Pond Siting Report

Florida Department of Transportation

District 7

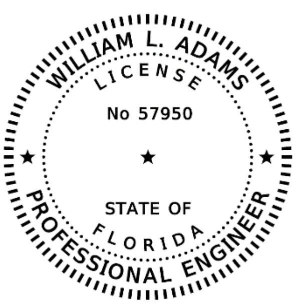
State Road (SR) 50 (US 98/Cortez Boulevard)
Project Development & Environment (PD&E) Study
From the Brooksville Bypass to west of Interstate 75
Hernando County, FL

Work Program Item Segment No. 430051-1

ETDM Project No. 13980

October 2020

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



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State Road (SR) 50 (US 98/Cortez Boulevard)
From the Brooksville Bypass to west of Interstate 75

Project Development & Environment (PD&E) Study

Pond Siting Report

Work Program Item Segment No. 430051-1
ETDM Project No. 13980
Hernando County

Prepared for:

Florida Department of Transportation
District Seven

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October 2020

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) study to evaluate alternative improvements for State Road (SR) 50 (US 98/Cortez Boulevard) from the Brooksville Bypass to west of Interstate 75 (I-75) in Hernando County (**Figure 1-1)**. The study extends to Lockhart Road on the east end of the project for a length of approximately 7.2 miles. The section along SR 50 to the east of Lockhart Road was studied as a part of a separate Federal Highway Administration (FHWA) approved PD&E study – SR 50 (Cortez Boulevard) from Lockhart Road to US 301 (SR 35/Treiman Boulevard), Work Program Item (WPI) Segment No.: 416732-2, with the I-75 interchange area excepted out under WPI Segment No. 411014-1. Study objectives include: determine proposed typical sections and develop preliminary conceptual design plans for proposed improvements, 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* is being prepared as part of this study. The highway is expected to be improved from an existing, four-lane divided rural facility to a six-lane divided facility. The proposed improvements will include construction of stormwater management and floodplain compensation facilities and various intersection improvements, in addition to multimodal facilities (pedestrian, bicycle and transit accommodations).

In accordance with the *FDOT's PD&E Manual*, a *Pond Siting Report (PSR)* was prepared for the proposed project's PD&E Study. The information presented in this document is subject to change until the final Phase of the project. This *PSR* is preliminary and it will be used as an engineering tool to identify potential stormwater management and floodplain encroachments as a result of the conceptual improvements. The calculations presented in this report are preliminary and help in estimating the preliminary size of the pond site facilities for each basin. The size requirements are preliminary based upon many assumptions and judgments.

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

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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) in reaching a decision on the type, location, and conceptual design of the proposed improvements for widening State Road (SR) 50 (US 98/Cortez Boulevard) from the Brooksville Bypass to west of Interstate 75 (I-75) in Hernando County.

The PD&E study satisfies all applicable state and federal requirements in order for this project to qualify for federal funding of subsequent development phases (design, right of way [ROW] acquisition, and construction). This project was screened through FDOT's Efficient Transportation Decision Making (ETDM) process as Project #13980. A *Final Programming Screen Summary Report* (PSSR) was published on January 7, 2014. A *Type 2 Categorical Exclusion* is being prepared as part of this study.

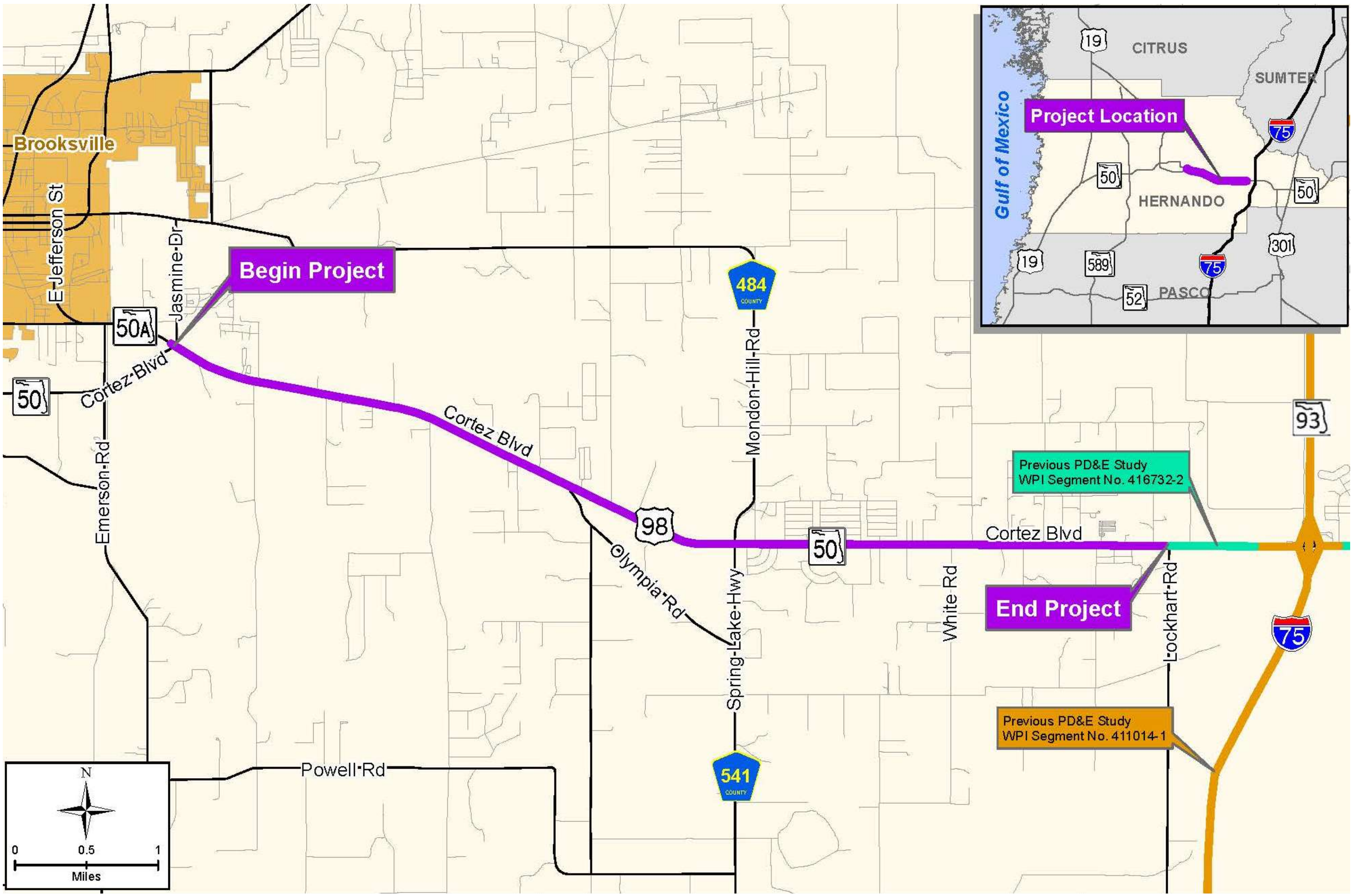
1.2 PROJECT DESCRIPTION

In order to accommodate projected traffic increases along SR 50, the FDOT is conducting a PD&E study to evaluate alternative capacity and operational improvements from the Brooksville Bypass to west of I-75 (**Figure 1-1**).

The study area extends to Lockhart Road on the east end of the project for a length of approximately 7.2 miles. The section along SR 50 to the east of Lockhart Road was studied as a part of a separate Federal Highway Administration (FHWA) approved PD&E study (2014) – SR 50 (Cortez Boulevard) from west of I-75 to US 301 (SR 35/Treiman Boulevard), Work Program Item (WPI) Segment No.: 416732-2, with the I-75 interchange area excepted out under WPI Segment No. 411014-1. Improvements for the Lockhart Road intersection were included in WPI Segment No. 416732-2. The highway is expected to be improved from an existing, four-lane divided rural facility to a six-lane divided facility. The proposed improvements will include construction of stormwater management and floodplain compensation facilities and various intersection improvements, in addition to multimodal facilities (pedestrian, bicycle and transit accommodations).

1.3 EXISTING FACILITY AND PROPOSED IMPROVEMENTS

SR 50 is currently a four-lane rural highway with 4-ft paved outside shoulders and 40 – 46-ft grassed median (**Figure 1-2**). The existing ROW is 200 feet wide. The posted speed limits vary from 45 mph to 60 mph. Major intersections within the project limits occur at Cortez Boulevard/Jasmine Drive, County Road (CR) 484/Spring Lake Highway and Lockhart Road (west of I-75). There is a short segment with existing sidewalk located near the west end of the project. There is a bridge culvert within the project limits located over the Bystream Overflow. This 53-ft bridge culvert was constructed in 1997 and has a sufficiency rating of 80 and a health index of 65.72 (inspected January 22, 2019). Expected improvements are described above in **Section 1.2**. The existing roadway is permitted under SWFWMD Permits No. 404773.001 and 44004306.002.



FDOT

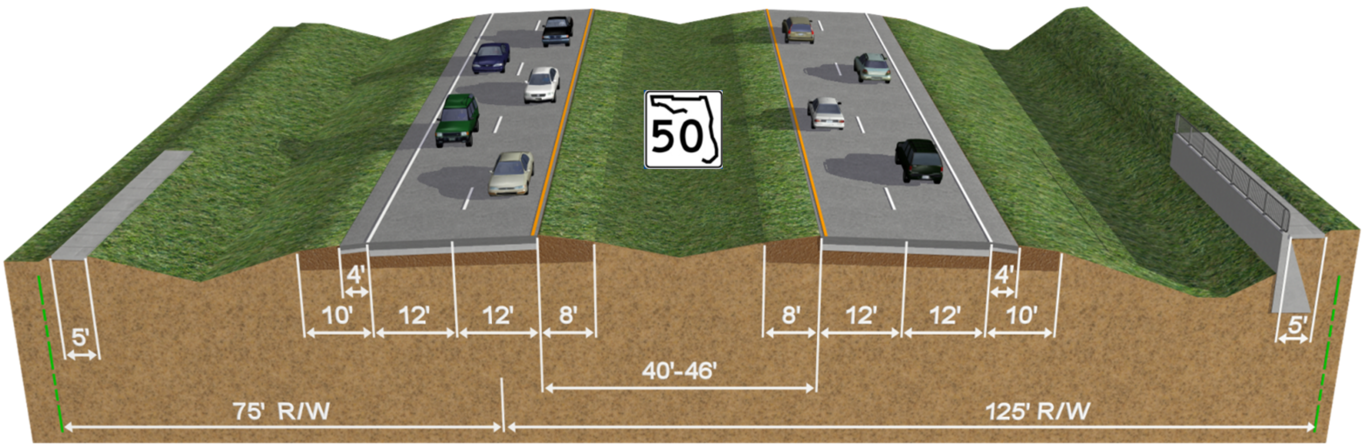
State Road 50 PD&E Study
From the Brooksville Bypass
to west of Interstate 75
WPI Segment No. 430051 1 - Hernando County

Project Location and Study Area Map

Figure 1-1

West Portion of Study Area

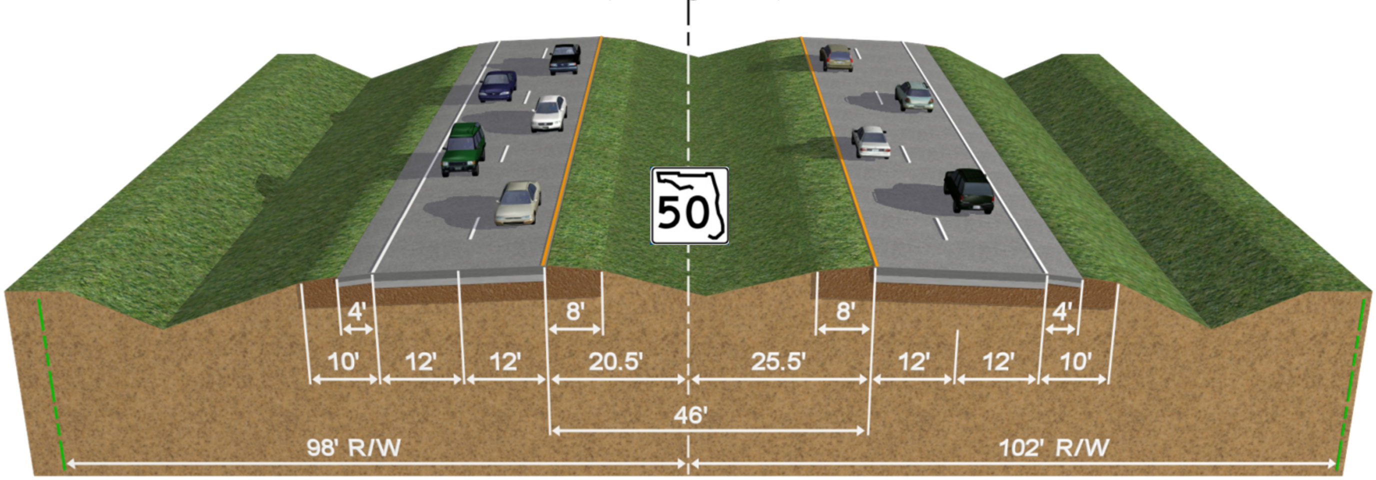
Roadway Segment ID 08 050 000
(facing east)



- From SR 50A/Brooksville Bypass/Cortez Blvd to Spring Lake Highway/Mondon Hill Road (4.2 miles)
- Posted Speed Varies: 45 mph at west end transitions to 60 mph throughout most of section
- Existing Context Classification: C2 Rural
- Sidewalks along western mile of segment

East Portion of Study Area

Roadway Segment ID 08 070 000
(facing east)



- From Spring Lake Highway/Mondon Hill Road to Lockhart Road (3.0 miles)
- Posted Speed Varies: 60 mph throughout most of section, transitions to 55 mph just west of Lockhart Road
- Existing Context Classification: C3R Suburban Residential

Proposed typical sections include rural and suburban typical sections (**Figure 1-3**). A six-lane rural section is proposed from the western project limits to east of Mondon Hill Road/Spring Lake Highway (West Segment) and a suburban typical section within 200-foot existing ROW is proposed from east of Mondon Hill Road/Spring Lake Highway to Lockhart Road. No additional ROW is anticipated for the roadway improvements with the exception of small corner clips at intersections along the corridor. Additional ROW may be needed for stormwater management facilities and floodplain compensation sites. A "No-Build" Alternative is also being evaluated.

1.4 PROJECT PURPOSE AND NEED

SR 50 is a major east-west rural principal arterial that spans central Florida from coast to coast. In Hernando County, SR 50 connects to several regionally significant corridors, including US 19, SR 589 (Suncoast Parkway), US 41, I-75, and US 301. SR 50 is also a hurricane evacuation route, a designated truck route, part of the Strategic Intermodal System (SIS) and part of the West Central Florida Metropolitan Planning Organization Chairs Coordinating Committee's (CCC) Regional Roadway Network. This segment of SR 50 connects the City of Brooksville to I-75.

The purpose of this project is to address projected roadway congestion due to future growth along the project corridor and within Hernando County. Increasing roadway capacity along this segment of SR 50 will accommodate future growth, provide for enhanced emergency response times and emergency evacuation, and work in conjunction with other projects planned or underway to increase the capacity of SR 50. The annual average daily traffic (AADT) within the study limits varied between 18,150 and 22,700 vehicles per day (VPD) in 2014. Year 2040 AADTs based on the Tampa Bay Regional Planning Model (TBRPM Version 7.2) are predicted to range from 47,400 to 59,100 VPD. This would result in level of service (LOS) "F" at the major intersections.

Within the limits of this PD&E study, the Hernando/Citrus Metropolitan Planning Organization's (MPO) 2045 Long Range Transportation Plan (LRTP), adopted on December 4, 2019, shows a need for improving SR 50 to 6 lanes. The LRTP shows funding for the design phase and right of way for expansion to 6 lanes in the *Cost Feasible Plan.*

A more detailed discussion of the project's purpose and need is included in the ETDM *Final Programming Screen Summary Report*, under ETDM project number 13980.

1.5 REPORT PURPOSE

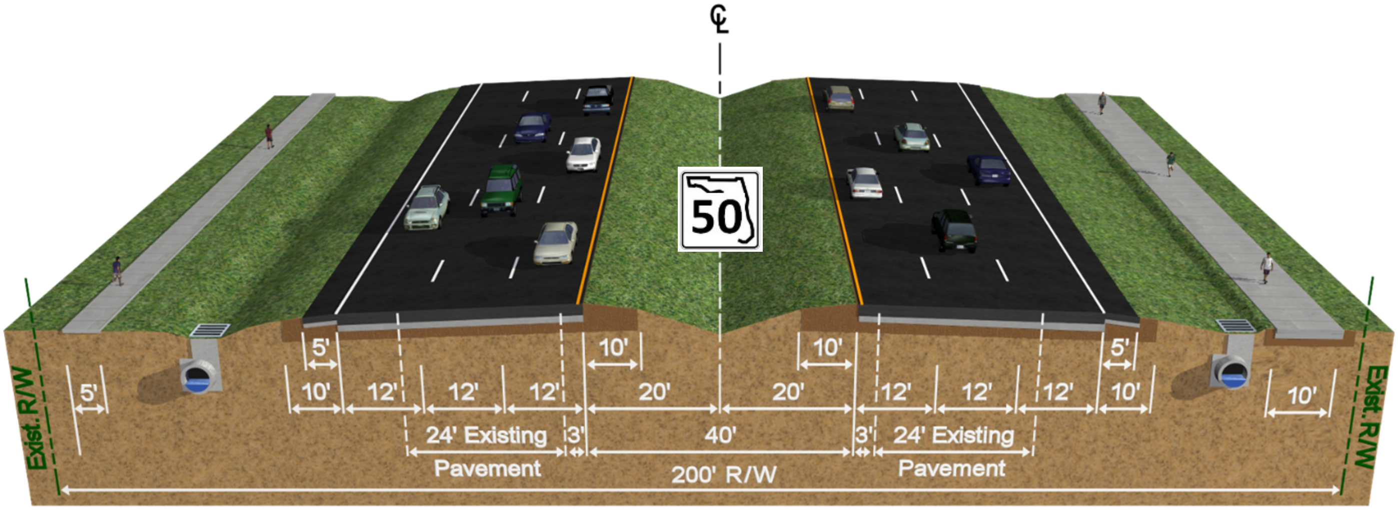
As part of the PD&E Study, this Pond Siting Report identifies stormwater management facility (SMF) and floodplain compensation (FPC) site alternatives, and includes the analysis for selection of preferred sites. This study analyzed SMF site alternatives that are hydraulically feasible and environmentally 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.

West Segment of Study Area

Roadway Segment ID 08 050 000

6-Lane Rural Typical Section – facing east

(from west limit of PD&E Study at SR 50/Brooksville Bypass to just east of Spring Lake Highway/Mondon Hill Road)



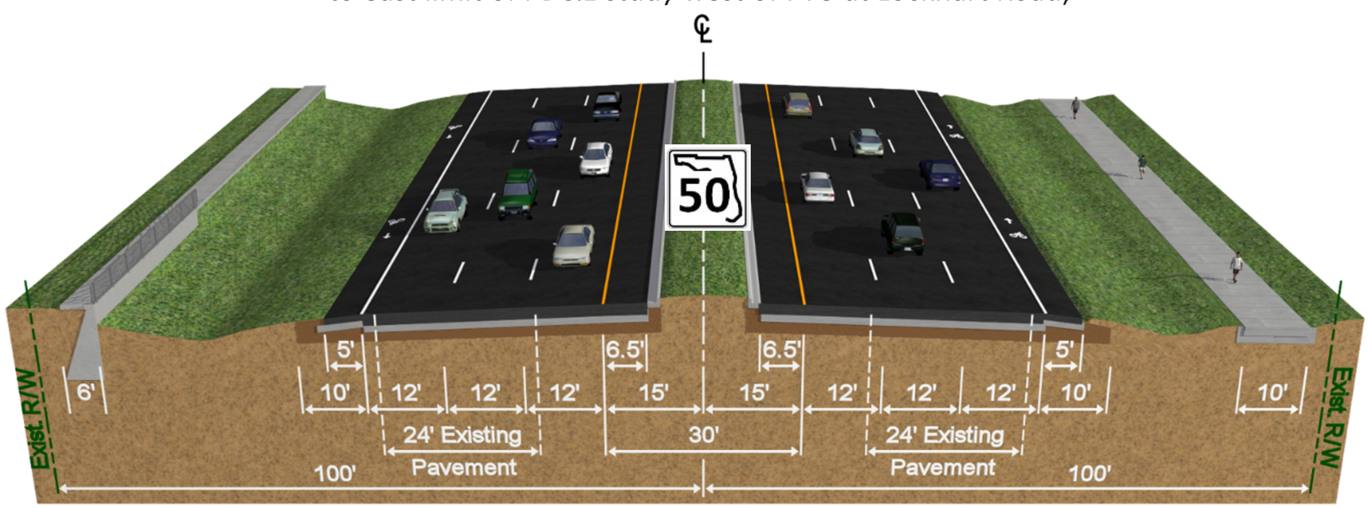
- Provides for 65 mph design speed
- Border width design variation required for left and right roadway sides (6 ft below standard)

East Segment of Study Area

Roadway Segment ID 08 070 000

6-Lane Suburban Typical Section – facing east

(from just east of Spring Lake Highway/Mondon Hill Road to east limit of PD&E study west of I-75 at Lockhart Road)



- Provides for 50 mph design speed

State Road 50 PD&E Study *From the Brooksville Bypass to west of Interstate 75* WPI Segment No. 430051 1 - Hernando County	**Preferred Roadway Typical Sections**	**Figure 1-3**

SECTION 2 HYDROLOGIC FEATURES

2.1 EXISTING DRAINAGE CONDITIONS

The study limits of the SR 50 corridor are within two closed basins: Bystre Lake Watershed and Croom Watershed. The basin limits and areas are presented in **Appendix A**. Existing storm water management facilities consist of linear ponds (swales) within the ROW that provide water quality treatment and discharge attenuation. A floodplain compensation pond exists on the north side of SR 50 east of CR 541 outside of the ROW. The swales were designed to treat one-half inch of runoff from their contributing drainage area. Swales were equipped with ditch blocks to control discharge and retain water quality volume. The study limits of the SR 50 corridor traverses 15 project sub-basins with ultimate discharge to Bystre Lake. There are 19 cross drains and 1 bridge culvert (Bridge No. 080036) within the study limits. See **Tables 2-1 & 2-2** and **Figure 2-1** for cross drain and bridge locations and points of discharge.

Table 2-1 Existing Cross Drains

Cross Drain No.	Mile Post	Station	Description
1	10.287	567+56	24” CC (Outfall Location)
2	9.786	594+30	24” CC
3	9.200	622+44	2-48” CC
4	9.022	634+30	76”X48” CC (Outfall Location)
5	8.296	673+83	24” CC (Outfall Location)
6	7.830	697+50	2-48” CC (Outfall Location)
7	7.460	721+50	18” CC
8	7.402	722+30	2-60”X38” CC (Outfall Location)
9	6.947	743+70	24” CC (Outfall Location)
10	6.708	756+30	10’X8’ CBC (Outfall Location)
11	6.352	777+70	36” CC (Outfall Location)
12	0.133	794+80	2-36” CC (Outfall Location)
13	0.697	824+20	36” CC
14	0.847	832+10	36” CC (Outfall Location)
15	1.257	853+80	24” CC (Outfall Location)
16	2.212	903+80	30” CC (Outfall Location)
17	2.422	915+90	18” CC
18	2.624	926+40	2-45”X29” CC (Outfall Location)
19	2.684	929+50	2-30” CC

Table 2-2 Existing Bridge Culvert

Bridge No.	Mile Post	Station	Description
080036	8.542 TO 8.552	659+30	53' Bridge Culvert (Outfall Location)

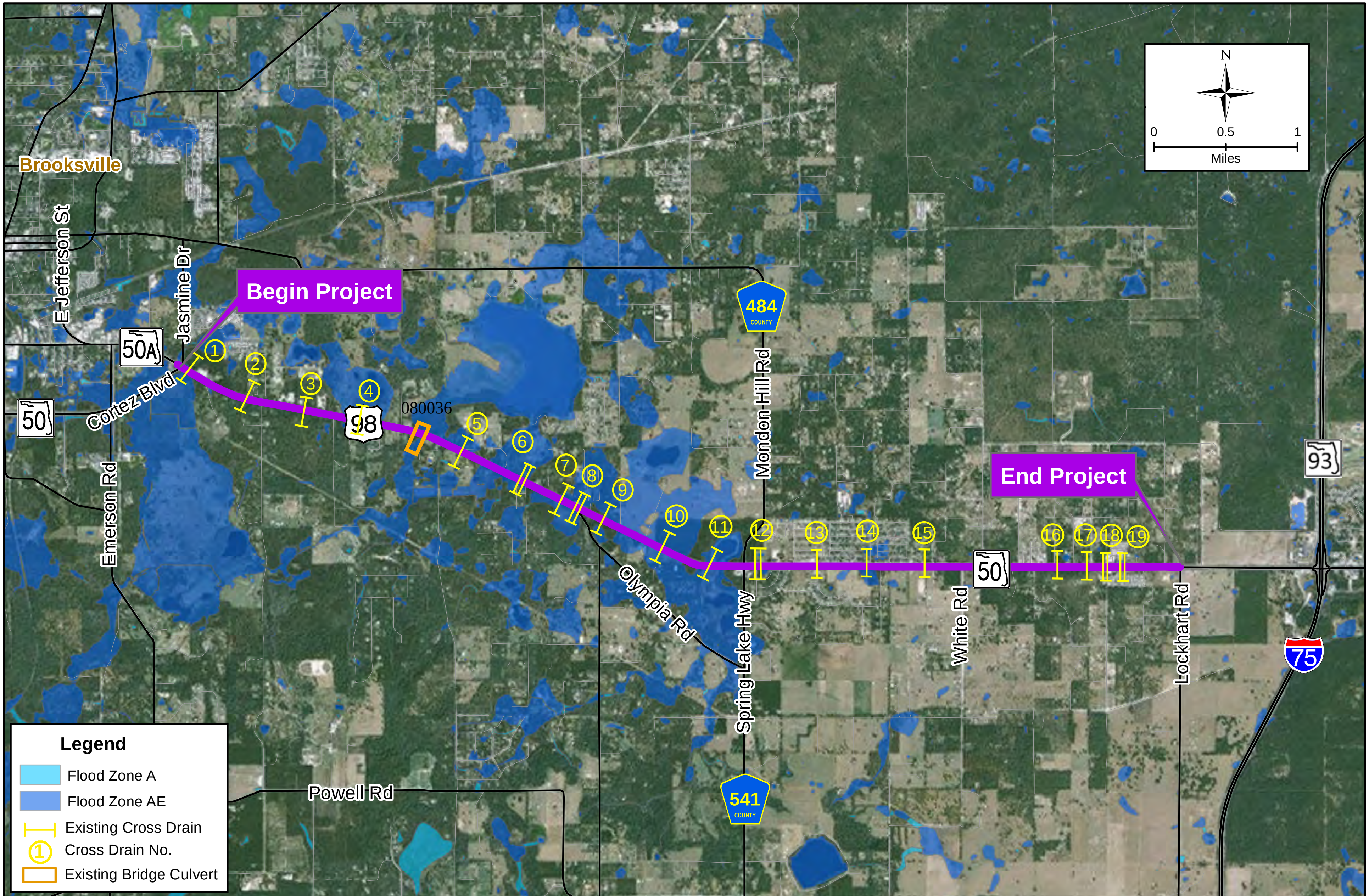
2.2 NUTRIENT LOADING

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

Table 2-3 Impaired WBIDs

Regional Basins	Project Basin No.	WBID	Impairments
Bystre Lake Watershed	1-8	1329E, 1329W	Nutrients (Total Phosphorus) in WBID 1329W
Croom Watershed	9-14	1329F	None

Bystre Lake has been identified to be impaired for nutrients (total phosphorus.)



