Pond Siting Report

Florida Department of Transportation

District 7

Interstate 75/SR 93A

Project Development and Environment (PD&E) Study

Limits of Project: From Moccasin Wallow Road to South of US 301/SR 43

Hillsborough and Manatee Counties, Florida

Financial Management Number: 419235-2-22-01

ETDM Number: 8001 & 14267

Date: July 2022

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

Interstate 75 (State Road 93A)
Project Development & Environment (PD&E) Study

From Moccasin Wallow Road to
South of US 301/ State Road 43

Pond Siting Report

Work Program Item Segment No. 419235-2
Manatee and Hillsborough Counties, Florida

Prepared for:



Florida Department of Transportation
District Seven

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July 2022

EXECUTIVE SUMMARY

The information presented in this document is subject to change until the final design phase of the project. This Alternative Stormwater Management Facilities Report and Floodplain Compensation Facility Report (ASWMF/FPCR), also referred to as Pond Siting Report (PSR), are preliminary and used as an engineering tool to identify potential Stormwater Management Facilities (SMF) and Floodplain Compensation (FPC) sites utilizing an alternatives methodology. The recommendations are generated using highly variable factors as summarized in the matrix for each SMF and FPC. The SMF and FPC site locations are screened using preliminary information based upon many assumptions and judgments. The calculations presented in this report are preliminary and are used to estimate the preliminary size of the SMF and the FPC for each basin. The SMF and FPC sizes, the limits of the basins associated with each SMF alternative shown on the figures, tables, and included in the documentation are subject to change throughout the preliminary engineering and project design phases (1 through final).

The Florida Department of Transportation (FDOT), District Seven, conducted a Project Development and Environment (PD&E) Study to evaluate capacity improvements along approximately 23 miles of Interstate 75 (I-75)/State Road (SR) 93A from Moccasin Wallow Road/County Road (CR) 6 in Manatee County to south of US 301/SR 43 in Hillsborough County. The design year for the improvements is 2045. This PD&E Study was conducted concurrently with the PD&E Study for the portion of I-75 that extends from south of US 301/SR 43 to north of Bruce B. Downs Boulevard/CR 581 in Hillsborough County under Work Program Item (WPI) Segment No. 419235-3.

The study focuses on widening I-75 to include two express lanes in each direction within the median from Moccasin Wallow Road to south of US 301 including operational improvements at the SR 674 and Gibsonton Drive interchanges. The study for this segment of I-75 evaluates issues including those related to corridor capacity, congestion, and safety. The project will improve capacity, relieve congestion, improve evacuation efforts, and provide for the efficient movement of goods in an important regional transportation corridor.

The objective of the PD&E Study is to assist the FDOT Office of Environmental Management (OEM) in reaching a decision on the type, location, and conceptual design of the necessary improvements for I-75 to safely and efficiently accommodate future travel demand while minimizing impacts to the environment, consider agency and public comments, and ensure project compliance with all applicable federal and state laws. A Type 2 Categorical Exclusion has been prepared as part of this study. This PD&E Study documents the need for the improvements as well as the procedures utilized to develop and evaluate various improvement alternatives including elements such as proposed typical sections, special designation of travel lanes, preliminary horizontal alignments, and interchange enhancement alternatives. The PD&E Study satisfies all applicable requirements, including the National Environmental Policy Act (NEPA), to qualify for federal-aid funding of subsequent development phases (design, right of way acquisition, and construction).

The PD&E Study satisfies all applicable requirements, including the National Environmental Policy Act (NEPA), to qualify for federal-aid funding of subsequent development phases (design, right-of-way acquisition, and construction). This Draft Pond Siting Report (PSR) has been prepared as part of this PD&E Study to document stormwater treatment and attenuation requirements for the proposed improvements. This report identifies up to three SMF site alternatives per basin and up to three FPC site alternatives per encroachment. The SMFs were sized for the anticipated future condition, 224 foot (10- lane) and 248 foot (12- lane) impervious width.

This Draft Pond Siting Report analyzed pond site alternatives that are hydraulically feasible and environmentally permissible based on the best available information. Section 4(f) involvement considerations consisted of avoidance of public lands in the placement of SMF and FPC sites.

The evaluation finds that a combination of wet detention ponds and floodplain compensation sites are recommended for meeting the stormwater management requirements for the proposed roadway improvements.

The following tables provide a summary of the preliminary preferred pond site alternatives.

Pond #	Pond Site Area (Ac)	FPC #	FPC Site Area (Ac)	Total Area (Ac)	Est. Total Costs
1C	1.35	1C	0.68	2.03	$ 307,924.07
2B	2.53	N/A	0.00	2.53	$ 384,111.41
3A	2.43	3A	9.07	11.50	$ 1,165,339.34
4A	2.18	N/A	0.00	2.18	$ 287,144.16
5A&6A	1.83	5-6A	7.28	9.11	$ 714,599.12
7A	2.11	7A	11.42	13.53	$ 1,566,161.97
8A	1.40	N/A	0.00	1.40	$ 317,740.21
9A	0.98	N/A	0.00	0.98	$ 202,221.02
10A&11B	3.94	N/A	0.00	3.94	$ 611,517.90
12	14.56	N/A	0.00	14.56	$ 171,200.00
13B	1.85	N/A	0.00	1.85	$ 310,119.74
14B&15B	5.20	14B&15B	4.25	9.45	$ 1,417,481.61
16A	4.44	N/A	0.00	4.44	$ 918,237.66
17	12.53	N/A	0.00	12.53	$ 1,340,332.68
N/A	0.00	17B	3.12	3.12	$ 594,384.58
18	4.67	N/A	0.00	4.67	$ 277,750.52
N/A	0.00	18A	5.57	5.57	$ 1,152,329.76
19B	3.60	19B	1.76	5.36	$ 2,543,737.42

Pond #	Pond Site Area (Ac)	FPC #	FPC Site Area (Ac)	Total Area (Ac)	Est. Total Costs
20A	4.54	N/A	0.00	4.54	$ 1,362,951.81
21A	8.90	N/A	0.00	8.90	$ 802,888.94
22A	3.84	N/A	0.00	3.84	$ 515,673.26
23A&24A	6.91	24A	5.34	12.26	$ 2,812,578.44
25	22.93	N/A	0.00	22.93	$ 1,703,564.78
26B	3.50	26B	4.52	8.02	$ 1,283,396.14
27A&28A*	0.00	27A	1.01	1.01	$ 3,305,749.86
N/A	0.00	28A	1.91	1.91	$ 462,036.20
29B	4.36	29B	2.97	7.33	$ 1,792,677.16
30	12.52	N/A	0.00	12.52	$ 561,395.23
N/A	0.00	30A	0.58	0.58	$ 246,685.39
31	8.94	N/A	0.00	8.94	$ 320,987.08
32&33A	5.31	N/A	0.00	5.31	$ 1,104,156.37
34B	3.56	N/A	0.00	3.56	$ 413,615.58
35A	2.51	34A&35A	3.77	6.28	$ 798,386.38
36A	2.18	N/A	0.00	2.18	$ 337,315.40
				Total Estimated Cost	**$ 32,106,391.19**

* indicates utilizing existing lake through modification of Environmental Resource Permit 44021713.000

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SECTION 1 INTRODUCTION

1.1 PD&E STUDY PURPOSE

The objective of this Project Development and Environment (PD&E) Study is to assist the Florida Department of Transportation (FDOT) Office of Environmental Management (OEM) in reaching a decision on the type, location, and conceptual design of the necessary improvements for I-75 to safely and efficiently accommodate future travel demand. This study documents the need for the improvements as well as the procedures utilized to develop and evaluate various improvements, including elements such as proposed typical sections, preliminary horizontal alignments, and interchange enhancement alternatives.

The PD&E Study satisfies all applicable requirements, including the National Environmental Policy Act (NEPA), to qualify for federal-aid funding of subsequent development phases (design, right of way [ROW] acquisition, and construction).

To initiate agency coordination, the project has been screened through the Programming Screen of the FDOT's Efficient Transportation Decision Making (ETDM) process as ETDM Project No. 8001, and an updated Advanced Notification (AN) was run under ETDM Project No. 14267. ETDM Project No. 14267 includes project limits from Moccasin Wallow Road in Manatee County to north of Bruce B. Downs in Hillsborough County. The portion of the corridor from south of US 301 to north of Bruce B. Downs in Hillsborough County was studied under a separate PD&E Study (WPI Segment No. 419235-3) and was previously screened through the ETDM process as Project No. 8002. An ETDM Programming Screen Summary Report was published on March 29, 2007, containing comments from the Environmental Technical Advisory Team (ETAT) on the project's effects on various natural, physical, and social resources. Based on the ETAT comments, the Federal Highway Administration (FHWA) determined that this project qualified as a Type 2 Categorical Exclusion.

1.2 PROJECT PURPOSE AND NEED

1.2.1 Purpose

The purpose of the project is to evaluate alternatives to address the corridor's capacity and relieve congestion. These improvements are expected to enhance the overall safety and improve the operating conditions of the facility within the project limits.

1.2.2 Need

I-75 is a south-north interstate highway that is a major trade and tourism corridor. I-75 is part of the highway network that provides access to regional intermodal facilities such as several general aviation airports, MacDill Air Force Base, several seaports, transit stations, cruise ship terminals and major CSX intermodal rail facilities. It is part of the SIS and is a vital link in the transportation network that connects the Tampa Bay region to the remainder of the state and the nation.

I-75 is a critical evacuation route as shown on the Florida Division of Emergency Management's evacuation route network. Improvements to I-75 will improve evacuation efforts, when needed, will enhance access to activity centers in the area, and movement of goods and freight in the greater Tampa Bay region. Statewide and regional transportation plans and studies by FDOT and the Hillsborough County Transportation Planning Organization (TPO) identify the need for interstate improvements.

1.3 PROJECT DESCRIPTION

The FDOT, District Seven, conducted a PD&E study to evaluate improvements along approximately 23 miles of I-75/State Road (SR) 93A from Moccasin Wallow Road in Manatee County to south of US 301/SR 43 in Hillsborough County, Florida. The design year for the improvements is 2045. This PD&E study was conducted concurrently with the PD&E study for the section of I-75 that extends from south of US 301 to north of Bruce B. Downs Boulevard in Hillsborough County (WPI Segment No. 419235-3). The project location map is shown on **Figure 1-1**.

1.4 EXISTING FACILITY AND PROPOSED IMPROVEMENTS

1.4.1 Existing Facility

I-75 is a limited access (L.A.) freeway that travels in a generally south-north direction from a southern terminus at SR 826 (Palmetto Expressway) in Hialeah, Florida, to a northern terminus in Sault Sainte Marie, Michigan, near the border with Canada. In Florida, I-75 is included in the State Highway System (SHS), designated as SR 93A; the Strategic Intermodal System (SIS); and the Federal Aid Interstate System. I-75 serves as a major evacuation route throughout the state.

Within the project limits, I-75 is classified as a Rural (south of 21st Avenue SE) Principal Arterial -- Interstate and Urban (north of 21st Avenue SE) Principal Arterial – Interstate. The roadway is generally three lanes in each direction from Moccasin Wallow Road to Gibsonton Drive and three lanes plus one auxiliary lane in each direction from Gibsonton Drive to south of US 301. All travel lanes are 12-ft wide and 12-ft inside and outside shoulders are provided, including 10-ft paved. The median width is a minimum of 88-ft wide; several areas near the south end of the project have a wider median where the roadway has been partially bifurcated. The existing typical sections are shown in **Figure 1-2**.

The existing L.A. ROW varies throughout the study limits; however, in most areas, the minimum ROW width is 348 feet. For a segment north of SR 674, the ROW on the west side narrows by as much as 46-ft just north of the interchange, yielding a total ROW of only 302-ft. Several areas near the south end have a ROW as wide as 556 feet, where the two roadways are partially bifurcated with a wider median. The posted speed limit is 70 miles per hour (mph).

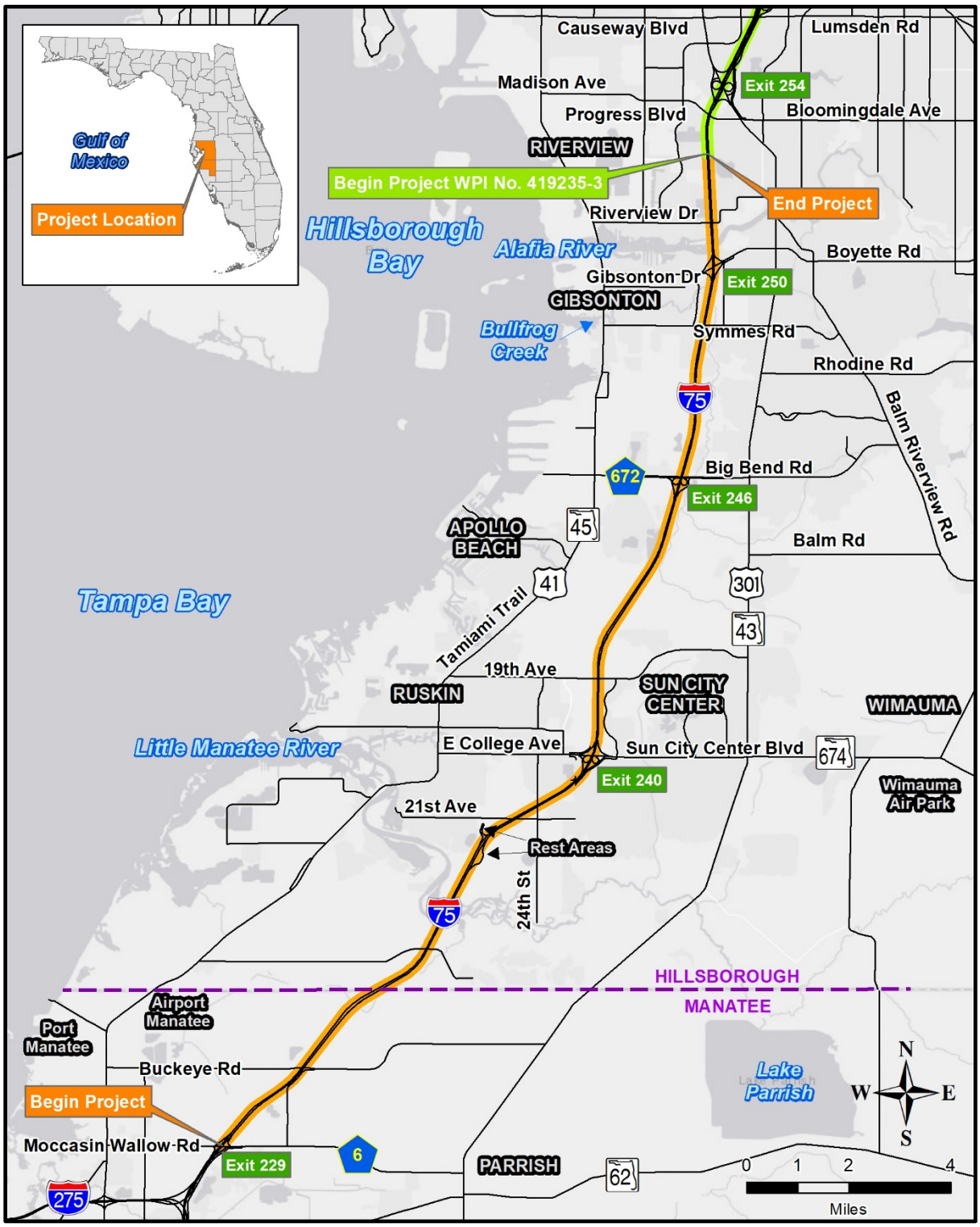
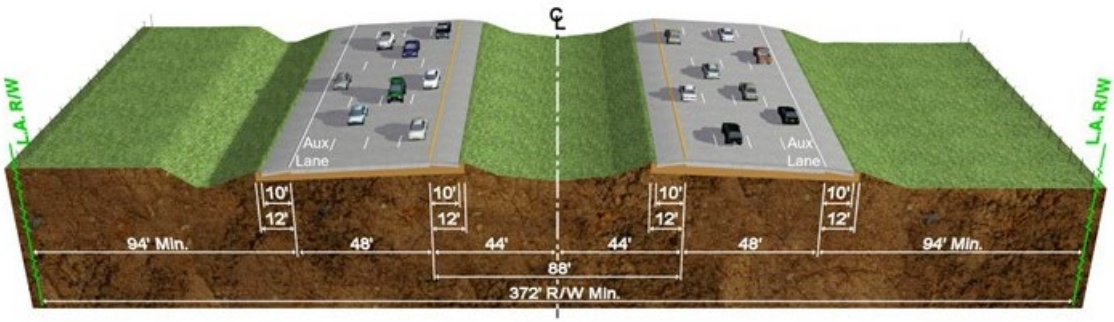


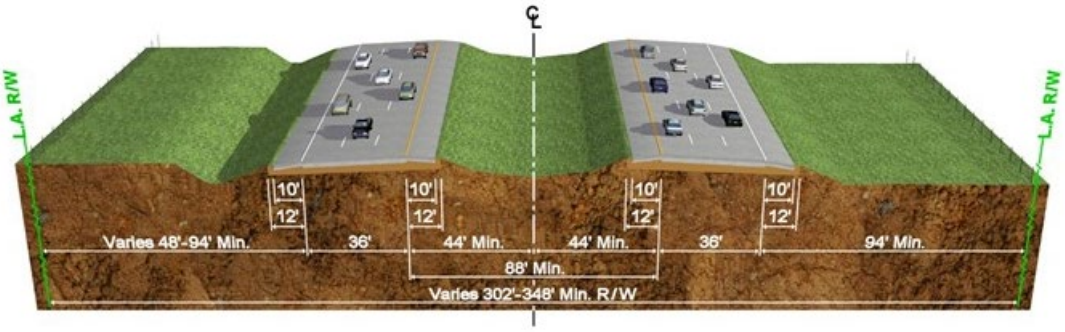
Figure 1-1 Project Location Map



Typical Section #2

From Gibsonton Drive to South of US 301

Design Speed = 70 mph



Typical Section #1

From Moccasin Wallow Road to Gibsonton Drive

Design Speed = 70 mph

Figure 1-2 Existing Roadway Typical Sections

There are three interchanges along I-75 within the project limits. They are located at SR 674/East College Avenue/Sun City Center Boulevard, County Road (CR) 672/Big Bend Road, and Gibsonton Drive. Existing rest area facilities for northbound and southbound travelers are situated approximately 3-miles south of SR 674. The study area includes 22 bridge structures, including crossings over Curiosity Creek, the Little Manatee River, Bullfrog Creek and the Alafia River.

Interstate 75 has not had capacity improvements from Moccasin Wallow Road to south of US 301 since its original construction in the early 1980's.

1.4.2 Proposed Improvements

All alternatives have been evaluated with regard to environmental impacts, costs, and operational factors. Based on these evaluations, a preferred build alternative utilizing two typical sections was identified for the I-75 mainline within the study area.

The Preferred Build Alternative Typical Section includes the existing mainline lanes to be designated as General Use Lanes (GULs). The three 12-foot lanes in each direction will remain from Moccasin Wallow Road to Gibsonton Drive and the three lanes plus one auxiliary lane in each direction will remain north of Gibsonton Drive to south of US 301. Outside shoulders will remain at 12-feet wide. Adjacent to the GULs, within the median, two 12-foot Express Lanes (ELs) with 12 to 15-foot inside shoulders will be added in each direction. The inside shoulders will be 15-feet wide where median barrier is proposed and 12-feet wide (10-foot paved) in bifurcated areas. The ELs will be separated from the GULs by a 4-foot painted and delineated buffer. The preferred alternative typical section is shown in **Figure 1-3**.

Three ingress and three egress connections between the ELs and GULs will be located within the limits of the project in each direction. The ELs are proposed to be managed by limiting direct access for traffic to/from existing interchanges, collection of tolls, vehicle occupancy and/or vehicle type.

As previously stated, there are three interchanges along I-75 within the project limits. They are located at SR 674/East College Avenue/Sun City Center Boulevard, CR 672/Big Bend Road, and Gibsonton Drive. The Big Bend Road interchange improvements are currently being constructed as part of a separate design-build project (WPI Segment No. 424513-3) and considered as an existing condition for this project.

The proposed improvements will include construction of 30 Stormwater Management Facilities (SMF) and 15 Floodplain Compensation (FPC) sites. A number of these SMF and FPC sites within common drainage basins are combined at a single location, and several of the SMFs are located at existing interchange locations within the existing ROW. Additional ROW at a total of 28 locations is required for constructing the offsite SMF and FPC sites. No additional ROW is required for the I-75 mainline or interchange improvements.

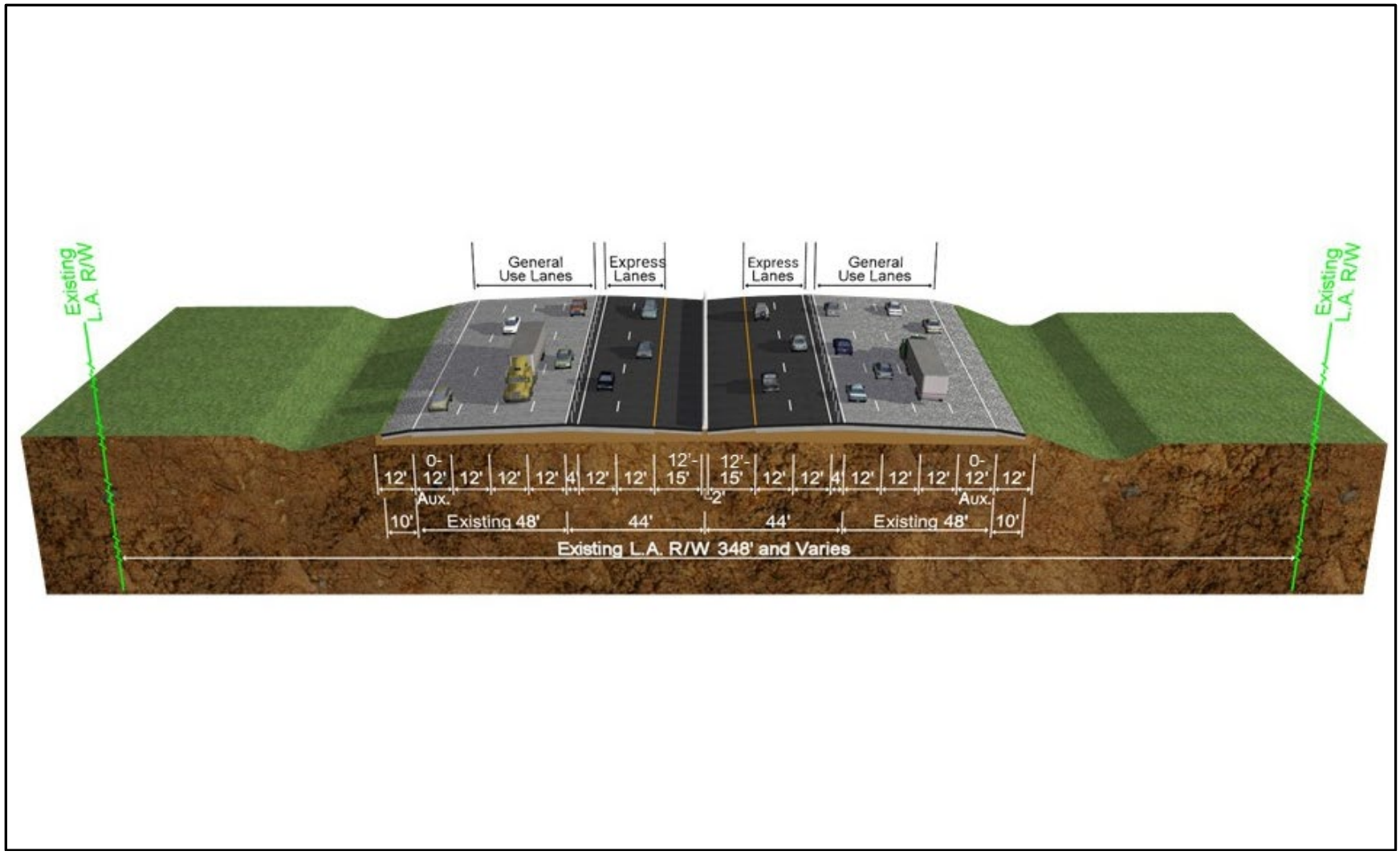


Figure 1-3 Preferred Roadway Typical Section

1.5 REPORT PURPOSE

This Draft Pond Siting Report is one of several documents that were prepared as part of this PD&E Study. This report identifies pond site alternatives and floodplain compensation sites and includes the analysis for selection of preferred sites. This study analyzed pond site alternatives that are hydraulically feasible and environmentally permissible based on the best available information. These alternatives were then compared based on relocations and community impacts; environmental impacts including wetlands, upland habitat and protected species involvement; petroleum and hazardous materials contamination; and economic factors including right-of-way costs.

This evaluation finds that a combination of wet detention ponds and floodplain compensation sites are recommended for meeting stormwater management requirements for the proposed roadway widening. The wet detention ponds will provide water quality treatment and discharge attenuation for the added impervious area. The floodplain compensation site will provide "cup-for-cup" compensation for fill placed within the 100 year floodplain.

The process of defining and developing the information base included review of the following sources:

- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) for Hillsborough County and Manatee County
- Applied Sciences. (2016) Delaney/Archie Creek Watershed Management Update. Public Works Department, Hillsborough County Technical Services Division, Florida.
- Atkins. (2015) Bull Frog Creek/Wolf Branch Watershed Master Plan Update. Public Works Stormwater Management Section, Hillsborough County Engineering Division, Florida.
- Jones Edmunds & Asscociates, Inc. (2007) Buffalo Canal/Frog Creek Watershed Management Plan. Southwest Florida Water Management District, Florida.
- Jones Edmunds & Asscociates, Inc. (2015) Little Manatee River Watershed Master Plan Update. Hillsborough County Board of County Commissioners, Florida.
- Parsons. (2010) Countywide Masterplan Update for the Alafia River Watershed. Department of Public Works Stormwater Management Section, Hillsborough County Engineering Division, Florida.
- Aerial photographs, (2017)
- United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Soil Surveys of Hillsborough and Manatee Counties
- Southwest Florida Water Management District (SWFWMD) aerial photography with contours, scale 1"=200', 1-foot contour interval, reference datum NGVD 29
- Low Altitude Mapping and Photography (LAMP) data within Hillsborough County from Rooks and ACA, reference datum NGVD 29
- Florida Department of Transportation (FDOT), As-Built Construction Plans for I-75, (SR 93A)
- FDOT Drainage Manual (2019)
- FDOT Drainage Design Guide (2019)
- FDOT Straight Line Diagrams (SLD) of Road Inventory for I-75, (Hillsborough County SLD dated September 16, 2017 and Manatee County SLD dated March 27, 2015)

- Field reviews by American Consulting Engineers of Florida personnel
- Hillsborough County and Manatee County GIS data
- Hillsborough County and Manatee County Property Appraiser's GIS Maps
- SWFWMD ERP Information Manual

SECTION 2 HYDROLOGIC FEATURES

2.1 EXISTING DRAINAGE CONDITIONS

2.1.1 Topography and Hydrologic Features

The Alafia River and Little Manatee River are the two major waterways within the study area. The Alafia River is listed in the Nationwide Rivers Inventory and is noted to be a good example of swiftly flowing unspoiled central Florida riverine system. The Little Manatee River is a designated outstanding Florida water (OFW). The Alafia River crosses the I-75 corridor at Station 1159+00 and outfalls into Hillsborough Bay. The Little Manatee River crosses the I-75 corridor at Station 371+00 and outfalls into Tampa Bay.

There are also several minor waterways within the study area, including Archie Creek, Bullfrog Creek, Curiosity Creek, and Cabbage Slough.

There are numerous named and unnamed lakes located proximate to the I-75 corridor. The named lakes include Marsh Branch Pond, Lake Fantasia, Lake St. Charles, and Straight Lake. The unnamed lakes consist of man-made areas that were created to serve stormwater management systems and man-made storage areas for agricultural use.

The I-75 study area lies within the coastal flatwood region of Manatee and Hillsborough Counties with a land use consisting predominantly of agricultural lands in good hydrologic condition, urban & built-up regions, and wetlands. The urban & built-up regions are primarily located at the northern portion of the study area and in proximity of the major interchanges.

Elevations throughout the project corridor range from 0 feet North American Vertical Datum of 1988 (NAVD 88) at the Alafia and Little Manatee River Crossings to 50 feet NAVD 88 around the middle of the study area at Station 778+00. **Table 2-1** describes the regional watershed boundaries, regional drainage basins, regional sub basins, and the project basin boundaries. A review of the best available information listed in **Section 1.5** of this report was conducted to assess the project basin limits.

Table 2-1 SWFWMD Regional Sub Basins

Regional Watershed	Regional Drainage Basin	Project Basin	Project Basin Boundaries	Project Basin Area (acre)
Little Manatee River	Cabbage Slough	1	Sta 75+00 to Sta 110+50	33.37
	Unnamed Drainage Ditch	2	Sta 110+50 to Sta 154+00	35.51
		3	Sta 154+00 to Sta 192+00	35.24
		4	Sta 192+00 to Sta 217+00	26.56
		5	Sta 217+00 to Sta 239+75	27.72
		6	Sta 239+75 to Sta 256+00	18.72
		7	Sta 256+00 to Sta 296+00	41.45
		8	Sta 296+00 to Sta 324+50	25.68
		9	Sta 324+50 to Sta 335+50	17.40 (1)
	Little Manatee River	10	Sta 335+50 to Sta 373+50	29.92
		11	Sta 373+50 to Sta 418+00	34.96
		12	Sta 418+00 to Sta 464+00	105.44 (1)
		13	Sta 464+00 to Sta 485+00	22.33 (1)
	Ruskin Inlet Marsh Br.	14	Sta 485+00 to Sta 512+75	28.87 (1)
		15	Sta 512+75 to Sta 550+00	61.94 (1)
	Cypress Creek	16	Sta 550+00 to Sta 585+00	57.24 (1)
		17	Sta 585+00 to Sta 621+00	99.25
		18	Sta 621+00 to Sta 635+00	36.95
		19	Sta 635+00 to Sta 674+00	27.63
	Wolf Branch Cutoff Creek	20	Sta 674+00 to Sta 701+00	21.43
Alafia River	Symphony Isles	21	Sta 701+00 to Sta 733+00	26.97
		22	Sta 733+00 to Sta 777+00	44.64
	Bullfrog Creek	23	Sta 777+00 to Sta 815+00	33.51
		24	Sta 815+00 to Sta 882+00	54.80
		25	Sta 882+00 to Sta 924+00	99.88
		26	Sta 924+00 to Sta 978+50	53.37
		27	Sta 978+50 to Sta 1029+50	40.50
		28	Sta 1029+50 to Sta 1077+00	37.85
		29	Sta 1077+00 to Sta 1110+00	27.10
		30	Sta 1110+00 to Sta 1137+50	58.85
	North Prong Alafia River	31	Sta 1137+50 to Sta 1159+50	54.99
		32	Sta 1159+50 to Sta 1184+00	21.76
		33	Sta 1184+00 to Sta 1195+00	9.92
	Archie Creek	34	Sta 1195+00 to Sta 1223+75	27.01
		35	Sta 1223+75 to Sta 1250+50	24.18
		36	Sta 1250+50 to Sta 1270+00	17.03

Notes: 1- Includes offsite area.

2.1.2 Existing Drainage Patterns

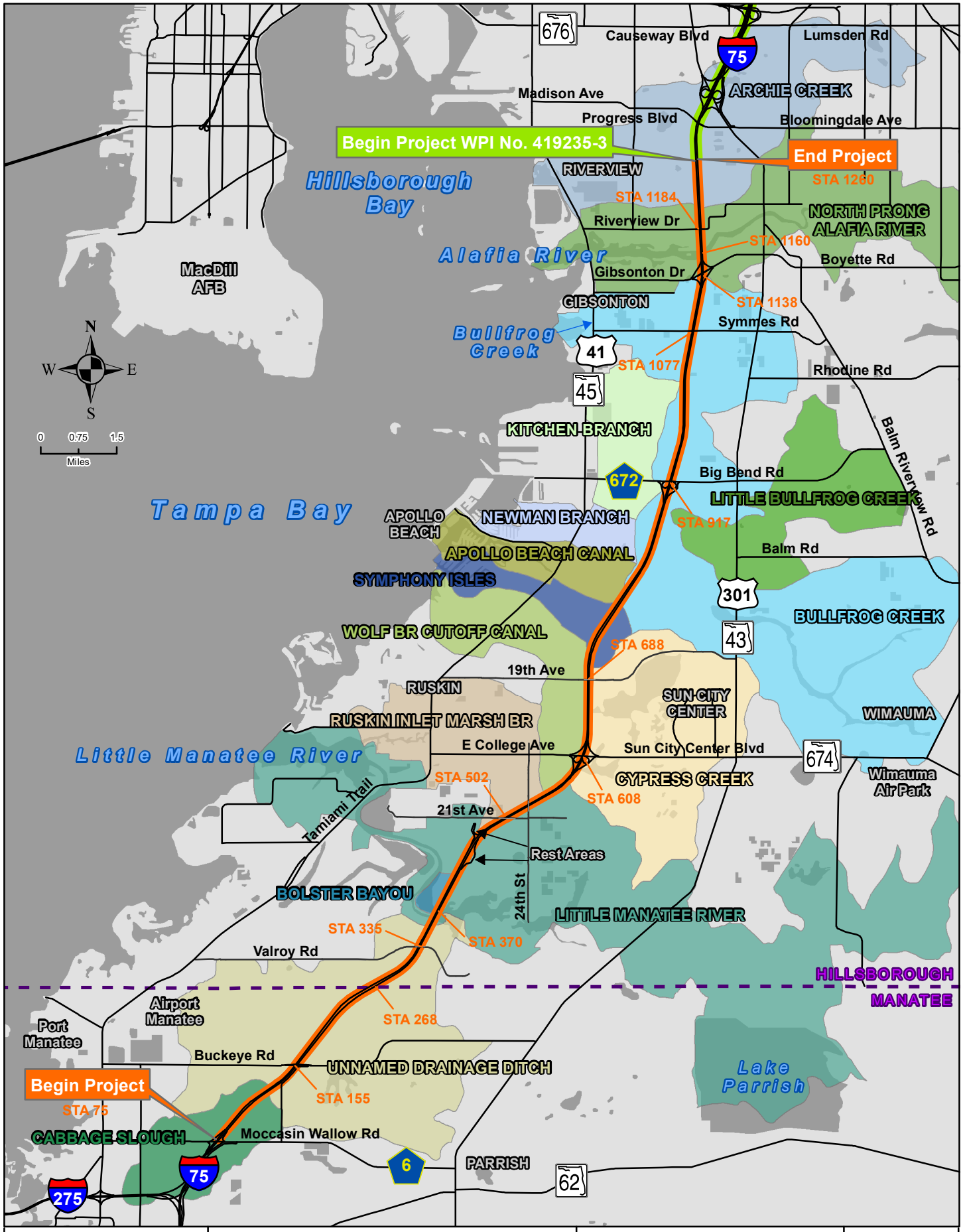
The study area is within the jurisdiction of the Southwest Florida Water Management District (SWFWMD).

Currently there is little to no treatment of stormwater runoff from I-75. The existing conveyance system is an open channel system consisting of depressed medians, roadside ditches, and interchange infields created during the original construction of the roadway. Runoff is directed towards either ditch bottom inlets or waterways. The ditch bottom inlets are primarily located within the depressed medians and runoff entering the ditch bottom inlets is directed towards the roadside ditches where it is conveyed to the outfalls. Runoff from the bridges enters the waterways directly via scuppers. There are also no stormwater retention or detention facilities for stormwater runoff within the study area dedicated to runoff from the I-75 right-of-way.

The study area is located within two Drainage Basins defined by the SWFWMD; the Alafia River Basin and the Manasota Basin. The study area is also located within two Watersheds; the Little Manatee River Watershed and the Alafia River Watershed. The Watersheds are divided into Regional Drainage Basins; see **Figure 2-1** for an illustration of the Regional Drainage Basins in relation to the study limits. For calculating the required stormwater management facility (SMF) attenuation volumes, the Regional Drainage Basins are further divided into Project Basins within and adjacent to the I-75 right-of-way. The Drainage Maps in **Appendix A** illustrate the Project Basin locations.

2.1.3 Existing Cross Drains

A review of the existing FDOT as-built construction plans and SLDs for Hillsborough County and Manatee Counties indicate that there are 67 existing cross drains within the limits of the I-75 PD&E study area. The locations and sizes of these drainage structures were verified by field inspection on April 18 & 19, 2008. Hydraulic equivalency for replacement or modification of the existing cross drains will be determined during the subsequent design phase of this project. The station, size and material of the existing cross drains are tabulated in **Table 2-2**. The cross drain locations are also identified on **Figure 2-2** and the Conceptual Drainage Maps in **Appendix A**.



FDOT	**I-75 (SR 93A) PD&E Study** *Moccasin Wallow Road to South of US 301* WPI Segment No.: 419235-2 Hillsborough and Manatee Counties	**Regional Drainage Basins**	**Figure 2-1**

Table 2-2 Existing Cross Drains

Cross Drain No.	Station	Description
Manatee County FDOT District One		
1	52+00	12' x 7' CBC
2	72+00	[Pair] 24" RCP LT & RT
3	85+00	[Pair] 30" RCP LT & RT
4	95+50	[Pair] (2) 42" RCP LT & RT
5	104+50	24" RCP
6	114+25	24" RCP
7	147+00	(2) 42" RCP
8	156+00	(2) 42" RCP
9	165+00	[Pair] (2) 30" LT & 42" RCP RT
10	171+00	[Pair] (2) 30" RCP LT & RT
11	212+00	[Pair] 30" RCP LT & RT
12	234+00	[Pair] 30" RCP LT & 24" RCP RT
13	240+00	[Pair] Bridge No. 0105 & 0106 (Curiosity Creek)
14	248+00	[Pair] 36" RCP LT & RT
15	266+50	[Pair] 5' x 5' CBC LT & RT
Hillsborough County FDOT District Seven		
16	273+00	[Pair] (2) 30" RCP LT & RT
17	285+00	[Pair] 5' x 4' CBC LT & RT
18	292+00	[Pair] 30" RCP LT & RT
19	300+50	[Pair] 24" RCP LT & RT
20	303+50	[Pair] 30" RCP LT & RT
21	333+25	(2) 30" RCP
22	351+00	24" RCP
23	357+00	10' x 5' CBC
24	371+00	[Pair] Bridge No. 352 & 353 (Little Manatee River)
25	446+00	[Pair] 24" RCP LT & 30" RCP RT
26	476+25	54" RCP
27	513+00	6' x 4' CBC
28	544+00	24" RCP
29	544+50	24" RCP
30	596+00	9' x 4' CBC
31	623+50	24" RCP
32	630+25	30" RCP
33	637+00	30" RCP

Cross Drain No.	Station	Description
Hillsborough County FDOT District Seven		
34	643+50	30" RCP
35	650+00	30" RCP
36	654+25	24" RCP
37	660+00	30" RCP
38	667+50	24" RCP
39	675+00	30" RCP
40	692+00	30" RCP
41	697+00	42" RCP
42	733+00	[Pair] (2) 6' x 4' CBC LT & RT
43	837+25	24" RCP
44	866+75	9' x 6' CBC
45	890+75	42" RCP
46	908+00	24" RCP
47	915+50	48" RCP
48	936+50	(2) 36" RCP
49	954+00	6' x 4' CBC
50	966+00	6' x 4' CBC
51	999+75	8' x 5' CBC
52	1038+00	24" RCP
53	1050+00	30" RCP
54	1056+00	48" RCP
55	1064+00	15" RCP
56	1069+75	30" RCP
57	1075+50	24" RCP
58	1089+00	42" RCP
59	1111+00	[Pair] Bridge No. 373 & 374 (Bullfrog Creek)
60	1113+50	18" RCP
61	1117+50	(2) 5' x 6' CBC
62	1133+25	24" RCP
63	1144+25	30" RCP
64	1159+00	[Pair] Bridge No. 358 & 359 {Alafia River}
65	1223+75	(2) 8' x 5' CBC
66	1243+25	30" RCP
67	1270+00	6' x 4' CBC

Notes: CBC = Concrete Box Culvert
RCP = Reinforced Concrete Pipe
[Pair] = Cross drain not continuous through median



FDOT

I-75 (SR 93A) PD&E Study

Moccasin Wallow Road to South of US 301

FPID: 419235-2-22-01

Hillsborough and Manatee Counties

Existing Cross Drain Map

Figure 2-2
Sheet 1 of 2



FDOT

I-75 (SR 93A) PD&E Study

Moccasin Wallow Road to South of US 301

FDIP: 419235-2-22-01

Hillsborough and Manatee Counties

Existing Cross Drain Map

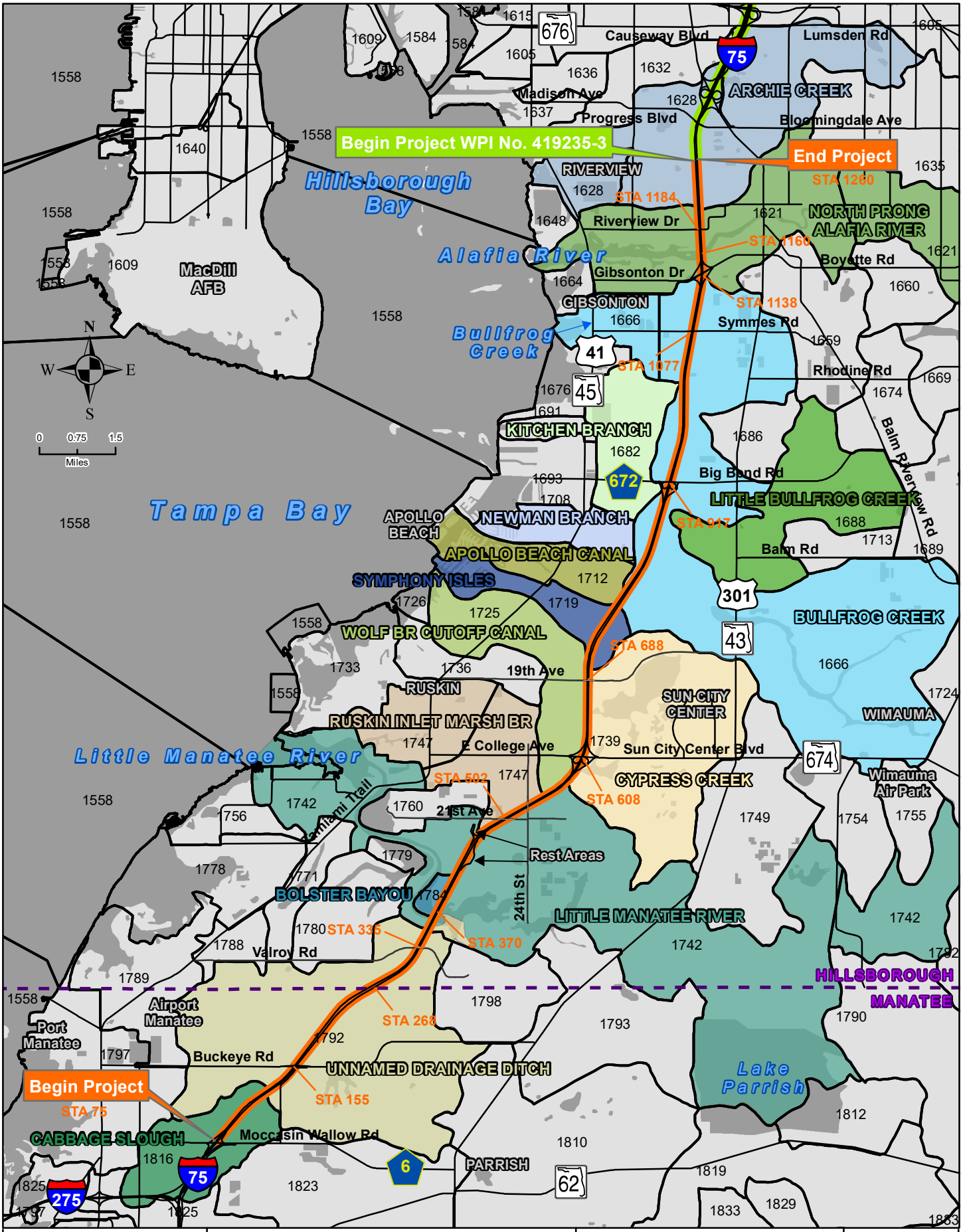
Figure 2-2
Sheet 2 of 2

2.2 NUTRIENT LOADING

The following **Table 2-3** summarizes verified Nutrient Impaired Water Body Identification (WBID) System based on Department of Environmental Protection (DEP) data, WBID's are shown in **Figure 2-3**.

Table 2-3 Nutrient Impaired WBIDs

Regional Basins	Project Basin No.	WBID	Nutrient Impairments
Little Manatee River Watershed	1	1816	None
	2	1792	
	3	1792	
	4	1792	
	5	1792	
	6	1792	
	7	1792	
	8	1792	
	9	1792	
	10	1792	
	11	1742A1	
	12	1742A1	
	13	1742A1	
	14	1742A1	
	15	1742A1	
	16	1742A1	
	17	1739	
	18	1739	
	19	1739	
	20	1725	
Alafia River Watershed	21	1719	None
	22	1719	
	23	1666	
	24	1666	
	25	1666	
	26	1666	
	27	1666	
	28	1666	
	29	1666	
	30	1666	
	31	1621G	DO & Nutrients
	32	1621G	DO & Nutrients
	33	1628	None
	34	1628	
	35	1628	
	36	1628	



FDOT	**I-75 (SR 93A) PD&E Study** *Moccasin Wallow Road to South of US 301* WPI Segment No.: 419235-2 Hillsborough and Manatee Counties	**Water Body Identification Map**	**Figure 2-3**

2.3 SOIL CHARACTERISTICS

Based on a review of existing data and reference materials included the Natural Resources Conservation Service (NRCS) web soil survey, USDA Soil Conservation Service (SCS) Soil Surveys of Hillsborough and Manatee Counties, Florida, SWFWMD aerial contour maps, and current photo aerials. The result of the preliminary geotechnical investigation gives a general assessment of the surface to near-surface conditions of the soils within the study limits. **Table 2-4** below is a tabulated summary of the soil characteristics found within the study limits, and the NRCS Soils Maps in **Figure 2-4** illustrate the soils within and adjacent to the study limits.

In general, the soils within the Hillsborough County portion of the study limits are considered to be in the region Soils of the Flatwoods, which have nearly level, poorly drained and very poorly drained soils that have a sandy subsoil, are sandy throughout, or have a loamy subsoil. Myakka fine sand comprises roughly 71% of the soil group within the Hillsborough portion of the study area. The soils within the Manatee County portion of the study limits are nearly level, poorly drained soil in broad areas of flatwoods with smooth slopes ranging from 0 to 2 percent, with some minor areas being moderately well drained, nearly level on low ridges and knolls in the uplands. EauGallie fine sand comprises roughly 26% of the soil group, and Cassia fine sand, moderately well drained comprises roughly 12% of the soil group within the Manatee portion of the study area.

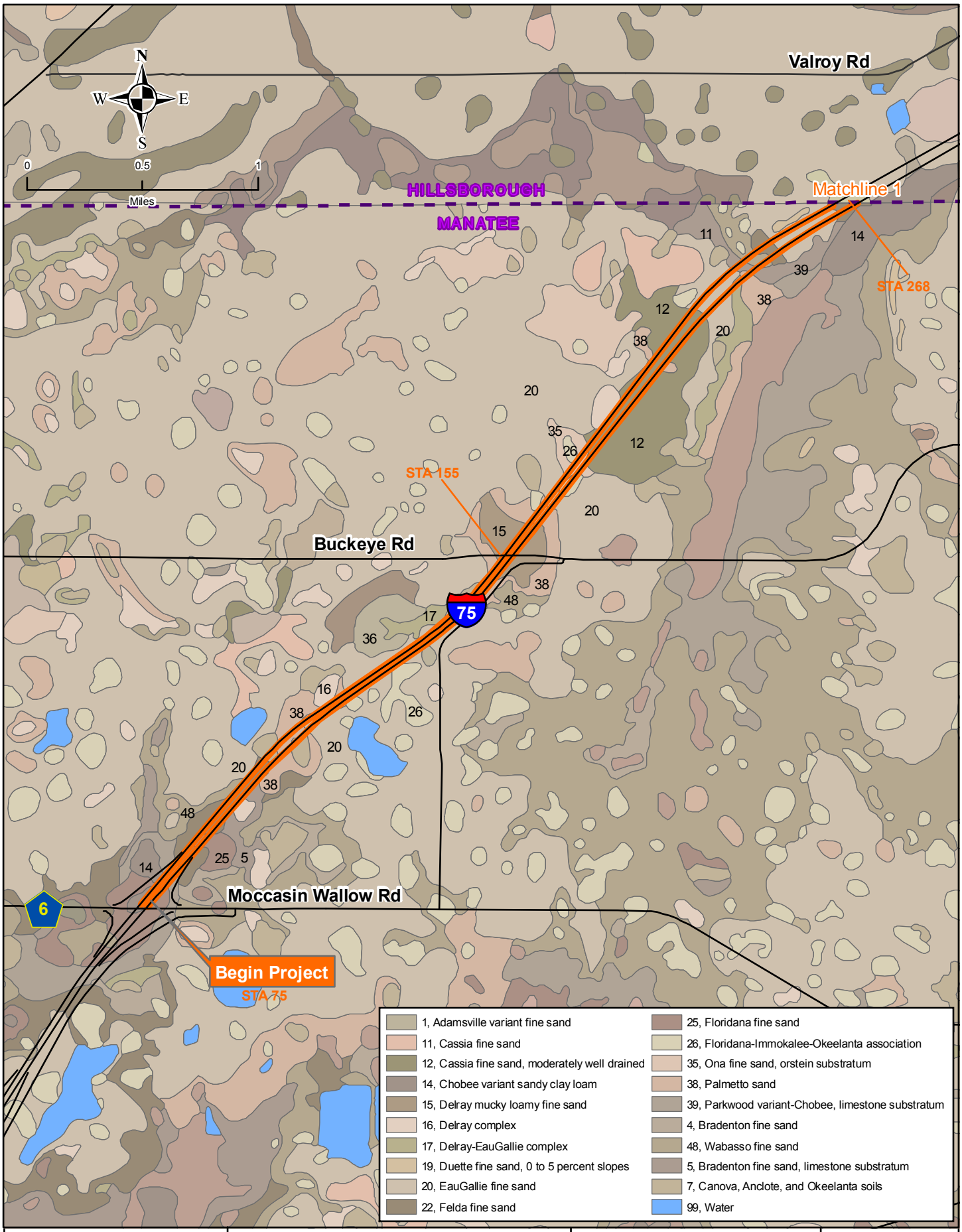
Table 2-4 NRCS Soil Summary

Soil Name (Map Unit No.)	Depth (inches)	Classification		Permeability (in/hr)	Seasonal High Water Table Depth (ft)	Hydrologic Soil Group
		AASHTO Group	USCS Group			
Manatee County						
Adamsville variant fine sand (1)	0-8	A-3, A-2-4	SP-SM	6.0-20	0.5-1.5	C
	8-80	A-3, A-2-4	SP, SP-SM	6.0-20		
Bradenton fine sand (4)	0-4	A-3, A-2-4	SP-SM	6.0-20	0-1.0	D
	4-9	A-3, A-2-4	SP-SM	6.0-20		
	9-27	A-2-4, A-2-6	SC, SM-SC	0.6-2.0		
	27-80	A-3, A-2-4, A-2-6	SP-SM, SM, SM-SC, SC	0.6-6.0		
Bradenton fine sand, limestone substratum (5)	0-6	A-3, A-2-4	SP-SM	6.0-20	0-1.0	B/D
	6-13	A-3, A-2-4	SP-SM, SM	6.0-20		
	13-47	A-2-4, A-2-6	SM-SC, SC	0.6-2.0		
	47-77	--------	---------	------		
	77-80	A-3, A-2-4, A-2-6, A-6	SP-SM, SM, SM-SC, SC	6.0-0.6		
Canova, Anclote, and Okeelanta soils (7)	0-20	A-8	PT	6.0-20	2	B/D
	20-80	A-3, A-2-4	SP, SP-SM, SM	6.0-20		
Cassia fine sand(11)	0-24	A-3	SP, SP-SM	6.0-20	1.5-3.5	C
	24-33	A-3, A-2-4	SP-SM, SM	0.6-6.0		
	33-80	A-3	SP, SP-SM	6.0-20		
	0-29	A-3	SP, SP-SM	>20	3.5-5.0	B

Soil Name (Map Unit No.)	Depth (inches)	Classification		Permeability (in/hr)	Seasonal High Water Table Depth (ft)	Hydrologic Soil Group
		AASHTO Group	USCS Group			
Cassia fine sand, moderately well drained (12)	29-41	A-3, A-2-4	SP, SP-SM	2.0-6.0		
	41-80	A-3	SP, SP-SM	>20		
Chobee variant sandy clay loam (14)	0-20	A-6, A-7	SC	0.06-0.2	1	D
	20-35	A-6, A-7	SC, CL, CH	0.06-0.2		
	35-40	A-2-4, A-2-6, A-6, A-7	SM-SC, SC, SL CH	0.06-0.6		
	40-80	A-3, A-2-4	SM, SM-SC, SC	6.0-20		
Delray mucky loamy fine sand (15)	0-16	A-3, A-2-4	SP-SM, SM, SM-SC	6.0-20	0-1.0	B/D
	16-51	A-3, A-2-4	SP-SM	6.0-20		
	51-80	A-2-4, A-2-6	SM, SM-SC, SC	0.6-6.0		
Delray complex (16)	0-15	A-3, A-2-4	SP-SM, SM, SM-SC	6.0-20	0-1.0	B/D
	15-55	A-3, A-2-4	SP-SM	6.0-20		
	55-80	A-2-4, A-2-6	SM, SM-SC, SC	0.6-6.0		
Delray-EauGallie complex (17)	0-15	A-3, A-2-4	SP-SM, SM, SM-SC	6.0-20	0-1.0	B/D
	15-55	A-3, A-2-4	SP-SM	6.0-20		
	55-80	A-2-4, A-2-6	SM, SM-SC, SC	0.6-6.0		
Duette fine sand, 0 to 5% slopes (19)	0-4	A-3	SP	>20	4.0-6.0	A
	4-58	A-3	SP	>20		
	58-80	A-3, A-2-4	SP, SP-SM	2.0-6.0		
EauGallie Fine sand (20)	0-28	A-3	SP, SP-SM	6.0-20	0-1.0	B/D
	28-42	A-3, A-2-4	SP-SM, SM	0.6-6.0		
	42-50	A-2-4, A-2-6	SM, SM-SC, SC	0.6-6.0		
	50-65	A-3, A-2-4	SP-SM, SM	2.0-6.0		
Felda fine sand (22)	0-24	A-3	SP, SP-SM	6.0-20	0-1.0	B/D
	24-80	A-2-4, A-2-6	SM, SM-SC, SC	0.6-6.0		
Floridana fine sand (25)	0-15	A-3, A-2-4	SP-SM, SM	6.0-20	0-1.0	B/D
	15-32	A-3	SP, SP-SM	6.0-20		
	32-65	A-2-4, A-2-6	SM-SC, SC	<0.2		
Floridana-Immokalee-Okeelanta association (26)	0-19	A-3, A-2-4	SP-SM, SM	6.0-20	1	B/D
	19-36	A-3	SP, SP-SM	6.0-20		
	36-63	A-2-4, A-2-6	SM-SC, SC	<0.2		
Gator muck (27)	0-18	A-8	PT	6.0-20	1	D
	18-55	A-2, A-4, A-6	SC, SM-SC	0.6-2.0		
	55-80	A-3, A-2-4	SP-SM	6.0-20		
Ona fine sand, orstein substratum (35)	0-5	A-3	SP, SP-SM	6.0-20	0-1.0	B/D
	5-16	A-3, A-2-4	SP-SM, SM	0.6-2.0		
	16-52	A-3	SP, SP-SM	6.0-20		
	52-68	A-2-4	SP-SM, SM	<0.2		
	68-80	A-2-4	SP-SM, SM	0.06-0.6		
	0-12	A-3, A-2-4	SP, SP-SM	6.0-20	3.5-6.0	A

Soil Name (Map Unit No.)	Depth (inches)	Classification		Permeability (in/hr)	Seasonal High Water Table Depth (ft)	Hydrologic Soil Group
		AASHTO Group	USCS Group			
Orlando fine sand, moderately wet, 0 to 2% slopes (36)	12-80	A-3, A-2-4	SP, SP-SM	6.0-20		
Palmetto sand (38)	0-25 25-45 45-64 64-68	A-3, A-2-4 A-3, A-2-4 A-2-4, A-2-6 A-3, A-2-4	SP, SP-SM SP-SM SM, SM-SC, SC SM, SP-SM	6.0-20 6.0-20 0.2-0.6 2.0-6.0	0-1.0	B/D
Parkwood variant-Chobee, limestone substratum-Parkwood complex (39)	0-9 9-37 37-80	A-3, A-2-4 A-2-4 ----------	SP, SP-SM SM, SM-SC ---------	>20 2.0-6.0 -------	0-1.0	B/D
Wabasso fine sand (48)	0-21 21-31 31-37 37-65 65-80	A-3 A-3, A-2-4 A-3 A-2-4, A-2-6 A-3, A-2-4	SP, SP-SM SP-SM, SM SP, SP-SM SC, SM-SC SP-SM, SM	6.0-20 0.6-2.0 6.0-20 <0.2 6.0-20	0-1.0	B/D
Hillsborough County						
Archbold fine sand (3)	0-4 4-80	A-3 A-3	SP SP	>20 >20	3.5-6.0	A
Arents, nearly level (4)	--------	--------	--------	--------	--------	--------
Bassinger, Holopaw, and Samsula soils, depressional (5)	0-7 7-28 28-42 42-80	A-3 A-3, A-2-4 A-3, A-2-4 A-3, A-2-4	SP SP, SP-SM SP, SP-SM SP, SP-SM	6.0-20 6.0-20 6.0-20 6.0-20	1	D
Eaton mucky sand, depressional (14)	0-8 8-22 22-80	A-3, A-2-4 A-2-4, A-3 A-7	SP-SM SM, SP-SM SC, CL, CH	6.0-20 6.0-20 0.06-0.2	1	D
Felda fine sand (15)	0-22 22-45 45-80	A-3 A-2-4, A-2-6 A-3, A-2-4	SP, SP-SM SM, SM-SC SP, SP-SM	6.0-20 0.6-6.0 6.0-20	0-1.0	B/D
Malabar fine sand (27)	0-12 13-30 30-50 50-66 66-80	A-3 A-3, A-2-4 A-3 A-2, A-4, A-6 A-3, A-2-4	SP, SP-SM SP, SP-SM SP, SP-SM SC, SM-SC, SM SP-SM, SM	6.0-20 6.0-20 6.0-20 <0.2 6.0-20	0-1.0	B/D
Myakka fine sand (29)	0-20 20-30 30-80	A-3 A-3, A-2-4 A-3	SP, SP-SM SM, SP-SM SP, SP-SM	6.0-20 0.6-6.0 6.0-20	0-1.0	B/D
Ona fine sand (33)	0-4 4-22 22-80	A-3 A-3, A-2-4 A-3	SP-SM, SP SP-SM, SM SP-SM, SP	6.0-20 0.6-2.0 6.0-20	0-1.0	B/D
	0-31	A-3	SP	>20	3.5-5.0	A

Soil Name (Map Unit No.)	Depth (inches)	Classification		Permeability (in/hr)	Seasonal High Water Table Depth (ft)	Hydrologic Soil Group
		AASHTO Group	USCS Group			
Orsino fine sand, 0 to 5% slopes (36)	31-80	A-3	SP, SP-SM	>20		
Pinellas fine sand (38)	0-11 11-22 22-27 27-80	A-3 A-3, A-2-4 A-2-4, A-2-6 A-3, A-2-4	SP SP-SM SP-SM, SM-SC, SC SP, SP-SM	6.0-20 6.0-20 0.6-2.0 6.0-20	0-1.0	B/D
Pomello fine sand, 0 to 5% slopes (41)	0-43 43-55 55-80	A-3 A-3, A-2-4 A-3	SP, SP-SM SP-SM, SM SP, SP-SM	>20 2.0-6.0 6.0-20	2.0-3.5	C
St. Johns fine sand (46)	0-12 12-29 29-46 46-80	A-3 A-3 A-3, A-2-4 A-3	SP, SP-SM SP, SP-SM SP-SM, SM SP, SP-SM	6.0-20 6.0-20 0.2-2.0 6.0-20	0-1.0	B/D
Smyrna fine sand (52)	0-12 12-20- 20-80	A-3, A-2-4 A-3, A-2-4 A-3	SP, SP-SM SM, SP-SM SP, SP-SM	6.0-20 0.6-6.0 6.0-20	0-1.0	B/D
Urban land (56)	--------	--------	--------	--------	--------	--------
Winder fine sand, frequently flooded (60)	0-14 14-17 17-33 33-80	A-3, A-2-4 A-2-4 A-2-4, A-2-6, A-1-B A-3, A-2-4, A-1-B	SP, SP-SM SM SM, SM-SC, SC, GM-GC SP, SP-SM, SM	6.0-20 0.2-0.6 <0.2 6.0-20	0-1.0	B/D
Zolfo fine sand (61)	0-3 3-60 60-80	A-3, A-2-4 A-3, A-2-4 A-3, A-2-4	SP-SM SP-SM, SM SP-SM, SM	6.0-20 6.0-20 0.6-2.0	2.0-3.5	C



I-75 (SR 93A) PD&E Study
Moccasin Wallow Road to US 301
WPI Segment No.: 419235-2
Hillsborough and Manatee Counties

NRCS Soils Map

Figure 2-4
Sheet 1 of 5



FDOT

I-75 (SR 93A) PD&E Study

Moccasin Wallow Road to US 301

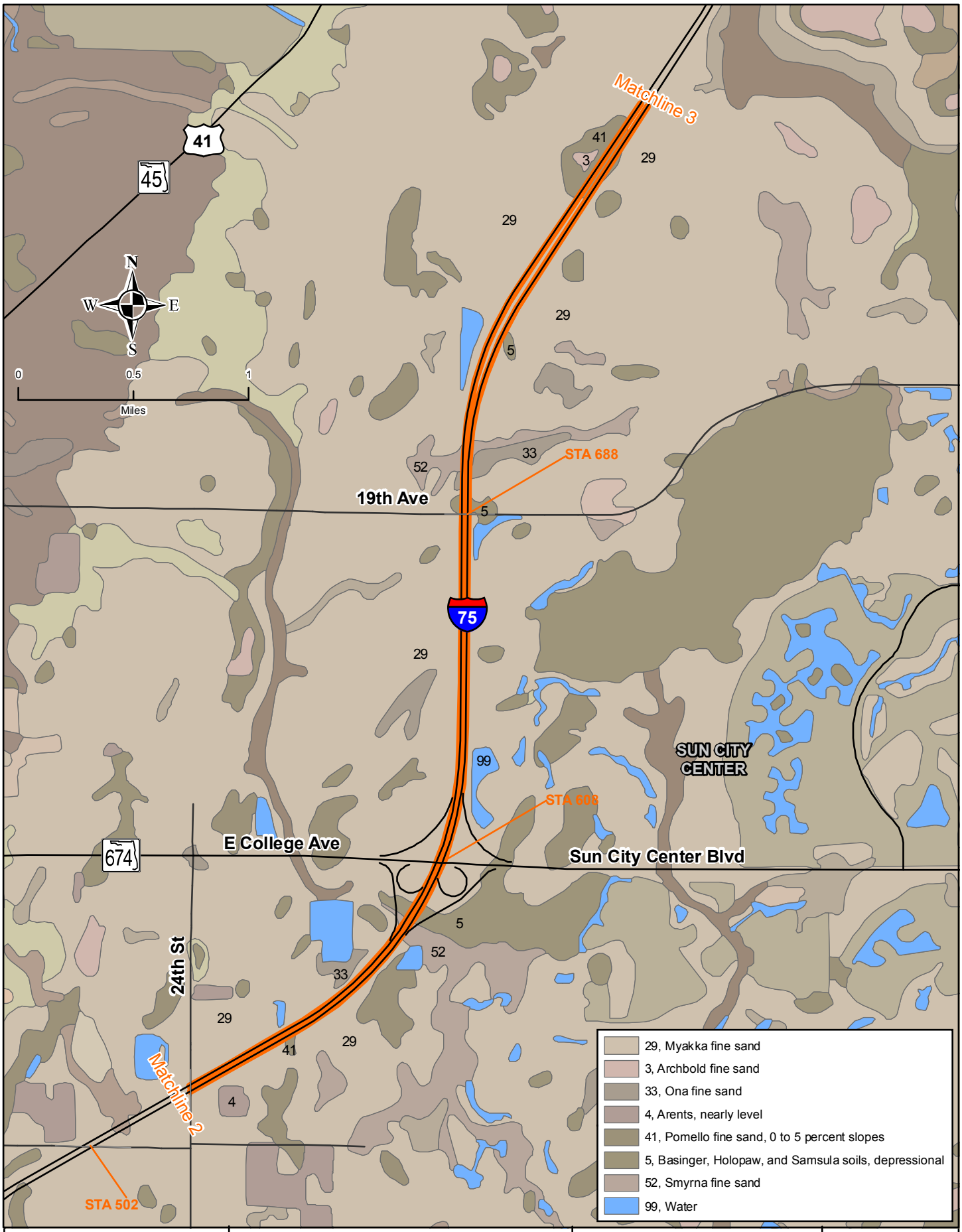
WPI Segment No.: 419235-2

Hillsborough and Manatee Counties

NRCS Soils Map

Figure 2-4

Sheet 2 of 5



FDOT

I-75 (SR 93A) PD&E Study

Moccasin Wallow Road to US 301

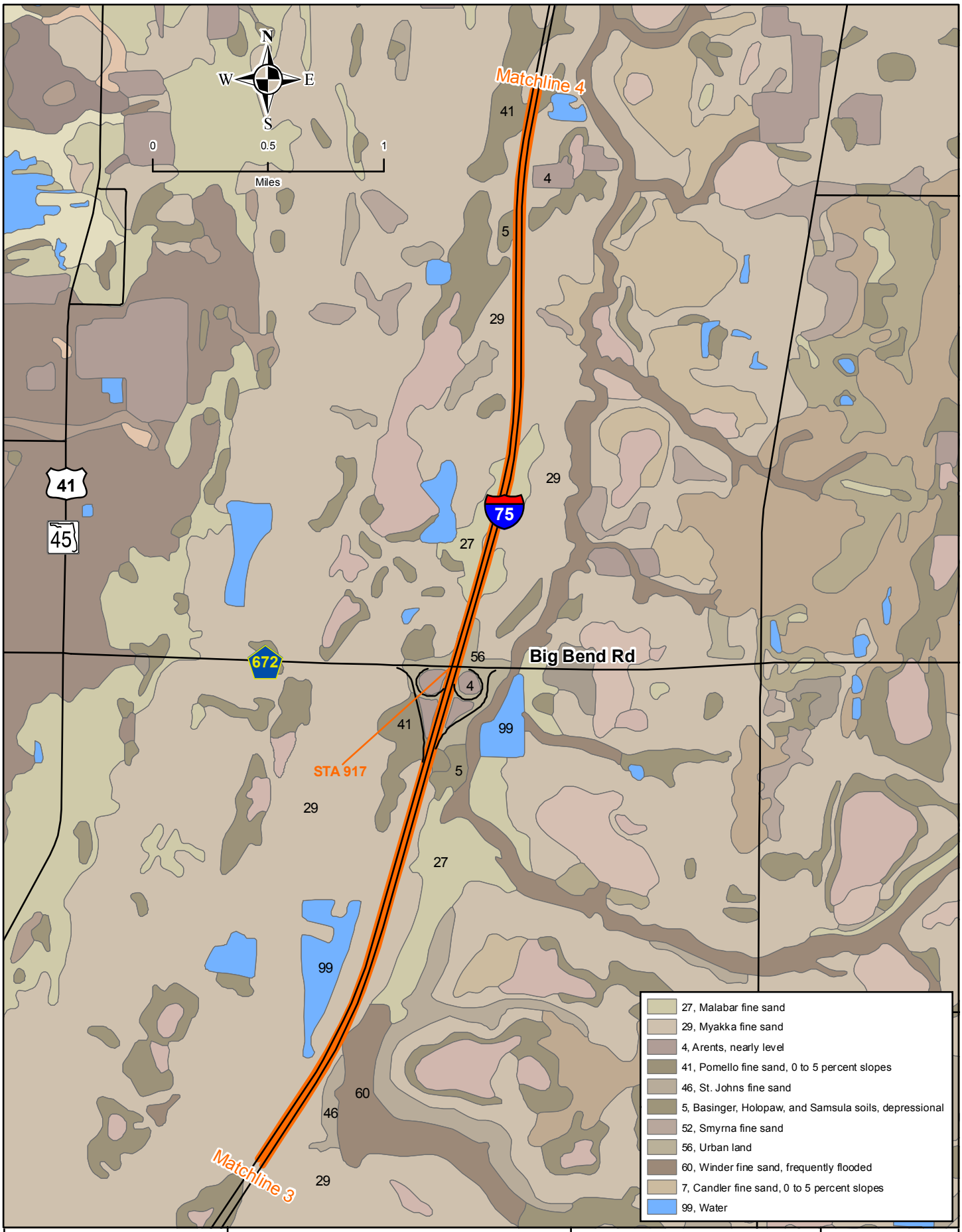
WPI Segment No.: 419235-2

Hillsborough and Manatee Counties

NRCS Soils Map

Figure 2-4

Sheet 3 of 5



FDOT

I-75 (SR 93A) PD&E Study

Moccasin Wallow Road to US 301

WPI Segment No.: 419235-2

Hillsborough and Manatee Counties

NRCS Soils Map

Figure 2-4

Sheet 4 of 5



I-75 (SR 93A) PD&E Study
Moccasin Wallow Road to US 301
WPI Segment No.: 419235-2
Hillsborough and Manatee Counties

NRCS Soils Map

Figure 2-4
Sheet 5 of 5

2.4 HISTORY OF FLOODING

FDOT drainage maps, SWFWMD 1-foot contour aerial maps, Low Altitude Mapping Photography (LAMP) elevation data and Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs were used to identify flood-prone areas within the I-75 study area. Field inspections were conducted in April 2008 to identify obvious drainage problems. Additionally, local maintenance offices having jurisdiction within the study area, and asset management contractors, were contacted to determine any history of flooding problems within the study area; see **Appendix D** for phone logs. As a result of this evaluation and coordination, no flooding history has been identified for the length of the study limits.