FDOT

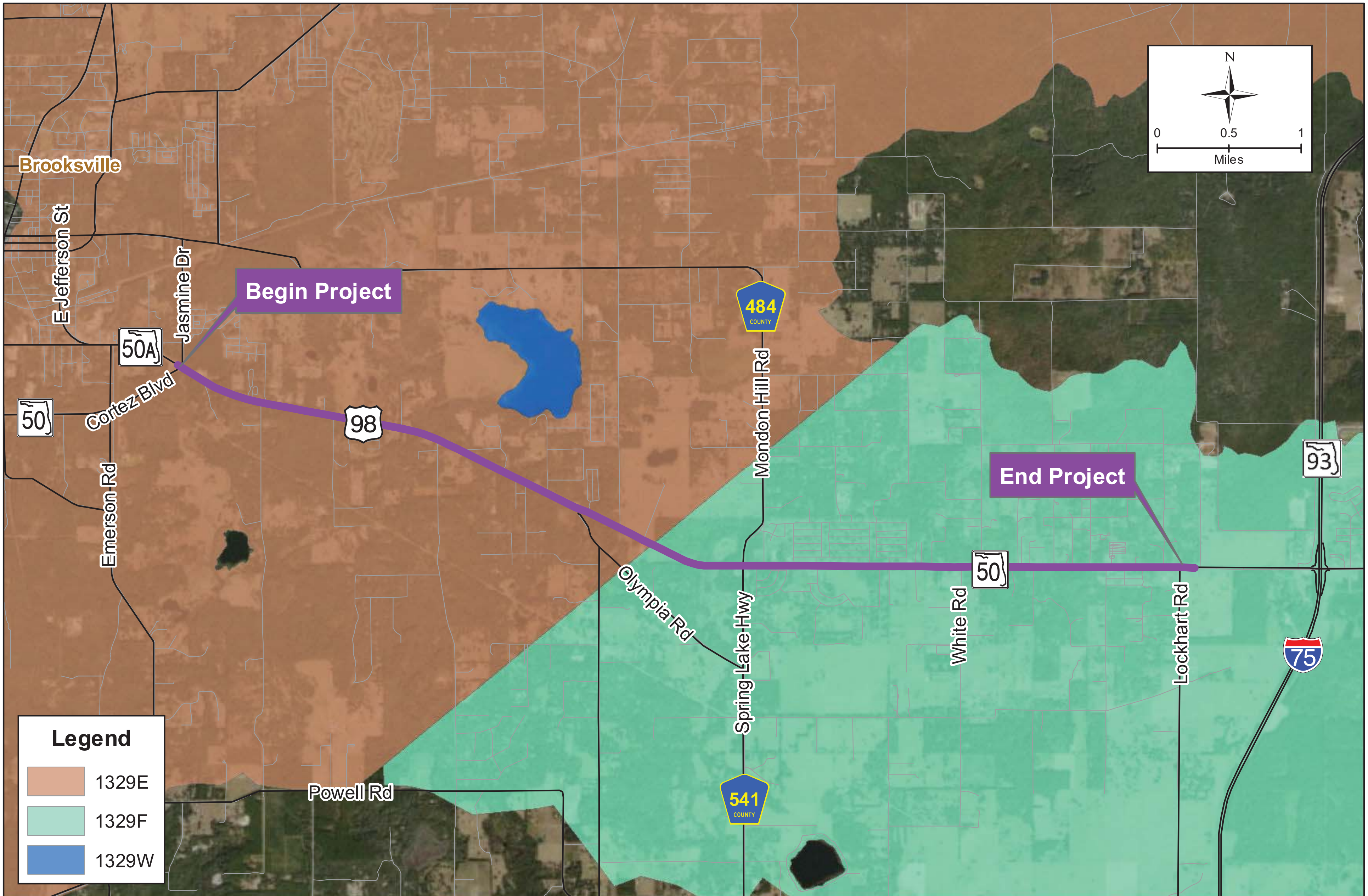
SR 50 (US 98) PD&E Study

From the Brooksville Bypass to west Interstate 75

WPI Segment No. 430051-1: Hernando County

Existing Cross Drain and Bridge Locations

Figure 2-1



SR 50 (US 98) PD&E Study

From the Brooksville Bypass to west Interstate 75

WPI Segment No. 430051-1: Hernando County

Water Body ID (WBID) Map

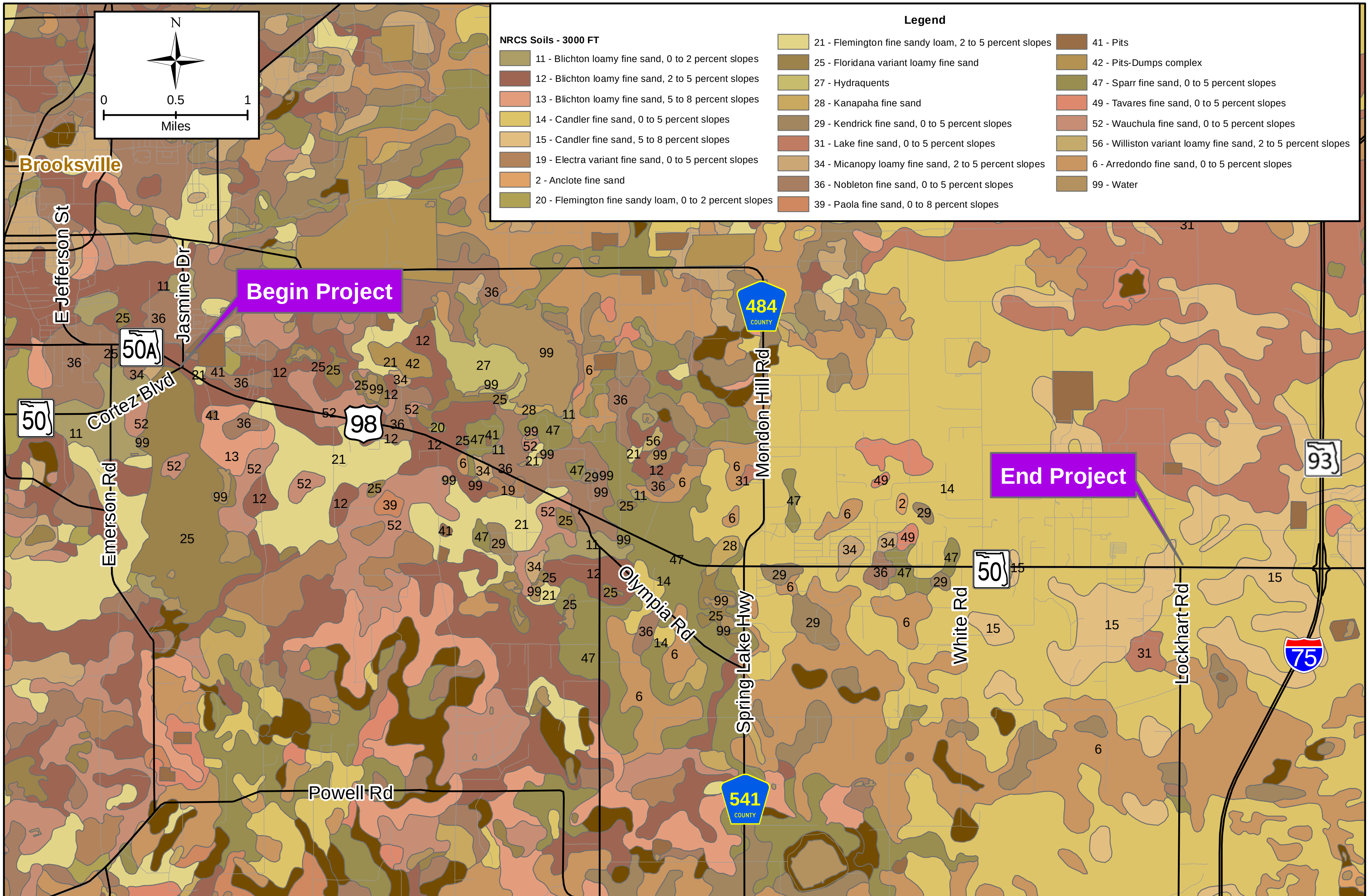
Figure 2-2

2.3 *SOIL CHARACTERISTICS*

Based on a review of the U.S. Department of Agriculture's Natural Resources Conservation Service (USDA – NRCS) Soil Survey for Hernando County, Florida, the predominant soils within the study limits consist of Blichton loamy fine sand (12), Candler fine sand (14), Nobleton Fine Sand (36) and Sparr fine sand (47). For the purpose of estimating the Soil Conservation Service (SCS) runoff Curve Numbers, the Hydrologic Soil Group was retrieved from the South West Florida Water Management District (SWFWMD) Information System website. See **Table 2-4** for USDA soils and **Figure 2-3** for soils map. The runoff Curve Numbers (CN) were determined from Table T-7 of the FDOT Hydrology Handbook (dated February 2012) using the Hydrologic Soil Group A/D.

Table 2-4 USDA Soils

Map #	Soil Name	Hydrologic Group	Depth to High Water Table (ft)	Soil Type	Description
6	Arredondo Fine Sand	A	>6.0	Sandy and loamy soil	Well drained soil on the uplands, slopes 0-5%
12	Blichton Loamy Fine Sand	D	0-1.0	Sandy and loamy soil	Poorly drained soil on the uplands, slopes 2-5%
14	Candler Fine Sand	A	>6.0	Sandy soil	Excessively drained soil on uplands, slopes 0-5%
15	Candler Fine Sand	A	>6.0	Sandy soil	Excessively drained soil on uplands, slopes 5-8%
19	Electra Variant Fine Sand	C	2.0-3.5	Sandy and loamy soil	Excessively drained soil on uplands, slopes 0-5%
21	Flemington Fine Sandy Loam	D	0-2.5	Sandy and loamy soil	Poorly drained soil on the uplands, slopes 2-5%
25	Floridana Variant Loamy Fine Sand	A/D	+2-1.0	Sandy and loamy soil	Very poorly drained soil in depressions
28	Kanapaha Fine Sand	A/D	0-1.0	Sandy and loamy soil	Poorly drained soil on the uplands
29	Kendrick Fine Sand	A	>6.0	Sandy and loamy soil	Well drained soil on the uplands, slopes 0-5%
34	Micanopy Loamy Fine Sand	C	1.5-2.5	Sandy and loamy soil	Poorly drained soil on the uplands, slopes 2-5%
36	Nobleton Fine Sand	C	1.5-3.5	Sandy and loamy soil	Poorly drained soil on the uplands, slopes 2-5%
47	Sparr Fine Sand	A	1.5-3.5	Sandy and loamy soil	Poorly drained soil on the uplands, slopes 0-5%
52	Wauchula Fine Sand	B/D	0-1.0	Sandy and loamy soil	Poorly drained soil on the uplands, slopes 0-5%



SR 50 (US 98) PD&E Study

From the Brooksville Bypass
to west Interstate 75

WPI Segment No. 430051-1: Hernando County

Soils Map

Figure 2-3

2.4 HISTORY OF FLOODING

According to the District 7 Drainage Office there are four flood investigation sites (Investigation Nos. 0806192006827, 0806192006317, 0806042010344, and 0806092017259) within the project limits which are within **Appendix D**. No history of SR 50 roadway flooding has been identified. District 7 Maintenance Office also noted some concerns listed below:

Maintenance-related issues identified include, Section #08050, from MP 6.117 to 10.130:

- Erosion under, behind and over pedestrian sidewalk
- Slime, mildew growing on sidewalks shaded by trees
- Erosion around headwalls
- Sidewalk constructed too close to trees are cracking, being stressed by tree growth
- Clogged drains installed on gravity walls (clogged with eroded sand from slopes)
- Silt over sidewalks
- Undermined sidewalks

2.5 BASE FLOODPLAIN

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) dated February 2, 2012, (Firm Nos. 12053C0211D, 12053C0212D, 12053C0214D, 12053C0218D and 12053C0219D) 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 **Figure 2-4**, and FEMA FIRMs are provided in **Appendix D**.

Hernando County provided the following studies that establish the base floodplain for the project limits:

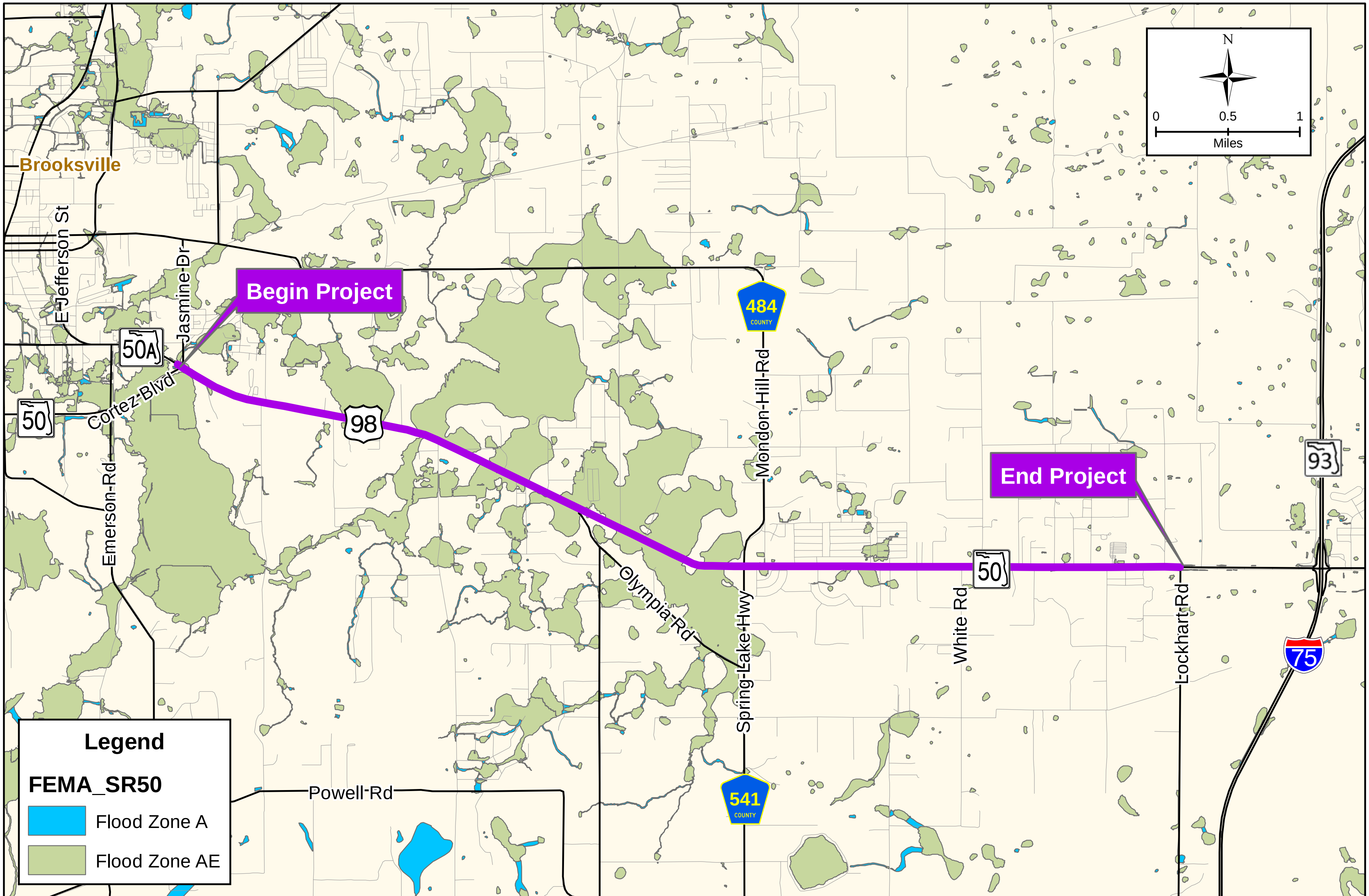
- *Bystre Lake Watershed Floodplain Justification Report*, dated March 2010 (**Appendix E**)
- *Justification for Updates to the FEMA Floodplain as a Result of Watershed Management Program for the Croom Watershed*, dated March 2010 (**Appendix F**)

Design floodplain elevations for each project sub-basin are identified in **Table 2-5**. The elevations provided in the table are for the 100-year storm event in feet North American Vertical Datum (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 Southwest Florida Water Management District (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 2-5 Floodplain Summary

Regional Basins	Project Sub-Basin No.	Project Sub Basin Boundaries	Model Node ID	Zone AE-Hernando County Design 100-yr Flood EL (ft – NAVD 88)
Bystre Lake Watershed	1	Sta 566+00 to Sta 598+25	NC0500	96.3
			NC0520	92.1
			NC0910	102.3
	2	Sta 598+25 to Sta 650+00	NC1400	87.8
			NC1405	85.1
	3	Sta 650+00 to Sta 669+00	NC1490/NA2040	78.2
			NC1345	77.5
	4	Sta 669+00 to Sta 680+00	NC1470/NC1480	78.2
	5	Sta 680+00 to Sta 707+00	NB0070	78.2
			NA1440/NA1480	77.4
	6	Sta 707+00 to Sta 731+00	NA1490	74.5
			NA1470	74.5
	7	Sta 731+00 to Sta 750+00	NA1770/NA1740	74.5
			NA1775/NA1790	74.5
	8	Sta 750+00 to Sta 769+00	NA1740	74.5
			NA1790/NA1880	74.5
Croom Watershed	9	Sta 769+00 to Sta 787+00	NA1240	74.5
			NA1248	74.5
	10	Sta 787+00 to Sta 813+00	NA1220	67.3
	11	Sta 813+00 to Sta 849+00	NK0510	58.1
			NK0430	63.6
			NK0500	57.9
	12	Sta 849+00 to Sta 879+00	NK0532	77.4
			NK0534	77.6
			NK0540	94.3
			NK0538	95.0
			NK0536	96.3
	13	Sta 879+00 to Sta 918+00	NL0293	86.8
			NL0297	84.5
			NL0300	79.1
			NL0257	80.4
	14	Sta 918+00 to Sta 939+00	NL0120	101.4
			NL0170	100.8
			NL0180	102.4



SR 50 (US 98) PD&E Study

From the Brooksville Bypass
to west Interstate 75

WPI Segment No. 430051-1: Hernando County

FEMA Floodplain Map

Figure 2-4

SECTION 3 SMF DESIGN CRITERIA AND METHODOLOGY

3.1 DISCHARGE ATTENUATION

Per the SWFWMD Environmental Resource Permit (ERP) Applicants Handbook II, Section 3.1 (d): 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. Additionally, being a closed basin, Florida Administrative Code (F.A.C.) 14-86 will require maintaining discharges to, at or below pre-developed discharges using a multiple storm approach. The required attenuation calculated is based on the difference of the existing and the proposed runoff volume for the critical storm event of 100-year/10-day.

The roadway improvements considered would result in the filling in of existing ponds within the ROW. Therefore, to estimate the required offsite pond sizes, the pre-development condition is considered as the two lane (pre-SWFWMD permits No. 404773.01 and 44004306.002) condition. For estimation of pond sizes the required attenuation volume is estimated as the difference in the 6-lane and 2-lane runoff volumes for the 100-year/10-day event.

3.2 WATER QUALITY

Water quality treatment shall be provided in accordance with SWFWMD criteria which vary according to the type of SMF as follows:

1. A wet detention treatment system shall treat one inch of runoff from the contributing area.
2. A dry retention pond shall treat one-half inch of runoff from the contributing area.

The depth to the water table for the basin area was utilized to assess if the treatment method would be wet or dry. Basins within depth to water table >6' assumed to be dry retention pond areas.

3.3 NUTRIENT LOADING

Bystre Lake has been identified to be impaired for nutrients (total phosphorus.) Per SWFWMD, basins that directly discharge to Bystre Lake will require nutrient loading calculations. Proposed nutrient loading shall not exceed existing nutrient loading to comply with impaired water body criteria. Nutrient loading calculations are provided in **Appendix B.**

3.4 DRAINAGE AREAS

The drainage area was calculated as the basin length multiplied by a typical ROW width of 200 feet. The impervious area for each basin was determined as the basin length multiplied by a typical impervious width and increased by 15% for intersections, etc. The pervious area was calculated as the remainder of the total drainage area. There is a separate PD&E study that has been conducted for the segment to the east under WPI Segment No. 416732-2. This extends past the project limits by approximately 1,400 feet; however, the area being calculated extends 900 feet to Lockhart Road. The calculations presented in this report are preliminary and help in estimating the preliminary size of the pond site facilities for each basin. The size requirements are preliminary based upon many assumptions and judgments. The results are tabulated in **Table 4-1**.

3.5 FLOODPLAIN INVOLVEMENT

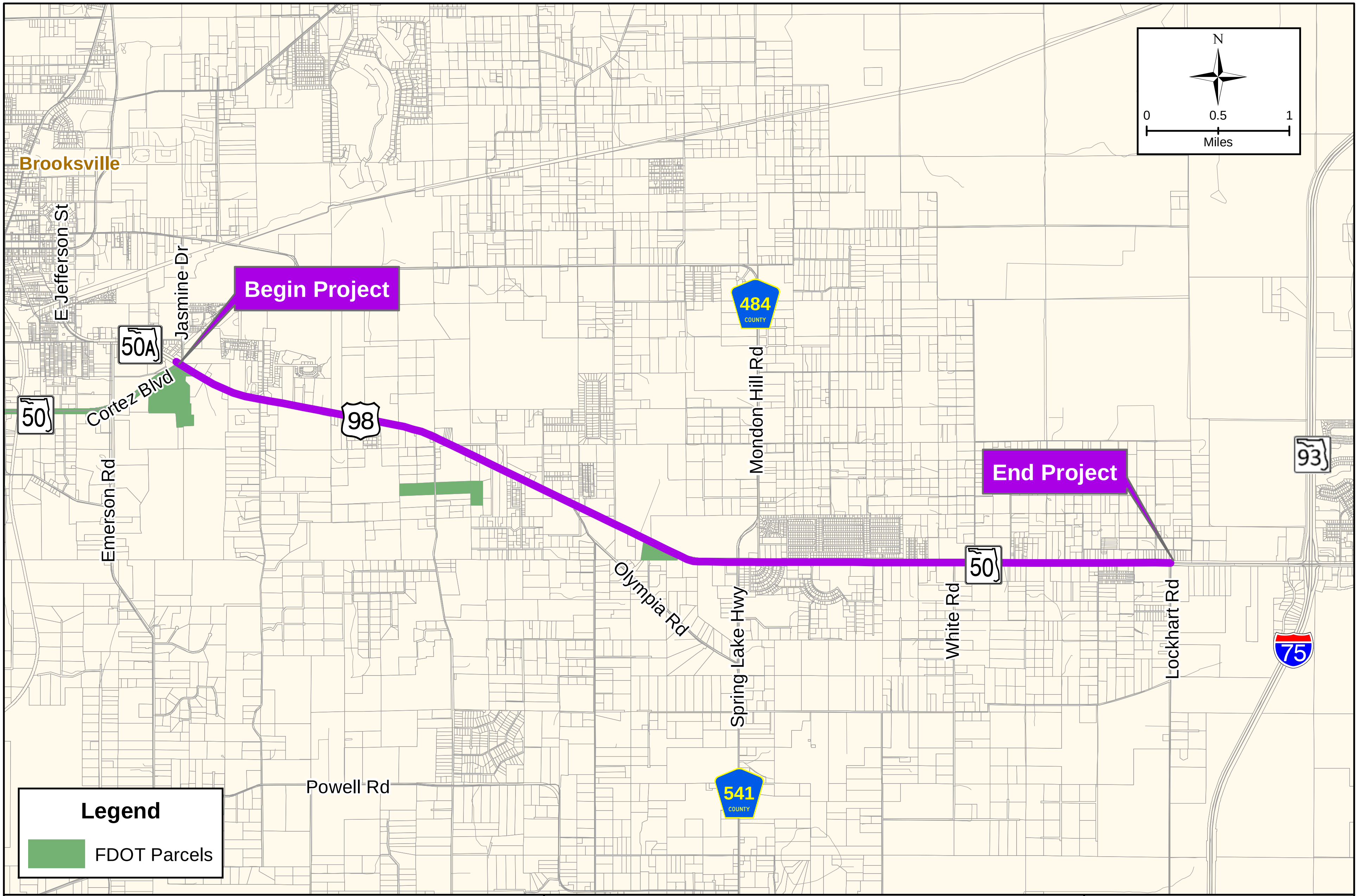
The project limits have been evaluated to determine potential impacts to the base floodplain. Cup-for-cup compensation will be provided for any fill placed within the floodplain. FPC site requirements are identified separately from SMF sites. Floodplain impacts are estimated based on estimated floodplain encroachment area and approximate average depths. FPC site areas are estimated based on the required compensation volume and depth to water table. These are summarized in **Table 4-2.**

It is noted that the floodplain encroachment volumes reported include volume below the weir of existing linear ponds within the ROW. It appears reasonable and correct to not include this volume in the required encroachment. However, justification of not being floodplain storage may require demonstration through modeling at the time of design. For this reason we have included the volume in the current calculations as a worst case scenario.