2.5 BASE FLOODPLAIN

The FEMA FIRMs Community Panels for Hillsborough and Manatee Counties listed in **Table 2-5** indicate that portions of the study limits are within Flood Zones A and AE (elevations vary throughout limits). A FEMA floodplain map is provided below in **Section 5-1** and **Figure 2-5**, and FEMA FIRMs are provided in **Appendix B**.

Table 2-5 FEMA FIRM Community Panel Numbers

Hillsborough County	
Community Panel No.	**Effective Date**
12057C0388H	August 28, 2008
12057C0389H	August 28, 2008
12057C0494H	August 28, 2008
12057C0501H	August 28, 2008
12057C0502H	August 28, 2008
12057C0503H	August 28, 2008
12057C0511H	August 28, 2008
12057C0515H	August 28, 2008
12057C0657H	August 28, 2008
12057C0658H	August 28, 2008
12057C0659H	August 28, 2008
12057C0662H	August 28, 2008
12057C0665H	August 28, 2008
12057C0670H	August 28, 2008
Manatee County	
Community Panel No.	**Effective Date**
12081C0038E	March 17, 2014
12081C0039E	March 17, 2014
12081C0157E	March 17, 2014
12081C0176E	March 17, 2014

Hillsborough and Manatee County provided the following studies that establish the base floodplain for the project limits:

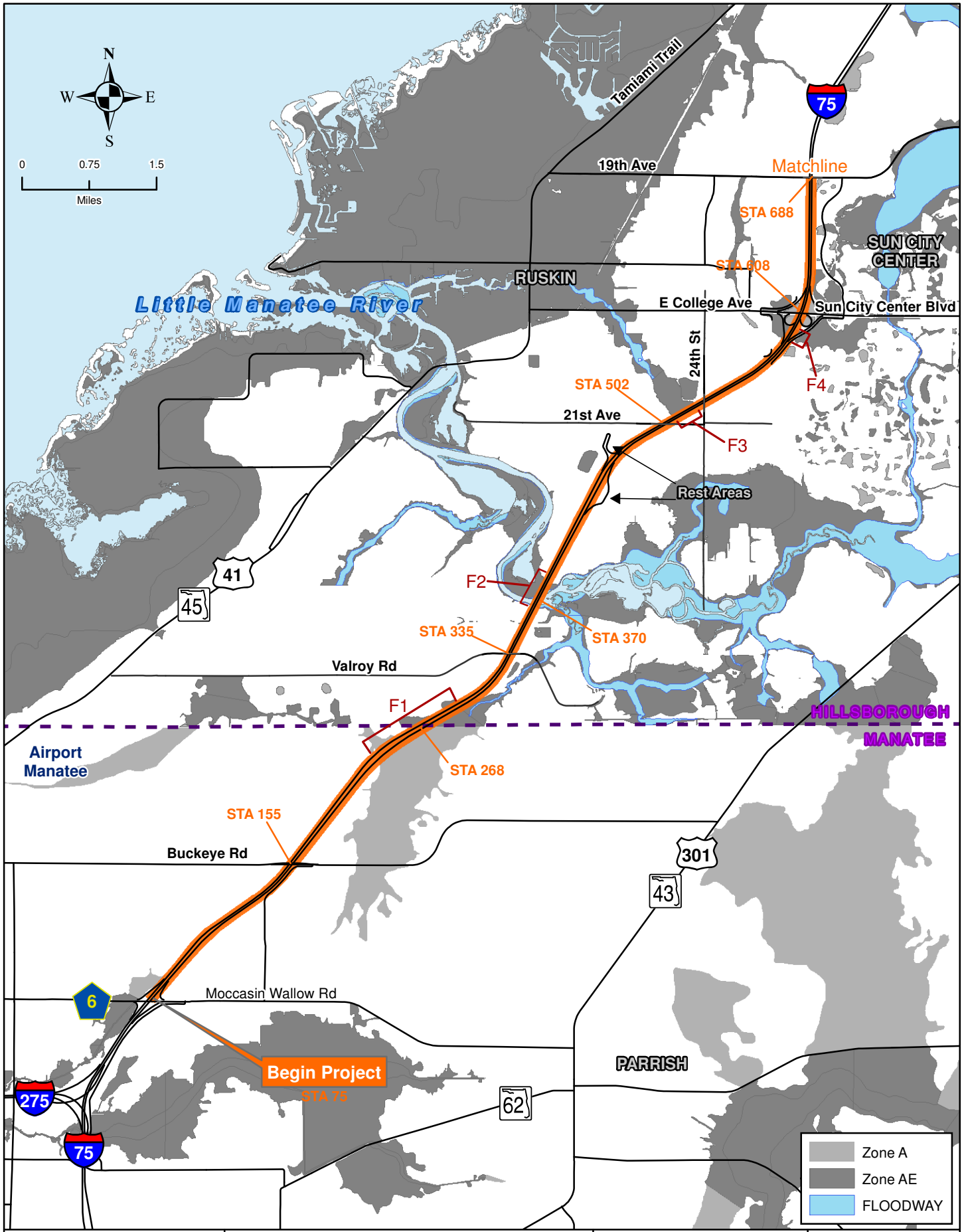
- *Delaney/Archie Creek Watershed Management Update, dated 2016*
- *Bull Frog Creek/Wolf Branch Watershed Master Plan Update, date 2015*
- *Buffalo Canal/Frog Creek Watershed Management Plan, dated 2007*
- *Little Manatee River Watershed Master Plan Update*, dated 2015
- *Countywide Masterplan Update for the Alafia River Watershed*, dated 2010

Design floodplain elevations for each project sub-basin are identified in **Table 2-6**. The elevations provided in the table are for the 100-year storm event in feet NAVD 88. The flood elevations utilized are per the current FEMA FIRMs and floodplain studies.

The project's drainage design will be consistent with local FEMA, FDOT, and SWFWMD design guidelines, which state that no net encroachment up to that, encompassed by the 100-year event, will be allowed, and that compensating storage shall be equivalently provided; therefore, no significant changes in base flood elevations or limits will occur.

Table 2-6 Floodplain Summary

Regional Basins	Project Basin No.	Project Basin Boundaries			Model Node ID	100-yr Flood El. (ft-NAVD 88)
		Station		Station		
Little Manatee River Watershed	1	75+00.00	to	110+50.00	NB0920	23.75
	2	110+50.00	to	154+00.00	931480	25.42
	3	154+00.00	to	192+00.00	931575	24.85
	4	192+00.00	to	217+00.00	931845	30.80
	5	217+00.00	to	239+75.00	931810	18.57
	6	239+75.00	to	256+00.00	931810	18.57
	7	256+00.00	to	296+00.00	930840	17.41
	8	296+00.00	to	324+50.00	930840	17.41
	9	324+50.00	to	335+50.00	930835	26.47
	10	335+50.00	to	373+50.00	930120	14.05
	11	373+50.00	to	418+00.00	900810	16.62
	12	418+00.00	to	464+00.00	900485	24.63
	13	464+00.00	to	485+00.00	900660	27.50
	14	485+00.00	to	512+75.00	924325	23.48
	15	512+75.00	to	550+00.00	924325	23.48
	16	550+00.00	to	585+00.00	942145	43.68
	17	585+00.00	to	621+00.00	942140	35.46
	18	621+00.00	to	635+00.00	942174	41.95
	19	635+00.00	to	674+00.00	827178	45.13
	20	674+00.00	to	701+00.00	827176	44.94
Alafia River Watershed	21	701+00.00	to	733+00.00	826152	44.48
	22	733+00.00	to	777+00.00	826152	44.48
	23	777+00.00	to	815+00.00	826208	42.18
	24	815+00.00	to	882+00.00	810620	32.72
	25	882+00.00	to	923+50.00	810600	32.22
	26	923+50.00	to	978+50.00	810546	28.17
	27	978+50.00	to	1029+50.00	810476	27.23
	28	1029+50.00	to	1077+00.00	810392	28.89
	29	1077+00.00	to	1110+00.00	810336	15.88
	30	1110+00.00	to	1137+50.00	810282	15.54
	31	1137+50.00	to	1159+50.00	700658	25.80
	32	1159+50.00	to	1184+00.00	700766	14.35
	33	1184+00.00	to	1195+00.00	700766	14.35
	34	1195+00.00	to	1223+75.00	280330	20.52
	35	1223+75.00	to	1250+50.00	280330	20.52
	36	1250+50.00	to	1270+00.00	281880	19.44



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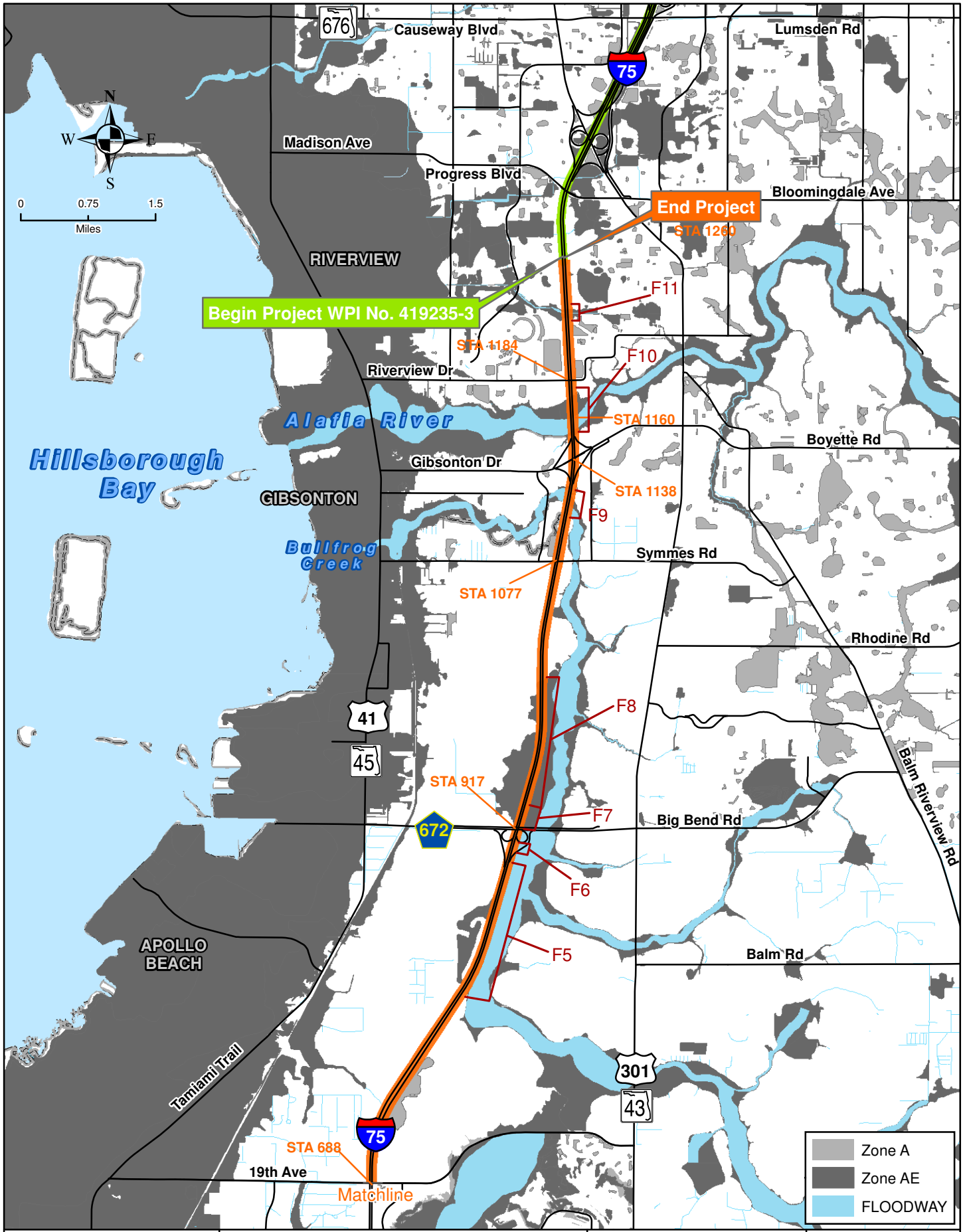
Moccasin Wallow Road to South of US 301

WPI Segment No.: 419235-2

Hillsborough and Manatee Counties

FEMA Floodplain Map

Figure 2-5
Sheet 1 of 2



FDOT

I-75 (SR 93A) PD&E Study

Moccasin Wallow Road to South of US 301

WPI Segment No.: 419235-2
Hillsborough and Manatee Counties

FEMA Floodplain Map

Figure 2-5
Sheet 2 of 2

SECTION 3 SMF DESIGN CRITERIA AND METHODOLOGY

This project is within the SWFWMD jurisdiction and will require an Environmental Resource Permit "Individual Permit" for projects greater than 100 acres. In general, SMFs are required to provide water quality treatment and peak attenuation of stormwater runoff prior to discharge to receiving waters and to ensure that the project will not adversely impact offsite drainage. The SMFs are evaluated to comply with the treatment and attenuation requirements set forth by the SWFWMD and FDOT Criteria.

3.1 DISCHARGE ATTENUATION

Per SWFWMD Environmental Resource Permit (ERP) Applicants Handbook II Section 3.0:

Pursuant to the Conditions for Issuance in Section 62-330.301, F.A.C., an applicant must provide reasonable assurance that the proposed construction, alteration, operation, maintenance, removal or abandonment of the works or other activities regulated under ERP rules:

a. Will not cause adverse water quantity impacts to receiving waters and adjacent lands;

b. Will not cause adverse flooding to on-site or off-site property;

c. Will not cause adverse impacts to existing surface water storage and conveyance capabilities; and

d. Will not adversely impact the maintenance of surface or ground water levels or surface water flows established pursuant to Section 373.042, F.S., or Chapter 40D-8, F.A.C.

Per SWFWMD Environmental Resource Permit (ERP) Applicants Handbook II Section 3.1:

Off-site discharge is limited to amounts which will not cause adverse off-site impacts.

For an open drainage basin the allowable discharge is: historic discharge, which is the peak rate at which runoff leaves a parcel of land by gravity under existing site conditions, or the legally allowable discharge at the time of permit application; or amounts determined in previous District permit actions relevant to the project.

Except in situations as described in SWFWMD Environmental Resource Permit (ERP) Applicants Handbook II Section 3.0 above, off-site discharges and peak stages for the existing and developed conditions shall be computed using the Southwest Florida Water Management District's 24-hour, 25-year rainfall maps and the Natural Resources Conservation Service type II Florida Modified 24-hour rainfall distribution with an antecedent moisture condition II.

For a project or portion of a project located within a closed drainage basin, the required retention volume shall be the post-development runoff volume less the pre-development runoff volume computed using the SWFWMD's 24-hour/100-year rainfall map and the NRCS Type II Florida Modified 24-hour rainfall distribution with an antecedent moisture condition II. The total post development volume leaving the site shall be no more than the total pre-development volume leaving the site for

the design 100-year storm. The rate of runoff leaving the site shall not cause adverse off-site impacts. Maintenance of pre-development off-site low flow may be required in hydrologically sensitive areas.

Per FDOT's Drainage Manual 5.2.1 Chapter 14-86, Florida Administrative Code:

The design of stormwater management systems for Department projects will comply with the water quality, rate, and quantity requirements of Section 334.044(15), F.S., Chapter 14-86, F.A.C., Rules of the Department of Transportation, only in basins closed during storms up to and including the 100-year storm event, or areas subject to historical flooding.

The basins within the study limits are open basins. The Department's flood complaint inventory was reviewed to identify locations with an applicable history of flooding or heightened public safety risk. No basins have been identified that are recommended to be designed to comply with the water quality, rate, and quantity requirements of Section 334.044(15), F.S., Chapter 14-86, F.A.C.

3.2 WATER QUALITY REQUIREMENTS

Per SWFWMD Environmental Resource Permit (ERP) Applicants Handbook II Section 4.1:

A wet detention treatment system shall treat one inch of runoff from the contributing area.

Per the coordination meeting with the SWFWMD on April 25, 2018, requirements include demonstration of no additional contribution to existing impairments through nutrient loading evaluation for basins that have been verified impaired for nutrient related parameters, Nitrogen (N) and Phosphorus (P). An additional 50% treatment is required for discharges to OFW. Additionally, the area to be used for the treatment volume calculations can be limited to the through lane pavement being drained to the stormwater management facility and treatment must be provided for at least as much through lane pavement is added per basin.

3.2.1 FDEP

The FDEP maintains a list of waterbodies and water segments (WBIDs) that are not meeting the applicable water quality standards and designated uses based on the Impaired Waters Rule Chapters 62-303 and 62-302, Florida Administrative Code (F.A.C.). This list is referred to as the verified impaired list. Basins currently listed as impaired for nutrients have been identified and shown in **Table 3-3**.

3.3 STORMWATER MANAGEMENT FACILITY SITES

The project area has been divided into 36 roadway drainage basins (project basins); see **Table 3-1** and Conceptual Drainage Maps in **Appendix A**. This report identifies one preferred pond SMF site and up to two SMF site alternatives per basin.

SMF site locations were selected such that a conveyance system of ditches inlets and pipe could reasonably be designed to convey roadway runoff to the ponds under gravity conditions and an outfall from the pond to the receiving water is convenient to the site. SMFs were also placed to avoid wetlands, development, and state lands as feasible. Additionally, SMFs where placed within existing FDOT Right-of-way where area allowed such as interchanges and rest areas.

3.4 FLOODPLAIN COMPENSATION FACILITY SITES

The project limits have been evaluated to determine potential impacts to the 100-year floodplain within the right-of-way. Cup for cup compensation will be provided for any fill placed within the floodplain. FPC site requirements are identified separately from SMF sites. Floodplain impacts are estimated based on estimated floodplain encroachment area and approximate average depths. FPC site areas are estimated based on the required compensation volume and depth to water table. This report identifies one preferred FPC and as many as two FPC site alternatives per encroachment. Floodplain compensation sites have been paired with SMF site locations where the pairing appears advantageous. Factors influencing the placement of the conceptual FPC sites included avoiding environmental impacts where possible, location to the 100-year floodplain boundary, existing topography, and soil types.

3.5 METHODOLOGIES

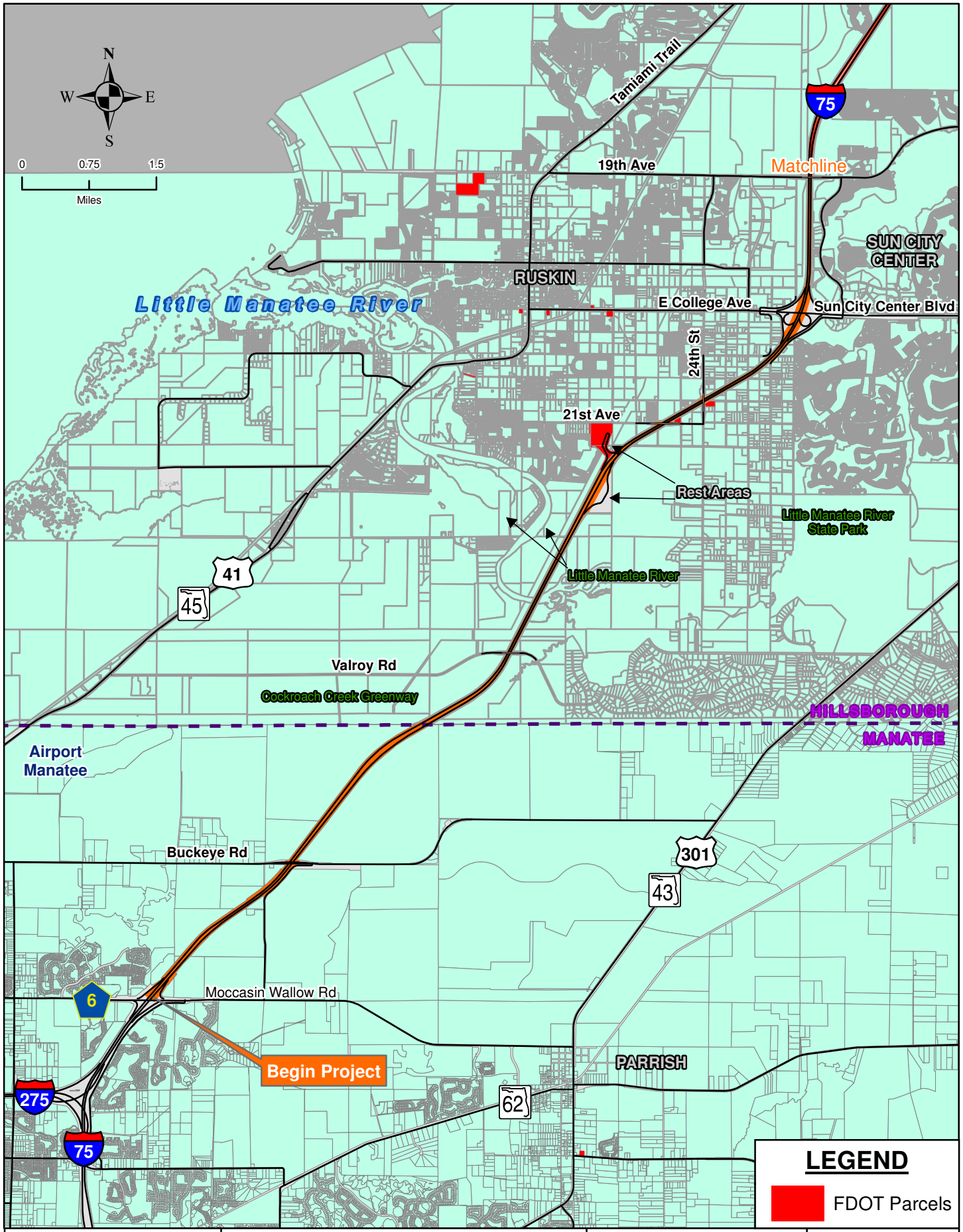
The following methodologies have been followed in the evaluation of pond and floodplain compensation sizing requirements and siting alternatives.

- The Hillsborough County and Manatee County Property Appraiser's GIS maps were used to determine approximate property boundaries.
- The existing topography was evaluated based on limited survey data and Lidar data provided by Hillsborough County and Manatee County.
- Soils data was found for each SMF and FPC site from the NRCS Soil Survey of Hillsborough and Manatee County. The seasonal high water (SHW) elevation was estimated based on normal water elevation data included in the floodplain models, wetland boundaries, soil data and the existing ground elevation from Lidar Data.
- Pre vs. post runoff computations were performed utilizing Interconnected Channel and Pond Routing (ICPR) V4. The existing vs. proposed right-of-way land use was based on existing topography vs. a proposed roadway TBN Section 10 design file provided by Atkins, GIS type shape files were generated based on land use, drainage divides and soil types. ICPR V4 generated the pre vs. post runoff volumes based on this data and a curve number table that includes the curve number for each land use and soil combination encountered in the study limits.
- Water quality treatment requirements were calculated conservatively based on 1 inch of treatment being provided for the contributing through lane pavement (existing and proposed).
- The SMF site alternatives were sized to store the sum of the water quality treatment volume and difference in pre vs. post runoff one foot below the top of bank of the pond. The top of bank of the pond was set to be below the low edge of pavement of the roadway within the limit of the basin draining to the pond.

- Floodplain impacts associated with the proposed roadway widening were computed based on the Lidar data contour information, proposed roadway footprint, and modeled 100 year 24 hour floodplain elevation.
- FPC sites were modeled using digital terrain models with the Lidar data obtained with the floodplain studies being the existing ground. Proposed surfaces were created for the floodplain compensation sites to determine the volume of compensation that would be achieved. Automated earthwork computations were performed with Geopak. The volumes of earthwork excavated between the seasonal high water elevation and the floodplain elevation were determined for each floodplain compensation site and compared with requirements.

3.6 EXISTING FDOT PARCELS

Several FDOT owned parcels are located along the project corridor and the infield areas of the interchanges within the project limits and have been analyzed as possible conceptual Pond Siting areas; however, all FDOT parcels do not appear usable as pond sites for the proposed improvements since they are located within the floodplain. FDOT parcels near the project corridor are shown in **Figure 3-1**.



FDOT

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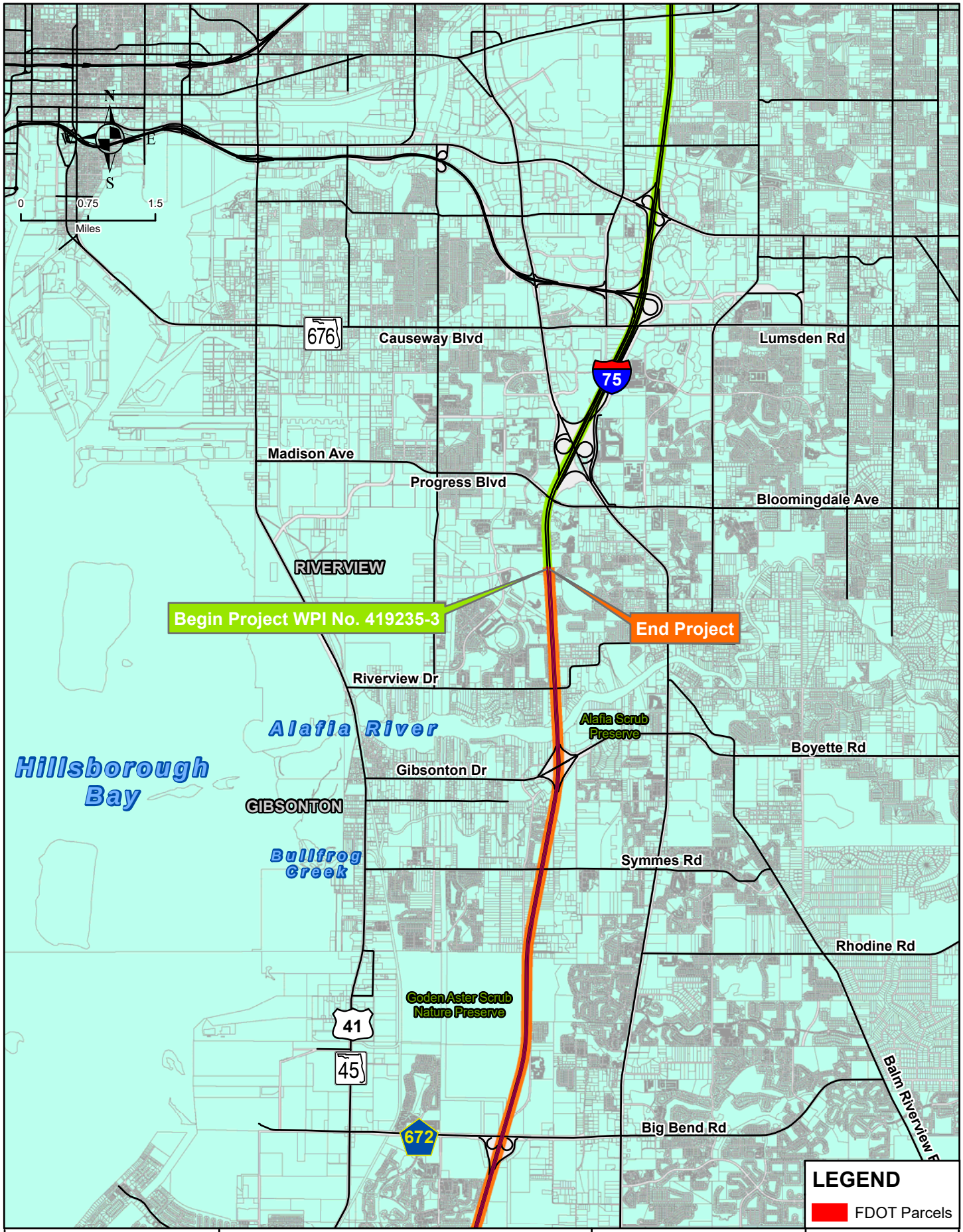
Moccasin Wallow Road to South of US 301

WPI Segment No.: 419235-2

Hillsborough and Manatee Counties

FDOT Parcels

Figure 3-1
Sheet 1 of 2



FDOT

I-75 (SR 93A) PD&E Study

Moccasin Wallow Road to South of US 301

WPI Segment No.: 419235-2

Hillsborough and Manatee Counties

FDOT Parcels

Figure 3-1
Sheet 2 of 2

SECTION 4 POND AND FLOODPLAIN COMPENSATION SITES ESTIMATES

The evaluation finds that a combination of wet detention ponds and floodplain compensation sites are recommended to serve the proposed I-75 improvements. The initial evaluation estimated area requirements based on general information which were then refined for site specific conditions for alternative site comparison. **Table 4-1** quantifies the initially estimated SMF size requirements per basin. **Table 4-2** shows the estimated floodplain encroachment area, estimated floodplain encroachment volume, and initially estimated FPC site area.

Table 4-1 SMF Sizing Areas

Regional Basins	Project Basin No.	Project Basin Boundaries			Project Basin Acreage (ac)	Type of Facility (Wet/Dry)	Estimated SMF Area (ac)
		Station		Station			
Little Manatee River Watershed	1	75+00.00	to	110+50.00	33.37	Wet	0.81
	2	110+50.00	to	154+00.00	35.51	Wet	1.00
	3	154+00.00	to	192+00.00	35.24	Wet	0.87
	4	192+00.00	to	217+00.00	26.56	Wet	0.66
	5	217+00.00	to	239+75.00	27.72	Wet	0.52
	6	239+75.00	to	256+00.00	18.72	Wet	0.37
	7	256+00.00	to	296+00.00	41.45	Wet	0.92
	8	296+00.00	to	324+50.00	25.68	Wet	0.65
	9	324+50.00	to	335+50.00	17.40	Wet	0.25
	10	335+50.00	to	373+50.00	29.92	Wet	0.87
	11	373+50.00	to	418+00.00	34.96	Wet	1.53
	12	418+00.00	to	464+00.00	105.44	Wet	1.98
	13	464+00.00	to	485+00.00	22.33	Wet	0.72
	14	485+00.00	to	512+75.00	28.87	Wet	1.00
	15	512+75.00	to	550+00.00	61.94	Wet	1.57
	16	550+00.00	to	585+00.00	57.24	Wet	1.40
	17	585+00.00	to	621+00.00	99.25	Wet	1.01
	18	621+00.00	to	635+00.00	36.95	Wet	0.57
	19	635+00.00	to	674+00.00	27.63	Wet	1.56
	20	674+00.00	to	701+00.00	21.43	Wet	0.89
Alafia River Watershed	21	701+00.00	to	733+00.00	26.97	Wet	1.13
	22	733+00.00	to	777+00.00	44.64	Wet	1.59
	23	777+00.00	to	815+00.00	33.51	Wet	1.34
	24	815+00.00	to	882+00.00	54.80	Wet	2.53
	25	882+00.00	to	923+50.00	99.88	Wet	1.72
	26	923+50.00	to	978+50.00	53.37	Wet	1.58
	27	978+50.00	to	1029+50.00	40.50	Wet	1.85
	28	1029+50.00	to	1077+00.00	37.85	Wet	1.42
	29	1077+00.00	to	1110+00.00	27.10	Wet	1.14
	30	1110+00.00	to	1137+50.00	58.85	Wet	1.00
	31	1137+50.00	to	1159+50.00	54.99	Wet	0.70
	32	1159+50.00	to	1184+00.00	21.76	Wet	0.67
	33	1184+00.00	to	1195+00.00	9.92	Wet	0.45
	34	1195+00.00	to	1223+75.00	27.01	Wet	1.01
	35	1223+75.00	to	1250+50.00	24.18	Wet	0.95
	36	1250+50.00	to	1270+00.00	17.03	Wet	0.74
		Total			**1420.00**		**39.03**

Table 4-2 Floodplain Encroachment and Compensation Summary

Floodplain Encroachment and Compensation Calculation Summary				
Basin	Project Floodplain Limits	Estimated Floodplain Encroachment Area (ac) ①	Estimated Floodplain Encroachment Volume (ac-ft) ①	Estimated Floodplain Comp. (FPC) site Area (ac)
1	Sta. 79+00 to Sta. 92+00, MED	0.75	0.37	0.75
3	Sta. 157+00 to Sta. 170+00, MED Sta. 160+00 to Sta. 172+00, LT Sta. 188+00 to Sta. 199+00, LT	3.92	5.18	5.34
5 & 6	Sta. 237+00 to Sta. 265+00, MED	7.63	7.63	5.07
7	Sta.281+50 to Sta. 296+00, LT Sta. 246+00 to Sta. 296+00, MED Sta. 281+00 to Sta. 288+00, RT	16.53	24.79	8.58
14 & 15	Sta. 490+00 to Sta. 498+00, LT Sta. 505+00 to Sta. 519+00, LT Sta. 506+00 to Sta. 520+00, RT	2.13	3.78	4.55
17	Sta. 565+00 to Sta. 579+00, RT Sta. 574+00 to Sta. 593+00, MED Sta. 581+00 to Sta. 593+00, RT	4.57	7.57	5.33
18	Sta. 623+50 to Sta.637+00, LT	0.68	1.02	2.64
19	Sta. 640+00 to Sta. 661+00, LT Sta. 664+00 to Sta. 669+00, RT	1.79	1.62	1.73
24	Sta. 829+00 to Sta. 860+00, RT Sta. 835+00 to Sta. 860+00, LT Sta. 847+00 to Sta. 862+50, MED Sta. 867+00 to Sta. 872+00, LT Sta. 872+00 to Sta. 896+00, RT	5.97	6.44	11.25
26	Sta. 935+00 to Sta. 972+50, RT Sta. 932+00 to Sta. 970+50, LT	4.28	2.14	3.51
27	Sta. 1005+00 to Sta. 1019+00, LT	0.64	0.32	1.38
28	Sta. 1043+50 to Sta. 1062+00, RT Sta. 1047+00 to Sta. 1060+00, LT	1.57	2.74	1.69
29	Sta. 1079+00 to Sta. 1091+00, LT Sta. 1097+00 to Sta. 1107+00, LT Sta. 1100+00 to Sta. 1109+00, MED	2.44	4.77	2.39
30	Sta. 1113+50 to Sta. 1122+00, LT	0.51	0.51	0.32
34	Sta. 1220+00 to Sta. 1222+00, LT	2.11	4.22	1.59
35	Sta. 1216+00 to Sta. 1226+50, LT Sta. 1221+00 to Sta. 1227+00, RT Sta. 1252+00 to Sta. 1270+00, RT	1.74	1.76	2.16
		57.26	**74.87**	

Notes:

1-See Appendix A (floodplain encroachment and compensation summary) for calculations

SECTION 5 POND AND FLOODPLAIN COMPENSATION SITES ALTERNATIVES

Table 5-1 at the end of this section summarizes the stormwater management facility alternative pond sites and floodplain compensation sites. The table includes area requirements for conveyance (conveyance easement) as well as parallel outfall construction in ROW (outfall) requirements and crossing major conveyance. The following is a brief discussion on the preferred site selection considerations per sub-basin. The final recommended SMF & FPC sites will be provided in later versions of this report as additional environmental and engineering considerations are refined.

A *Contamination Screening Evaluation Report* (CSER) has been prepared for this study and evaluated preferred alternatives with respect to potential contamination.

A *Cultural Resource Assessment Survey* (CRAS) *Technical Memorandum Stormwater Management Facilities (SMF) & Floodplain Compensation (FPC) Sites* was prepared for this study. The CRAS evaluated preferred pond site alternatives with respect to archeological potential.

A *Natural Resource Evaluation* (NRE) has been prepared for this study. The NRE evaluates preferred pond site alternatives with respect to wetland impact potential. The report also identifies the potential occurrence of listed and protected species. Please refer to the NRE for details related to potential listed and protected species occurrence within the preferred SMF and FPC locations.

5.1 BASIN CONSIDERATIONS

This section will be updated when we receive estimated ROW costs from DOT.

Basin 1:

Three SMF and FPC alternatives have been identified for this basin. SMF-1B would be a whole take of one parcel with an additional 30’ easement acquired on the adjacent parcel for grading to convey offsite runoff to an I-75 cross drain. SMF/FPC numbering is in accordance with potential pairing. i.e. SMF-1C would be paired with FPC-1C.

SMF-1C and FPC-1C are the preferred alternatives for the basin.

The CSER identified No risk for contamination associated with FPC-1C and SMF 1C sites.

The CRAS identified the FPC-1C and SMF 1C sites to have Low archeological potential.

The NRE estimates 0.07 acres of wetland impacts for FPC-1C. No wetland impacts were identified for SMF-1C.

Basin 2:

Three SMF alternatives have been identified for this basin. An easement has been included to access SMF-2A in the event that it isn’t feasible to utilize the Buckeye Road right-of-way to convey water to and access the site.

SMF-2B is the preferred pond site for the basin.

The CSER prepared for this study identified Low risk for contamination associated with the SMF-2B site.

The CRAS prepared for this study identified the SMF-2B site to have Low archeological potential.

The NRE estimates 0.48 acres of wetland impact for SMF-2B. It appears that it may be possible to construct around the wetland without impacts however. This will be further evaluated during design.

Basin 3:

Three SMF and FPC alternative pairs have been identified for this basin.

SMF-3A and FPC-3A are the preferred alternatives for the basin.

The CSER prepared for this study identified Low risk for contamination associated with the FPC-3A and SMF-3A sites.

The CRAS prepared for this study identified the SMF-3A site to have Low archeological potential. FPC-3A was rated as Low-Moderate for Prehistoric Archeological potential and Low for other archeological potential.

The NRE did not identify any wetland impacts associated SMF-3A or FPC-3A.

Basin 4:

Two SMF alternatives have been identified for this basin since there are large parcels on either side of the roadway there aren't any other alternatives in the basin.

SMF-4A is the preferred pond site for the basin.

The CSER prepared for this study identified No risk for contamination associated with the SMF-4A site.

The CRAS prepared for this study identified the SMF-4A site to have Low archeological potential.

The NRE did not identify any wetland impacts associated with SMF-4A.

Basin 5&6:

Two SMF and FPC pairs have been identified for these basins. The basins have been paired due to the extensive floodplain and wetland areas associated with Basin 6. There was no apparent reasonable SMF site alternatives being available within the Basin 6 limits.

FPC-5A&6A and SMF-5A&6A are the preferred sites for the basins.

The CSER prepared for this study identified No risk for contamination associated with the FPC-5A&6A and SMF-5A&6A sites.

The CRAS prepared for this study rated FPC-5A&6A and SMF-5A&6A sites to have **Moderate-High** Prehistoric Archeological potential with a low rating for other archeological potential.

The NRE did not identify any wetland impacts associated with the FPC-5A&6A or SMF-5A&6A sites.

Basin 7:

Two SMF and FPC pairs have been identified for the basin. However it is noted that the alternatives are on the same large parcel. The opposite side of the roadway (from the sites identified) does not provide reasonable alternatives due to being floodplain and wetland area.

FPC-7A and SMF-7A are the preferred sites for the basin.

The CSER prepared for this study identified Low risk for contamination associated with the FPC-7A and SMF-7A sites.

The CRAS prepared for this study identified the FPC-7A and SMF-7A sites to have Low archeological potential.

The NRE did not identify any wetland impacts associated with FPC-7A or SMF-7A.

Basin 8:

Only one alternative SMF has been identified for this basin for the same reasons as discussed for Basin 7. This could potentially be combined with a Basin 7 SMF for which alternatives are on the same large parcel.

SMF-8A is the preferred site for the basin.

The CSER prepared for this study identified Low risk for contamination associated with the SMF-8A site.

The CRAS prepared for this study identified the SMF-8A site to have Low archeological potential.

The NRE estimated 0.29 acres of wetland impacts associated with SMF-8A.

Basin 9:

Two alternative SMF's were identified. SMF 9-B is on the same large parcel as the Basins 7 and 8 SMFs.

SMF-9A is the preferred site for the basin.

The CSER prepared for this study identified **Medium** risk for contamination associated with the SMF-9A site.

The CRAS prepared for this study identified the SMF-9A site to have Low archeological potential.

The NRE did not identify any wetland impacts associated with SMF-9A.

Basin 10:

This basin drains to the Little Manatee River/Cockroach Bay Aquatic Preserve which is an OFW. The required treatment volume for this basin is equal to the standard treatment volume increased by 50%. The minimum treatment requirement will be an inch over the new through lane pavement area increased by 50%. The calculations conservatively utilize the entire pavement area without taking credit for existing. Since the 6 existing through lanes are more than 50% of the total proposed 10 lane facility, the calculations are still conservative and no adjustments are required.

Three alternative SMF sites have been identified for this basin.

SMF-10A/SMF-11B is the preferred site for the basin and includes compensation for Basin 11.

The CSER prepared for this study identified **Medium** risk for contamination associated with the SMF-10A/SMF-11B site.

The CRAS prepared for this study rated the SMF-10A/SMF-11B site to have **High** Prehistoric Archeological potential with a Low rating for other archeological potential.

The NRE did not identify any wetland impacts associated with SMF-10A/SMF-11B.

Basin 11:

This basin drains to the Little Manatee River/Cockroach Bay Aquatic Preserve which is an OFW. The required treatment volume for this basin is equal to the standard treatment volume increased by 50%. The minimum treatment requirement will be an inch over the new through lane pavement area increased by 50%. The calculations conservatively utilize the entire pavement area without taking credit for existing. Since the 6 existing through lanes are more than 50% of the total proposed 10 lane facility, the calculations are still conservative and no adjustments are required.

Due to public lands adjoining this basin the only in-basin SMF alternative is to place a pond within the Teco property. One in-basin SMF alternative has been identified for the basin. A second alternative has been identified in Basin 10, SMF-11B would provide compensatory discharge attenuation. To do this would require more compensatory treatment than achievable in Basin 10 however. The out of basin pond would require additional treatment provisions such as potentially exfiltration trench or baffle box treatment within Basin 11 and compensatory treatment in Basin 8, 9 and 10.

Basin 12:

SMF requirements are achievable on FDOT owned northbound I-75 rest area property. The rest area will be reconstructed in a new configuration. The rest area is currently being improved under a design build project which was permitted under SWFWMD Permit No. 44478, Application No. 795079. The rest area permitted conditions utilized most of the available site area for ponds and the design provides the required water quality and discharge attenuation with very little staging of the water quality pool and flood stages. The permit identifies minimal provisions for the ultimate I-75 conditions. The permitted rest area conditions do not appear to address the overall requirements for the basin. It will be possible to modify the system to meet requirements however. One option, given the substantial pond areas, may be to utilize the conservation method, providing the required water quality treatment below the control elevation. In any case it will be possible to meet requirements using this site although the details that will be worked out during the design phase have been made more complex due to the extent of pond coverage for just the rest area improvements. It appears necessary to modify the control structures and raise flood stages in the ponds but that won't be problematic since the low pavement and finished floor elevations will accommodate higher stages.

SMF-12 is the preferred site for the basin.

The CSER prepared for this study identified No risk for contamination associated with the SMF-12 site.

The CRAS prepared for this study identified the SMF-12 site to have Low archeological potential.

The NRE did not identify any wetland impacts associated with SMF-12.

Basin 13:

Two SMF alternatives have been identified for this basin.

SMF-13B is the preferred site for the basin.

The CSER prepared for this study identified No risk for contamination associated with the SMF-13B site.

The CRAS prepared for this study identified the SMF-13B site to have Low archeological potential.

The NRE estimated 0.05 acres of wetland impact for SMF-13B.

Basin 14 and 15:

Basin 14 and 15 have been grouped together since the acquisition requirements for Basin 15 alone could be marginally increased to accommodate the Basin 14 SMF needs. Two SMF and FPC pairs have been identified for these basins.

The SMF-14B&15B/FPC-14B&15B site is the preferred alternative for the basin.

The CSER prepared for this study identified No risk for contamination associated with the SMF-14B&15B/FPC-14B&15B site.

The CRAS prepared for this study identified the SMF-14B&15B/FPC-14B&15B site to have Low archeological potential.

The NRE did not identify any wetland impacts associated with SMF-14B&15B/FPC-14B&15B site.

Basin 16:

Three SMF alternatives have been identified for this basin.

SMF-16A is the preferred site for the basin.

The CSER prepared for this study identified No risk for contamination associated with the SMF-16A site.

The CRAS prepared for this study identified the SMF-16A site to have Low archeological potential.

The NRE did not identify any wetland impacts associated with SMF-16A

Basin 17:

Three FPC alternatives have been identified for this basin. No SMF site acquisitions are necessary. SMFs are proposed to be located within the interchange infield areas.

FPC-17B is the preferred floodplain compensation site for the basin.

The CSER prepared for this study identified Low risk for contamination associated with the FPC-17B, SMF-17(1), SMF-17(2), SMF-17(3) and SMF-17(4) sites.

The CRAS prepared for this study rated the FPC-17B and SMF-17(3) sites to have **Moderate** Prehistoric Archeological potential with a Low rating for other archeological potential. SMF-17(1), SMF-17(1) and SMF-17(4) were rated to have Low archeological potential.

The NRE identified 2.82 acres of wetland impacts associated with SMF-17(1), 1.2 acres for SMF-17(2), and 0.8 acres SMF-17(3), for a total of 4.82 acres of impacts for the SMFs. No impacts were identified for FPC-17B or SMF-17(4). The wetlands are located within the I-75 interchange and provide minimal quality habitat. This also reduces the amount of right of way needed for this basin.

Basin 18:

Two FPC alternatives have been identified for this basin. No SMF site acquisitions are necessary. SMFs are proposed to be located within the interchange infield areas.

FPC-18A is the preferred floodplain compensation site for the basin.

The CSER prepared for this study identified Low risk for contamination associated with the SMF-18(1) and SMF-18(2) sites and No risk for contamination associated with the FPC-18A site.

The CRAS prepared for this study identified the SMF-18(1), SMF-18(2) and FPC-18A sites to have Low archeological potential.

The NRE estimated 0.42 acres of wetland impacts associated with SMF-18(2) and 2.63 acres for FPC-18A. No impacts were identified for SMF-18(1).

Basin 19:

Two alternative SMF and two alternative FPC sites have been identified.SMF-19B and FPC-19B are paired. Note that FPC-18B is an alternative to FPC-18A and is not an alternative to basin 19 FPC sites.

FPC-19B and SMF-19B are the preferred alternatives for the basin.

The CSER prepared for this study identified Low risk for contamination associated with the FPC-19B and SMF-19B sites.

The CRAS prepared for this study identified the FPC-19B and SMF-19B sites to have Low archeological potential.

The NRE did not identify any wetland impacts associated with FPC-19B or SMF-19B.

Basin 20:

Two alternative SMF sites have been identified for this basin.

SMF-20A is the preferred pond site for the basin.

The CSER prepared for this study identified Low risk for contamination associated with the SMF-20A site.

The CRAS prepared for this study identified the SMF-20A site to have Low archeological potential.

The NRE did not identify any wetland impacts associated with SMF-20A.

Basin 21:

Two alternative SMF sites have been identified for this basin. SMF-21A would be an expansion of an existing County owned pond.

SMF-21A is the preferred pond site for the basin.

The CSER prepared for this study identified Low risk for contamination associated with the SMF-21A site.

The CRAS prepared for this study identified the SMF-21A site to have Low archeological potential.

The NRE did not identify any wetland impacts associated with SMF-21A.

Basin 22:

Two alternative SMF sites have been identified for this basin. SMF-22A is on the same County owned parcel as alternative SMF-21A.

SMF-22A is the preferred pond site for the basin.

The CSER prepared for this study identified Low risk for contamination associated with the SMF-22A site.

The CRAS prepared for this study identified the SMF-22A site to have Low archeological potential.

The NRE did not identify any wetland impacts associated with SMF-22A.

Basin 23:

Two alternative sites have been identified for this basin. SMF-23B is located on property that is platted for developed. SMF-23A is sited in consideration of combining with Basin 24.

SMF-23A&24A/FPC-24A is the preferred site for the basin and includes provisions for Basin 24.

The CSER prepared for this study identified No risk for contamination associated with the SMF-23A&24A/FPC-24A site.

The CRAS prepared for this study identified the FPC-24A to have **Moderate** Prehistoric Archeological potential with a Low rating for other archeological potential. SMF-23A&24Asites were rated as having Low archeological potential.

The NRE estimates 0.64 acres of wetland impacts associated with SMF-23A&24A/FPC-24A.

Basin 24:

Basin 24 is characterized as being adjoined to the east by floodway and wetland area and to the west by developed residential area. There aren't any reasonable alternatives within the basin limits we have identified two alternative SMFs for the basin. SMF-23A & 24A would combine the 23 and 24 basin requirements. SMF-24B is located just north of the basin limits and appears a feasible, albeit challenging, site. For either alternative some amount of compensatory treatment and attenuation of other area will be beneficial to reduce the amount of the basin area that will need to be conveyed to

a pond. Three FPC site alternatives have also been identified, one on each of three large parcels located in the floodplain/floodway of Bullfrog Creek.

Basin 25:

No pond site acquisitions are necessary for Basin 25. All pond sites are within FDOT right-of-way within the infield area of the Big Bend Road Interchange.

The CSER prepared for this study identified **Medium** risk for contamination associated with the SMF-25 site (infield ponds).

The CRAS prepared for this study rated the SMF-25 site to have **Moderate-High** Prehistoric Archeological potential with a Low rating for other archeological potential.

The NRE estimated 4.27 acres of wetland impacts associated with SMF-25. However, this interchange is currently being modified and there may be no future mitigation requirements.

Basin 26:

Two SMF FPC site pair alternatives have been identified for this basin. It will be necessary to utilize Bullfrog Creek Road for access to the sites.

FPC-26B and SMF-26B are the preferred sites for the basin.

The CSER prepared for this study identified No risk for contamination associated with the FPC-26B and SMF-26B sites.

The CRAS prepared for this study identified the FPC-26B and SMF-26B sites to have Low archeological potential.

The NRE estimated 0.41 acres of wetland impacts associated with FPC-26B. No impacts were identified for SMF-26B

Basin 27:

Only one SMF and FPC site has been identified for the basin. Due to being adjoined by public lands to the west, our recommendation is to modify the existing permitted lake that the roadway currently drains to. We have evaluated required modifications and the lake can readily accommodate additional runoff with minor adjustments to the control structure.

SMF-27A&28A and FPC-27A are the preferred sites for the basin. Compensation for Basin 28 is also included.

The CSER prepared for this study identified No risk for contamination associated with the FPC-27A and SMF-27A&28A sites.

The CRAS prepared for this study rated the FPC-27A site to have Low-Moderate Prehistoric Archeological potential with a Low rating for other archeological potential. SMF-27A&28A was rated to have Low archeological potential.

The NRE did not identify any wetland impacts associated with SMF-27A&28A or FPC-27A.

Basin 28:

Two in basin SMF alternatives and three FPC alternatives have been identified. SMF-28B is paired with FPC-28B. A third SMF alternative is to divert drainage area to the recommended pond site for Basin 27.

FPC-28A is the preferred floodplain compensation site.

The CSER prepared for this study identified No risk for contamination associated with the FPC-28A site.

The CRAS prepared for this study identified the FPC-28A site to have Low archeological potential.

The NRE did not identify any wetland impacts associated with FPC-28A.

Basin 29:

Two SMF and three FPC alternatives have been identified. SMF-29A is paired with FPC-29A.

FPC-29B and SMF-29B are the preferred sites for the basin.

The CSER prepared for this study identified Low risk for contamination associated with the FPC-29B and SMF-29B sites.

The CRAS prepared for this study rated the FPC-29B site to have **High** Prehistoric Archeological potential with a Low rating for other archeological potential. SMF-29B was rated to have Low archeological potential.

The NRE estimated 1.23 acres of wetland impacts associated with FPC-29B. No impacts were identified for SMF-29B.

Basin 30:

No acquisitions are needed for SMF's in Basin 30. All SMF sites are within FDOT right-of-way. Two alternative FPC's are identified.

FPC-30A is the preferred floodplain compensation site for the basin.

The CSER prepared for this study identified Low risk for contamination associated with the FPC-30A site and **Medium** risk for contamination associated with the SMF-30(1) and SMF-30(2) sites.

The CRAS prepared for this study identified the FPC-30A, SMF-30(1) and SMF-30(2) sites to have Low archeological potential.

The NRE estimated 0.29 acres of wetland impacts associated with SMF-30(1) and 1.38 acres for SMF-30(2), for a total of 1.67 acres of impact associated with the SMFs. No impacts were identified for FPC-30A.

Basin 31:

No pond site acquisitions are necessary for Basin 31. All pond sites are within FDOT right-of-way.

The CSER prepared for this study identified **High** risk for contamination associated with the SMF-31(1) and SMF-31(2) sites.

The CRAS prepared for this study rated the SMF-31(1) and SMF-31(2) sites to have Low-Moderate Prehistoric Archeological potential with a Low rating for other archeological potential.

The NRE estimated 0.13 acres of wetland impacts associated with SMF-31(2). No impacts were identified for SMF-31(1).

Basin 32&33:

Three SMF alternatives have been identified for the combined Basins 32 and 33. The basins were combined due to the relatively short length of Basin 33 and the adjacent properties in the basin being substantially developed.

SMF-32&33A is the preferred site for the basin.

The CSER prepared for this study identified No risk for contamination associated with the SMF-32&33A site.

The CRAS prepared for this study rated the SMF-32&33A site to have **Moderate** Prehistoric Archeological potential with a Low rating for other archeological potential.

The NRE did not identify any wetland impacts associated with the SMF-32&33A site.

Basin 34:

Two SMF alternatives have been identified for this basin. SMF-34B includes additional area for floodplain compensation, to compensate for impacts associated with the pond. SMF-34A would also have floodplain impacts. Compensation for impacts associated with SMF-34A would be provided in the FPC-34A & 35A floodplain compensation site alternative. An FPC alternative for pond construction within the floodplain is being identified in Basin 35 since there are no reasonable FPC alternatives within Basin limits.

FPC-34A&35A and SMF-34B are the preferred sites for the basin. See Basin 35 information for FPC site considerations.

The CSER prepared for this study identified No risk for contamination associated with the FPC-34A&35A and SMF-34B sites.

The CRAS prepared for this study rated the FPC-34A&35A site to have **Moderate-High** Prehistoric Archeological potential with a Low rating for other archeological potential. SMF-34B was rated to have Low archeological potential.

The NRE did not identify any wetland impacts associated with SMF-34B site. 0.1 acres of wetland impacts were estimated for the FPC-34A&35A site.

Basin 35:

Two SMF alternatives and three FPC alternatives have been identified for this basin. SMF-35A is paired with FPC-35A. Note that FPC-34A is combined with FPC-35A, however this pairing is only applicable if SMF-34A is the preferred alternative for Basin 34, it is also valid without pairing with FPC-34A.

The CSER prepared for this study identified No risk for contamination associated with the SMF-35A site.

The CRAS prepared for this study rated the SMF-35A site to have **High** Prehistoric Archeological potential with a Low rating for other archeological potential.

The NRE estimated 0.02 acres of wetland impacts associated SMF-35A. 0.1 acres of wetland impacts were estimated for the FPC-34A&35A site.

Basin 36:

Two SMF alternatives have been identified for this basin.

SMF-36A is the preferred site for the basin.

The CSER prepared for this study identified No risk for contamination associated with the SMF-36A site.

The CRAS prepared for this study identified the SMF-36A site to have Low archeological potential.

The NRE did not identify any wetland impacts associated with the SMF-36A.