Also noted is that the FEMA mapping of the floodplain identifies a combination of 24-hour/100-year and 120-hr/100-year elevations. The original data is available from the Bystre Lake Watershed Floodplain Justification Report and the Justification for Updates to the FEMA Floodplain as a result of Watershed Management Program for the Croom Watershed (B206) report.

3.6 EXISTING FDOT PARCELS

FDOT owned parcels are located 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 or currently being utilized as floodplain compensation sites. FDOT parcels near the project corridor are shown in **Figure 3-1**. The FDOT floodplain compensation parcel that is west of Spring Lake Hwy and east of Olympia Rd was permitted under ERP: #4773.001. Data regarding the existing floodplain compensation pond is located within **Appendix H**.



SR 50 (US 98) PD&E Study

From the Brooksville Bypass to west Interstate 75

WPI Segment No. 430051-1: Hernando County

FDOT Parcels

Figure 3-1

SECTION 4 SMF AND FPC SITE ALTERNATIVES

Table 4-1 summarizes the SMF and FPC site alternatives. The table includes all pond site area requirements, including the pond site, ingress/egress and conveyances to and from the pond. The table identifies estimated costs for construction and property acquisition for each alternative. **Table 4-2** summarizes the environmental evaluation and potential impacts. Most categories were given a ranking of No Low, Moderate, or High based on potential impacts. **Table 4-3** shows the estimated floodplain encroachment area and estimated floodplain encroachment volume. The following tables are located at the end of **Section 4**. The following is a brief discussion on the preferred site selection considerations per sub-basin. A *Preliminary Cultural Resource Assessment Probability Analysis Technical Memorandum* (**Appendix I**) was prepared to provide a desktop evaluation of all of the proposed SMF and FPC sites. A detailed *Cultural Resource Assessment Survey (CRAS) Technical Memorandum Proposed SMF and FPC Sites* was prepared for the preferred pond sites. The CRAS stated that the proposed project would have no effect on any cultural resources, including archaeological sites and historic resources, which are listed, determined eligible, or that appear to be eligible for listing in the National Register of Historic Places (NRHP). The CRAS can be found in the project file.

4.1 BASIN CONSIDERATIONS

4.1.1 Basin 1

The SMF's and FPC's have been grouped together in the consideration of pond site alternatives for their respective limits since this appears to be the best approach for acquisition of the required land for these facilities. This is a closed basin. Three alternative SMF's and FPC sites were identified. The SMF ponds would function as offline systems with the control structure and point of discharge being located as the existing 24" cross drain, Sta. 567+56. The SMF alternatives are all wet ponds. The preliminary recommended SMF and FPC sites are SMF 1C and FPC 1C.

The SMF and FPC alternatives within Basin 1 are located within the U.S. Fish and Wildlife Service (USFWS) consultation area for the Florida scrub-jay and red-cockaded woodpecker. No scrub habitat to support the Florida scrub-jay appears to be present at any of the SMF and FPC alternatives. There are no residential or business relocations associated with Basin 1 alternatives.

SMF-1A/FPC-1A:

SMF-1A and FPC-1A are located on the south side of SR 50 adjacent to the road. Based on the soils and contours, SMF-1A is sited on low lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size. FPC-1A is adjacent to SMF-1A on the same parcel. The south side of SR 50 is the downstream side of the floodplain with a lower Base Flood Elevation (BFE) than the north side. FPC-1A is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

SMF-1A and FPC-1A are located within land use identified as hardwood conifer mixed. No wetlands were identified within this alternative. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise and Florida pine snake. There is one medium ranked contamination site located on the north side of SR 50 across from these alternatives.

SMF-1B/FPC-1B:

SMF-1B and FPC-1B are located on the north side of SR 50 adjacent to the road. Based on the soils and contours, SMF-1B is sited on higher lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively higher estimated seasonal high water elevation at this site allows for reduced storage depth and increases the required pond size. FPC-1B is adjacent to SMF-1B on a different parcel. FPC-1B allows needed access to SMF-1B. The north side of SR 50 is the upstream side of the floodplain with a higher BFE than the south side. FPC-1B is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

SMF-1B and FPC-1B are located within land use identified as mostly pine flatwood. Pine flatwoods typically provide good habitat for the gopher tortoise, although much of this area seems to be dense and overgrown, which could limit the herbaceous vegetation needed for foraging. No wetlands were identified within these alternatives. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. There is one medium ranked contamination site located to the east of these alternatives.

SMF-1C/FPC-1C:

SMF-1C and FPC-1C are located on the south side of SR 50 adjacent to the road. Based on the soils and contours, SMF-1C is sited on low lying undeveloped area and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size. FPC-1C is adjacent to SMF-1C on the same parcel. The south side of SR 50 is the downstream side of the floodplain with a lower BFE than the north side. FPC-1C is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

SMF-1C and FPC-1C are located in land uses identified as hardwood conifer mixed and other open lands (rural). The open grassed areas provide potential habitat for the gopher tortoise. No wetlands were identified within these alternatives. Potential federal and state-listed species include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. The contamination site identified for 1A and 1B above is located over 600 feet from this alternative and should not result in potential contamination impacts.

4.1.2 Basin 2

The SMF's and FPC's have been grouped together in the consideration of pond site alternatives for their respective limits since this appears to be the best approach for acquisition of the required land for these facilities. This is a closed basin. Three alternative SMF's and FPC sites were identified. The SMF ponds would function as offline systems with the control structure and point of discharge being located as the existing 76"x48" cross drain, Sta. 634+30. The SMF alternatives are all wet ponds. The preliminary recommended SMF and FPC sites are SMF 2A and FPC 2A.

The SMF and FPC alternatives within Basin 2 are located within the USFWS consultation area for the Florida scrub-jay and red-cockaded woodpecker. No scrub habitat to support the Florida scrub-jay appears to be present at any of the SMF and FPC alternatives. There are no residential or business relocations associated with Basin 1 alternatives.

SMF-2A/FPC-2A:

SMF-2A and FPC-2A are located offsite on the north side of SR 50 along Irwin Street. Based on the soils and contours, SMF-2A is sited on low lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size. FPC-2A is adjacent to SMF-2A on the same parcel. The north side of SR 50 is the downstream side of the floodplain with a lower BFE than the south side. FPC-2A is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

SMF-2A and FPC-2A are located within cropland and pastureland land use. There are also some forested habitats within these locations. Wetlands are identified to the west and may extend within the limits of these sites. Potential wetland impacts may occur at this alternative. Potential federal and state-listed species include the eastern indigo snake, wood stork, red-cockaded woodpecker, gopher tortoise, Florida pine snake, Southeastern American kestrel, roseate spoonbill, little blue heron, tricolored heron, and Florida sandhill crane. There are no potential contamination sites located near this alternative.

SMF-2B/FPC-2B:

SMF-2B and FPC-2B are located on the north side of SR 50 adjacent to the road. Based on the soils and contours, SMF-2B is sited on low lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size. FPC-2B is adjacent to SMF-2B on the same parcel. The north side of SR 50 is the downstream side of the floodplain with a lower BFE than the south side. FPC-2B is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

SMF-2B and FPC-2B are located within land use identified as commercial and services; however, there are forested habitats within the SMF and FPC locations. Wetlands are identified to the east and could be affected by the proposed pond alternatives. There is also a linear surface water feature associated with a cross drain that appears to run through SMF-2B. Potential wetland and/or surface water impacts may occur at this alternative. Potential federal and state-listed species include the eastern indigo snake, wood stork, red-cockaded woodpecker, gopher tortoise, Florida pine snake, Southeastern American kestrel, roseate spoonbill, little blue heron, tricolored heron, and Florida sandhill crane. There is one high ranked contamination site located to the west of SMF-2B. Further evaluation will need to be conducted during design to determine potential contamination impacts.

SMF-2C/FPC-2C:

SMF-2C is located on the south side of SR 50 along Singer Lane, and FPC-2C is located on the north side of SR 50 adjacent to the road. Based on the soils and contours, SMF-2C is sited on higher lying undeveloped area adjacent to the Zone AE Floodplain. The relatively higher estimated seasonal high water elevation at this site allows for reduced storage depth and increases the required pond size. FPC-2C is on a different parcel than SMF-2C. The north side of SR 50 is the downstream side of the floodplain with a lower BFE than the south side. FPC-2C is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

SMF-2C is located within land use identified as hardwood conifer mixed, and FPC-2C is located within land use identified as cropland and pastureland; however, there are forested habitats within FPC-2C. Wetlands are identified to the east of FPC-2C and may extend within the footprint of FPC-2C. Potential wetland and/or surface water impacts may occur at this alternative. Potential federal and state-listed species include the eastern indigo snake, wood stork, red-cockaded woodpecker, gopher tortoise, Florida pine snake, Southeastern American kestrel, roseate spoonbill, little blue heron, tricolored heron, and Florida sandhill crane. There are no potential contamination sites located near this alternative.

4.1.3 Basin 3

The SMF’s and FPC’s have been grouped together in the consideration of pond site alternatives for their respective limits since this appears to be the best approach for acquisition of the required land for these facilities. This is a closed basin. Three alternative SMF’s and FPC sites were identified. The SMF ponds would function as offline systems with the control structure and point of discharge being located as the existing bridge culvert, Sta. 659+30. The SMF alternatives are all wet ponds. The preliminary recommended SMF and FPC sites are SMF 3A and FPC 3-4A.

This basin combined with Basin 4 discharges to Bystre Lake based on the LiDAR contour data and therefore required nutrient loading evaluation. The evaluation finds that the required nutrient loading reduction exceeds what can be achieved through wet detention alone. To meet the nutrient loading requirements for this basin either approximately 0.2 inch of retention can be provided within the swales in the right-of-way or offsite area can be drained to the wet detention pond along with the roadway pavement and credit taken for reduction of the loading from offsite. To provide the dry retention treatment within the roadway swales would be roughly 3 inch depth retained within the border swales. Nutrient loading calculations are provided in the **Appendix B** and are based on a treatment train of dry retention in the swales followed by wet detention treatment.

The SMF and FPC alternatives within Basin 3 are located within the USFWS consultation area for the Florida scrub-jay and red-cockaded woodpecker. No scrub habitat to support the Florida scrub-jay appears to be present at any of the SMF and FPC alternatives. There are no potential contamination sites located near the alternatives in this basin. There are no residential or business relocations associated with Basin 3 alternatives.

SMF-3A/FPC-3-4A:

SMF-3A and FPC-3-4A are located on the south side of SR 50 adjacent to the road. Based on the soils and contours, SMF-3A is sited on low lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size. FPC-3-4A is adjacent to SMF-3A on the same parcel. The south side of SR 50 is the downstream side of the floodplain with a lower BFE than the north side. FPC-3-4A is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

SMF-3A and FPC-3-4A are located within a residential land use. The actual alternatives are located on mostly undeveloped property within this land use. The area near SR 50 is mostly open grass with upland forested areas to the south. There is a surface water/wetland feature located at FPC-3-4A associated with the existing bridge culvert. The FPC site could be graded to avoid impacts to the surface water/wetland, but impacts may occur at this alternative. Potential federal and state-listed species include the eastern indigo snake, wood stork, gopher tortoise, Florida pine snake, Southeastern American kestrel, roseate spoonbill, little blue heron, tricolored heron, and Florida sandhill crane.

SMF-3B/FPC-3-4B:

SMF-3B and FPC-3-4B are located offsite with a conveyance easement on the north side of SR 50. Based on the soils and contours, SMF-3B is sited on low lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size. FPC-3-4B is adjacent to SMF-3B on the same parcel. The north side of SR 50 is the upstream side of the floodplain with a higher BFE than the south side. FPC-3-4B is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

SMF-3B and FPC-3-4B are located mostly within land uses identified as hardwood conifer mixed and stream and lake swamps (bottomland). There are forested wetlands located within FPC-3-4B. The FPC site could be graded to avoid impacts to wetlands; however, wetland impacts are likely to occur at this alternative. Potential federal and state-listed species include the eastern indigo snake, wood stork, gopher tortoise, Florida pine snake, Southeastern American kestrel, roseate spoonbill, little blue heron, tricolored heron, and Florida sandhill crane.

SMF-3C/FPC-3-4C:

SMF-3C & FPC-3-4C are located offsite along Irwin Street. Based on the soils and contours, SMF-3C is sited on low lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size. FPC-3-4C is adjacent to SMF-3C on the same parcel. The north side of SR 50 is the upstream side of the floodplain with a higher BFE than the south side. FPC-3-4C is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

SMF-3C and FPC-3-4C are located mostly within land use identified as cropland and pastureland. The majority of the area consists of open land with low-growing herbaceous vegetation. There appears to be no wetlands within these alternatives. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel.

4.1.4 Basin 4

This basin contains only SMF alternatives. Floodplain area has been accounted for within FPC-3-4 Alternatives. This is a closed basin. Three alternative SMF's were identified. The SMF ponds would function as offline systems with the control structure and point of discharge being located as the existing 24" cross drain, Sta. 673+83. The SMF alternatives are all wet ponds. The preliminary recommended SMF site is SMF-4C.

This basin discharges to Bystre Lake based on the LiDAR contour data and therefore required nutrient loading evaluation. The evaluation has been combined and documented within Basin 3. Nutrient loading calculations are provided in the **Appendix B** and are based on a treatment train of dry retention in the swales followed by wet detention treatment.

Note that from Sta. 665+00 and Sta. 669+00 LT, there is potential for minimal floodplain impact to occur that can be addressed through either grading or potentially with gravity wall. Alternatively, the impact potential is small enough that modeling may demonstrate no impact without any adjustments.

The SMF alternatives within Basin 4 are located within the USFWS consultation area for the Florida scrub-jay and red-cockaded woodpecker. No scrub habitat to support the Florida scrub-jay or habitat to support the red-cockaded woodpecker appears to be present at any of the SMF alternatives. There are no potential contamination sites located near the alternatives in this basin.

SMF-4A

SMF-4A is located on the south side of SR 50 adjacent to the road. Based on the soils and contours, SMF-4A is sited on low lying undeveloped area and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size.

SMF-4A is located within a land use identified as cropland and pastureland, but there is also residential land use within the surrounding area to the east and west. The site consists of mostly open land with low-growing herbaceous vegetation. There is a small wetland/surface water feature to the south of this site. No wetland and surface water impacts are anticipated. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. There are no residential or business relocations associated with this alternative.

SMF-4B

SMF-4B is located on the north side of SR 50 adjacent to the road. Based on the soils and contours, SMF-4B is sited on low lying undeveloped area and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size.

SMF-4B is located within a land use identified as residential. There are residences located at this location. No wetland and surface water impacts are anticipated. There is minimal to no anticipated species utilization at this site. There is the potential for at least one residential relocation associated with this alternative.

SMF-4C

SMF-4C is located offsite along Cedar Lane with a conveyance easement. Based on the soils and contours, SMF-4C is sited on low lying undeveloped area and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size.

SMF-4C is located within a land use identified as cropland and pastureland, but there is also residential land use within the surrounding area to the east and west. The site consists of mostly open land with low-growing herbaceous vegetation. There is a small wetland/surface water feature to the west of this site. Minimal to no wetland and surface water impacts are anticipated. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. There are no residential or business relocations associated with this alternative.

4.1.5 Basin 5

The SMF's and FPC's have been grouped together in the consideration of pond site alternatives for their respective limits since this appears to be the best approach for acquisition of the required land for these facilities. This is a closed basin. Three alternative SMF's and FPC sites were identified. The SMF ponds would function as offline systems with the control structure and point of discharge being located as the existing 2-48" cross drains, Sta. 697+50. The SMF alternatives are all wet ponds. The preliminary recommended SMF and FPC sites are SMF 5B and FPC 5B.

This basin discharges to Bystre Lake based on the LiDAR contour data and therefore required nutrient loading evaluation. The evaluation finds that the required nutrient loading reduction exceeds what can be achieved through wet detention alone. To meet the nutrient loading requirements for this basin either approximately 0.4 inch of retention can be provided within the swales in the right-of-way or offsite area can be drained to the wet detention pond along with the roadway pavement and credit taken for reduction of the loading from offsite. To provide the dry retention treatment within the roadway swales would be roughly 6 inch depth retained within the border swales. Nutrient loading calculations are provided in the **Appendix B** and are based on a treatment train of dry retention in the swales followed by wet detention treatment.

The SMF and FPC alternatives within Basin 5 are located within the USFWS consultation area for the Florida scrub-jay and red-cockaded woodpecker. No scrub habitat to support the Florida scrub-jay appears to be present at any of the SMF and FPC alternatives. There are no residential or business relocations associated with the Basin 5 alternatives.

SMF-5A/FPC-5A:

SMF-5A is located on the north side of SR 50 adjacent to the road, and FPC-5A is located on the south side of SR 50. Based on the soils and contours, SMF-5A is sited on lower lying undeveloped area adjacent to wetlands. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size. FPC-5A is on a different parcel than SMF-5A. The south side of SR 50 is the downstream side of the floodplain with a lower BFE than the north side. FPC-5A is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

SMF-5A is located within land uses identified as residential and hardwood conifer mixed. There are no residences on this property, but there is a cell tower to the west. There are forested wetlands located to the west, and potential impacts may occur with this alterantive. FPC-5A is located within land use identified as hardwood conifer mixed. Minimal wetland impacts may occur with FPC-5A. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. Wetland dependent wading birds, such as the wood stork, may exist if wetlands are determined to be present. There are no potential contamination sites located near this alternative.

SMF-5B/FPC-5B:

SMF-5B and FPC-5B are located on the south side of SR 50 adjacent to the road. Based on the soils and contours, SMF-5B is sited on higher lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively higher estimated seasonal high water elevation at this site allows for reduced storage depth and increases the required pond size. FPC-5B is adjacent to SMF-5B on the same parcel. The south side of SR 50 is the downstream side of the floodplain with a lower BFE than the north side. FPC-5B is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

SMF-5B and FPC-5B are located mostly within hardwood conifer mixed land use. There is a freshwater emergent wetland located on the north end of SMF-5B and a forested wetland within the southern portion of FPC-5B. Wetland impacts are anticipated by the proposed SMF and FPC alternatives. Potential federal and state-listed species include the eastern indigo snake, wood stork, gopher tortoise, Florida pine snake, Southeastern American kestrel, roseate spoonbill, little blue heron, tricolored heron, and Florida sandhill crane. There is one site ranked as no for potential contamination identified to the east of these alternatives. No contamination impacts are anticipated.

SMF-5C/FPC-5C:

SMF-5C and FPC-5C are located offsite along Dorsey Smith Road. Based on the soils and contours, SMF-5C is sited on lower lying undeveloped area adjacent to the Zone AE Floodplain. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size. FPC-5C is adjacent to SMF-5C on the same parcel. The north side of SR 50 is the upstream side of the floodplain with a higher BFE than the south side. FPC-5C is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

SMF-5C and FPC-5C are located within land uses identified as hardwood conifer mixed and cropland and pastureland. The majority of the site is forested with some open grassy areas along the south side. There are no wetland impacts anticipated for this site. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. Wildlife utilization would be low within SMF-5C due to close proximity to SR 50 and surrounding residential land uses and low-moderate at FPC-5C since it is further away from SR 50 although there are some surrounding residential areas. There are no potential contamination sites located near this alternative.

4.1.6 Basin 6

This basin contains only SMF alternatives. Floodplain area has been accounted for in FPC-6-9 alternatives. This is a closed basin. Three alternative SMF's were identified. The SMF ponds would function as offline systems with the control structure and point of discharge being located as the existing 2-60"x38" cross drains, Sta. 722+30. The SMF alternatives are all wet ponds. The preliminary recommended SMF site is SMF 6B.

The SMF alternatives within Basin 6 are located within the USFWS consultation area for the Florida scrub-jay and red-cockaded woodpecker. No scrub habitat to support the Florida scrub-jay appears to be present at any of the SMF alternatives. There are no residential or business relocations associated with Basin 6 SMF alternatives.

SMF-6A

SMF-6A is located on the north side of SR 50 adjacent to the road. Based on the soils and contours, SMF-6A is sited on higher lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively higher estimated seasonal high water elevation at this site allows for reduced storage depth and increases the required pond size.

SMF-6A is located within land use identified as residential. There appear to be no residences within the proposed pond location, but there are houses surrounding the site. No wetlands are located within or adjacent to this site. Due to the close proximity to the road and surrounding residential areas, species utilization is not likely at this site. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. There are no potential contamination sites located near this alternative.

SMF-6B

SMF-6B is located on the north side of SR 50 adjacent to the road. Based on the soils and contours, SMF-6B is sited on lower lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size.

SMF-6B is located within land use identified as hardwood conifer mixed. There is a small residential community located directly to the north. There are no wetlands identified within or adjacent to this proposed site, so no wetland impacts are anticipated. There is wildlife access through undeveloped areas to the east, but utilization is likely low due to the residential area to the north and SR 50 directly to the south. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. There is one low ranked potential contamination site located to the north of this alternative.

SMF-6C

SMF-6C is located offsite along Clayton Road with a conveyance easement on the north side of SR 50. Based on the soils and contours, SMF-6C is sited on higher lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively higher estimated seasonal high water elevation at this site allows for reduced storage depth and increases the required pond size.

SMF-6C is located within land use identified as hardwood conifer mixed. This site is a small undisturbed area surrounded by mostly residences, making the site less likely to be utilized by wildlife. There are no wetlands identified within or adjacent to the site, so no wetland impacts are anticipated. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. There are no potential contamination sites located near this alternative.

4.1.7 Basins 7 and 8:

These basins contain only SMF alternatives. Floodplain area has been accounted for in FPC-6-9 alternatives. This is a closed basin. Three alternative SMF's were identified. The SMF ponds would function as offline systems with the control structure and point of discharge being located as either the existing 24” cross drain, Sta. 743+70 or 10’x8’ box culvert, Sta. 756+30. The SMF alternatives are all wet ponds. The preliminary recommended SMF site is SMF 7&8C.

The SMF alternatives within Basin 6 are located within the USFWS consultation area for the Florida scrub-jay and red-cockaded woodpecker. No scrub habitat to support the Florida scrub-jay appears to be present at any of the SMF alternatives. There are no residential or business relocations associated with Basin 7-8 SMF alternatives.

SMF-7-8A

SMF-7-8A is located on the south side of SR 50 adjacent to the road. Based on the soils and contours, SMF-7-8A is sited on higher lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively higher estimated seasonal high water elevation at this site allows for reduced storage depth and increases the required pond size.

SMF-7-8A is located within land use identified as hardwood conifer mixed. This site has low-density residential to the south with some open rangeland. There were no wetlands identified within this alternative, so no wetland impacts are anticipated. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. There is one low ranked contamination site located directly to the west of this proposed alternative.

SMF-7-8B

SMF-7-8B is located offsite with a conveyance easement on the south side of SR 50. Based on the soils and contours, SMF-7-8B is sited on higher lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively higher estimated seasonal high water elevation at this site allows for reduced storage depth and increases the required pond size.

SMF-7-8B is located within land use identified as cropland and pastureland. This is an open grassy area with minimal other vegetation. There are commercial, residential and upland forested habitats within the vicinity of this site. No wetlands have been identified at this alternative, so no wetland impacts are anticipated. The small area of open land provides minimal habitat for listed species, with the exception of the gopher tortoise and eastern indigo snake. There is one low ranked contamination site located directly to the north of this proposed alternative.

SMF-7-8C

SMF-7-8C is located on the north side of SR 50 adjacent to the road. Based on the soils and contours, SMF-7-8C is sited on lower lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size.

SMF-7-8C is located within land use identified as tree plantations. This site appears to be planted pines of moderate size. There are large areas of open land surrounding this site including wetlands to the east and a mixture of cropland and pastureland mixed with low-density residential to the north and west. No wetlands have been identified within the site, so no wetland impacts are anticipated. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. There are no potential contamination sites located near this alternative.

4.1.8 Basin 9

This basin contains only SMF alternatives. Floodplain area has been accounted for in FPC-6-9 alternatives. This is a closed basin. Three alternative SMF's were identified. The SMF ponds would function as offline systems with the control structure and point of discharge being located as the existing 36" cross drain, Sta. 777+70. The SMF alternatives are all wet ponds. The preliminary recommended SMF site is SMF 9A.

The SMF alternatives within Basin 6 are located within the USFWS consultation area for the Florida scrub-jay and red-cockaded woodpecker. No scrub habitat to support the Florida scrub-jay appears to be present at any of the SMF alternatives. There are no residential or business relocations associated with Basin 9 SMF alternatives.

SMF-9A

SMF-9A is located along Mondon Hill Road on the north side of SR 50. Based on the soils and contours, SMF-9A is sited on higher lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively higher estimated seasonal high water elevation at this site allows for reduced storage depth and increases the required pond size.

SMF-9A is located within land uses identified as tree plantations and hardwood conifer mixed. There are a combination of planted pines and mixed uplands within this site. There are wetlands identified to the west, but no wetland impacts are anticipated with this alternative. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. There are no potential contamination sites located near this alternative.

SMF-9B

SMF-9B is located on the south side of SR 50 adjacent to the road. Based on the soils and contours, SMF-9B is sited on lower lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size.

SMF-9B is located within land use identified as hardwood conifer mixed. There are large areas of wetland located to the west and south with commercial property (gas station) located to the east. There are some upland forested areas surrounding the wetlands. No wetland impacts are anticipated with the proposed alternative. Large areas of natural communities are located to the west and south. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern

American kestrel. The gas station to the east of this alternative is ranked medium for potential contamination.

SMF-9C

SMF-9C is located along Spring Lake Highway on the south side of SR 50. Based on the soils and contours, SMF-9C is sited on lower lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size.

SMF-9C is located within land use identified as hardwood conifer mixed, and is located to the south of the commercial property identified for alternative SMF-9B. There are upland forest and wetland habitats located to the west and south of the site. No wetland impacts are anticipated with the proposed alternative. Large areas of natural communities are located to the west and south. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. The gas station to the north of this alternative is ranked medium for potential contamination.

4.1.9 Basins 6-9 (FPC)

Basins 6-9 contain FPC-6-9 alternatives. Three FPC sites were identified. The preliminary recommended FPC site is FPC 6-9A.

The FPC 6-9 alternatives are located within the USFWS consultation area for the Florida scrub-jay and red-cockaded woodpecker. No scrub habitat to support the Florida scrub-jay appears to be present at any of the SMF alternatives. There are no potential contamination sites located near these FPC alternatives. There are no residential or business relocations associated with Basins 6-9 FPC alternatives.

FPC-6-9A

FPC-6-9A is located on the north side of SR 50 adjacent to the road. The north and south sides of SR 50 have the same BFE. FPC-6-9A is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

FPC-6-9A is located within land use identified as tree plantations as described for SMF-7&8C. There are large areas of open land surrounding this site including wetlands to the east and a mixture of cropland and pastureland mixed with low-density residential to the north and west. No wetlands have been identified within the site, so no wetland impacts are anticipated. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel.

FPC-6-9B

FPC-6-9B is located offsite along Clayton Road with a conveyance easement on the north side of SR 50. The north and south sides of SR 50 have the same BFE. FPC-6-9B is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

FPC-6-9B is located within land uses identified as residential low density and hardwood conifer mixed. There are no wetland identified at this alternative, and no wetland impacts are anticipated. The majority of the surroundings are residential communities with some upland forested area and rangeland located to the east. Minimal wildlife utilization would be anticipated at this location. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel.

FPC-6-9C

FPC-6-9C is located offsite with a conveyance easement on the south side of SR 50. The north and south sides of SR 50 have the same BFE. FPC-6-9C is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

FPC-6-9C is located within land use identified as hardwood conifer mixed. There are natural upland and wetland communities located around the site with low density residential to the west. There are no wetland impacts anticipated with this alternative. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel.

4.1.10 Basin 10

The SMF's and FPC's are being reviewed independently in the consideration of pond site and floodplain alternatives for their respective limits since this appears to be the best approach for acquisition of the required land for these facilities. This is a closed basin. Two alternative SMF's and FPC sites were identified. There are only 2 alternative's identified since there is not a reasonable third alternative. SMF 10A would function as offline system with the control structure and point of discharge being located as the existing 2-36" cross drains, Sta. 794+80, and SMF 10B would function as an online system being adjacent to the existing 2-36" cross drains, Sta. 794+80. The SMF alternatives are all dry ponds. The preliminary recommended SMF and FPC sites are SMF 10A and FPC 10A.

The SMF alternatives within Basin 6 are located within the USFWS consultation area for the Florida scrub-jay and red-cockaded woodpecker. No scrub habitat to support the Florida scrub-jay appears to be present at any of the SMF alternatives.

SMF-10A

SMF-10A is located on the north side of SR 50 adjacent to the road. Based on the soils and contours, SMF-10A is sited on higher lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively higher estimated seasonal high water elevation at this site allows for reduced storage depth and increases the required pond size.

SMF-10A is located within land use identified as tree plantations. The project is bordered by two roads with additional tree plantation to the north and some vacant land to the east. There are commercial and residential land uses further to the east. There are no wetlands identified at this location, and no wetland impacts are anticipated. Wildlife utilization is anticipated to be minimal at this location. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. There is one potential contamination site ranked medium located about 400 feet southwest of this alternative on the south side of SR 50. There are no residential or business relocations associated with this alternative.

SMF-10B

SMF-10B is located on the north side of SR 50 adjacent to the road. Based on the soils and contours, SMF-10B is sited on lower lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size. SMF-10B is covered over two parcels with an equalizer pipe.

SMF-10B is located within land use identified as open land. This site has mostly herbaceous vegetation with a few trees and saplings. There is a tree plantation to the west and commercial property to the east with residential property in the surroundings. No wetland impacts will occur with this alternative. The gopher tortoise and eastern indigo snake are most likely to be located at this site. There are no potential contamination sites located near this alternative. There are no residential or business relocations associated with this alternative.

FPC-10A

FPC-10A is located on the north side of SR 50 along an existing easement. The north side of SR 50 is the downstream side of the floodplain with a lower BFE than the south side. FPC-10A is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

FPC-10A is located within land uses identified as tree plantations and open land. The surrounding habitats are similar to those described for SMF-10A and SMF-10B. No wetland impacts will occur with this alternative. The gopher tortoise and eastern indigo snake are most likely to be located at this site. There are no potential contamination sites located near this alternative. There are no residential or business relocations associated with this alternative.

FPC-10B

FPC-10B is located on the south side of SR 50 adjacent to the road. The south side of SR 50 is the upstream side of the floodplain with a higher BFE than the north side. FPC-10B is adjacent to wetlands and sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

FPC-10B is located within residential land use. There are residences located within the southern portion of the site. There are also wetlands identified within this alternative, and wetland impacts would likely occur. Minimal to no wildlife utilization is anticipated with this alternative. The nearest contamination site is located about 350 feet to the west and was ranked low for potential contamination. It appears there would be two residential relocations associated with this alternative.

4.1.11 Basin 11

The SMF's and FPC's have been grouped together in the consideration of pond site alternatives for their respective limits since this appears to be the best approach for acquisition of the required land for these facilities. This is a closed basin. Two alternative SMF's and FPC sites were identified. There are only 2 alternative's identified since there is not a reasonable third alternative. The SMF ponds would function as offline systems with the control structure and point of discharge being located as the existing 36" cross drain, Sta. 832+10. The SMF alternatives are all dry ponds. The preliminary recommended SMF and FPC sites are SMF-11B and FPC-11B.

The SMF alternatives within Basin 4 are located within the USFWS consultation area for the Florida scrub-jay and red-cockaded woodpecker. No scrub habitat to support the Florida scrub-jay or habitat to support the red-cockaded woodpecker appears to be present at any of the SMF alternatives. There are no residential or business relocations associated with the alternatives in Basin 11.

SMF-11A/FPC-11A:

SMF-11A & FPC-11A are located offsite with a conveyance easement on the south side of SR 50. Based on the soils and contours, SMF-11A is sited on higher lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively higher estimated seasonal high water elevation at this site allows for reduced storage depth and increases the required pond size. FPC-11A is adjacent to SMF-11A on the same parcel. The south side of SR 50 is the downstream side of the floodplain with a lower BFE than the north side. FPC-11A is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

SMF-11A and FPC-11A are located mostly within land use identified as cropland and pastureland. There is some upland forested area located within FPC-11A. The Hill 'n Dale subdivision is located north of SR 50 with residential land uses located mostly to the south with open lands. There are no wetland impacts anticipated within this alternative. Wildlife utilization is anticipated to be low. The gopher tortoise and eastern indigo snake have potential within the open areas. There is a potential contamination site located at SR 50 that was ranked as low.

SMF-11B/FPC-11B:

SMF-11B & FPC-11B are located on the south side of SR 50 adjacent to the road. Based on the soils and contours, SMF-11B is sited on low lying undeveloped area adjacent to the Zone AE Floodplain, and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size. FPC-11B is adjacent to SMF-11B on the same parcel. The south side of SR 50 is the downstream side of the floodplain with a lower BFE than the north side. FPC-11A is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

SMF-11B and FPC-11B are located within land use identified as other open lands (rural), but most of these sites consist of forested habitats surrounded by open land. As mentioned above, the Hill 'n Dale subdivision is located north of SR 50 with residential land uses located mostly to the south with open lands. There are no wetland impacts anticipated within this alternative. Wildlife utilization is anticipated to be low. The gopher tortoise is unlikely within this alternative since it is mostly overgrown. There is a potential contamination site located at SR 50 that was ranked as low.

4.1.12 Basin 12

The SMF's and FPC's have been reviewed independently in the consideration of pond site and floodplain alternatives for their respective limits since this appears to be the best approach for acquisition of the required land for these facilities. This is a closed basin. Two alternative SMF's and 3 alternative FPC sites were identified. There are only 2 SMF alternative's identified since there is not a reasonable third alternative. The SMF ponds would function as offline systems with the control structure and point of discharge being located as the existing 24" cross drain, Sta. 853+80. The SMF alternatives are all dry ponds. The preliminary recommended SMF and FPC sites are SMF-12A and FPC-12B.

The SMF alternatives within Basin 4 are located within the USFWS consultation area for the Florida scrub-jay and red-cockaded woodpecker. No scrub habitat to support the Florida scrub-jay or habitat to support the red-cockaded woodpecker appears to be present at any of the SMF alternatives.

SMF-12A

SMF-12A is located on the south side of SR 50 adjacent to the road. Based on the soils and contours, SMF-12A is sited on higher lying undeveloped area and near the outfall for the basin. The relatively higher estimated seasonal high water elevation at this site allows for reduced storage depth and increases the required pond size.

SMF-12A is located within land use identified as residential low density. The site is located within an area of open land and west of the Hillside Community Church. There are no wetland impacts anticipated with this alternative. Wildlife utilization is anticipated to be low. The gopher tortoise and eastern indigo snake have potential within the open areas. There are no potential contamination sites located near this alternative. There are no residential or business relocations associated with this alternative.

SMF-12B

SMF-12B is located on the south side of SR 50 adjacent to the road. Based on the soils and contours, SMF-12B is sited on low lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size.

SMF-12B is located within land use identified as cropland and pastureland. This area is mostly maintained field grass with minimal other vegetation. There are no wetland impacts anticipated with this alternative. The potential for gopher tortoises and eastern indigo snakes exists at this site, and no other listed species are anticipated. There is a potential contamination site located approximately 400 feet to the west on SR 50 that was ranked as low. There are no residential or business relocations associated with this alternative.

FPC-12A

FPC-12A is located on the north side of SR 50 adjacent to the road. The north side of SR 50 is the downstream side of the floodplain with a lower BFE than the south side. FPC-12A is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

FPC-12A is located within land use identified as medium density residential. This alternative has some natural upland forested areas and open grassy areas with some continued natural habitat to the east. The overall surrounding is low density residential. There are no wetland impacts anticipated with this alternative. The potential for gopher tortoises and eastern indigo snakes exists at this site, and no other listed species are anticipated. There are no potential contamination sites located near this alternative. There are no residential or business relocations associated with this alternative.

FPC-12B

FPC-12B is located on the north side of SR 50 adjacent to the road. The north side of SR 50 is the downstream side of the floodplain with a lower BFE than the south side. FPC-12B is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

FPC-12B is located within land use identified as longleaf pine – xeric oak. There are residential land uses surrounding this site in the distance that block off big picture connectivity to natural other natural habitats. There are no wetland impacts anticipated with this alternative. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, gopher tortoise, Florida pine snake, and Southeastern American kestrel. There are no potential contamination sites located near this alternative. There are no residential or business relocations associated with this alternative.

FPC-12C

FPC-12C is located on the north side of SR 50 adjacent to the road. The north side of SR 50 is the downstream side of the floodplain with a lower BFE than the south side. FPC-12C is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

FPC-12C is located within land use identified as medium density residential. This is a small forested area directly surrounded by houses. There are no wetland impacts anticipated with this alternative. Minimal to wildlife utilization is anticipated at this site since it is such a small forested area with surrounding development. There are no potential contamination sites located near this alternative. There appears to be at least two residential relocations associated with this alternative.

4.1.13 Basin 13

The SMF's and FPC's have been reviewed independently in the consideration of pond site and floodplain alternatives for their respective limits since this appears to be the best approach for acquisition of the required land for these facilities. This is a closed basin. Three alternative SMF and FPC sites were identified. SMF-13A and SMF-13B would function as offline systems with the control structure and point of discharge being located as the existing 30" cross drain, Sta. 903+80, and SMF-13C would function as an online system being adjacent to the existing 30" cross drain, Sta. 903+80. The SMF alternatives are all dry ponds. The preliminary recommended SMF and FPC sites are SMF 13B and FPC 13B.

The SMF alternatives within Basin 6 are located within the USFWS consultation area for the Florida scrub-jay and red-cockaded woodpecker. No scrub habitat to support the Florida scrub-jay appears to be present at any of the SMF alternatives.

SMF-13A

SMF-13A is located offsite with a conveyance easement on the north side of SR 50. Based on the soils and contours, SMF-13A is sited on low lying undeveloped area and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size.

SMF-13A is located within land use identified as tree plantations; however, the area is cleared land with minimal trees. There are no wetland impacts associated with this alternative. The gopher tortoise and eastern indigo snake have the potential to exist within this site. There are no potential contamination sites located near this alternative. There are no residential or business relocations associated with this alternative.

SMF-13B

SMF-13B is located on the south side of SR 50. Based on the soils and contours, SMF-13B is sited on higher lying undeveloped area and near the outfall for the basin. The relatively higher estimated seasonal high water elevation at this site allows for reduced storage depth and increases the required pond size.

SMF-13B is located within land use identified as longleaf pine – xeric oak. There is low density residential land use located around this site, but the area remains heavily forested. There are no wetland impacts anticipated with this alternative. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. There are two potential contamination sites located on the opposite side of SR 50. These sites were ranked as no and low for potential contamination and should not be an issue with this alternative. There are no residential or business relocations associated with this alternative.

SMF-13C

SMF-13C is located on the south side of SR 50. Based on the soils and contours, SMF-13C is sited on higher lying undeveloped area and near the outfall for the basin. The relatively higher estimated seasonal high water elevation at this site allows for reduced storage depth and increases the required pond size.

SMF-13C is located within land use identified as longleaf pine – xeric oak, directly east of SMF-13B. There is low density residential land use located around this site, but the area remains heavily forested. There are no wetland impacts anticipated with this alternative. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. There are two potential contamination sites located on the opposite side of SR 50 about 450 feet to the northwest. These sites were ranked as no and low for potential contamination and should not be an issue with this alternative. There is one potential residential relocation associated with this alternative.

FPC-13A

FPC-13A is located on the north side of SR 50 adjacent to the road. The north side of SR 50 is the downstream side of the floodplain with a lower BFE than the south side. FPC-13A is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

FPC-13A is located within land use identified as tree plantations; however, the area is cleared land with minimal trees. There are no wetland impacts associated with this alternative. The gopher tortoise and eastern indigo snake have the potential to exist within this site. There are two sites that were ranked as no and low for potential contamination directly west of this site. Since the contamination sites do not appear to be a risk, no contamination impacts are anticipated. There are no residential or business relocations associated with this alternative.

FPC-13B

FPC-13B is located on the south side of SR 50 adjacent to the road. The south side of SR 50 is the upstream side of the floodplain with a higher BFE than the north side. FPC-13B is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

FPC-13B is located within land use identified as longleaf pine – xeric oak, directly east of SMF-13C. There is low density residential land use located around this site, but the area remains heavily forested. There are no wetland impacts anticipated with this alternative. Federal and state-listed species that have the potential to exist within this location include the eastern indigo snake, red-cockaded woodpecker, gopher tortoise, Florida pine snake, and Southeastern American kestrel. There are two potential contamination sites located on the opposite side of SR 50. These sites were ranked as no and low for potential contamination and should not be an issue with this alternative. There are no residential or business relocations associated with this alternative.

FPC-13C

FPC-13C is located on the north side of SR 50 adjacent to the road. The north side of SR 50 is the downstream side of the floodplain with a lower BFE than the south side. FPC-13C is sited at the fringe of the existing floodplain to achieve efficiency in the amount of cup-for-cup compensation relative to the area and earthwork.

FPC-13C is located within land use identified as residential low density. The area of the proposed alternative is cleared land with minimal trees. There are no wetland impacts associated with this alternative. The gopher tortoise and eastern indigo snake have the potential to exist within this site. There are two sites that were ranked as no and low for potential contamination about 350 feet to the west of this site. Since the contamination sites do not appear to be a risk, no contamination impacts are anticipated. There are no residential or business relocations associated with this alternative.

4.1.14 Basin 14

The SMF's and FPC's have grouped together in the consideration of pond site alternatives for their respective limits since this appears to be the best approach for acquisition of the required land for these facilities. This is a closed basin. Two alternative SMF's and FPC sites were identified. There are only 2 alternative's identified since there is not a reasonable third alternative. The FPC area has been combined into the SMF ponds. SMF 14A/FPC-14A would function as offline system with the control structure and point of discharge being located as the existing 2-30" cross drains, Sta. 929+50, and SMF 14B/FPC-14B would function as an online system with interconnected ponds being adjacent to the existing 2-45"x29" cross drains, Sta. 926+40 or the 2-30" cross drains, Sta. 929+50. The SMF/FPC alternatives are all dry ponds. The preliminary recommended SMF/FPC site is SMF14A/FPC-14A.

The SMF alternatives within Basin 4 are located within the USFWS consultation area for the Florida scrub-jay and red-cockaded woodpecker. No scrub habitat to support the Florida scrub-jay or habitat to support the red-cockaded woodpecker appears to be present at any of the SMF alternatives.

SMF-14A/FPC-14A:

SMF-14A and FPC-14A are located on the north side of SR 50 adjacent to the road. Based on the soils and contours, SMF-14A is sited on higher lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively higher estimated seasonal high water elevation at this site allows for reduced storage depth and increases the required pond size. FPC-14A is combined with SMF-14A. The north side of SR 50 is the upstream side of the floodplain with a higher BFE than the south side.

SMF-14A/FPC-14A is located within land use identified as residential low density. There appears to be at least one residence located on the property. The remaining site is mostly open grass with scattered trees. There is commercial development located to the west. No wetland impacts are anticipated with this alternative. The potential for gopher tortoise and eastern indigo snake exists at this site. The nearest contamination site is located over 800 feet away, and no contamination impacts are anticipated. There is one residential relocation associated with this alternative.

SMF-14B/FPC-14B:

SMF-14B and FPC-14B are located on the south side of SR 50 adjacent to the road. Based on the soils and contours, SMF-14B is sited on low lying undeveloped area adjacent to the Zone AE Floodplain and near the outfall for the basin. The relatively lower estimated seasonal high water elevation at this site allows for added storage depth and reduces the required pond size. FPC-14B is combined with SMF-14B. The south side of SR 50 is the downstream side of the floodplain with a lower BFE than the north side. SMF-14B is covered over two parcels with an equalizer pipe.

SMF-14B/FPC-14B is located within land use identified as open land is positioned between SR 50 and a high density residential community to the south. There are no wetland impacts anticipated with this alternative. Minimal habitat for protected species exists and wildlife utilization is anticipated to be low. The potential for gopher tortoise and eastern indigo snake exists. There are two contamination sites to the west that were ranked as low for potential contamination. Contamination impacts are unlikely with this alternative. There are no residential or business relocations associated with this alternative.