Table 5-1: Pond and Floodplain Compensation Sites Evaluation Matrix

Pond #	Pond Area (Ac)	FPC #	FPC Sites (Ac)	Total Area (Ac)	Conveyance Easement (Ac)	Clearing & Grubbing	Pond Excavation (cy)	FPC Excavation (cy)	Excavation	Pond Embankment (cy)	FPC Embankment (cy)	Embankment	Conveyances (ft)		Online or Offline Pond	Conveyance	Major Crossing Cost	Total Const. Cost	Wetland Impacts (Ac)	Est. Right of Way Costs	Est. Total Costs	Comments
													From Pond	To Pond								
Units -->						acre			cubic yard			cubic yard				feet						
Unit Costs -->						$ 6,373.84			$ 6.79			$ 7.64				$ 160.00						
1A	1.01	N/A	0	2.11	0.00	$ 13,448.80	1,913	0	$ 12,986.61	5,155	0	$ 39,386.51	0	85	Offline	$ 13,600.00	$ -	$ 79,421.93	0.00	$ 211,000.00	$ 290,421.93	
1B	1.22	N/A	0	1.69	0.00	$ 10,771.79	1,734	0	$ 11,773.05	7,173	0	$ 54,801.01	0	80	Offline	$ 12,800.00	$ -	$ 90,145.85	0.00	$ 169,000.00	$ 259,145.85	Preliminarily Preferred Alternative
1C	1.06	N/A	0	1.61	0.00	$ 10,261.88	4,165	0	$ 28,278.67	2,438	0	$ 18,630.04	0	0	Offline	$ -	$ 50,000.00	$ 107,170.59	0.00	$ 161,000.00	$ 268,170.59	
N/A	0	2A	0.38	0.53	0.00	$ 3,378.14	0	629	$ 4,272.50	0	2	$ 14.04	0	0	N/A	$ -	$ -	$ 7,664.68	0.00	$ 53,000.00	$ 60,664.68	
N/A	0	2B	0.15	0.43	0.00	$ 2,740.75	0	1,545	$ 10,489.52	0	1	$ 7.64	0	0	N/A	$ -	$ -	$ 13,237.91	0.00	$ 43,000.00	$ 56,237.91	Preliminarily Preferred Alternative
2A	1.53	2C	0.38	4.15	0.00	$ 26,451.44	779	229	$ 6,842.96	14,177	170	$ 109,609.84	0	700	Offline	$ 112,000.00	$ -	$ 254,904.24	0.00	$ 415,000.00	$ 669,904.24	
2B	1.79	N/A	0	2.07	0.00	$ 13,193.85	3,567	0	$ 24,219.24	3,737	0	$ 28,551.09	0	140	Offline	$ 22,400.00	$ -	$ 88,364.18	0.00	$ 207,000.00	$ 295,364.18	Preliminarily Preferred Alternative
2C	0..9	N/A	0	1.92	0.00	$ 12,237.77	2,320	0	$ 15,751.96	6,215	0	$ 47,485.30	0	670	Offline	$ 107,200.00	$ -	$ 182,675.04	0.00	$ 192,000.00	$ 374,675.04	
3A	1.18	3A	6.73	15.89	0.00	$ 101,280.32	3,028	9,860	$ 87,512.30	5,056	1	$ 38,635.51	0	190	Offline	$ 30,400.00	$ 50,000.00	$ 307,828.13	0.00	$ 1,589,000.00	$ 1,896,828.13	
3B	1.22	N/A	0	2.02	0.00	$ 12,875.16	944	0	$ 6,408.55	5,535	0	$ 42,289.28	0	70	Offline	$ 11,200.00	$ -	$ 72,772.99	0.00	$ 202,000.00	$ 274,772.99	Preliminarily Preferred Alternative
3C	1.22	N/A	0	2.37	0.13	$ 15,934.60	2,283	0	$ 15,498.62	6,209	0	$ 47,433.51	0	700	Offline	$ 112,000.00	$ -	$ 190,866.73	0.00	$ 237,000.00	$ 427,866.73	
N/A	0	3B	6.79	7.37	0.00	$ 46,975.20	0	13,915	$ 94,481.78	0	306	$ 2,339.56	0	0	N/A	$ -	$ -	$ 143,796.54	0.00	$ 737,000.00	$ 880,796.54	Preliminarily Preferred Alternative
N/A	0	3C	5.88	7.25	0.00	$ 46,210.34	0	49,474	$ 335,928.75	0	1	$ 7.64	0	0	N/A	$ -	$ -	$ 382,146.73	0.00	$ 725,000.00	$ 1,107,146.73	
4A	1.23	N/A	0	1.43	0.00	$ 9,114.59	7,181	0	$ 48,757.41	310	0	$ 2,366.64	0	210	Offline	$ 33,600.00	$ -	$ 93,838.64	0.00	$ 143,000.00	$ 236,838.64	Preliminarily Preferred Alternative
4B	1.23	5B	7.59	10.85	0.00	$ 69,156.16	8,769	62,922	$ 486,782.20	359	1	$ 2,749.33	0	100	Offline	$ 16,000.00	$ -	$ 574,687.69	0.00	$ 1,085,000.00	$ 1,659,687.69	
5-6A	1.46	5A	7.99	12.03	0.00	$ 76,677.30	5,277	31,758	$ 251,462.76	1,193	1	$ 9,124.36	0	80	Offline	$ 12,800.00	$ 50,000.00	$ 400,064.42	0.00	$ 1,203,000.00	$ 1,603,064.42	Preliminarily Preferred Alternative
5-6B	1.23	N/A	0	2.01	0.00	$ 12,811.42	17,723	0	$ 120,341.70	94	0	$ 716.59	0	100	Offline	$ 16,000.00	$ -	$ 149,869.71	0.00	$ 201,000.00	$ 350,869.71	
N/A	0	6A	4.13	10.43	0.00	$ 66,479.15	0	54,232	$ 368,237.74	0	1	$ 7.64	0	0	N/A	$ -	$ -	$ 434,724.54	0.00	$ 1,043,000.00	$ 1,477,724.54	
7A	1.05	7A	9.03	14.12	0.00	$ 89,998.62	8,635	155,166	$ 1,112,211.53	21	1	$ 170.70	0	150	Offline	$ 24,000.00	$ -	$ 1,226,380.85	0.00	$ 1,412,000.00	$ 2,638,380.85	Preliminarily Preferred Alternative
7B	1.55	7B	19.7	26.03	0.00	$ 165,911.06	3,158	97,611	$ 684,218.31	7,567	600	$ 62,393.57	0	100	Offline	$ 16,000.00	$ -	$ 928,522.93	0.23	$ 2,603,000.00	$ 3,554,402.93	
7C	1.09	N/A	0	1.53	0.00	$ 9,751.98	12,127	0	$ 82,342.76	0	0	$ 0.18	0	100	Offline	$ 16,000.00	$ -	$ 108,094.91	0.00	$ 153,000.00	$ 261,094.91	
8A	0.81	N/A	0	1.28	0.00	$ 8,158.52	3,461	0	$ 23,502.80	3,127	0	$ 23,887.69	0	0	Offline	$ -	$ -	$ 55,549.00	0.25	$ 128,000.00	$ 208,409.00	
8B	0.82	N/A	0	1.15	0.00	$ 7,329.92	8,519	0	$ 57,842.96	0	0	$ 0.11	0	0	Offline	$ -	$ -	$ 65,172.99	0.00	$ 115,000.00	$ 180,172.99	Preliminarily Preferred Alternative
9A	0.42	N/A	0	0.74	0.00	$ 4,716.64	1,047	0	$ 7,111.71	1,358	0	$ 10,377.56	0	0	Offline	$ -		$ 22,205.91	0.00	$ 74,000.00	$ 96,205.91	Preliminarily Preferred Alternative
9B	0.65	N/A	0	1.22	0.00	$ 7,776.08	2,785	0	$ 18,912.24	308	0	$ 2,351.37	0	0	Offline	$ -		$ 29,039.70	0.00	$ 122,000.00	$ 151,039.70	
10A	1.39	N/A	0	1.97	0.00	$ 12,556.46	10,034	0	$ 68,131.67	576	0	$ 4,402.47	0	0	Offline	$ -		$ 85,090.60	0.00	$ 197,000.00	$ 282,090.60	
10B	1.37	N/A	0	1.81	0.00	$ 11,536.65	8,694	0	$ 59,033.20	819	0	$ 6,256.88	0	0	Offline	$ -		$ 76,826.73	0.00	$ 181,000.00	$ 257,826.73	Preliminarily Preferred Alternative
10C	1.57	N/A	0	3.83	0.00	$ 24,411.81	4,118	0	$ 27,961.05	6,258	0	$ 47,810.96	0	0	Offline	$ -	$ 50,000.00	$ 150,183.82	0.00	$ 383,000.00	$ 533,183.82	
11A	2.29	N/A	0	3.08	0.10	$ 20,259.25	40,586	0	$ 275,580.06	0	0	$ 0.11	0	320	Offline	$ 51,200.00	$ 50,000.00	$ 397,039.42	0.00	$ 308,000.00	$ 705,039.42	Preliminarily Preferred Alternative
11B	2.29	N/A	0	3.22	0.10	$ 21,143.30	8,129	0	$ 55,195.17	6,142	0	$ 46,923.77	0	3800	Offline	$ 608,000.00	$ 50,000.00	$ 781,262.24	0.00	$ 322,000.00	$ 1,103,262.24	
12A	11	N/A	0	4.42	0.00	$ 28,172.37	11,471	0	$ 77,886.10	8,534	0	$ 65,202.80	0	450	Offline	$ 72,000.00	$ -	$ 243,261.27	0.00	$ 442,000.00	$ 685,261.27	Preliminarily Preferred Alternative
12B	2.8	N/A	0	5.62	1.43	$ 44,935.57	212	0	$ 1,439.83	21,580	0	$ 164,872.66	0	1400	Offline	$ 224,000.00	$ -	$ 435,248.06	0.00	$ 562,000.00	$ 997,248.06	
12C	3.01	N/A	0	4.1	0.05	$ 26,434.23	11,592	0	$ 78,711.47	7,029	0	$ 53,698.37	0	800	Offline	$ 128,000.00	$ 50,000.00	$ 336,844.07	0.00	$ 410,000.00	$ 746,844.07	
13A	1.23	N/A	0	1.84	0.00	$ 11,727.87	3,905	0	$ 26,512.92	3,925	0	$ 29,983.68	0	80	Offline	$ 12,800.00	$ -	$ 81,024.46	0.00	$ 184,000.00	$ 265,024.46	Preliminarily Preferred Alternative
13B	1.22	N/A	0	1.74	0.00	$ 11,090.48	6,126	0	$ 41,594.19	1,827	0	$ 13,960.09	0	90	Offline	$ 14,400.00	$ 50,000.00	$ 131,044.76	0.00	$ 174,000.00	$ 305,044.76	
13C	1.69	N/A	0	2.45	0.00	$ 15,615.91	6,940	0	$ 47,123.59	3,740	0	$ 28,572.06	0	90	Offline	$ 14,400.00	$ 50,000.00	$ 155,711.56	0.00	$ 245,000.00	$ 400,711.56	
14A	2.05	14A	3.08	7.56	0.00	$ 48,186.23	4,539	9,313	$ 94,053.72	9,583	225	$ 74,937.76	0	80	Offline	$ 12,800.00	$ -	$ 229,977.70	0.00	$ 756,000.00	$ 985,977.70	Preliminarily Preferred Alternative
14B	2.61	N/A	0	3.38	0.00	$ 21,543.58	15,160	0	$ 102,936.79	3,097	0	$ 23,661.19	0	1300	Offline	$ 208,000.00	$ 50,000.00	$ 406,141.56	0.00	$ 338,000.00	$ 744,141.56	
14C	1.87	N/A	0	2.31	0.00	$ 14,723.57	11,785	0	$ 80,019.89	888	0	$ 6,786.59	0	2300	Offline	$ 368,000.00	$ 50,000.00	$ 519,530.05	0.00	$ 231,000.00	$ 750,530.05	
15A	2.06	15A	2.83	9.45	0.00	$ 60,232.79	9,710	12,058	$ 147,806.24	6,898	472	$ 56,305.55	0	125	Offline	$ 20,000.00	$ 50,000.00	$ 334,344.58	0.00	$ 945,000.00	$ 1,279,344.58	
15B	3.13	N/A	0	8.98	0.06	$ 57,619.51	23,755	0	$ 161,299.49	1,684	0	$ 12,862.47	0	350	Offline	$ 56,000.00	$ 50,000.00	$ 337,781.47	0.00	$ 898,130.00	$ 1,235,911.47	Preliminarily Preferred Alternative
16A	4.44	N/A	0	4.44	0.00	$ 28,299.85	5,769	0	$ 39,174.23	8,559	0	$ 65,394.43	0	100	Offline	$ 16,000.00	$ 50,000.00	$ 198,868.50	0.00	$ 444,000.00	$ 642,868.50	
16B	3.66	N/A	0	3.66	0.00	$ 23,328.25	11,108	0	$ 75,422.57	5,911	0	$ 45,160.15	0	100	Offline	$ 16,000.00	$ 50,000.00	$ 209,910.98	0.00	$ 366,000.00	$ 575,910.98	Preliminarily Preferred Alternative
16C	4.53	N/A	0	4.53	0.07	$ 29,319.66	5,750	0	$ 39,040.12	12,551	0	$ 95,886.43	0	160	Offline	$ 25,600.00	$ 50,000.00	$ 239,846.22	0.00	$ 453,000.00	$ 692,846.22	
17	7.63	N/A	0	10.76	0.00	$ 68,582.52	31,346	0	$ 212,839.07	20,980	0	$ 160,288.43	0	0	Offline	$ -	$ 50,000.00	$ 491,710.02	0.00	$ 1,076,000.00	$ 1,567,710.02	Preliminarily Preferred Alternative
N/A	0	17A	5.33	9.24	0.00	$ 58,894.28	0	14,403	$ 97,795.32	0	44	$ 335.13	0	0	N/A	$ -	$ -	$ 157,024.73	0.00	$ 924,000.00	$ 1,081,024.73	
N/A	0	17B	2.48	3.12	0.00	$ 19,886.38	0	16,379	$ 111,210.64	0	1	$ 7.64	0	0	N/A	$ -	$ -	$ 131,104.66	0.00	$ 312,000.00	$ 443,104.66	Preliminarily Preferred Alternative
N/A	0	17C	4.42	4.97	0.00	$ 31,677.98	0	13,636	$ 92,587.52	0	1	$ 7.64	0	0	N/A	$ -	$ -	$ 124,273.14	0.00	$ 497,000.00	$ 621,273.14	
18	3.27	18A	5.56	4.67	0.00	$ 29,765.83	23,818	0	$ 161,724.37	2,465	0	$ 18,831.51	0	0	Offline	$ -	$ 50,000.00	$ 260,321.71	0.00	$ 467,000.00	$ 727,321.71	Preliminarily Preferred Alternative
19A	2.2	19A	2.39	6.50	0.03	$ 41,621.18	6,204	8,182	$ 97,680.61	7,321	1	$ 55,938.06	0	220	Offline	$ 35,200.00	$ -	$ 230,439.85	0.00	$ 650,000.00	$ 880,439.85	Preliminarily Preferred Alternative
19B	4.75	N/A	0	6.22	0.00	$ 39,645.28	2,077	0	$ 14,102.79	16,324	0	$ 124,715.26	0	130	Offline	$ 20,800.00	$ -	$ 199,263.33	0.00	$ 622,000.00	$ 821,263.33	
19C	4.99	N/A	0	6.46	0.00	$ 41,175.01	19,583	0	$ 132,967.65	6,090	0	$ 46,529.08	0	80	Offline	$ 12,800.00	$ -	$ 233,471.74	0.00	$ 646,000.00	$ 879,471.74	
N/A	0	19B	2.46	8.51	0.30	$ 56,153.53	0	5,776	$ 39,220.74	0	1	$ 7.64	0	0	N/A	$ -	$ -	$ 95,381.91	0.00	$ 851,000.00	$ 946,381.91	
N/A	0	19C	1.73	2.28	0.00	$ 14,532.36	0	11,297	$ 76,705.05	0	1	$ 7.64	0	0	N/A	$ -	$ -	$ 91,245.04	0.00	$ 228,000.00	$ 319,245.04	
20A	2.21	N/A	0	4.54	0.00	$ 28,937.23	6,026	0	$ 40,918.67	7,887	0	$ 60,257.56	0	70	Offline	$ 11,200.00	$ -	$ 141,313.46	0.00	$ 454,000.00	$ 595,313.46	Preliminarily Preferred Alternative
20B	2.22	N/A	0	4.14	0.21	$ 27,726.20	7,437	0	$ 50,499.95	6,627	0	$ 50,631.56	400	400	Offline	$ 128,000.00	$ -	$ 256,857.72	0.00	$ 414,290.00	$ 671,147.72	

Table 5-1: Pond and Floodplain Compensation Sites Evaluation Matrix

Pond #	Pond Area (Ac)	FPC #	FPC Sites (Ac)	Total Area (Ac)	Conveyance Easement (Ac)	Clearing & Grubbing	Pond Excavation (cy)	FPC Excavation (cy)	Excavation	Pond Embankment (cy)	FPC Embankment (cy)	Embankment	Conveyances (ft)		Online or Offline Pond	Conveyance	Major Crossing Cost	Total Const. Cost	Wetland Impacts (Ac)	Est. Right of Way Costs	Est. Total Costs	Comments
													From Pond	To Pond								
Units -->						acre			cubic yard			cubic yard				feet						
Unit Costs -->						$ 6,373.84			$ 6.79			$ 7.64				$ 160.00						
21A	2.2	N/A	0	4.3	0.00	$ 27,407.51	3,814	0	$ 25,894.17	11,869	0	$ 90,675.91	0	120	Offline	$ 19,200.00	$ -	$ 163,177.58	0.00	$ 430,000.00	$ 593,177.58	Preliminarily Preferred Alternative
21B	1.93	N/A	0	3.16	0.00	$ 20,141.33	12,915	0	$ 87,691.40	1,562	0	$ 11,936.87	0	700	Offline	$ 112,000.00	$ 50,000.00	$ 281,769.61	0.00	$ 316,000.00	$ 597,769.61	
22A	2.44	N/A	0	3.84	0.00	$ 24,475.55	5,995	0	$ 40,704.08	9,905	0	$ 75,673.33	0	0	Offline	$ -	$ 50,000.00	$ 190,852.96	0.02	$ 384,000.00	$ 577,102.96	
22B	2.37	N/A	0	3.5	0.00	$ 22,308.44	6,397	0	$ 43,437.24	8,208	0	$ 62,709.87	0	0	Offline	$ -	$ 50,000.00	$ 178,455.55	0.00	$ 350,000.00	$ 528,455.55	Preliminarily Preferred Alternative
23A	2.91	23A	2.58	8.07	0.00	$ 51,436.89	29,565	20,818	$ 342,095.79	610	1	$ 4,666.66	0	100	Offline	$ 16,000.00	$ 50,000.00	$ 464,199.34	0.01	$ 807,000.00	$ 1,272,199.34	
23B	2.93	N/A	0	4.95	0.00	$ 31,550.51	13,293	0	$ 90,257.01	4,929	0	$ 37,653.77	0	160	Offline	$ 25,600.00	$ 50,000.00	$ 235,061.29	0.15	$ 495,000.00	$ 745,061.29	Preliminarily Preferred Alternative
24A	4.16	24A	11.61	28.79	0.00	$ 183,502.85	52	25,464	$ 173,254.72	46,964	125	$ 359,763.13	0	0	Offline	$ -	$ -	$ 716,520.70	0.25	$ 2,879,000.00	$ 3,620,520.70	
24B	3.78	24B	10.78	17.8	0.00	$ 113,454.35	16,611	23,407	$ 271,718.94	7,330	1,746	$ 69,342.24	0	0	Offline	$ -	$ -	$ 454,515.53	0.02	$ 1,780,000.00	$ 2,236,515.53	Preliminarily Preferred Alternative
25	18.05	N/A	0	18.05	0.00	$ 115,047.81	115,859	0	$ 786,679.72	39,079	0	$ 298,564.17	0	0	Offline	$ -	$ -	$ 1,200,291.71	0.00	$ 1,805,000.00	$ 3,005,291.71	Preliminarily Preferred Alternative
26A	2.33	26A	3.51	8.38	0.00	$ 53,412.78	11,437	7,562	$ 129,000.56	3,786	2,660	$ 49,245.26	0	1550	Offline	$ 248,000.00	$ -	$ 479,658.60	0.00	$ 838,000.00	$ 1,317,658.60	
26B	2.52	26B	2.31	6.9	0.00	$ 43,979.50	7,687	8,162	$ 107,614.87	4,877	609	$ 41,912.30	0	1300	Offline	$ 208,000.00	$ -	$ 401,506.66	0.00	$ 690,000.00	$ 1,091,506.66	Preliminarily Preferred Alternative
27A*	0	27A	1.38	1.38	0.00	$ 8,795.90	0	11,312	$ 76,808.48	0	0	$ -	0		Offline	$ -		$ 85,604.38	0.00	$ 138,000.00	$ 223,604.38	Preliminarily Preferred Alternative
28A*	0	N/A	0	0	0.00	$ -	0	0	$ -	0	0	$ -	0		N/A	$ -		$ -	0.00	$ -	$ -	Preliminarily Preferred Alternative
N/A	0	28A	3.12	3.12	0.37	$ 22,244.70	0	17,652	$ 119,857.08	0	1	$ 7.64	0		Offline	$ -		$ 142,109.42	0.00	$ 312,000.00	$ 454,109.42	Preliminarily Preferred Alternative
28B	2.94	N/A	0	2.94	0.00	$ 18,739.09	21,745	0	$ 147,651.92	1,377	0	$ 10,516.52	0		Offline	$ -		$ 176,907.53	0.00	$ 294,000.00	$ 470,907.53	
N/A	0	28B	4.03	4.03	0.63	$ 29,702.09	0	57,504	$ 390,452.16	0	1	$ 7.64	0		Offline	$ -		$ 420,161.89	0.00	$ 403,000.00	$ 823,161.89	
28C	8.32	N/A	0	8.32	0.00	$ 53,030.35	113,344	0	$ 769,604.07	25	0	$ 190.85	0		Offline	$ -		$ 822,825.27	0.00	$ 832,000.00	$ 1,654,825.27	
29A	4.46	29A	6.92	11.38	0.00	$ 72,534.30	15,620	55,748	$ 484,591.78	2,473	1	$ 18,899.08	0		Offline	$ -		$ 576,025.16	0.00	$ 1,138,000.00	$ 1,714,025.16	
29B	2.81	29B	2.97	5.78	0.10	$ 37,478.18	15,280	8,349	$ 160,442.12	2,541	1	$ 19,420.41	0		Offline	$ -		$ 217,340.71	0.00	$ 578,000.00	$ 795,340.71	Preliminarily Preferred Alternative
30	3.81	N/A	0	5.41	0.00	$ 34,482.47	5,620	0	$ 38,159.57	13,791	0	$ 105,363.86	0	0	Offline	$ -	$ 50,000.00	$ 228,005.90	1.76	$ 541,000.00	$ 945,005.90	Preliminarily Preferred Alternative
N/A	0	30A	0.23	0.58	0.00	$ 3,696.83	0	834	$ 5,662.45	0	1	$ 7.64	0	0	N/A	$ -	$ -	$ 9,366.91	0.00	$ 58,000.00	$ 67,366.91	Preliminarily Preferred Alternative
N/A	0	30B	0.32	0.67	0.00	$ 4,270.47	0	1,480	$ 10,049.39	0	1	$ 7.64	0	0	N/A	$ -	$ -	$ 14,327.50	0.00	$ 67,000.00	$ 81,327.50	
31	2.82	N/A	0	4.73	0.00	$ 30,148.26	18,913	0	$ 128,417.50	19,846	0	$ 151,625.72	0	0	Offline	$ -	$ 50,000.00	$ 360,191.48	0.00	$ 473,000.00	$ 833,191.48	Preliminarily Preferred Alternative
32-33A	1.74	N/A	0	3.54	0.17	$ 23,646.95	24,084	0	$ 163,527.01	856	0	$ 6,542.57	0	2600	Offline	$ 416,000.00	$ -	$ 609,716.52	0.00	$ 354,000.00	$ 963,716.52	
32-33B	1.68	N/A	0	3.65	0.00	$ 23,264.52	14,580	0	$ 98,997.73	2,342	0	$ 17,893.88	0	1800	Offline	$ 288,000.00	$ 50,000.00	$ 478,156.13	0.00	$ 365,000.00	$ 843,156.13	
32-33C	1.67	N/A	0	2.65	0.00	$ 16,890.68	7,762	0	$ 52,700.61	451	0	$ 3,445.62	0	2100	Offline	$ 336,000.00	$ -	$ 409,036.90	0.00	$ 265,000.00	$ 674,036.90	Preliminarily Preferred Alternative
34A	2.66	N/A	0	5.91	0.00	$ 37,669.39	566	0	$ 3,843.76	24,383	0	$ 186,286.73	0	100	Offline	$ 16,000.00		$ 243,799.89	1.32	$ 591,000.00	$ 966,799.89	
34B	1.69	N/A	0	3.28	0.00	$ 20,906.20	3,836	0	$ 26,043.22	6,749	0	$ 51,565.55	0	140	Offline	$ 22,400.00	$ 50,000.00	$ 170,914.97	0.00	$ 328,000.00	$ 498,914.97	Preliminarily Preferred Alternative
35A	1.81	35A	1.88	6.27	0.00	$ 39,963.98	6,931	7,125	$ 95,439.21	4,319	1	$ 33,001.24	0	0	Offline	$ -	$ -	$ 168,404.43	0.25	$ 627,000.00	$ 820,404.43	Preliminarily Preferred Alternative
35B	1.75	N/A	0	2.71	0.00	$ 17,273.11	3,094	0	$ 21,005.99	8,754	0	$ 66,880.88	0	0	Offline	$ -	$ -	$ 105,159.98	1.13	$ 271,000.00	$ 488,859.98	
N/A	0	35B	2.16	4.45	0.00	$ 28,363.59	0	5,974	$ 40,560.53	0	302	$ 2,304.23	0	0	N/A	$ -	$ -	$ 71,228.35	0.00	$ 445,000.00	$ 516,228.35	
N/A	0	35C	1.95	4.54	0.00	$ 28,937.23	0	6,516	$ 44,244.24	0	1	$ 9.41	0	0	N/A	$ -	$ -	$ 73,190.88	0.00	$ 454,000.00	$ 527,190.88	
36A	1.29	N/A	0	2.18	0.00	$ 13,894.97	2,935	0	$ 19,926.24	6,825	0	$ 52,140.32	0	100	Offline	$ 16,000.00	$ 50,000.00	$ 151,961.53	0.65	$ 218,000.00	$ 434,961.53	Preliminarily Preferred Alternative
36B	1.4	N/A	0	2.51	0.00	$ 15,998.34	0	0	$ 0.07	13,533	0	$ 103,391.44	0	475	Offline	$ 76,000.00	$ -	$ 195,389.85	0.00	$ 251,000.00	$ 446,389.85	

Notes: Pond area is the measured at outside berm area.

Floodplain compensation area is measured at the SHW which will be the water surface elevation of the pond.

Ponds are paired with FPC sites where it appears the most reasonable alternative to acquire both properties together.

Construction costs are based on Area 7, 12 month average from 10/1/17 - 9/30/18.

Est. Right of Way Costs preliminary costs include $100,000 per acre of wetland impact. This will be updated with actual estimated cost from District Right of Way.

Est. Total Costs include $100,000 per acre of wetland impact.

* Indicated utilizing existing lake Modify ERP No. 44021713.00

APPENDICES

APPENDIX A	Pond Site Calculations, Conceptual Drainage Maps with Alternative SMF & FPC Sites, Pond Site Alternative Calculations, & Floodplain Compensation Site Calculations
APPENDIX B	FEMA Mapping/Flood Investigation Documentation
APPENDIX C	ERP# 44021713.000
APPENDIX D	I 95 NB Rest Area SWMR Partial SWFWMD Permit No. 44478, Application No. 795079
APPENDIX E	Meeting Minutes

APPENDIX A Pond Site Calculations, Conceptual Drainage Maps with Alternative SMF & FPC Sites, Pond Site Alternative Calculations, & Floodplain Compensation Site Calculations

Pond Site Calculations

EXISTING LAND USE								
Basin	Sta. From	Sta. To	Length (ft)	Typical [1] Imp. Width (ft)	Typical Imp. Area (ac)	Pervious Area (ac)	Total Area (ac)	Exist. CN
1	75+00.00	110+50.00	3550	112	9.18	24.2	33.37	87.8
2	110+50.00	154+00.00	4350	112	11.07	24.44	35.51	88.3
3	154+00.00	192+00.00	3800	112	9.82	25.41	35.24	85.5
4	192+00.00	217+00.00	2500	112	6.30	20.26	26.56	77.3
5	217+00.00	239+75.00	2275	112	5.68	22.04	27.72	82.7
6	239+75.00	256+00.00	1625	112	3.95	14.77	18.72	86.7
7	256+00.00	296+00.00	4000	112	10.11	31.33	41.45	87.3
8	296+00.00	324+50.00	2850	112	7.33	18.35	25.68	87.5
9	324+50.00	335+50.00	1100	112	5.37	12.03	17.40 (2)	87.5
10	335+50.00	373+50.00	3800	112	9.90	20.02	29.92	84
11	373+50.00	418+00.00	4450	112	11.57	23.39	34.96	69.7
12	418+00.00	464+00.00	4600	112	20.30	85.14	105.44 (2)	60.5
13	464+00.00	485+00.00	2100	112	6.41	15.92	22.33 (2)	69.3
14	485+00.00	512+75.00	2775	112	9.33	19.55	28.87 (2)	67
15	512+75.00	550+00.00	3725	112	12.74	49.2	61.94 (2)	59.5
16	550+00.00	585+00.00	3500	112	9.32	47.92	57.24 (2)	63.2
17	585+00.00	621+00.00	3600	112	24.56	74.69	99.25	65.5
18	621+00.00	635+00.00	1400	112	8.26	28.69	36.95	61.7
19	635+00.00	674+00.00	3900	112	10.09	17.54	27.63	66.9
20	674+00.00	701+00.00	2700	112	7.27	14.17	21.43	74.8
21	701+00.00	733+00.00	3200	112	7.91	19.06	26.97	65.7
22	733+00.00	777+00.00	4400	112	11.34	33.3	44.64	65.5
23	777+00.00	815+00.00	3800	112	9.59	23.92	33.51	68.3
24	815+00.00	882+00.00	6700	112	17.17	37.63	54.80	64.6
25	882+00.00	923+50.00	4150	112	23.64	76.24	99.88	63.2
26	923+50.00	978+50.00	5500	112	16.92	36.45	53.37	75.9
27	978+50.00	1029+50.00	5100	112	12.63	27.87	40.50	66.2
28	1029+50.00	1077+00.00	4750	112	12.18	25.67	37.85	72.3
29	1077+00.00	1110+00.00	3300	112	8.40	18.7	27.10	67.9
30	1110+00.00	1137+50.00	2750	112	10.72	48.13	58.85	67.9
31	1137+50.00	1159+50.00	2200	136	14.90	40.09	54.99	72.6
32	1159+50.00	1184+00.00	2450	136	7.88	13.88	21.76	85.6
33	1184+00.00	1195+00.00	1100	136	3.71	6.2	9.92	67.5
34	1195+00.00	1223+75.00	2875	136	8.78	18.24	27.01	70.1
35	1223+75.00	1250+50.00	2675	136	8.51	15.67	24.18	73.1
36	1250+50.00	1270+00.00	1950	136	6.17	10.87	17.03	70.6

Note:

1- Typical impervious width based on (6 or 8) 12' travel lanes + (4) 10' shoulders

2- Includes offsite area

PROPOSED LAND USE									
Basin	Sta. From	Sta. To	Length (ft)	Through[1] Lane Width (ft)	Through Lane Area (ac)	Imp. Total (ac)	Pervious Area (ac)	Total Area (ac)	Prop. CN
1	75+00.00	110+50.00	3550	120	9.78	18.42	14.95	33.37	91.7
2	110+50.00	154+00.00	4350	120	11.98	22.45	13.05	35.51	92.8
3	154+00.00	192+00.00	3800	120	10.47	20.85	14.39	35.24	90.9
4	192+00.00	217+00.00	2500	120	6.89	13.51	13.05	26.56	84.9
5	217+00.00	239+75.00	2275	120	6.27	11.56	16.16	27.72	86.9
6	239+75.00	256+00.00	1625	120	4.48	8.03	10.69	18.72	89.8
7	256+00.00	296+00.00	4000	120	11.02	20.54	20.91	41.45	90.8
8	296+00.00	324+50.00	2850	120	7.85	14.95	10.74	25.68	91.8
9	324+50.00	335+50.00	1100	120	3.03	8.22	9.18	17.40 (2)	89.9
10	335+50.00	373+50.00	3800	120	10.47	19.76	10.16	29.92	91.2
11	373+50.00	418+00.00	4450	120	12.26	21.31	13.64	34.96	81.4
12	418+00.00	464+00.00	4600	120	12.67	33.64	71.80	105.44 (2)	66.4
13	464+00.00	485+00.00	2100	120	5.79	11.71	10.62	22.33 (2)	78.8
14	485+00.00	512+75.00	2775	120	7.64	16.16	12.71	28.87 (2)	77.3
15	512+75.00	550+00.00	3725	120	10.26	22.93	39.01	61.94 (2)	67.4
16	550+00.00	585+00.00	3500	120	9.64	18.16	39.08	57.24 (2)	70.6
17	585+00.00	621+00.00	3600	120	9.92	32.47	66.78	99.25	68.7
18	621+00.00	635+00.00	1400	120	3.86	12.15	24.81	36.95	66.9
19	635+00.00	674+00.00	3900	120	10.74	20.86	6.76	27.63	85.9
20	674+00.00	701+00.00	2700	120	7.44	15.20	6.23	21.43	88.3
21	701+00.00	733+00.00	3200	120	8.82	16.18	10.79	26.97	79.4
22	733+00.00	777+00.00	4400	120	12.12	23.85	20.79	44.64	77.2
23	777+00.00	815+00.00	3800	120	10.47	20.41	13.09	33.51	81.5
24	815+00.00	882+00.00	6700	120	18.46	34.42	20.38	54.80	79.9
25	882+00.00	923+50.00	4150	120	11.43	36.18	63.70	99.88	69
26	923+50.00	978+50.00	5500	120	15.15	32.76	20.61	53.37	85.1
27	978+50.00	1029+50.00	5100	120	14.05	25.83	14.67	40.50	81.2
28	1029+50.00	1077+00.00	4750	120	13.09	24.18	13.67	37.85	84.3
29	1077+00.00	1110+00.00	3300	120	9.09	17.01	10.10	27.10	81.7
30	1110+00.00	1137+50.00	2750	120	7.58	18.98	39.87	58.85	73.5
31	1137+50.00	1159+50.00	2200	144	7.27	20.74	34.25	54.99	76.5
32	1159+50.00	1184+00.00	2450	144	8.10	14.94	6.82	21.76	92.3
33	1184+00.00	1195+00.00	1100	144	3.64	6.72	3.20	9.92	82.3
34	1195+00.00	1223+75.00	2875	144	9.50	16.40	10.61	27.01	81.8
35	1223+75.00	1250+50.00	2675	144	8.84	16.63	7.55	24.18	85.6
36	1250+50.00	1270+00.00	1950	144	6.45	11.66	5.37	17.03	84.5

Note:

1- Through lane width based on 10 or 12 lane typical section.

2- Includes offsite area

POND SIZING CALCULATIONS												
Basin	Basin Area	Exist. CN	Exist. Total Runoff (in)	Exist. 25 yr 24-hour vol. (ac-ft)	Prop. CN	Prop. Total Runoff (in)	Prop. 25-yr 24-hour vol. (ac-ft)	Req. Att. Vol. (ac-ft)	Req. WQ[1] Vol. (ac-ft)	Type of Facility$_2$ (Wet/Dry)	Estimated Req. Storage Volume (ac-ft)	Estimated SMF area$_3$ (ac)
1	33.37	87.8	7.47	20.78	91.7	7.94	22.08	1.31	0.81	Wet	2.12	0.81
2	35.51	88.3	7.53	22.28	92.8	8.07	23.88	1.60	1.00	Wet	2.60	1.00
3	35.24	85.5	7.19	21.11	90.9	7.85	23.05	1.94	0.87	Wet	2.81	0.87
4	26.56	77.3	6.18	13.68	84.9	7.12	15.76	2.08	0.57	Wet	2.65	0.66
5	27.72	82.7	6.85	15.82	86.9	7.36	17.00	1.18	0.52	Wet	1.70	0.52
6	18.72	86.7	7.34	11.45	89.8	7.71	12.03	0.58	0.37	Wet	0.95	0.37
7	41.45	87.3	7.41	25.59	90.8	7.84	27.08	1.49	0.92	Wet	2.40	0.92
8	25.68	87.5	7.43	15.90	91.8	7.95	17.01	1.11	0.65	Wet	1.77	0.65
9	17.40 (4)	87.5	7.43	10.78	89.9	7.73	11.21	0.44	0.25	Wet	0.69	0.25
10	29.92	84	7.01	17.48	91.2	7.88	19.65	2.17	0.87	Wet	3.04	0.87
11	34.96	69.7	5.26	15.32	81.4	6.69	19.49	4.17	1.53	Wet	5.70	1.53
12	105.44 (4)	60.5	4.13	36.29	66.4	4.85	42.62	6.33	1.58	Wet	7.91	1.98
13	22.33 (4)	69.3	5.21	9.70	78.8	6.37	11.86	2.16	0.72	Wet	2.88	0.72
14	28.87 (4)	67	4.92	11.84	77.3	6.19	14.89	3.06	0.96	Wet	4.01	1.00
15	61.94 (4)	59.5	4.00	20.65	67.4	4.97	25.65	5.01	1.28	Wet	6.29	1.57
16	57.24 (4)	63.2	4.45	21.23	70.6	5.37	25.61	4.39	1.21	Wet	5.59	1.40
17	99.25	65.5	4.74	39.20	68.7	5.13	42.43	3.23	0.83	Wet	4.05	1.01
18	36.95	61.7	4.28	13.18	66.9	4.91	15.12	1.94	0.32	Wet	2.26	0.57
19	27.63	66.9	4.91	11.30	85.9	7.24	16.67	5.36	0.90	Wet	6.26	1.56
20	21.43	74.8	5.88	10.50	88.3	7.53	13.45	2.95	0.62	Wet	3.57	0.89
21	26.97	65.7	4.76	10.70	79.4	6.44	14.48	3.78	0.73	Wet	4.51	1.13

POND SIZING CALCULATIONS												
Basin	Basin Area	Exist. CN	Exist. Total Runoff (in)	Exist. 25 yr 24-day vol. (ac-ft)	Prop. CN	Prop. Total Runoff (in)	Prop. 25-yr 24-day vol. (ac-ft)	Req. Att. Vol. (ac-ft)	Req. WQ[1] Vol. (ac-ft)	Type of Facility$_2$ (Wet/Dry)	Estimated Req. Storage Volume (ac-ft)	Estimated SMF area$_3$ (ac)
22	44.64	65.5	4.74	17.63	77.2	6.18	22.99	5.36	1.01	Wet	6.37	1.59
23	33.51	68.3	5.09	14.21	81.5	6.70	18.71	4.50	0.87	Wet	5.37	1.34
24	54.80	64.6	4.62	21.10	79.9	6.50	29.69	8.59	1.54	Wet	10.12	2.53
25	99.88	63.2	4.46	37.12	69	5.17	43.03	5.91	0.95	Wet	6.86	1.72
26	53.37	75.9	6.01	26.73	85.1	7.15	31.80	5.07	1.26	Wet	6.33	1.58
27	40.50	66.2	4.82	16.27	81.2	6.67	22.51	6.24	1.17	Wet	7.41	1.85
28	37.85	72.3	5.58	17.60	84.3	7.04	22.21	4.61	1.09	Wet	5.70	1.42
29	27.10	67.9	5.04	11.38	81.7	6.73	15.20	3.82	0.76	Wet	4.57	1.14
30	58.85	67.9	5.03	24.67	73.5	5.72	28.05	3.38	0.63	Wet	4.02	1.00
31	54.99	72.6	5.61	25.71	76.5	6.09	27.91	2.20	0.61	Wet	2.81	0.70
32	21.76	85.6	7.20	13.06	92.3	8.02	14.54	1.49	0.67	Wet	2.16	0.67
33	9.92	67.5	4.99	4.12	82.3	6.80	5.62	1.50	0.30	Wet	1.80	0.45
34	27.01	70.1	5.30	11.93	81.8	6.74	15.17	3.24	0.79	Wet	4.03	1.01
35	24.18	73.1	5.68	11.45	85.6	7.21	14.53	3.08	0.74	Wet	3.82	0.95
36	17.03	70.6	5.37	7.62	84.5	7.08	10.05	2.43	0.54	Wet	2.96	0.74
Total								117.64	30.47		148.11	39.03

Notes:

1- Water quantity based on treatment of imperivous from through lane area.

2- Determined by depth-to-water, <6' depth assumed as dry pond.

3- Based on the greater of the total water quaility treatment or storing sum of treatment and attenuation volumes over 4' depth of storage.

4- Includes offsite area

Floodplain Encroachment Calculations									
Basins	Sta From	Sta To	Offset [1]	Length (ft)	Estimated Length of Impact (ft)	Average Width of Impact (ft)	Average Depth of Impact (ft)	Total Estimated Impact (ac-ft)	Estimate Impact Area (ac)
1	79+00.00	92+00.00	MED	1300.00	1300.00	25.00	0.50	0.37	0.75
								0.37	**0.75**
3	157+00.00	170+00.00	MED	1300.00	1300.00	110.00	1.50	4.92	3.28
	160+00.00	172+00.00	LT	1200.00	1200.00	12.00	0.50	0.17	0.33
	188+00.00	199+00.00	LT	1100.00	1100.00	12.00	0.30	0.09	0.30
								5.18	**3.92**
5 & 6	237+00.00	256+00.00	MED	1900.00	1900.00	175.00	1.00	7.63	7.63
								7.63	**7.63**
7	256+00.00	296+00.00	MED	4000.00	4000.00	180.00	1.50	24.79	16.53
								24.79	**16.53**
14 & 15	490+00.00	498+00.00	LT	800.00	800.00	25.00	2.00	0.92	0.46
	505+00.00	519+00.00	LT	1400.00	1400.00	30.00	1.50	1.45	0.96
	506+00.00	520+00.00	RT	1400.00	1400.00	22.00	2.00	1.41	0.71
								3.78	**2.13**
17	565+00.00	579+00.00	RT	1400.00	1400.00	26.00	0.50	0.42	0.84
	574+00.00	593+00.00	MED	1900.00	1900.00	68.00	1.50	4.45	2.97
	581+00.00	593+00.00	RT	1200.00	1200.00	28.00	3.50	2.70	0.77
								7.57	**4.57**
18	623+50.00	637+00.00	LT	1350.00	1350.00	22.00	1.50	1.02	0.68
								1.02	**0.68**
19	640+00.00	661+00.00	LT	2100.00	2100.00	30.00	1.00	1.45	1.45
	664+00.00	669+00.00	RT	500.00	500.00	30.00	0.50	0.17	0.34
								1.62	**1.79**
24	829+00.00	860+00.00	RT	3100.00	3100.00	15.00	2.00	2.13	1.07
	835+00.00	860+00.00	LT	2500.00	2500.00	20.00	1.00	1.15	1.15
	847+00.00	862+50.00	MED	1550.00	1550.00	68.00	0.80	1.94	2.42
	867+00.00	872+00.00	LT	500.00	500.00	20.00	0.50	0.11	0.23
	872+00.00	896+00.00	RT	2400.00	2400.00	20.00	1.00	1.10	1.10

Floodplain Encroachment Calculations									
Basins	**Sta From**	**Sta To**	**Offset [1]**	**Length (ft)**	**Estimated Length of Impact (ft)**	**Average Width of Impact (ft)**	**Average Depth of Impact (ft)**	**Total Estimated Impact (ac-ft)**	**Estimate Impact Area (ac)**
								6.44	**5.97**
26	935+00.00	972+50.00	RT	3750.00	3750.00	20.00	0.50	0.86	1.72
	932+00.00	970+50.00	LT	3850.00	3850.00	29.00	0.50	1.28	2.56
								2.14	**4.28**
27	1005+00.00	1019+00.00	LT	1400.00	1400.00	20.00	0.50	0.32	0.64
								0.32	**0.64**
28	1043+50.00	1062+00.00	RT	1850.00	1850.00	23.00	2.50	2.44	0.98
	1047+00.00	1060+00.00	LT	1300.00	1300.00	20.00	0.50	0.30	0.60
								2.74	**1.57**
29	1079+00.00	1091+00.00	LT	1200.00	1200.00	20.00	0.50	0.28	0.55
	1097+00.00	1107+00.00	LT	1000.00	1000.00	21.00	3.50	1.69	0.48
	1100+00.00	1109+00.00	MED	900.00	900.00	68.00	2.00	2.81	1.40
								4.77	**2.44**
30	1113+50.00	1122+00.00	LT	850.00	850.00	26.00	1.00	0.51	0.51
								0.51	**0.51**
34 [2]	1220+00.00	1222+00.00	LT	200.00	460.00	200.00	1.50	3.17	2.11
								3.17	**2.11**
35	1216+00.00	1226+50.00	LT	1050.00	1050.00	19.00	1.00	0.46	0.46
	1221+00.00	1227+00.00	RT	600.00	600.00	24.00	2.50	0.83	0.33
	1252+00.00	1270+00.00	RT	1800.00	1800.00	23.00	0.50	0.48	0.95
								1.76	**1.74**
								73.81	**57.26**

Notes:

1- RT indicates floodplain impact on northbound shoulder; MED indicates floodplain impact in median; LT indicates floodplain impact on southbound shoulder.
2- FPC for SMF 34A
alternative.

Floodplain Encroachment and Compensation Calculation Summary				
Basin	Project Floodplain Limits	Estimated Floodplain Encroachment Area (ac) ①	Estimated Floodplain Encroachment Volume (ac-ft) ①	Estimated Floodplain Comp. (FPC) site Area (ac)
1	Sta. 79+00 to Sta. 92+00, MED	0.75	0.37	0.75
3	Sta. 157+00 to Sta. 170+00, MED Sta. 160+00 to Sta. 172+00, LT Sta. 188+00 to Sta. 199+00, LT	3.92	5.18	5.34
5 & 6	Sta. 237+00 to Sta. 265+00, MED	7.63	7.63	5.07
7	Sta.281+50 to Sta. 296+00, LT Sta. 246+00 to Sta. 296+00, MED Sta. 281+00 to Sta. 288+00, RT	16.53	24.79	8.58
14 & 15	Sta. 490+00 to Sta. 498+00, LT Sta. 505+00 to Sta. 519+00, LT Sta. 506+00 to Sta. 520+00, RT	2.13	3.78	4.55
17	Sta. 565+00 to Sta. 579+00, RT Sta. 574+00 to Sta. 593+00, MED Sta. 581+00 to Sta. 593+00, RT	4.57	7.57	5.33
18	Sta. 623+50 to Sta.637+00, LT	0.68	1.02	2.64
19	Sta. 640+00 to Sta. 661+00, LT Sta. 664+00 to Sta. 669+00, RT	1.79	1.62	1.73
24	Sta. 829+00 to Sta. 860+00, RT Sta. 835+00 to Sta. 860+00, LT Sta. 847+00 to Sta. 862+50, MED Sta. 867+00 to Sta. 872+00, LT Sta. 872+00 to Sta. 896+00, RT	5.97	6.44	11.25
26	Sta. 935+00 to Sta. 972+50, RT Sta. 932+00 to Sta. 970+50, LT	4.28	2.14	3.51
27	Sta. 1005+00 to Sta. 1019+00, LT	0.64	0.32	1.38
28	Sta. 1043+50 to Sta. 1062+00, RT Sta. 1047+00 to Sta. 1060+00, LT	1.57	2.74	1.69
29	Sta. 1079+00 to Sta. 1091+00, LT Sta. 1097+00 to Sta. 1107+00, LT Sta. 1100+00 to Sta. 1109+00, MED	2.44	4.77	2.39
30	Sta. 1113+50 to Sta. 1122+00, LT	0.51	0.51	0.32
34	Sta. 1220+00 to Sta. 1222+00, LT	2.11	4.22	1.59
35	Sta. 1216+00 to Sta. 1226+50, LT Sta. 1221+00 to Sta. 1227+00, RT Sta. 1252+00 to Sta. 1270+00, RT	1.74	1.76	2.16
		57.26	**74.87**	

Notes:

1-See Appendix A (floodplain encroachment and compensation summary) for calculations

Conceptual Drainage Maps with Alternative SMF & FPC Sites

SWFWMD BASIN: MANASOTA

REGIONAL BASIN: CABBAGE SLOUGH

REGIONAL WATERSHED: LITTLE MANATEE RIVER

0 100 400

Feet

30" PIPE

30" PIPE

24" PIPE

MOCCASIN WALLOW RD

DBL 10'X7' CBC

CABBAGE SLOUGH

Cross Drain 1
12' X 7' CBC

5'X6' CBC

18" PIPE

15" PIPE

15" PIPE

15" PIPE

15" PIPE

15" PIPE

10 15 20 25 30 35 40 45 50 55 60

18" PIPE

18" PIPE

15" PIPE

15" PIPE

5'X6' CBC

PIPE

24" PIPE

18" PIPE

15" PIPE

15" PIPE

15" PIPE

24" PIPE

18" PIPE

24" PIPE

MOCCASIN WALLOW RD

24" PIPE

PIPE

24" PIPE

IMPERIAL LAKEWOODS GOLF CLUB

PIPE

18" PIPE

LEGEND

- PUBLIC MANAGED LANDS
- FEMA 100 YEAR FLOODPLAIN
- WETLAND BOUNDARY
- EXISTING ROW
- PROPERTY LINE
- FLOODWAY
- PREFFERED PROPOSED ROW
- ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY FPC = FLOODPLAIN COMPENSATION SITE

DATE OF AERIAL : 2017

American
Consulting Engineers of Florida, LLC
2818 Cypress Ridge Blvd, Suite 200
Wesley Chapel, Florida 33544
Phone: (813) 435-2600 Fax: (813) 435-2601
Certificate of Authorization No. 9302
William L. Adams, P.E. No. 57950

DRAINAGE MAP

SHEET NO. 1

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SWFWMD BASIN: MANASOTA
REGIONAL BASIN: CABBAGE SLOUGH
REGIONAL WATERSHED: LITTLE MANATEE RIVER

N

0 100 400
Feet

NWL = 23.10'
DHW25 = 23.57'
DHW50 = 23.71'
DHW100 = 23.75'

SMF-1B
103,821.3 SQ. FT.

NWL = 23.60'
DHW25 = 23.84'
DHW50 = 23.90'
DHW100 = 23.93'

FPC-1A
115,363.8 SQ. FT. (SMF & FPC)

SMF-1A

NWL = 23.04'
DHW25 = 24.05'
DHW50 = 24.37'
DHW100 = 24.47'

NWL = 26.63'
DHW25 = 27.83'
DHW50 = 28.25'
DHW100 = 28.42'

Cross Drain 6
24" PIPE

Cross Drain 2
24" PIPE

60 70 75 80 85 90 95 100 105 110 115

D.W.E. REF. PT.
D.W.E. REF. PT.
D.W.E. REF. PT.
D.W.E. REF. PT.
D.W.E. REF. PT.

Cross Drain 3
30" PIPE

Cross Drain 4
(2) 42" PIPE

STA 75+00
END PROJECT WPI SEGMENT NO. 201032-1
BEGIN PROJECT WPI SEGMENT NO. 419235-2

SMF-1C
88,390.8 SQ. FT. (SMF & FPC)

FPC-1C

Cross Drain 5
24" PIPE

NWL = 22.99'
DHW25 = 23.57'
DHW50 = 23.73'
DHW100 = 23.79'

FPC-1B
77,805.9 SQ. FT.

SWFWMD BASIN: MANASOTA
REGIONAL BASIN: CABBAGE SLOUGH
REGIONAL WATERSHED: LITTLE MANATEE RIVER

BASIN 1

BASIN2

LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY
FPC = FLOODPLAIN COMPENSATION SITE

DATE OF AERIAL : 2017

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Phone: (813) 435-2600 Fax: (813) 435-2601
Certiflcate of Authorization No. 9302
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DRAINAGE MAP

SHEET NO. 2

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SWFWMD BASIN: MANASOTA
REGIONAL BASIN: UNNAMED DRAINAGE DITCH
REGIONAL WATERSHED: LITTLE MANATEE RIVER

0 100 400
Feet

SMF-3C
422,602.8 SQ. FT. (SMF & FPC)

Cross Drain 8
(2) 42" PIPE
NWL = 23.72'
DHW25 = 24.27'
DHW50 = 24.92'
DHW100 = 25.24'
D.W.E. REF. PT.

FPC-3C
NWL = 23.20'
DHW25 = 24.00'
DHW50 = 24.51'
DHW100 = 24.80'
D.W.E. REF. PT.

Cross Drain 10
(2) 30" PIPE

SMF-2C
90,328 SQ. FT.

15" PIPE
15" PIPE
BUCKEYE RD

NWL = 22.45'
DHW25 = 24.39'
DHW50 = 25.10'
DHW100 = 25.42'

15" PIPE
Cross Drain 7
(2) 42" PIPE
D.W.E. REF. PT.

NWL = 23.68'
DHW25 = 24.42'
DHW50 = 25.12'
DHW100 = 25.44'
D.W.E. REF. PT.

18" PIPE

120 125 130 135 140 145 150 155 160 165 170 175

24" PIPE

SMF-3B
15" PIPE
Cross Drain 9
(2) 30" PIPE
Cross Drain 9
(2) 42" PIPE
D.W.E. REF. PT.
NWL = 21.34'
DHW25 = 21.83'
DHW50 = 22.00'
DHW100 = 22.08'

SMF-3A
D.W.E. REF. PT.

NWL = 23.92'
DHW25 = 24.71'
DHW50 = 25.03'
DHW100 = 25.18'
D.W.E. REF. PT.

CARTER RD

15" PIPE

SMF-2B
110,160.4 SQ. FT.
(2) 48" PIPE

9'X5' CBC PIPE

SMF-2A
136,330.1 SQ. FT.

FPC-3B
771,809.4 SQ. FT.
(SMF & FPC)

NWL = 24.72'
DHW25 = 24.80'
DHW50 = 24.83'
DHW100 = 24.85'

FPC-3A
500,762.4 SQ. FT.
(SMF & FPC)

SWFWMD BASIN: MANASOTA
REGIONAL BASIN: UNNAMED DRAINAGE DITCH
REGIONAL WATERSHED: LITTLE MANATEE RIVER

D.W.E. REF. PT.
NWL = 21.32'
DHW25 = 21.84'
DHW50 = 22.05'
DHW100 = 22.15'

NWL = 21.34'
DHW25 = 21.84'
DHW50 = 22.05'
DHW100 = 22.14'

BASIN 2
BASIN 3

LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY
FPC = FLOODPLAIN COMPENSATION SITE

DATE OF AERIAL : 2017

American
Consulting Engineers of Florida, LLC
2818 Cypress Ridge Blvd, Suite 200
Wesley Chapel, Florida 33544
Phone: (813) 435-2600 Fax: (813) 435-2601
Certificate of Authorization No. 9302
William L. Adams, P.E. No. 57950

DRAINAGE MAP

SHEET NO. 3

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SWFWMD BASIN: MANASOTA

REGIONAL BASIN: UNNAMED DRAINAGE DITCH

REGIONAL WATERSHED: LITTLE MANATEE RIVER

0 100 400

Feet

FPC-3C

NWL = 31.46'
DHW25 = 32.02'
DHW50 = 32.27'
DHW100 = 32.38'
D.W.E. REF. PT.

53"X34" PIPE

NWL = 28.39'
DHW25 = 29.85'
DHW50 = 30.53'
DHW100 = 30.80'
D.W.E. REF. PT.

SMF-4B
86,234.6 SQ. FT.

Cross Drain 11
30" PIPE

SMF-5B&6B
95,947.4 SQ. FT.

180 185 190 195 200 205 210 215 220 225 230

Cross Drain 12
24" PIPE

Cross Drain 11
30" PIPE

SMF-4A
94,759.5 SQ. FT.

SMF-5A&6A
396,825.1 SQ. FT. (SMF & FPC)

FPC-5A&6A

SWFWMD BASIN: MANASOTA

REGIONAL BASIN: UNNAMED DRAINAGE DITCH

REGIONAL WATERSHED: LITTLE MANATEE RIVER

NWL = 15.52'
DHW25 = 17.13'
DHW50 = 18.01'
DHW100 = 18.42'
D.W.E. REF. PT.

BASIN 3 BASIN 4 BASIN 5

LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY FPC = FLOODPLAIN COMPENSATION SITE

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DRAINAGE MAP

SHEET NO. 4

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COCKROACH CREEK

GREENWAY

NWL = 24.64'
DHW25 = 25.25'
DHW50 = 25.58'
DHW100 = 25.74'

SWFWMD BASIN: ALAFIA RIVER

REGIONAL BASIN: UNNAMED DRAINAGE DITCH

REGIONAL WATERSHED: LITTLE MANATEE RIVER

0 100 400
Feet

CURIOSITY CREEK

NWL = 14.45'
DHW25 = 17.04'
DHW50 = 17.98'
DHW100 = 18.57'

SMF-5B&6B

D.W.E. REF. PT.

FPC-5B&6B
454,837.4 SQ. FT.

HILLSBOROUGH COUNTY
MANATEE COUNTY

NWL = 14.09
DHW25 = 16.46'
DHW50 = 17.50'
DHW100 = 17.99

D.W.E. REF. PT.

FPC-7A

589,185 SQ. FT. (SMF & FPC)

SMF-7A

D.W.E. REF. PT.

NWL = 13.87'
DHW25 = 15.91'
DHW50 = 16.97'
DHW100 = 17.41'

235 240 245 250 255 260 265 270 275 280 285 290

Cross Drain 12
30" PIPE

Cross Drain 13
BRIDGE

Cross Drain 14
36" PIPE

Cross Drain 14
36" PIPE

Cross Drain 15
5'X5' CBC

Cross Drain 16
(2) 30" PIPE

Cross Drain 17
5'X4' CBC

Cross Drain 18
30" PIPE

Cross Drain 17
5'X4' CBC

DITCH BLOCK

Cross Drain 16
(2) 30" PIPE

Cross Drain 18
30" PIPE

NWL = 11.97'
DHW25 = 13.44'
DHW50 = 14.15'
DHW100 = 14.46'

D.W.E. REF. PT.

HILLSBOROUGH COUNTY
MANATEE COUNTY

FPC-5A&6A

SWFWMD BASIN: MANASOTA

REGIONAL BASIN: UNNAMED DRAINAGE DITCH

REGIONAL WATERSHED: LITTLE MANATEE RIVER

BASIN 5

BASIN 6

BASIN 7

LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY FPC = FLOODPLAIN COMPENSATION SITE

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DRAINAGE MAP

SHEET NO. 5

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SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: UNNAMED DRAINAGE DITCH
REGIONAL WATERSHED: LITTLE MANATEE RIVER

0 100 400
Feet

SMF-7B
544,882.5 SQ. FT. (SMF & FPC)
FPC-7B
Cross Drain 19
24" PIPE
SMF-8A
61,106.6 SQ. FT.
Cross Drain 20
30" PIPE

24 LF OF 15" PIPE
54 LF OF 15" CMP
Cross Drain 21
(2) 30" PIPE
42 LF OF 15" PIPE
42 LF OF 15" CMP
NWL = 23.74'
DHW25 = 25.57'
DHW50 = 26.20'
DHW100 = 26.47'
VALROY RD
NWL = 24.63'
DHW25 = 24.70'
DHW50 = 24.73'
DHW100 = 24.75'
D.W.E. REF. PT.
SMF-9B
52,928.0 SQ. FT.

NWL = 21.71'
DHW25 = 22.68'
DHW50 = 22.72'
DHW100 = 22.73'
SMF-9A
42,515.8 SQ. FT.
D.W.E. REF. PT.
48 LF OF 15" CMP
42 LF OF 15" PIPE
LIGHTFOOT RD
SMF-10B
85,519.5 SQ. FT.
SMF-10C
167,267.9 SQ. FT.
42 LF OF 15" PIPE
61 LF OF 15" CMP
20 LF OF 15" PIPE

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: UNNAMED DRAINAGE DITCH
REGIONAL WATERSHED: LITTLE MANATEE RIVER

BASIN 7
BASIN 8
BASIN 9
BASIN 10

LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY
FPC = FLOODPLAIN COMPENSATION SITE

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DRAINAGE MAP

SHEET NO. 6

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SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: LITTLE MANATEE RIVER
REGIONAL WATERSHED: LITTLE MANATEE RIVER

BOLSTER BAYOU

BASIN: ALAFIA RIVER
REGIONAL BASIN: LITTLE MANATEE RIVER
REGIONAL WATERSHED: LITTLE MANATEE RIVER

0 100 400
Feet

LITTLE MANATEE RIVER

LITTLE MANATEE RIVER PRESERVE

SMF-11A
138,580.5 SQ. FT.

Cross Drain 22
24" PIPE

NWL = 13.75'
DHW25 = 15.23'
DHW50 = 15.97'
DHW100 = 16.34'

NWL = 2.95'
DHW25 = 4.47'
DHW50 = 5.43'
DHW100 = 5.90'

TECO

122 LF OF 18" PIPE
PROP. 30' ESMT

TECO

46 LF OF 15" CMP

15" PIPE

18" PIPE

D.W.E. REF. PT.

Cross Drain 23
10'-2" X 5' CBC

355 360 365 370 375 380 385 390 395 400 405

D.W.E. REF. PT.

Cross Drain 24
BRIDGE

15" PIPE

15" PIPE

15" PIPE

LITTLE MANATEE RIVER

LITTLE MANATEE RIVER PRESERVE

NWL = 13.06'
DHW25 = 13.66'
DHW50 = 13.93'
DHW100 = 14.05'

SMF-10A/
SMF-11B
171,584.7 SQ. FT.

64 LF OF 15" CMP

64 LF OF 15" CMP

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: UNNAMED DRAINAGE DITCH
REGIONAL WATERSHED: LITTLE MANATEE RIVER

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: LITTLE MANATEE RIVER
REGIONAL WATERSHED: LITTLE MANATEE RIVER

BASIN 10

BASIN 11

LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY FPC = FLOODPLAIN COMPENSATION SITE

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DRAINAGE MAP

SHEET NO. 7

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SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: LITTLE MANATEE RIVER
REGIONAL WATERSHED: LITTLE MANATEE RIVER

BOLSTER BAYOU

RIVER BEND PHASE 4A

0 100 400
Feet

NWL = 23.26'
DHW25 = 24.13'
DHW50 = 24.48'
DHW100 = 24.63'

TECO

TECO

TECO

PIPE

TO SOUTHBOUND REST AREA

Cross Drain 25
24" PIPE

111 LF OF 24" PIPE

120 LF OF (2) 30" PIPE

410 415 420 425 430 435 440 445 450 455 460 465

D.W.E. REF. PT.

SMF-12
634,240.8 SQ. FT.

Cross Drain 25
30" PIPE

UTILITY TUNNEL
420 LF OF 4'X4' CBC

111 LF OF 24" PIPE

18" PIPE

18" PIPE

18" PIPE

30" PIPE

18" PIPE

15" PIPE

24" PIPE

18" PIPE

24" PIPE

(3) 30" PIPE

(2) 24" PIPE

NORTHBOUND REST AREA

48" PIPE

Exist.
Ditch

(2) 24" PIPE

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: LITTLE MANATEE RIVER
REGIONAL WATERSHED: LITTLE MANATEE RIVER

NWL = 20.22'
DHW25 = 20.46'
DHW50 = 20.57'
DHW100 = 20.62'

D.W.E. REF. PT.

BASIN 11

BASIN 12

LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY FPC = FLOODPLAIN COMPENSATION SITE

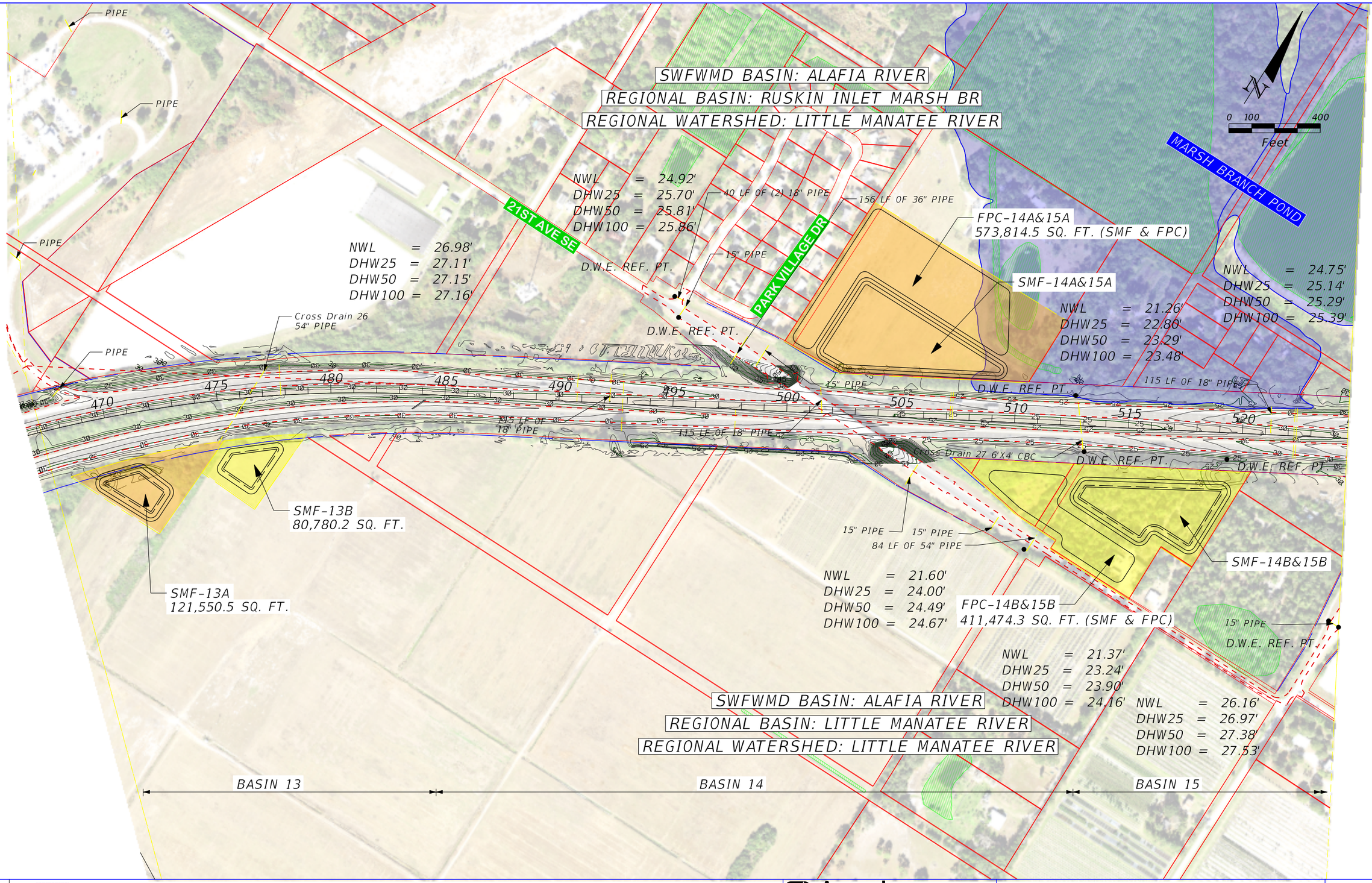
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DRAINAGE MAP

SHEET NO. 8

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LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY FPC = FLOODPLAIN COMPENSATION SITE

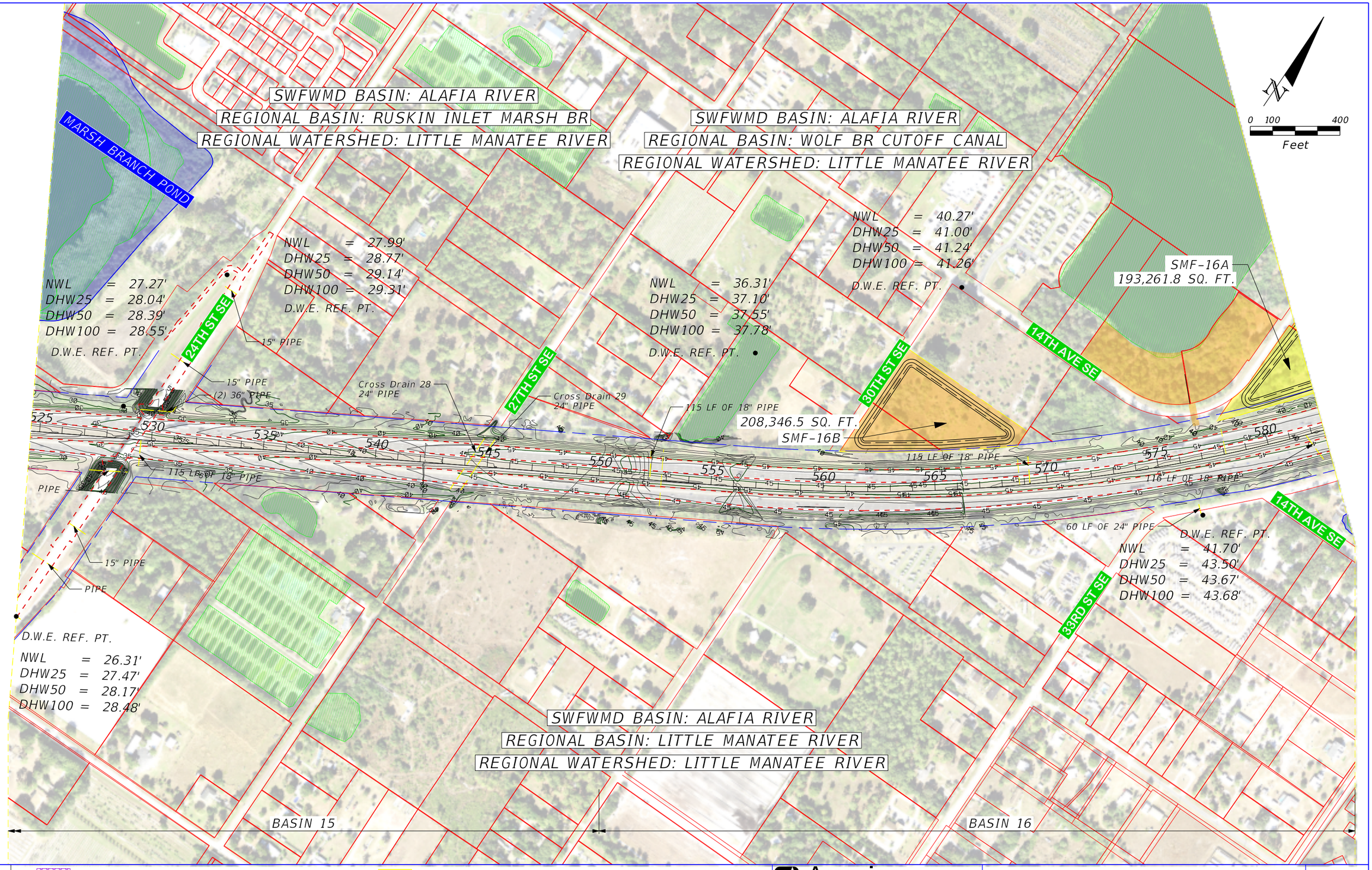
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DRAINAGE MAP

SHEET NO. 9

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LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY FPC = FLOODPLAIN COMPENSATION SITE

DATE OF AERIAL : 2017

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DRAINAGE MAP

SHEET NO. 10

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SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: WOLF BR CUTOFF CANAL
REGIONAL WATERSHED: LITTLE MANATEE RIVER

0 100 400
Feet

FPC-17A
402,355.9 SQ. FT.
NWL = 36.36'
DHW25 = 37.20'
DHW50 = 37.57'
DHW100 = 37.78'
D.W.E. REF. PT.

FPC-17B
136,098.3 SQ. FT.
NWL = 34.45'
DHW25 = 36.51'
DHW50 = 37.25'
DHW100 = 37.53'
D.W.E. REF. PT.

82 LF OF 15" PIPE
198 LF OF 6'X4' CBC
48 LF OF 30" PIPE
88 LF OF 18" PIPE
82 LF OF (2) 42" PIPE
82 LF OF 24" PIPE
41 LF OF 15" CMP
148 LF OF 24" PIPE
91 LF OF 9'X4' CBC
108 LF OF 15" CMP
59 LF OF 15" CMP
60 LF OF 15" CMP
100 LF OF 18" PIPE
53 LF OF 15" CMP
120 LF OF 24" CBC
75" PIPE
58 LF OF 15" CMP
41 LF OF 15" CMP
56 LF OF 24" PIPE (SPN 3403)
60 LF OF 24" PIPE(SPN 3403)
56 LF OF 15" CMP
18" PIPE
15" CMP
18" PIPE
144 LF OF 18" PIPE
45 LF OF 30" PIPE
88 LF OF 18" PIPE
Cross Drain 30
9'X4' CBC
99 LF OF 9'X4' CBC
24" PIPE
60" PIPE
Cross Drain 32
30" PIPE
Cross Drain 33
30" PIPE
Cross Drain 31
24" PIPE

33RD ST SE
COLLEGE AVE E
TECO RD
SUN CITY CENTER BLVD
SOUTH COUNTY WASTEWATER TREATMENT PLANT
TECO

SMF-16A
SMF-17 (1)
SMF-17 (2)
SMF-17 (3)
SMF-17 (4)
545,643.6 SQ. FT.
(17(1),(2),(3),(4))
SMF-18 (1)
SMF-18 (2)
203,588.4 SQ. FT. (18(1),(2))
SMF-19A
146,542.3 SQ. FT.