Table 4-1: SMF and FPC Site Alternatives Matrix

SMF #	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 -->						$ 4,004.25			$ 3.53			$ 4.70				$ 186.00						
1A	1.91	1A	0.64	4.08	0	$ 16,337.34	3,403	3,608	$ 24,749.75	4,047	0	$ 19,019.48	0	85	Offline	$ 15,810.00	$ -	$ 75,916.57	0	$ 530,500.00	$ 606,416.57	
1B	3.81	1B	0.59	7.02	0	$ 28,109.84	10,026	3,613	$ 48,145.90	4,139	0	$ 19,454.69	0	375	Offline	$ 69,750.00	$ -	$ 165,460.42	0	$ 1,798,000.00	$ 1,963,460.42	
1C	2.08	1C	0.69	5.33	0	$ 21,342.65	13,196	3,989	$ 60,661.43	1,242	0	$ 5,837.20	0	360	Offline	$ 66,960.00	$ -	$ 154,801.28	0	$ 342,700.00	$ 497,501.28	Preliminarily Preferred Alternative
2A	2.74	2A	0.33	5.27	0.74	$ 24,065.54	32,995	3,692	$ 129,502.26	1,073	0	$ 5,041.61	0	100	Offline	$ 18,600.00	$ 50,000.00	$ 227,209.42	0	$ 371,000.00	$ 598,209.42	Preliminarily Preferred Alternative
2B	2.94	2B	1.68	7.91	0	$ 31,673.62	27,775	8,934	$ 129,582.58	712	107	$ 3,850.54	0	100	Offline	$ 18,600.00	$ 50,000.00	$ 233,706.73	0.51	$ 722,500.00	$ 1,058,206.73	
2C	4.95	2C	1.51	9.93	0.39	$ 41,323.86	85,299	8,557	$ 331,310.66	0	9	$ 44.46	0	145	Offline	$ 26,970.00	$ 50,000.00	$ 449,648.99	0.20	$ 645,900.00	$ 1,135,548.99	
3A	1.81	3-4A	1.99	5.23	0	$ 20,942.23	12,021	13,149	$ 88,848.74	575	54	$ 2,958.41	0	70	Offline	$ 13,020.00	$ 50,000.00	$ 175,769.37	0	$ 535,100.00	$ 710,869.37	Preliminarily Preferred Alternative
3B	1.79	3-4B	3.63	9.05	0.51	$ 38,280.63	7,933	16,232	$ 85,304.76	1,879	681	$ 12,029.65	0	470	Offline	$ 87,420.00	$ 50,000.00	$ 273,035.04	2.08	$ 495,000.00	$ 1,184,035.04	
3C	1.75	3-4C	1.06	5.96	0.79	$ 27,028.69	35,386	8,777	$ 155,898.31	2	18	$ 93.81	0	320	Offline	$ 59,520.00	$ 50,000.00	$ 292,540.81	0	$ 647,100.00	$ 939,640.81	
4A	1.59	N/A	N/A	2.77	0	$ 11,091.77	11,780	0	$ 41,581.94	0	0	$ -	0	100	Offline	$ 18,600.00	$ 50,000.00	$ 121,273.71	0	$ 283,500.00	$ 404,773.71	
4B	1.20	N/A	N/A	2.25	0	$ 9,009.56	7,676	0	$ 27,097.83	751	0	$ 3,529.35	0	140	Offline	$ 26,040.00	$ 50,000.00	$ 115,676.74	0	$ 1,283,800.00	$ 1,399,476.74	
4C	1.63	N/A	N/A	3.55	0.20	$ 15,015.94	1,008	0	$ 3,559.57	1,460	0	$ 6,862.16	0	70	Offline	$ 13,020.00	$ 50,000.00	$ 88,457.67	0	$ 263,600.00	$ 352,057.67	Preliminarily Preferred Alternative
5A	1.85	5A	3.07	8.52	0	$ 34,116.21	41,940	24,028	$ 232,866.42	0	0	$ -	0	95	Offline	$ 17,670.00	$ 50,000.00	$ 334,652.63	0	$ 685,500.00	$ 1,020,152.63	
5B	1.84	5B	2.97	10.04	0	$ 40,202.67	15,356	23,591	$ 137,481.73	112	4	$ 546.46	0	140	Offline	$ 26,040.00	$ 50,000.00	$ 254,270.87	0	$ 504,300.00	$ 758,570.87	Preliminarily Preferred Alternative
5C	1.64	5C	1.64	5.86	0.79	$ 26,628.26	16,045	18,978	$ 123,632.50	104	0	$ 490.37	120	1525	Online	$ 305,970.00	$ 50,000.00	$ 506,721.13	0	$ 1,328,500.00	$ 1,835,221.13	
N/A	N/A	6-9A	12.99	21.54	0	$ 86,251.55	0	181,551	$ 640,873.49	0	544	$ 2,558.72	0	0	N/A	$ -	$ -	$ 729,683.75	0	$ 936,200.00	$ 1,665,883.75	Preliminarily Preferred Alternative
N/A	N/A	6-9B	12.25	20.14	0.44	$ 82,407.47	0	188,635	$ 665,881.24	0	26	$ 122.01	0	0	N/A	$ -	$ -	$ 748,410.72	0	$ 1,203,500.00	$ 1,951,910.72	
N/A	N/A	6-9C	10.92	15.31	0.15	$ 61,905.71	0	183,587	$ 648,062.03	0	10	$ 45.24	0	0	N/A	$ -	$ -	$ 710,012.97	0	$ 703,700.00	$ 1,413,712.97	
6A	2.68	N/A	N/A	4.03	0	$ 16,137.13	26,437	0	$ 93,321.39	1,019	0	$ 4,787.40	0	90	Offline	$ 16,740.00	$ 50,000.00	$ 180,985.92	0	$ 426,600.00	$ 607,585.92	
6B	1.70	N/A	N/A	2.45	0	$ 9,810.41	7,877	0	$ 27,804.38	2,277	0	$ 10,703.50	0	85	Offline	$ 15,810.00	$ 50,000.00	$ 114,128.30	0	$ 341,200.00	$ 455,328.30	Preliminarily Preferred Alternative
6C	2.36	N/A	N/A	3.52	0.94	$ 17,858.96	22,559	0	$ 79,634.13	50	0	$ 233.43	0	1340	Offline	$ 249,240.00	$ 50,000.00	$ 396,966.52	0	$ 273,600.00	$ 670,566.52	
7-8A	3.84	N/A	N/A	5.32	0	$ 21,302.61	35,021	0	$ 123,623.65	0	0	$ -	0	75	Offline	$ 13,950.00	$ 50,000.00	$ 208,876.26	0	$ 447,900.00	$ 656,776.26	
7-8B	2.67	N/A	N/A	3.72	0.33	$ 16,217.21	37,740	0	$ 133,221.90	79	0	$ 372.34	0	620	Offline	$ 115,320.00	$ 50,000.00	$ 315,131.45	0.09	$ 280,000.00	$ 613,131.45	
7-8C	2.48	N/A	N/A	3.08	0	$ 12,333.09	23,849	0	$ 84,188.67	421	0	$ 1,977.87	0	85	Offline	$ 15,810.00	$ 50,000.00	$ 164,309.63	0	$ 255,400.00	$ 419,709.63	Preliminarily Preferred Alternative
9A	1.51	N/A	N/A	2.57	0	$ 10,290.92	26,018	0	$ 91,843.59	7	0	$ 32.71	0	85	Offline	$ 15,810.00	$ 50,000.00	$ 167,977.22	0	$ 242,800.00	$ 410,777.22	Preliminarily Preferred Alternative
9B	1.24	N/A	N/A	2.06	0	$ 8,248.76	15,205	0	$ 53,672.76	336	0	$ 1,581.17	0	75	Offline	$ 13,950.00	$ 50,000.00	$ 127,452.68	0	$ 282,400.00	$ 409,852.68	
9C	1.27	N/A	N/A	2.52	0.26	$ 11,131.82	19,897	0	$ 70,236.28	0	0	$ -	0	385	Offline	$ 71,610.00	$ 50,000.00	$ 202,978.10	0	$ 447,200.00	$ 650,178.10	
10A	3.18	N/A	N/A	4.57	0	$ 18,299.42	69,572	0	$ 245,590.22	0	0	$ -	0	95	Offline	$ 17,670.00	$ 50,000.00	$ 331,559.64	0	$ 495,300.00	$ 826,859.64	Preliminarily Preferred Alternative
10B	2.43	N/A	N/A	3.88	0	$ 15,536.49	27,297	0	$ 96,359.82	34	0	$ 160.71	0	0	Online	$ -	$ -	$ 112,057.02	0	$ 824,600.00	$ 936,657.02	
N/A	N/A	10A	0.74	1.93	0	$ 7,728.20	0	4,415	$ 15,586.00	0	2	$ 9.11	0	0	N/A	$ -	$ -	$ 23,323.31	0	$ 272,900.00	$ 296,223.31	Preliminarily Preferred Alternative
N/A	N/A	10B	0.61	1.56	0	$ 6,246.63	0	3,705	$ 13,077.38	0	0	$ -	0	0	N/A	$ -	$ -	$ 19,324.01	0.29	$ 1,529,000.00	$ 1,606,324.01	
11A	2.20	11A	0.34	4.02	0.30	$ 17,298.36	19,909	7,177	$ 95,611.94	792	0	$ 3,723.26	0	530	Offline	$ 98,580.00	$ 50,000.00	$ 265,213.55	0	$ 292,100.00	$ 557,313.55	
11B	1.84	11B	0.83	8.42	0	$ 33,715.79	8,755	10,198	$ 66,905.92	3,081	0	$ 14,482.29	0	110	Offline	$ 20,460.00	$ 50,000.00	$ 185,564.00	0	$ 446,100.00	$ 631,664.00	Preliminarily Preferred Alternative
12A	1.86	N/A	N/A	3.89	0	$ 15,576.53	31,201	0	$ 110,138.84	2,868	0	$ 13,481.53	0	100	Offline	$ 18,600.00	$ 50,000.00	$ 207,796.90	0	$ 276,300.00	$ 484,096.90	Preliminarily Preferred Alternative
12B	1.40	N/A	N/A	3.04	0	$ 12,172.92	2,152	0	$ 7,594.81	13,841	0	$ 65,054.44	0	125	Offline	$ 23,250.00	$ 50,000.00	$ 158,072.18	0	$ 827,100.00	$ 985,172.18	
N/A	N/A	12A	0.35	0.68	0	$ 2,722.89	0	2,031	$ 7,168.49	0	0	$ -	0	0	N/A	$ -	$ -	$ 9,891.38	0	$ 225,100.00	$ 234,991.38	
N/A	N/A	12B	0.42	0.99	0	$ 3,964.21	0	2,354	$ 8,310.91	0	0	$ -	0	0	N/A	$ -	$ -	$ 12,275.12	0	$ 169,100.00	$ 181,375.12	Preliminarily Preferred Alternative
N/A	N/A	12C	0.27	1.11	0	$ 4,444.72	0	1,759	$ 6,208.01	0	0	$ -	0	0	N/A	$ -	$ -	$ 10,652.72	0	$ 1,128,100.00	$ 1,138,752.72	
13A	2.26	N/A	N/A	5.00	0.40	$ 21,622.95	47,687	0	$ 168,335.00	0	0	$ -	0	720	Offline	$ 133,920.00	$ 50,000.00	$ 373,877.95	0	$ 431,300.00	$ 805,177.95	
13B	2.96	N/A	N/A	6.88	0	$ 27,549.24	47,291		$ 166,938.73	1	0	$ 4.22	0	285	Offline	$ 53,010.00	$ 50,000.00	$ 297,502.19	0	$ 388,700.00	$ 686,202.19	Preliminarily Preferred Alternative
13C	2.85	N/A	N/A	9.13	0	$ 36,558.80	77,107	0	$ 272,188.97	169	0	$ 794.65	0	0	Online	$ -	$ -	$ 309,542.43	0	$ 1,381,500.00	$ 1,691,042.43	
N/A	N/A	13A	1.20	2.93	0	$ 11,732.45	0	7,901	$ 27,891.74	0	0	$ -	0	0	N/A	$ -	$ -	$ 39,624.19	0	$ 346,200.00	$ 385,824.19	
N/A	N/A	13B	0.85	2.25	0	$ 9,009.56	0	6,443	$ 22,742.93	0	0	$ -	0	0	N/A	$ -	$ -	$ 31,752.49	0	$ 214,300.00	$ 246,052.49	Preliminarily Preferred Alternative
N/A	N/A	13C	1.48	3.31	0	$ 13,254.07	0	8,945	$ 31,577.07	0	0	$ -	0	0	N/A	$ -	$ -	$ 44,831.14	0	$ 378,300.00	$ 423,131.14	
14A	1.54	14A	N/A	4.65	0	$ 18,619.76	18,519	0	$ 65,370.95	0	0	$ -	0	85	Offline	$ 15,810.00	$ 50,000.00	$ 149,800.72	0	$ 1,112,100.00	$ 1,261,900.72	Preliminarily Preferred Alternative
14B	1.54	14B	N/A	3.46	0	$ 13,854.71	26,588	0	$ 93,857.07	2	0	$ 7.41	0		Online	$ -	$ -	$ 107,719.19	0	$ 1,841,300.00	$ 1,949,019.19	

Notes:

1) Pond area is the measured at outside berm area.
2) Floodplain compensation area is measured at the SHW which will be the water surface elevation of the pond.
3) Ponds are paired with FPC sites where it appears the most reasonable alternative to acquire both properties together.
4) Construction costs are based on Area 7, 12 month average from 10/1/16 - 9/30/17.
5) Est. Right of Way Costs are from FDOT District Seven Right of Way.
6) Est. Total Costs include $200,000 per acre of wetland impact.
7) One potential residential relocation with SMF 14A/FPC 14A
8) Preferred pond sites and preferred FPC sites are delineated by the yellow highlighting

Table 4-2: SMF and FPC Site Evaluation Matrix

SMF #	Pond Area (Ac)	FPC #	FPC Sites (Ac)	Total Area (Ac)	Wetlands	Widlife and Habitat	Contamination	Cultural Resources	Potential Relocations	Estimated Cost
1A	1.91	1A	0.64	4.08	No	Low	Low	Low-Moderate	None	$606,416.57
1B	3.81	1B	0.59	7.02	No	Low	Low-Moderate	Low-Moderate	None	$1,963,460.42
1C	2.08	1C	0.69	5.33	No	Low	Low	Low-Moderate	None	$497,501.28
2A	2.74	2A	0.33	5.27	Low	Low-Moderate	No	Low-Moderate	None	$598,209.42
2B	2.94	2B	1.68	7.91	Low-Moderate	Low-Moderate	Moderate	Low	None	$1,058,206.73
2C	4.95	2C	1.51	9.93	Low-Moderate	Low-Moderate	No	Low-Moderate	None	$1,135,548.99
3A	1.81	3-4A	1.99	5.23	Low-Moderate	Low-Moderate	No	Low-Moderate	None	$710,869.37
3B	1.79	3-4B	3.63	9.05	Low-Moderate	Low-Moderate	No	Low	None	$1,184,035.04
3C	1.75	3-4C	1.06	5.96	No	Low	No	Low-Moderate	None	$939,640.81
4A	1.59	N/A	N/A	2.77	Low	Low	No	Low-Moderate	None	$404,773.71
4B	1.20	N/A	N/A	2.25	Low	Low	No	Moderate	1	$1,399,476.74
4C	1.63	N/A	N/A	3.55	Low	Low	No	Low	None	$352,057.67
5A	1.85	5A	3.07	8.52	Low	Low	No	Low-Moderate	None	$1,020,152.63
5B	1.84	5B	2.97	10.04	Moderate	Low-Moderate	Low	Low-Moderate	None	$758,570.87
5C	1.64	5C	1.64	5.86	No	Low	No	Moderate	None	$1,835,221.13
N/A	N/A	6-9A	12.99	21.54	No	Low	No	Low-Moderate	None	$1,665,883.75
N/A	N/A	6-9B	12.25	20.14	No	Low	No	Moderate	None	$1,951,910.72
N/A	N/A	6-9C	10.92	15.31	No	Low	No	Low-Moderate	None	$1,413,712.97
6A	2.68	N/A	N/A	4.03	No	Low	No	Low-Moderate	None	$607,585.92
6B	1.70	N/A	N/A	2.45	No	Low	Low	Low-Moderate	None	$455,328.30
6C	2.36	N/A	N/A	3.52	No	Low	No	Low	None	$670,566.52
7-8A	3.84	N/A	N/A	5.32	No	Low	Low	Low-Moderate	None	$656,776.26
7-8B	2.67	N/A	N/A	3.72	No	Low	Low	Moderate	None	$613,131.45
7-8C	2.48	N/A	N/A	3.08	No	Low	No	Low-Moderate	None	$419,709.63
9A	1.51	N/A	N/A	2.57	No	Low	No	Low-Moderate	None	$410,777.22
9B	1.24	N/A	N/A	2.06	No	Low	Low-Moderate	Low-Moderate	None	$409,852.68
9C	1.27	N/A	N/A	2.52	No	Low	Low-Moderate	Low-Moderate	None	$650,178.10
10A	3.18	N/A	N/A	4.57	No	Low	Low	Low-Moderate	None	$826,859.64
10B	2.43	N/A	N/A	3.88	No	Low	No	Low-Moderate	None	$936,657.02
N/A	N/A	10A	0.74	1.93	No	Low	No	Low-Moderate	None	$296,223.31
N/A	N/A	10B	0.61	1.56	Low	Low	Low	Low-Moderate	2	$1,606,324.01
11A	2.20	11A	0.34	4.02	No	Low	Low	Low	None	$557,313.55
11B	1.84	11B	0.83	8.42	No	Low	Low	Low	None	$631,664.00
12A	1.86	N/A	N/A	3.89	No	Low	No	Low-Moderate	None	$484,096.90
12B	1.40	N/A	N/A	3.04	No	Low	Low	Low-Moderate	None	$985,172.18
N/A	N/A	12A	0.35	0.68	No	Low	No	Low-Moderate	None	$234,991.38
N/A	N/A	12B	0.42	0.99	No	Low	No	Low	None	$181,375.12
N/A	N/A	12C	0.27	1.11	No	Low	No	Low-Moderate	2	$1,138,752.72
13A	2.26	N/A	N/A	5.00	No	Low	No	Moderate	None	$805,177.95
13B	2.96	N/A	N/A	6.88	No	Low	Low	Low-Moderate	None	$686,202.19
13C	2.85	N/A	N/A	9.13	No	Low	Low	Low-Moderate	1	$1,691,042.43
N/A	N/A	13A	1.20	2.93	No	Low	Low	Low-Moderate	None	$385,824.19
N/A	N/A	13B	0.85	2.25	No	Low	Low	Low	None	$246,052.49
N/A	N/A	13C	1.48	3.31	No	Low	Low	Low	None	$423,131.14
14A	1.54	14A	N/A	4.65	No	Low	No	Low	1	$1,261,900.72
14B	1.54	14B	N/A	3.46	No	Low	Low	Low-Moderate	None	$1,949,019.19

Notes:

1) One potential residential relocation with SMF 14A/FPC 14A
2) Preferred pond sites and preferred FPC sites are delineated by the yellow highlighting

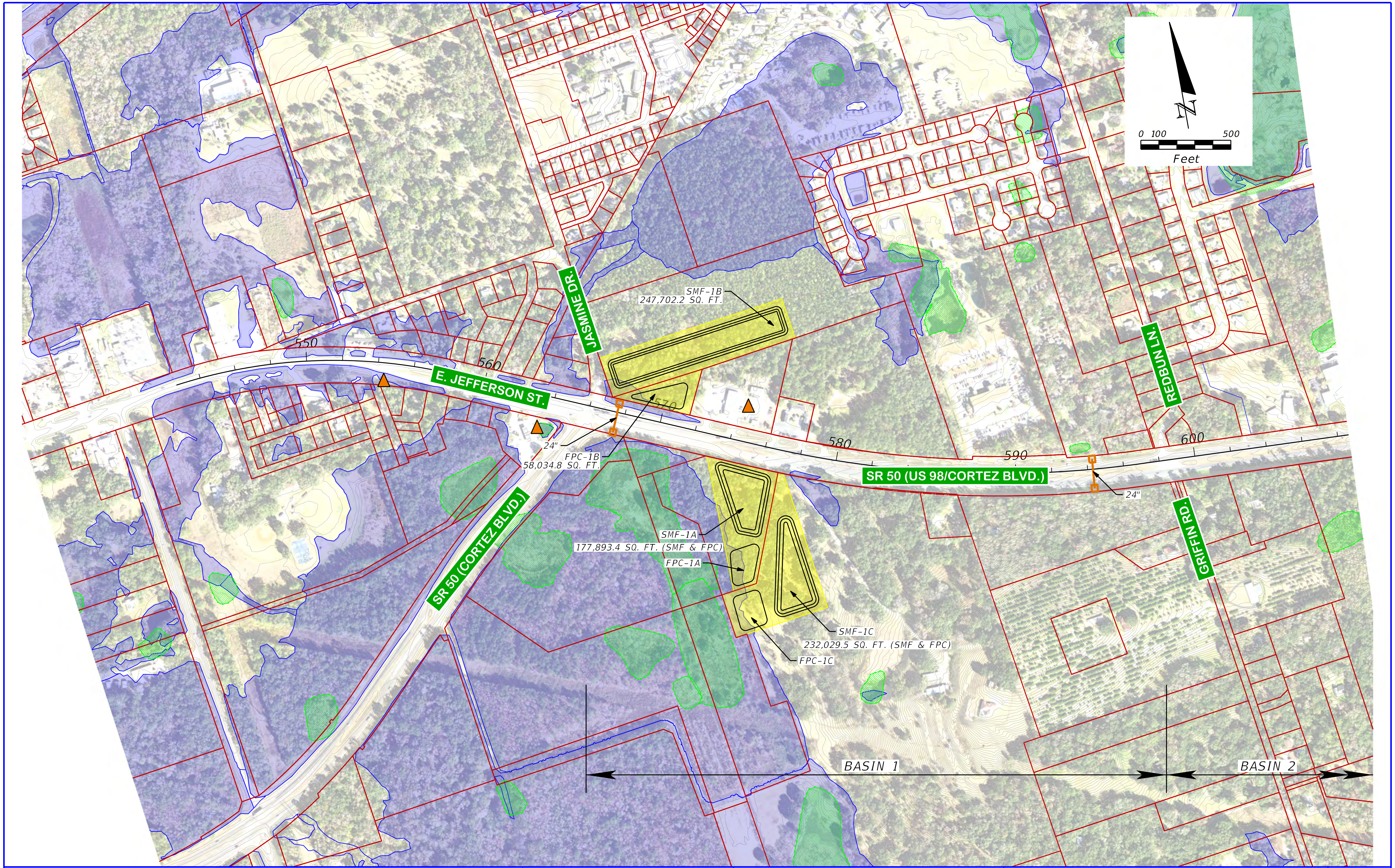
Table 4-3 Floodplain Encroachment Summary

Floodplain	Sub-Basins	Project Floodplain Limits	Base Flood Elev. (BFE)	Estimated Floodplain Encroachment Area (ac) ①③	Estimated Floodplain Encroachment Volume (ac-ft) ②③
1	1A	Sta 566+00 to Sta 572+00 LT	96.3	0.48	0.48
	1B	Sta 577+62 to Sta 579+30 RT	102.3	0.10	0.05
2	2A	Sta 628+00 to Sta 641+50 RT	85.1	0.62	0.62
	2B	Sta 629+40 to Sta 637+00 LT	87.8	0.52	0.52
3-4	3A	Sta 656+55 to Sta 669+00 LT	78.2	0.57	0.86
	3B	Sta 657+30 to Sta 665+15 RT	77.5	0.45	0.34
	4	Sta 669+00 to Sta 678+00 LT	78.2	0.72	1.45
5	5A	Sta 685+50 to Sta 702+00 LT	78.2	1.33	3.31
	5B	Sta 683+50 to Sta 700+50 RT	77.4	1.17	2.93
6-9	6A	Sta 714+00 to Sta 731+00 LT	74.5	1.17	1.46
	6B	Sta 712+00 to Sta 731+00 RT		0.87	1.09
	7	Sta 731+00 to Sta 750+00 LT&RT		5.94	25.25
	8	Sta 750+00 to Sta 769+00 LT&RT		6.50	34.13
	9	Sta 769+00 to Sta 781+00 LT&RT		3.13	13.30
10	10A	Sta 793+25 to Sta 795+50 LT	67.3	0.18	0.18
	10B	Sta 793+07 to Sta 797+15 RT		0.28	0.56
11	11	Sta 829+35 to Sta 836+50 RT	57.9	0.66	1.97
12	12A	Sta 851+50 to Sta 852+90 LT	77.4	0.08	0.06
	12B	Sta 853+40 to Sta 854+50 LT	77.6	0.04	0.03
	12C	Sta 860+45 to Sta 862+00 LT	94.3	0.12	0.12
	12D	Sta 862+45 to Sta 866+35 LT	95.0	0.22	0.22
13	13A	Sta 899+45 to Sta 905+30 LT	80.4	0.54	0.40
	13B	Sta 888+20 to Sta 892+65 RT	86.8	0.46	0.69
	13C	Sta 895+00 to Sta 897+00 RT	84.5	0.09	0.11
	13D	Sta 900+20 to Sta 904+85 RT	79.1	0.32	0.48
14	14A	Sta 925+00 to Sta 928+35 LT	100.8	0.23	0.35
	14B	Sta 928+35 to Sta 930+05 LT	102.4	0.18	0.22
	14C	Sta 926+50 to Sta 927+72 RT	101.4	0.08	0.06
			Totals	**27.05**	**91.24**

①*The estimated floodplain encroachment area is based on an average 20-40 ft width per the length of encroachment per side.*
②*An estimated fill depth based on existing ground and the average depth was estimated per basin.*
③*See Appendix B (Floodplain Encroachment and Compensation Calculation Summary) for Calculations.*

APPENDIX A

Conceptual Drainage Maps with SMF and FPC Site Alternatives



Legend		
Existing Right of Way (ROW)	Floodplains	Cross Drains
Altnerative Proposed ROW	Wetlands	Contamination Sites

Aerial Photo Date: 2017 SMF = Stormwater Management Facility FPC = Floodplain Compensation Site

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

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	430051-1-22-01

CONCEPTUAL SMF & FPC MAPS

SHEET NO.
1

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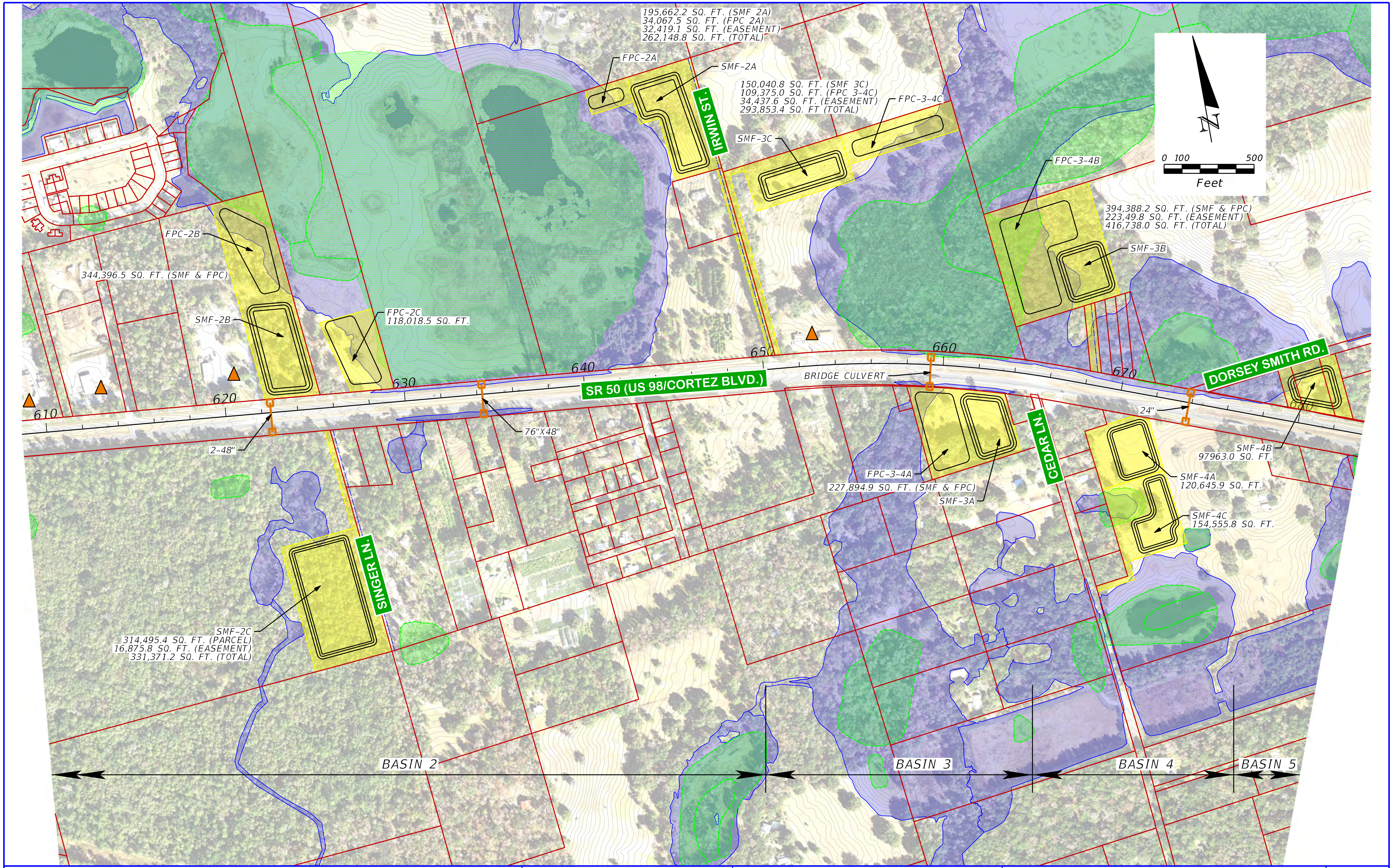