FDOT DRAINAGE CONNECTION PERMIT 10-047-89

D.W.E. REF. PT.
NWL = 34.24'
DHW25 = 35.97'
DHW50 = 36.62'
DHW100 = 36.89'

D.W.E. REF. PT.
NWL = 33.98'
DHW25 = 35.29'
DHW50 = 35.84'
DHW100 = 36.10'

D.W.E. REF. PT.
NWL = 33.75'
DHW25 = 34.73'
DHW50 = 35.21'
DHW100 = 35.46'

D.W.E. REF. PT.
NWL = 33.63'
DHW25 = 34.69'
DHW50 = 35.21'
DHW100 = 35.46'

D.W.E. REF. PT.
NWL = 34.49'
DHW25 = 35.38'
DHW50 = 35.87'
DHW100 = 36.11'

D.W.E. REF. PT.
NWL = 33.96'
DHW25 = 35.08'
DHW50 = 35.62'
DHW100 = 35.87'

D.W.E. REF. PT.
NWL = 40.94'
DHW25 = 41.59'
DHW50 = 41.90'
DHW100 = 41.95'

FPC-18A
242,782.1 SQ. FT.

FPC-18B
137,467.1 SQ. FT.

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: CYPRESS CREEK
REGIONAL WATERSHED: LITTLE MANATEE RIVER

BASIN 17
BASIN 18
BASIN 19

585 590 595 600 605 610 615 620 625 630 635 64

LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY FPC = FLOODPLAIN COMPENSATION SITE

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DRAINAGE MAP

SHEET NO. 11

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SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: WOLF BR CUTOFF CANAL
REGIONAL WATERSHED: LITTLE MANATEE RIVER

NWL = 44.57'
DHW25 = 44.80'
DHW50 = 44.86'
DHW100 = 44.88'

NWL = 44.59'
DHW25 = 44.97'
DHW50 = 45.07'
DHW100 = 45.13'

NWL = 44.59'
DHW25 = 45.04'
DHW50 = 45.12'
DHW100 = 45.17'

D.W.E. REF. PT.
NWL = 44.58'
DHW25 = 44.85'
DHW50 = 44.91'
DHW100 = 44.94'

TECO

SOUTH COUNTY WASTEWATER TREATMENT PLANT

HILLSBOROUGH COUNTY

SMF-20A
197,690.6 SQ. FT.

15" PIPE

Cross Drain 41
42" PIPE

30" PIPE

645 650 655 660 665 670 675 680 685 690 695

D.W.E. REF. PT.

Cross Drain 34
30" PIPE

Cross Drain 35
30" PIPE

Cross Drain 37
30" PIPE

Cross Drain 36
24" PIPE

Cross Drain 38
24" PIPE

Cross Drain 39
30" PIPE

NWL = 44.59'
DHW25 = 45.05'
DHW50 = 45.11'
DHW100 = 45.15'

NWL = 44.66'
DHW25 = 45.53'
DHW50 = 45.72'
DHW100 = 45.79'

Cross Drain 40
30" PIPE

CYPRESS CREEK ASSIS. LIVING RESIDENCE, INC

FPC-19B
233,562.1 SQ. FT.
(SMF & FPC)

FPC-19A
100,410.2 SQ. FT.

SMF-19A

SMF-19B

SMF-20B
206,722.8 SQ. FT.

CYPRESS VILLAGE BLVD

CYPRESS VILLAGE BLVD
NWL = 38.28'
DHW25 = 38.62'
DHW50 = 38.66'
DHW100 = 38.67'

NWL = 39.96'
DHW25 = 40.93'
DHW50 = 40.96'
DHW100 = 40.97'

NWL = 38.29'
DHW25 = 40.08'
DHW50 = 40.53'
DHW100 = 40.63'

CYPRESS CREEK VILLAGE

NWL = 44.72'
DHW25 = 45.73'
DHW50 = 45.88'
DHW100 = 45.91'

D.W.E. REF. PT.
NWL = 48.19'
DHW25 = 48.46'
DHW50 = 48.65'
DHW100 = 48.73'

19TH AVE NE

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: CYPRESS CREEK
REGIONAL WATERSHED: LITTLE MANATEE RIVER

BASIN 19

BASIN 20

N

0 100 400
Feet

LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

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DRAINAGE MAP

SHEET NO. 12

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SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: SYMPHONY ISLES
REGIONAL WATERSHED: ALAFIA RIVER

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: WOLF BR CUTOFF CANAL
REGIONAL WATERSHED: LITTLE MANATEE RIVER

TECO

NWL = 40.58'
DHW25 = 41.15'
DHW50 = 41.41'
DHW100 = 41.44'
D.W.E. REF. PT.

SMF-21A
387,668.6 SQ. FT.

Cross Drain 42
(2) 6' X 4' CBC

NWL = 42.85'
DHW25 = 43.88'
DHW50 = 44.33'
DHW100 = 44.48'
D.W.E. REF. PT.

SMF-22A
167,234.3 SQ. FT.

SMF-22B
152,402.6 SQ. FT.

0 100 400
Feet

D.W.E. REF. PT.

D.W.E. REF. PT.

Cross Drain 42
(2) 6' X 4' CBC

NWL = 49.03'
DHW25 = 49.08'
DHW50 = 49.10'
DHW100 = 49.10'
D.W.E. REF. PT.

SMF-21B
137,644.2 SQ. FT.

NWL = 43.36'
DHW25 = 45.00'
DHW50 = 46.11'
DHW100 = 46.46'

NWL = 43.17'
DHW25 = 44.47'
DHW50 = 45.25'
DHW100 = 45.51'

BULLFROG CREEK MITIGATION PARK
WILDLIFE AND ENVIRONMENTAL AREA

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: SYMPHONY ISLES
REGIONAL WATERSHED: ALAFIA RIVER

BASIN 21

BASIN 22

LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY FPC = FLOODPLAIN COMPENSATION SITE

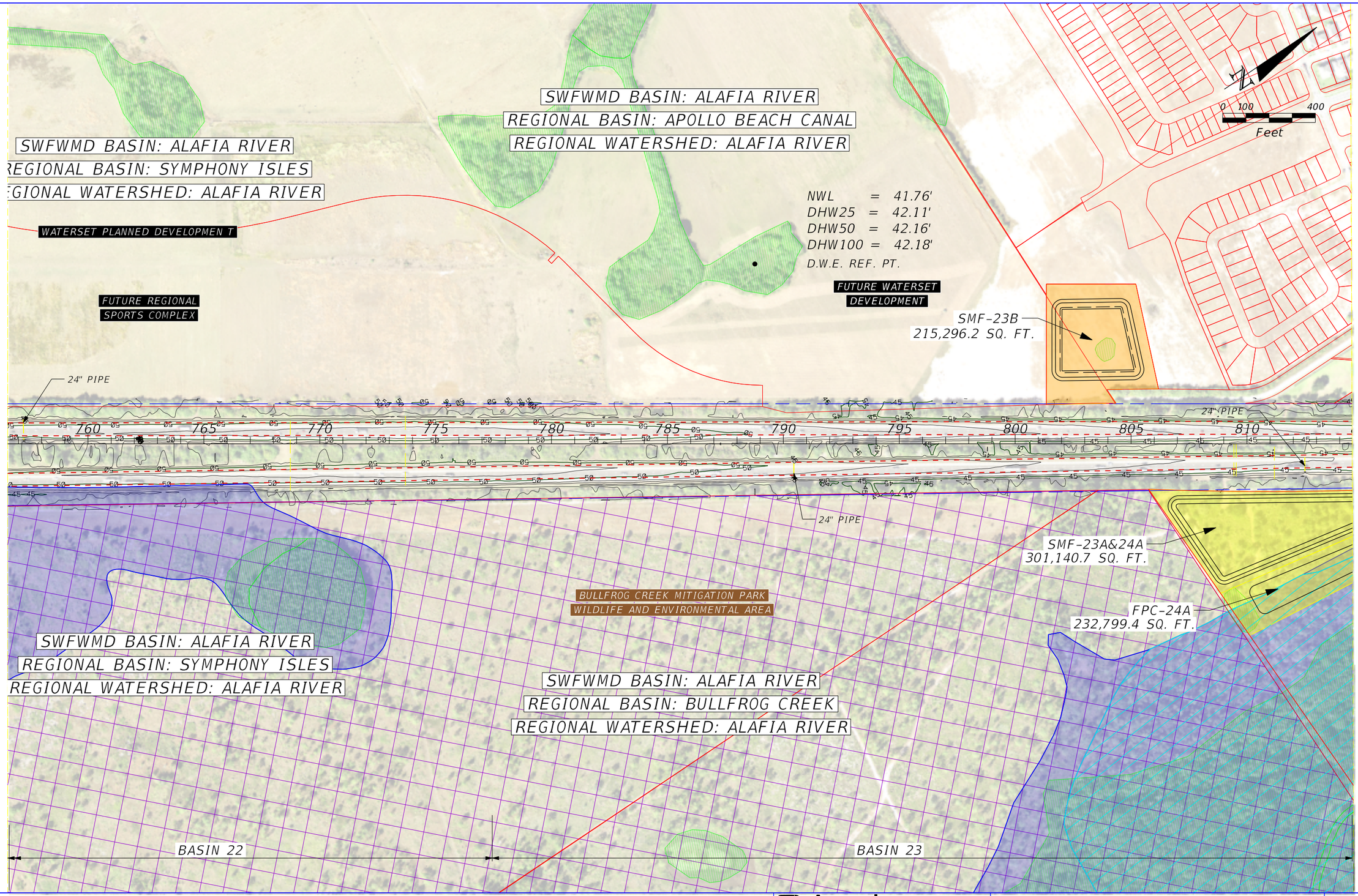
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Certificate of Authorization No. 9302
William L. Adams, P.E. No. 57950

DRAINAGE MAP

SHEET NO. 13

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LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY FPC = FLOODPLAIN COMPENSATION SITE

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DRAINAGE MAP

SHEET NO. 14

5cuetam 8/12/2020 8:24:52 PM c:\pw_work\american-pw-01\manuel.cuetara\dms56899\DRMPRD38.dgn

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: NEWMAN BRANCH
REGIONAL WATERSHED: ALAFIA RIVER

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: BULLFROG CREEK
REGIONAL WATERSHED: ALAFIA RIVER

0 100 400
Feet

COVINGTON GARDENS DR

BRIGHTON PARK DR

LAKE ST. CLAIR

CLAIR SHORE DR

LAKE ST. CLAIR

CLAIR SHORE DR

LAKE ST. CLAIR

NWL = 29.80'
DHW25 = 31.57'
DHW50 = 32.56'
DHW100 = 33.00'

FDOT DRAINAGE
CONNECTION PERMIT
99-D-796-0024

NWL = 37.29'
DHW25 = 38.02'
DHW50 = 38.19'
DHW100 = 38.26'

D.W.E. REF. PT.

D.W.E. REF. PT.

D.W.E. REF. PT.

18" PIPE

Cross Drain 44
9' X 6' CBC

24" PIPE

NWL = 37.03'
DHW25 = 38.06'
DHW50 = 38.53'
DHW100 = 38.81'

18" PIPE

FPC-24A

Cross Drain 43
24" PIPE

FPC-24B
595,958.8 SQ. FT.

NWL = 29.41'
DHW25 = 31.28'
DHW50 = 32.15'
DHW100 = 32.72'

D.W.E. REF. PT.
NWL = 33.90'
DHW25 = 35.42'
DHW50 = 36.30'
DHW100 = 36.76'

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: BULLFROG CREEK
REGIONAL WATERSHED: ALAFIA RIVER

D.W.E. REF. PT.
NWL = 28.65'
DHW25 = 31.20'
DHW50 = 32.30'
DHW100 = 32.87'

BASIN 24

LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY
FPC = FLOODPLAIN COMPENSATION SITE

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DRAINAGE MAP

SHEET NO. 15

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SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: KITCHEN BRANCH
REGIONAL WATERSHED: ALAFIA RIVER

0 100 400
Feet

0.40 AC

18" PIPE
18" PIPE
36" PIPE
24" PIPE
15" PIPE

SMF-25 (2)
SMF-25 (1)
998,653.2 SQ. FT.
SMF-24B
251,244.2 SQ. FT.

NWL = 28.84'
DHW25 = 30.33'
DHW50 = 31.31'
DHW100 = 31.44'
HILLSBOROUGH COUNTY
PUBLIC WORKS

BIG BEND RD

COVINGTON PARK
MONARCH PARK DR
NWL = 30.04'
DHW25 = 31.78'
DHW50 = 32.89'
DHW100 = 33.17'

24" PIPE
15" PIPE
Cross Drain 46
24" PIPE
D.W.E. REF. PT.
Cross Drain 47
48" PIPE

875 880 885 890 895 900 905 910 915 920 925 930

D.W.E. REF. PT.
Cross Drain 45
42" PIPE
18" PIPE
FPC-24B

VANCE VOGEL PARK
NWL = 28.20'
DHW25 = 30.87'
DHW50 = 31.99'
DHW100 = 32.56'

SMF-25 (3)
NWL = 28.19'
DHW25 = 28.44'
DHW50 = 29.24'
DHW100 = 29.55'

ZONE AE
FLOODWAY
(EL 33' NAVD 88)

BULLFROG CREEK

SMF-25 (4)
18" PIPE
48" PIPE
24" PIPE
D.W.E. REF. PT.
ZONE AE
FLOODWAY
(EL 32' NAVD 88)

OLD BIG BEND RD

BULLFROG CREEK RD
15" PIPE
D.W.E. REF. PT.
GOLDEN ASTER SCRUB
NATURE PRESERVE
(TIITF)
NWL = 27.15'
DHW25 = 30.33'
DHW50 = 31.53'
DHW100 = 31.99'

NWL = 26.38'
DHW25 = 28.94'
DHW50 = 29.25'
DHW100 = 29.55'

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: BULLFROG CREEK
REGIONAL WATERSHED: ALAFIA RIVER

NWL = 27.15'
DHW25 = 30.33'
DHW50 = 31.63'
DHW100 = 32.22'

BULLFROG CREEK
BULLFROG CREEK
ZONE AE (FLOODWAY)
(EL 30' NAVD 88)

BASIN 24
BASIN 25
BASIN 26

LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY
FPC = FLOODPLAIN COMPENSATION SITE

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DRAINAGE MAP

SHEET NO. 16

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SWFWMD BASIN: ALAFIA RIVER

REGIONAL BASIN: BULLFROG CREEK

REGIONAL WATERSHED: ALAFIA RIVER

0 100 400

Feet

NWL = 27.52'
DHW25 = 27.74'
DHW50 = 27.91'
DHW100 = 28.20'

TECO

D.W.E. REF. PT.

GOLDEN ASTER SCRUB NATURE PRESERVE (TIITF)

D.W.E. REF. PT.

NWL = 27.14'
DHW25 = 27.67'
DHW50 = 27.86'
DHW100 = 28.19'

NWL = 25.45'
DHW25 = 26.99'
DHW50 = 27.71'
DHW100 = 28.17'

18" PIPE

Cross Drain 49
6' X 4' CBC

Cross Drain 50
6' X 4' CBC

18" PIPE

935 940 945 950 955 960 965 970 975 980 985

Cross Drain 48
(2) 36" PIPE

D.W.E. REF. PT.

GOLDEN ASTER SCRUB NATURE PRESERVE (TIITF)

NWL = 27.43'
DHW25 = 27.69'
DHW50 = 28.07'
DHW100 = 28.49'

NWL = 27.08'
DHW25 = 27.36'
DHW50 = 28.07'
DHW100 = 28.49'

D.W.E. REF. PT.

NWL = 24.77'
DHW25 = 25.45'
DHW50 = 27.56'
DHW100 = 27.99'

D.W.E. REF. PT.

BULLFROG CREEK RD

BULLFROG CREEK RD

SMF-26B

349,567.4 SQ. FT. (SMF & FPC)

NWL = 20.45'
DHW25 = 24.07'
DHW50 = 25.33'
DHW100 = 25.87'

SMF-26A

470,548.6 SQ. FT. (SMF & FPC)

FPC-26B

D.W.E. REF. PT.

NWL = 25.36'
DHW25 = 28.37'
DHW50 = 29.22'
DHW100 = 29.55'

BULLFROG CREEK PARK RD

EAST BAY LITTLE LEAGUE VANCE VOGEL PARK

NWL = 21.41'
DHW25 = 25.02'
DHW50 = 26.21'
DHW100 = 26.68'

FPC-26A

BULLFROG CREEK

NWL = 19.45'
DHW25 = 22.59'
DHW50 = 23.65'
DHW100 = 24.09'

D.W.E. REF. PT.

BASIN 26

BASIN 27

D.W.E. REF. PT.

LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY FPC = FLOODPLAIN COMPENSATION SITE

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DRAINAGE MAP

SHEET NO. 17

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SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: KITCHEN BRANCH
REGIONAL WATERSHED: ALAFIA RIVER

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: BULLFROG CREEK
REGIONAL WATERSHED: ALAFIA RIVER

GOLDEN ASTER SCRUB
NATURE PRESERVE
(TIITF)

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: BULLFROG CREEK
REGIONAL WATERSHED: ALAFIA RIVER

N

0 100 400
Feet

NWL = 31.57'
DHW25 = 31.85'
DHW50 = 31.93'
DHW100 = 31.96'
D.W.E. REF. PT.

NWL = 26.90'
DHW25 = 27.30'
DHW50 = 27.53'
DHW100 = 27.70'
D.W.E. REF. PT.

Cross Drain 51
8' X 5' CBC

Cross Drain 52
24" PIPE

EAST BAY RD

990 995 1000 1005 1010 1015 1020 1025 1030 1035 1040 1045

BULLFROG CREEK RD

18" PIPE

18" PIPE

D.W.E. REF. PT.
NWL = 26.88'
DHW25 = 27.14'
DHW50 = 27.20'
DHW100 = 27.23'

(2) 8'X5' CBC

D.W.E. REF. PT.
NWL = 26.82'
DHW25 = 26.96'
DHW50 = 26.98'
DHW100 = 26.99'

SMF-27A&28A

FPC-27A
44,108.3 SQ. FT. (SMF & FPC)

D.W.E. REF. PT.
NWL = 18.83'
DHW25 = 21.22'
DHW50 = 22.70'
DHW100 = 23.33'

EXISTING LAKE
(NEWLY CONSTRUCTED)
(ERP PERMIT NO. 44021713.000)

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: BULLFROG CREEK
REGIONAL WATERSHED: ALAFIA RIVER

BULLFROG CREEK RD

D.W.E. REF. PT.
NWL = 30.33'
DHW25 = 30.49'
DHW50 = 30.56'
DHW100 = 30.59'

BREEZY CREEK RD

D.W.E. REF. PT.
NWL = 30.74'
DHW25 = 31.23'
DHW50 = 31.44'
DHW100 = 31.54'

D.W.E. REF. PT.

NWL = 29.69'
DHW25 = 30.09'
DHW50 = 30.25'
DHW100 = 30.32'

FPC-28A
99,640.2 SQ. FT.

SMF-28C
362,371.7 SQ. FT.

NWL = 13.27'
DHW25 = 18.34'
DHW50 = 20.29'
DHW100 = 21.13'

D.W.E. REF. PT.

BULLFROG CREEK

BASIN 27

BASIN 28

LEGEND

- PUBLIC MANAGED LANDS
- FEMA 100 YEAR FLOODPLAIN
- WETLAND BOUNDARY
- EXISTING ROW
- PROPERTY LINE
- FLOODWAY
- PREFFERED PROPOSED ROW
- ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY FPC = FLOODPLAIN COMPENSATION SITE

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DRAINAGE MAP

SHEET NO. 18

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SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: BULLFROG CREEK
REGIONAL WATERSHED: ALAFIA RIVER

0 100 400
Feet

EAST BAY RD
SYMMES RD
SOUTHWIND LAKE DR
SOUTHWIND
CYPRESS HARBOR DR
EAST BAY LAKES
BULLFROG CREEK RD
TROTWOOD DR
BRANCATO LN
BULLFROG CREEK

NWL = 30.28'
DHW25 = 30.52'
DHW50 = 30.54'
DHW100 = 30.55'
D.W.E. REF. PT.

NWL = 28.51'
DHW25 = 29.32'
DHW50 = 29.64'
DHW100 = 29.81'
D.W.E. REF. PT.

Cross Drain 53
30" PIPE

Cross Drain 54
48" PIPE

BERM EL 50'
NGVD 29

Cross Drain 56
30" PIPE

NWL = 28.91'
DHW25 = 29.19'
DHW50 = 29.30'
DHW100 = 29.34'
D.W.E. REF. PT.

FDOT DRAINAGE
CONNECTION PERMIT
04-D-796-0059

NWL = 24.47'
DHW25 = 25.69'
DHW50 = 26.22'
DHW100 = 26.49'

NWL = 26.78'
DHW25 = 26.99'
DHW50 = 27.10'
DHW100 = 27.22'

D.W.E. REF. PT.

BERM EL 30' NGVD 29

D.W.E. REF. PT.

1050 1055 1060 1065 1070 1075 1080 1085 1090 1095 1100

D.W.E. REF. PT.

SMF-29B
189,943.6 SQ. FT.

18" PIPE

Cross Drain 57
24" PIPE

D.W.E. REF. PT.
NWL = 27.35'
DHW25 = 29.32'
DHW50 = 29.41'
DHW100 = 29.42'

Cross Drain 58
42" PIPE

Cross Drain 55
15" PIPE

SMF-28B
259,122.4 SQ. FT. (SMF & FPC)

NWL = 13.14'
DHW25 = 17.89'
DHW50 = 19.80'
DHW100 = 20.62'
D.W.E. REF. PT.

FPC-28B

NWL = 28.62'
DHW25 = 28.84'
DHW50 = 28.88'
DHW100 = 28.89'

D.W.E. REF. PT.

FPC-29A
495,509.6 SQ. FT. (SMF & FPC)

SMF-29A

FPC-29B
129,318.2 SQ. FT.

D.W.E. REF. PT.

NWL = 10.43'
DHW25 = 15.31'
DHW50 = 17.17'
DHW100 = 18.02'

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: BULLFROG CREEK
REGIONAL WATERSHED: ALAFIA RIVER

NWL = 12.91'
DHW25 = 14.47'
DHW50 = 19.80'
DHW100 = 20.62'

D.W.E. REF. PT.
NWL = 12.30'
DHW25 = 17.53'
DHW50 = 19.46'
DHW100 = 20.28'

FPC-29C
218,181.5 SQ. FT.

FPC-28C
228,646 SQ. FT.

BASIN 28

BASIN 29

LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY
FPC = FLOODPLAIN COMPENSATION SITE

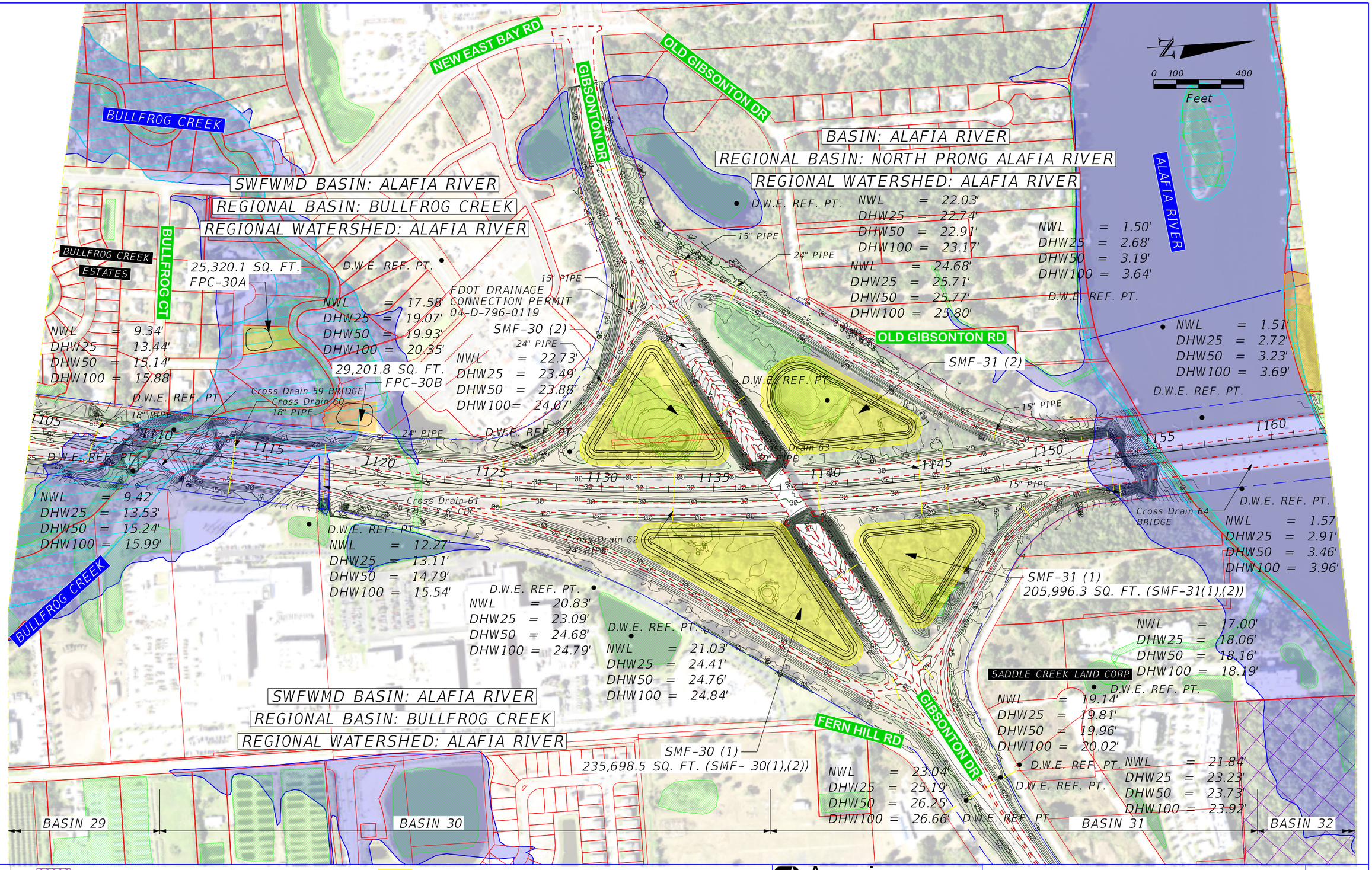
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DRAINAGE MAP

SHEET NO. 19

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LEGEND

- PUBLIC MANAGED LANDS
- FEMA 100 YEAR FLOODPLAIN
- WETLAND BOUNDARY
- EXISTING ROW
- PROPERTY LINE
- FLOODWAY
- PREFFERED PROPOSED ROW
- ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY FPC = FLOODPLAIN COMPENSATION SITE

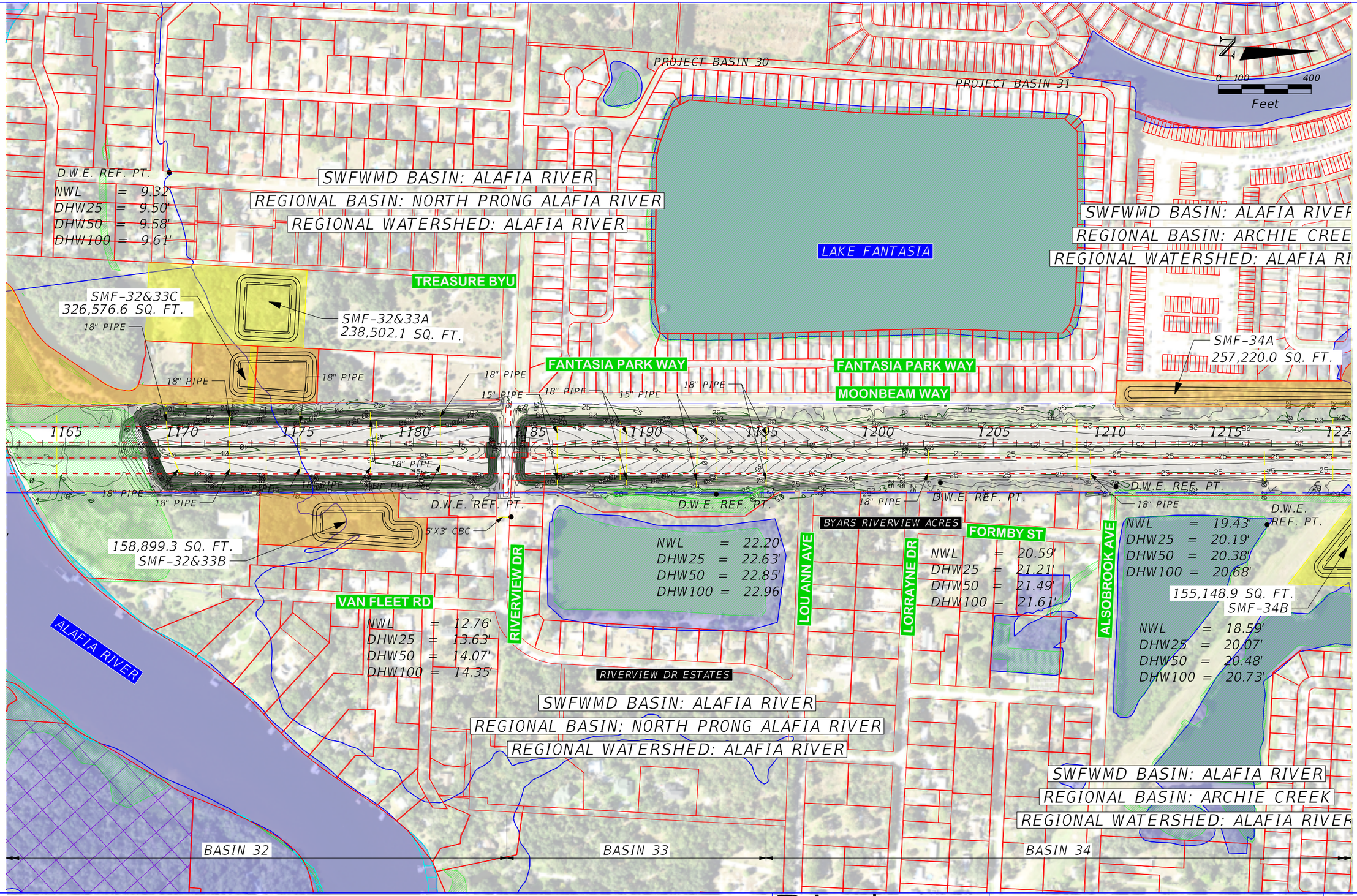
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DRAINAGE MAP

SHEET NO. 20

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LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY FPC = FLOODPLAIN COMPENSATION SITE

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DRAINAGE MAP

SHEET NO. 21

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197,546.4 SQ. FT.
FPC-35C

NWL = 17.76'
DHW25 = 19.12'
DHW50 = 19.79'
DHW100 = 20.09'

194,006.7 SQ. FT.
FPC-35B

NWL = 18.05'
DHW25 = 19.22'
DHW50 = 19.97'
DHW100 = 20.31'

NWL = 18.08'
DHW25 = 19.51'
DHW50 = 20.22'
DHW100 = 20.52'

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: ARCHIE CREEK
REGIONAL WATERSHED: ALAFIA RIVER

SPOTO HIGH SCHOOL

NWL = 20.33'
DHW25 = 20.65'
DHW50 = 20.79'
DHW100 = 20.84'

NWL = 17.45'
DHW25 = 18.46'
DHW50 = 19.11'
DHW100 = 19.44'

N
0 100 400
Feet

D.W.E. REF. PT.
D.W.E. REF. PT.
FPC-34A&35A
SMF-34A

EAGLE PALM CONDOMINIUM PHASE IIA

SMF-35B
118,235.9 SQ. FT.

SMF-35A
273,558.1 SQ. FT.
(SMF & FPC)

STA 1260+00
END PROJECT WPI SEGMENT NO. 419235-2
BEGIN PROJECT WPI SEGMENT NO. 419235-3

NWL = 20.80'
DHW25 = 21.23'
DHW50 = 21.43'
DHW100 = 21.53'

D.W.E. REF. PT.

D.W.E. REF. PT.
SMF-36B
108,700.6 SQ. FT.

D.W.E. REF. PT. Cross Drain 65 (2) 8' x 5' CBC
18" PIPE
18" PIPE

1225 1230 1235 1240 1245 1250 1255 1260 1265 1270 1275

Cross Drain 67 6' x 4' CBC

18" PIPE
Cross Drain 66
30" PIPE

LAKE ST. CHARLES

COLONY POINTE DR
CHART HOUSE CT
COLONIAL LAKE DR

LAKE ST CHARLES RECREATIONAL PARK

SMF-34B

D.W.E. REF. PT.
NWL = 21.25'
DHW25 = 22.32'
DHW50 = 22.83'
DHW100 = 23.03'

SMF-36A
94,858.4 SQ. FT.

D.W.E. REF. PT.
NWL = 22.34'
DHW25 = 22.53'
DHW50 = 22.85'
DHW100 = 23.04'

LAKE ST. CHARLES

WATERTON DR

WATERTON DR

D.W.E. REF. PT.
NWL = 17.97'
DHW25 = 18.83'
DHW50 = 19.43'
DHW100 = 19.75'

VILLAGE OF BLOOMINGDALE CONDOMINIUMS

LAKE ST. CHARLES

SWFWMD BASIN: ALAFIA RIVER
REGIONAL BASIN: ARCHIE CREEK
REGIONAL WATERSHED: ALAFIA RIVER

BASIN 34 BASIN 35 BASIN 36

LEGEND

PUBLIC MANAGED LANDS
FEMA 100 YEAR FLOODPLAIN
WETLAND BOUNDARY
EXISTING ROW
PROPERTY LINE
FLOODWAY
PREFFERED PROPOSED ROW
ALTERNATIVE PROPOSED ROW

SMF = STORMWATER MANAGEMENT FACILITY FPC = FLOODPLAIN COMPENSATION SITE

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DRAINAGE MAP

SHEET NO. 22

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Pond Site Alternative Calculations

Stormwater Management Calculations
Basin 1

POND PROPERTIES, SMF 1A

Storage requirement, from spreadsheet $ReqVol := 2.12acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.81acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (23.1) from floodplain model data. The elevation of the existing ground is 24. Soils are Felda and Wabasso Fine Sands

Seasonal High Water Elevation $SHW := 24.0ft$

Pond CWE elevation $CWE := 24.0ft$

Pond CWE Area $A_{CWE} := 0.558acre$

Pond top of bank elevation $TOB := 29ft$ Existing Low EOP = 29.8 ft

Top of Bank Area $A_{TOB} := 0.912 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	24 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	25	0.558	0.035	0.593
2	26	1.116	0.142	1.258
3	27	1.674	0.319	1.993
4	28	2.232	0.566	2.798
5	29	2.79	0.885	3.675

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 25.33\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.326\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.798\ ft \cdot acre$

$ReqVol = 2.12\ ft \cdot acre$

Stormwater Management Calculations
Basin 1

POND PROPERTIES, SMF 1B

Storage requirement, from spreadsheet $ReqVol := 2.12acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.81acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (23.1) from floodplain model data. The elevation of the existing ground is 24. Soils are Felda and Wabasso Fine Sands

Seasonal High Water Elevation $SHW := 24.0ft$

Pond CWE elevation $CWE := 24.0ft$

Pond CWE Area $A_{CWE} := 0.716acre$

Pond top of bank elevation $TOB := 29ft$ Existing Low EOP = 29.8 ft

Top of Bank Area $A_{TOB} := 1.114 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	24 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	25	0.716	0.04	0.756
2	26	1.432	0.159	1.591
3	27	2.148	0.358	2.506
4	28	2.864	0.637	3.501
5	29	3.58	0.995	4.575

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 25.06\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.065\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.501\ ft \cdot acre$

$ReqVol = 2.12\ ft \cdot acre$

Stormwater Management Calculations
Basin 1

POND PROPERTIES, SMF 1C

Storage requirement, from spreadsheet
Treatment requirement, from spreadsheet

$ReqVol := 2.12acre \cdot ft$
$WQ_{Vol} := 0.81acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (22.99) from floodplain model data. The elevation of the existing ground is 25. Soils are Felda and Wabasso Fine Sands

Seasonal High Water Elevation $SHW := 23.0ft$

Pond CWE elevation $CWE := 23.0ft$

Pond CWE Area $A_{CWE} := 0.542acre$

Pond top of bank elevation $TOB := 28ft$

Existing Low EOP = 29.8 ft

Top of Bank Area $A_{TOB} := 0.863 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	23 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	24	0.542	0.032	0.574
2	25	1.084	0.128	1.212
3	26	1.626	0.289	1.915
4	27	2.168	0.514	2.682
5	28	2.71	0.803	3.513

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 24.37\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.37\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.682\ ft \cdot acre$

$ReqVol = 2.12\ ft \cdot acre$

Stormwater Management Calculations
Basin 2

POND PROPERTIES, SMF 2A

Storage requirement, from spreadsheet
Treatment requirement, from spreadsheet

$ReqVol := 2.60acre \cdot ft$
$WQ_{Vol} := 1.00acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (21.32) from floodplain model data. The elevation of the existing ground is 22. Soils are Delray

Seasonal High Water Elevation $SHW := 22ft$

Pond CWE elevation $CWE := 22ft$

Pond CWE Area $A_{CWE} := 0.617acre$

Pond top of bank elevation $TOB := 27ft$

Existing Low EOP = 31.40 ft

Top of Bank Area $A_{TOB} := 0.986 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	22 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	23	0.617	0.037	0.654
2	24	1.234	0.148	1.382
3	25	1.851	0.332	2.183
4	26	2.468	0.59	3.058
5	27	3.085	0.923	4.008

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 23.48\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.476\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.058\ ft \cdot acre$

$ReqVol = 2.6\ ft \cdot acre$

Stormwater Management Calculations
Basin 2

POND PROPERTIES, SMF 2B

Storage requirement, from spreadsheet $ReqVol := 2.60acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 1.00acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (21.32) from floodplain model data. The elevation of the existing ground is 25. Soils are Delray

Seasonal High Water Elevation $SHW := 22ft$

Pond CWE elevation $CWE := 22ft$

Pond CWE Area $A_{CWE} := 0.611acre$

Pond top of bank elevation $TOB := 27ft$ Existing Low EOP = 31.40 ft

Top of Bank Area $A_{TOB} := 0.974 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	22 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	23	0.611	0.036	0.647
2	24	1.222	0.145	1.367
3	25	1.833	0.327	2.16
4	26	2.444	0.581	3.025
5	27	3.055	0.908	3.963

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 23.49\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.49\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.025\ ft \cdot acre$

$ReqVol = 2.6\ ft \cdot acre$

Stormwater Management Calculations
Basin 2

POND PROPERTIES, SMF 2C

Storage requirement, from spreadsheet
Treatment requirement, from spreadsheet

$ReqVol := 2.60acre \cdot ft$
$WQ_{Vol} := 1.00acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (22.45) from floodplain model data. The elevation of the existing ground is 23. Soils are Delray

Seasonal High Water Elevation $SHW := 23ft$

Pond CWE elevation $CWE := 23ft$

Pond CWE Area $A_{CWE} := 0.679acre$

Pond top of bank elevation $TOB := 28ft$

Existing Low EOP = 31.40 ft

Top of Bank Area $A_{TOB} := 1.094 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	23 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	24	0.679	0.042	0.721
2	25	1.358	0.166	1.524
3	26	2.037	0.374	2.411
4	27	2.716	0.664	3.38
5	28	3.395	1.038	4.433

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 24.35\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.348\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.38\ ft \cdot acre$

$ReqVol = 2.6\ ft \cdot acre$

Stormwater Management Calculations
Basin 3

POND PROPERTIES, SMF 3A

Storage requirement, from spreadsheet $ReqVol := 2.81acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.87acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on NWL of 21.34 at outfall. Soils are Palmetto

Seasonal High Water Elevation $SHW := 23ft$

Pond CWE elevation $CWE := 23ft$

Pond CWE Area $A_{CWE} := 0.581acre$

Pond top of bank elevation $TOB := 28ft$ Existing Low EOP = 28.4 ft

Top of Bank Area $A_{TOB} := 0.900 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	23 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	24	0.581	0.032	0.613
2	25	1.162	0.128	1.29
3	26	1.743	0.287	2.03
4	27	2.324	0.51	2.834
5	28	2.905	0.798	3.703

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 24.38\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.38\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.834\ ft \cdot acre$

$ReqVol = 2.81\ ft \cdot acre$

Stormwater Management Calculations
Basin 3

POND PROPERTIES, SMF 3B

Storage requirement, from spreadsheet $ReqVol := 2.81acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.87acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (21.34) from floodplain model data. The elevation of the existing ground is 20. Soils are Palmetto

Seasonal High Water Elevation $SHW := 22ft$

Pond CWE elevation $CWE := 19ft$

Pond CWE Area $A_{CWE} := 1.21acre$

Pond top of bank elevation $TOB := 27ft$ Existing Low EOP = 28.4 ft

Top of Bank Area $A_{TOB} := 1.71 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 8\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	19 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	20	1.21	0.031	1.241
2	21	2.42	0.125	2.545
3	22	3.63	0.281	3.911
4	23	4.84	0.5	5.34
5	24	6.05	0.781	6.831
6	25	7.26	1.125	8.385
7	26	8.47	1.531	10.001
8	27	9.68	2	11.68

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 19.70\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.701\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 10.001\ ft \cdot acre$

$ReqVol = 2.81\ ft \cdot acre$

Stormwater Management Calculations
Basin 3

POND PROPERTIES, SMF 3C

Storage requirement, from spreadsheet $ReqVol := 2.81acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.87acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (23.72') from floodplain model data. The elevation of the existing ground is 21. Soils are Palmetto

Seasonal High Water Elevation $SHW := 24ft$

Pond CWE elevation $CWE := 24ft$

Pond CWE Area $A_{CWE} := 0.830acre$

Pond top of bank elevation $TOB := 28ft$ Existing Low EOP = 28.4 ft

Top of Bank Area $A_{TOB} := 1.148 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 4\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	24 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	25	0.83	0.04	0.87
2	26	1.66	0.159	1.819
3	27	2.49	0.358	2.848
4	28	3.32	0.636	3.956

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 25.00\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.848\ ft \cdot acre$

$ReqVol = 2.81\ ft \cdot acre$

Stormwater Management Calculations
Basin 4

POND PROPERTIES, SMF 4A

Storage requirement, from spreadsheet $ReqVol := 2.65acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.57acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just below NWL of outfall (15.52') from floodplain model data. The elevation of the existing ground is 29'. Soils are Cassia find sand, moderately will drained

Seasonal High Water Elevation $SHW := 24ft$

Pond CWE elevation $CWE := 24ft$

Pond CWE Area $A_{CWE} := 0.540acre$

Pond top of bank elevation $TOB := 29ft$ Existing Low EOP = 34.8 ft

Top of Bank Area $A_{TOB} := 0.900 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	24 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	25	0.54	0.036	0.576
2	26	1.08	0.144	1.224
3	27	1.62	0.324	1.944
4	28	2.16	0.576	2.736
5	29	2.7	0.9	3.6

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 24.99\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.99\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.736\ ft \cdot acre$

$ReqVol = 2.65\ ft \cdot acre$

Stormwater Management Calculations
Basin 4

POND PROPERTIES, SMF 4B

Storage requirement, from spreadsheet $ReqVol := 2.65acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.57acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just below NWL of outfall (28.39') from floodplain model data. The elevation of the existing ground is 32'. Soils are Cassia find sand, moderately will drained

Seasonal High Water Elevation $SHW := 29ft$

Pond CWE elevation $CWE := 29ft$

Pond CWE Area $A_{CWE} := 0.587acre$

Pond top of bank elevation $TOB := 34ft$ Existing Low EOP = 34.8 ft

Top of Bank Area $A_{TOB} := 0.925 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	29 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	30	0.587	0.034	0.621
2	31	1.174	0.135	1.309
3	32	1.761	0.304	2.065
4	33	2.348	0.541	2.889
5	34	2.935	0.845	3.78

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 29.92\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.918\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.889\ ft \cdot acre$

$ReqVol = 2.65\ ft \cdot acre$

Stormwater Management Calculations
Basin 5

POND PROPERTIES, SMF 5A & 6A

Storage requirement, from spreadsheet $ReqVol := 2.65acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.89acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (15.5) from floodplain model data. The elevation of the existing ground is 21. Soil is EauGallie.

Seasonal High Water Elevation $SHW := 16ft$

Pond CWE elevation $CWE := 16ft$

Pond CWE Area $A_{CWE} := 0.566acre$

Pond top of bank elevation $TOB := 21ft$ Existing Low EOP = 20 ft

Top of Bank Area $A_{TOB} := 0.971 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	16 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	17	0.566	0.041	0.607
2	18	1.132	0.162	1.294
3	19	1.698	0.364	2.062
4	20	2.264	0.648	2.912
5	21	2.83	1.013	3.842

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 17.41\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.412\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.912\ ft \cdot acre$

$ReqVol = 2.65\ ft \cdot acre$

Stormwater Management Calculations
Basin 6

POND PROPERTIES, SMF 5B & 6B

Storage requirement, from spreadsheet $ReqVol := 2.65acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.89acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (14.45) from floodplain model data. The elevation of the existing ground is 22'. Soil is EauGallie and Felda.

Seasonal High Water Elevation $SHW := 15ft$

Pond CWE elevation $CWE := 15ft$

Pond CWE Area $A_{CWE} := 0.585acre$

Pond top of bank elevation $TOB := 20ft$ Existing Low EOP = 20.0 ft

Top of Bank Area $A_{TOB} := 0.993 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	15 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	16	0.585	0.041	0.626
2	17	1.17	0.163	1.333
3	18	1.755	0.367	2.122
4	19	2.34	0.653	2.993
5	20	2.925	1.02	3.945

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 16.37\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.373\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.993\ ft \cdot acre$

$ReqVol = 2.65\ ft \cdot acre$

Stormwater Management Calculations
Basin 7

POND PROPERTIES, SMF 7A

Storage requirement, from spreadsheet $ReqVol := 2.40acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.92acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (13.87) from floodplain model data. The elevation of the existing ground is 21'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 15ft$

Pond CWE elevation $CWE := 15ft$

Pond CWE Area $A_{CWE} := 0.570acre$

Pond top of bank elevation $TOB := 20ft$ Existing Low EOP = 20.0 ft

Top of Bank Area $A_{TOB} := 0.900 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	15 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	16	0.57	0.033	0.603
2	17	1.14	0.132	1.272
3	18	1.71	0.297	2.007
4	19	2.28	0.528	2.808
5	20	2.85	0.825	3.675

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 16.47\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.474\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.808\ ft \cdot acre$

$ReqVol = 2.4\ ft \cdot acre$

Stormwater Management Calculations
Basin 7

POND PROPERTIES, SMF 7B

Storage requirement, from spreadsheet $ReqVol := 2.40acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.92acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (13.87) from floodplain model data. The elevation of the existing ground is 20. Soil is Manatee.

Seasonal High Water Elevation $SHW := 14ft$

Pond CWE elevation $CWE := 14ft$

Pond CWE Area $A_{CWE} := 0.593acre$

Pond top of bank elevation $TOB := 19ft$ Existing Low EOP = 20.0 ft

Top of Bank Area $A_{TOB} := 0.914 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	14 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	15	0.593	0.032	0.625
2	16	1.186	0.128	1.314
3	17	1.779	0.289	2.068
4	18	2.372	0.514	2.886
5	19	2.965	0.803	3.768

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 15.43\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.428\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.886\ ft \cdot acre$

$ReqVol = 2.4\ ft \cdot acre$

Stormwater Management Calculations
Basin 8

POND PROPERTIES, SMF 8A

Storage requirement, from spreadsheet $ReqVol := 1.77acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.65acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on interpolation of NWL from floodplain model node data. The elevation of the existing ground is 25 Soil is Manatee.

Seasonal High Water Elevation $SHW := 17ft$

Pond CWE elevation $CWE := 17ft$

Pond CWE Area $A_{CWE} := 0.447acre$

Pond top of bank elevation $TOB := 22ft$ Existing Low EOP = 22.5 ft

Top of Bank Area $A_{TOB} := 0.749 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	17 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	18	0.447	0.03	0.477
2	19	0.894	0.121	1.015
3	20	1.341	0.272	1.613
4	21	1.788	0.483	2.271
5	22	2.235	0.755	2.99

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 18.32\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.321\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.271\ ft \cdot acre$

$ReqVol = 1.77\ ft \cdot acre$

Stormwater Management Calculations
Basin 9

POND PROPERTIES, SMF 9A

Storage requirement, from spreadsheet $ReqVol := 0.69acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.25acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (21.7) from floodplain model data. The elevation of the existing ground is 24. Soil is Manatee.

Seasonal High Water Elevation $SHW := 22ft$

Pond CWE elevation $CWE := 22ft$

Pond CWE Area $A_{CWE} := 0.226acre$

Pond top of bank elevation $TOB := 27ft$ Existing Low EOP = 27.0 ft

Top of Bank Area $A_{TOB} := 0.431 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	22 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	23	0.226	0.021	0.247
2	24	0.452	0.082	0.534
3	25	0.678	0.185	0.863
4	26	0.904	0.328	1.232
5	27	1.13	0.513	1.643

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 23.01\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.012\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 1.232\ ft \cdot acre$

$ReqVol = 0.69\ ft \cdot acre$

Stormwater Management Calculations
Basin 9

POND PROPERTIES, SMF 9B

Storage requirement, from spreadsheet

$ReqVol := 0.69acre \cdot ft$

Treatment requirement, from spreadsheet

$WQ_{Vol} := 0.25acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (23.74) from floodplain model data. The elevation of the existing ground is 26. Soil is Manatee.

Seasonal High Water Elevation $SHW := 24ft$

Pond CWE elevation $CWE := 24ft$

Pond CWE Area $A_{CWE} := 0.3827acre$

Pond top of bank elevation $TOB := 27ft$

Existing Low EOP = 27.0 ft

Top of Bank Area $A_{TOB} := 0.435 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 3\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	24 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	25	0.383	$8.717 \cdot 10^{-3}$	0.391
2	26	0.765	0.035	0.8
3	27	1.148	0.078	1.227

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 24.64\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.639\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 0.8\ ft \cdot acre$

$ReqVol = 0.69\ ft \cdot acre$

Stormwater Management Calculations
Basin 10

POND PROPERTIES, SMF 10A & 11B

Storage requirement, from spreadsheet $ReqVol := 8.74acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 2.40acre \cdot ft$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 14ft$

Pond CWE elevation $CWE := 14ft$

Pond CWE Area $A_{CWE} := 2.02acre$

Pond top of bank elevation $TOB := 19ft$

Top of Bank Area $A_{TOB} := 2.62 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Note: SHW estimated based on being just above NWL of outfall (13.06) from floodplain model data. The elevation of the existing ground is 19. Soil is pits and dumps.

Existing Low EOP = 25.43 ft

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	14 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	15	2.02	0.06	2.08
2	16	4.04	0.24	4.28
3	17	6.06	0.54	6.6
4	18	8.08	0.96	9.04
5	19	10.1	1.5	11.6

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 15.15\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.145\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 9.04\ ft \cdot acre$

$ReqVol = 8.74\ ft \cdot acre$

Stormwater Management Calculations
Basin 10

POND PROPERTIES, SMF 10B

Storage requirement, from spreadsheet $ReqVol := 3.04acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.87acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (13.1) from floodplain model data. The elevation of the existing ground is 20. Soil is pits and dumps.

Seasonal High Water Elevation $SHW := 16ft$

Pond CWE elevation $CWE := 16ft$

Pond CWE Area $A_{CWE} := 0.739acre$

Pond top of bank elevation $TOB := 21ft$ Existing Low EOP = 25.4 ft

Top of Bank Area $A_{TOB} := 1.152 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	16 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	17	0.739	0.041	0.78
2	18	1.478	0.165	1.643
3	19	2.217	0.372	2.589
4	20	2.956	0.661	3.617
5	21	3.695	1.032	4.728

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 17.10\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.104\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.617\ ft \cdot acre$

$ReqVol = 3.04\ ft \cdot acre$

Stormwater Management Calculations
Basin 10

POND PROPERTIES, SMF 10C

Storage requirement, from spreadsheet $ReqVol := 3.04acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.87acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on soil survey data The elevation of the existing ground is 22. Soil is Manatee.

Seasonal High Water Elevation $SHW := 21ft$

Pond CWE elevation $CWE := 21ft$

Pond CWE Area $A_{CWE} := 0.773acre$

Pond top of bank elevation $TOB := 26ft$ Existing Low EOP = 25.4 ft

Top of Bank Area $A_{TOB} := 1.208 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	21 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	22	0.773	0.044	0.817
2	23	1.546	0.174	1.72
3	24	2.319	0.392	2.711
4	25	3.092	0.696	3.788
5	26	3.865	1.087	4.952

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 22.06\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.059\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.788\ ft \cdot acre$

$ReqVol = 3.04\ ft \cdot acre$

Stormwater Management Calculations
Basin 11

POND PROPERTIES, SMF 11A

Storage requirement, from spreadsheet $ReqVol := 5.70acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 1.53acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (2.95) from floodplain model data. The elevation of the existing ground is 10. Soil is Manatee.

Seasonal High Water Elevation $SHW := 5ft$

Pond CWE elevation $CWE := 5ft$

Pond CWE Area $A_{CWE} := 1.215acre$

Pond top of bank elevation $TOB := 10ft$ Existing Low EOP = 28.1 ft

Top of Bank Area $A_{TOB} := 1.807 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	5 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	6	1.215	0.059	1.274
2	7	2.43	0.237	2.667
3	8	3.645	0.533	4.178
4	9	4.86	0.947	5.807
5	10	6.075	1.48	7.555

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 6.18\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.184\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 5.807\ ft \cdot acre$

$ReqVol = 5.7\ ft \cdot acre$

Stormwater Management Calculations
Basin 12

POND PROPERTIES, SMF 12 (2 PONDS FOR NB REST AREA)

Storage requirement, from spreadsheet $ReqVol := 7.91acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 1.58acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on permitted conditions, it does appear that a lower SHWE could have been justified.
Storage volumes are based on the rest area wet ponds currently being constructed.

Seasonal High Water Elevation $SHW := 22ft$

Pond CWE elevation $CWE := 22ft$

Pond CWE Area $A_{CWE} := 12.52acre$

Pond top of bank elevation $TOB := 24.5ft$

Existing Low EOP = 28.3 ft
The rest area low pavement elevation is approximately 24.5 ft

Top of Bank Area $A_{TOB} := 14.56acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 2.5\,ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	22 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	23	12.52	0.408	12.928
2	24	25.04	1.632	26.672

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 22.12\,ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.122\,ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 19.8\,ft \cdot acre$

$ReqVol = 7.91\,ft \cdot acre$

The remaining storage volume is to provide stormwater management for the rest area.

Stormwater Management Calculations
Basin 13

POND PROPERTIES, SMF 13A

Storage requirement, from spreadsheet $ReqVol := 2.88acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.72acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on NWL of 20.22 to the south and 21.60 to the north. Soil is Chobee Variant.

Seasonal High Water Elevation $SHW := 26ft$

Pond CWE elevation $CWE := 26ft$

Pond CWE Area $A_{CWE} := 0.597acre$

Pond top of bank elevation $TOB := 31ft$ Existing Low EOP = 31.1 ft

Top of Bank Area $A_{TOB} := 0.936 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	26 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	27	0.597	0.034	0.631
2	28	1.194	0.136	1.33
3	29	1.791	0.305	2.096
4	30	2.388	0.542	2.93
5	31	2.985	0.848	3.832

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 27.13\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.128\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.93\ ft \cdot acre$

$ReqVol = 2.88\ ft \cdot acre$

Stormwater Management Calculations
Basin 13

POND PROPERTIES, SMF 13B

Storage requirement, from spreadsheet $ReqVol := 2.88acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.72acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on NWL 1.0' below existing ground. The elevation of the existing ground is 27'. Soil is Pits and Dumps.

Seasonal High Water Elevation $SHW := 26ft$

Pond CWE elevation $CWE := 26ft$

Pond CWE Area $A_{CWE} := 0.592acre$

Pond top of bank elevation $TOB := 31ft$ Existing Low EOP = 31.0 ft

Top of Bank Area $A_{TOB} := 0.927 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	26 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	27	0.592	0.033	0.625
2	28	1.184	0.134	1.318
3	29	1.776	0.301	2.077
4	30	2.368	0.536	2.904
5	31	2.96	0.838	3.798

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 27.14\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.136\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.904\ ft \cdot acre$

$ReqVol = 2.88\ ft \cdot acre$

Stormwater Management Calculations
Basin 14 & 15

POND PROPERTIES, SMF 14A & 15A

Storage requirement, from spreadsheet $ReqVol := 10.30acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 2.24acre \cdot ft$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 21.5ft$

Pond CWE elevation $CWE := 21.5ft$

Pond CWE Area $A_{CWE} := 3.384acre$

Note: SHW estimated based on being just above NWL of outfall (21.26) from floodplain model data. The elevation of the existing ground is 20'. Soil is Manatee.

Pond top of bank elevation $TOB := 25.5ft$

Existing Low EOP = 25.30 ft

Top of Bank Area $A_{TOB} := 4.083 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 4\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	21.5 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	22.5	3.384	0.087	3.471
2	23.5	6.768	0.35	7.118
3	24.5	10.152	0.786	10.938
4	25.5	13.536	1.398	14.934

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 22.15\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.645\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 10.938\ ft \cdot acre$

$ReqVol = 10.3\ ft \cdot acre$

Stormwater Management Calculations
Basin 14 & 15

POND PROPERTIES, SMF 14B & 15B

Storage requirement, from spreadsheet $ReqVol := 10.30acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 2.24acre \cdot ft$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 22ft$

Pond CWE elevation $CWE := 22ft$

Pond CWE Area $A_{CWE} := 2.336acre$

Pond top of bank elevation $TOB := 27ft$

Top of Bank Area $A_{TOB} := 3.071 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Note: SHW estimated based on being just above NWL of outfall (21.60) from floodplain model data. The elevation of the existing ground is 23'. Soil is Manatee.

Existing Low EOP = 25.95 ft

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	22 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	23	2.336	0.074	2.41
2	24	4.672	0.294	4.966
3	25	7.008	0.662	7.67
4	26	9.344	1.176	10.52
5	27	11.68	1.838	13.518

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 22.93\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.93\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 10.52\ ft \cdot acre$

$ReqVol = 10.3\ ft \cdot acre$

Stormwater Management Calculations
Basin 16

POND PROPERTIES, SMF 16A

Storage requirement, from spreadsheet $ReqVol := 5.59acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 1.21acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (34.45') from floodplain model data. The elevation of the existing ground is 40'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 40ft$

Pond CWE elevation $CWE := 40ft$

Pond CWE Area $A_{CWE} := 2.40acre$

Pond top of bank elevation $TOB := 44ft$ Existing Low EOP = 43.1 ft

Top of Bank Area $A_{TOB} := 2.98 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 4\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	40 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	41	2.4	0.073	2.473
2	42	4.8	0.29	5.09
3	43	7.2	0.653	7.853
4	44	9.6	1.16	10.76

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 40.49\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.489\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 7.853\ ft \cdot acre$

$ReqVol = 5.59\ ft \cdot acre$

Stormwater Management Calculations
Basin 16

POND PROPERTIES, SMF 16B

Storage requirement, from spreadsheet $ReqVol := 5.59acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 1.21acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (40.27') from floodplain model data. The elevation of the existing ground is 42'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 40.5ft$

Pond CWE elevation $CWE := 41ft$

Pond CWE Area $A_{CWE} := 2.873acre$

Pond top of bank elevation $TOB := 44ft$ Existing Low EOP = 43.1 ft

Top of Bank Area $A_{TOB} := 3.327 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 3\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	41 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	42	2.873	0.076	2.949
2	43	5.746	0.303	6.049
3	44	8.619	0.681	9.3

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 41.41\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.41\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 6.049\ ft \cdot acre$

$ReqVol = 5.59\ ft \cdot acre$

Stormwater Management Calculations
Basin 17

POND PROPERTIES, SMF 17 (1)

Storage requirement, from spreadsheet $ReqVol := 4.05acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.83acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (33.98') from floodplain model data. The elevation of the existing ground is 34'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 34ft$

Pond CWE elevation $CWE := 34ft$

Pond CWE Area $A_{CWE} := 1.734acre$

Pond top of bank elevation $TOB := 39ft$

Existing Low EOP = 43.1 ft

Top of Bank Area $A_{TOB} := 2.32 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	34 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	35	1.734	0.059	1.793
2	36	3.468	0.234	3.702
3	37	5.202	0.527	5.729
4	38	6.936	0.938	7.874
5	39	8.67	1.465	10.135

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 34.46\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.463\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 7.874\ ft \cdot acre$

$ReqVol = 4.05\ ft \cdot acre$

Stormwater Management Calculations
Basin 17

POND PROPERTIES, SMF 17 (2)

Storage requirement, from spreadsheet $ReqVol := 4.05acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.83acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (33.98') from floodplain model data. The elevation of the existing ground is 34'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 34ft$

Pond CWE elevation $CWE := 34ft$

Pond CWE Area $A_{CWE} := 0.537acre$

Pond top of bank elevation $TOB := 39ft$ Existing Low EOP = 43.1 ft

Top of Bank Area $A_{TOB} := 0.892 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	34 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	35	0.537	0.036	0.573
2	36	1.074	0.142	1.216
3	37	1.611	0.32	1.931
4	38	2.148	0.568	2.716
5	39	2.685	0.887	3.572

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 35.40\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.4\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.716\ ft \cdot acre$

$ReqVol = 4.05\ ft \cdot acre$

Stormwater Management Calculations
Basin 17

POND PROPERTIES, SMF 17 (3)

Storage requirement, from spreadsheet $ReqVol := 4.05acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.83acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (34.24') from floodplain model data. The elevation of the existing ground is 36'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 35ft$

Pond CWE elevation $CWE := 35ft$

Pond CWE Area $A_{CWE} := 2.473acre$

Pond top of bank elevation $TOB := 40ft$ Existing Low EOP = 43.1 ft

Top of Bank Area $A_{TOB} := 3.07 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	35 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	36	2.473	0.06	2.533
2	37	4.946	0.239	5.185
3	38	7.419	0.537	7.956
4	39	9.892	0.955	10.847
5	40	12.365	1.492	13.857

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 35.33\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.328\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 10.847\ ft \cdot acre$

$ReqVol = 4.05\ ft \cdot acre$

26 POND PROPERTIES, SMF 17 (4)

Storage requirement, from spreadsheet $ReqVol := 4.05acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.83acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (36.80') from floodplain model data. The elevation of the existing ground is 40'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 37ft$

Pond CWE elevation $CWE := 37ft$

Pond CWE Area $A_{CWE} := 1.05acre$

Pond top of bank elevation $TOB := 42ft$ Existing Low EOP = 43.1 ft

Top of Bank Area $A_{TOB} := 1.56 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	37 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	38	1.05	0.051	1.101
2	39	2.1	0.204	2.304
3	40	3.15	0.459	3.609
4	41	4.2	0.816	5.016
5	42	5.25	1.275	6.525

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 37.75\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.754\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 5.016\ ft \cdot acre$

$ReqVol = 4.05\ ft \cdot acre$

Stormwater Management Calculations
Basin 18

POND PROPERTIES, SMF 18 (1)

Storage requirement, from spreadsheet $ReqVol := 2.26acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.32acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (33.96') from floodplain model data. The elevation of the existing ground is 38'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 34ft$

Pond CWE elevation $CWE := 34ft$

Pond CWE Area $A_{CWE} := 0.471acre$

Pond top of bank elevation $TOB := 39ft$ Existing Low EOP = 41.9 ft

Top of Bank Area $A_{TOB} := 0.758 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	34 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	35	0.471	0.029	0.5
2	36	0.942	0.115	1.057
3	37	1.413	0.258	1.671
4	38	1.884	0.459	2.343
5	39	2.355	0.717	3.072

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 34.64\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.64\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.343\ ft \cdot acre$

$ReqVol = 2.26\ ft \cdot acre$

Stormwater Management Calculations
Basin 18

POND PROPERTIES, SMF 18 (2)

Storage requirement, from spreadsheet $ReqVol := 2.26acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.32acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (33.96') from floodplain model data. The elevation of the existing ground is 38'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 34ft$

Pond CWE elevation $CWE := 34ft$

Pond CWE Area $A_{CWE} := 1.31acre$

Pond top of bank elevation $TOB := 39ft$ Existing Low EOP = 41.9 ft

Top of Bank Area $A_{TOB} := 1.94 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	34 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	35	1.31	0.063	1.373
2	36	2.62	0.252	2.872
3	37	3.93	0.567	4.497
4	38	5.24	1.008	6.248
5	39	6.55	1.575	8.125

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 34.23\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.233\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 6.248\ ft \cdot acre$

$ReqVol = 2.26\ ft \cdot acre$

Stormwater Management Calculations
Basin 19

POND PROPERTIES, SMF 19A

Storage requirement, from spreadsheet $ReqVol := 6.26acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.90acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (38.28') from floodplain model data. The elevation of the existing ground is 39'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 39ft$

Pond CWE elevation $CWE := 39ft$

Pond CWE Area $A_{CWE} := 1.404acre$

Pond top of bank elevation $TOB := 44ft$

Existing Low EOP = 45.68 ft

Top of Bank Area $A_{TOB} := 1.836 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	39 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	40	1.404	0.043	1.447
2	41	2.808	0.173	2.981
3	42	4.212	0.389	4.601
4	43	5.616	0.691	6.307
5	44	7.02	1.08	8.1

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 39.62\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.622\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 6.307\ ft \cdot acre$

$ReqVol = 6.26\ ft \cdot acre$

Stormwater Management Calculations
Basin 19

POND PROPERTIES, SMF 19B

Storage requirement, from spreadsheet $ReqVol := 6.26acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.90acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (38.29') from floodplain model data. The elevation of the existing ground is 38'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 39ft$

Pond CWE elevation $CWE := 39ft$

Pond CWE Area $A_{CWE} := 1.796acre$

Pond top of bank elevation $TOB := 44ft$ Existing Low EOP = 45.68 ft

Top of Bank Area $A_{TOB} := 2.337 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	39 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	40	1.796	0.054	1.85
2	41	3.592	0.216	3.808
3	42	5.388	0.487	5.875
4	43	7.184	0.866	8.05
5	44	8.98	1.353	10.333

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 39.49\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.486\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 8.05\ ft \cdot acre$

$ReqVol = 6.26\ ft \cdot acre$

Stormwater Management Calculations
Basin 20

POND PROPERTIES, SMF 20A

Storage requirement, from spreadsheet $ReqVol := 3.57acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.62acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (44.58') from floodplain model data. The elevation of the existing ground is 38'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 45ft$

Pond CWE elevation $CWE := 45ft$

Pond CWE Area $A_{CWE} := 0.733acre$

Pond top of bank elevation $TOB := 50ft$ Existing Low EOP = 49.9 ft

Top of Bank Area $A_{TOB} := 1.151 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	45 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	46	0.733	0.042	0.775
2	47	1.466	0.167	1.633
3	48	2.199	0.376	2.575
4	49	2.932	0.669	3.601
5	50	3.665	1.045	4.71

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 45.80\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.8\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.601\ ft \cdot acre$

$ReqVol = 3.57\ ft \cdot acre$

Stormwater Management Calculations
Basin 20

POND PROPERTIES, SMF 20B

Storage requirement, from spreadsheet $ReqVol := 3.57acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.62acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (44.72') from floodplain model data. The elevation of the existing ground is 47'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 45ft$

Pond CWE elevation $CWE := 45ft$

Pond CWE Area $A_{CWE} := 1.207acre$

Pond top of bank elevation $TOB := 50ft$

Existing Low EOP = 49.9 ft

Top of Bank Area $A_{TOB} := 1.767 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	45 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	46	1.207	0.056	1.263
2	47	2.414	0.224	2.638
3	48	3.621	0.504	4.125
4	49	4.828	0.896	5.724
5	50	6.035	1.4	7.435

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 45.49\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.491\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 5.724\ ft \cdot acre$

$ReqVol = 3.57\ ft \cdot acre$

Stormwater Management Calculations
Basin 21

POND PROPERTIES, SMF 21A

Storage requirement, from spreadsheet $ReqVol := 4.51acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.73acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (40.58') from floodplain model data. The elevation of the existing ground is 43'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 41ft$

Pond CWE elevation $CWE := 41ft$

Pond CWE Area $A_{CWE} := 2.260acre$

Pond top of bank elevation $TOB := 44ft$

Existing Low EOP = 48.3 ft

Top of Bank Area $A_{TOB} := 2.853 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 3\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	41 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	42	2.26	0.099	2.359
2	43	4.52	0.395	4.915
3	44	6.78	0.89	7.67

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 41.31\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.309\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 4.915\ ft \cdot acre$

$ReqVol = 4.51\ ft \cdot acre$

Stormwater Management Calculations
Basin 21

POND PROPERTIES, SMF 21B

Storage requirement, from spreadsheet $ReqVol := 4.51acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.73acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (43.36') from floodplain model data. The elevation of the existing ground is 47'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 43.5ft$

Pond CWE elevation $CWE := 43.5ft$

Pond CWE Area $A_{CWE} := 1.085acre$

Pond top of bank elevation $TOB := 48.5ft$ Existing Low EOP = 48.3 ft

Top of Bank Area $A_{TOB} := 1.545 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	43.5 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	44.5	1.085	0.046	1.131
2	45.5	2.17	0.184	2.354
3	46.5	3.255	0.414	3.669
4	47.5	4.34	0.736	5.076
5	48.5	5.425	1.15	6.575

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 44.15\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.645\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 5.076\ ft \cdot acre$

$ReqVol = 4.51\ ft \cdot acre$

Stormwater Management Calculations
Basin22

POND PROPERTIES, SMF 22A

Storage requirement, from spreadsheet $ReqVol := 6.37acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 1.01acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (42.85') from floodplain model data. The elevation of the existing ground is 44'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 43ft$

Pond CWE elevation $CWE := 43ft$

Pond CWE Area $A_{CWE} := 1.382acre$

Pond top of bank elevation $TOB := 48ft$ Existing Low EOP = 48.3 ft

Top of Bank Area $A_{TOB} := 1.967 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	43 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	44	1.382	0.059	1.441
2	45	2.764	0.234	2.998
3	46	4.146	0.527	4.673
4	47	5.528	0.936	6.464
5	48	6.91	1.463	8.373

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 43.70\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.701\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 6.464\ ft \cdot acre$

$ReqVol = 6.37\ ft \cdot acre$

Stormwater Management Calculations
Basin 22

POND PROPERTIES, SMF 22B

Storage requirement, from spreadsheet $ReqVol := 6.37acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 1.01acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being just above NWL of outfall (42.85') from floodplain model data. The elevation of the existing ground is 44'. Soil is Manatee.