Existing Right of Way (ROW) | Floodplains | Cross Drains

Altnerative Proposed ROW | Wetlands | Contamination Sites

Aerial Photo Date: 2017 | SMF = Stormwater Management Facility | FPC = Floodplain Compensation Site

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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	430051-1-22-01

CONCEPTUAL SMF & FPC MAPS

SHEET NO.
2

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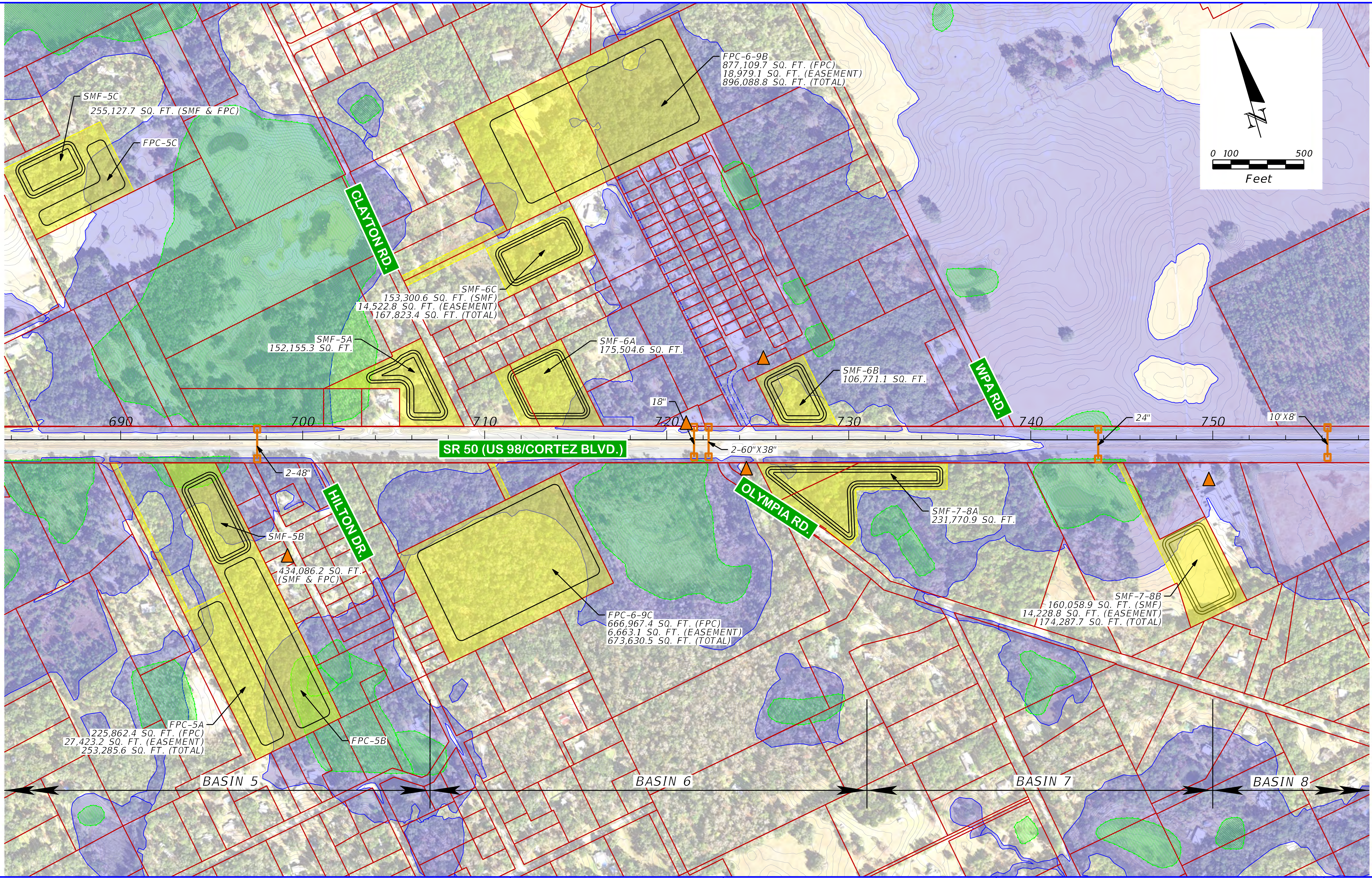

Existing Right of Way (ROW)	Floodplains	Cross Drains
Altnerative Proposed ROW	Wetlands	Contamination Sites

Aerial Photo Date: 2017 SMF = Stormwater Management Facility FPC = Floodplain Compensation Site

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DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	430051-1-22-01

CONCEPTUAL SMF & FPC MAPS

SHEET NO.
3

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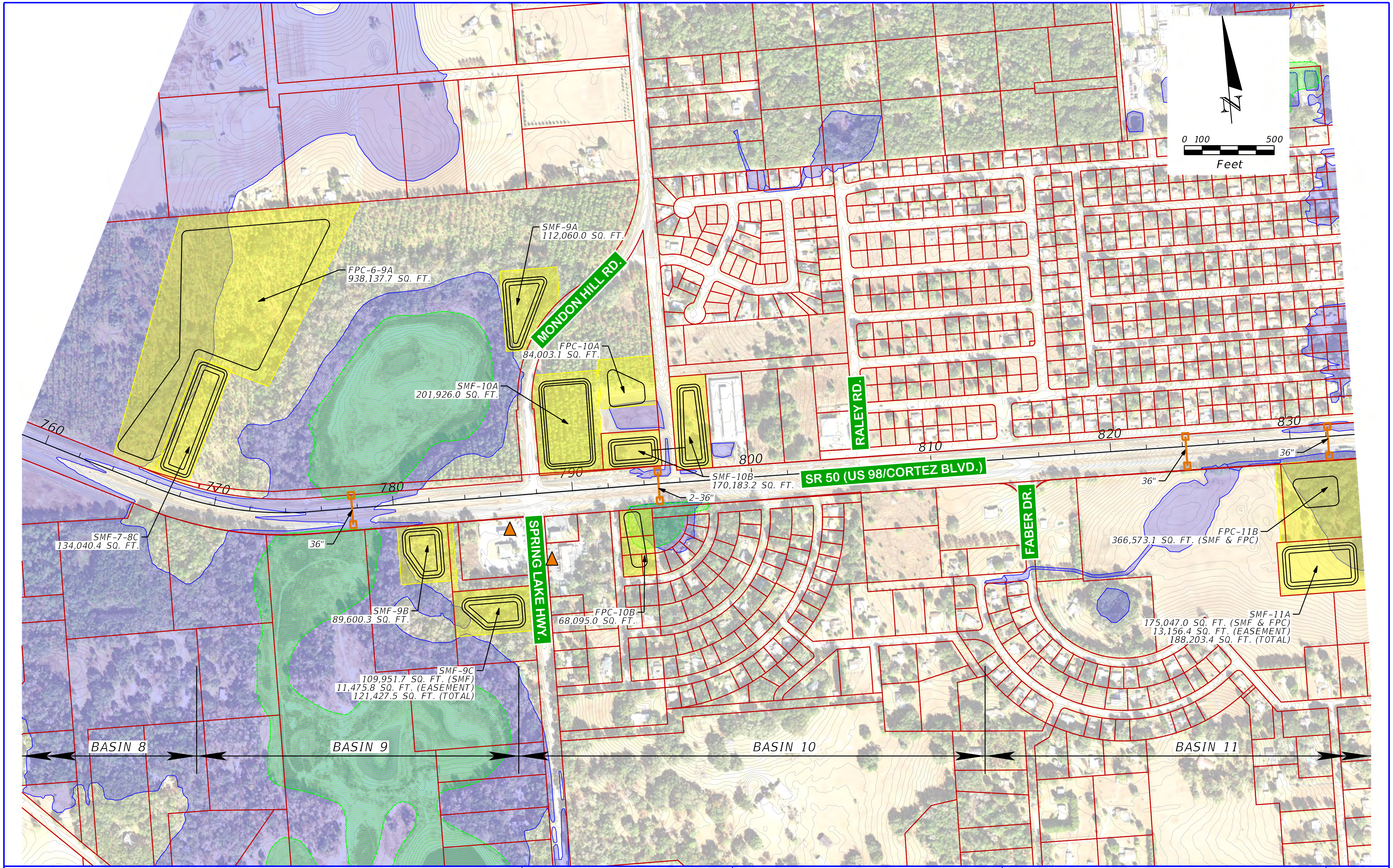

Existing Right of Way (ROW)
Altnerative Proposed ROW
Floodplains
Wetlands
Cross Drains
Contamination Sites

Aerial Photo Date: 2017
SMF = Stormwater Management Facility
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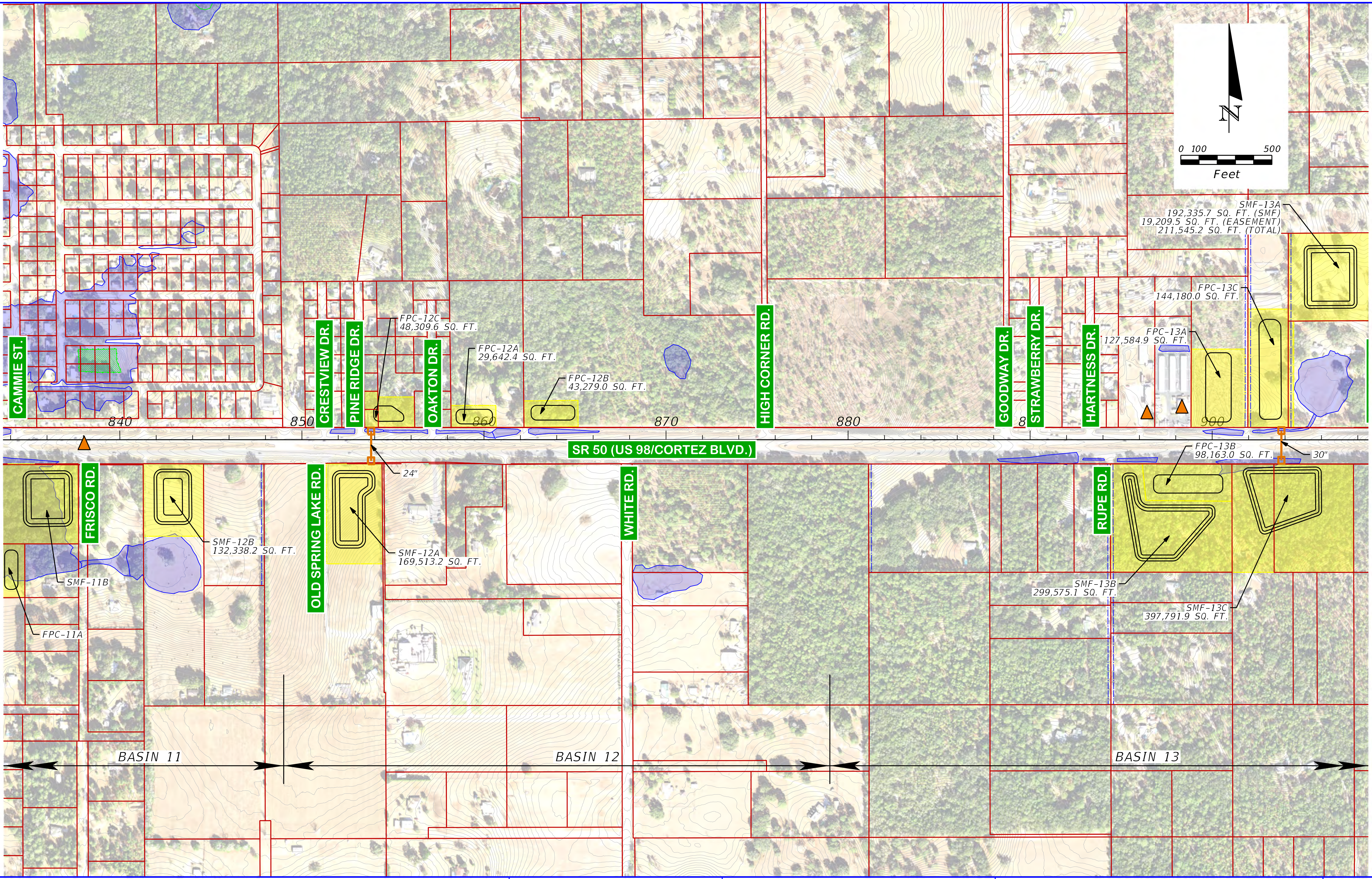
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	430051-1-22-01

CONCEPTUAL SMF & FPC MAPS

SHEET NO.
4



Existing Right of Way (ROW) | Floodplains | Cross Drains

Altnerative Proposed ROW | Wetlands | Contamination Sites

Aerial Photo Date: 2017 | SMF = Stormwater Management Facility | FPC = Floodplain Compensation Site

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	430051-1-22-01

CONCEPTUAL SMF & FPC MAPS

SHEET NO.
5

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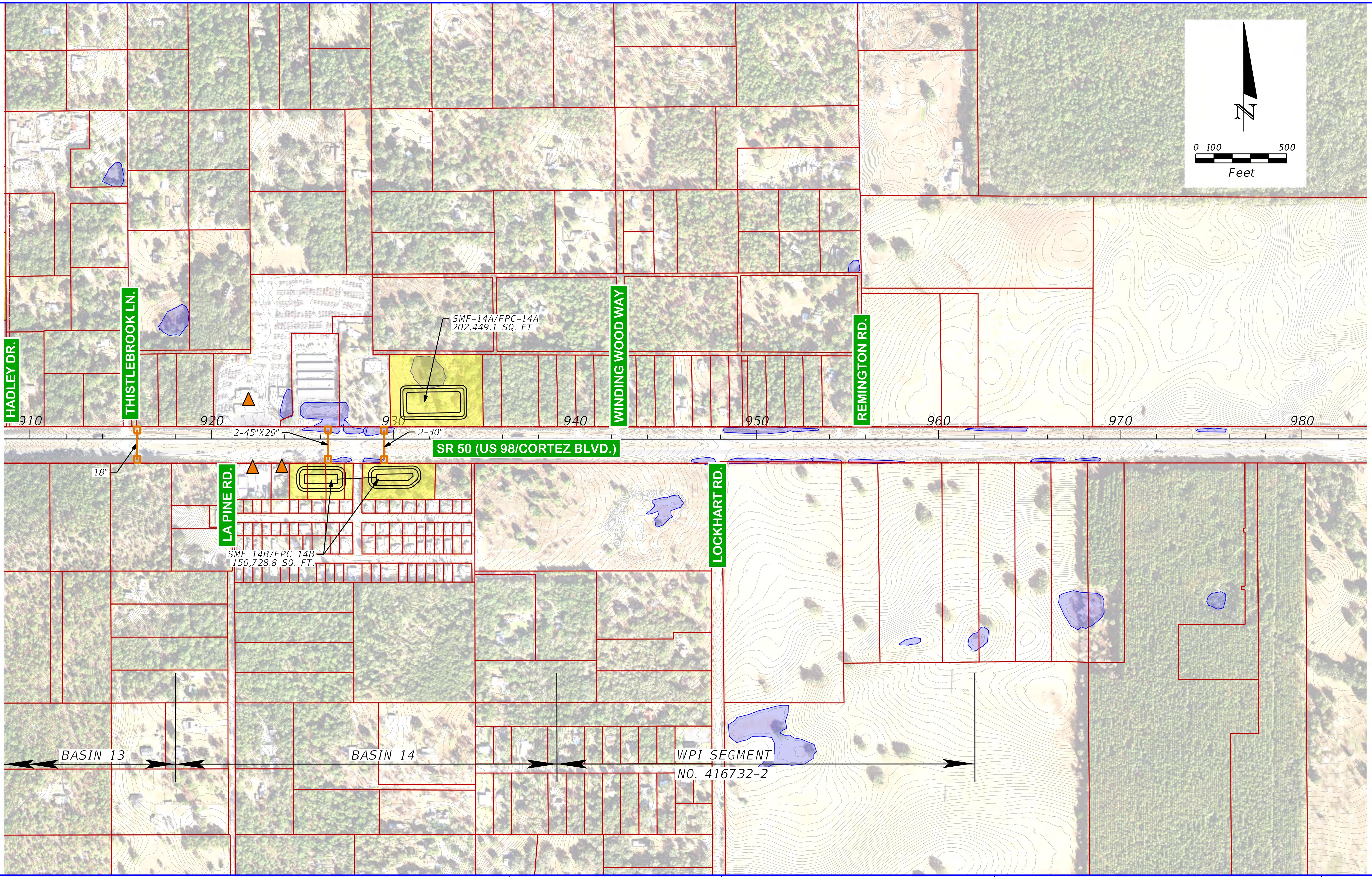

Existing Right of Way (ROW)	Floodplains	Cross Drains
Altnerative Proposed ROW	Wetlands	Contamination Sites

Aerial Photo Date: 2017 SMF = Stormwater Management Facility FPC = Floodplain Compensation Site

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	430051-1-22-01

CONCEPTUAL SMF & FPC MAPS

SHEET NO.
6

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APPENDIX B

Land Use Calculations, Nutrient Loading Calculations, SMF Site Alternative Calculations and Floodplain Compensation Site Alternative Calculations with Grading Schematics

EXISTING LAND USE												
Basin	**Sta. From**	**Sta. To**	**Outfall Location**	**Length (ft)**	**Typical R/W Width (ft)**	**Typical Imp. Width (ft) (1)**	**Typical Imp. Area (Ac)**	**5' Sidewalk (ac)**	**Imp. Total (ac)**	**Pervious Area (Ac)**	**Total Onsite Area (ac)**	**Exist. CN**
1	566+00.00	598+25.00	567+56.00	3225	200	26	1.92	0.50	2.42	12.38	14.81	67
2	598+25.00	650+00.00	634+30.00	5175	200	26	3.09	0.64	3.73	20.03	23.76	67
3	650+00.00	669+00.00	659+30.00	1900	200	26	1.13	------	1.13	7.59	8.72	66
4	669+00.00	680+00.00	673+83.00	1100	200	26	0.66	------	0.66	4.39	5.05	66
5	680+00.00	707+00.00	697+50.00	2700	200	26	1.61	------	1.61	10.79	12.40	66
6	707+00.00	731+00.00	722+30.00	2400	200	24	1.32	------	1.32	9.70	11.02	65
7	731+00.00	750+00.00	743+70.00	1900	200	24	1.05	------	1.05	7.68	8.72	65
8	750+00.00	769+00.00	756+30.00	1900	200	24	1.05	------	1.05	7.68	8.72	65
9	769+00.00	787+00.00	777+70.00	1800	200	24	0.99	------	0.99	7.27	8.26	65
10	787+00.00	813+00.00	794+80.00	2600	200	24	1.43	------	1.43	10.51	11.94	65
11	813+00.00	849+00.00	832+10.00	3600	200	24	1.98	------	1.98	14.55	16.53	65
12	849+00.00	879+00.00	853+80.00	3000	200	24	1.65	------	1.65	12.12	13.77	65
13	879+00.00	918+00.00	903+80.00	3900	200	24	2.15	------	2.15	15.76	17.91	65
14	918+00.00	939+00.00	926+40.00	2100	200	24	1.16	------	1.16	8.48	9.64	65

(1) Typical Impervious width is based on the pre permit existing calculations for 2 lanes

PROPOSED LAND USE											
Basin	Sta From	Sta To	Length (ft)	Typical R/W Width (ft)	Typical Imp. Width (ft)	Typical Imp. Area (Ac)	Add 15% Imp. Area (Ac)	Imp. Total (ac)	Pervious Area (Ac)	Total Onsite Area (ac)	Prop. CN
1	566+00.00	598+25.00	3225	200	113	8.37	1.25	9.62	5.19	14.81	85
2	598+25.00	650+00.00	5175	200	113	13.42	2.01	15.43	8.33	23.76	85
3	650+00.00	669+00.00	1900	200	92	4.01	0.60	4.61	4.11	8.72	81
4	669+00.00	680+00.00	1100	200	92	2.32	0.35	2.67	2.38	5.05	81
5	680+00.00	707+00.00	2700	200	92	5.70	0.86	6.56	5.84	12.40	81
6	707+00.00	731+00.00	2400	200	92	5.07	0.76	5.83	5.19	11.02	81
7	731+00.00	750+00.00	1900	200	92	4.01	0.60	4.61	4.11	8.72	81
8	750+00.00	769+00.00	1900	200	92	4.01	0.60	4.61	4.11	8.72	81
9	769+00.00	787+00.00	1800	200	92	3.80	0.57	4.37	3.89	8.26	81
10	787+00.00	813+00.00	2600	200	92	5.49	0.82	6.31	5.63	11.94	81
11	813+00.00	849+00.00	3600	200	92	7.60	1.14	8.74	7.79	16.53	81
12	849+00.00	879+00.00	3000	200	92	6.34	0.95	7.29	6.48	13.77	81
13	879+00.00	918+00.00	3900	200	92	8.24	1.24	9.47	8.44	17.91	81
14	918+00.00	939+00.00	2100	200	92	4.44	0.67	5.10	4.54	9.64	81

Pond Water Quality and Quantity Calculations										
Basin	**Basin Area**	**Exist. CN**	**Exist. S (in)**	**Exist. 100-yr 10-day vol. (ac-ft)**	**Prop.CN**	**Prop. S (in)**	**Prop. 100-yr 10-day vol.(ac-ft)**	**Req. Att. Vol. (ac-ft)**	**Req. WQ Vol. (ac-ft)**	**Type of Facility [1.] (Wet/Dry)**
1	14.81	67	4.9	18.64	85	1.8	22.25	3.61	1.23	Wet
2	23.76	67	4.9	29.90	85	1.8	35.70	5.79	1.98	Wet
3	8.72	66	5.2	10.85	81	2.3	12.68	1.83	0.73	Wet
4	5.05	66	5.2	6.28	81	2.3	7.34	1.06	0.42	Wet
5	12.40	66	5.2	15.41	81	2.3	18.01	2.60	1.03	Wet
6	11.02	65	5.4	13.53	81	2.3	16.01	2.48	0.92	Wet
7	8.72	65	5.4	10.71	81	2.3	12.68	1.97	0.73	Wet
8	8.72	65	5.4	10.71	81	2.3	12.68	1.97	0.73	Wet
9	8.26	65	5.4	10.15	81	2.3	12.01	1.86	0.69	Wet
10	11.94	65	5.4	14.66	81	2.3	17.35	2.69	0.50	Dry
11	16.53	65	5.4	20.29	81	2.3	24.02	3.73	0.69	Dry
12	13.77	65	5.4	16.90	81	2.3	20.01	3.10	0.57	Dry
13	17.91	65	5.4	21.99	81	2.3	26.02	4.04	0.75	Dry
14	9.64	65	5.4	11.83	81	2.3	14.01	2.17	0.40	Dry
Total								**38.91**	**11.36**	

1. Determined by depth to water table, >6' depth assumed as dry pond

Summary of Nutrient Loading Calculations				
Basin No.	Existing Nitrogen Loading (kg/yr)	Existing Phosphorus Loading (kg/yr)	Proposed Nitrogen Loading (kg/yr)	Proposed Phosphorus Loading (kg/yr)
3	24.38	3.21	23.53	1.23
4				
5	14.42	1.90	14.36	0.83
Totals	**38.80**	**5.11**	**37.89**	**2.06**

Nutrient Loading Analysis

Nutrient Loading Calculations - Basins 3&4

Existing Loading Calculations - Basins 3&4

Basin area $A_{ex} := 8.72acre + 5.05acre$ $A_{ex} = 13.77 \cdot acre$

Impervious Area $Imp_{ex} := 1.13acre + 0.66acre$ $Imp_{ex} = 1.79 \cdot acre$

Meteorological Zone 4 Annual Precipitation Depth $AP := 51.50 \frac{in}{yr}$

Annual Mass Loading for Highway Areas

Total Nitrogen $TNhwy := 1.52 \cdot \frac{mg}{l}$ Total Phosphorus $TPhwy := 0.20 \cdot \frac{mg}{l}$ *From Stormwater BMP Treatment Trains developed by FDOT and UCF Stormwater Management Academy.*

$DCIA_{ex} := Imp_{ex} \div A_{ex}$ $DCIA_{ex} = 13.00 \cdot \%$ *From **Appendix E**, FDEP Stormwater Quality Handbook (2010)*

Non DCIA CN $NonDCIA := 80$

Note basins 3 and 4 are calculated separately since the soil type within these basins is Hydrologic Soil Group D

Calculate annual runoff coefficient (CA) $CA_{ex} := 0.234 - \left(\frac{0.234 - 0.199}{15\% - 10\%}\right) \cdot \left(15\% - DCIA_{ex}\right)$ $CA_{ex} = 0.220$

Calculate annual runoff (QA) $QA_{ex} := CA_{ex} \cdot AP \cdot A_{ex}$ $QA_{ex} = 13.00 \cdot \frac{acre \cdot ft}{yr}$

Calculate annual Nitrogen loading (NA) $NA_{ex} := TNhwy \cdot QA_{ex}$ $NA_{ex} = 24.38 \cdot \frac{kg}{yr}$

Calculate annual Phosphorus loading (PA) $PA_{ex} := TPhwy \cdot QA_{ex}$ $PA_{ex} = 3.21 \cdot \frac{kg}{yr}$

Proposed Loading Calculations - Basins 3&4

Basin area $A_{pr} := 8.72acre + 5.05acre$ $A_{pr} = 13.77 \cdot acre$

Impervious Area $Imp_{pr} := 4.61acre + 2.67acre$ $Imp_{pr} = 7.28 \cdot acre$

Meteorological Zone 4 Annual Precipitation Depth $AP := 51.50 \dfrac{in}{yr}$

Annual Mass Loading for Highway Areas

Total Nitrogen $TNhwy := 1.52 \cdot \dfrac{mg}{l}$ Total Phosphorus $TPhwy := 0.20 \cdot \dfrac{mg}{l}$ *From Stormwater BMP Treatment Trains developed by FDOT and UCF Stormwater Management Academy.*

$DCIA_{pr} := Imp_{pr} \div A_{pr}$ $DCIA_{pr} = 52.87 \cdot \%$ *From **Appendix E**, FDEP Stormwater Quality Handbook (2010)*

Non DCIA CN $NonDCIA := 80$

Note basins 3 and 4 are calculated separately since the soil type within these basins is Hydrologic Soil Group D

Calculate annual runoff coefficient (CA) $CA_{pr} := 0.511 - \left(\dfrac{0.511 - 0.476}{55\% - 50\%}\right) \cdot (55\% - DCIA_{pr})$ $CA_{pr} = 0.496$

Calculate annual runoff (QA) $QA_{pr} := CA_{pr} \cdot AP \cdot A_{pr}$ $QA_{pr} = 29.32 \cdot \dfrac{acre \cdot ft}{yr}$

Calculate annual Nitrogen loading (NA) $NA_{pr} := TNhwy \cdot QA_{pr}$ $NA_{pr} = 54.97 \cdot \dfrac{kg}{yr}$

Calculate annual Phosphorus loading (PA) $PA_{pr} := TPhwy \cdot QA_{pr}$ $PA_{pr} = 7.23 \cdot \dfrac{kg}{yr}$

Required N removal efficiency $NRe := 1 - \dfrac{NA_{ex}}{NA_{pr}}$ $NRe = 55.653 \cdot \%$

Required P removal efficiency $PRe := 1 - \dfrac{PA_{ex}}{PA_{pr}}$ $PRe = 55.653 \cdot \%$

Nutrient Loading Analysis

Proposed removal efficiencies

Permanent Pool Volume $PPV := 9.32\,acre \cdot ft$

$Input := QA_{pr}$ $Input = 29.32 \cdot \frac{acre \cdot ft}{yr}$ Residence time $Rt := \frac{PPV}{Input}$ $Rt = 116.114 \cdot day$

Nitrogen removal efficiency

$$PRN := \frac{43.75 \cdot \frac{Rt}{day}}{\left(4.38 + \frac{Rt}{day}\right)} \cdot \frac{1}{100} \qquad PRN = 42.16 \cdot \%$$

Phosphorus removal efficiency

$$PRP := \frac{1}{100} \cdot \left[44.53 + 6.146 \cdot \ln\left(\frac{Rt}{day}\right) + 0.145 \cdot \left(\ln\left(\frac{Rt}{day}\right)\right)^2\right]$$

Nitrogen loading

$N_{loading} := (1 - PRN) \cdot NA_{pr}$ $N_{loading} = 31.79 \cdot \frac{kg}{yr}$

Phosphorus loading

$P_{loading} := (1 - PRP) \cdot PA_{pr}$ $P_{loading} = 1.66 \cdot \frac{kg}{yr}$

The calculated removal efficiencies did not meet the required removal efficiencies for the wet pond alone. A dry retention swale must be added for this basin to supplement the wet detention pond to meet the require removal efficiency.

Required dry retention efficiency (trial and error)

$NDe := 26\%$ $PDe := NDe$ $NRe = 55.653 \cdot \%$ $PRe = 55.653 \cdot \%$

Required treatment train efficiency

$NTe := NDe + (1 - NDe) \cdot PRN$ $NTe = 57.198 \cdot \%$

$PTe := PDe + (1 - PDe) \cdot PRP$ $PTe = 83.002 \cdot \%$

Nitrogen loading

$N_{loading} := (1 - NTe) \cdot NA_{pr}$ $N_{loading} = 23.53 \cdot \frac{kg}{yr}$

Phosphorus loading

$P_{loading} := (1 - PTe) \cdot PA_{pr}$ $P_{loading} = 1.23 \cdot \frac{kg}{yr}$

Nutrient Loading Analysis

Nutrient Loading Calculations - Basin 5

Existing Loading Calculations - Basin 5

Basin area $A_{ex} := 12.40\,acre$ $A_{ex} = 12.4 \cdot acre$

Impervious Area $Imp_{ex} := 1.61\,acre$ $Imp_{ex} = 1.61 \cdot acre$

Meteorological Zone 4 Annual Precipitation Depth $AP := 51.50 \dfrac{in}{yr}$

Annual Mass Loading for Highway Areas

Total Nitrogen $TNhwy := 1.52 \cdot \dfrac{mg}{l}$ Total Phosphorus $TPhwy := 0.20 \cdot \dfrac{mg}{l}$ *From Stormwater BMP Treatment Trains developed by FDOT and UCF Stormwater Management Academy.*

$DCIA_{ex} := Imp_{ex} \div A_{ex}$ $DCIA_{ex} = 12.98 \cdot \%$ *From **Appendix E**, FDEP Stormwater Quality Handbook (2010)*

Non DCIA CN $NonDCIA := 61$

Calculate annual runoff coefficient (CA)

Three linear interpolation calculations performed between four seperate coefficient values for DCIA and non DCIA CN.

$$CA_{ex1} := 0.158 - \left(\frac{0.158 - 0.119}{15\% - 10\%}\right) \cdot \left(15\% - DCIA_{ex}\right) \qquad CA_{ex1} = 0.142$$

$$CA_{ex2} := 0.169 - \left(\frac{0.169 - 0.131}{15\% - 10\%}\right) \cdot \left(15\% - DCIA_{ex}\right) \qquad CA_{ex2} = 0.154$$

$$CA_{ex} := CA_{ex2} - \left(\frac{CA_{ex2} - CA_{ex1}}{65 - 60}\right) \cdot (65 - NonDCIA) \qquad CA_{ex} = 0.145$$

Calculate annual runoff (QA) $QA_{ex} := CA_{ex} \cdot AP \cdot A_{ex}$ $QA_{ex} = 7.69 \cdot \dfrac{acre \cdot ft}{yr}$

Calculate annual Nitrogen loading (NA) $NA_{ex} := TNhwy \cdot QA_{ex}$ $NA_{ex} = 14.42 \cdot \dfrac{kg}{yr}$

Calculate annual Phosphorus loading (PA) $PA_{ex} := TPhwy \cdot QA_{ex}$ $PA_{ex} = 1.90 \cdot \dfrac{kg}{yr}$

Nutrient Loading Analysis

Proposed Loading Calculations - Basin 5

Basin area $A_{pr} := 12.40 acre$ $A_{pr} = 12.4 \cdot acre$

Impervious Area $Imp_{pr} := 6.56 acre$ $Imp_{pr} = 6.56 \cdot acre$

Meteorological Zone 4 Annual Precipitation Depth $AP := 51.50 \frac{in}{yr}$

Annual Mass Loading for Highway Areas

Total Nitrogen $TNhwy := 1.52 \cdot \frac{mg}{l}$ Total Phosphorus $TPhwy := 0.20 \cdot \frac{mg}{l}$ *From Stormwater BMP Treatment Trains developed by FDOT and UCF Stormwater Management Academy.*

$DCIA_{pr} := Imp_{pr} \div A_{pr}$ $DCIA_{pr} = 52.90 \cdot \%$ *From **Appendix E**, FDEP Stormwater Quality Handbook (2010)*

Non DCIA CN $NonDCIA := 61$

Calculate annual runoff coefficient (CA)

$$CA_{pr1} := 0.471 - \left(\frac{0.471 - 0.432}{55\% - 50\%}\right) \cdot \left(55\% - DCIA_{pr}\right) \qquad CA_{pr1} = 0.455$$

Three linear interpolation calculations performed between four seperate coefficient values for DCIA and non DCIA CN..

$$CA_{pr2} := 0.477 - \left(\frac{0.477 - 0.438}{55\% - 50\%}\right) \cdot \left(55\% - DCIA_{pr}\right) \qquad CA_{pr2} = 0.461$$

$$CA_{pr} := CA_{pr2} - \left(\frac{CA_{pr2} - CA_{pr1}}{65 - 60}\right) \cdot (65 - NonDCIA) \qquad CA_{pr} = 0.456$$

Calculate annual runoff (QA) $QA_{pr} := CA_{pr} \cdot AP \cdot A_{pr}$ $QA_{pr} = 24.26 \cdot \frac{acre \cdot ft}{yr}$

Calculate annual Nitrogen loading (NA) $NA_{pr} := TNhwy \cdot QA_{pr}$ $NA_{pr} = 45.48 \cdot \frac{kg}{yr}$

Calculate annual Phosphorus loading (PA) $PA_{pr} := TPhwy \cdot QA_{pr}$ $PA_{pr} = 5.98 \cdot \frac{kg}{yr}$

Required N removal efficiency $NRe := 1 - \frac{NA_{ex}}{NA_{pr}}$ $NRe = 68.289 \cdot \%$

Required P removal efficiency $PRe := 1 - \frac{PA_{ex}}{PA_{pr}}$ $PRe = 68.289 \cdot \%$

Nutrient Loading Analysis

Proposed removal efficiences

Permanent Pool Volume $PPV := 5.44 acre \cdot ft$

$Input := QA_{pr}$ $Input = 24.26 \cdot \frac{acre \cdot ft}{yr}$ Residence time $Rt := \frac{PPV}{Input}$ $Rt = 81.906 \cdot day$

Nitrogen removal efficiency

$$PRN := \frac{43.75 \cdot \frac{Rt}{day}}{\left(4.38 + \frac{Rt}{day}\right)} \cdot \frac{1}{100} \qquad PRN = 41.53 \cdot \%$$

Phosphorus removal efficiency

$$PRP := \frac{1}{100} \cdot \left[44.53 + 6.146 \cdot \ln\left(\frac{Rt}{day}\right) + 0.145 \cdot \left(\ln\left(\frac{Rt}{day}\right)\right)^2\right]$$

Nitrogen loading

$N_{loading} := (1 - PRN) \cdot NA_{pr}$ $N_{loading} = 26.59 \cdot \frac{kg}{yr}$

Phosphorus loading

$P_{loading} := (1 - PRP) \cdot PA_{pr}$ $P_{loading} = 1.53 \cdot \frac{kg}{yr}$

The calculated removal efficiencies did not meet the required removal efficiencies for the wet pond alone. A dry retention swale must be added for this basin to supplement the wet detention pond to meet the require removal efficiency.

Required dry retention efficiency (trial and error)

$NDe := 46\%$ $PDe := NDe$ $NRe = 68.289 \cdot \%$ $PRe = 68.289 \cdot \%$

Required treatment train efficiency

$NTe := NDe + (1 - NDe) \cdot PRN$ $NTe = 68.426 \cdot \%$

$PTe := PDe + (1 - PDe) \cdot PRP$ $PTe = 86.187 \cdot \%$

Nitrogen loading

$N_{loading} := (1 - NTe) \cdot NA_{pr}$ $N_{loading} = 14.36 \cdot \frac{kg}{yr}$

Phosphorus loading

$P_{loading} := (1 - PTe) \cdot PA_{pr}$ $P_{loading} = 0.83 \cdot \frac{kg}{yr}$

Stormwater Management Calculations
Basin 1

POND PROPERTIES, SMF 1A

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 14.81acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 1.23\,ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 93.0ft$

Note: SHW estimated based on 3' above approximate existing wetland elevation of 90. BFE is 92.1.

Pond CWE elevation $CWE := 93.0ft$

Pond CWE Area $A_{CWE} := 1.08acre$

Pond top of bank elevation $TOB := 98.0ft$ Existing Low EOP = 98 ft

Top of Bank Area $A_{TOB} := 1.51 \cdot acre$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	93	0	0	0
1	94	1.08	0.043	1.123
2	95	2.16	0.172	2.332
3	96	3.24	0.387	3.627
4	97	4.32	0.688	5.008
5	98	5.4	1.075	6.475

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

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 94.09\,ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 5.008\,ft \cdot acre$

Required attenutation volume $Att_{req} := 3.61ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 3.77\,ft \cdot acre$

Stormwater Management Calculations
Basin 1

POND PROPERTIES, SMF 1B

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 14.81 acre$ $ReqWQ := A_{basin} \cdot 1 in$ $ReqWQ = 1.23 ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 95.0 ft$ Note: SHW estimated based on 1' below BFE 96.3.

Pond CWE elevation $CWE := 95.0 ft$

Pond CWE Area $A_{CWE} := 2.43 acre$

Pond top of bank elevation $TOB := 98.0 ft$ Existing Low EOP = 98 ft

Top of Bank Area $A_{TOB} := 3.03 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 3\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	95	0	0	0
1	96	2.43	0.1	2.53
2	97	4.86	0.4	5.26
3	98	7.29	0.9	8.19

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

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 95.49\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 5.26\ ft \cdot acre$

Required attenutation volume $Att_{req} := 3.61 ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 4.03\ ft \cdot acre$

Stormwater Management Calculations
Basin 1

POND PROPERTIES, SMF 1C

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 14.81\,acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 1.23\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 93.0ft$

Note: SHW estimated based on 3' above approximate existing wetland elevation of 90. BFE is 92.1.

Pond CWE elevation $CWE := 93.0ft$

Pond CWE Area $A_{CWE} := 1.08acre$

Pond top of bank elevation $TOB := 98.0ft$ Existing Low EOP = 98 ft

Top of Bank Area $A_{TOB} := 1.63 \cdot acre$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	93	0	0	0
1	94	1.08	0.055	1.135
2	95	2.16	0.22	2.38
3	96	3.24	0.495	3.735
4	97	4.32	0.88	5.2
5	98	5.4	1.375	6.775

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

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 94.08\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 5.2\ ft \cdot acre$

Required attenutation volume $Att_{req} := 3.61ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 3.97\ ft \cdot acre$

Stormwater Management Calculations
Basin 2

POND PROPERTIES, SMF 2A

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 23.76 acre$ $ReqWQ := A_{basin} \cdot 1 in$ $ReqWQ = 1.98\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 83.5 ft$

Note: SHW estimated based on 3.5' above approximate existing wetland elevation of 80. BFE is 85.1.

Pond CWE elevation $CWE := 83.5 ft$

Pond CWE Area $A_{CWE} := 1.47 acre$

Pond top of bank elevation $TOB := 89.0 ft$ Existing Low EOP = 89 ft

Top of Bank Area $A_{TOB} := 2.20 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5.5\ ft$

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

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

Stage Storage Calculation Results

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	83.5	0	0	0
1	84.5	1.47	0.066	1.536
2	85.5	2.94	0.265	3.205
3	86.5	4.41	0.597	5.007
4	87.5	5.88	1.062	6.942
5	88.5	7.35	1.659	9.009

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

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 84.77\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 7.975\ ft \cdot acre$

Required attenutation volume $Att_{req} := 5.79 ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 6\ ft \cdot acre$

Stormwater Management Calculations
Basin 2

POND PROPERTIES, SMF 2B

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 23.76acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 1.98\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 84.0ft$

Note: SHW estimated based on 4' above approximate existing wetland elevation of 80. BFE is 85.1.

Pond CWE elevation $CWE := 84.0ft$

Pond CWE Area $A_{CWE} := 1.85acre$

Pond top of bank elevation $TOB := 89.0ft$ Existing Low EOP = 89 ft

Top of Bank Area $A_{TOB} := 2.45 \cdot acre$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	84	0	0	0
1	85	1.85	0.06	1.91
2	86	3.7	0.24	3.94
3	87	5.55	0.54	6.09
4	88	7.4	0.96	8.36
5	89	9.25	1.5	10.75

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

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 85.03\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 8.36\ ft \cdot acre$

Required attenutation volume $Att_{req} := 5.79ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 6.38\ ft \cdot acre$

Stormwater Management Calculations
Basin 2

POND PROPERTIES, SMF 2C

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 23.76\,acre$ $ReqWQ := A_{basin} \cdot 1\,in$ $ReqWQ = 1.98\,ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 86.0\,ft$ Note: SHW estimated based on 6' below BFE 92.6.

Pond CWE elevation $CWE := 86.0\,ft$

Pond CWE Area $A_{CWE} := 3.83\,acre$

Pond top of bank elevation $TOB := 89.0\,ft$ Existing Low EOP = 89 ft

Top of Bank Area $A_{TOB} := 4.32 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 3\,ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	86	0	0	0
1	87	3.83	0.082	3.912
2	88	7.66	0.327	7.987
3	89	11.49	0.735	12.225

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

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 86.51\,ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 7.987\,ft \cdot acre$

Required attenutation volume $Att_{req} := 5.79\,ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 6.01\,ft \cdot acre$

POND PROPERTIES, SMF 3A

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 8.72acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 0.73\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 76.0ft$ Note: SHW estimated based on 4' below BFE 79.8.

Pond CWE elevation $CWE := 76.0ft$

Pond CWE Area $A_{CWE} := 1acre$

Pond top of bank elevation $TOB := 80.0ft$ Existing Low EOP = 80 ft

Top of Bank Area $A_{TOB} := 1.34 \cdot acre$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ (acre·ft)	Linear Pond Storage (Vpl) $Vpl1_i =$ (acre·ft)	Total wet pond storage (Vpond) $Vpond1_i =$ (acre·ft)
0	76	0	0	0
1	77	1	0.043	1.043
2	78	2	0.17	2.17
3	79	3	0.383	3.383
4	80	4	0.68	4.68

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 76.70\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.776\ ft \cdot acre$

Required attenutation volume $Att_{req} := 1.83ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 2.05\ ft \cdot acre$

Stormwater Management Calculations
Basin 3

POND PROPERTIES, SMF 3B

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 8.72acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 0.73\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 76.0ft$

Note: SHW estimated based on 3' above approximate existing wetland elevation of 73. BFE is 78.2.

Pond CWE elevation $CWE := 76.0ft$

Pond CWE Area $A_{CWE} := 1.00acre$

Pond top of bank elevation $TOB := 80.0ft$

Existing Low EOP = 80 ft

Top of Bank Area $A_{TOB} := 1.33 \cdot acre$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ (·acre·ft)	Linear Pond Storage (Vpl) $Vpl1_i =$ (·acre·ft)	Total wet pond storage (Vpond) $Vpond1_i =$ (·acre·ft)
0	76	0	0	0
1	77	1	0.041	1.041
2	78	2	0.165	2.165
3	79	3	0.371	3.371
4	80	4	0.66	4.66

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 76.70\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.768\ ft \cdot acre$

Required attenutation volume $Att_{req} := 1.83ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 2.04\ ft \cdot acre$

Stormwater Management Calculations
Basin 3

POND PROPERTIES, SMF 3C

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 8.72acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 0.73\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 75.5ft$

Note: SHW estimated based on 2.5' above approximate existing wetland elevation of 73. BFE is 78.2.

Pond CWE elevation $CWE := 75.5ft$

Pond CWE Area $A_{CWE} := 0.78acre$

Pond top of bank elevation $TOB := 80.0ft$ Existing Low EOP = 80 ft

Top of Bank Area $A_{TOB} := 1.23 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 4.5\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	75.5	0	0	0
1	76.5	0.78	0.05	0.83
2	77.5	1.56	0.2	1.76
3	78.5	2.34	0.45	2.79
4	79.5	3.12	0.8	3.92

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 76.38\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.79\ ft \cdot acre$

Required attenutation volume $Att_{req} := 1.83ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 2.06\ ft \cdot acre$

Stormwater Management Calculations
Basin 4

POND PROPERTIES, SMF 4A

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 5.05acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 0.42\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 77.0ft$

Note: SHW estimated based on 1' above approximate existing wetland elevation of 76. BFE is Zone A.

Pond CWE elevation $CWE := 77.0ft$

Pond CWE Area $A_{CWE} := 1.02acre$

Pond top of bank elevation $TOB := 80.0ft$

Existing Low EOP = 80 ft

Top of Bank Area $A_{TOB} := 1.26 \cdot acre$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	77	0	0	0
1	78	1.02	0.04	1.06
2	79	2.04	0.16	2.2
3	80	3.06	0.36	3.42

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 77.40\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 1.63\ ft \cdot acre$

Required attenutation volume $Att_{req} := 1.06ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 1.21\ ft \cdot acre$

POND PROPERTIES, SMF 4B

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 5.05 acre$ $ReqWQ := A_{basin} \cdot 1 in$ $ReqWQ = 0.42\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 76.0 ft$

Note: SHW estimated based on 9' above approximate existing wetland elevation of 67. BFE is 78.2.

Pond CWE elevation $CWE := 76.0 ft$

Pond CWE Area $A_{CWE} := 0.54 acre$

Pond top of bank elevation $TOB := 80.0 ft$ Existing Low EOP = 80 ft

Top of Bank Area $A_{TOB} := 0.80 \cdot acre$

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

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	76	0	0	0
1	77	0.54	0.033	0.573
2	78	1.08	0.13	1.21
3	79	1.62	0.293	1.913
4	80	2.16	0.52	2.68

Top of attenuation pool $Att_{elev} := TOB - 1.5 ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 76.74\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 1.561\ ft \cdot acre$

Required attenutation volume $Att_{req} := 1.06 ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 1.14\ ft \cdot acre$

POND PROPERTIES, SMF 4C

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 5.05acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 0.42\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 77.0ft$

Note: SHW estimated based on 1' above approximate existing wetland elevation of 76. BFE is Zone A.

Pond CWE elevation $CWE := 77.0ft$

Pond CWE Area $A_{CWE} := 0.94acre$

Pond top of bank elevation $TOB := 80.0ft$ Existing Low EOP = 80 ft

Top of Bank Area $A_{TOB} := 1.23 \cdot acre$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ (acre·ft)	Linear Pond Storage (Vpl) $Vpl1_i =$ (acre·ft)	Total wet pond storage (Vpond) $Vpond1_i =$ (acre·ft)
0	77	0	0	0
1	78	0.94	0.048	0.988
2	79	1.88	0.193	2.073
3	80	2.82	0.435	3.255

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 77.43\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 1.531\ ft \cdot acre$

Required attenutation volume $Att_{req} := 1.06ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 1.11\ ft \cdot acre$

Stormwater Management Calculations
Basin 5

POND PROPERTIES, SMF 5A

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 12.40acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 1.03\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 74.0ft$

Note: SHW estimated based on 2' above approximate existing wetland elevation of 72. BFE is 78.2.

Pond CWE elevation $CWE := 74.0ft$

Pond CWE Area $A_{CWE} := 0.64acre$

Pond top of bank elevation $TOB := 80.0ft$

Existing Low EOP = 80 ft

Top of Bank Area $A_{TOB} := 1.29 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 6\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	74	0	0	0
1	75	0.64	0.054	0.694
2	76	1.28	0.217	1.497
3	77	1.92	0.488	2.408
4	78	2.56	0.867	3.427
5	79	3.2	1.354	4.554
6	80	3.84	1.95	5.79

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 75.42\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.99\ ft \cdot acre$

Required attenutation volume $Att_{req} := 2.60ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 2.96\ ft \cdot acre$

Stormwater Management Calculations
Basin 5

POND PROPERTIES, SMF 5B

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 12.40\,acre$ $ReqWQ := A_{basin} \cdot 1\,in$ $ReqWQ = 1.03\,ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 75.5\,ft$

Note: SHW estimated based on 1.5' above approximate existing wetland elevation of 74. BFE is 77.4.

Pond CWE elevation $CWE := 75.5\,ft$

Pond CWE Area $A_{CWE} := 1.09\,acre$

Pond top of bank elevation $TOB := 80.0\,ft$

Existing Low EOP = 80 ft

Top of Bank Area $A_{TOB} := 1.48 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 4.5\,ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	75.5	0	0	0
1	76.5	1.09	0.043	1.133
2	77.5	2.18	0.173	2.353
3	78.5	3.27	0.39	3.66
4	79.5	4.36	0.693	5.053

Top of attenuation pool $Att_{elev} := TOB - 1.5\,ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 76.41\,ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.66\,ft \cdot acre$

Required attenutation volume $Att_{req} := 2.60\,ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 2.63\,ft \cdot acre$

Stormwater Management Calculations
Basin 5

POND PROPERTIES, SMF5C

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 12.40acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 1.03\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 74.0ft$

Note: SHW estimated based on 2' above approximate existing wetland elevation of 72. BFE is 78.2.

Pond CWE elevation $CWE := 74.0ft$

Pond CWE Area $A_{CWE} := 0.71acre$

Pond top of bank elevation $TOB := 80.0ft$ Existing Low EOP = 80 ft

Top of Bank Area $A_{TOB} := 1.19 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 6\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ (acre·ft)	Linear Pond Storage (Vpl) $Vpl1_i =$ (acre·ft)	Total wet pond storage (Vpond) $Vpond1_i =$ (acre·ft)
0	74	0	0	0
1	75	0.71	0.04	0.75
2	76	1.42	0.16	1.58
3	77	2.13	0.36	2.49
4	78	2.84	0.64	3.48
5	79	3.55	1	4.55
6	80	4.26	1.44	5.7

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 75.34\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 4.015\ ft \cdot acre$

Required attenutation volume $Att_{req} := 2.60ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 2.98\ ft \cdot acre$

Stormwater Management Calculations
Basin 6

POND PROPERTIES, SMF 6A

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 11.02acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 0.92\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 72.5ft$ Note: SHW estimated based on 2' below BFE 74.5.