Seasonal High Water Elevation $SHW := 43ft$

Pond CWE elevation $CWE := 43ft$

Pond CWE Area $A_{CWE} := 1.449acre$

Pond top of bank elevation $TOB := 48ft$

Existing Low EOP = 48.3 ft

Top of Bank Area $A_{TOB} := 1.954 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	43 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	44	1.449	0.051	1.5
2	45	2.898	0.202	3.1
3	46	4.347	0.455	4.802
4	47	5.796	0.808	6.604
5	48	7.245	1.263	8.508

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 43.67\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.674\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 6.604\ ft \cdot acre$

$ReqVol = 6.37\ ft \cdot acre$

Stormwater Management Calculations
Basin 23 & 24

POND PROPERTIES, SMF 23A&24A

Storage requirement, from spreadsheet $ReqVol := 15.49 acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 2.41 acre \cdot ft$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 35 ft$

Note: SHW estimated based on being just above NWL of outfall (33.90') from floodplain model data. The elevation of the existing ground is 41'. Soil is Myakka.

Pond CWE elevation $CWE := 35 ft$

Pond CWE Area $A_{CWE} := 3.622 acre$

Pond top of bank elevation $TOB := 40 ft$

Existing Low EOP = 44.18 ft

Top of Bank Area $A_{TOB} := 4.631 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0 ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1 in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	35 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	36	3.622	0.101	3.723
2	37	7.244	0.404	7.648
3	38	10.866	0.908	11.774
4	39	14.488	1.614	16.102
5	40	18.11	2.522	20.632

Top of attenuation pool $Att_{elev} := TOB - 1 ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 35.65\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.647\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 16.102\ ft \cdot acre$

$ReqVol = 15.49\ ft \cdot acre$

Stormwater Management Calculations
Basin 23

POND PROPERTIES, SMF 23B

Storage requirement, from spreadsheet $ReqVol := 5.37acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.87acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on 1' below existing ground. The elevation of the existing ground is 41. Soils are Myakka.

Seasonal High Water Elevation $SHW := 40ft$

Pond CWE elevation $CWE := 40ft$

Pond CWE Area $A_{CWE} := 1.92acre$

Pond top of bank elevation $TOB := 45ft$ Existing Low EOP = 44.18 ft

Top of Bank Area $A_{TOB} := 2.48 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	40 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	41	1.92	0.056	1.976
2	42	3.84	0.224	4.064
3	43	5.76	0.504	6.264
4	44	7.68	0.896	8.576
5	45	9.6	1.4	11

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 40.44\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.44\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 8.576\ ft \cdot acre$

$ReqVol = 5.37\ ft \cdot acre$

Stormwater Management Calculations
Basin 24

POND PROPERTIES, SMF 24B

Storage requirement, from spreadsheet $ReqVol := 10.12 acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 1.54 acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on 1' below existing ground. The elevation of the existing ground is 26. Soils are Malabar.

Seasonal High Water Elevation $SHW := 30ft$

Pond CWE elevation $CWE := 30ft$

Pond CWE Area $A_{CWE} := 2.361 acre$

Pond top of bank elevation $TOB := 35ft$ Existing Low EOP = 36.08 ft

Top of Bank Area $A_{TOB} := 3.055 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	30 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	31	2.361	0.069	2.43
2	32	4.722	0.278	5
3	33	7.083	0.625	7.708
4	34	9.444	1.11	10.554
5	35	11.805	1.735	13.54

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 30.63\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.634\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 10.554\ ft \cdot acre$

$ReqVol = 10.12\ ft \cdot acre$

Stormwater Management Calculations
Basin 25

POND PROPERTIES, SMF 25

Storage requirement, from spreadsheet $ReqVol := 6.86acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.95acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being NWL of outfall (28.19') from floodplain model data. The elevation of the existing ground is 35. Soils are Arents.

Seasonal High Water Elevation $SHW := 29ft$

Pond CWE elevation $CWE := 29ft$

Pond CWE Area $A_{CWE} := 12.50acre$

Pond top of bank elevation $TOB := 34ft$ Existing Low EOP = 36.62 ft

Top of Bank Area $A_{TOB} := 15.58 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	29 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	30	12.5	0.308	12.808
2	31	25	1.232	26.232
3	32	37.5	2.772	40.272
4	33	50	4.928	54.928
5	34	62.5	7.7	70.2

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 29.07\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.074\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 54.928\ ft \cdot acre$

$ReqVol = 6.86\ ft \cdot acre$

Stormwater Management Calculations
Basin 26

POND PROPERTIES, SMF 26A

Storage requirement, from spreadsheet $ReqVol := 6.33acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 1.26acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on 2' below BFE 26. The elevation of the existing ground is 26. Soils are Malabar.

Seasonal High Water Elevation $SHW := 24ft$

Pond CWE elevation $CWE := 24ft$

Pond CWE Area $A_{CWE} := 1.44acre$

Pond top of bank elevation $TOB := 29ft$ Existing Low EOP = 32.11 ft

Top of Bank Area $A_{TOB} := 1.93 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	24 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	25	1.44	0.049	1.489
2	26	2.88	0.196	3.076
3	27	4.32	0.441	4.761
4	28	5.76	0.784	6.544
5	29	7.2	1.225	8.425

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 24.85\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.846\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 6.544\ ft \cdot acre$

$ReqVol = 6.33\ ft \cdot acre$

Stormwater Management Calculations
Basin 26

POND PROPERTIES, SMF 26B

Storage requirement, from spreadsheet $ReqVol := 6.33acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 1.26acre \cdot ft$

Stage Storage Calculations

Note: Note: SHW estimated based on being just below NWL of outfall (20.45) from floodplain model data. The elevation of the existing ground is 26'. Soils are Malabar.

Seasonal High Water Elevation $SHW := 21ft$

Pond CWE elevation $CWE := 21ft$

Pond CWE Area $A_{CWE} := 1.49acre$

Pond top of bank elevation $TOB := 26ft$ Existing Low EOP = 32.11 ft

Top of Bank Area $A_{TOB} := 2.06 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	21 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	22	1.49	0.057	1.547
2	23	2.98	0.228	3.208
3	24	4.47	0.513	4.983
4	25	5.96	0.912	6.872
5	26	7.45	1.425	8.875

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 21.81\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.814\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 6.872\ ft \cdot acre$

$ReqVol = 6.33\ ft \cdot acre$

Stormwater Management Calculations
Basin 27

POND PROPERTIES, SMF 27A&28A

Storage requirement, from spreadsheet $ReqVol := 13.11acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 2.26acre \cdot ft$

Stage Storage Calculations

Note: Note: SHW estimated based on being just below NWL of outfall (18.83) from floodplain model data. The elevation of the existing ground is 32'. Soils are Malabar.

Seasonal High Water Elevation $SHW := 19ft$

Pond CWE elevation $CWE := 19ft$

Pond CWE Area $A_{CWE} := 61.978acre$

Pond top of bank elevation $TOB := 22ft$ Existing Low EOP = 32.11 ft

Top of Bank Area $A_{TOB} := 63.858 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 3\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	19 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	20	61.978	0.313	62.291
2	21	123.956	1.253	125.209
3	22	185.934	2.82	188.754

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 19.04\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.036\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 125.209\ ft \cdot acre$

$ReqVol = 13.11\ ft \cdot acre$

Stormwater Management Calculations
Basin 28

POND PROPERTIES, SMF 28B

Storage requirement, from spreadsheet $ReqVol := 5.70acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 1.09acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being 3' below existing ground. The elevation of the existing ground is 24. Soils are Archbold and Arents.

Seasonal High Water Elevation $SHW := 19ft$

Pond CWE elevation $CWE := 19ft$

Pond CWE Area $A_{CWE} := 1.31acre$

Pond top of bank elevation $TOB := 24ft$ Existing Low EOP = 31.92 ft

Top of Bank Area $A_{TOB} := 1.79 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	19 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	20	1.31	0.048	1.358
2	21	2.62	0.192	2.812
3	22	3.93	0.432	4.362
4	23	5.24	0.768	6.008
5	24	6.55	1.2	7.75

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 19.80\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.803\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 6.008\ ft \cdot acre$

$ReqVol = 5.7\ ft \cdot acre$

Stormwater Management Calculations
Basin 28

POND PROPERTIES, SMF 28C

Storage requirement, from spreadsheet $ReqVol := 5.70acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 1.09acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated 3' below existing ground. The elevation of the existing ground is 27. Soils are Arents.

Seasonal High Water Elevation $SHW := 24ft$

Pond CWE elevation $CWE := 24ft$

Pond CWE Area $A_{CWE} := 4.22acre$

1

Existing Low EOP = 31.92 ft

Pond top of bank elevation $TOB := 29ft$

Top of Bank Area $A_{TOB} := 5.14 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	24 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	25	4.22	0.092	4.312
2	26	8.44	0.368	8.808
3	27	12.66	0.828	13.488
4	28	16.88	1.472	18.352
5	29	21.1	2.3	23.4

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 24.25\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.253\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 18.352\ ft \cdot acre$

$ReqVol = 5.7\ ft \cdot acre$

Stormwater Management Calculations
Basin 29

POND PROPERTIES, SMF 29A

Storage requirement, from spreadsheet $ReqVol := 4.57acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.76acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being 3' below existing ground. The NWL to the east is 10.43'. The elevation of the existing ground is 21. Soils are Myakka.

Seasonal High Water Elevation $SHW := 17ft$

Pond CWE elevation $CWE := 17ft$

Pond CWE Area $A_{CWE} := 1.12acre$

Pond top of bank elevation $TOB := 22ft$ Existing Low EOP = 22.41 ft

Top of Bank Area $A_{TOB} := 1.79 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	17 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	18	1.12	0.067	1.187
2	19	2.24	0.268	2.508
3	20	3.36	0.603	3.963
4	21	4.48	1.072	5.552
5	22	5.6	1.675	7.275

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 17.64\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.64\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 5.552\ ft \cdot acre$

$ReqVol = 4.57\ ft \cdot acre$

Stormwater Management Calculations
Basin 29

POND PROPERTIES, SMF 29B

Storage requirement, from spreadsheet $ReqVol := 4.57acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.76acre \cdot ft$

Stage Storage Calculations

Note: Note: SHW estimated based on being 3' below existing ground. The NWL to the east is 10.43'. The elevation of the existing ground is 21. Soils are Myakka.

Seasonal High Water Elevation $SHW := 16ft$

Pond CWE elevation $CWE := 16ft$

Pond CWE Area $A_{CWE} := 0.98acre$

Pond top of bank elevation $TOB := 21ft$ Existing Low EOP = 22.41 ft

Top of Bank Area $A_{TOB} := 1.50 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	16 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	17	0.98	0.052	1.032
2	18	1.96	0.208	2.168
3	19	2.94	0.468	3.408
4	20	3.92	0.832	4.752
5	21	4.9	1.3	6.2

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 16.74\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.736\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 4.752\ ft \cdot acre$

$ReqVol = 4.57\ ft \cdot acre$

Stormwater Management Calculations
Basin 30

POND PROPERTIES, SMF 30 (1) (2)

SMF 2 to drain to SMF 1 areas are combined

Storage requirement, from spreadsheet $ReqVol := 4.02acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.63acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being NWL of outfall (21.03) from floodplain model data. The elevation of the existing ground is 25. Soils are Myakka.

Seasonal High Water Elevation $SHW := 21.5ft$

Pond CWE elevation $CWE := 21.5ft$

Pond CWE Area $A_{CWE} := 4acre + 3acre$

Pond top of bank elevation $TOB := 23.5ft$

Existing Low EOP = 22.41 ft

Top of Bank Area $A_{TOB} := 4.8acre + 3.7acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 2\ ft$

The roadway in this basin slopes relatively steeply downwards to the bridge. It will not be possible to drain the entire basin limits to the pond. The designer will need to drain the higher limits of the roadway to the pond and compensate for the lower area that cannot be captured.

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	21.5 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	22.5	7	0.375	7.375
2	23.5	14	1.5	15.5

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 21.59\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.085\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 7.375\ ft \cdot acre$

$ReqVol = 4.02\ ft \cdot acre$

Stormwater Management Calculations
Basin 31

POND PROPERTIES, SMF 31 (1)(2)

SMF 2 to drain to SMF 1 areas are combined

Storage requirement, from spreadsheet

$ReqVol := 2.81\,acre\cdot ft$

Treatment requirement, from spreadsheet

$WQ_{Vol} := 0.61\,acre\cdot ft$

Stage Storage Calculations

Note: SHW estimated based on the NWL of outfall (1.57) from floodplain model data. The elevation of the existing ground is 25. Soils are Myakka.

Seasonal High Water Elevation $SHW := 22ft$

Pond CWE elevation $CWE := 22ft$

Pond CWE Area $A_{CWE} := 2.494\,acre + 3.0\,acre$

Pond top of bank elevation $TOB := 24ft$ Existing Low EOP = 29.41 ft

Top of Bank Area $A_{TOB} := 2.757\,acre + 3.205\,acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 2\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i\cdot incr$

$elev_i := CWE + i\cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right)\cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right]\cdot\left(A_{TOB} - A_{CWE}\right)}{2\cdot(TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	22 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	23	5.494	0.117	5.611
2	24	10.988	0.468	11.456

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 22.11\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.109\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 5.611\ ft\cdot acre$

$ReqVol = 2.81\ ft\cdot acre$

Stormwater Management Calculations
Basin 32 & 33

POND PROPERTIES, SMF 32&33A

Storage requirement, from spreadsheet $ReqVol := 3.96acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.97acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being NWL of outfall (9.32') from floodplain model data. The existing ground varies in elevation from 7 to 12 ft. Soils are St. Johhns fine sand.

Seasonal High Water Elevation $SHW := 17ft$

Pond CWE elevation $CWE := 17ft$

Pond CWE Area $A_{CWE} := 0.99acre$

Pond top of bank elevation $TOB := 22ft$ Existing Low EOP = 39.44 ft

Top of Bank Area $A_{TOB} := 1.40 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	17 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	18	0.99	0.041	1.031
2	19	1.98	0.164	2.144
3	20	2.97	0.369	3.339
4	21	3.96	0.656	4.616
5	22	4.95	1.025	5.975

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 17.94\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.941\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 4.616\ ft \cdot acre$

$ReqVol = 3.96\ ft \cdot acre$

Stormwater Management Calculations
Basin 32 & 33

POND PROPERTIES, SMF 32&33B

Storage requirement, from spreadsheet $ReqVol := 3.96acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.97acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being NWL of outfall (1.57) from floodplain model data. The existing ground varies in elevation from 8 to 20 feet. Soils are St. Johns fine sand.

Seasonal High Water Elevation $SHW := 10ft$

Pond CWE elevation $CWE := 10ft$

Pond CWE Area $A_{CWE} := 0.80acre$

Pond top of bank elevation $TOB := 15ft$ Existing Low EOP = 39.44 ft

Top of Bank Area $A_{TOB} := 1.29 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	10 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	11	0.8	0.049	0.849
2	12	1.6	0.196	1.796
3	13	2.4	0.441	2.841
4	14	3.2	0.784	3.984
5	15	4	1.225	5.225

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 11.13\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.128\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.984\ ft \cdot acre$

$ReqVol = 3.96\ ft \cdot acre$

Stormwater Management Calculations
Basin 32 & 33

POND PROPERTIES, SMF 32&33C

Storage requirement, from spreadsheet $ReqVol := 3.96acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.97acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being NWL of outfall (9.32) from floodplain model data. The existing ground varies in elevation from 7 to 15 feet. Soils are St. Johns fine sand.

Seasonal High Water Elevation $SHW := 10ft$

Pond CWE elevation $CWE := 10ft$

Pond CWE Area $A_{CWE} := 0.90acre$

Pond top of bank elevation $TOB := 15ft$ Existing Low EOP = 39.44 ft

Top of Bank Area $A_{TOB} := 1.32 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	10 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	11	0.9	0.042	0.942
2	12	1.8	0.168	1.968
3	13	2.7	0.378	3.078
4	14	3.6	0.672	4.272
5	15	4.5	1.05	5.55

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 11.03\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.027\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 4.272\ ft \cdot acre$

$ReqVol = 3.96\ ft \cdot acre$

Stormwater Management Calculations
Basin 34

POND PROPERTIES, SMF 34A

Storage requirement, from spreadsheet $ReqVol := 4.03acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.79acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being NWL of outfall (18.05') from floodplain model data. The elevation of the existing ground is 20. Soils are Myakka.

Seasonal High Water Elevation $SHW := 19ft$

Pond CWE elevation $CWE := 19ft$

Pond CWE Area $A_{CWE} := 0.63acre$

Pond top of bank elevation $TOB := 24ft$ Existing Low EOP = 24.38 ft

Top of Bank Area $A_{TOB} := 1.62 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	19 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	20	0.63	0.099	0.729
2	21	1.26	0.396	1.656
3	22	1.89	0.891	2.781
4	23	2.52	1.584	4.104
5	24	3.15	2.475	5.625

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 20.07\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 1.066\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 4.104\ ft \cdot acre$

$ReqVol = 4.03\ ft \cdot acre$

Stormwater Management Calculations
Basin 34

POND PROPERTIES, SMF 34B

Storage requirement, from spreadsheet $ReqVol := 4.03acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.79acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being NWL of outfall (18.05') from floodplain model data. The elevation of the existing ground is 20. Soils are Myakka.

Seasonal High Water Elevation $SHW := 19ft$

Pond CWE elevation $CWE := 19ft$

Pond CWE Area $A_{CWE} := 0.92acre$

Pond top of bank elevation $TOB := 24ft$ Existing Low EOP = 24.38 ft

Top of Bank Area $A_{TOB} := 1.34 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	19 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	20	0.92	0.042	0.962
2	21	1.84	0.168	2.008
3	22	2.76	0.378	3.138
4	23	3.68	0.672	4.352
5	24	4.6	1.05	5.65

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 19.82\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.821\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 4.352\ ft \cdot acre$

$ReqVol = 4.03\ ft \cdot acre$

Stormwater Management Calculations
Basin 35

POND PROPERTIES, SMF 35A

Storage requirement, from spreadsheet $ReqVol := 3.82acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.74acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being NWL of outfall (18.08) from floodplain model data. The elevation of the existing ground is 21. Soils are Myakka.

Seasonal High Water Elevation $SHW := 19ft$

Pond CWE elevation $CWE := 19ft$

Pond CWE Area $A_{CWE} := 0.76acre$

Pond top of bank elevation $TOB := 24ft$ Existing Low EOP = 24.44 ft

Top of Bank Area $A_{TOB} := 1.25 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	19 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	20	0.76	0.049	0.809
2	21	1.52	0.196	1.716
3	22	2.28	0.441	2.721
4	23	3.04	0.784	3.824
5	24	3.8	1.225	5.025

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 19.91\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.915\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.824\ ft \cdot acre$

$ReqVol = 3.82\ ft \cdot acre$

Stormwater Management Calculations
Basin 35

POND PROPERTIES, SMF 35B

Storage requirement, from spreadsheet $ReqVol := 3.82acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.74acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being NWL of outfall (18.80) from floodplain model data. The elevation of the existing ground is 21. Soils are Bassinger, Holopaw, and Samsula soils.

Seasonal High Water Elevation $SHW := 20ft$

Pond CWE elevation $CWE := 20ft$

Pond CWE Area $A_{CWE} := 0.80acre$

Pond top of bank elevation $TOB := 25ft$ Existing Low EOP = 24.44 ft

Top of Bank Area $A_{TOB} := 1.32 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	20 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	21	0.8	0.052	0.852
2	22	1.6	0.208	1.808
3	23	2.4	0.468	2.868
4	24	3.2	0.832	4.032
5	25	4	1.3	5.3

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 20.87\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.869\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 4.032\ ft \cdot acre$

$ReqVol = 3.82\ ft \cdot acre$

Stormwater Management Calculations
Basin 36

POND PROPERTIES, SMF 36A

Storage requirement, from spreadsheet $ReqVol := 2.96acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.54acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being NWL of outfall (21.25) from floodplain model data. The elevation of the existing ground is 22. Soils are Myakka.

Seasonal High Water Elevation $SHW := 22ft$

Pond CWE elevation $CWE := 22ft$

Pond CWE Area $A_{CWE} := 0.58acre$

Pond top of bank elevation $TOB := 27ft$ Existing Low EOP = 26.44 ft

Top of Bank Area $A_{TOB} := 0.98 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	22 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	23	0.58	0.04	0.62
2	24	1.16	0.16	1.32
3	25	1.74	0.36	2.1
4	26	2.32	0.64	2.96
5	27	2.9	1	3.9

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 22.87\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.871\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.96\ ft \cdot acre$

$ReqVol = 2.96\ ft \cdot acre$

Stormwater Management Calculations
Basin 36

POND PROPERTIES, SMF 36B

Storage requirement, from spreadsheet $ReqVol := 2.96acre \cdot ft$

Treatment requirement, from spreadsheet $WQ_{Vol} := 0.54acre \cdot ft$

Stage Storage Calculations

Note: SHW estimated based on being NWL of outfall (20.80) from floodplain model data. The elevation of the existing ground is 22. Soils are Myakka.

Seasonal High Water Elevation $SHW := 21ft$

Pond CWE elevation $CWE := 21ft$

Pond CWE Area $A_{CWE} := 0.606acre$

Pond top of bank elevation $TOB := 26ft$ Existing Low EOP = 26.44 ft

Top of Bank Area $A_{TOB} := 0.988 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5\ ft$

Number of pond stages desired $stage_{number} := Depth \div 1.0ft$

$i := 0 .. stage_{number}$

stage increment $incr := Depth \div stage_{number}$

$stage_i := i \cdot incr$

$elev_i := CWE + i \cdot incr$

Vertical Pond Storage (Vpv) $Vpv1_i := if\left[elev_i > CWE, \left(elev_i - CWE\right) \cdot A_{CWE}, 0\right]$ Note: Vertical storage is storage above the pond bottom or the control water elevation.

Linear Pond Storage (Vpl) $Vpl1_i := if\left[elev_i > CWE \wedge elev_i < TOB + 1in, \frac{\left[\left(elev_i - CWE\right)^2\right] \cdot \left(A_{TOB} - A_{CWE}\right)}{2 \cdot (TOB - CWE)}, 0\right]$

Total wet pond storage $Vpond1 := Vpv1 + Vpl1$ Note: Linear storage is storage over the pond side slopes

Stage Storage Calculation Results

$stage_i =$	$elev_i =$	Vertical Pond Storage (Vpv) $Vpv1_i =$	Linear Pond Storage (Vpl) $Vpl1_i =$	Total wet pond storage (Vpond) $Vpond1_i =$
0 ft	21 ft	0 ·acre·ft	0 ·acre·ft	0 ·acre·ft
1	22	0.606	0.038	0.644
2	23	1.212	0.153	1.365
3	24	1.818	0.344	2.162
4	25	2.424	0.611	3.035
5	26	3.03	0.955	3.985

Top of attenuation pool $Att_{elev} := TOB - 1ft$

Water Quality volume stage $Stage_{WQ} := linterp\left(Vpond1, elev, WQ_{Vol}\right)$ $Stage_{WQ} = 21.84\ ft$

Water Quality depth $WQ_{Depth} := Stage_{WQ} - CWE$ $WQ_{Depth} = 0.838\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.035\ ft \cdot acre$

$ReqVol = 2.96\ ft \cdot acre$

Manual Basin Runoff Summary [Scenario1]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
B-1	WMD25_24	123.62	12.1500	9.00	7.47	33.3738	87.8	0.00	0.00
B-10	WMD25_24	101.27	12.1500	9.00	7.01	29.9210	84.0	0.00	0.00
B-11	WMD25_24	86.38	12.1667	9.00	5.26	34.9584	69.7	0.00	0.00
B-12	WMD25_24	203.66	12.1667	9.00	4.13	105.4393	60.5	0.00	0.00
B-13	WMD25_24	55.32	12.1667	9.00	5.21	22.3329	69.3	0.00	0.00
B-14	WMD25_24	66.39	12.1667	9.00	4.92	28.8708	67.0	0.00	0.00
B-15	WMD25_24	115.14	12.1667	9.00	4.00	61.9427	59.5	0.00	0.00
B-16	WMD25_24	122.03	12.1667	9.00	4.45	57.2372	63.2	0.00	0.00
B-17	WMD25_24	222.14	12.1667	9.00	4.74	99.2508	65.5	0.00	0.00
B-18	WMD25_24	73.82	12.1667	9.00	4.28	36.9547	61.7	0.00	0.00
B-19	WMD25_24	62.80	12.1667	9.00	4.91	27.6261	66.9	0.00	0.00
B-2	WMD25_24	132.02	12.1500	9.00	7.53	35.5056	88.3	0.00	0.00
B-20	WMD25_24	60.16	12.1500	9.00	5.88	21.4317	74.8	0.00	0.00
B-21	WMD25_24	60.03	12.1667	9.00	4.76	26.9725	65.7	0.00	0.00
B-22	WMD25_24	100.11	12.1667	9.00	4.74	44.6444	65.5	0.00	0.00
B-23	WMD25_24	80.93	12.1667	9.00	5.09	33.5082	68.3	0.00	0.00
B-24	WMD25_24	117.37	12.1667	9.00	4.62	54.8034	64.6	0.00	0.00
B-25	WMD25_24	209.24	12.1667	9.00	4.46	99.8818	63.2	0.00	0.00
B-26	WMD25_24	154.36	12.1500	9.00	6.01	53.3703	75.9	0.00	0.00
B-27	WMD25_24	91.08	12.1667	9.00	4.82	40.4980	66.2	0.00	0.00
B-28	WMD25_24	101.07	12.1667	9.00	5.58	37.8499	72.3	0.00	0.00
B-29	WMD25_24	64.34	12.1667	9.00	5.04	27.1019	67.9	0.00	0.00
B-3	WMD25_24	125.59	12.1500	9.00	7.19	35.2364	85.5	0.00	0.00

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
B-30	WMD25_24	143.58	12.1667	9.00	5.03	58.8525	67.9	0.00	0.00
B-31	WMD25_24	147.60	12.1667	9.00	5.61	54.9900	72.6	0.00	0.00
B-32	WMD25_24	75.46	12.1500	9.00	7.20	21.7609	85.6	0.00	0.00
B-33	WMD25_24	22.90	12.1667	9.00	4.99	9.9177	67.5	0.00	0.00
B-34	WMD25_24	67.58	12.1667	9.00	5.30	27.0141	70.1	0.00	0.00
B-35	WMD25_24	65.31	12.1667	9.00	5.68	24.1810	73.1	0.00	0.00
B-36	WMD25_24	42.92	12.1667	9.00	5.37	17.0344	70.6	0.00	0.00
B-4	WMD25_24	82.04	12.1500	9.00	6.18	26.5629	77.3	0.00	0.00
B-5	WMD25_24	95.04	12.1500	9.00	6.85	27.7213	82.7	0.00	0.00
B-6	WMD25_24	68.54	12.1500	9.00	7.34	18.7211	86.7	0.00	0.00
B-7	WMD25_24	152.77	12.1500	9.00	7.41	41.4473	87.3	0.00	0.00
B-8	WMD25_24	94.56	12.1500	9.00	7.43	25.6826	87.5	0.00	0.00
B-9	WMD25_24	63.80	12.1500	9.00	7.43	17.4038	87.5	0.00	0.00

Curve Number: SCS CN [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
Imp	A	98.0
Imp	B	98.0
Imp	B/D	98.0
Imp	C	98.0
Imp	D	98.0
Imp	W	100.0
Per	A	49.0
Per	B	69.0
Per	B/D	84.0
Per	C	79.0
Per	D	84.0
Per	W	100.0

Manual Basin: B-1

Scenario: Scenario1
Node: N-1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
23.6738	Per	B/D			
9.1743	Imp	B/D			
0.5247	Per	D			
0.0009	Imp	D			

Comment:

Manual Basin: B-10

Scenario: Scenario1
Node: N-10
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
9.8679	Per	B/D			
5.0378	Imp	B/D			
0.2299	Per	D			
0.0635	Imp	D			
3.2309	Per	C			
1.5943	Imp	C			
4.5133	Per	A			
2.1564	Imp	A			
2.1750	Per	W			
1.0520	Imp	W			

Comment:

Manual Basin: B-11

Scenario: Scenario1
Node: N-11
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.2922	Per	W			
0.0760	Imp	W			
4.0750	Per	B/D			
1.9739	Imp	B/D			
19.0206	Per	A			
9.5207	Imp	A			

Comment:

Manual Basin: B-12

Scenario: Scenario1
Node: N-12
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
78.9043	Per	A			
19.2086	Imp	A			
5.2845	Per	B/D			
0.8360	Imp	B/D			
0.0000	Per	D			
0.9484	Per	C			
0.2574	Imp	C			

Comment:

Manual Basin: B-13

Scenario: Scenario1
Node: N-13

Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
11.5914	Per	A			
4.9455	Imp	A			
2.3659	Per	C			
1.9660	Per	D			
0.3824	Imp	C			
1.0817	Imp	D			

Comment:

Manual Basin: B-14

Scenario: Scenario1
Node: N-14
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.3028	Per	C			
17.7261	Per	A			
0.1243	Imp	C			
8.3647	Imp	A			
1.5163	Per	B/D			
0.8366	Imp	B/D			

Comment:

Manual Basin: B-15

Scenario: Scenario1
Node: N-15
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min

Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
48.5336	Per	A			
12.6262	Imp	A			
0.6658	Per	B/D			
0.1172	Imp	B/D			

Comment:

Manual Basin: B-16

Scenario: Scenario1
Node: N-16
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
36.2316	Per	A			
11.6856	Per	C			
9.2937	Imp	A			
0.0263	Imp	C			

Comment:

Manual Basin: B-17

Scenario: Scenario1
Node: N-17
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
62.1691	Per	A			

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
20.0890	Imp	A			
2.7399	Per	B/D			
1.2062	Imp	B/D			
9.1656	Per	D			
2.4024	Imp	D			
0.6126	Per	C			
0.8657	Imp	C			

Comment:

Manual Basin: B-18

Scenario: Scenario1
Node: N-18
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
7.4558	Imp	A			
26.8565	Per	A			
0.1137	Imp	C			
0.0307	Per	C			
1.8031	Per	D			
0.6949	Imp	D			

Comment:

Manual Basin: B-19

Scenario: Scenario1
Node: N-19
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
17.5396	Per	A			
10.0865	Imp	A			

Comment:

Manual Basin: B-2

Scenario: Scenario1
Node: N-2
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
23.3197	Per	B/D			
11.0058	Imp	B/D			
0.7369	Per	D			
0.0635	Imp	D			
0.3796	Per	C			

Comment:

Manual Basin: B-20

Scenario: Scenario1
Node: N-20
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
8.5443	Per	A			
4.5340	Imp	A			
1.1746	Imp	D			
2.1647	Per	D			
3.4575	Per	B/D			
1.5567	Imp	B/D			

Comment:

Manual Basin: B-21

Scenario: Scenario1
Node: N-21
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
1.6882	Per	B/D			
0.8797	Imp	B/D			
17.3037	Per	A			
7.0347	Imp	A			
0.0663	Per	D			

Comment:

Manual Basin: B-22

Scenario: Scenario1
Node: N-22
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
27.2734	Per	A			
9.0428	Imp	A			
6.0293	Per	C			
2.2988	Imp	C			

Comment:

Manual Basin: B-23

Scenario: Scenario1
Node: N-23
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
5.9088	Per	C			
2.3412	Imp	C			
18.0100	Per	A			
7.2482	Imp	A			

Comment:

Manual Basin: B-24

Scenario: Scenario1
Node: N-24
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
37.3697	Per	A			
17.1694	Imp	A			
0.2643	Per	B/D			

Comment:

Manual Basin: B-25

Scenario: Scenario1
Node: N-25
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr

Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
67.6533	Per	A			
21.6173	Imp	A			
0.0433	Per	D			
8.4860	Per	C			
1.9427	Imp	C			
0.0543	Per	B/D			
0.0850	Imp	B/D			

Comment:

Manual Basin: B-26

Scenario: Scenario1
Node: N-26
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
9.6256	Imp	A			
19.0078	Per	A			
0.1803	Imp	C			
0.6864	Per	C			
16.7530	Per	B/D			
7.1172	Imp	B/D			

Comment:

Manual Basin: B-27

Scenario: Scenario1
Node: N-27
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
25.7139	Per	A			
11.6571	Imp	A			
0.0108	Per	C			
2.1437	Per	D			
0.9725	Imp	D			

Comment:

Manual Basin: B-28

Scenario: Scenario1
Node: N-28
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
16.0826	Per	A			
7.6195	Imp	A			
9.5906	Per	C			
4.5572	Imp	C			

Comment:

Manual Basin: B-29

Scenario: Scenario1
Node: N-29
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
3.1116	Per	C			
1.3900	Imp	C			
15.3695	Per	A			
6.9217	Imp	A			

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.2235	Per	B/D			
0.0855	Imp	B/D			

Comment:

Manual Basin: B-3

Scenario: Scenario1
Node: N-3
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
17.1049	Per	B/D			
7.1106	Imp	B/D			
2.7475	Per	D			
0.7673	Imp	D			
5.5622	Per	B			
1.9440	Imp	B			

Comment:

Manual Basin: B-30

Scenario: Scenario1
Node: N-30
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
1.9110	Per	B/D			
0.7196	Imp	B/D			
29.1169	Per	A			
6.5331	Imp	A			
0.7406	Per	D			

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.3574	Imp	D			
16.3645	Per	C			
3.1094	Imp	C			

Comment:

Manual Basin: B-31

Scenario: Scenario1
Node: N-31
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
10.0138	Imp	A			
22.8395	Per	A			
3.5855	Imp	C			
14.9431	Per	C			
2.3043	Per	W			
1.3038	Imp	W			

Comment:

Manual Basin: B-32

Scenario: Scenario1
Node: N-32
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
1.6723	Per	W			
0.9150	Imp	W			
2.9054	Per	D			
1.5834	Imp	D			

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
5.5719	Per	B/D			
3.0261	Imp	B/D			
2.8230	Per	A			
1.9346	Imp	A			
0.9110	Per	C			
0.4182	Imp	C			

Comment:

Manual Basin: B-33

Scenario: Scenario1
Node: N-33
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.0480	Per	C			
0.0262	Imp	C			
3.6887	Imp	A			
6.1549	Per	A			

Comment:

Manual Basin: B-34

Scenario: Scenario1
Node: N-34
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
14.2631	Per	A			
6.7796	Imp	A			
3.9754	Per	B/D			

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
1.9960	Imp	B/D			

Comment:

Manual Basin: B-35

Scenario: Scenario1
Node: N-35
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
1.6072	Per	B/D			
0.8350	Imp	B/D			
10.3804	Per	A			
5.2810	Imp	A			
2.3980	Imp	C			
3.6793	Per	C			

Comment:

Manual Basin: B-36

Scenario: Scenario1
Node: N-36
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
8.9859	Per	A			
4.9238	Imp	A			
1.8824	Per	D			
1.2423	Imp	D			

Comment:

Manual Basin: B-4

Scenario: Scenario1
Node: N-4
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
17.7053	Per	B			
5.4538	Imp	B			
0.8471	Imp	B/D			
2.5568	Per	B/D			

Comment:

Manual Basin: B-5

Scenario: Scenario1
Node: N-5
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
7.5258	Per	B			
2.0286	Imp	B			
14.5134	Per	B/D			
3.6535	Imp	B/D			

Comment:

Manual Basin: B-6

Scenario: Scenario1
Node: N-6
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs

Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
14.6530	Per	B/D			
3.9486	Imp	B/D			
0.0080	Per	D			
0.1115	Per	A			

Comment:

Manual Basin: B-7

Scenario: Scenario1
Node: N-7
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
30.7672	Per	B/D			
9.9276	Imp	B/D			
0.0184	Per	A			
0.0692	Per	D			
0.1849	Imp	C			
0.4800	Per	C			

Comment:

Manual Basin: B-8

Scenario: Scenario1
Node: N-8
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
15.7787	Per	B/D			
6.5061	Imp	B/D			
2.5670	Per	C			
0.8279	Imp	C			
0.0029	Per	A			

Comment:

Manual Basin: B-9

Scenario: Scenario1
Node: N-9
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 999999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.4011	Per	A			
9.8083	Per	B/D			
4.1463	Imp	B/D			
0.0493	Imp	A			
1.8231	Per	D			
1.1756	Imp	D			

Comment:

Node: N-1

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 16.58 ft
Warning Stage: 24.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	23.60
0	0	0	12.0000	23.84
0	0	0	36.0000	23.60

Comment:

Node: N-10

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 11.08 ft
Warning Stage: 14.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	11.08
0	0	0	12.0000	13.66
0	0	0	36.0000	11.08

Comment:

Node: N-11

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 1.58 ft
Warning Stage: 5.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	1.58
0	0	0	12.0000	4.47
0	0	0	36.0000	1.58

Comment:

Node: N-12

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 15.60 ft
Warning Stage: 21.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	15.60
0	0	0	12.0000	20.46
0	0	0	36.0000	15.60

Comment:

Node: N-13

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 12.00 ft
Warning Stage: 17.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	12.00
0	0	0	12.0000	16.75
0	0	0	36.0000	12.00

Comment:

Node: N-14

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 16.58 ft
Warning Stage: 23.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	16.58
0	0	0	12.0000	22.80
0	0	0	36.0000	16.58

Comment:

Node: N-15

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 16.58 ft
Warning Stage: 23.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	16.58
0	0	0	12.0000	22.80
0	0	0	36.0000	16.58

Comment:

Node: N-16

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 29.48 ft
Warning Stage: 37.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	30.68
0	0	0	12.0000	36.51
0	0	0	24.0000	30.68

Comment:

Node: N-17

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 30.68 ft
Warning Stage: 35.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	29.48
0	0	0	12.0000	34.73
0	0	0	36.0000	29.48

Comment:

Node: N-18

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 36.00 ft
Warning Stage: 36.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	29.48
0	0	0	12.0000	35.08
0	0	0	36.0000	29.48

Comment:

Node: N-19

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 29.48 ft
Warning Stage: 39.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	36.00
0	0	0	12.0000	38.62
0	0	0	36.0000	36.00

Comment:

Node: N-2

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 15.28 ft
Warning Stage: 22.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	15.28
0	0	0	12.0000	21.84
0	0	0	36.0000	15.28

Comment:

Node: N-20

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 40.29 ft
Warning Stage: 45.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	29.48
0	0	0	12.0000	44.80
0	0	0	36.0000	29.48

Comment:

Node: N-21

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 40.11 ft
Warning Stage: 46.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	40.11
0	0	0	12.0000	45.00
0	0	0	36.0000	40.11

Comment:

Node: N-22

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 33.11 ft
Warning Stage: 38.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	33.11
0	0	0	12.0000	37.74
0	0	0	36.0000	33.11

Comment:

Node: N-23

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 27.48 ft
Warning Stage: 36.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	27.48
0	0	0	12.0000	35.79
0	0	0	36.0000	27.48

Comment:

Node: N-24

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 22.50 ft
Warning Stage: 32.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	22.50
0	0	0	12.0000	31.20
0	0	0	36.0000	22.50

Comment:

Node: N-25

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 17.50 ft
Warning Stage: 31.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	17.50
0	0	0	12.0000	30.33
0	0	0	36.0000	17.50

Comment:

Node: N-26

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 11.50 ft
Warning Stage: 26.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	11.50
0	0	0	12.0000	25.02
0	0	0	36.0000	11.50

Comment:

Node: N-27

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 9.00 ft
Warning Stage: 23.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	9.00
0	0	0	12.0000	22.58
0	0	0	36.0000	9.00

Comment:

Node: N-28

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 23.50 ft
Warning Stage: 26.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	23.50
0	0	0	12.0000	25.79
0	0	0	36.0000	23.50

Comment:

Node: N-29

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 1.60 ft
Warning Stage: 16.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	1.60
0	0	0	12.0000	15.31
0	0	0	36.0000	1.60

Comment:

Node: N-3

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 15.38 ft
Warning Stage: 22.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	15.38
0	0	0	12.0000	21.84
0	0	0	36.0000	15.38

Comment:

Node: N-30

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 10.17 ft
Warning Stage: 14.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	10.17
0	0	0	12.0000	13.11
0	0	0	36.0000	10.17

Comment:

Node: N-31

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 1.15 ft
Warning Stage: 3.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	1.15
0	0	0	12.0000	2.68
0	0	0	36.0000	1.15

Comment:

Node: N-32

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 5.60 ft
Warning Stage: 10.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	5.60
0	0	0	12.0000	9.50
0	0	0	36.0000	5.60

Comment:

Node: N-33

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 10.25 ft
Warning Stage: 14.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	10.25
0	0	0	12.0000	13.63
0	0	0	36.0000	10.25

Comment:

Node: N-34

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 13.25 ft
Warning Stage: 20.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	13.25
0	0	0	12.0000	19.51
0	0	0	36.0000	13.25

Comment:

Node: N-35

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 13.25 ft
Warning Stage: 20.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	13.25
0	0	0	12.0000	19.51
0	0	0	36.0000	13.25

Comment:

Node: N-36

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 19.97 ft
Warning Stage: 21.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	19.97
0	0	0	12.0000	20.65
0	0	0	36.0000	19.97

Comment:

Node: N-4

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 7.04 ft
Warning Stage: 18.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	7.04
0	0	0	12.0000	17.13
0	0	0	36.0000	7.04

Comment:

Node: N-5

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 7.04 ft
Warning Stage: 18.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	7.04
0	0	0	12.0000	17.13
0	0	0	36.0000	7.04

Comment:

Node: N-6

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 7.58 ft
Warning Stage: 17.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	7.58
0	0	0	12.0000	16.12
0	0	0	36.0000	7.58

Comment:

Node: N-7

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 5.08 ft
Warning Stage: 17.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	5.08
0	0	0	12.0000	16.12
0	0	0	36.0000	5.08

Comment:

Node: N-8

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 1.58 ft
Warning Stage: 12.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	1.58
0	0	0	12.0000	11.72
0	0	0	36.0000	1.58

Comment:

Node: N-9

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 18.18 ft
Warning Stage: 23.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	18.18
0	0	0	12.0000	22.68
0	0	0	36.0000	18.18

Comment:

Simulation: WMD25_24

Scenario: Scenario1
Run Date/Time: 12/19/2018 9:45:16 AM
Program Version: ICPR4 4.04.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000

Max Calculation Time: 60.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	7.5000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	360.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: SCS CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: SCS
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

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
ET for Manual Basins: False
Manual Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FLMOD
Rainfall Amount: 9.00 in
Storm Duration: 24.0000 hr

Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	1 ft2	Min Node Srf Area (1D):	113 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Manual Basin Runoff Summary [Scenario1]

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
B-1	WMD25_24	127.87	12.1500	9.00	7.94	33.3738	91.7	0.00	0.00
B-10	WMD25_24	111.35	12.1500	9.00	7.88	29.9210	91.2	0.00	0.00
B-11	WMD25_24	109.07	12.1500	9.00	6.69	34.9584	81.4	0.00	0.00
B-12	WMD25_24	238.36	12.1667	9.00	4.85	105.4393	66.4	0.00	0.00
B-13	WMD25_24	66.89	12.1500	9.00	6.37	22.3329	78.8	0.00	0.00
B-14	WMD25_24	83.05	12.1500	9.00	6.19	28.8708	77.3	0.00	0.00
B-15	WMD25_24	142.70	12.1667	9.00	4.97	61.9427	67.4	0.00	0.00
B-16	WMD25_24	146.21	12.1667	9.00	5.37	57.2372	70.6	0.00	0.00
B-17	WMD25_24	239.11	12.1667	9.00	5.13	99.2508	68.7	0.00	0.00
B-18	WMD25_24	84.53	12.1667	9.00	4.91	36.9547	66.9	0.00	0.00
B-19	WMD25_24	92.71	12.1500	9.00	7.24	27.6261	85.9	0.00	0.00
B-2	WMD25_24	137.25	12.1500	9.00	8.07	35.5056	92.8	0.00	0.00
B-20	WMD25_24	75.71	12.1500	9.00	7.53	21.4317	88.3	0.00	0.00
B-21	WMD25_24	80.75	12.1500	9.00	6.44	26.9725	79.4	0.00	0.00
B-22	WMD25_24	128.81	12.1500	9.00	6.18	44.6444	77.2	0.00	0.00
B-23	WMD25_24	105.01	12.1500	9.00	6.70	33.5082	81.5	0.00	0.00
B-24	WMD25_24	165.12	12.1500	9.00	6.50	54.8034	79.9	0.00	0.00
B-25	WMD25_24	241.34	12.1667	9.00	5.17	99.8818	69.0	0.00	0.00
B-26	WMD25_24	179.93	12.1500	9.00	7.15	53.3703	85.1	0.00	0.00
B-27	WMD25_24	125.58	12.1500	9.00	6.67	40.4980	81.2	0.00	0.00
B-28	WMD25_24	125.32	12.1500	9.00	7.04	37.8499	84.3	0.00	0.00
B-29	WMD25_24	85.10	12.1500	9.00	6.73	27.1019	81.7	0.00	0.00
B-3	WMD25_24	132.87	12.1500	9.00	7.85	35.2364	90.9	0.00	0.00

Basin Name	Sim Name	Max Flow [cfs]	Time to Max Flow [hrs]	Total Rainfall [in]	Total Runoff [in]	Area [ac]	Equivalent Curve Number	% Imperv	% DCIA
B-30	WMD25_24	161.45	12.1500	9.00	5.72	58.8525	73.5	0.00	0.00
B-31	WMD25_24	159.65	12.1500	9.00	6.09	54.9900	76.5	0.00	0.00
B-32	WMD25_24	82.25	12.1500	9.00	8.02	21.7609	92.3	0.00	0.00
B-33	WMD25_24	31.27	12.1500	9.00	6.80	9.9177	82.3	0.00	0.00
B-34	WMD25_24	85.11	12.1500	9.00	6.74	27.0141	81.8	0.00	0.00
B-35	WMD25_24	81.51	12.1500	9.00	7.21	24.1810	85.6	0.00	0.00
B-36	WMD25_24	56.18	12.1500	9.00	7.08	17.0344	84.5	0.00	0.00
B-4	WMD25_24	91.50	12.1500	9.00	7.12	26.5629	84.9	0.00	0.00
B-5	WMD25_24	99.67	12.1500	9.00	7.36	27.7213	86.9	0.00	0.00
B-6	WMD25_24	70.41	12.1500	9.00	7.71	18.7211	89.8	0.00	0.00
B-7	WMD25_24	157.57	12.1500	9.00	7.84	41.4473	90.8	0.00	0.00
B-8	WMD25_24	98.27	12.1500	9.00	7.95	25.6826	91.8	0.00	0.00
B-9	WMD25_24	65.25	12.1500	9.00	7.73	17.4038	89.9	0.00	0.00

Curve Number: SCS CN [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
Imp	A	98.0
Imp	B	98.0
Imp	B/D	98.0
Imp	C	98.0
Imp	D	98.0
Imp	NA	98.0
Imp	W	100.0
Per	A	49.0
Per	B	69.0
Per	B/D	84.0
Per	C	79.0
Per	D	84.0
Per	W	100.0

Manual Basin: B-1

Scenario: Scenario1
Node: N-1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
14.4949	Per	B/D			
18.3532	Imp	B/D			
0.4587	Per	D			
0.0669	Imp	D			

Comment:

Manual Basin: B-10

Scenario: Scenario1
Node: N-10
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
5.2958	Per	B/D			
9.6099	Imp	B/D			
0.1901	Per	D			
0.1034	Imp	D			
1.5907	Per	C			
3.2345	Imp	C			
2.0818	Per	A			
4.5879	Imp	A			
2.2284	Imp	W			
0.9987	Per	W			

Comment:

Manual Basin: B-11

Scenario: Scenario1
Node: N-11
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.1986	Per	W			
0.1696	Imp	W			
3.7411	Imp	B/D			
2.3079	Per	B/D			
11.1383	Per	A			
17.4030	Imp	A			

Comment:

Manual Basin: B-12

Scenario: Scenario1
Node: N-12
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
66.4630	Per	A			
31.6499	Imp	A			
1.7353	Imp	B/D			
4.3852	Per	B/D			
0.0000	Per	D			
0.9480	Per	C			
0.2578	Imp	C			

Comment:

Manual Basin: B-13

Scenario: Scenario1
Node: N-13

Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
7.6705	Per	A			
8.8663	Imp	A			
2.0909	Per	C			
0.8605	Per	D			
0.6574	Imp	C			
2.1871	Imp	D			

Comment:

Manual Basin: B-14

Scenario: Scenario1
Node: N-14
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.1884	Per	C			
11.8796	Per	A			
0.2388	Imp	C			
14.2113	Imp	A			
0.6460	Per	B/D			
1.7069	Imp	B/D			

Comment:

Manual Basin: B-15

Scenario: Scenario1
Node: N-15
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min

Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
38.5712	Per	A			
22.5886	Imp	A			
0.4375	Per	B/D			
0.3454	Imp	B/D			

Comment:

Manual Basin: B-16

Scenario: Scenario1
Node: N-16
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
27.4791	Per	A			
11.5983	Per	C			
18.0462	Imp	A			
0.1136	Imp	C			

Comment:

Manual Basin: B-17

Scenario: Scenario1
Node: N-17
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
56.3544	Per	A			

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
25.9038	Imp	A			
1.8340	Per	B/D			
2.1122	Imp	B/D			
7.9761	Per	D			
3.5919	Imp	D			
0.6124	Per	C			
0.8660	Imp	C			

Comment:

Manual Basin: B-18

Scenario: Scenario1
Node: N-18
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
11.3408	Imp	A			
22.9715	Per	A			
0.0308	Per	C			
0.1136	Imp	C			
1.8031	Per	D			
0.6949	Imp	D			

Comment:

Manual Basin: B-19

Scenario: Scenario1
Node: N-19
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
6.7624	Per	A			
20.8637	Imp	A			

Comment:

Manual Basin: B-2

Scenario: Scenario1
Node: N-2
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
12.0747	Per	B/D			
22.2508	Imp	B/D			
0.6311	Per	D			
0.1694	Imp	D			
0.3459	Per	C			
0.0337	Imp	C			

Comment:

Manual Basin: B-20

Scenario: Scenario1
Node: N-20
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
9.6563	Imp	A			
3.4221	Per	A			
2.3791	Imp	D			
0.9601	Per	D			
1.8487	Per	B/D			

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
3.1654	Imp	B/D			

Comment:

Manual Basin: B-21

Scenario: Scenario1
Node: N-21
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.7486	Per	B/D			
1.8193	Imp	B/D			
9.9758	Per	A			
14.3626	Imp	A			
0.0663	Per	D			

Comment:

Manual Basin: B-22

Scenario: Scenario1
Node: N-22
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
17.6539	Per	A			
18.6623	Imp	A			
3.1356	Per	C			
5.1925	Imp	C			

Comment:

Manual Basin: B-23

Scenario: Scenario1
Node: N-23
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
3.0096	Per	C			
5.2405	Imp	C			
10.0842	Per	A			
15.1739	Imp	A			

Comment:

Manual Basin: B-24

Scenario: Scenario1
Node: N-24
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
20.1201	Per	A			
34.4190	Imp	A			
0.2643	Per	B/D			

Comment:

Manual Basin: B-25

Scenario: Scenario1
Node: N-25
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr

Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
56.3244	Per	A			
32.9461	Imp	A			
0.0433	Per	D			
7.2752	Per	C			
3.1535	Imp	C			
0.0544	Per	B/D			
0.0848	Imp	B/D			

Comment:

Manual Basin: B-26

Scenario: Scenario1
Node: N-26
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
17.4977	Imp	A			
11.1357	Per	A			
0.1803	Imp	C			
0.6864	Per	C			
15.0818	Imp	B/D			
8.7884	Per	B/D			

Comment:

Manual Basin: B-27

Scenario: Scenario1
Node: N-27
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
13.4153	Per	A			
23.9557	Imp	A			
0.0108	Per	C			
1.2420	Per	D			
1.8742	Imp	D			

Comment:

Manual Basin: B-28

Scenario: Scenario1
Node: N-28
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
8.5282	Per	A			
15.1739	Imp	A			
5.1413	Per	C			
9.0066	Imp	C			

Comment:

Manual Basin: B-29

Scenario: Scenario1
Node: N-29
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
1.6924	Per	C			
2.8092	Imp	C			
8.2680	Per	A			
14.0232	Imp	A			

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.1362	Per	B/D			
0.1729	Imp	B/D			

Comment:

Manual Basin: B-3

Scenario: Scenario1
Node: N-3
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
9.3163	Per	B/D			
14.8992	Imp	B/D			
1.9712	Per	D			
1.5435	Imp	D			
3.0991	Per	B			
4.4070	Imp	B			

Comment:

Manual Basin: B-30

Scenario: Scenario1
Node: N-30
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
1.1462	Per	B/D			
1.4844	Imp	B/D			
23.1225	Per	A			
12.5276	Imp	A			
0.4461	Per	D			

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.6519	Imp	D			
15.1600	Per	C			
4.3139	Imp	C			

Comment:

Manual Basin: B-31

Scenario: Scenario1
Node: N-31
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
14.2474	Imp	A			
18.6059	Per	A			
3.9925	Imp	C			
14.5361	Per	C			
1.1083	Per	W			
2.4998	Imp	W			

Comment:

Manual Basin: B-32

Scenario: Scenario1
Node: N-32
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.8299	Per	W			
1.7574	Imp	W			
1.4267	Per	D			
3.0621	Imp	D			

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
2.7585	Per	B/D			
5.8396	Imp	B/D			
1.1640	Per	A			
3.5935	Imp	A			
0.6449	Per	C			
0.6843	Imp	C			

Comment:

Manual Basin: B-33

Scenario: Scenario1
Node: N-33
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.0655	Per	C			
0.0087	Imp	C			
6.7101	Imp	A			
3.1335	Per	A			

Comment:

Manual Basin: B-34

Scenario: Scenario1
Node: N-34
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
8.2081	Per	A			
12.8347	Imp	A			
2.4064	Per	B/D			

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
3.5650	Imp	B/D			

Comment:

Manual Basin: B-35

Scenario: Scenario1
Node: N-35
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.9067	Per	B/D			
1.5355	Imp	B/D			
5.2824	Per	A			
10.3790	Imp	A			
4.7139	Imp	C			
1.3634	Per	C			

Comment:

Manual Basin: B-36

Scenario: Scenario1
Node: N-36
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
4.3550	Per	A			
9.5547	Imp	A			
1.0157	Per	D			
2.1090	Imp	D			

Comment:

Manual Basin: B-4

Scenario: Scenario1
Node: N-4
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
10.8573	Per	B			
12.3018	Imp	B			
1.2080	Imp	B/D			
2.1958	Per	B/D			

Comment:

Manual Basin: B-5

Scenario: Scenario1
Node: N-5
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
5.3715	Per	B			
4.1829	Imp	B			
10.7884	Per	B/D			
7.3785	Imp	B/D			

Comment:

Manual Basin: B-6

Scenario: Scenario1
Node: N-6
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs

Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
10.5695	Per	B/D			
8.0321	Imp	B/D			
0.0080	Per	D			
0.1115	Per	A			

Comment:

Manual Basin: B-7

Scenario: Scenario1
Node: N-7
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
20.4109	Per	B/D			
20.2839	Imp	B/D			
0.0184	Per	A			
0.0692	Per	D			
0.2543	Imp	C			
0.4106	Per	C			

Comment:

Manual Basin: B-8

Scenario: Scenario1
Node: N-8
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
8.9527	Per	B/D			
13.3321	Imp	B/D			
1.6131	Imp	C			
1.7818	Per	C			
0.0029	Per	A			

Comment:

Manual Basin: B-9

Scenario: Scenario1
Node: N-9
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 20.0000 min
Max Allowable Q: 99999.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.3399	Per	A			
7.6963	Per	B/D			
6.2583	Imp	B/D			
0.1105	Imp	A			
1.1453	Per	D			
1.8535	Imp	D			

Comment:

Node: N-1

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 23.60 ft
Warning Stage: 24.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	23.60
0	0	0	12.0000	23.84
0	0	0	36.0000	23.60

Comment:

Node: N-10

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 11.08 ft
Warning Stage: 14.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	11.08
0	0	0	12.0000	13.66
0	0	0	36.0000	11.08

Comment:

Node: N-11

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 1.58 ft
Warning Stage: 5.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	1.58
0	0	0	12.0000	4.47
0	0	0	36.0000	1.58

Comment:

Node: N-12

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 15.60 ft
Warning Stage: 21.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	15.60
0	0	0	12.0000	20.46
0	0	0	36.0000	15.60

Comment:

Node: N-13

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 12.00 ft
Warning Stage: 17.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	12.00
0	0	0	12.0000	16.75
0	0	0	36.0000	12.00

Comment:

Node: N-14

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 16.58 ft
Warning Stage: 23.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	16.58
0	0	0	12.0000	22.80
0	0	0	36.0000	16.58

Comment:

Node: N-15

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 16.58 ft
Warning Stage: 23.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	16.58
0	0	0	12.0000	22.80
0	0	0	36.0000	16.58

Comment:

Node: N-16

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 29.48 ft
Warning Stage: 37.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	30.68
0	0	0	12.0000	36.51
0	0	0	24.0000	30.68

Comment:

Node: N-17

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 30.68 ft
Warning Stage: 35.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	29.48
0	0	0	12.0000	34.73
0	0	0	36.0000	29.48

Comment:

Node: N-18

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 36.00 ft
Warning Stage: 36.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	29.48
0	0	0	12.0000	35.08
0	0	0	36.0000	29.48

Comment:

Node: N-19

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 29.48 ft
Warning Stage: 39.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	36.00
0	0	0	12.0000	38.62
0	0	0	36.0000	36.00

Comment:

Node: N-2

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 15.28 ft
Warning Stage: 22.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	15.28
0	0	0	12.0000	21.84
0	0	0	36.0000	15.28

Comment:

Node: N-20

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 40.29 ft
Warning Stage: 45.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	29.48
0	0	0	12.0000	44.80
0	0	0	36.0000	29.48

Comment:

Node: N-21

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 40.11 ft
Warning Stage: 46.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	40.11
0	0	0	12.0000	45.00
0	0	0	36.0000	40.11

Comment:

Node: N-22

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 33.11 ft
Warning Stage: 38.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	33.11
0	0	0	12.0000	37.74
0	0	0	36.0000	33.11

Comment:

Node: N-23

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 27.48 ft
Warning Stage: 36.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	27.48
0	0	0	12.0000	35.79
0	0	0	36.0000	27.48

Comment:

Node: N-24

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 22.50 ft
Warning Stage: 32.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	22.50
0	0	0	12.0000	31.20
0	0	0	36.0000	22.50

Comment:

Node: N-25

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 17.50 ft
Warning Stage: 31.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	17.50
0	0	0	12.0000	30.33
0	0	0	36.0000	17.50

Comment:

Node: N-26

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 11.50 ft
Warning Stage: 26.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	11.50
0	0	0	12.0000	25.02
0	0	0	36.0000	11.50

Comment:

Node: N-27

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 9.00 ft
Warning Stage: 23.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	9.00
0	0	0	12.0000	22.58
0	0	0	36.0000	9.00

Comment:

Node: N-28

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 23.50 ft
Warning Stage: 26.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	23.50
0	0	0	12.0000	25.79
0	0	0	36.0000	23.50

Comment:

Node: N-29

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 1.60 ft
Warning Stage: 16.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	1.60
0	0	0	12.0000	15.31
0	0	0	36.0000	1.60

Comment:

Node: N-3

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 15.38 ft
Warning Stage: 22.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	15.38
0	0	0	12.0000	21.84
0	0	0	36.0000	15.38

Comment:

Node: N-30

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 10.17 ft
Warning Stage: 14.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	10.17
0	0	0	12.0000	13.11
0	0	0	36.0000	10.17

Comment:

Node: N-31

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 1.15 ft
Warning Stage: 3.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	1.15
0	0	0	12.0000	2.68
0	0	0	36.0000	1.15

Comment:

Node: N-32

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 5.60 ft
Warning Stage: 10.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	5.60
0	0	0	12.0000	9.50
0	0	0	36.0000	5.60

Comment:

Node: N-33

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 10.25 ft
Warning Stage: 14.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	10.25
0	0	0	12.0000	13.63
0	0	0	36.0000	10.25

Comment:

Node: N-34

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 13.25 ft
Warning Stage: 20.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	13.25
0	0	0	12.0000	19.51
0	0	0	36.0000	13.25

Comment:

Node: N-35

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 13.25 ft
Warning Stage: 20.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	13.25
0	0	0	12.0000	19.51
0	0	0	36.0000	13.25

Comment:

Node: N-36

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 19.97 ft
Warning Stage: 21.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	19.97
0	0	0	12.0000	20.65
0	0	0	36.0000	19.97

Comment:

Node: N-4

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 7.04 ft
Warning Stage: 18.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	7.04
0	0	0	12.0000	17.13
0	0	0	36.0000	7.04

Comment:

Node: N-5

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 7.04 ft
Warning Stage: 18.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	7.04
0	0	0	12.0000	17.13
0	0	0	36.0000	7.04

Comment:

Node: N-6

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 7.58 ft
Warning Stage: 17.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	7.58
0	0	0	12.0000	16.12
0	0	0	36.0000	7.58

Comment:

Node: N-7

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 5.08 ft
Warning Stage: 17.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	5.08
0	0	0	12.0000	16.12
0	0	0	36.0000	5.08

Comment:

Node: N-8

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 1.58 ft
Warning Stage: 12.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	1.58
0	0	0	12.0000	11.72
0	0	0	36.0000	1.58

Comment:

Node: N-9

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 18.18 ft
Warning Stage: 23.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	18.18
0	0	0	12.0000	22.68
0	0	0	36.0000	18.18

Comment:

Simulation: WMD25_24

Scenario: Scenario1
Run Date/Time: 12/19/2018 9:25:26 AM
Program Version: ICPR4 4.04.00

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000

Max Calculation Time: 60.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	5.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	7.5000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	360.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: SCS CN
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: SCS
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

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
ET for Manual Basins: False
Manual Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FLMOD
Rainfall Amount: 9.00 in
Storm Duration: 24.0000 hr

Dflt Damping (2D):	0.0050 ft	Dflt Damping (1D):	0.0050 ft
Min Node Srf Area (2D):	1 ft2	Min Node Srf Area (1D):	113 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Floodplain Compensation Site Calculations

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Fri Mar 22 09:25:06 2019       **
**                                                                  **
** From Object <Exist Ground A> to Object <FPC 1A>                  **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         3312.667 Cubic Yards                        **
**  Total Fill =        0.000 Cubic Yards                           **
**  Area =              3210.703 Sq Yards                           **
**  Balance =           3312.667 Cubic Yards                        **
**                                                                  **
** Elevation Range Used                                             **
** 23.100 to 23.750     Cut = 695.652   Fill = 0.000                **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************
Required Floodplain Compensation
0.37    AC-FT
Proposed Floodplain Compensation
0.43    AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Fri Mar 22 10:03:01 2019       **
**                                                                  **
** From Object <Exist Ground A> to Object <FPC 1B>                  **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         682.072 Cubic Yards                         **
**  Total Fill =        40.554 Cubic Yards                          **
**  Area =              4008.972 Sq Yards                           **
**  Balance =           641.518 Cubic Yards                         **
**                                                                  **
** Elevation Range Used                                             **
** 22.990 to 23.790     Cut = 605.674   Fill = 0.000                **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************

Required Floodplain Compensation
0.37    AC-FT
Proposed Floodplain Compensation
0.38    AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Thu Aug 20 14:50:47 2020       **
**                                                                  **
** From Object <Exist Ground A> to Object <FPC/SMF1C>               **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
** Fill Factor 1.000                                               **
** Cut Factor  1.000                                               **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         1635.906 Cubic Yards                        **
**  Total Fill =        0.000 Cubic Yards                           **
**  Area =              2384.537 Sq Yards                           **
**  Balance =           1635.906 Cubic Yards                        **
**                                                                  **
** Elevation Range Used                                             **
** 22.990 to 23.790     Cut = 632.899   Fill = 0.000                **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************

Required Floodplain Compensation
0.37    AC-FT
Proposed Floodplain Compensation
0.39    AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Fri Mar 22 11:48:01 2019       **
**                                                                  **
** From Object <Exist Ground B> to Object <FPC 3A>                  **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         18736.375 Cubic Yards                       **
**  Total Fill =        0.000 Cubic Yards                           **
**  Area =              35885.465 Sq Yards                          **
**  Balance =           18736.375 Cubic Yards                       **
**                                                                  **
** Elevation Range Used                                             **
** 21.340 to 22.080     Cut = 8843.502  Fill = 0.000                **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************
Required Floodplain Compensation
5.18    AC-FT
Proposed Floodplain Compensation
5.48    AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Sun Mar 24 15:25:23 2019
**                                                                  **
** From Object <Exist Ground B> to Object <FPC 3B>
**                                                                  **
** Prismoidal Volume
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         14396.377 Cubic Yards
**  Total Fill =        109.033 Cubic Yards
**  Area =              38933.126 Sq Yards
**  Balance =           14287.344 Cubic Yards
**                                                                  **
** Elevation Range Used
** 21.340 to 22.080     Cut = 8545.336  Fill = 0.000
**                                                                  **
** No Quantity Depth Used
** Boundary Polygon Used
**********************************************************************
Required Floodplain Compensation
5.18    AC-FT
Proposed Floodplain Compensation
5.30    AC-FT
```

FPC 3C.vol

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Sun Mar 24 15:39:06 2019       **
**                                                                  **
** From Object <Exist Ground B> to Object <FPC 3C>                  **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =          22287.363 Cubic Yards                      **
**  Total Fill =         0.000 Cubic Yards                          **
**  Area =               17473.087 Sq Yards                         **
**  Balance =            22287.363 Cubic Yards                      **
**                                                                  **
** Elevation Range Used                                             **
** 23.200 to 24.000     Cut = 4504.487  Fill = 0.000                **
** 24.000 to 24.800     Cut = 4280.722  Fill = 0.000                **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************

Required Floodplain Compensation
5.18    AC-FT
Proposed Floodplain Compensation
5.40 AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Fri Mar 22 12:22:25 2019       **
**                                                                  **
** From Object <Exist Ground C> to Object <FPC 5&6A>                **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =          16211.799 Cubic Yards                      **
**  Total Fill =         7.987 Cubic Yards                          **
**  Area =               24560.224 Sq Yards                         **
**  Balance =            16203.812 Cubic Yards                      **
**                                                                  **
** Elevation Range Used                                             **
** 15.520 to 16.487     Cut = 6762.405  Fill = 0.000                **
** 16.487 to 17.453     Cut = 3948.701  Fill = 0.000                **
** 17.453 to 18.420     Cut = 2163.729  Fill = 0.000                **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************

Required Floodplain Compensation
7.63    AC-FT
Proposed Floodplain Compensation
7.98    AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Fri Mar 22 12:37:39 2019       **
**                                                                  **
** From Object <Exist Ground D> to Object <FPC 5B&6B>               **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         46453.388 Cubic Yards                       **
**  Total Fill =        0.000 Cubic Yards                           **
**  Area =              19989.656 Sq Yards                          **
**  Balance =           46453.388 Cubic Yards                       **
**                                                                  **
** Elevation Range Used                                             **
** 16.000 to 16.995     Cut = 6629.903  Fill = 0.000                 **
** 16.995 to 17.990     Cut = 6629.903  Fill = 0.000                 **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************

Required Floodplain Compensation
7.63 AC-FT
Proposed Floodplain Compensation
8.22 AC-FT
```

FPC 7A.vol

```
**************************************************************
**                                                          **
** Object to Object Volume Report -- Fri Mar 22 12:44:45 2019
**                                                          **
** From Object <Exist Ground D> to Object <FPC 7A>
**                                                          **
** Prismoidal Volume
**                                                          **
**                                                          **
**************************************************************
**                                                          **
**  Total Cut =         102992.966 Cubic Yards
**  Total Fill =        0.000 Cubic Yards
**  Area =              34626.881 Sq Yards
**  Balance =           102992.966 Cubic Yards
**                                                          **
** Elevation Range Used
** 13.870 to 15.050     Cut = 13619.907         Fill = 0.000
** 15.050 to 16.230     Cut = 13619.907         Fill = 0.000
** 16.230 to 17.410     Cut = 13619.907         Fill = 0.000
**                                                          **
** No Quantity Depth Used
** Boundary Polygon Used
**************************************************************
```

Required Floodplain Compensation
24.79 AC-FT

Proposed Floodplain Compensation
25.33 AC-FT

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Fri Mar 22 12:53:30 2019       **
**                                                                  **
** From Object <Exist Ground D> to Object <FPC 7B>                  **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         134002.378 Cubic Yards                      **
**  Total Fill =        0.000 Cubic Yards                           **
**  Area =              35676.227 Sq Yards                          **
**  Balance =           134002.378 Cubic Yards                      **
**                                                                  **
** Elevation Range Used                                             **
** 13.870 to 15.050     Cut = 14032.649         Fill = 0.000        **
** 15.050 to 16.230     Cut = 14032.649         Fill = 0.000        **
** 16.230 to 17.410     Cut = 14032.649         Fill = 0.000        **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************

Required Floodplain Compensation
24.79   AC-FT
Proposed Floodplain Compensation
26.09   AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Fri Mar 22 13:18:18 2019       **
**                                                                  **
** From Object <Exist Ground G> to Object <FPC 14A&15A>             **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         8923.253 Cubic Yards                        **
**  Total Fill =        3574.656 Cubic Yards                        **
**  Area =              24396.044 Sq Yards                          **
**  Balance =           5348.597 Cubic Yards                        **
**                                                                  **
** Elevation Range Used                                             **
** 21.260 to 22.370     Cut = 4803.531  Fill = 0.000                 **
** 22.370 to 23.480     Cut = 3023.667  Fill = 0.000                 **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************

Required Floodplain Compensation
4.78    AC-FT (Includes 1 ac-ft from SMF 14A&15A FPC Encroachment)
Proposed Floodplain Compensation
4.85    AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Tue Mar 26 10:45:09 2019
**                                                                  **
** From Object <Exist Ground G> to Object <FPC 14B&15B>
**                                                                  **
** Prismoidal Volume
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         6943.188 Cubic Yards
**  Total Fill =        0.000 Cubic Yards
**  Area =              11316.598 Sq Yards
**  Balance =           6943.188 Cubic Yards
**                                                                  **
** Elevation Range Used
** 22.000 to 23.080     Cut = 3734.905  Fill = 0.000
** 23.080 to 24.160     Cut = 2525.592  Fill = 0.000
**                                                                  **
** No Quantity Depth Used
** Boundary Polygon Used
**********************************************************************
Required Floodplain Compensation
3.78    AC-FT
Proposed Floodplain Compensation
3.88    AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Fri Mar 22 13:29:24 2019       **
**                                                                  **
** From Object <Exist Ground H> to Object <FPC 17A>                 **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =          14230.201 Cubic Yards                      **
**  Total Fill =         36.995 Cubic Yards                         **
**  Area =               25795.233 Sq Yards                         **
**  Balance =            14193.207 Cubic Yards                      **
**                                                                  **
** Elevation Range Used                                             **
** 34.450 to 35.477     Cut = 8279.474  Fill = 0.000                **
** 35.477 to 36.503     Cut = 4915.443  Fill = 0.000                **
** 36.503 to 37.530     Cut = 1035.285  Fill = 0.000                **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************

Required Floodplain Compensation
7.57     AC-FT
Proposed Floodplain Compensation
8.82 AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Fri Mar 22 13:35:12 2019       **
**                                                                  **
** From Object <Exist Ground H> to Object <FPC 17B>                 **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         15630.596 Cubic Yards                       **
**  Total Fill =        0.000 Cubic Yards                           **
**  Area =              12433.222 Sq Yards                          **
**  Balance =           15630.596 Cubic Yards                       **
**                                                                  **
** Elevation Range Used                                             **
** 34.450 to 35.477     Cut = 4256.306  Fill = 0.000                **
** 35.477 to 36.503     Cut = 4252.162  Fill = 0.000                **
** 36.503 to 37.530     Cut = 4128.076  Fill = 0.000                **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************
Required Floodplain Compensation
7.57   AC-FT
Proposed Floodplain Compensation
7.83  AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Tue Mar 26 11:03:07 2019       **
**                                                                  **
** From Object <Exist Ground H> to Object <FPC 18A>                 **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         2160.138 Cubic Yards                        **
**  Total Fill =        53.762 Cubic Yards                          **
**  Area =              12761.814 Sq Yards                          **
**  Balance =           2106.376 Cubic Yards                        **
**                                                                  **
** Elevation Range Used                                             **
** 34.700 to 35.870     Cut = 1970.935  Fill = 0.000                 **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************
Required Floodplain Compensation
1.02    AC-FT
Proposed Floodplain Compensation
1.22    AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Tue Mar 26 11:25:54 2019       **
**                                                                  **
** From Object <Exist Ground I> to Object <FPC 18B>                 **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         10257.255 Cubic Yards                       **
**  Total Fill =        0.000 Cubic Yards                           **
**  Area =              8261.215 Sq Yards                           **
**  Balance =           10257.255 Cubic Yards                       **
**                                                                  **
** Elevation Range Used                                             **
** 35.400 to 36.110     Cut = 1955.154  Fill = 0.000                **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************

Required Floodplain Compensation
1.02    AC-FT
Proposed Floodplain Compensation
1.21    AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Tue Mar 26 11:48:53 2019
**                                                                  **
** From Object <Exist Ground I> to Object <FPC 19A>
**                                                                  **
** Prismoidal Volume
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         2456.694 Cubic Yards
**  Total Fill =        105.661 Cubic Yards
**  Area =              10366.612 Sq Yards
**  Balance =           2351.034 Cubic Yards
**                                                                  **
** Elevation Range Used
** 39.960 to 40.970     Cut = 2706.848  Fill = 0.000
**                                                                  **
** No Quantity Depth Used
** Boundary Polygon Used
**********************************************************************

Required Floodplain Compensation
1.62    AC-FT
Proposed Floodplain Compensation
1.68    AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Tue Mar 26 11:52:54 2019
**                                                                  **
** From Object <Exist Ground I> to Object <FPC 19B>
**                                                                  **
** Prismoidal Volume
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         5861.199 Cubic Yards
**  Total Fill =        0.000 Cubic Yards
**  Area =              5391.141 Sq Yards
**  Balance =           5861.199 Cubic Yards
**                                                                  **
** Elevation Range Used
** 39.000 to 39.815     Cut = 1464.593  Fill = 0.000
** 39.815 to 40.630     Cut = 1454.107  Fill = 0.000
**                                                                  **
** No Quantity Depth Used
** Boundary Polygon Used
**********************************************************************

Required Floodplain Compensation
1.62    AC-FT
Proposed Floodplain Compensation
1.81    AC-FT
```

```
**************************************************************
**                                                          **
** Object to Object Volume Report -- Fri Mar 22 15:11:45 2019
**                                                          **
** From Object <Exist Ground 1> to Object <FPC 24A>
**                                                          **
** Prismoidal Volume
**                                                          **
**                                                          **
**************************************************************
**                                                          **
**  Total Cut =         18294.956 Cubic Yards
**  Total Fill =        0.000 Cubic Yards
**  Area =              13281.421 Sq Yards
**  Balance =           18294.956 Cubic Yards
**                                                          **
** Elevation Range Used
** 33.900 to 34.853     Cut = 4219.065  Fill = 0.000
** 34.853 to 35.807     Cut = 4223.363  Fill = 0.000
** 35.807 to 36.760     Cut = 4052.274  Fill = 0.000
**                                                          **
** No Quantity Depth Used
** Boundary Polygon Used
**************************************************************

Required Floodplain Compensation
6.44    AC-FT
Proposed Floodplain Compensation
7.74    AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Fri Mar 22 15:30:20 2019       **
**                                                                  **
** From Object <Exist Ground 1> to Object <FPB 24B>                 **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         11791.337 Cubic Yards                       **
**  Total Fill =        4209.560 Cubic Yards                        **
**  Area =              54472.077 Sq Yards                          **
**  Balance =           7581.777 Cubic Yards                        **
**                                                                  **
** Elevation Range Used                                             **
** 28.200 to 29.653     Cut = 11358.977         Fill = 0.000        **
** 29.653 to 31.107     Cut = 432.359   Fill = 0.000                **
** 31.107 to 32.560     Cut = 0.000     Fill = 0.000                **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************
Required Floodplain Compensation
6.44    AC-FT
Proposed Floodplain Compensation
7.31    AC-FT
```

```
**************************************************************
**                                                          **
** Object to Object Volume Report -- Fri Mar 22 15:58:21 2019
**                                                          **
** From Object <Exist Ground 1> to Object <FPC 24C>
**                                                          **
** Prismoidal Volume
**                                                          **
**                                                          **
**************************************************************
**                                                          **
**  Total Cut =         12517.462 Cubic Yards
**  Total Fill =        0.000 Cubic Yards
**  Area =              11709.723 Sq Yards
**  Balance =           12517.462 Cubic Yards
**                                                          **
** Elevation Range Used
** 29.410 to 30.513     Cut = 4256.024  Fill = 0.000
** 30.513 to 31.617     Cut = 3947.063  Fill = 0.000
** 31.617 to 32.720     Cut = 3139.557  Fill = 0.000
**                                                          **
** No Quantity Depth Used
** Boundary Polygon Used
**************************************************************
Required Floodplain Compensation
6.44    AC-FT
Proposed Floodplain Compensation
7.03    AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Tue Mar 26 12:06:18 2019
**                                                                  **
** From Object <Exist Ground 1> to Object <FPB 26A>
**                                                                  **
** Prismoidal Volume
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         3823.659 Cubic Yards
**  Total Fill =        4745.302 Cubic Yards
**  Area =              16971.673 Sq Yards
**  Balance =           -921.643 Cubic Yards
**                                                                  **
** Elevation Range Used
** 25.000 to 25.840     Cut = 2290.707  Fill = 0.000
** 25.840 to 26.680     Cut = 1356.126  Fill = 0.000
**                                                                  **
** No Quantity Depth Used
** Boundary Polygon Used
**********************************************************************
Required Floodplain Compensation
2.14     AC-FT
Proposed Floodplain Compensation
2.26     AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Sun Mar 24 14:53:34 2019       **
**                                                                  **
** From Object <Exist Ground 1> to Object <FPC 26B>                 **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         5025.495 Cubic Yards                        **
**  Total Fill =        0.000 Cubic Yards                           **
**  Area =              5025.914 Sq Yards                           **
**  Balance =           5025.495 Cubic Yards                        **
**                                                                  **
** Elevation Range Used                                             **
** 23.000 to 23.957     Cut = 1599.792  Fill = 0.000                 **
** 23.957 to 24.913     Cut = 1533.018  Fill = 0.000                 **
** 24.913 to 25.870     Cut = 860.269   Fill = 0.000                 **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************
Required Floodplain Compensation
2.14     AC-FT
Proposed Floodplain Compensation
2.48     AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Tue Mar 26 12:15:22 2019       **
**                                                                  **
** From Object <Exist Ground 1> to Object <FPB 27A>                 **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         2820.448 Cubic Yards                        **
**  Total Fill =        0.000 Cubic Yards                           **
**  Area =              2211.319 Sq Yards                           **
**  Balance =           2820.448 Cubic Yards                        **
**                                                                  **
** Elevation Range Used                                             **
** 22.500 to 23.330     Cut = 611.798   Fill = 0.000                **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************


Required Floodplain Compensation
0.32     AC-FT
Proposed Floodplain Compensation
0.38     AC-FT
```

```
**************************************************************
**                                                          **
** Object to Object Volume Report -- Sun Mar 24 13:53:39 2019
**                                                          **
** From Object <Exist Ground 1> to Object <FPC 28A>
**                                                          **
** Prismoidal Volume
**                                                          **
**                                                          **
**************************************************************
**                                                          **
**  Total Cut =         8374.999 Cubic Yards
**  Total Fill =        0.000 Cubic Yards
**  Area =              2888.532 Sq Yards
**  Balance =           8374.999 Cubic Yards
**                                                          **
** Elevation Range Used
** 15.000 to 16.124     Cut = 990.956   Fill = 0.000
** 16.124 to 17.248     Cut = 1067.596  Fill = 0.000
** 17.248 to 18.372     Cut = 1082.237  Fill = 0.000
** 18.372 to 19.496     Cut = 1082.237  Fill = 0.000
** 19.496 to 20.620     Cut = 1071.996  Fill = 0.000
**                                                          **
** No Quantity Depth Used
** Boundary Polygon Used
**************************************************************
Required Floodplain Compensation
2.74     AC-FT
Proposed Floodplain Compensation
3.35 AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Fri Mar 22 16:08:39 2019       **
**                                                                  **
** From Object <Exist Ground 1> to Object <FPC 28B>                 **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         4494.576 Cubic Yards                        **
**  Total Fill =        8.202 Cubic Yards                           **
**  Area =              4890.932 Sq Yards                           **
**  Balance =           4486.374 Cubic Yards                        **
**                                                                  **
** Elevation Range Used                                             **
** 15.000 to 16.124     Cut = 1711.291  Fill = 0.000                 **
** 16.124 to 17.248     Cut = 1390.751  Fill = 0.000                 **
** 17.248 to 18.372     Cut = 909.425   Fill = 0.000                 **
** 18.372 to 19.496     Cut = 418.817   Fill = 0.000                 **
** 19.496 to 20.620     Cut = 64.289    Fill = 0.000                 **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************
Required Floodplain Compensation
2.74     AC-FT
Proposed Floodplain Compensation
2.79     AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Sun Mar 24 13:39:41 2019       **
**                                                                  **
** From Object <Exist Ground 1> to Object <FPC 28C>                 **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         37754.564 Cubic Yards                       **
**  Total Fill =        0.000 Cubic Yards                           **
**  Area =              6671.726 Sq Yards                           **
**  Balance =           37754.564 Cubic Yards                       **
**                                                                  **
** Elevation Range Used                                             **
** 18.000 to 19.140     Cut = 2535.256  Fill = 0.000                 **
** 19.140 to 20.280     Cut = 2535.256  Fill = 0.000                 **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************
Required Floodplain Compensation
2.74     AC-FT
Proposed Floodplain Compensation
3.14     AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Sat Mar 23 08:17:16 2019       **
**                                                                  **
** From Object <Exist Ground 1> to Object <FPC 29A>                 **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         43448.225 Cubic Yards                       **
**  Total Fill =        0.000 Cubic Yards                           **
**  Area =              11591.309 Sq Yards                          **
**  Balance =           43448.225 Cubic Yards                       **
**                                                                  **
** Elevation Range Used                                             **
** 16.000 to 17.010     Cut = 3902.407  Fill = 0.000                **
** 17.010 to 18.020     Cut = 3902.407  Fill = 0.000                **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************
Required Floodplain Compensation
4.77     AC-FT
Proposed Floodplain Compensation
4.84 AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Sat Mar 23 08:22:53 2019       **
**                                                                  **
** From Object <Exist Ground 1> to Object <FPC 29B>                 **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =          8366.264 Cubic Yards                       **
**  Total Fill =         0.000 Cubic Yards                          **
**  Area =               5946.683 Sq Yards                          **
**  Balance =            8366.264 Cubic Yards                       **
**                                                                  **
** Elevation Range Used                                             **
** 10.430 to 11.514     Cut = 2148.735  Fill = 0.000                **
** 11.514 to 12.599     Cut = 2150.717  Fill = 0.000                **
** 12.599 to 13.683     Cut = 2148.735  Fill = 0.000                **
** 13.683 to 14.767     Cut = 1697.569  Fill = 0.000                **
** 14.767 to 15.851     Cut = 220.509   Fill = 0.000                **
** 15.851 to 16.936     Cut = 0.000     Fill = 0.000                **
** 16.936 to 18.020     Cut = 0.000     Fill = 0.000                **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************
Required Floodplain Compensation
4.77     AC-FT
Proposed Floodplain Compensation
5.19 AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Sun Mar 24 12:44:12 2019       **
**                                                                  **
** From Object <Exist Ground 1> to Object <FPC 29C>                 **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         10555.511 Cubic Yards                       **
**  Total Fill =        1.697 Cubic Yards                           **
**  Area =              4304.394 Sq Yards                           **
**  Balance =           10553.815 Cubic Yards                       **
**                                                                  **
** Elevation Range Used                                             **
** 11.000 to 12.003     Cut = 1429.816  Fill = 0.000                 **
** 12.003 to 13.006     Cut = 1408.383  Fill = 0.000                 **
** 13.006 to 14.009     Cut = 1348.700  Fill = 0.000                 **
** 14.009 to 15.011     Cut = 1239.156  Fill = 0.000                 **
** 15.011 to 16.014     Cut = 1106.188  Fill = 0.000                 **
** 16.014 to 17.017     Cut = 968.453   Fill = 0.000                 **
** 17.017 to 18.020     Cut = 823.257   Fill = 0.000                 **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************
Required Floodplain Compensation
4.77     AC-FT
Proposed Floodplain Compensation
5.16 AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Sat Mar 23 09:12:51 2019       **
**                                                                  **
** From Object <Exist Ground 1> to Object <FPC 30A>                 **
**                                                                  **
** Prismoidal Volume                                                **
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         1102.992 Cubic Yards                        **
**  Total Fill =        0.000 Cubic Yards                           **
**  Area =              1106.932 Sq Yards                           **
**  Balance =           1102.992 Cubic Yards                        **
**                                                                  **
** Elevation Range Used                                             **
** 10.000 to 10.980     Cut = 361.598   Fill = 0.000                **
** 10.980 to 11.960     Cut = 361.598   Fill = 0.000                **
** 11.960 to 12.940     Cut = 358.447   Fill = 0.000                **
** 12.940 to 13.920     Cut = 21.350    Fill = 0.000                **
** 13.920 to 14.900     Cut = 0.000     Fill = 0.000                **
** 14.900 to 15.880     Cut = 0.000     Fill = 0.000                **
**                                                                  **
** No Quantity Depth Used                                           **
** Boundary Polygon Used                                            **
**********************************************************************
Required Floodplain Compensation
0.51     AC-FT
Proposed Floodplain Compensation
0.68 AC-FT
```

```
**************************************************************
**                                                          **
** Object to Object Volume Report -- Sat Mar 23 09:16:25 2019
**                                                          **
** From Object <Exist Ground 1> to Object <FPC 30B>
**                                                          **
** Prismoidal Volume
**                                                          **
**                                                          **
**************************************************************
**                                                          **
**  Total Cut =         1228.025 Cubic Yards
**  Total Fill =        0.012 Cubic Yards
**  Area =              1531.563 Sq Yards
**  Balance =           1228.013 Cubic Yards
**                                                          **
** Elevation Range Used
** 11.000 to 11.976     Cut = 485.807   Fill = 0.000
** 11.976 to 12.952     Cut = 425.743   Fill = 0.000
** 12.952 to 13.928     Cut = 259.411   Fill = 0.000
** 13.928 to 14.904     Cut = 56.943    Fill = 0.000
** 14.904 to 15.880     Cut = 0.121     Fill = 0.000
**                                                          **
** No Quantity Depth Used
** Boundary Polygon Used
**************************************************************

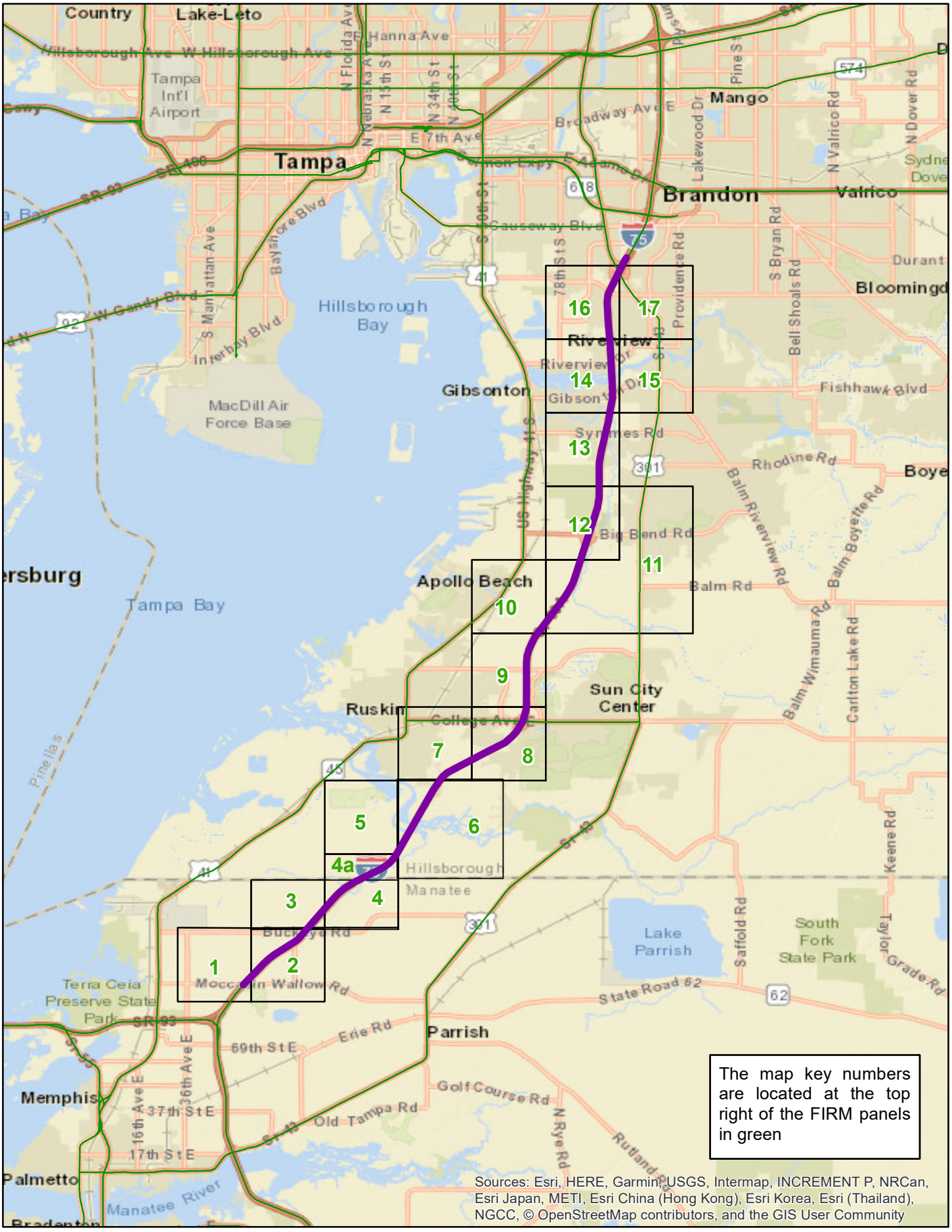
Required Floodplain Compensation
0.51     AC-FT
Proposed Floodplain Compensation
0.76 AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Sat Mar 23 11:40:06 2019
**                                                                  **
** From Object <Exist Ground 1> to Object <FPC 35A>
**                                                                  **
** Prismoidal Volume
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         9559.304 Cubic Yards
**  Total Fill =        0.000 Cubic Yards
**  Area =              13399.850 Sq Yards
**  Balance =           9559.304 Cubic Yards
**                                                                  **
** Elevation Range Used
** 18.080 to 19.300     Cut = 5441.212  Fill = 0.000
** 19.300 to 20.520     Cut = 3209.176  Fill = 0.000
**                                                                  **
** No Quantity Depth Used
** Boundary Polygon Used
**********************************************************************
Required Floodplain Compensation
4.93     AC-FT    (Includes 1.76 ac-ft for Basin 35 and 3.17 ac-ft for SMF 34A)
Proposed Floodplain Compensation
5.36   AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Sat Mar 23 11:42:21 2019
**                                                                  **
** From Object <Exist Ground 1> to Object <FPC 35B>
**                                                                  **
** Prismoidal Volume
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         6177.047 Cubic Yards
**  Total Fill =        820.004 Cubic Yards
**  Area =              15032.460 Sq Yards
**  Balance =           5357.042 Cubic Yards
**                                                                  **
** Elevation Range Used
** 17.760 to 18.925     Cut = 2675.388  Fill = 0.000
** 18.925 to 20.090     Cut = 1104.776  Fill = 0.000
**                                                                  **
** No Quantity Depth Used
** Boundary Polygon Used
**********************************************************************
Required Floodplain Compensation
1.76     AC-FT
Proposed Floodplain Compensation
2.34 AC-FT
```

```
**********************************************************************
**                                                                  **
** Object to Object Volume Report -- Sat Mar 23 11:43:30 2019
**                                                                  **
** From Object <Exist Ground 1> to Object <FPC 35C>
**                                                                  **
** Prismoidal Volume
**                                                                  **
**                                                                  **
**********************************************************************
**                                                                  **
**  Total Cut =         5583.705 Cubic Yards
**  Total Fill =        97.305 Cubic Yards
**  Area =              10436.762 Sq Yards
**  Balance =           5486.400 Cubic Yards
**                                                                  **
** Elevation Range Used
** 17.760 to 18.925     Cut = 2293.415  Fill = 0.000
** 18.925 to 20.090     Cut = 845.495   Fill = 0.000
**                                                                  **
** No Quantity Depth Used
** Boundary Polygon Used
**********************************************************************
Required Floodplain Compensation
1.76     AC-FT
Proposed Floodplain Compensation
1.95 AC-FT
```

APPENDIX B FEMA Mapping/Flood Investigation Documentation



Appendix B: FIRM Panel Index Map

I-75 (SR 93A) PD&E Study: Hillsborough and Manatee Counties

N

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 Florida State Plane west zone (FIPSZONE 0902). The **horizontal datum** was NAD83, 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 the FIRM.

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

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC–3, #9202
1315 East–West Highway
Silver Spring, MD 20910–3282

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/.

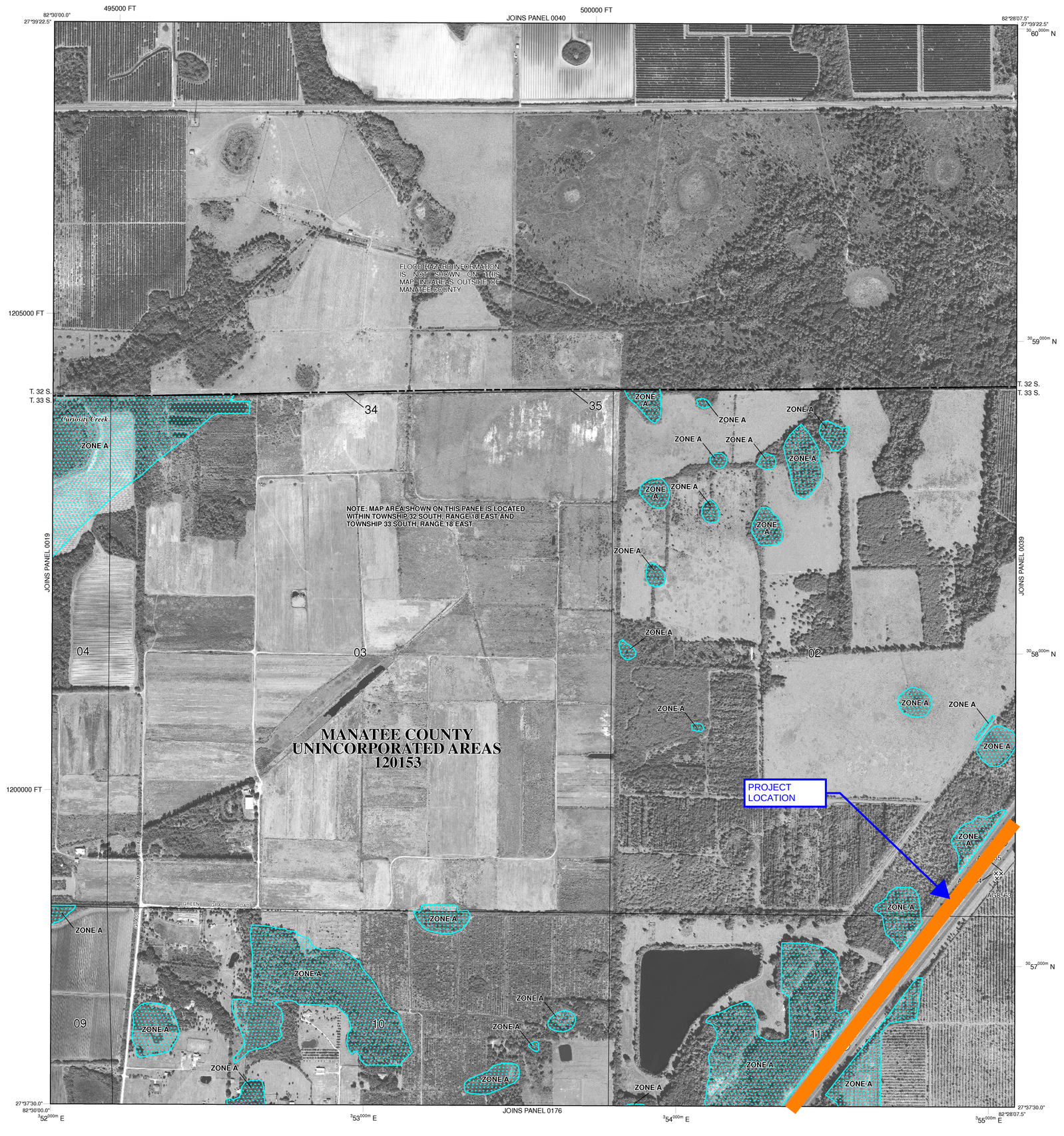
Base map orthophotography was obtained from Southwest Florida Water Management District (SWFWMD) from one foot resolution digital orthoimagery flown in 2008 and 2009. Vector base map data was provided by Manatee County and SWFWMD. Vector information was compiled in 2003 – 2009 by Manatee County GIS department.

This map may reflect more detailed or up to date stream channel configurations than those shown on the previous FIRM. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations and improved topographic data. The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles and Floodway Data Tables if applicable, in the FIS report. As a result, the profile baselines may deviate significantly from the new base map channel representation and may appear outside of the floodplain.

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 Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the **FEMA Map Service Center** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. 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.



LEGEND

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

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

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

FLOODWAY AREAS IN ZONE AE

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

OTHER FLOOD AREAS

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

OTHER AREAS

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

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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

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

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

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 17
- 6000000 FT — 5000-foot grid ticks: Florida State Plane coordinate system, west zone (FIPSZONE 0902), Transverse Mercator
- 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
March 17, 2014
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0038E

FIRM

FLOOD INSURANCE RATE MAP

MANATEE COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 38 OF 575
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MANATEE COUNTY	120153	0038	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
12081C0038E

EFFECTIVE DATE
MARCH 17, 2014

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.

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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 Florida State Plane west zone (FIPSZONE 0902), The **horizontal datum** was NAD83, 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 the FIRM.

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

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC–3, #9202
1315 East–West Highway
Silver Spring, MD 20910–3282

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/.

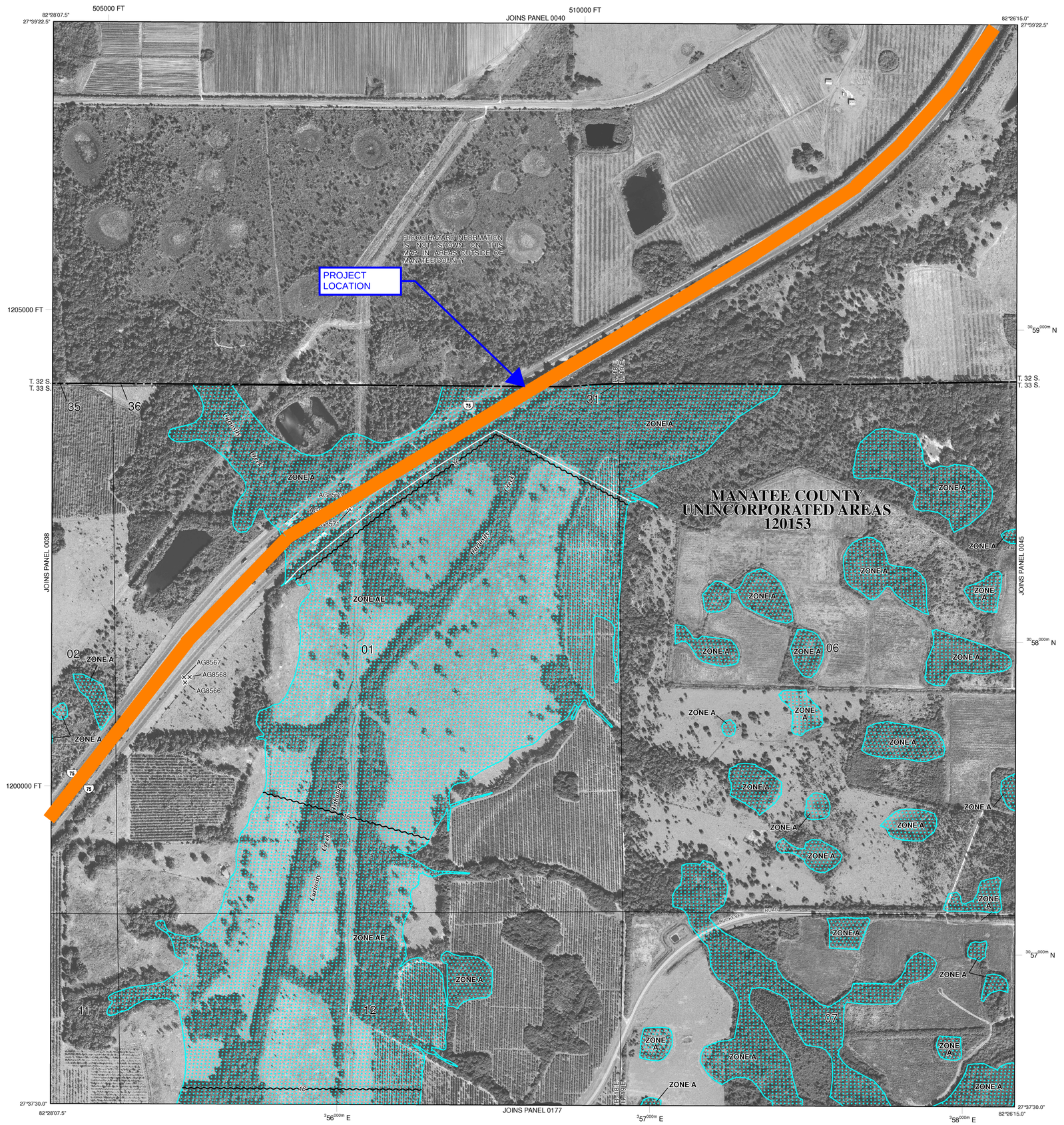
Base map orthophotography was obtained from Southwest Florida Water Management District (SWFWMD) from one foot resolution digital orthoimagery flown in 2008 and 2009. Vector base map data was provided by Manatee County and SWFWMD. Vector information was compiled in 2003 – 2009 by Manatee County GIS department.

This map may reflect more detailed or up to date stream channel configurations than those shown on the previous FIRM. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations and improved topographic data. The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles and Floodway Data Tables if applicable, in the FIS report. As a result, the profile baselines may deviate significantly from the new base map channel representation and may appear outside of the floodplain.

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 Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the **FEMA Map Service Center** website at http://msc.fema.gov. Available products may include previously issued Letters ofMap Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the **FEMA Map Service Center** website or by calling the FEMA Map Information eXchange.



LEGEND

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

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

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

FLOODWAY AREAS IN ZONE AE

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

OTHER FLOOD AREAS

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

OTHER AREAS

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

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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

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

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

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- $^{42}75^{000m}$N — 1000-meter Universal Transverse Mercator grid ticks, zone 17
- 6000000 FT — 5000-foot grid ticks: Florida State Plane coordinate system, west zone (FIPSZONE 0902), Transverse Mercator
- 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
March 17, 2014
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0039E

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

PANEL 39 OF 575
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MANATEE COUNTY	120153	0039	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
12081C0039E
EFFECTIVE DATE
MARCH 17, 2014

Federal Emergency Management Agency

NOTES TO USERS

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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.

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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 Florida State Plane west zone (FIPSZONE 0902). The **horizontal datum** was NAD83, 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 the FIRM.

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1315 East–West Highway
Silver Spring, MD 20910–3282

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 orthophotography was obtained from Southwest Florida Water Management District (SWFWMD) from one-foot resolution digital orthoimagery flown in 2008 and 2009. Vector base map data was provided by Manatee County and SWFWMD. Vector information was compiled in 2003 – 2009 by Manatee County GIS department.

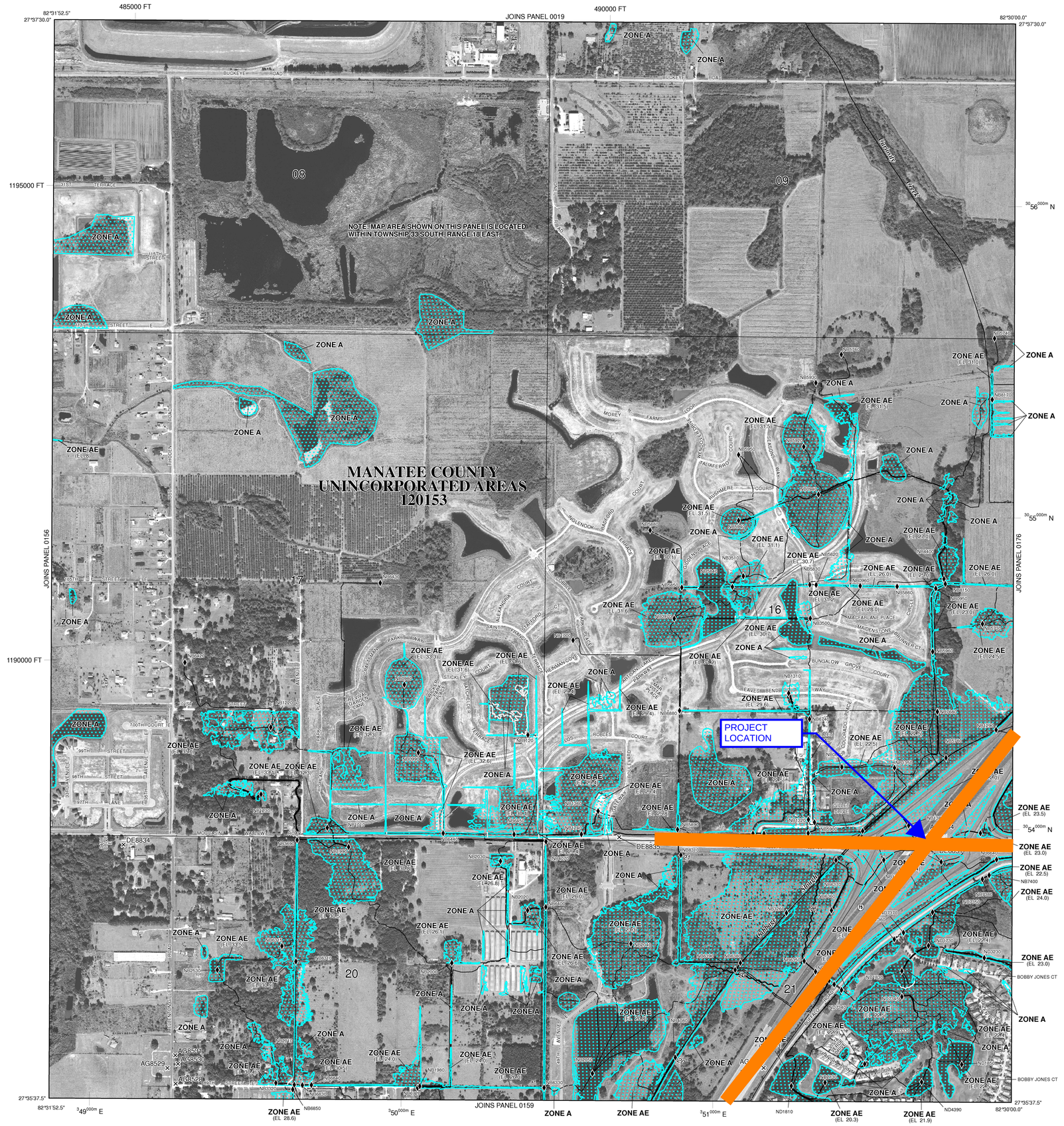
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Static elevations may be shown to the nearest tenth of a foot in modeled ponding areas based on modeled flow accumulation points (junctions). These junctions are shown as a diamond symbol connected by a flow pathway in between junction points. Boundary junctions, without an associated floodplain, are also shown. Users should refer to the Flood Insurance Study (FIS) for detailed flood elevation information.



LEGEND

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

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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

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- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

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

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- 6000000 FT — 5000-foot grid ticks: Florida State Plane coordinate system, west zone (FIPSZONE 0902), Transverse Mercator
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
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EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
March 17, 2014
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0157E

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

PANEL 157 OF 575
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MANATEE COUNTY	120153	0157	E

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MAP NUMBER
12081C0157E
EFFECTIVE DATE
MARCH 17, 2014

Federal Emergency Management Agency

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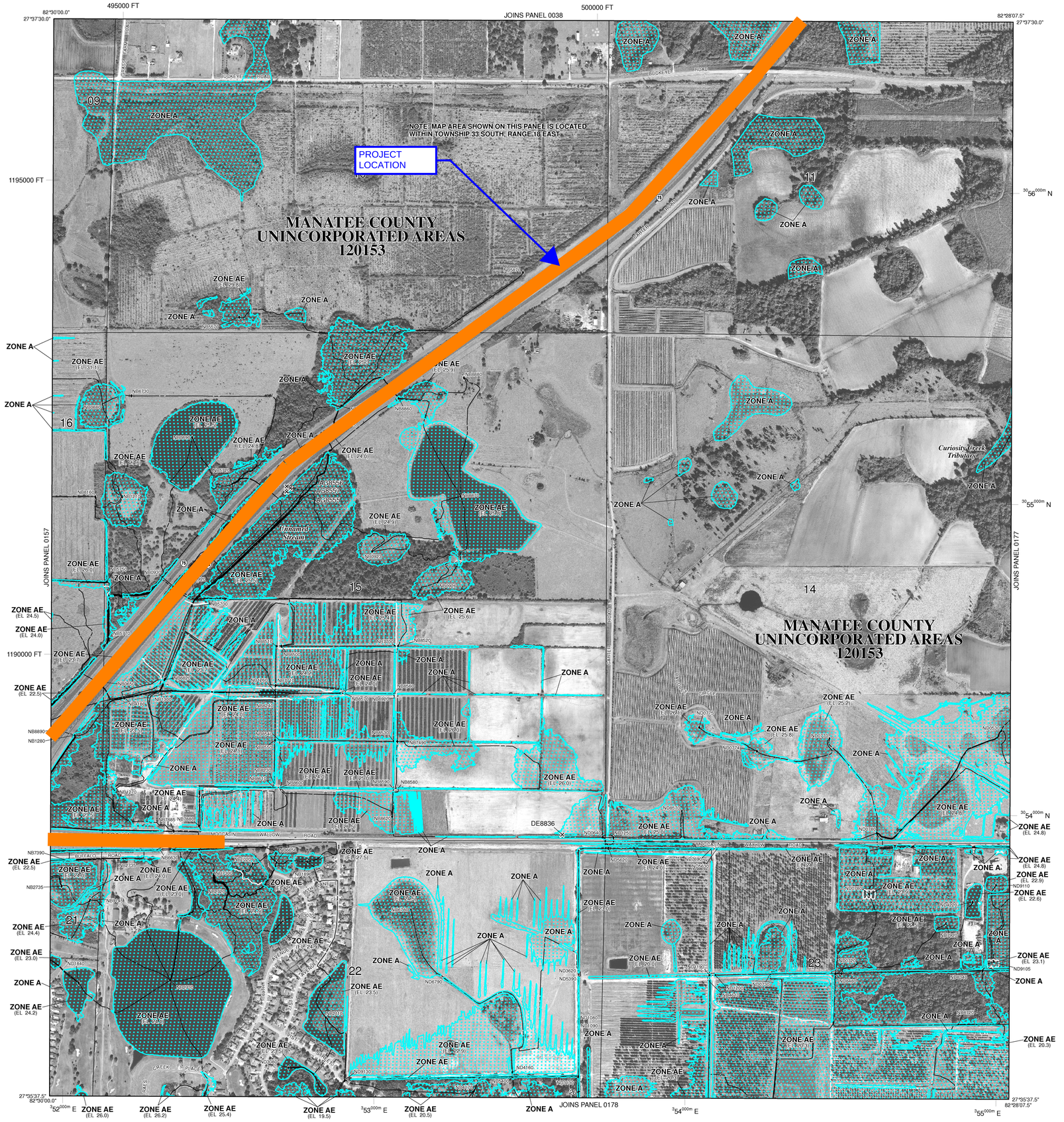
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LEGEND

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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.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
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MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
March 17, 2014
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0176E

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

PANEL 176 OF 575
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MANATEE COUNTY	120153	0176	E

-NOTE –
THIS MAP INCLUDES BOUNDARIES OF THE COASTAL BARRIER RESOURCES SYSTEM ESTABLISHED UNDER THE COASTAL BARRIER RESOURCES ACT OF 1982 AND/OR SUBSEQUENT ENABLING LEGISLATION.

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
12081C0176E

EFFECTIVE DATE
MARCH 17, 2014

Federal Emergency Management Agency

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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.

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

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Hillsborough County

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LEGEND

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

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ZONE A	No Base Flood Elevations determined.
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ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
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ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood 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.

- 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* / Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- A — A: Cross section Line
- 23 — 23: Transect line
- 87°07'45", 32°22'30": Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 2676000mN: 1000-meter Universal Transverse Mercator grid values, zone NAD 83 UTM Zone 17
- 600000 FT: 5000-foot grid ticks: Florida State Plane coordinate system, West zone (FIPSZONE 0902), Transverse Mercator projection
- DX5510: Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5: River Mile
- 410285: Junction

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 28, 2008

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

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.

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MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0388H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 388 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0388	H

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
12057C0388H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

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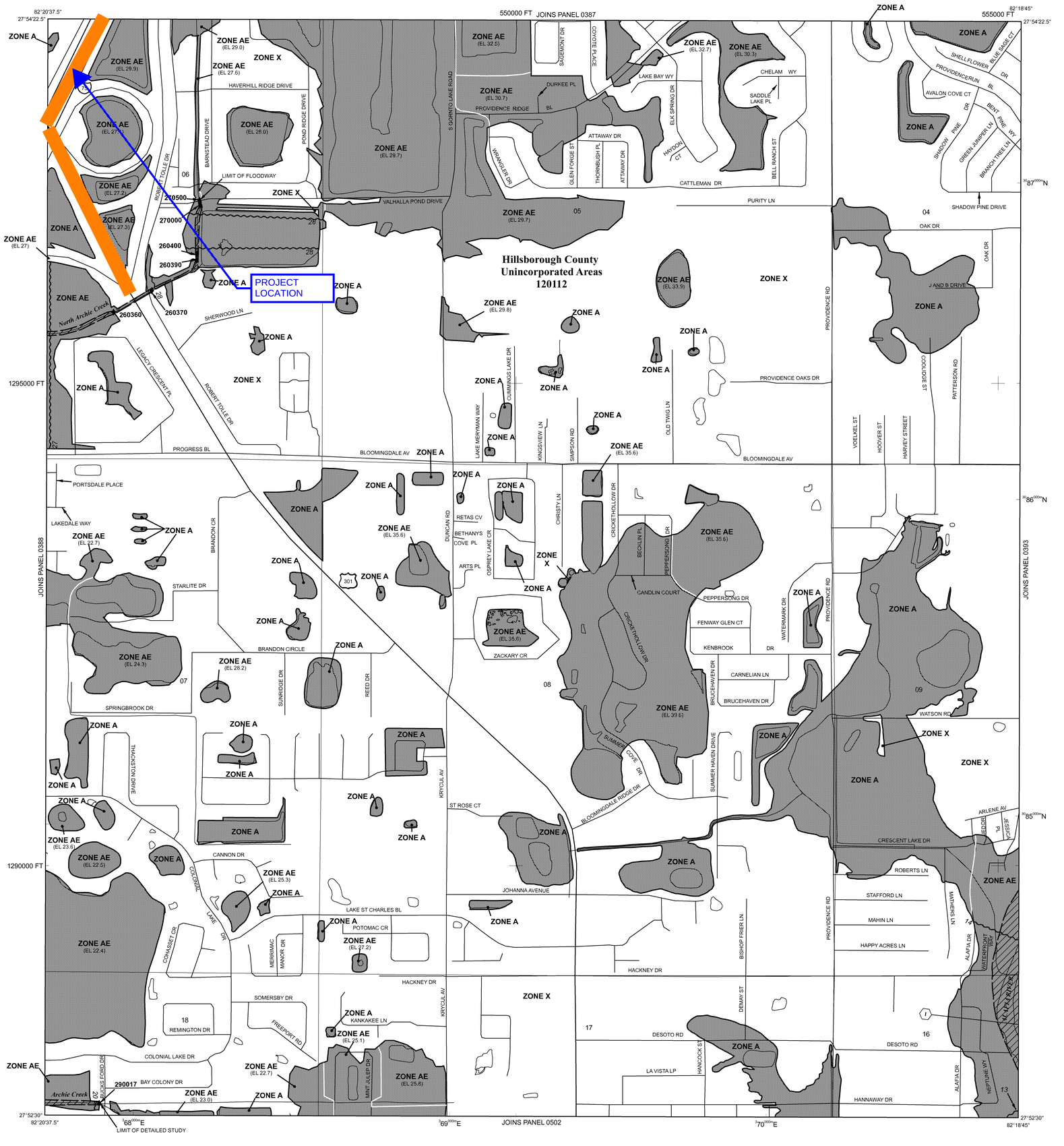
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OTHER FLOOD AREAS

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	CBRS and OPA boundary
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513 (EL 987)	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

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A A	Cross section Line
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M1.5	River Mile
410285	Junction

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

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

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MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0389H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 389 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0389	H

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MAP NUMBER
12057C0389H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

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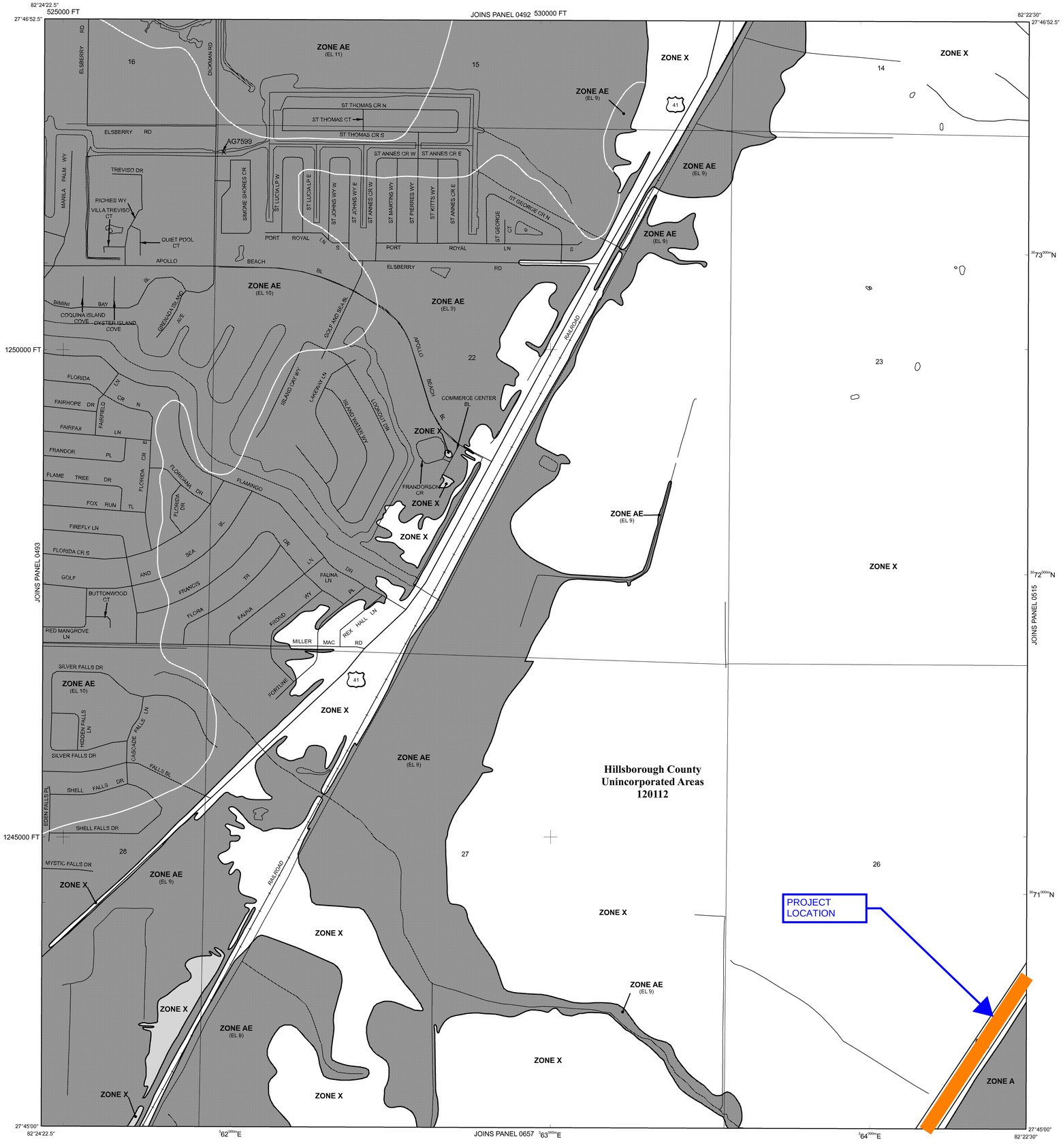
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LEGEND

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OTHER FLOOD AREAS

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August 28, 2008

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NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0494H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 494 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0494	H

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MAP NUMBER
12057C0494H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

NOTES TO USERS

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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.

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

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Hillsborough County

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LEGEND

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

The 1% annual 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.
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ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood 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.

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

* Referenced to the North American Vertical Datum of 1988

A A	Cross section Line
23 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
2676000mN	1000-meter Universal Transverse Mercator grid values, zone NAD 83 UTM Zone 17
600000 FT	5000-foot grid ticks: Florida State Plane coordinate system, West zone (FIPSZONE 0902), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile
410285	Junction

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

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

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MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0501H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 501 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0501	H

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
12057C0501H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

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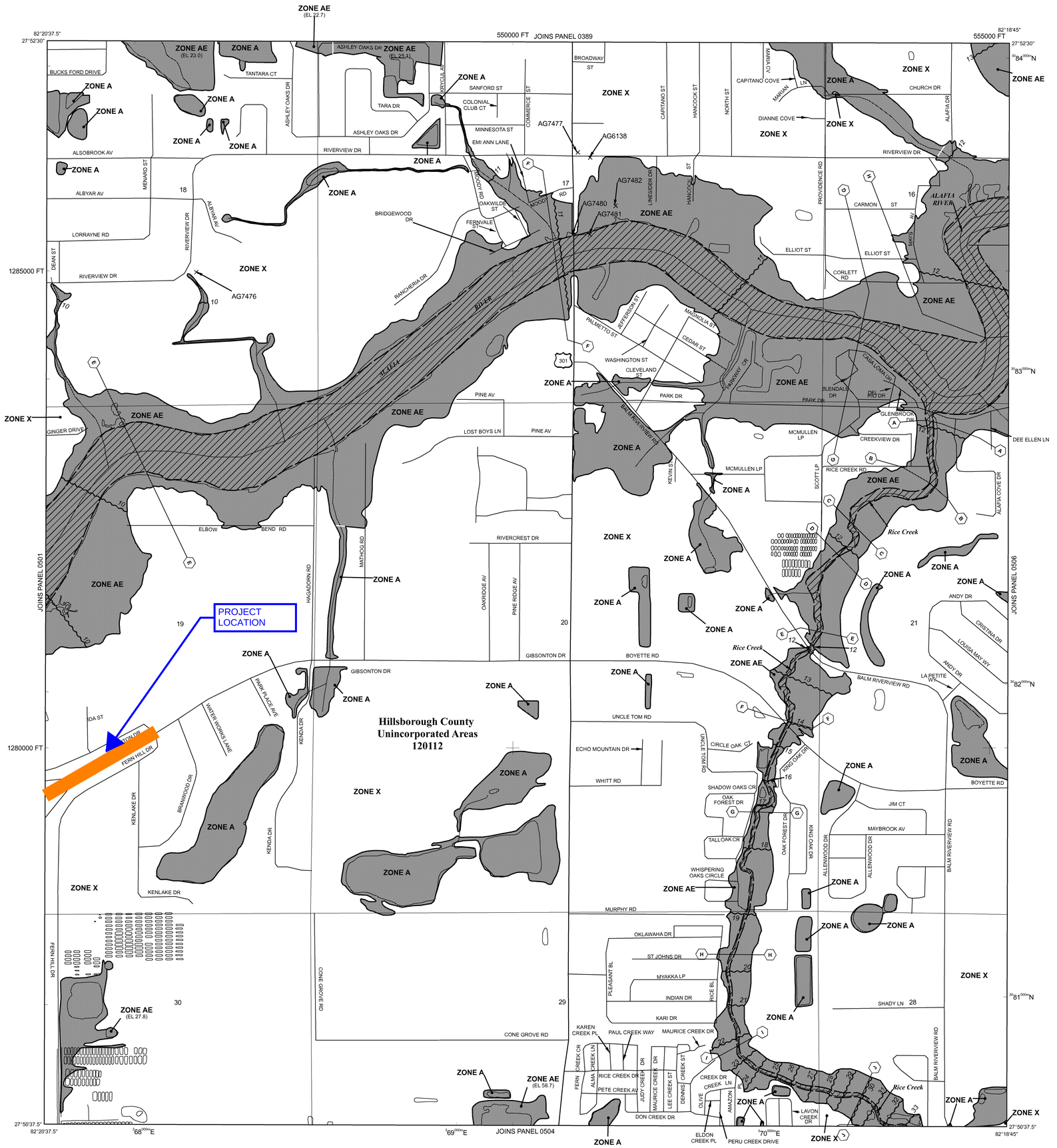
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OTHER FLOOD AREAS

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A–A	Cross section Line
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MAP REPOSITORY
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EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

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

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250 0 500 1000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0502H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 502 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0502	H

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MAP NUMBER
12057C0502H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

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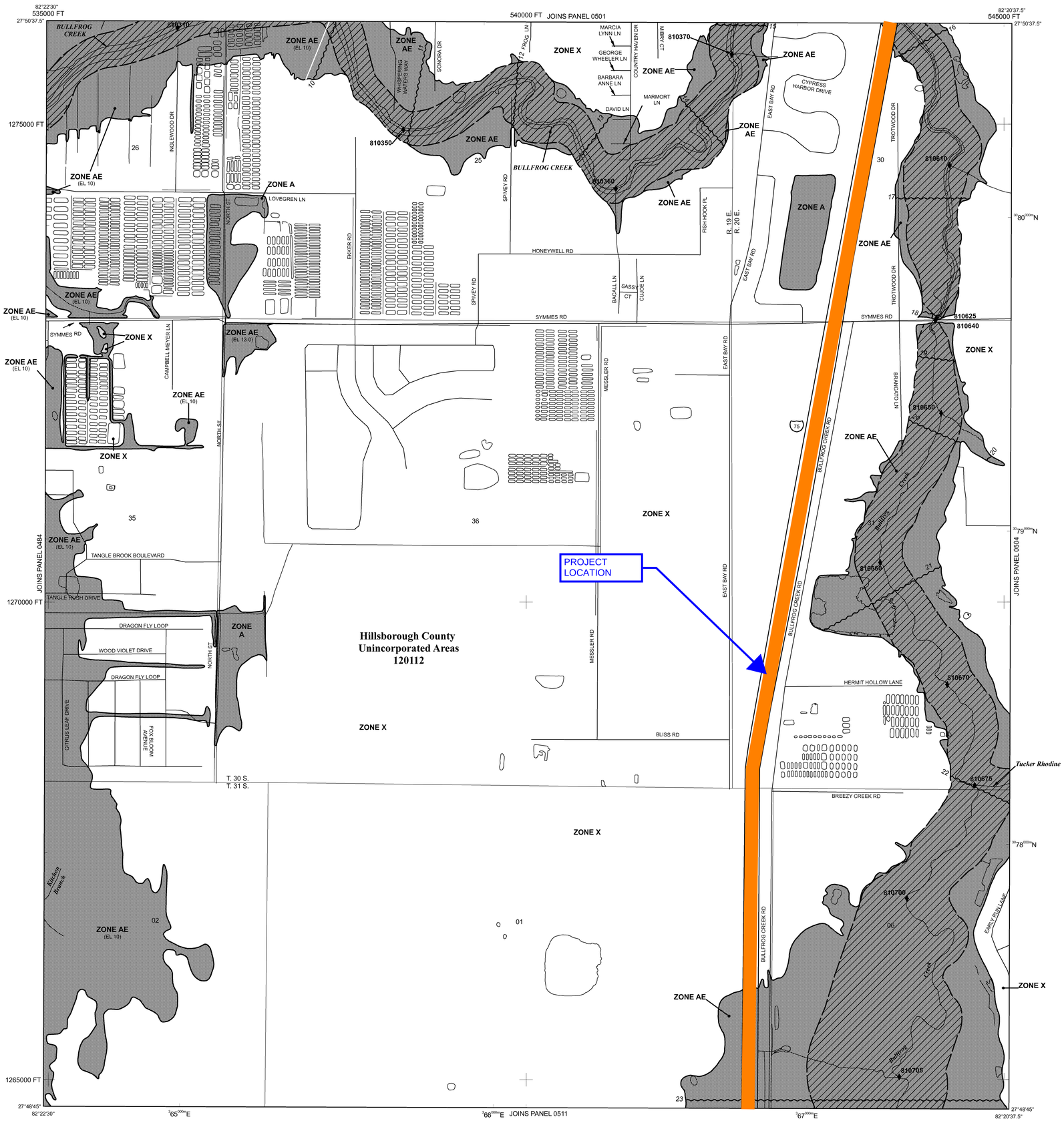
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LEGEND

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August 28, 2008

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NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0503H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 503 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0503	H

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12057C0503H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

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NGS Information Services
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Silver Spring, Maryland 20910-3282
(301) 713-3242

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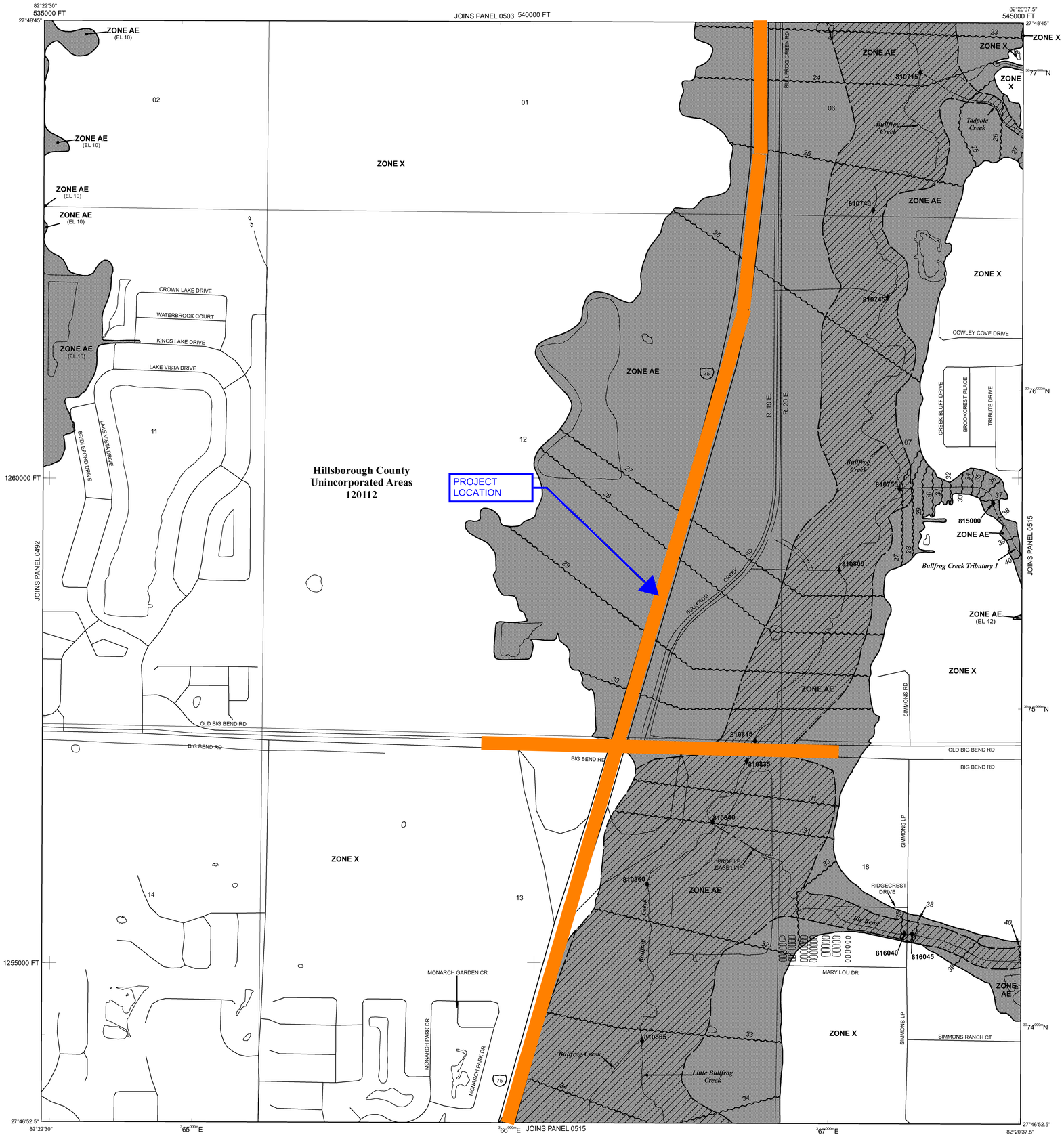
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Hillsborough County

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LEGEND

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

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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.
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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.
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COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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	Floodplain boundary
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	Zone D boundary
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513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

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A — A	Cross section Line
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87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
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DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
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MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

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

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MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0511H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 511 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0511	H

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
12057C0511H

EFFECTIVE DATE
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Federal Emergency Management Agency

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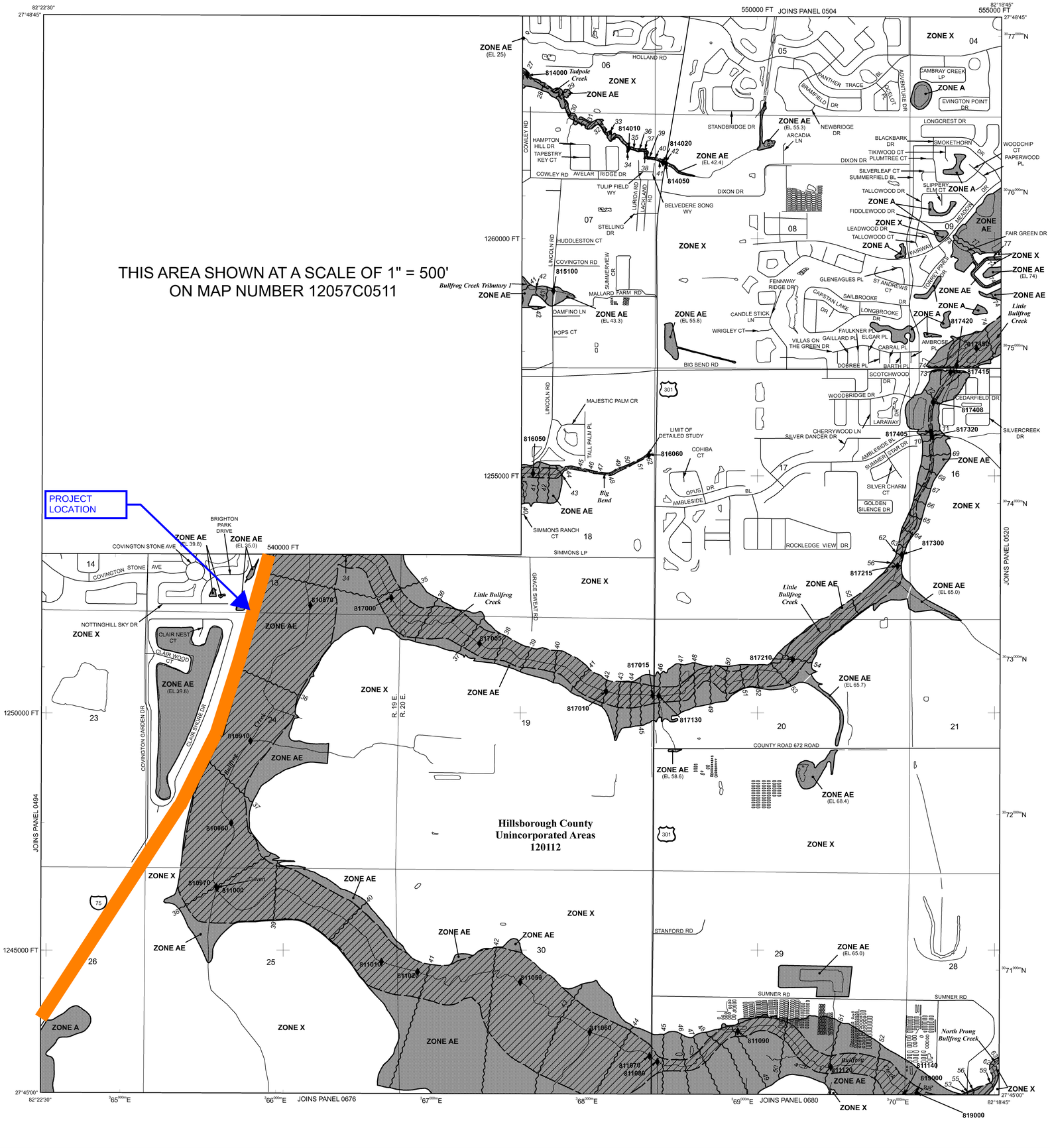
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August 28, 2008

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500 0 1000 2000 FEET
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NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0515H

FIRM
FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 515 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0515	H

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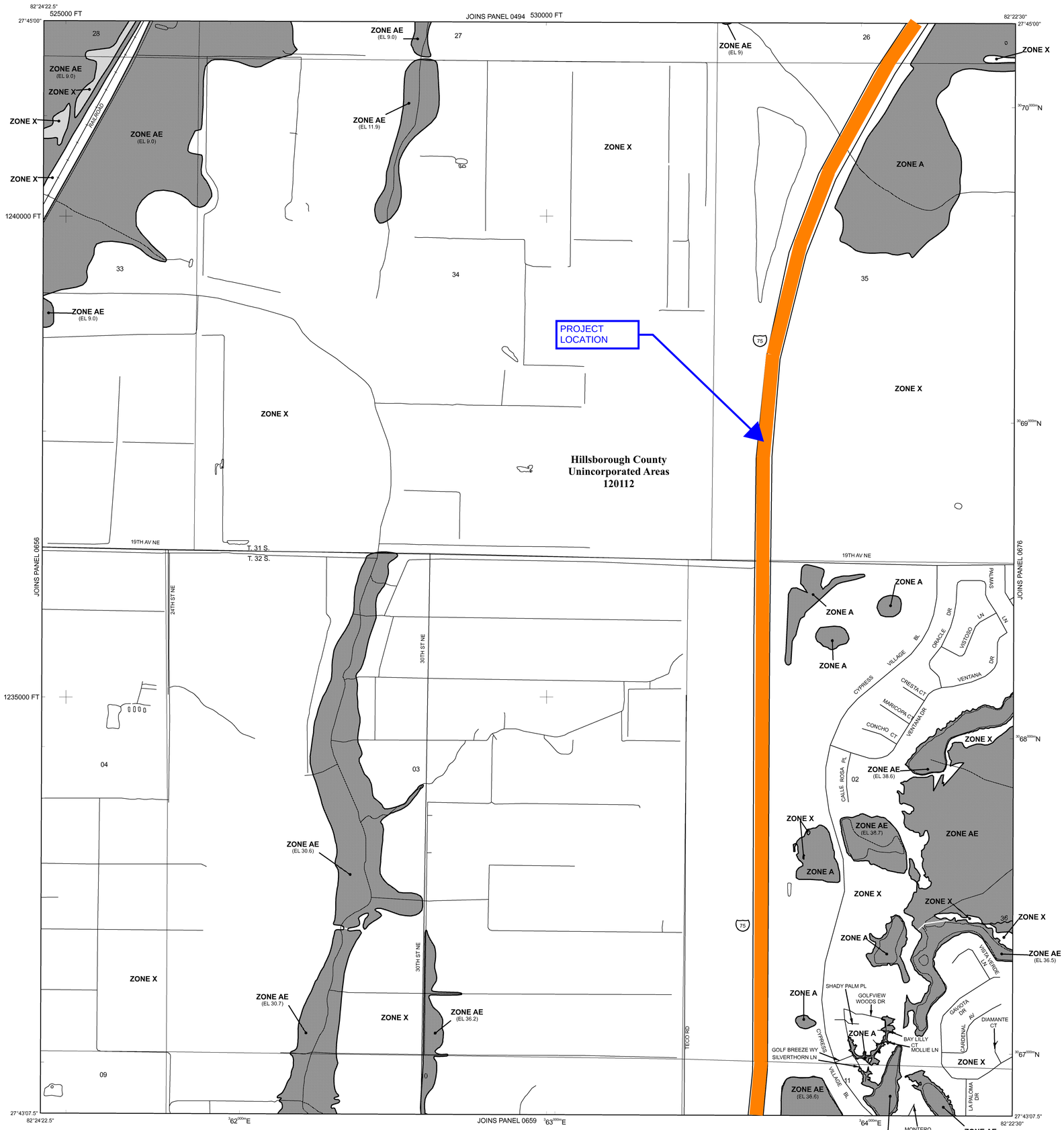
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NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0657H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 657 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0657	H

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
12057C0657H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

NOTES TO USERS

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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 Coastal Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Coastal 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 Florida State Plane west zone (FIPSZONE 0902). The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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

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

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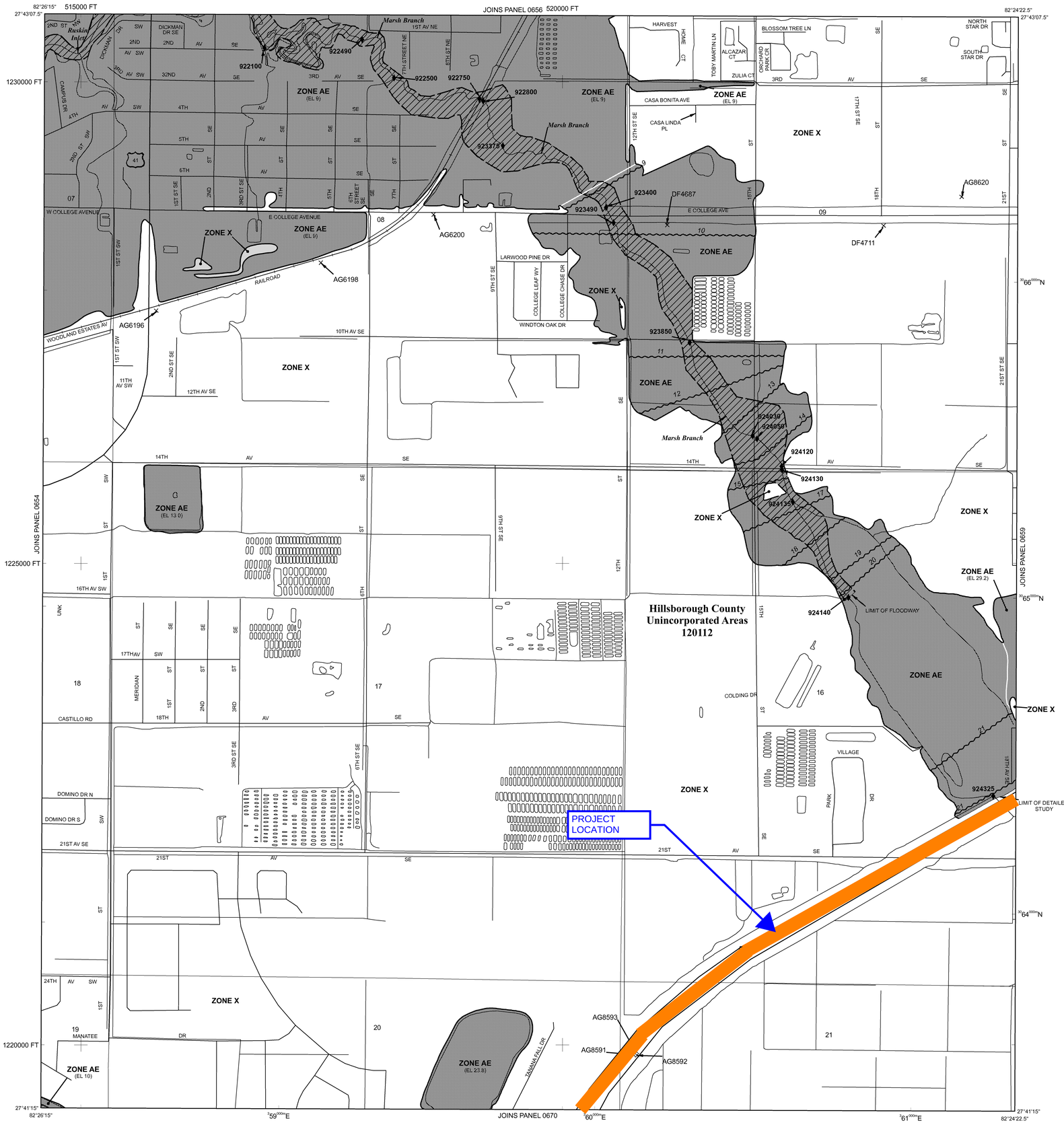
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If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.

Hillsborough County

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LEGEND

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

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

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

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
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- 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

- A — A — Cross section Line
- 23 — — — 23 — Transect line
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- 2676000mN — 1000-meter Universal Transverse Mercator grid values, zone NAD 83 UTM Zone 17
- 600000 FT — 5000-foot grid ticks: Florida State Plane coordinate system, West zone (FIPSZONE 0902), Transverse Mercator projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- ●M1.5 — River Mile
- ♦410285 — Junction

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

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

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.

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MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0658H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 658 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0658	H

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MAP NUMBER
12057C0658H

EFFECTIVE DATE
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Federal Emergency Management Agency

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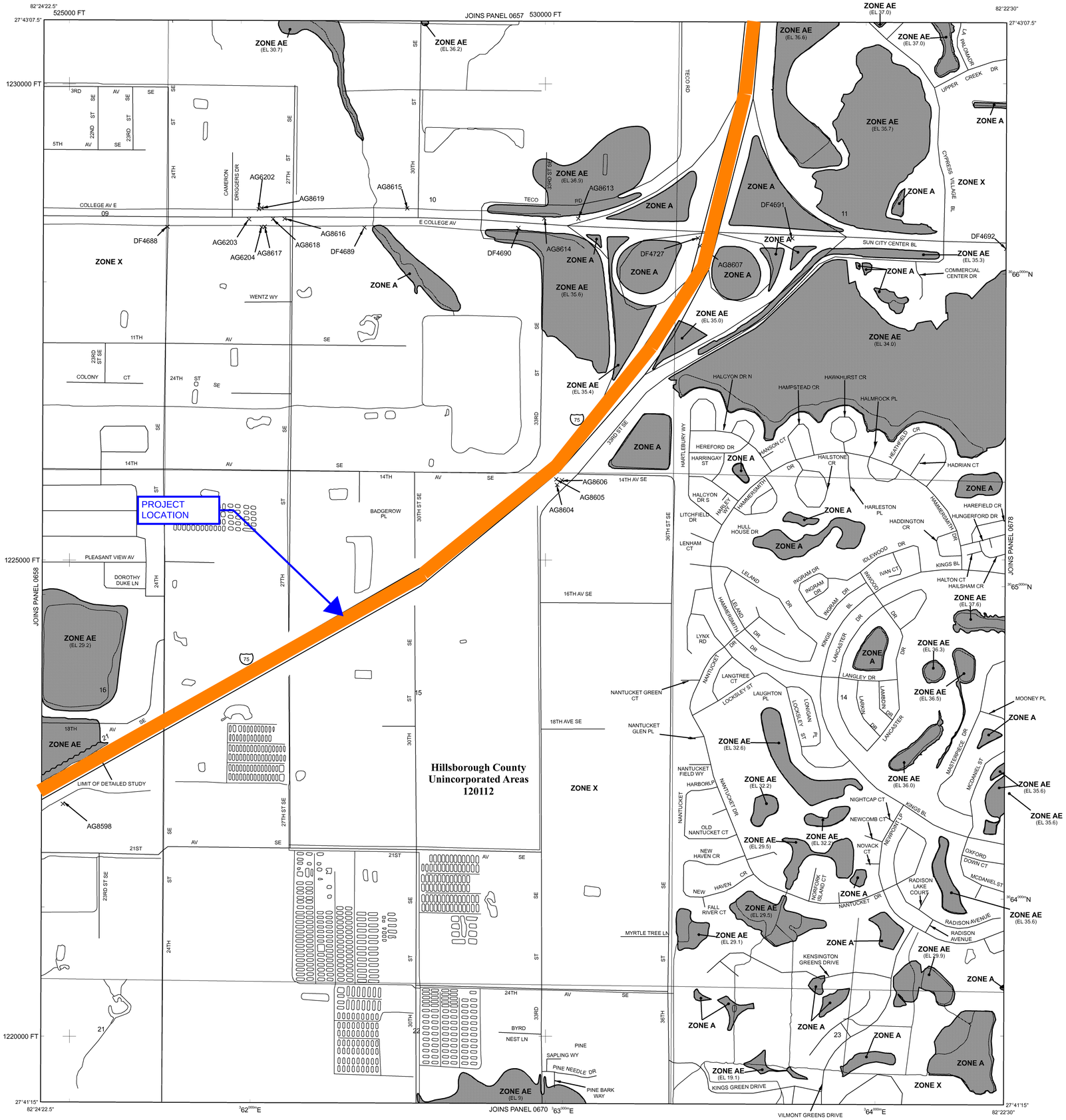
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LEGEND

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FLOODWAY AREAS IN ZONE AE

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OTHER FLOOD AREAS

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(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

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M1.5	River Mile
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MAP REPOSITORY
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EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 28, 2008

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

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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0659H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 659 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0659	H

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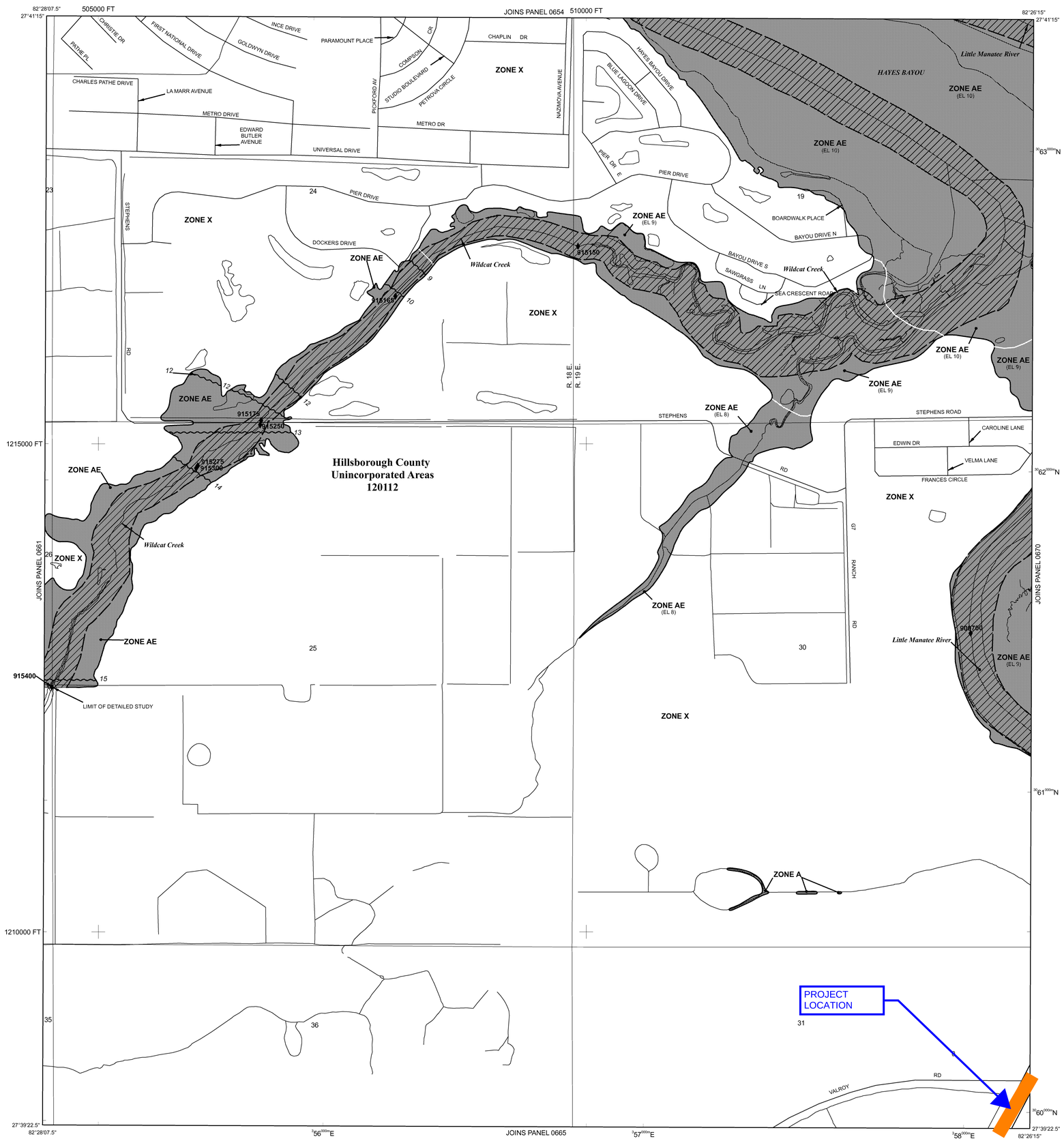
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LEGEND

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EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

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

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" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0662H

FIRM
FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 662 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0662	H

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
12057C0662H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

NOTES TO USERS

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

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at www.ngs.noaa.gov. Information on elevation reference marks is readily available through a variety of sources: the NGS website, www.ngs.noaa.gov/cgi-bin/datasheet.prl, the Land Boundary Information System (LABINS) maintained by the Florida Department of Environmental Protection www.labins.org, and the Hillsborough County Survey Division www.hillsboroughcounty.org/realestate/surveying/.

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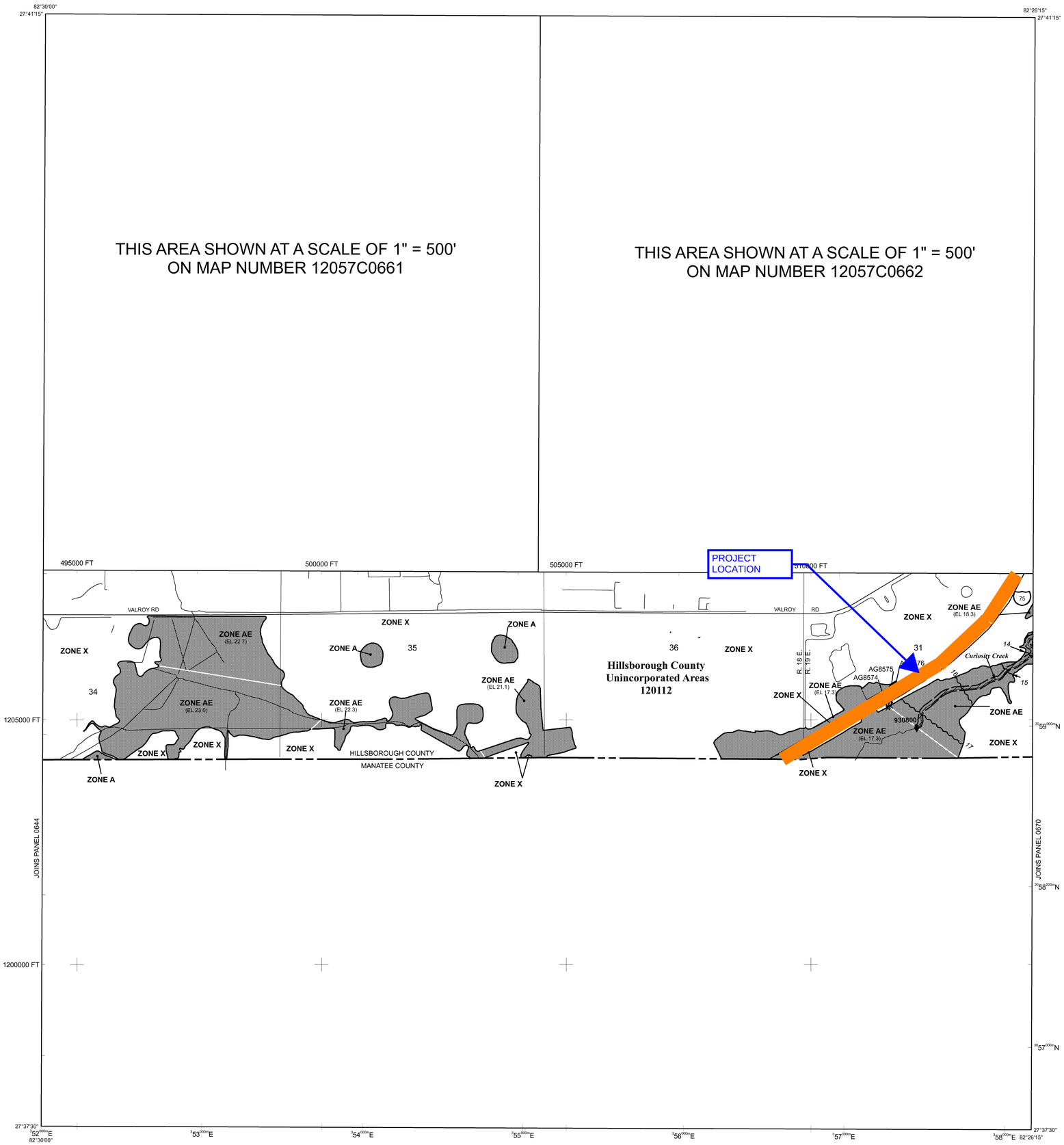
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which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

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

Hillsborough County

In cooperation with the Federal Emergency Management Agency (FEMA), Hillsborough County developed this Flood Insurance Rate Map in a digital countywide format to assist communities in their efforts to minimize the loss of property and life through effectively management development in floodprone areas. Hillsborough County has implemented a long term approach to floodplain management to reduce the impacts of flooding. This is demonstrated by the County's commitment to map floodplain areas at the local level. As part of this effort, Hillsborough County is working closely with FEMA as a Cooperating Technical Partner to produce and maintain this digital FIRM.



LEGEND

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

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

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

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

* Referenced to the North American Vertical Datum of 1988

A A	Cross section Line
23 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4276000mN	1000-meter Universal Transverse Mercator grid values, zone NAD 83 UTM Zone 17
600000 FT	5000-foot grid ticks: Florida State Plane coordinate system, West zone (FIPSZONE 0902), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile
410285	Junction

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

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

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500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0665H

FIRM
FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA
AND INCORPORATED AREAS

PANEL 665 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0665	H

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MAP NUMBER
12057C0665H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

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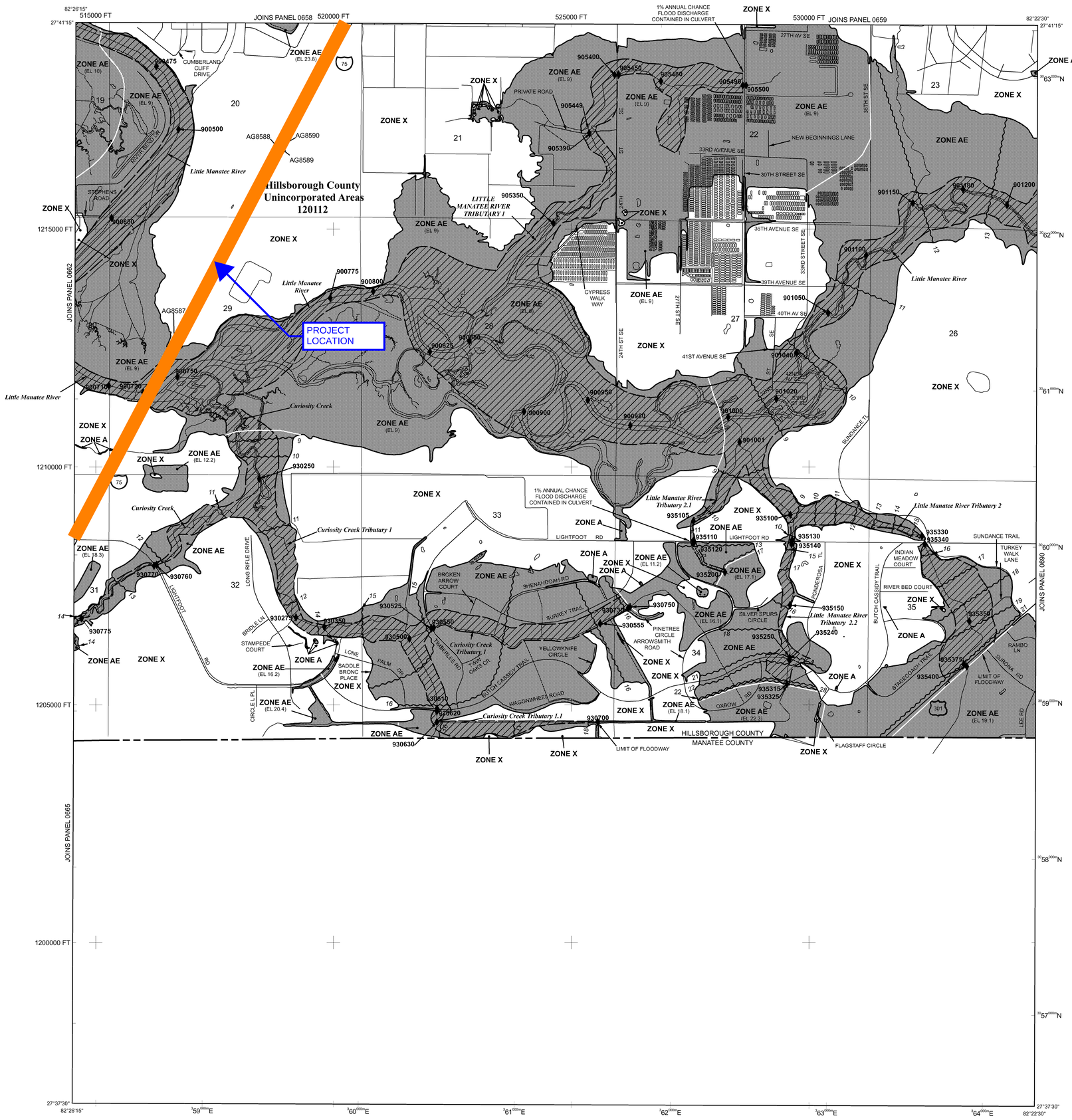
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NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0670H

FIRM

FLOOD INSURANCE RATE MAP

HILLSBOROUGH COUNTY, FLORIDA AND INCORPORATED AREAS

PANEL 670 OF 801

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HILLSBOROUGH COUNTY	120112	0670	H

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MAP NUMBER
12057C0670H

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

APPENDIX C ERP# 44021713.000

Southwest Florida
Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
On the Internet at: WaterMatters.org

An Equal Opportunity Employer

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)
SUNCOM 578-2070

Bartow Service Office
170 Century Boulevard
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)
SUNCOM 572-6200

Venice Service Office
115 Corporation Way
Venice, Florida 34292-3524
(941) 486-1212 or
1-800-320-3503 (FL only)
SUNCOM 526-6900

Lecanto Service Office
3600 West Sovereign Path
Suite 226
Lecanto, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

Ronnie E. Duncan
Chair, Pinellas
Thomas G. Dabney, II
Vice Chair, Sarasota
Janet D. Kovach
Secretary, Hillsborough
Watson L. Haynes, II
Treasurer, Pinellas
Edward W. Chance
Manatee
Monroe "Al" Coogler
Citrus
Maggie N. Dominguez
Hillsborough
Pamela L. Fentress
Highlands
Ronald C. Johnson
Polk
Heidi B. McCree
Hillsborough
John K. Renke, III
Pasco

E. D. "Sonny" Vergara
Executive Director
Gene A. Heath
Assistant Executive Director
William S. Bilenky
General Counsel

June 28, 2001

Scott Griffith
Southern Development Group
8752 Ashworth Drive
Tampa, FL 33647

Subject: **Notice of Final Agency Action for Approval**
ERP Standard General Construction
Permit No: 44021713.000
Project Name: SDG Land Excavation
County: Hillsborough
Sec/Twp/Rge: 6/31S/20E

Dear Mr. Griffith:

This letter constitutes notice of Final Agency Action for **approval** of the permit application referenced above. Final approval is contingent upon no objection to the District's action being received by the District within the time frames described below.

You or any person whose substantial interests are affected by the District's action regarding a permit may request an administrative hearing in accordance with Sections 120.569 and 120.57, F.S., and Chapter 28-106, F.A.C., of the Uniform Rules of Procedure. *A request for hearing must: (1) explain how the substantial interests of each person requesting the hearing will be affected by the District's action, or proposed action, (2) state all material facts disputed by the person requesting the hearing or state that there are no disputed facts, and (3) otherwise comply with Chapter 28-106, F.A.C.* Copies of Sections 28-106.201 and 28-106.301, F.A.C. are enclosed for your reference. A request for hearing must be filed with (received by) the Agency Clerk of the District at the District's Brooksville address within 21 days of receipt of this notice. Receipt is deemed to be the fifth day after the date on which this notice is deposited in the United States mail. Failure to file a request for hearing within this time period shall constitute a waiver of any right you or such person may have to request a hearing under Sections 120.569 and 120.57, F.S. Mediation pursuant to Section 120.573, F.S., to settle an administrative dispute regarding the District's action in this matter is not available prior to the filing of a request for hearing.

Enclosed is a "Noticing Packet" that provides information regarding the District Rule 40D-1.1010, F.A.C., which addresses the notification of persons whose substantial interests may be affected by the District's action in this matter. The packet contains guidelines on how to provide notice of the District's action, and a notice that you may use.

The enclosed approved construction plans are part of the permit, and construction must be in accordance with these plans.

If you have questions concerning the permit, please contact Abdul Waris, P.E., at the Tampa Service Office, extension 2053. For assistance with environmental concerns, please contact Patricia A. Frantz, extension 2054.

Sincerely,

Alba E. Más, P.E., Director
Tampa Regulation Department

AEM:srb
Enclosures: Approved Permit w/Conditions Attached
Approved Construction Drawings
Statement of Completion
Notice of Authorization to Commence Construction
Noticing Packet (42.00-039)
Sections 28-106.201 and 28-106.301, F.A.C.
cc/enc: File of Record 44021713.000
USACOE
Richard S. Boydack, P.E., Heidt and Associates, Incorporated
Donald Fraser

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE
STANDARD GENERAL CONSTRUCTION
PERMIT NO. 44021713.000

Original
Poor
Quality

EXPIRATION DATE: June 28, 2006

PERMIT ISSUE DATE: June 28, 2001

This permit issued under the provisions of Chapter 373, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.), Rule 40D-40, authorizes the Permittee to perform the work outlined herein and shown by the application, approved drawing(s), plans, and other documents, attached hereto and kept on file at the Southwest Florida Water Management District (District). All construction, operation and maintenance of the surface water management system authorized by this permit shall occur in compliance with Florida Statutes and Administrative Code and the conditions of this permit.

PROJECT NAME: SDG Land Excavation

GRANTED TO: Southern Development Group
8752 Ashworth Drive
Tampa, FL 33647

ABSTRACT: This permit proposes excavation of a borrow pit for fill material, and construction of the related stormwater management facilities. The borrow pit will be excavated by creating cells. A six inch diameter sock drain and settling pond combination will be used to control groundwater entry and turbid water discharge during construction of Cell 1. Following the construction of Cell 1, the dewatering discharge will be transferred between the cells and offsite discharge will be limited.

The mining operation specifies procedures which will protect onsite wetlands. Rehydration conveyance swales will be constructed to maintain recharge. Vertical impermeable barriers will be constructed to minimize drawdown in the wetlands. A shallow network of piezometers will be installed to track groundwater levels. When drawdown in a piezometer exceeds a specified target level, rehydration of the wetlands will be accomplished in accordance with the enclosed monitoring and rehydration plan. Recharge ditches to limit offsite drawdown will be constructed based on monitoring data from the piezometers.

Calculations demonstrate that the post-developed 25-year, 24-hour discharge rate will be limited to the 10-year, 24-hour pre-development conditions discharge rate. The peak stage elevation is below the top of bank elevation. Plans and calculations indicate that offsite conveyance will be maintained during and after construction of the borrow pit.

OP. & MAINT. ENTITY: Southern Development Group

PROPERTY LOCATION: Hillsborough County

SEC/TWP/RGE: 6/31S/20E

TOTAL ACRES OWNED OR UNDER CONTROL: 123.40

PROJECT SIZE: 74.45 Acres

LAND USE: Commercial

DATE APPLICATION FILED: December 18, 2000

AMENDED DATE: N/A

Permit No. 44021713.000
Project Name: SDG Land Excavation
Page 2

I. Water Quantity/Quality

POND NO.	AREA ACRES AT TOP OF BANK	TREATMENT TYPE
1	73.80	N/A
TOTAL	73.80	

Mixing Zone required: YES ( ) NO (X)

Variance required: YES ( ) NO (X)

II. 100-Year Floodplain

Encroachment (Acre-Feet of Fill)	Compensation (Acre-Feet of Excavation)	Compensation Type	Encroachment Result (Feet)
0.41	0.41	EE	N/A

EE = Equivalent Excavation to offset project filling per Section 4.4 of the District's Basis of Review

III. Environmental Considerations

Original Poor Quality

Wetland Information:

WETLAND NO.	TOTAL AC.	NOT IMPACTED AC.	TEMPORARILY DISTURBED AC.	PERMANENTLY DESTROYED AC.
B	2.10	2.10	0.00	0.00
C	1.46	1.46	0.00	0.00
D	0.02	0.02	0.00	0.00
E	0.09	0.09	0.00	0.00
F	0.01	0.01	0.00	0.00
G	0.21	0.21	0.00	0.00
H	0.39	0.39	0.00	0.00
I	0.47	0.47	0.00	0.00
TOTAL	4.75	4.75	0.00	0.00

Comments: There are 4.76 acres of wetlands and 1.52 acres of upland cut surface waters within the project area. There is an isolated wetland 0.01 acre, that is exempt from fish and wildlife review and 0.85 acre of upland cut surface water that will be impacted by the proposed land excavation. No mitigation is required for the wetland and surface water impacts. An Eagles' nest, nest number HL-05C, is present within the project area and the proposed project has Fish and Wildlife services approval for the Bald Eagle Management Plan and the project.

Original Poor Quality

Watershed name: Tampa Bay Drainage

A regulatory conservation easement is not required.

A proprietary conservation easement is not required.

SPECIFIC CONDITIONS

1. If the ownership of the project area covered by the subject permit is divided, with someone other than the Permittee becoming the owner of part of the project area, this permit shall terminate, pursuant to Section 40D-1.6105, F.A.C. In such situations, each land owner shall obtain a permit (which may be a modification of this permit) for the land owned by that person. This condition shall not apply to the division and sale of lots or units in residential subdivisions or condominiums.

2. The discharges from this system shall meet state water quality standards as set forth in Chapter 62-302 and Section 62-4.242, F.A.C., for class waters equivalent to the receiving waters.

3. Unless specified otherwise herein, two copies of all information and reports required by this permit shall be submitted to:

   Tampa Regulation Department
   Southwest Florida Water Management District
   7601 U.S. Highway 301 North
   Tampa, FL 33637

   The permit number, title of report or information and event (for recurring report or information submittal) shall be identified on all information and reports submitted.

4. The Permittee shall retain the design engineer, or other professional engineer registered in Florida, to conduct on-site observations of construction and assist with the as-built certification requirements of this project. The Permittee shall inform the District in writing of the name, address and phone number of the professional engineer so employed. This information shall be submitted prior to construction.

5. Within 30 days after completion of construction of the permitted activity, the Permittee shall submit to the Tampa Service Office a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1, F.A.C., and signed, dated, and sealed as-built drawings. The as-built drawings shall identify any deviations from the approved construction drawings.

6. The District reserves the right, upon prior notice to the Permittee, to conduct on-site research to assess the pollutant removal efficiency of the surface water management system. The Permittee may be required to cooperate in this regard by allowing on-site access by District representatives, by allowing the installation and operation of testing and monitoring equipment, and by allowing other assistance measures as needed on site.

7. Wetland buffers shall remain in an undisturbed condition except for approved drainage facility construction/maintenance.

8. The following boundaries, as shown on the approved construction drawings, shall be clearly delineated on the site prior to initial clearing or grading activities:

(X) wetland preservation
(X) wetland buffers
( ) upland preservation
( ) limits of approved wetland impacts
( ) construction access for (list mitigation area(s))

Original Poor Quality

The delineation shall endure throughout the construction period and be readily discernible to construction and District personnel.

9. Wetland boundaries as shown on the approved construction drawings shall be binding upon the Permittee and the District.

10. Rights-of-way and easement locations necessary to construct, operate and maintain all facilities, which constitute the permitted surface water management system, shall be shown on the final plat recorded in the County Public Records. Documentation of this plat recording shall be submitted to the District with the Statement of Completion and Request for Transfer to Operation Entity Form, and prior to beneficial occupancy or use of the site. The plat shall include the locations and limits of the following:

(X) all wetlands
(X) wetland buffers
( ) upland preservation easements
( ) upland buffers for water quality treatment
( ) 100-yr floodplain area(s)
( ) flood plain compensation area(s)

11. The Permittee shall notify the District at least 48 hours prior to the maximum excavation of each cell and must notify the District upon the completion of each cell.

12. If limestone bedrock is encountered during construction of the borrow pit, the District must be notified and construction in the affected area shall cease.

13. The Permittee shall notify the District of any sinkhole development in the borrow pit within 48 hours of discovery and must submit a detailed sinkhole evaluation and repair plan for approval by the District within 30 days of discovery.

14. Maximum cell depths are designed from site test borings and are depicted on Sheet 3 of the permitted drawings, which accompany the permit. No excavation of depths greater than maximum depths is permitted. No excavation of the confining layer is permitted. Any proposed changes for these permitted depths must be accompanied by a permit modification.

15. Should collected data from the system of piezometers indicate that the specified drawdown target levels have been exceeded, the drawdown must be corrected in accordance with the 'monitoring and rehydration plan,' or by the creation of recharge ditches to serve as hydraulic barriers, as shown on the permitted construction plans.

Original
Poor
Quality

16. Refer to **GENERAL CONDITION** No. 15 herein.

GENERAL CONDITIONS

1. The general conditions attached hereto as Exhibit "A" are hereby incorporated into this permit by reference and the Permittee shall comply with them.

Authorized Signature

Original Poor Quality

EXHIBIT "A"

1. All activities shall be implemented as set forth in the plans, specifications and performance criteria as approved by this permit. Any deviation from the permitted activity and the conditions for undertaking that activity shall constitute a violation of this permit.

2. This permit or a copy thereof, complete with all conditions, attachments, exhibits, and modifications, shall be kept at the work site of the permitted activity. The complete permit shall be available for review at the work site upon request by District staff. The Permittee shall require the contractor to review the complete permit prior to commencement of the activity authorized by this permit.

3. Activities approved by this permit shall be conducted in a manner which does not cause violations of state water quality standards. The Permittee shall implement best management practices for erosion and a pollution control to prevent violation of state water quality standards. Temporary erosion control shall be implemented prior to and during construction, and permanent control measures shall be completed within 7 days of any construction activity. Turbidity barriers shall be installed and maintained at all locations where the possibility of transferring suspended solids into the receiving waterbody exists due to the permitted work. Turbidity barriers shall remain in place at all locations until construction is completed and soils are stabilized and vegetation has been established. Thereafter the Permittee shall be responsible for the removal of the barriers. The Permittee shall correct any erosion or shoaling that causes adverse impacts to the water resources.

4. Water quality data for the water discharged from the Permittee's property or into the surface waters of the state shall be submitted to the District as required by the permit. Analyses shall be performed according to procedures outlined in the current edition of Standard Methods for the Examination of Water and Wastewater by the American Public Health Association or Methods for Chemical Analyses of Water and Wastes by the U.S. Environmental Protection Agency. If water quality data are required, the Permittee shall provide data as required on volumes of water discharged, including total volume discharged during the days of sampling and total monthly volume discharged from the property or into surface waters of the state.

5. District staff must be notified in advance of any proposed construction dewatering. If the dewatering activity is likely to result in offsite discharge or sediment transport into wetlands or surface waters, a written dewatering plan must either have been submitted and approved with the permit application or submitted to the District as a permit prior to the dewatering event as a permit modification. A water use permit may be required prior to any use exceeding the thresholds in Chapter 40D-2, F.A.C.

6. Stabilization measures shall be initiated for erosion and sediment control on disturbed areas as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased.

7. Off-site discharges during construction and development shall be made only through the facilities authorized by this permit. Water discharged from the project shall be through structures having a mechanism suitable for regulating upstream stages. Stages may be subject to operating schedules satisfactory to the District.

8. The Permittee shall complete construction of all aspects of the surface water management system, including wetland compensation (grading, mulching, planting), water quality treatment features, and discharge control facilities prior to beneficial occupancy or use of the development being served by this system.

Original
Poor
Quality

9. The following shall be properly abandoned and/or removed in accordance with the applicable regulations:

   a. Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed well contractor.
   b. Any existing septic tanks on site shall be abandoned at the beginning of construction.
   c. Any existing fuel storage tanks and fuel pumps shall be removed at the beginning of construction.

10. All surface water management systems shall be operated to conserve water in order to maintain environmental quality and resource protection; to increase the efficiency of transport, application and use; to decrease waste; to minimize unnatural runoff from the property and to minimize dewatering of offsite property.

11. At least 48 hours prior to commencement of activity authorized by this permit, the Permittee shall submit to the District a written notification of commencement indicating the actual start date and the expected completion date.

12. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the occupation of the site or operation of site infrastructure located within the area served by that portion or phase of the system. Each phase or independent portion of the system must be completed in accordance with the permitted plans and permit conditions prior to transfer of responsibility for operation and maintenance of that phase or portion of the system to a local government or other responsible entity.

13. Within 30 days after completion of construction of the permitted activity, the Permittee shall submit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1, F.A.C. Additionally, if deviation from the approved drawings are discovered during the certification process the certification must be accompanied by a copy of the approved permit drawings with deviations noted.

14. This permit is valid only for the specific processes, operations and designs indicated on the approved drawings or exhibits submitted in support of the permit application. Any substantial deviation from the approved drawings, exhibits, specifications or permit conditions, including construction within the total land area but outside the approved project area(s), may constitute grounds for revocation or enforcement action by the District, unless a modification has been applied for and approved. Examples of substantial deviations include excavation of ponds, ditches or sump areas deeper than shown on the approved plans.

15. The operation phase of this permit shall not become effective until the Permittee has complied with the requirements of the conditions herein, the District determines the system to be in compliance with the permitted plans, and the entity approved by the District accepts responsibility for operation and maintenance of the system. The permit may not be transferred to the operation and maintenance entity approved by the District until the operation phase of the permit becomes effective. Following inspection and approval of the permitted system by the District, the Permittee shall request transfer of the permit to the responsible operation and maintenance entity approved by the District, if different from the Permittee. Until a transfer is approved by the District, the Permittee shall be liable for compliance with the terms of the permit.

16. Should any other regulatory agency require changes to the permitted system, the District shall be notified of the changes prior to implementation so that a determination can be made whether a permit modification is required.

17. This permit does not eliminate the necessity to obtain any required federal, state, local and special District authorizations including a determination of the proposed activities' compliance with the applicable comprehensive plan prior to the start of any activity approved by this permit.

Original
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Quality

18. This permit does not convey to the Permittee or create in the Permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the Permittee, or convey any rights or privileges other than those specified in the permit and Chapter 40D-4 or Chapter 40D-40, F.A.C.

19. The Permittee is hereby advised that Section 253.77, F.S., states that a person may not commence any excavation, construction, or other activity involving the use of sovereign or other lands of the state, the title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund without obtaining the required lease, license, easement, or other form of consent authorizing the proposed use. Therefore, the Permittee is responsible for obtaining any necessary authorizations from the Board of Trustees prior to commencing activity on sovereignty lands or other state-owned lands.

20. The Permittee shall hold and save the District harmless from any and all damages, claims, or liabilities which may arise by reason of the activities authorized by the permit or any use of the permitted system.

21. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under section 373.421(2), F.S., provides otherwise.

22. The Permittee shall notify the District in writing within 30 days of any sale, conveyance, or other transfer of ownership or control of the permitted system or the real property at which the permitted system is located. All transfers of ownership or transfers of a permit are subject to the requirements of Rule 40D-4.351, F.A.C. The Permittee transferring the permit shall remain liable for any corrective actions that may be required as a result of any permit violations prior to such sale, conveyance or other transfer.

23. Upon reasonable notice to the Permittee, District authorized staff with proper identification shall have permission to enter, inspect, sample and test the system to insure conformity with District rules, regulations and conditions of the permits.

24. If historical or archaeological artifacts are discovered at any time on the project site, the Permittee shall immediately notify the District and the Florida Department of State, Division of Historical Resources.

25. The Permittee shall immediately notify the District in writing of any previously submitted information that is later discovered to be inaccurate.

PART II HEARINGS INVOLVING DISPUTED ISSUES OF MATERIAL FACT

28-106.201 Initiation of Proceedings.

(1) Unless otherwise provided by statute, initiation of proceedings shall be made by written petition to the agency responsible for rendering final agency action. The term "petition" includes any document that requests an evidentiary proceeding and asserts the existence of a disputed issue of material fact. Each petition shall be legible and on 8 ½ by 11 inch white paper. Unless printed, the impression shall be on one side of the paper only and lines shall be double-spaced.

(2) All petitions filed under these rules shall contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination;

(c) A statement of when and how the petitioner received notice of the agency decision;

(d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;

(e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action;

(f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and

(g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

(3) Upon receipt of a petition involving disputed issues of material fact, the agency shall grant or deny the petition, and if granted shall, unless otherwise provided by law, refer the matter to the Division of Administrative Hearings with a request that an administrative law judge be assigned to conduct the hearing. The request shall be accompanied by a copy of the petition and a copy of the notice of agency action.

(4) A petition shall be dismissed if it is not in substantial compliance with subsection (2) of this rule or it has been untimely filed. Dismissal of a petition shall, at least once, be without prejudice to petitioner's filing a timely amended petition curing the defect, unless it conclusively appears from the face of the petition that the defect cannot be cured.

(5) The agency shall promptly give written notice to all parties of the action taken on the petition, shall state with particularity its reasons if the petition is not granted, and shall state the deadline for filing an amended petition if applicable.

Specific Authority 120.54(3), (5) F.S. Law Implemented 120.54(5), 120.569, 120.57 F.S. History–New 4-1-97, Amended 9-17-98.

PART III PROCEEDINGS AND HEARINGS NOT INVOLVING DISPUTED ISSUES OF MATERIAL FACT

28-106.301 Initiation of Proceedings

(1) Initiation of a proceeding shall be made by written petition to the agency responsible for rendering final agency action. The term "petition" includes any document which requests a proceeding. Each petition shall be legible and on 8 ½ by 11 inch white paper or on a form provided by the agency. Unless printed, the impression shall be on one side of the paper only and lines shall be double-spaced.

(2) All petitions filed under these rules shall contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination;

(c) A statement of when and how the petitioner received notice of the agency decision;

(d) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action;

(e) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and

(f) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

(3) If the petition does not set forth disputed issues of material fact, the agency shall refer the matter to the presiding officer designated by the agency with a request that the matter be scheduled for a proceeding not involving disputed issues of material fact. The request shall be accompanied by a copy of the petition and a copy of the notice of agency action.

(4) A petition shall be dismissed if it is not in substantial compliance with subsection (2) of this Rule or it has been untimely filed. Dismissal of a petition shall, at least once, be without prejudice to petitioner's filing a timely amended petition curing the defect, unless it conclusively appears from the face of the petition that the defect cannot be cured.

(5) The agency shall promptly give written notice to all parties of the action taken on the petition, shall state with particularity its reasons if the petition is not granted, and shall state the deadline for filing an amended petition if applicable.

Specific Authority 120.54(5) F.S. Law Implemented 120.54(5), 120.569, 120.57 F.S. History–New 4-1-97, Amended 9-17-98.

Southwest Florida Water Management District

2379 Broad St. Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
World Wide Web: http://www.swfwmd.state.fl.us

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)
SUNCOM 578-2070

Bartow Service Office
170 Century Boulevard
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)
SUNCOM 572-6200

Venice Service Office
115 Corporation Way
Venice, Florida 34292-3524
(941) 486-1212 or
1-800-320-3503 (FL only)
SUNCOM 526-6900

Lecanto Service Office
3600 West Sovereign Path
Suite 226
Lecanto, Florida 34461-8070
(352) 527-8131
SUNCOM 667-3271

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Ronald C. Johnson
Chair, Polk
Monroe "Al" Coogler
Vice Chair, Citrus
Sally Thompson
Secretary, Hillsborough
Ronnie E. Duncan
Treasurer, Pinellas
Edward W. Chance
Manatee
Thomas G. Dabney, II
Sarasota
Pamela L. Fentress
Highlands
Watson L. Haynes, II
Pinellas
Janet D. Kovach
Hillsborough
Heidi B. McCree
Hillsborough
John K. Renke, III
Pasco

E. D. "Sonny" Vergara
Executive Director
Gene A. Heath
Assistant Executive Director
William S. Bilenky
General Counsel

NOTICING PACKET PUBLICATION INFORMATION

PLEASE SEE THE REVERSE SIDE OF THIS NOTICE FOR A LIST OF FREQUENTLY ASKED QUESTIONS (FAQ)

The District's action regarding the issuance or denial of a permit or qualification for an exemption only becomes closed to future legal challenges from members of the public ("third parties"), if 1.) "third parties" have been properly notified of the District's action regarding the permit or exemption, and 2.) no "third party" objects to the District's action within a specific period of time following the notification.

Notification of "third parties" is provided through publication of certain information in a newspaper of general circulation in the county or counties where the proposed activities are to occur. Publication of notice informs "third parties" of their right to challenge the District's action. If proper notice is provided by publication, "third parties" have a 21-day time limit in which to file a petition opposing the District's action. A shorter 14-day time limit applies to District action regarding Environmental Resource Permits linked with an authorization to use Sovereign Submerged Lands. However, if no notice to "third parties" is published, there is no time limit to a party's right to challenge the District's action. The District has not published a notice to "third parties" that it has taken or intends to take final action on your application. If you want to ensure that the period of time in which a petition opposing the District's action regarding your application is limited to the time frames stated above, you may publish, at your own expense, a notice in a newspaper of general circulation. A copy of the Notice of Agency Action the District uses for publication, a list of newspapers of general circulation, and guidelines for publishing are included in this packet.

Guidelines for Publishing a Notice of Agency Action

1. Prepare a notice for publication in the newspaper. The District's Notice of Agency Action, included with this packet, contains all of the information that is required for proper noticing. However, you are responsible for ensuring that the form and **the** content of your notice comply with the applicable statutory provisions.
2. Your notice must be published in accordance with Chapter 50, Florida Statutes. A copy of the statute is enclosed.
3. Choose the newspaper that is appropriate considering the location of the activities proposed in your application.
4. Contact the newspaper you have chosen for further information regarding their procedures for publishing.
5. You only need to publish the notice for one day.
6. Obtain an "affidavit of publication" from the newspaper after your notice is published.
7. Immediately upon receipt send the **ORIGINAL** affidavit to the District at the address below, for the file of record. **Retain a copy of the affidavit for your records.**

Southwest Florida Water Management District
Records and Data Supervisor
2379 Broad Street
Brooksville, Florida 34604-6899

Note: If you are advertising a notice of the District's proposed action, and the District's final action is different, publication of an additional notice may be necessary to prevent future legal challenges. If you need additional assistance, you may contact Myra Ford at ext. 4338, or Adeline Wood at ext. 4344 at Brooksville. **(Your question may be on the FAQ list).**

Protecting Your Water Resources

FAQ ABOUT NOTICING

1. **Q.** Do I have to do this noticing, and what is this notice for?
A. You do not have to do this noticing. You need to publish a notice if you want to ensure that a "third party" cannot challenge the District's action on your permit or exemption at some future date. If you choose not to publish, there is no time limit to a third party's right to challenge the District's action.

2. **Q.** What do I need to send to the newspaper?
A. The enclosed one page notice form entitled "Notice of Final Agency Action (or Proposed Agency Action) By The Southwest Florida Water Management District." You must fill in the blanks before sending it.

3. **Q.** Do I have to use the notice form, or can I make up my own form?
A. You do not have to use our form. However, your notice must contain all information that is in the form.

4. **Q.** Do I send the newspaper the whole form (one page) or just the top portion that has blanks?
A. Send the full page form which includes the **NOTICE OF RIGHTS** section on the bottom half.

5. **Q.** Do I type or print the information in the blanks? Or will the newspaper fill in the blanks?
A. You are required to fill in the blanks on the form before sending it to the newspaper. Contact your selected newspaper for instructions on printing or typing the information in the blanks.

6. **Q.** The section 50.051, F.S. (enclosed) proof of publication form of uniform affidavit has blanks in the text. Do I fill in these blanks and send that to the newspaper?
A. No. That section shows the affidavit the newspaper will send you. They will fill in the blanks.

7. **Q.** If someone objects, is my permit or exemption, no good?
A. If you publish a notice and a "third party" files a request for administrative hearing within the allotted time, the matter is referred to an administrative hearing. While the case is pending, generally, you may not proceed with activities under the challenged agency action. When the hearing is complete, the administrative law judge's (ALJ) recommendation is returned to the District Governing Board, and the Governing Board will take final action on the ALJ's recommendation. There is no time limit for a "third party" to object and file a request for administrative hearing if you do not publish a notice.

8. **Q.** Do I have to use the newspapers you've listed? My local newspaper is cheaper.
A. You may use any newspaper for your area if it meets the criteria on the enclosed Chapter 50, F.S.

9. **Q.** I don't understand what I should put in the blanks on the Notice form?
A.
   1. **County, Section/Township/Range, application No., permit No., proposed permit No., Exemption No., or permit inquiry No.** is on your Permit, Exemption, or Denial document.
   2. **Permit Type or Application Type** is Environmental Resource Permit, Water Use Permit, Work of the District, etc.
   3. **# of Acres** is the project acres. This is listed on the Environmental Resource Permit documents. For Water Use Permits, Exemptions, etc., you may put "Not Applicable" if unknown.
   4. **Rule or Statute reference** (Exemptions only). The rule and/or statute reference is at the top of page one in the reference line of the Exemption. For all others, put "Not Applicable" in this blank.
   5. **Type of Project** describes your project activity. Environmental Resource Permit = Agriculture, Commercial, Government, Industrial, Mining, Road Projects, Residential, Semi-Public or Water Quality Treatment. Water Use Permit = Agricultural (if irrigating, state that it is irrigation and specify what is being irrigated), Industrial Commercial, Recreation Aesthetic, Mining Dewatering, or Public Supply. Work of the District = pipeline, etc.
   6. **Project Name** is the name of your project, if applicable. If there is no project name, put "Not Applicable" in this blank.

NOTICE OF FINAL AGENCY ACTION BY

THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

Imaged as Received

Notice is given that the District's Final Agency Action is approval of the_____

on_____acres to serve_____known as_____.

The project is located in_____ County, Section(s)_____,

Township_____South, Range_____East. The permit applicant

is_____whose address is_____.

The permit No. is _____.

The file(s) pertaining to the project referred to above is available for inspection Monday through Friday except for legal holidays, 8:00 a.m. to 5:00 p.m., at the Southwest Florida Water Management District (District)_____.

NOTICE OF RIGHTS

Any person whose substantial interests are affected by the District's action regarding this permit may request an administrative hearing in accordance with Sections 120.569 and 120.57, Florida Statutes (F.S.), and Chapter 28-106, Florida Administrative Code (F.A.C.), of the Uniform Rules of Procedure. *A request for hearing must (1) explain how the substantial interests of each person requesting the hearing will be affected by the District's action, or final action; (2) state all material facts disputed by each person requesting the hearing or state that there are no disputed facts; and (3) otherwise comply with Chapter 28-106, F.A.C.* A request for hearing must be filed with and received by the Agency Clerk of the District at the District's Brooksville address, 2379 Broad Street, Brooksville, FL 34604-6899 within 21 days of publication of this notice (or within14 days for an Environmental Resource Permit with Proprietary Authorization for the use of Sovereign Submerged Lands). Failure to file a request for hearing within this time period shall constitute a waiver of any right such person may have to request a hearing under Sections 120.569 and 120.57,F.S.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the District's final action may be different from the position taken by it in this notice of final agency action. Persons whose substantial interests will be affected by any such final decision of the District on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation pursuant to Section 120.573, F.S., to settle an administrative dispute regarding the District's final action in this matter is not available prior to the filing of a request for hearing.

YOU MAY SELECT A NEWSPAPER THAT IS NOT ON THIS LIST TO PUBLISH THE NOTICE, IF THE NEWSPAPER MEETS THE REQUIREMENTS OF CHAPTER 50, FLORIDA STATUTES (COPY ENCLOSED)

SAMPLE LIST OF NEWSPAPERS

NEWSPAPER ADVERTISING CONTACT LIST

CHARLOTTE COUNTY
Charlotte Sun Herald
P.O. Box 2390
Port Charlotte, FL 33949
941 629-2855/Fax 941 629-7740

DESOTO, HARDEE, HIGHLANDS COUNTIES
Tampa Tribune - Highlands Today
231 US Highway 27 N
Sebring, FL 33870
941 382-1164/Fax 941 382-1076

HERNANDO COUNTY
Tampa Tribune - Hernando Edition
15319 Cortez Blvd.
Brooksville, FL 34613
352 544-5240/Fax 352 544-0599

HILLSBOROUGH, CITRUS, LAKE, & PASCO COUNTIES
Tampa Tribune
P.O. Box 191
Tampa, FL 33601
813 259-7585/Fax 813 259-7392

HILLSBOROUGH
La Gaceta
3210 E 7th Avenue
Tampa, FL 33605
813 248-3921/FAX 813 247-5357

LEVY COUNTY
Levy County Journal
P.O. Box 159
Bronson, FL 32621
352 486-2312

MANATEE COUNTY
Bradenton Herald
P.O. Box 921
Bradenton, FL 33506
941 745-7064/Fax 941 745-7096

MARION & SUMTER COUNTIES
Ocala Star Banner
P.O. Box 490
Ocala, FL 33478
352 867-4038/Fax 352 867-4028

CITRUS, HERNANDO, PASCO
PINELLAS COUNTIES
St. Petersburg Times
490 1ST Avenue S
St. Petersburg, FL 33701
813 893-8358/Fax 813 892-2209

POLK COUNTY
Tampa Tribune - Polk Edition
223 S Florida Avenue
Lakeland, FL 33801
941 683-6531/Fax 941 686-8397

SARASOTA COUNTY
Sarasota Herald Tribune
P.O. Drawer 1719
Sarasota, FL 33578
941 957-5160/Fax 941 957-5235

LEGAL AND OFFICIAL ADVERTISEMENTS

50.011 Where and in what language legal notices to be published.
50.021 Publication when no newspaper in county.
50.031 Newspapers in which legal notices and process may be published.
50.041 Proof of publication; uniform affidavits required.
50.051 Proof of publication; form of uniform affidavit.
50.061 Amounts chargeable.
50.071 Publication costs; court docket fund.

50.011 Where and in what language legal notices to be published.–

Whenever by statute an official or legal advertisement or a publication, or notice in a newspaper has been or is directed or permitted in the nature of or in lieu of process, or for constructive service, or in initiating, assuming, reviewing, exercising or enforcing jurisdiction or power, or for any purpose, including all legal notices and advertisements of sheriffs and tax collectors, the contemporaneous and continuous intent and meaning of such legislation all and singular, existing or repealed, is and has been and is hereby declared to be and to have been, and the rule of interpretation is and has been, a publication in a newspaper printed and published periodically once a week or oftener, containing at least 25 percent of its words in the English language, entered or qualified to be admitted and entered as [1]second-class matter at a post office in the county where published, for sale to the public generally, available to the public generally for the publication of official or other notices and customarily containing information of a public character or of interest or of value to the residents or owners of property in the county where published, or of interest or of value to the general public.

History.–s. 2, ch. 3022, 1877; RS 1296; GS 1727; s. 1, ch. 5610, 1907; RGS 2942; s. 1, ch. 12104, 1927; CGL 4666, 4901; s. 1, ch. 63-387; s. 6, ch. 67-254.

[1]**Note.**–Redesignated as "Periodicals" by the United States Postal Service, *see* 61 F.R. 10123-10124, March 12, 1996.

Note.–Former s. 49.01.

50.021 Publication when no newspaper in county.–

When any law, or order or decree of court, shall direct advertisements to be made in any county and there be no newspaper published in the said county, the advertisement may be made by posting three copies thereof in three different places in said county, one of which shall be at the front door of the courthouse, and by publication in the nearest county in which a newspaper is published.

History.–RS 1297; GS 1728; RGS 2943; CGL 4667; s. 6, ch. 67-254.

Note.–Former s. 49.02.

50.031 Newspapers in which legal notices and process may be published.–

No notice or publication required to be published in a newspaper in the nature of or in lieu of process of any kind, nature, character or description provided for under any law of the state, whether heretofore or hereafter enacted, and whether pertaining to constructive service, or the initiating, assuming, reviewing, exercising or enforcing jurisdiction or power, by any court in this state, or any notice of sale of property, real or personal, for taxes, state, county or municipal, or sheriff's, guardian's or administrator's or any sale made pursuant to any judicial order, decree or statute or any other publication or notice pertaining to any affairs of the state, or any county, municipality or other political subdivision thereof, shall be deemed to have been published in accordance with the statutes providing for such publication, unless the same shall have been published for the prescribed period of time required for such publication, in a newspaper which at the time of such publication shall have been in existence for 1 year and shall have been entered as [1]second-class mail matter at a post office in the county where published, or in a newspaper which is a direct successor of a newspaper which together have been so published; provided, however, that nothing herein contained shall apply where in any county there shall be no newspaper in existence which shall have been published for the length of time above prescribed. No legal publication of any kind, nature or description, as herein defined, shall be valid or binding or held to be in compliance with the statutes providing for such publication unless the same shall have been published in accordance with the provisions of this section. Proof of such publication shall be made by uniform affidavit.

History.–ss. 1-3, ch. 14830, 1931; CGL 1936 Supp. 4274(1); s. 7, ch. 22858, 1945; s. 6, ch. 67-254; s. 1, ch. 74-221.

[1]**Note.**–Redesignated as "Periodicals" by the United States Postal Service, *see* 61 F.R. 10123-10124, March 12, 1996.

Note.–Former s. 49.03.

50.041 Proof of publication; uniform affidavits required.–

(1) All affidavits of publishers of newspapers (or their official representatives) made for the purpose of establishing proof of publication of public notices or legal advertisements shall be uniform throughout the state.

(2) Each such affidavit shall be printed upon white bond paper containing at least 25 percent rag material and shall be 8½ inches in width and of convenient length, not less than 5½ inches. A white margin of not less than 2½ inches shall be left at the right side of each affidavit form and upon or in this space shall be substantially pasted a clipping which shall be a true copy of the public notice or legal advertisement for which proof is executed.

(3) In all counties having a population in excess of 450,000 according to the latest official decennial census, in addition to the charges which are now or may hereafter be established by law for the publication of every official notice or legal advertisement, there may be a charge not to exceed $2 for the preparation and execution of each such proof of publication or publisher's affidavit.

History.–s. 1, ch. 19290, 1939; CGL 1940 Supp. 4668(1); s. 1, ch. 63-49; s. 26, ch. 67-254; s. 1, ch. 76-58.

Note.–Former s. 49.04.

50.051 Proof of publication; form of uniform affidavit.–

The printed form upon which all such affidavits establishing proof of publication are to be executed shall be substantially as follows:

NAME OF NEWSPAPER
Published (Weekly or Daily)
(Town or City) (County) FLORIDA

STATE OF FLORIDA
COUNTY OF _____:

Before the undersigned authority personally appeared _____, who on oath says that he or she is _____ of the _____, a _____ newspaper published at _____ in _____ County, Florida; that the attached copy of advertisement, being a _____ in the matter of _____ in the _____ Court, was published in said newspaper in the issues of _____.

Affiant further says that the said _____ is a newspaper published at _____, in said _____ County, Florida, and that the said newspaper has heretofore been continuously published in said _____ County, Florida, each _____ and has been entered as [1]second-class mail matter at the post office in _____, in said _____ County, Florida, for a period of 1 year next preceding the first publication of the attached copy of advertisement; and affiant further says that he or she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Sworn to and subscribed before me this _____ day of _____, 19__, by _____, who is personally known to me or who has produced (type of identification) as identification.

____(Signature of Notary Public)____
____(Print, Type, or Stamp Commissioned Name of Notary Public)____
____(Notary Public)____

History.–s. 2, ch. 19290, 1939; CGL 1940 Supp. 4668(2); s. 6, ch. 67-254; s. 1, ch. 93-62; s. 291, ch. 95-147.

[1]**Note.**–Redesignated as "Periodicals" by the United States Postal Service, *see* 61 F.R. 10123-10124, March 12, 1996.

Note.–Former s. 49.05.

50.061 Amounts chargeable.–

(1) The publisher of any newspaper publishing any and all official public notices or legal advertisements shall charge therefor the rates specified in this section without rebate, commission or refund.

(2) The charge for publishing each such official public notice or legal advertisement shall be 70 cents per square inch for the first insertion and 40 cents per square inch for each subsequent insertion, except that:

(a) In all counties having a population of more than 304,000 according to the latest official decennial census, the charge for publishing each such official public notice or legal advertisement shall be 80 cents per square inch for the first insertion and 60 cents per square inch for each subsequent insertion.

(b) In all counties having a population of more than 450,000 according to the latest official decennial census, the charge for publishing each such official public notice or legal advertisement shall be 95 cents per square inch for the first insertion and 75 cents per square inch for each subsequent insertion.

(3) Where the regular established minimum commercial rate per square inch of the newspaper publishing such official public notices or legal advertisements is in excess of the rate herein stipulated, said minimum commercial rate per square inch may be charged for all such legal advertisements or official public notices for each insertion, except that a governmental agency publishing an official public notice or legal advertisement may procure publication by soliciting and accepting written bids from newspapers published in the county, in which case the specified charges in this section do not apply.

(4) All official public notices and legal advertisements shall be charged and paid for on the basis of 6-point type on 6-point body, unless otherwise specified by statute.

(5) Any person violating a provision of this section, either by allowing or accepting any rebate, commission, or refund, commits a misdemeanor of the second degree, punishable as provided in s. 775.082 or s. 775.083.

(6) Failure to charge the rates prescribed by this section shall in no way affect the validity of any official public notice or legal advertisement and shall not subject same to legal attack upon such grounds.

History.–s. 3, ch. 3022, 1877; RS 1298; GS 1729; RGS 2944; s. 1, ch. 12215, 1927; CGL 4668; ss. 1, 2, 2A, 2B, ch. 20264, 1941; s. 1, ch. 23663, 1947; s. 1, ch. 57-160; s. 1, ch. 63-50; s. 1, ch. 65-569; s. 6, ch. 67-254; s. 15, ch. 71-136; s. 35, ch. 73-332; s. 1, ch. 90-279.

Note.–Former s. 49.06.

50.071 Publication costs; court docket fund.–

(1) There is established in Broward, Dade, and Duval Counties a court docket fund for the purpose of paying the cost of the publication of the fact of the filing of any civil case in the circuit court in those counties by their counties by their style and of the calendar relating to such cases. A newspaper qualified under the terms of s. 50.011 shall be designated as the record newspaper for such publication by an order of a majority of the judges in the judicial circuit in which the subject county is located and such order shall be filed and recorded with the clerk of the circuit court for the subject county. The court docket fund shall be funded by a service charge of $1 added to the filing fee for all civil actions, suits, or proceedings filed in the circuit court of the subject county. The clerk of the circuit court shall maintain such funds separate and apart, and the aforesaid fee shall not be diverted to any other fund or for any purpose other than that established herein. The clerk of the circuit court shall dispense the fund to the designated record newspaper in the county on a quarterly basis. The designated record newspaper may be changed at the end of any fiscal year of the county by a majority vote of the judges of the judicial circuit of the county so ordering 30 days prior to the end of the fiscal year, notice of which order shall be given to the previously designated record newspaper.

(2) The board of county commissioners or comparable or substituted authority of any county in which a court docket fund is not specifically established in subsection (1) may, by local ordinance, create such a court docket fund on the same terms and conditions as established in subsection (1).

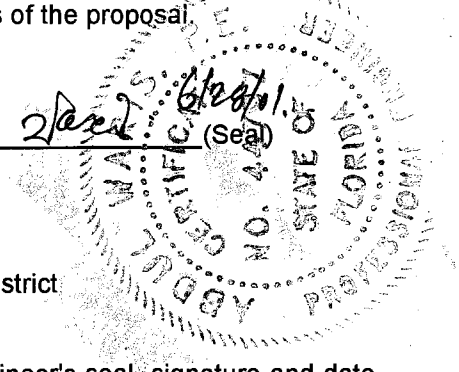
(3) The publishers of any designated record newspapers receiving the court docket fund established in subsection (1) shall, without charge, accept legal advertisement for the purpose of service of process by publication under s. 49.011(4), (10), and (11) when such publication is required of persons authorized to proceed as insolvent and poverty-stricken persons under s. 57.081.

History.–s. 1, ch. 75-206.

PROFESSIONAL CERTIFICATION*
FOR THE ENGINEERING EVALUATION REPORT

MSSW/ERP Permit Number:	44021713.000
Date Application Received:	December 18, 2000
Permittee's Name:	Southern Development Group
Address:	8752 Ashworth Drive Tampa, FL 33647
Project Name:	SDG Land Excavation
Project Description:	Commercial
Project Size:	74.45 Acres
Activity:	Construction
Section(s)/Township/Range:	6/31S/20E

I HEREBY CERTIFY that the engineering features described in the referenced application to construct and/or operate a surface water management system associated with the indicated project have been evaluated regarding provision of reasonable assurance of compliance with Part IV, Chapter 373, Florida Statutes, and Chapters 40D-4, 40D-40 or 40D-400, Florida Administrative Code (F.A.C.), as applicable. I have not evaluated and do not make any certifications as to other aspects of the proposal.



(Seal)

Abdul Waris, P.E.
FL P.E. #44797
June 28, 2001
Tampa Regulation Department
Southwest Florida Water Management District

* When required by Section 61G15-26.001(1), F.A.C., a professional engineer's seal, signature and date (i.e., "Professional Certification") means that the work indicated has been conducted under the responsible supervision, direction or control of a person licensed by the State to practice engineering, who by authority of their license is required to have some specialized knowledge of engineering. Professional Certification is not a guaranty or warranty of fitness or suitability, either explicit or implied.

CERTIFICATE OF MAILING

I hereby certify that a copy of the FAA letter on Application No. 44021713.000 was mailed by United States Mail to the below listed parties this 6/28, 2001.

FAA Expiration Date: 7/29/01
(Enter date-26 days from the date of mailing)

Permittee	Scott Griffith Southern Development Group 8752 Ashworth Drive Tampa, FL 33647	**Agent:**
Engineer/Consultant	Richard S. Boydack, P.E. Heidt and Associates, Incorporated 2212 Swann Avenue Tampa, FL 33606	**Applicant:**
FAA Request(s):	Donald Fraser 1630 Summerfield Avenue Winter Park, FL 32789	**Requests for RAIs/FAA:**
Required Noticing: (w/ Letter & Copy of the Permit)	US Army Corps of Engineers Tampa Regulatory Field Office PO Box 19247 Tampa FL 33686-9247	
Documents sent by Regular US Mail to Permittee/Consultant	FAA Transmittal Letter Sections 28-106.201 and 28-106.301, F.A.C. Noticing Packet Approved Permit with Conditions Approved Construction Drawing(s) Statement of Completion Notice of Authorization	
Documents sent by Regular US Mail to FAA Requestors and others	FAA Transmittal Letter Sections 28-106.201 and 28-106.301, F.A.C. Approved Permit with Conditions	

(✓) ERP - Eminent Domain Property Owners (EPOs) **mailed regular U.S. Mail** (see list)
( ) WRP - Adjacent Waterfront Property Owners (AWPOs) **if requested**

S Boydack
Administrative Section
Tampa Regulation Department

The Free Press

(Published Weekly)
Tampa, Hillsborough County, Florida

Imaged as Received

44021713.000
(T)

STATE OF FLORIDA,
COUNTY OF HILLSBOROUGH.

Before the undersigned authority personally appeared JOHN N. HARRISON, IV, who on oath says that he is Publisher of THE FREE PRESS, a weekly newspaper published at Tampa, in Hillsborough County, Florida, that the attached copy of advertising being a true copy in the matter of

NOTICE OF AGENCY ACTION TAKEN BY THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

Southern Development Group

was published in said newspaper in the issues of August 25, 2001

Affiant further says that the said THE FREE PRESS is a newspaper published at Tampa, in said Hillsborough County, and that the said newspaper has heretofore been continuously published in said Hillsborough County, Florida, each week and has been entered as a second-class mail matter at the post office in Tampa, in said Hillsborough County, Florida for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

This 25 of August, 2001

who is personally known to me
SWORN TO and subscribed before me

This 25 of August, 2001

Margie Luciene

9-14-01

MARGIE LUCIENE
My Comm Exp. 9/01/05
No. DD029719
( )Personally Known ( )Other I.D.

STATE OF FLORIDA NOTARY PUBLIC

S.W.F.W.M.D.
SEP 13 2001
ARR
RECORDS & DATA

NOTICE OF AGENCY ACTION TAKEN BY THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

Notice is given that the following permit was issued on June 28, 2001 to Southern Development Group, 8752 Ashworth Drive, Tampa, Florida 33647. Permit #44021713.000

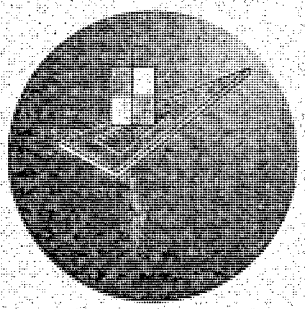
The Project is located in Hillsborough County, Section(s) 6, Township 31S, Range 20E. The permit authorizes A SURFACE WATER MANAGEMENT SYSTEM ON 74.45 ACRES TO SERVE a Commercial Land Use project known as SD Gilland Excavation.

The file(s) containing the application for the above listed permit is available for inspection Monday through Friday, except for legal holidays, 8:00 a.m. to 5:00 p.m. at the Southwest Florida Water Management District (District) Tampa Service Office, 7601 Highway 301 North, Tampa, Florida 33637-6759. A person whose substantial interests are affected by the District permitting decision may petition for an administrative hearing in accordance with Sections 120.569 and 120.57, F.S. and Chapter 28-106, Florida Administrative Code, and be filed with (received by) the District Clerk located at District Headquarters, 2379 Broad Street, Brooksville, Florida 34609-6899. Petitions for administrative hearing on the above permit(s) must be filed within twenty-one (21) days of publication of this notice or within twenty-six (26) days of the District depositing notice of agency action in the mail for those persons to whom the District mails actual notice. Failure to file a petition within this time period shall constitute a waiver of any right(s) such person(s) may have to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., concerning the subject permit. Petitions which are not filed in accordance with the above provisions are subject to dismissal.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the District's final action may be different from the position taken by it in this notice of agency action. Persons whose substantial interests will be affected by any such final decision of the District on the applicant have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation pursuant to Section 120.573, F.S. to settle an administrative dispute regarding the District's action in this matter is not available prior to the filing of a request for hearing. 8-25

HEIDT &
ASSOCIATES, INC.



CIVIL ENGINEERING

SURVEYING

ENVIRONMENTAL
PERMITTING

PLANNING

LANDSCAPE
ARCHITECTURE



September 7, 2001

Ms. Myra Ford
Southwest Florida Water
Management District
2379 Broad Street
Brooksville, Florida 34609-6899

RE: NOTICE OF AGENCY ACTION
PROOF OF PUBLICATION AFFIDAVIT

Dear Ms. Ford:

Enclosed please find the following proof of publication affidavits:

1. Permit #44021713.000 SDG Land Excavation
2. Permit #44021274.002 Wesley Chapel Lakes Parcel K

If you have any questions or need additional information, please do not hesitate to contact me.

Sincerely,

HEIDT & ASSOCIATES, INC.

Katrina Samson

Katrina Samson

/ks

Enclosures

Tampa
2212 Swann Avenue
Tampa, FL 33606
Phone: 813.253.5311
Fax: 813.253.2478

Fort Myers
6326 Presidential Court
Fort Myers, FL 33919
Phone: 941.482.7275
Fax: 941.482.2103

APPENDIX D I 95 NB Rest Area SWMR Partial SWFWMD Permit No. 44478, Application No. 795079

DRAINAGE DESIGN DOCUMENTATION

I-75 Northbound Rest Area from beginning of NB Ramp # 10075001 to End of NB Ramp

FPID: 437638-1-52-01 and 437638-1-52-02

HILLSBOROUGH COUNTY

Prepared for: FDOT DISTRICT SEVEN

March 2020

Zachary A Keller 2020.03.12 07:34:23 -04'00'

ZACHARY A. KELLER LICENSE No 83906 STATE OF FLORIDA PROFESSIONAL ENGINEER

Zachary A Keller, FL. P.E. No. 83906

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED. THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

Prepared by:

WGI
3111 W. Dr. Martin Luther King Jr. Boulevard, Suite 375
Tampa, Florida 33607

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DEFINITIONA/ ABBREVIATIONS

BL	Baseline (i.e. Baseline Survey)
CD-1	Cross Drain
CL	Centerline (i.e. Centerline Const.)
CSLE	Culvert Service Life Estimator
CWA	Clean Water Act
DCIA	Directly Connected Impervious Area
DHW	Design High Water
D/S	Down Stream
ERP	Environmental Resource Permit
F.A.C.	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FIRM	Federal Insurance Rate Map
FPID	Federal Project ID
ICPR4	Interconnected Channel and Pond Routing Model, Streamline Technologies, Inc. Version 4
LA R/W	Limited Access Right-of-Way
MOT	Maintenance of Traffic
NAVD	North American Vertical Datum (1988)
NGVD	National Geodetic Vertical Datum (1929)
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
OFW	Outstanding Florida Water
PGL	Profile Grade Line
RHPZ	Riparian Habitat Protection Zone
R/W	Right-of-Way
SHGWT	Seasonal High Ground Water Table
SWFWMD	Southwest Florida Water Management District
SMF	Stormwater Management Facility
SR	State Road
SSL	Sovereign Submerged Lands
STR	Section, Township, Range
SWPPP	Storm Water Pollution Prevention Program
TIITF	Board of Trustees of the Internal Improvement Trust Fund (State of Florida)
TMDL	Total Maximum Daily Load
U/S	Up Stream
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geologic Service
WGI	Wantman Group, Inc. (Design Consultant)
WMD	Water Management District
WSS	US Department of Agriculture Natural Resource Conservation Service Online Soils Data (Known as the Web Soil Survey)

SECTION 1.0 – INTRODUCTION

1.1 Project Location

Florida Department of Transportation (FDOT) District 7 Office has contracted with the design build team of Pepper Contracting Services Inc. and Wantman Group, Inc. (WGI) to provide construction, engineering analysis, and permitting for the reconstruction of the I-75 northbound (NB) rest area in Ruskin Florida.

The project is located in Sections 20 of Township 32 South, Range 19 East in Hillsborough County. A project location map is provided in **Appendix A.**

The vertical survey datum for this project is the North American Vertical Datum of 1988 (NAVD88) and is expressed in feet. The conversion equation for this project between NAVD88 and the National Geodetic Vertical Datum of 1929 (NGVD29) is:

NAVD = NGVD – 0.93' | 20.00' (NAVD) = 20.93' (NGVD)

1.2 Purpose

The proposed reconstructed NB rest area will consist of a new rest area building (two wings), expanded car, RV, and truck parking, along with a new stormwater management system to serve the revised site and the future 10-lane section of I-75 (approximately 1.2 miles). The stormwater management system will provide the necessary water quality treatment and peak discharge attenuation consistent with the Southwest Florida Water Management District (SWFWMD) and FDOT design standards. The project will require an ERP permit.

This report contains the calculations for the proposed stormwater management system comprised of: wet detention facilities, a dry retention facility, and infrastructure improvements. The calculations demonstrate a design compliant with Florida Administrative Code Chapter 62-25, SWFWMD permit criteria, and FDOT design methodology.

1.3 Existing Drainage

The existing NB rest area and a portion of I-75 consists of 4 drainage sub-basins as shown on the Pre-Development Drainage Map provided in **Appendix B**. The general drainage pattern is from west to east through I-75 and into the rest area site. The runoff within the rest area site drains both south and east towards the eastern property line. The rest area runoff discharges through two outfall points. The outfall points are shown in the Pre-Development Drainage Map as an existing upland cut agricultural (Ag) ditch that parallels the east side of the rest area property.

- Outfall Point 1: located in the southeast corner of the property and associated with the offsite existing Ag ditch; there is an existing FDOT drainage easement at this location.

- Outfall Point 2: located along the east property line, near the onsite wastewater treatment facility, and associated with the offsite existing Ag ditch; there is an existing FDOT drainage easement at this location.

The Ag ditch parallels (outside the R/W) the eastern side of the FDOT rest area property. The ditch drains from north to south into an SWFWMD property and eventually outfalls into the Little Manatee River and ultimately to the Gulf of Mexico. There are existing drainage easements associated with the two outfall locations.

1.4 Tailwater

The design tailwater for storm drain systems, cross drains, and storm water management facility (SMF) pond outfalls is based on a number of factors including the review of multiple sources of documentation such as, wetland and other biological indicators, observable staining on end-treatments/headwalls, cross drain crown elevations, other field observations, and source data from the local jurisdictional agencies.

- **Closed storm drain systems:**
  - Those that discharge within the LA R/W (not directly into a SMF), the design tailwater was conservatively estimated as the crown of the outfall pipe.
  - Those that discharge into a stormwater management facility, the peak stage for the 10-year/24-hour storm event for I-75 mainline and the 3 year/24 hour storm event for the rest area was used as the design tailwater.
- **Cross drains:**
  - The tailwater was generally held static at the crown of D/S end of the cross drain or at the established 100-year floodplain elevation at the cross drain, where applicable.
  - Or a channel/canal/tributary design water elevation, if applicable.
- **Stormwater Management Facilities (SMFs):**
  - The tailwater of the SMF outfalls was taken as the greater of the crown of the pipes or the SHGWT

1.5 Floodplains and Encroachments

Based on a review of Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) 12057C0670H dated August 28, 2008, the project is located within unshaded Zone "X" which is defined as "areas determined to be outside the 0.2% annual (500-yr.) chance of floodplain." Floodplain impacts are not anticipated with this project. FEMA FIRM Panel 12057C0670H is provided in **Appendix A.**

1.6 Geotech

Soils data review included the Natural Resources Conservation Service (NRCS) Web Soil Survey and field exploration and testing by Tierra Inc. A GIS Soils Data Map (from the Web Soil Survey) is provided in **Appendix A.**

Tierra provided geotechnical information and recommendations for the proposed roadway, building, and SMF sites. **Table 1-1** summaries the results for pond recovery parameters provided by Tierra. During the storm routing analysis a safety factor of 2 was applied to the soil conductivity rates (Kh/Kv) as required by SWFWMD. Excerpts of the Geotechnical report from Tierra are provided in **Appendix F.**

Table 1-1. SMF Geotechnical Summary

SMF No.	SCS HSG	Kh (ft/day)	Kv (ft/day)	Soil Porosity
SMF4	A/D	13.5	13.5	0.3
SMF5*	A/D	40	40	0.3
SMF6*	A/D	13.5	13.5	0.3

*future (by others)

1.7 Seasonal High Ground Water Table (SHGWT)

Multiple data sources were evaluated to best determine the primary water table condition that would influence the performance of SMFs and the roadway base along the project corridor. Data sources include;

- Multiple geotechnical evaluations (including the latest data compiled by Tierra)
- SCS soils data from the SCS Web Soil Survey, and
- Biological wetland species indicators
- Field review explorations and survey data

Tierra conducted a subsurface exploration using hand auger borings within the limits of the proposed ponds to determine the SHGWT of the site during an above average rainy season in August. The depth to the water table was generally found to be between 2 to 5 feet below existing ground surface with estimations of SHGWT of 0.5 to 2.5 feet below surface. This data is consistent with the NRCS soils data, which approximates a SHGWT of 1.5+/- feet below existing ground. Excerpts from the Tierra Geotechnical Report include SHGWT recommendations based on historic indicators are provided in **Appendix F**. The seasonal high groundwater level in the proposed pond areas SMF-1, SMF-2, SMF-3 and SMF-7 varies from approximately +19.9 feet to +22.9 feet. Based on the results of the borings performed for this study, it is Tierra's opinion that the historical average seasonal high groundwater elevation at the site is +22.0 feet. In the final condition, the site will be dominated (square area) by equalized wet detention SMFs (acting as a single pond facility) which will produce a level (flat pool) water table across the site. Pond SMF-4 is located in an area that is currently occupied by an existing sprayfield/effluent discharge area. The continuous dosing in this area has resulted in artificially

elevated seasonal high groundwater levels. Subsequent to the discontinuation of the sprayfield/effluent discharging and the development of SMF-4, the seasonal high groundwater elevation in this area is expected to reestablish at the historical average elevation of +22.0 feet.

Establishment of the SHGWT

Adjacent to the rest area is an agricultural drainage ditch that is used to hold groundwater levels down as a means to avoid oversaturation of planted crops. This ditch, flows from north to south and eventually discharges to the Little Manatee River, It also serves as the outfall feature for the Rest Area Site. Survey information shows the ditch top of bank elevations vary from +21.0 to +22.0 (NAVD) and bottom elevations that varies from +17.0 to +19.0 (NAVD). During multiple field visits, the water level in the agriculture ditch was not observed at the top of bank, this corroborates a SHGWT at or below elevation +22.0 (NAVD).

In the proposed condition, the rest area wet detention SMFs will be controlled by four outfall control structures. These control structures will regulate discharge to the identified outfall points (noted on the Pre-developed Drainage Map in **Appendix B)** located along the east side of the site. The control structures also have designed bleed-down mechanisms that will hold the water table at the proposed SMF NWL elevation of +22.0 (NAVD) shortly after a storm event. Furthermore, the biological indicators in the onsite wetland generally agree with the estimated SHGWT elevations (+22.0 NAVD) throughout the rest area site. The site also contains an existing waster water treatment plant that provides manmade recharge that would cause the existing water table to be elevated. In the proposed condition, the site will be connected to the Hillsborough County sanity system lowering the ground water from its current conditions. In summary, the proposed rest area condition will experience a SHGWT elevation (+22.0 NAVD) due to the following factors.

Concluding SHGWT points:

1. Geotechnical investigation data throughout the site
2. Wet detention SMFs dominate the site (square area)
3. The wet detention SMFs have bleed down mechanisms set at the SHGWT / NWL elevation (+22.0 NAVD) that will hold that elevation shortly after each storm event.
4. The SMFs have positive outfall via the agriculture ditch located along the east side of the site.
5. The agriculture ditch has positive outfall (to the south, away from the site) to the Little Manatee River.
6. The interior of the site is primarily comprised of impervious area (truck, RV, & car parking) which will restrict rainfall infiltration.
7. The concrete pavement has a designed edge drain system that will also work to keep groundwater from mounding internally in the site.
8. The site contains an existing waste water treatment plant that is continuously recharging the site artificially inflating the natural ground water table during Tierra's geotechnical exploration.

1.8 Rules and Regulations / Regulatory Agency Coordination

The proposed I-75 Northbound Rest Area is located entirely within Hillsborough County, and is under the jurisdiction of the Southwest Florida Water Management District (SWFWMD). SWFWMD stormwater rules and design criteria were used throughout the stormwater design process. The following jurisdictional permits are required:

1) **SWFWMD ERP and Water Use Permit:**

   In accordance with F.A.C. chapter 62-330, an ERP permit will be required to authorize the proposed improvements address water quality treatment, water quantity peak discharge attenuation, floodplain impacts, compensation, cross drain design, existing drainage patterns, and environmental issues associated with wetlands. The proposed stormwater management system design for the rest area will adhere to all jurisdictional criteria outlined in the SWFWMD Applicants Handbook Vol. II. A pre-application meeting with SWFWMD for this project was held on August 6, 2019 (meeting minutes are provided in **Appendix G**). Coordination will also be provided with SWFWMD to notify intention to abandon an existing well on site under existing Well Construction Permit No. 415626 and water use Permit No. 8501.002. The intention of this project is to remove the well.

2) **U.S. Army Corps of Engineers Dredge and Fill permit**

   In accordance with Section 404, the Clean Water Act established the basis for regulating discharge of dredged or fill material into waters of the United States. As these impacts to the water are considered minimal a general permit will be required.

3) **USEPA General Construction NPDES Permit**

   The U.S. Environmental Protection Agency (USEPA) under the Federal Clean Water Act (CWA) requires that construction projects that disturb 5.0 acers or more require a General Construction National Pollutant Discharge Elimination System (NPDES) Permit. The process includes submitting a Notice of Intent (NOI), providing a Stormwater Pollution Prevention Plan (SWPPP) and submitting a Notice of Termination (NOT). The FDEP has been delegated the authority to review and authorize these permits.

4) **State Historic Preservation Office**

   A Cultural Resource Assessment Survey will be required for the construction footprint as required in the National Historic Preservation Act of 1966. The site shall investigated the site in accordance with the FDOT's PD&E Manual and FDOT Cultural Resource Manual to demonstrate that there are no significant historic or prehistoric archeological sites or historic resources within the project limits.

Existing Permits

The I-75 northbound rest area is currently not a permitted system and will require a new ERP. **Table 1-2** shows the ERP permits issued adjacent to the proposed roadway improvements for the I-75 southbound rest area. Excerpt from the existing permit is provided in **Appendix G.**

Table 1-2. Existing Adjacent ERP Permits

Permitting Agency	Permit No.	Project Name
Southwest Florida Water Management District	44 4405 3	FDOT-I-75 Manatee River Rest #10075-1464

SECTION 2.0 – PRE-DEVELOPMENT ANALYSIS

The project is located within Little Manatee River Basin (WBID 1742A1) of the Little Manatee River Watershed and is impaired for fecal coliform a WBID map is provided in **Appendix A**. The existing rest area does not have an issued ERP.

The existing NB rest area and a portion of I-75 consist of 4 drainage sub-basins as shown on the Pre-developement Drainage Map provided in **Appendix B**. The general drainage pattern is from west to east through I-75 and into the rest area site. The runoff within the rest area site drains east and discharges (at two outfalls locations) into an upland cut agricultural ditch that runs just outside of the eastern side of the FDOT rest area property. There are existing drainage easements associated with the two outfall locations. The agricultural ditch drains from north to south and discharges into the Manatee River and ultimately outfalls into the Gulf of Mexico.

Outfall 1 is located in the southeast corner of the site. Runoff from the interior of the existing rest area site (beginning of the off ramp and half of the existing rest area building structure, and all of the existing recirculation ramp) drains via sheet flow into poorly defined ditches that convey the runoff through the site to Outfall 1, located in the southeast corner of the site. An existing 18" PVC pipe discharges the runoff offsite to the existing Ag ditch at Outfall No. 1, within an FDOT easement. The Ag ditch drains south and discharges to SWFWMD owned land to the south, which outfalls to the Little Manatee River without formal water quality treatment

Outfall 2 is located adjacent to the southeastern corner of the existing onsite wastewater treatment facility (centrally located along the east side of the site). Offsite runoff from west of I-75 along with runoff from the I-75 median drains into the existing rest area site and the interior wetland labeled on the Pre-developement Drainage Map provided in **Appendix B**. The runoff is conveyed through the site and underneath interior rest area ramps and recirculation ramps via (2) 24-inch pipes which eventually discharged into the existing Ag ditch at Outfall No. 2, within an FDOT easement. The Ag ditch drains south and discharges to SWFWMD owned land to the south, which outfalls to the Little Manatee River without formal water quality treatment.

In total, 14.46 acres of impervious surfaces are discharged to both outfalls without formal treatment. A summary of the existing pre-developed basins is provided in **Table 2-1**.The existing drainage conditions within the project limits are shown on the Pre-development Drainage Maps provided in **Appendix B**.

Table 2-1. Existing Basin Summary

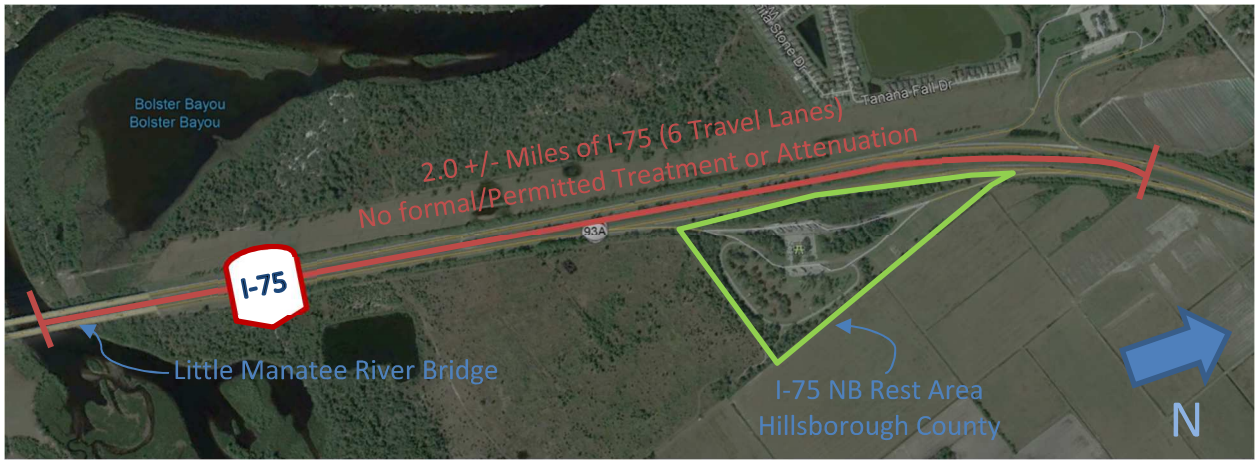
Basin Name	Total Basin Area (Ac)	Imperious Basin Area (Ac)
Exist 1	25.96	4.41
Exist Wetland (includes I-75)	37.80	7.60
Exist 3	6.80	2.05
Exist 4	7.77	0.40
tals	**78.33**	**14.46**

SECTION 3.0 – POST-DEVELOPMENT ANALYSIS

The proposed stormwater management system provides water quality treatment, peak discharge attenuation, drainage infrastructure, offsite drainage, and floodplains per FDOT / SWFWMD jurisdictional criteria. Additionally, the design will provide a safe roadway facility and rest area for the traveling public by ensuring runoff is efficiently conveyed away from the paved surfaces (travel lanes and parking areas) and does not adversely affect the structural component of the roadway pavement base course.

The proposed NB rest area project provides a stormwater management system that will provide water quality treatment and peak discharge attenuation for the entire NB rest area site as well as future improvements to I-75 (between the Little Manatee River Bridge to just north of the NB rest area). The future I-75 improvements will involve widening I-75 from the current 6-lane section to a 10-lane section. At this time, I-75 receives no formal water quality treatment or attenuation for the 6-lane section for an approximate distance of 2.0 miles (between the Little Manatee River Bridge to just north of the NB rest area "on-ramp") as shown in **Figure 3-1**.

Figure 3-1. I-75 Current Conditions Improvement Limits



The proposed project improvements will be constructed in separate phases;

- Phase I - the proposed NB Rest Area improvements
- Phase II the proposed future I-75 widening from 6-lanes to 10-lanes.

Phase I will improve the NB rest area site and include all the necessary stormwater management facilities for the new improvements associated with the rest area and the majority of future compensatory treatment required for future widening (four additional travel lanes) of I-75 (SR 93). No improvements are to be made to I-75 during the Phase I design. Phase II will provide the necessary improvements within I-75 to convey the runoff towards the rest area for treatment as well as the construction of two additional dry retention facilities (future SMF5 & SMF6) used for compensatory treatment for adjacent sections of I-75 construction.

Figure 3-2. I-75 Improvement Limits



For the Phase I design, all existing drainage patterns for I-75 will be maintained consistent with the existing condition. Offsite runoff will be conveyed to the existing I-75 cross drain (approximate station 440+00) and taken into the existing infield wetland. The wetland discharges via (2) 24" pipes into the proposed equalized wet ponds SMF1, SMF2, SMF3, and SMF7. The interconnected wet SMFs have two outfalls at the same locations as in the existing conditions, one to the southeast corner of the site and one to the east of the rest area property. Both outfalls and SMFs have been sized to treat and attenuate for the ultimate I-75 10 lane configuration. All additional impervious runoff not collected in the wet SMFs will be collected in the dry retention pond SMF4 for treatment before discharging into the interconnected wet detention system as shown in the post-development drainage maps provided in **Appendix B**.

In the Phase II condition, SMF5 and SMF6 will be constructed by others to provide the additional compensatory treatment volume required for the ultimate I-75 typical section. The I-75 basin will be expanded by introduction of storm sewer to allow the rest area to treat additional imperious surfaces that currently have no formal water quality treatment (shown in orange in **Figure 3-1).** The total final basin configuration will allow for compensatory treatment allotted for the ultimate I-75 section to be constructed without requiring future water quality measures to Little Manatee River (shown in red in **Figure 3-2**).

Presumptive Water Quality Criteria:

The SWFWMD presumptive criteria for wet detention systems is treatment of the first one inch of runoff from the basin and first one-half inch for on-line dry retention facilities. For further detail on the water quality treatment volumes, see **Table 3-1**.

Water Quality Treatment:

The proposed project improvements will increase the overall impervious area within the rest area site and will require stormwater treatment and peak discharge attenuation. The proposed stormwater management system has been designed to provide excess water quality treatment and

attenuation for future improvements to I-75 along the frontage of the NB rest area (a distance of approximately 1.2 miles). The future I-75 typical section includes 10 travel lanes (5- NB and 5-SB lanes); the proposed design will meet the stormwater permitting requirements for the section of I-75 between I-75 bridge over the Little Manatee River to just north of the NB rest area (for a total distance of approximately 2.0 miles), through compensatory treatment criteria as specified in the SWFWMD ERP Applicants Handbook Volume II, Chapter 4, Section 4.5.

Table 3-1. Impervious Area Breakdown

Proposed Rest Area Impervious Surface (Ac.) Entire Site Impervious Area	13.35
Future Ultimate I-75 Area Impervious Surface (Ac.) (Additional 4-travel lanes; 1.2 miles)	10.47
Existing Untreated I-75 Area Impervious Surface (Ac.) (Existing 6-travel lanes; 1.2 miles)	14.25
Total Impervious Area Being Treated (I-75 and NB Rest Area (Ac.)	38.07
Total Water Quality Treatment Provided (Equivalent Imp Area Ac.)	39.70
Excess Water Quality Impervious Area Treatment Provided (Ac.)	**1.63**

The required water quality volume for this project comprises of the proposed rest area impervious, plus the additional 2.0 miles of anticipated ultimate I-75 10 lane typical section by utilizing compensatory treatment of the existing I-75 section that drains through the rest area. This compensatory treatment is intended to provide the I-75 ultimate 10-lane typical section to be constructed from the rest area to the Little Manatee River (shown in red on **Figure 3-2**) without the need for offsite ponds.

Table 3-2 demonstrates the proposed design meets all the required water quality criteria applicable to this project and treatment for future I-75 improvements. The table also provides a summary for each SMF, the treatment method, required and provided water quality treatment. All water quality retention volumes have been demonstrated to recover with the allotted 72 hour time frame and wet detention systems treatment volume shall be discharged in no less than 120 hours with not more than one-half the total volume discharged in the first 60 hours (see **Appendix B** ICPR recovery results). The proposed design provides equal to or greater water quality treatment than what is jurisdictionally required.

Table 3-2. Water Quality Summary

SMF No.	Treatment Type	Basin Impervious Area (Ac.)	1" Over the Impervious Area (Ac. ft.)[1]	0.5" Over the Impervious Area (Ac. ft.)[2]	Water Quality Volume Required (Ac. ft.)	Water Quality Volume Provided (Ac. ft.)
SMF 1, 2, 3, 7	Wet Detention	33.24[4]	2.77	--	2.77	3.16
SMF 4	Dry Retention	1.30	--	0.05	0.05	0.31
(Future) SMF 5[3]	Dry Retention	1.74[4]	--	0.07	0.07	0.30
(Future) SMF 6[3]	Dry Retention	1.79[4]	--	0.07	0.07	0.28
Totals					2.96	4.05

[1]Wet Detention Criteria: one-inch runoff from contributing area
[2]Dry retention Criteria: one-half inch of runoff for contributing area less than 100 acres
[3]SMF 5 & SMF 6 are Future (by others)
[4]Area Includes Impervious from Existing and Ultimate I-75 Typical Section

Water Quantity (Attenuation):

The proposed design will provide treatment and attenuation for the new impervious area associated with the rest area and the future 4 additional travel lanes within this segment. **Table 3-3** demonstrates the proposed design meets the FDOT/SWFWMD attenuation and design storm peak stage freeboard requirements by providing a minimum of 1 ft. of freeboard in the stormwater management facilities. The proposed design meets all jurisdictional regulatory agency requirements and FDOT design criteria.

Table 3-3. SMF Design High Water (DHW) Summary

SMF No.	Inside Top Of Berm Elevation (ft)	SWFWMD 25-year/ 24-hour Storm DHW (ft)	Freeboard (ft)	SWFWMD 25-year/ 24-hour Pre-Development Discharge Rate (cfs)	SWFWMD 25-year/ 24-hour Post-Development Discharge Rate (cfs)	Reduction (cfs)
Outfall 1						
SMF 1	24.50	22.80	1.70	56.97	51.84	5.13
SMF 2	24.50	22.97	1.53			
SMF 5[1]	26.00	24.14	1.86			
Outfall 2						
SMF 3	24.50	23.04	1.46	40.52	23.30	17.22
SMF 4	26.00	24.30	1.70			
SMF 6[1]	26.00	24.31	1.69			
SMF 7	24.50	22.82	1.68			

[1]SMF 5 & SMF 6 are Future (by others)

SECTION 4.0 – FLOODPLAIN ANALYSIS

Based on a review of Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) 12057C0670H dated August 28, 2008, the project is located within unshaded Zone "X" which is defined as "areas determined to be outside the 0.2% annual (500-yr.) chance of floodplain." The proposed project improvements do not result in floodplain impacts and therefore compensation is not required. FEMA FIRM Panel 12057C0670H is provided in **Appendix A.**

SECTION 5.0 – BASE CLEARANCE ANALYSIS

The base clearance of the roadway is measured between the bottom elevation of the roadway base and the DHW elevation, or Base Clearance Water Elevation (BCWE). The DHW/BCWE elevation for setting the roadway grade is based on the highest elevation of the following:

- The established Seasonal High Groundwater Table (SHGWT) elevation along the corridor
- The 24-hour recovery elevation in the Stormwater Management Facility (SMF) located adjacent to the roadway
- Where a weir or control elevation could potentially create conditions where the water table becomes elevated for a period greater than 24 hours

Per the FDM 210.10.3 the minimum clearance from the bottom of the roadway base course to the BCWE is 3ft for two-lane roadways having a context classification of C1, C2, C2T, C3 and 2-feet for all ramps. However, low points on ramps at cross roads may be reduced to a 1-foot clearance. For this project, the BCWE for the site was set to 2-feet with a minimum of 1-foot. In the Tierra roadway geotechnical investigation and analysis report (excerpts provided in **Appendix F**) the estimated SHGWT ground water is approximately 2-feet below the existing ground surface or elevation +22.00 feet NAVD. The majority of the rest area site, interior to the proposed wet SMFs, is comprised of impervious surfaces (paved truck, RV, & car parking) that will restrict rainfall infiltration and avoid any groundwater-mounding affect interior to the site. All pavement locations within the NB rest area site meet the minimum base clearance requirement. Excerpts from the Tierra roadway geotechnical investigation and analysis, are provided in **Appendix F.**

For pavement areas adjacent to a wet or dry SMF, base clearance determine from the SHGWT or the 24-hr. water quality recovery elevation, whichever is higher. For wet detention SMFs the drawdown of the water quality elevation at 24-hrs was used as the BCWE. An edge drain system is provided for the concrete pavement areas and will facilitate the movement of water away from the roadway and base. Calculations demonstrating conformance with the required base clearance are provided in **Appendix E.**

SECTION 6.0 – CROSS DRAINS

Existing I-75 / Rest Area Culvert Crossings:

The general flow of offsite runoff is from west to east through the project corridor. There is currently one existing cross drains within or adjacent to the project limits and two culvert crossings internal to the site. Offsite runoff enters the I-75 median from existing structure 23 through a 24" pipe and is convey to existing structure 26 through a 30" pipe. Existing structure 26 outfall into the on site rest area wetland. The wetland is connected to existing structure 14, which has two 24" pipes, that discharges under the existing rest area ramp to existing structure 15. Existing structure 15 acts as a storm sewer to convey water around the rest area wastewater treatment facility through two 24" pipes and discharges offsite. During a field review, all cross drains and culvert crossings were inspected and showed no signs of failure such as cracking or joint separation. The current cross drains demonstrated sufficient additional service life for this project. Existing offsite flow patterns are shown in the Pre-Development Drainage Map located in **Appendix B**.

Proposed I-75 Rest Area Culvert Crossings:

With the interim improvements, the existing structure 26 will not experience additional runoff or be extended, and therefore, no calculations are required. Existing culvert crossing 14 will be extended and 15 will be replaced with an SMF equalizer pipe and has been included in the ICPR routing analysis. The results on the upstream stage for existing cross drain 14 are provided in **Table 6-1**. ICPR routing analysis are provided in **Appendix B.**

Table 6-1. Culvert Crossing Design High Water (DHW) Summary

Culvert Crossing	Size	Flow Line		100 yr. DHW Elevation	50 yr. DHW Elevation
		LT	RT		
Existing Structure 14	(2) 24"	21.17	21.06	25.37	25.17
Proposed Structure 14	(2) 24"	21.17	20.00	25.22	25.03

SECTION 7.0 – SECONDARY INFRASTRUCTURE

Storm Sewer Design

The Automated Storm Sewer Analysis & Design (ASAD) software was used to analyze and design the storm drain systems within the rest area site. The 10-year storm event for Zone 6 IDF Curve were used to design the storm drain systems along I-75 ramps and the 3-year storm event for the rest area. Minor losses were included in the analysis to ensure the hydraulic gradient was below the top of grate for inlets adjacent to travel lanes. All the storm sewer tabulations are provided in **Appendix C.**

Additionally, where inlets have no overflow outlet other than the storm drain system (e.g., sags in ditches or shoulder gutter); flanking inlets, where required, are provided in accordance with 3.7.1 of the FDOT Drainage manual.

Ditch Calculations

Ditch collection and conveyance is the primary form of collection and conveyance along the project corridor, where feasible. Open channel ditch calculations were performed in the methodology described in the FDOT Drainage Design Guide Chapter 3. To ensure that stormwater flow is conveyed within the limits of the channel, the appropriate channel linings are identified and the freeboard for the 10-year storm event is met for the specific conditions encountered along the project corridor. All of the designed ditches contain the design storm event. The freeboard associated with the constructed back berm (soil and sod) have a minimum of 6-in. of freeboard based on standard earthwork construction tolerances. All the ditch calculations are provided in **Appendix C.**

Roadway Spread Calculations

All travel lanes and ramps from this project consist of open drainage conveyance features such as ditches or drain directly into adjacent SMFs. Closed storm sewer systems are only located inside the parking facility. The FDOT drainage manual and FDOT Drainage Design Guide has no maximum spread criteria for parking lots as such roadway spread calculations were not required for this project.

SECTION 8.0 – MOT DRAINAGE

Construction phasing calls for the rest area be closed to the public for the duration of construction activities. Therefore, Maintenance of Traffic (MOT) drainage design is not applicable to this project as construction phasing will not affect existing drainage flows. However, the site does take in offsite flows from I-75 corridor, and therefore, these flow patterns will be maintained during construction.

SECTION 9.0 – OPTIONAL PIPE ANALYSIS

Optional Culvert Materials Analysis was performed in accordance with Chapter 6 of the FDOT Drainage Manual and FDOT Drainage Design Guide. The FDOT latest version of Culvert Service Life Estimator (CSLE) - V5.1.3.3 was used for the analysis. The program was run using a 100-year design service life in accordance with the definition of a “major facility” as identified in Table 6-1 of the FDOT Drainage Manual. The corrosion analysis parameters used in the analysis were provided in the Tierra geotechnical report, see **Appendix F**. The CSLE output sheets and an optional Materials Tabulation sheet showing the allowable pipe materials results are provided in **Appendix D.**

SECTION 10.0 – RESEARCH AND REFERENCES

Research for this project included review of applicable design resources, historic documents and plans, hydrologic and hydraulic studies specific to the project corridor, and applicable agency design handbooks and regulatory criteria. The following is a list of reference documents, design handbooks, and jurisdictional agency manuals utilized in the design of this project.

- **Other Reference Materials/Sources**
  - FDEP WBID & TMDL Map (**Appendix A**)
  - Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for Hillsborough County: Panel Nos. 12057C0670H (August 28, 2008) (**Appendix A**)
  - USDA NRCS SCS – WEB Soil Survey – Lake County, Florida (**Appendix A**)
  - Field Reconnaissance and Photos.
  - FDOT Design Standards
  - FDOT Standard Specification for Road and Bridge Construction
  - FDOT Design Manual (Latest Edition)
  - FDOT Drainage Manual (Latest Edition)
  - FDOT Drainage Design Guide, (Latest Edition)
  - FDOT Temporary Drainage Handbook, (Latest Edition)
  - TR-55 Urban Hydrology for Small Watersheds,
  - Statewide Environmental Resource Permitting (ERP) Manual (2013), Applicant's Handbook Volume I.
  - SWFWMD Environmental Resource Permitting (ERP) Manual (2013), Applicant's Handbook Volume II.
  - Flood Insurance Study Hillsborough County, Florida and Incorporated Areas- Revised August 28, 2008

- **Issued ERP Permits:**
  - SWFWMD ERP Permit No. 44 4405 3 FDOT-I-75 Manatee River Rest #10075-1464

SECTION 11.0 – CONCLUSIONS

The proposed stormwater management system design meets all SWFWMD and FDOT jurisdictional criteria.

The stormwater management system design and hydrologic and hydraulic modeling analysis demonstrates adherence with SWFWMD criteria:

- Required water quality treatment volumes and recovery requirements (within the proposed dry retention and wet detention facilities)
- Pre-post discharges for the SWFWMD 25-year/24-hour event and been attenuated.
- The proposed improvements do not cause a net reduction in flood storage within the 100-year floodplain of a stream or other watercourse.
- Detailed Stormwater Pollution Prevention Plans (SWPPP) and Erosion Control Plans are provided.

Overall, the proposed design discharges to the same primary outfall points, maintains existing drainage patterns, provides offsite conveyance connectivity to the historical receiving waterbodies, and provides for general public safety.

APPENDIX E Meeting Minutes

THIS FORM IS INTENDED TO FACILITATE AND GUIDE THE DIALOGUE DURING A PRE-APPLICATION MEETING BY PROVIDING A PARTIAL "PROMPT LIST" OF DISCUSSION SUBJECTS. IT IS NOT A LIST OF REQUIREMENTS FOR SUBMITTAL BY THE APPLICANT.

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
RESOURCE REGULATION DIVISION
PRE-APPLICATION MEETING NOTES

FILE NUMBER:

PA 405566

Date:	04/25/2018		
Time:	11:00		
Project Name:	Tampa Bay Next Sections 9 and 10		
District Engineer:	David Kramer		
District ES:	Lauren Greenfield, Joel Brown		
Attendees:	Daniel Lauricello, Virginia Creighton, William Adams, Cristina Jackson, John Littlefield		
County:	Hillsborough/Manatee	**Sec/Twp/Rge:**	Varies
Total Land Acreage:	ROW	**Project Acreage:**	100++ acres

Prior On-Site/Off-Site Permit Activity:

- Significant permitting history within and adjacent to the roadway corridor.

Project Overview:

- High level discussion regarding improvements to I75 within Hillsborough and Manatee Counties.
- Section 10: Moccasin Wallow Road (CR 6) to South of US Hwy 301 (SR 43), Manatee and Hillsborough
- Section 9: US Hwy 301 to Bruce B. Downs, Hillsborough

Environmental Discussion: (Wetlands On-Site, Wetlands on Adjacent Properties, Delineation, T&E species, Easements, Drawdown Issues, Setbacks, Justification, Elimination/Reduction, Permanent/Temporary Impacts, Secondary and Cumulative Impacts, Mitigation Options, SHWL, Upland Habitats, Site Visit, etc.)

- Provide the limits of surface waters and wetlands on-site.
- Provide appropriate mitigation using UMAM for impacts, if applicable.
- Demonstrate elimination and reduction of wetland impacts.
- Maintain minimum 15 foot, average 25 foot wetland conservation area setback or address secondary impacts.
- As of October 1, 2017, the District will no longer send a copy of an application that does not qualify for a State Programmatic General Permit (SPGP) to the U.S. Army Corps of Engineers. If a project does not qualify for a SPGP, you will need to apply separately to the Corps using the appropriate federal application form for activities under federal jurisdiction. Please see the Corps' Jacksonville District Regulatory Division Sourcebook for more information about federal permitting. Please call your local Corps office if you have questions about federal permitting. Link: http://www.saj.usace.army.mil/Missions/Regulatory/Source-Book/

Site Information Discussion: (SHW Levels, Floodplain, Tailwater Conditions, Adjacent Off-Site Contributing Sources, Receiving Waterbody, etc.)

- Project encompasses almost the entire length of Hillsborough County and a portion of Manatee County along the existing I75 corridor.
- WBIDs need to be independently verified by the consultant
- Portions of the project discharge to impaired waters.
- Portions of the project may discharge to local closed basins.
- Several OFW's within the project area including but possibly not limited to the Hillsborough and Little Manatee Rivers and the Cockroach Bay Aquatic Preserve.
- All wells within the project area should be identified and their future use/abandonment must be designated.

Water Quantity Discussions: (Basin Description, Storm Event, Pre/Post Volume, Pre/Post Discharge, etc.)

- Project falls within many different regional and local watersheds/drainage basins.
- Demonstrate that post development peak discharges from proposed project area will not cause an adverse impact for a 25-year, 24-hour storm event.
- For projects or portions of projects that discharge to a closed basin, limit the post-development 100-year discharge volume to the pre-development 100-year, 24-hour volume.
- Demonstrate that site will not impede the conveyance of contributing off-site flows.
- Demonstrate that the project will not increase flood stages up- or down-stream of the project area(s).

- Provide equivalent compensating storage for all 100-year, 24-hour riverine floodplain impacts if applicable. Providing cup-for-cup storage in dedicated areas of excavation is the preferred method of compensation. if no impacts to flood conveyance are proposed and storage impacts and compensation occur within the same basin. In this case, tabulations should be provided at 0.5-foot increments to demonstrate encroachment and compensation occur at the same levels. Otherwise, storage modeling will be required to demonstrate no increase in flood stages will occur on off-site properties, using the mean annual, 10-year, 25-year, and 100-year storm events for the pre- and post-development conditions.
- Please be aware that if there is credible historical evidence of past flooding or the physical capacity of the downstream conveyance or receiving waters indicates that the conditions for issuance will not be met without consideration of storm events of different frequency or duration, applicants shall be required to provide additional analyses using storm events of different duration or frequency than the 25-year 24-hour storm event, or to adjust the volume, rate or timing of discharges. [Section 3.0 Applicant's Handbook Volume II]

Water Quality Discussions: (Type of Treatment, Technical Characteristics, Non-presumptive Alternatives, etc.)

- Must replace treatment function of existing ditches to be filled.
- Refer to Section 4.5 A.H.V.II for Alterations to Existing Public Roadway Projects.
- Refer to Sections 4.8, 4.8.1 and 4.8.2 A.H.V.II for Compensating Stormwater Treatment, Overtreatment, and Offsite Compensation.
- All co-mingled existing & new impervious (DCIA) that is proposed to be connected to a treatment pond will require treatment (times ½" for dry treatment or 1" for wet treatment).
- However, if equivalent treatment concepts are used it is possible to strategically locate the pond(s) so that the minimum treatment requirement may be for an area equivalent to the net increase in impervious area. That is, co-mingled existing & new impervious that is not connected to a treatment pond may bypass treatment (as per Section 4.5(2), A.H.V.II) if the 'total impervious area' that is connected to the treatment pond(s) is at least equivalent to the area of new impervious. The 'total impervious area' that is connected to the pond(s) may be composed of co-mingled existing & new impervious.
- Offsite impervious not required to be treated; but may be useful to be treated when using equivalent treatment concepts or when attempting to meet net improvement.
- Provide additional 50% treatment for any direct discharges to OFW. Refer to ERP Applicant's Handbook Vol. II Subsection 4.1(f).
- Please be advised that although use of isolated wetlands for ERP treatment purposes is permittable as per Section 4.1(a)(3), A.H.V.II, use of isolated wetlands for treatment purposes may not necessarily meet US Army Corps criteria.
- In addition, if the project discharges to an impaired water body, must provide a net environmental improvement.
- Applicant must demonstrate a net improvement for the parameters of concern by performing a pre/post pollutant loading analysis based on existing land use and the proposed land use.
- Discussion also included the potential for off-site compensatory treatment or "regional treatment." Most feasible/permittable regional treatment locations would be within the same Wbid, or another segment/Wbid that is part of the same contiguous water body that is located upstream of the impacts. This would allow the applicant to clearly demonstrate that the load reduction provided by the regional treatment facility provides a measurable benefit to the segment/Wbid being impacted.

Sovereign Lands Discussion: (Determining Location, Correct Form of Authorization, Content of Application, Assessment of Fees, Coordination with FDEP)

- Portions of the project may be located within state owned sovereign submerged lands (SSSL). Be advised that a title determination will be required from FDEP to verify the presence and/or location of SSSL.
- If use of SSSL is proposed, authorization will be required. Refer to Chapter 18-21, F.A.C. and Chapter 18-20, F.A.C. for guidance on projects that impact SSSL and Aquatic Preserves.
- For areas over SSSL, a new easement or a modification to an existing easement may be required.

Operation and Maintenance/Legal Information: (Ownership or Perpetual Control, O&M Entity, O&M Instructions, Homeowner Association Documents, Coastal Zone requirements, etc.)

- Demonstrate ownership and control of entire project area.

Application Type and Fee Required:

- SWERP – Sections A, C and E of the ERP Application – fee to be determined based on construction permit project area.

- The group also discussed expected deliverables for design-build projects. The District has agreed to a minimum level of detail to be provided with construction permit applications for project using a design-build approach. HNTB has created a list of items that must be included, at a minimum, with future ERP applications.

Other: (Future Pre-Application Meetings, Fast Track, Submittal Date, Construction Start Date, Required District Permits – WUP, WOD, Well Construction, etc.)

- An application for an individual permit to construct or alter a dam, impoundment, reservoir, or appurtenant work, requires that a notice of receipt of the application must be published in a newspaper within the affected area. Provide documentation that such noticing has been accomplished. Note that the published notices of receipt for an ERP can be in accordance with the language provided in Rule 40D-1.603(10), F.A.C.

- The plans and drainage report submitted electronically must include the appropriate information required under Rule 61G15-23.005(4)(c), F.A.C. The following text is acceptable to the Florida Board of Professional Engineers (FBPE) to meet this requirement and must appear where the signature would normally appear:

  [Licensee] State of Florida, Professional Engineer, License No. X
  This item has been electronically signed and sealed by [Licensee, PE] on [DATE] using a SHA authentication code. Printed copies of this document are not considered signed and sealed and the SHA authentication code must be verified on any electronic copies

- Provide soil erosion and sediment control measures for use during construction. Refer to ERP Applicant's Handbook Vol. 1 Part IV Erosion and Sediment Control.

Disclaimer: The District ERP pre-application meeting process is a service made available to the public to assist interested parties in preparing for submittal of a permit application. Information shared at pre-application meetings is superseded by the actual permit application submittal. District permit decisions are based upon information submitted during the application process and Rules in effect at the time the application is complete.

MEETING MINUTES

Meeting Date:	1/30/2019	**Date Issued:**	2/12/2019
Location:	FDOT District 7, Tarpon		
Project Name:	I-75 (SR 93A) From Moccasin Wallow Road to South of US Hwy 301 (SR 43)		
Purpose:	Pond Site Alternatives Discussion		
Notes by:	Bill Adams	**American Project #:**	5077075
Copies to:	Attendees, File		

See attached attendance list

The following notes reflect our understanding of the discussions and decisions made at this meeting. If you have any questions, additions or comments, please contact us at the above address. We will consider the minutes to be accurate unless written notice is received within 10 working days of the date issued.

Purpose of Meeting

The purpose of the meeting is to discuss pond site sizing and siting for the referenced PD&E study. American will implement any changes identified during this meeting to the currently proposed pond alternatives and then finalize the draft report to be submitted for RW estimates.

Jeff Novotny provided an overview and brief history of the project.

Bill Adams discussed the criteria and methodology utilized to develop the alternative pond sites for the project as follows:

Criteria Utilized/Evaluation Performed

(A hand was available for those interested in calculation spread sheets.)

Water Quality Treatment

The proposed water quality treatment was calculated based on 1" over the contributing through lane pavement. It was assumed that the entire limits of the basin would be drained to a pond which amounts to 10 thru lanes 12 feet in width for 120 foot total width. This is conservative since SWFWMD should accept treatment of only the new impervious area.

Discharge Attenuation

Pre vs. Post peak discharge comparison of the 25yr-24 hour design storm event.

Evaluation utilized ICPR V4 to take off pre vs. post land use and calculate pre vs. post runoff volumes per basin. Soil shape files were utilized to account for differing curve numbers for pervious areas.

Floodplain Compensation

The limits of the study have been modeled. Current model data, including Lidar data obtained for developing the models, was obtained and utilized to estimate floodplain encroachment volumes. Earthwork and floodplain compensation volumes were computed for each proposed floodplain compensation site using Geopak site modeler and tin to tin volume calculations.

Discussion of Pond/FPC Alternatives

A preliminary evaluation matrix was provided for vetting alternatives being considered. The maps with pond site alternatives were shown on the screen. The pond sites were then discussed per basin.

Bill Mctere indicated that the same display symbology should be utilized for the maps as for the SR 50 Pond Siting Report. American will update the symbology to follow the referenced report format. Also the estimated RW cost should be left blank for the draft report until actual estimated RW costs are available.

Discussion of sites began with a general discussion of the pond siting as follows:

The drainage to the ponds is assumed to occur via ditches as possible but will require some pipe conveyance. Ponds have been placed in locations convenient to drain to and discharge from. Objectives included avoidance of wetlands and development (both existing and planned). Floodplains were avoided if options outside the floodplain were available.

Basins and pond site alternatives were discussed as follows:

Basin 1:

SMF 1B was discussed– The offsite conveyance through the site would be directed to the cross drain near station 72+00 by grading along the north side of the pond.

Basin 2 :

SMF 2A and B were discussed. There may be future plans to improve Buckeye Road, such as an interchange. SMF 2A utilizes County RW which may be in conflict with their plans.

General: If there is an upland area made unusable between a pond and wetland then adjust the proposed shape to include the unusable remainder.

Basin 3:

SMF-3B add FPC “3B” to go along with pond site. Extend FPC 3B to wetland. Combine FPC and pond sites in general where it makes sense.

General - Make sure that FPC naming and “goes with” SMF are clear.

Basin 4,5,6: No changes were discussed

Basin 7:

Relocate FPC 7B to north side.

Correct label for FPC 7C (shows 7B). Location of 7C being in floodplain was discussed. Essentially the siting achieves less compensation depth per area but the compensation volume was confirmed based on Lidar data survey from the Floodplain models that were obtained from the Counties. (Note after further review of this is was determined that FPC B was split into two sites and not mislabeled. However FBC B is being re-sited.)

SMF-7B ensure floodplain encroachment compensation is included in FPC 7B.

FPC 6A and 7C**,**Ensure there is access to these sites. (Actually the whole parcel is proposed to be acquired for both.)

General: ensure 30’ min. easements are provided to access sites.

Basins 8,9,10: No changes were discussed.

Basin 11:

Evaluate compensatory alternative in Basin 10.

Basin 12:

There are plans to improve the rest northbound rest area. We need to obtain current plans, determine if a pond for I-75 can be places as we have it. The location of the existing/proposed septic field needs to be identified.

If the FDOT owned site will work then no other alternatives need to be identified.

Basin 13:

Adjust 13A to extend up to cross drain.

Basin 14 and 15:

FPC-14A appears to be an alternative to FPC-15A. This may lead to confusion when comparing alternatives and combinations.

SMF-14C check if triangular area is a separate parcel.

Basins 16 & 17: No changes identified

Basin 18:

FPC-18A appears to be alt for FPC-19A that appears to be paired with SMF-19A.

Basin 19:

Check necessity to acquire entire FPC-19B site and adjust as appropriate.

Check Cypress Village Blvd. to determine if public or private road for proposed conveyances to pond and use as pond access.

Basin 20:

Add line work for SMF 20A and 20B.

Need to highlight easement (min. 30').

Basins 21 and 22:

Evaluate if existing ponds can be expanded.

Basin 23:

It was discussed that SMF-23B is sited on area proposed for development. No changes were discussed, however.

Basin 24

Verify that floodplain compensation for SMF-24A is included in FPC-24A.

The map identifies Zone AE "Floodway". The limits of the floodway need to be shown in order to determine if there is an issue with the current pond/fpc site layout.

If floodway is a problem compensation in Basin 23 could be evaluated.

Basin 25:

There is a Big Bend Road Interchange improvement project currently being designed. American will continue to coordinate with WSP for consistency.

Basin 26:

Ensure SMF 26A and B can be accessed via. Bullfrog Creek Rd.

Either access to property remainders need to be provided or entire parcel will need to be acquired for SMF 26B and FPC-26B.

End of Meeting

The meeting had to end due to time constraints. FDOT indicated that any additional basin comments would be provided. American will review the remaining pond sites for the same general type of issues discussed during the meeting.

The site plans for the northbound rest area will be provided.