Pond CWE elevation $CWE := 72.5ft$

Pond CWE Area $A_{CWE} := 1.75acre$

Pond top of bank elevation $TOB := 76.0ft$ Existing Low EOP = 76 ft

Top of Bank Area $A_{TOB} := 2.13 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 3.5\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	72.5	0	0	0
1	73.5	1.75	0.054	1.804
2	74.5	3.5	0.217	3.717
3	75.5	5.25	0.489	5.739

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 73.01\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.717\ ft \cdot acre$

Required attenutation volume $Att_{req} := 2.48ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 2.80\ ft \cdot acre$

POND PROPERTIES, SMF 6B

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 11.02\,acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 0.92\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 70.5ft$ Note: SHW estimated based on 4' below BFE 74.5

Pond CWE elevation $CWE := 70.5ft$

Pond CWE Area $A_{CWE} := 0.76acre$

Pond top of bank elevation $TOB := 76.0ft$ Existing Low EOP = 76 ft

Top of Bank Area $A_{TOB} := 1.21 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5.5\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	70.5	0	0	0
1	71.5	0.76	0.041	0.801
2	72.5	1.52	0.164	1.684
3	73.5	2.28	0.368	2.648
4	74.5	3.04	0.655	3.695
5	75.5	3.8	1.023	4.823

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 71.63\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.695\ ft \cdot acre$

Required attenutation volume $Att_{req} := 2.48ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 2.78\ ft \cdot acre$

POND PROPERTIES, SMF 6C

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 11.02 acre$ $ReqWQ := A_{basin} \cdot 1 in$ $ReqWQ = 0.92\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 72.0 ft$ Note: SHW estimated based on 2' below BFE 74.5

Pond CWE elevation $CWE := 72.0 ft$

Pond CWE Area $A_{CWE} := 1.37 acre$

Pond top of bank elevation $TOB := 76.0 ft$ Existing Low EOP = 76 ft

Top of Bank Area $A_{TOB} := 1.79 \cdot acre$

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

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ (·acre·ft)	Linear Pond Storage (Vpl) $Vpl1_i =$ (·acre·ft)	Total wet pond storage (Vpond) $Vpond1_i =$ (·acre·ft)
0	72	0	0	0
1	73	1.37	0.053	1.423
2	74	2.74	0.21	2.95
3	75	4.11	0.473	4.583
4	76	5.48	0.84	6.32

Top of attenuation pool $Att_{elev} := TOB - 1.5 ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 72.65\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.766\ ft \cdot acre$

Required attenutation volume $Att_{req} := 2.48 ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 2.85\ ft \cdot acre$

POND PROPERTIES, SMF 7-8A

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 17.44acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 1.45\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 69.0ft$

Note: SHW estimated based on 2' above approximate existing wetland elevation of 67. BFE is 74.5.

Pond CWE elevation $CWE := 69.0ft$

Pond CWE Area $A_{CWE} := 2.10acre$

Pond top of bank elevation $TOB := 73.0ft$

Existing Low EOP = 73 ft

Top of Bank Area $A_{TOB} := 2.95 \cdot acre$

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

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

Stage Storage Calculation Results

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	69	0	0	0
1	70	2.1	0.106	2.206
2	71	4.2	0.425	4.625
3	72	6.3	0.956	7.256
4	73	8.4	1.7	10.1

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 69.66\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 5.941\ ft \cdot acre$

Required attenutation volume $Att_{req} := 3.94ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 4.49\ ft \cdot acre$

POND PROPERTIES, SMF 7-8B

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 17.44\,acre$ $ReqWQ := A_{basin} \cdot 1\,in$ $ReqWQ = 1.45\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 68.0\,ft$

Note: SHW estimated based on 3' above approximate existing wetland elevation of 65. BFE is 74.5.

Pond CWE elevation $CWE := 68.0\,ft$

Pond CWE Area $A_{CWE} := 1.51\,acre$

Pond top of bank elevation $TOB := 73.0\,ft$ Existing Low EOP = 73 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 $stage_{number} := Depth \div 1.0\,ft$

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

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ (·acre·ft)	Linear Pond Storage (Vpl) $Vpl1_i =$ (·acre·ft)	Total wet pond storage (Vpond) $Vpond1_i =$ (·acre·ft)
0	68	0	0	0
1	69	1.51	0.055	1.565
2	70	3.02	0.22	3.24
3	71	4.53	0.495	5.025
4	72	6.04	0.88	6.92
5	73	7.55	1.375	8.925

Top of attenuation pool $Att_{elev} := TOB - 1.5\,ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 68.93\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 5.973\ ft \cdot acre$

Required attenutation volume $Att_{req} := 3.94\,ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 4.52\ ft \cdot acre$

POND PROPERTIES, SMF 7-8C

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 17.44acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 1.45\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 67.0ft$

Note: SHW estimated based on 2' above approximate existing wetland elevation of 65. BFE is 74.5.

Pond CWE elevation $CWE := 67.0ft$

Pond CWE Area $A_{CWE} := 1.03acre$

Pond top of bank elevation $TOB := 73.0ft$

Existing Low EOP = 73 ft

Top of Bank Area $A_{TOB} := 1.80 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 6\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	67	0	0	0
1	68	1.03	0.064	1.094
2	69	2.06	0.257	2.317
3	70	3.09	0.578	3.668
4	71	4.12	1.027	5.147
5	72	5.15	1.604	6.754
6	73	6.18	2.31	8.49

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 68.29\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 5.95\ ft \cdot acre$

Required attenutation volume $Att_{req} := 3.94ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 4.50\ ft \cdot acre$

POND PROPERTIES, SMF9A

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 8.26acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 0.69\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 68.0ft$

Note: SHW estimated based on 2' above approximate existing wetland elevation of 66. BFE is 74.5.

Pond CWE elevation $CWE := 68.0ft$

Pond CWE Area $A_{CWE} := 0.60acre$

Pond top of bank elevation $TOB := 73.0ft$

Existing Low EOP = 73.0 ft

Top of Bank Area $A_{TOB} := 1.04 \cdot acre$

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$_i$ = (ft)	elev$_i$ = (ft)	Vertical Pond Storage (Vpv) Vpv1$_i$ = (·acre·ft)	Linear Pond Storage (Vpl) Vpl1$_i$ = (·acre·ft)	Total wet pond storage (Vpond) Vpond1$_i$ = (·acre·ft)
0	68	0	0	0
1	69	0.6	0.044	0.644
2	70	1.2	0.176	1.376
3	71	1.8	0.396	2.196
4	72	2.4	0.704	3.104
5	73	3	1.1	4.1

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 69.06\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.65\ ft \cdot acre$

Required attenutation volume $Att_{req} := 1.86ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 1.96\ ft \cdot acre$

POND PROPERTIES, SMF 9B

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 8.26acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 0.69\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 67.0ft$

Note: SHW estimated based on 1' above approximate existing wetland elevation of 66. BFE is 74.5.

Pond CWE elevation $CWE := 67.0ft$

Pond CWE Area $A_{CWE} := 0.46acre$

Pond top of bank elevation $TOB := 73.0ft$

Existing Low EOP = 73.0 ft

Top of Bank Area $A_{TOB} := 0.84 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 6\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ (acre·ft)	Linear Pond Storage (Vpl) $Vpl1_i =$ (acre·ft)	Total wet pond storage (Vpond) $Vpond1_i =$ (acre·ft)
0	67	0	0	0
1	68	0.46	0.032	0.492
2	69	0.92	0.127	1.047
3	70	1.38	0.285	1.665
4	71	1.84	0.507	2.347
5	72	2.3	0.792	3.092
6	73	2.76	1.14	3.9

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 68.35\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.719\ ft \cdot acre$

Required attenutation volume $Att_{req} := 1.86ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 2.03\ ft \cdot acre$

POND PROPERTIES, SMF 9C

Water quality requirement, 1" over basin area

Basin Area $A_{basin} := 8.26acre$ $ReqWQ := A_{basin} \cdot 1in$ $ReqWQ = 0.69\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 67.0ft$

Note: SHW estimated based on 1' above approximate existing wetland elevation of 66. BFE is 74.5.

Pond CWE elevation $CWE := 67.0ft$

Pond CWE Area $A_{CWE} := 0.44acre$

Pond top of bank elevation $TOB := 73.0ft$ Existing Low EOP = 73.0 ft

Top of Bank Area $A_{TOB} := 0.85 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 6\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	67	0	0	0
1	68	0.44	0.034	0.474
2	69	0.88	0.137	1.017
3	70	1.32	0.308	1.628
4	71	1.76	0.547	2.307
5	72	2.2	0.854	3.054
6	73	2.64	1.23	3.87

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 68.39\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.68\ ft \cdot acre$

Required attenutation volume $Att_{req} := 1.86ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 1.99\ ft \cdot acre$

Stormwater Management Calculations
Basin 10

POND PROPERTIES, SMF 10A

Water quality requirement, 0.5" over basin area

Basin Area $A_{basin} := 11.94acre$ $ReqWQ := A_{basin} \cdot 0.5in$ $ReqWQ = 0.50\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 65.0ft$ Note: SHW estimated based on 2' below BFE 67.3.

Pond CWE elevation $CWE := 67.0ft$

Pond CWE Area $A_{CWE} := 2.27acre$

Pond top of bank elevation $TOB := 70.0ft$ Existing Low EOP = 70 ft

Top of Bank Area $A_{TOB} := 2.64 \cdot acre$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	67	0	0	0
1	68	2.27	0.062	2.332
2	69	4.54	0.247	4.787
3	70	6.81	0.555	7.365

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 67.21\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.559\ ft \cdot acre$

Required attenutation volume $Att_{req} := 2.69ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 3.06\ ft \cdot acre$

Stormwater Management Calculations
Basin 10

POND PROPERTIES, SMF 10B

Water quality requirement, 0.5" over basin area

Basin Area $A_{basin} := 11.94acre$ $ReqWQ := A_{basin} \cdot 0.5in$ $ReqWQ = 0.50\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 63.0ft$ Note: SHW estimated based on 4' below BFE 67.3.

Pond CWE elevation $CWE := 65.5ft$

Pond CWE Area $A_{CWE} := 0.96acre$

Pond top of bank elevation $TOB := 70.0ft$ Existing Low EOP = 70 ft

Top of Bank Area $A_{TOB} := 1.64 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 4.5\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	65.5	0	0	0
1	66.5	0.96	0.076	1.036
2	67.5	1.92	0.302	2.222
3	68.5	2.88	0.68	3.56
4	69.5	3.84	1.209	5.049

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 65.98\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 3.56\ ft \cdot acre$

Required attenutation volume $Att_{req} := 2.69ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 3.06\ ft \cdot acre$

POND PROPERTIES, SMF 11A

Water quality requirement, 0.5" over basin area

Basin Area $A_{basin} := 16.53\,acre$ $ReqWQ := A_{basin} \cdot 0.5in$ $ReqWQ = 0.69\,ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 51.0ft$ Note: SHW estimated based on 7' below BFE 57.9

Pond CWE elevation $CWE := 53.5ft$

Pond CWE Area $A_{CWE} := 1.00acre$

Pond top of bank elevation $TOB := 59.0ft$ Existing Low EOP = 59 ft

Top of Bank Area $A_{TOB} := 1.54 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 5.5\,ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ (acre·ft)	Linear Pond Storage (Vpl) $Vpl1_i =$ (acre·ft)	Total wet pond storage (Vpond) $Vpond1_i =$ (acre·ft)
0	53.5	0	0	0
1	54.5	1	0.049	1.049
2	55.5	2	0.196	2.196
3	56.5	3	0.442	3.442
4	57.5	4	0.785	4.785
5	58.5	5	1.227	6.227

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 54.16\,ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 4.785\,ft \cdot acre$

Required attenutation volume $Att_{req} := 3.73ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 4.10\,ft \cdot acre$

Stormwater Management Calculations
Basin 11

POND PROPERTIES, SMF 11B

Water quality requirement, 0.5" over basin area

Basin Area $A_{basin} := 16.53acre$ $ReqWQ := A_{basin} \cdot 0.5in$ $ReqWQ = 0.69\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 50.0ft$ Note: SHW estimated based on 8' below BFE 57.9

Pond CWE elevation $CWE := 52.0ft$

Pond CWE Area $A_{CWE} := 0.67acre$

Pond top of bank elevation $TOB := 59.0ft$ Existing Low EOP = 59 ft

Top of Bank Area $A_{TOB} := 1.24 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 7\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ (·acre·ft)	Linear Pond Storage (Vpl) $Vpl1_i =$ (·acre·ft)	Total wet pond storage (Vpond) $Vpond1_i =$ (·acre·ft)
0	52	0	0	0
1	53	0.67	0.041	0.711
2	54	1.34	0.163	1.503
3	55	2.01	0.366	2.376
4	56	2.68	0.651	3.331
5	57	3.35	1.018	4.368
6	58	4.02	1.466	5.486
7	59	4.69	1.995	6.685

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 52.97\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 4.927\ ft \cdot acre$

Required attenutation volume $Att_{req} := 3.73ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 4.24\ ft \cdot acre$

Stormwater Management Calculations
Basin 12

POND PROPERTIES, SMF 12A

Water quality requirement, 0.5" over basin area

Basin Area $A_{basin} := 13.77acre$ $ReqWQ := A_{basin} \cdot 0.5in$ $ReqWQ = 0.57\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 69.0ft$ Note: SHW estimated based on 6' below existing ground El. 75.0

Pond CWE elevation $CWE := 73.0ft$

Pond CWE Area $A_{CWE} := 0.68acre$

Pond top of bank elevation $TOB := 79.0ft$ Existing Low EOP = 79 ft

Top of Bank Area $A_{TOB} := 1.25 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 6\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ (·acre·ft)	Linear Pond Storage (Vpl) $Vpl1_i =$ (·acre·ft)	Total wet pond storage (Vpond) $Vpond1_i =$ (·acre·ft)
0	73	0	0	0
1	74	0.68	0.048	0.728
2	75	1.36	0.19	1.55
3	76	2.04	0.428	2.468
4	77	2.72	0.76	3.48
5	78	3.4	1.188	4.588
6	79	4.08	1.71	5.79

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 73.79\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 4.034\ ft \cdot acre$

Required attenutation volume $Att_{req} := 3.10ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 3.46\ ft \cdot acre$

Stormwater Management Calculations
Basin 12

POND PROPERTIES, SMF 12B

Water quality requirement, 0.5" over basin area

Basin Area $A_{basin} := 13.77acre$ $ReqWQ := A_{basin} \cdot 0.5in$ $ReqWQ = 0.57\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 62.0ft$ Note: SHW estimated based on 1' below BFE 62.8.

Pond CWE elevation $CWE := 70.0ft$

Pond CWE Area $A_{CWE} := 0.28acre$

Pond top of bank elevation $TOB := 79.0ft$ Existing Low EOP = 79 ft

Top of Bank Area $A_{TOB} := 0.89 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 9\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ (acre·ft)	Linear Pond Storage (Vpl) $Vpl1_i =$ (acre·ft)	Total wet pond storage (Vpond) $Vpond1_i =$ (acre·ft)
0	70	0	0	0
1	71	0.28	0.034	0.314
2	72	0.56	0.136	0.696
3	73	0.84	0.305	1.145
4	74	1.12	0.542	1.662
5	75	1.4	0.847	2.247
6	76	1.68	1.22	2.9
7	77	1.96	1.661	3.621
8	78	2.24	2.169	4.409
9	79	2.52	2.745	5.265

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 71.68\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 4.015\ ft \cdot acre$

Required attenutation volume $Att_{req} := 3.10ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 3.44\ ft \cdot acre$

Stormwater Management Calculations
Basin 13

POND PROPERTIES, SMF 13A

Water quality requirement, 0.5" over basin area

Basin Area $A_{basin} := 17.91\,acre$ $ReqWQ := A_{basin} \cdot 0.5in$ $ReqWQ = 0.75\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 73.0ft$ Note: SHW estimated based on 3' below BFE 76.1.

Pond CWE elevation $CWE := 75.0ft$

Pond CWE Area $A_{CWE} := 0.97acre$

Pond top of bank elevation $TOB := 81.0ft$ Existing Low EOP = 81 ft

Top of Bank Area $A_{TOB} := 1.55 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 6\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ (·acre·ft)	Linear Pond Storage (Vpl) $Vpl1_i =$ (·acre·ft)	Total wet pond storage (Vpond) $Vpond1_i =$ (·acre·ft)
0	75	0	0	0
1	76	0.97	0.048	1.018
2	77	1.94	0.193	2.133
3	78	2.91	0.435	3.345
4	79	3.88	0.773	4.653
5	80	4.85	1.208	6.058
6	81	5.82	1.74	7.56

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 75.73\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 5.356\ ft \cdot acre$

Required attenutation volume $Att_{req} := 4.04ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 4.61\ ft \cdot acre$

Stormwater Management Calculations
Basin 13

POND PROPERTIES, SMF 13B

Water quality requirement, 0.5" over basin area

Basin Area $A_{basin} := 17.91\,acre$ $\quad ReqWQ := A_{basin} \cdot 0.5in$ $\quad ReqWQ = 0.75\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 75.0ft$ Note: SHW estimated based on 4' below BFE 79.1.

Pond CWE elevation $CWE := 76.5ft$

Pond CWE Area $A_{CWE} := 1.57acre$

Pond top of bank elevation $TOB := 81.0ft$ Existing Low EOP = 81 ft

Top of Bank Area $A_{TOB} := 2.21 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $\quad Depth = 4.5\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	76.5	0	0	0
1	77.5	1.57	0.071	1.641
2	78.5	3.14	0.284	3.424
3	79.5	4.71	0.64	5.35
4	80.5	6.28	1.138	7.418

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $\quad Stage_{WQ} = 76.95\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $\quad Storage_{vol} = 5.35\ ft \cdot acre$

Required attenutation volume $Att_{req} := 4.04ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $\quad Att_{vol} = 4.60\ ft \cdot acre$

POND PROPERTIES, SMF 13C

Water quality requirement, 0.5" over basin area

Basin Area $A_{basin} := 17.91 acre$ $ReqWQ := A_{basin} \cdot 0.5in$ $ReqWQ = 0.75\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 74.0ft$ Note: SHW estimated based on 5' below BFE 79.1.

Pond CWE elevation $CWE := 76.5ft$

Pond CWE Area $A_{CWE} := 1.58acre$

Pond top of bank elevation $TOB := 81.0ft$ Existing Low EOP = 81 ft

Top of Bank Area $A_{TOB} := 2.09 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 4.5\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ ($\cdot acre \cdot ft$)	Linear Pond Storage (Vpl) $Vpl1_i =$ ($\cdot acre \cdot ft$)	Total wet pond storage (Vpond) $Vpond1_i =$ ($\cdot acre \cdot ft$)
0	76.5	0	0	0
1	77.5	1.58	0.057	1.637
2	78.5	3.16	0.227	3.387
3	79.5	4.74	0.51	5.25
4	80.5	6.32	0.907	7.227

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 76.96\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 5.25\ ft \cdot acre$

Required attenutation volume $Att_{req} := 4.04ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 4.50\ ft \cdot acre$

Stormwater Management Calculations
Basin 14

POND PROPERTIES, SMF 14A/FPC-14A

Water quality requirement, 0.5" over basin area

Basin Area $A_{basin} := 9.64acre$ $ReqWQ := A_{basin} \cdot 0.5in$ $ReqWQ = 0.40\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 95.0ft$ Note: SHW estimated based on 9' below BFE 104.1.

Pond CWE elevation $CWE := 98.0ft$

Pond CWE Area $A_{CWE} := 0.67acre$

Pond top of bank elevation $TOB := 103.0ft$ Existing Low EOP = 103 ft

Top of Bank Area $A_{TOB} := 1.08 \cdot acre$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ (·acre·ft)	Linear Pond Storage (Vpl) $Vpl1_i =$ (·acre·ft)	Total wet pond storage (Vpond) $Vpond1_i =$ (·acre·ft)
0	98	0	0	0
1	99	0.67	0.041	0.711
2	100	1.34	0.164	1.504
3	101	2.01	0.369	2.379
4	102	2.68	0.656	3.336
5	103	3.35	1.025	4.375

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 98.56\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.858\ ft \cdot acre$

Required attenutation volume $Att_{req} := 2.17ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 2.46\ ft \cdot acre$

Stormwater Management Calculations
Basin 14

POND PROPERTIES, SMF 14B/FPC-14B

Water quality requirement, 0.5" over basin area

Basin Area $A_{basin} := 9.64acre$ $ReqWQ := A_{basin} \cdot 0.5in$ $ReqWQ = 0.40\ ft \cdot acre$

Stage Storage Calculations

Seasonal High Water Elevation $SHW := 95.0ft$ Note: SHW estimated based on 6' below BFE 101.4.

Pond CWE elevation $CWE := 96.0ft$

Pond CWE Area $A_{CWE} := 0.22acre$

Pond top of bank elevation $TOB := 103.0ft$ Existing Low EOP = 103 ft

Top of Bank Area $A_{TOB} := 0.92 \cdot acre$

Available storage depth $Depth := TOB - CWE$ $Depth = 7\ ft$

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

$stage_i =$ (ft)	$elev_i =$ (ft)	Vertical Pond Storage (Vpv) $Vpv1_i =$ (acre·ft)	Linear Pond Storage (Vpl) $Vpl1_i =$ (acre·ft)	Total wet pond storage (Vpond) $Vpond1_i =$ (acre·ft)
0	96	0	0	0
1	97	0.22	0.05	0.27
2	98	0.44	0.2	0.64
3	99	0.66	0.45	1.11
4	100	0.88	0.8	1.68
5	101	1.1	1.25	2.35
6	102	1.32	1.8	3.12
7	103	1.54	2.45	3.99

Top of attenuation pool $Att_{elev} := TOB - 1.5ft$

Water Quality volume stage $Stage_{WQ} := linterp(Vpond1, elev, ReqWQ)$ $Stage_{WQ} = 97.36\ ft$

Proposed storage volume at weir $Storage_{vol} := linterp\left(elev, Vpond1, Att_{elev}\right)$ $Storage_{vol} = 2.735\ ft \cdot acre$

Required attenutation volume $Att_{req} := 2.17ft \cdot acre$

Proposed attenutation volume $Att_{vol} := Storage_{vol} - ReqWQ$ $Att_{vol} = 2.33\ ft \cdot acre$

Floodplain Encroachment Calculation Summary
Table 4-2 Calculation Basis

Basin 1A

Column 1: Station 566+00.00 to 572+00.00 (North) (600') times 35' width of Floodplain Encroachment

Column 2: Volume = Encroachment area times depth of 1' (Based on estimated average of 0-2' fill below floodplain depth to Exist. Ground El.)

Basin 1B - Connected to Basin 1A

Column 1: Station 577+62.00 to 579+30.00 (South) (168') times 25' width of Floodplain Encroachment

Column 2: Volume = Encroachment area times depth of 0.5' (Based on estimated average of 0-1' fill below floodplain depth to Exist. Ground El.)

Basin 2A

Column 1: Station 628+00.00 to 641+50.00 (North) (1350') times 20' width of Floodplain Encroachment

Column 2: Volume = Encroachment area times depth of 1' (Based on estimated average of 0-2' fill below floodplain depth to Exist. Ground El.)

Basin 2B - Connected to Basin 2A

Column 1: Station 629+40.00 to 637+00.00 (South) (760') times 30' width of Floodplain Encroachment

Column 2: Volume = Encroachment area times depth of 1.0' (Based on estimated average of 0-2' fill below floodplain depth to Exist. Ground El.)

Basin 3A - Connected to Basin 3B

Column 1: Station 656+55.00 to 669+00.00 (North) (1245') times 20' width of Floodplain Encroachment

Column 2: Volume = Encroachment area times depth of 1.5' (Based on estimated average of 0-3' fill below floodplain depth to Exist. Ground El.)

Basin 3B

Column 1: Station 657+30.00 to 665+15.00 (South) (785') times 25' width of Floodplain Encroachment

Column 2: Volume = Encroachment area times depth of 0.75' (Based on estimated average of 0-1.5' fill below floodplain depth to Exist. Ground El.)

Basin 4 - Connected to Basin 3A

Column 1: Station 669+0.00 to 678+00.00 (North) (900') times 35' width of Floodplain Encroachment

Column 2: Volume = Encroachment area times depth of 2' (Based on estimated average of 0-4' fill below floodplain depth to Exist. Ground El.)

Basin 5A - Connected to Basin 5B

Column 1: Station 685+50.00 to 702+00.00 (North) (1650') times 35' width of Floodplain Encroachment

Column 2: Volume = Encroachment area times depth of 2.5' (Based on estimated average of 0-5.0' fill below floodplain depth to Exist. Ground El.)

Basin 5B

Column 1: Station 683+50.00 to 700+50.00 (South) (1700') times 30' width of Floodplain Encroachment

Column 2: Volume = Encroachment area times depth of 2.5' (Based on estimated average of 0-5' fill below floodplain depth to Exist. Ground El.)

Basin 6A - Connected to Basin 9

Column 1: Station 714+00.00 to 731+00.00 (North) (1700') times 30' width of Floodplain Encroachment

Column 2: Volume = Encroachment area times depth of 1.25' (Based on estimated average of 0-2.5' fill below floodplain depth to Exist. Ground El.)

Basin 6B - Connected to Basin 9

Column 1: Station 712+00.00 to 731+00.00 (South) (1900') times 20' width of Floodplain Encroachment

Column 2: Volume = Encroachment area times depth of 1.25' (Based on estimated average of 0-2.5' fill below floodplain depth to Exist. Ground El.)

Basin 7 - Connected to Basin 9

Column 1: Portion of basin limits within Floodplain Encroachment - measured at 5.94 acres

Column 2: Volume = Encroachment area times average depth of 4.25' (Based on estimated average of 0-8.5' fill below floodplain depth to Exist. Ground El.)

Basin 8 - Connected to Basin 9

Column 1: Portion of basin limits within Floodplain Encroachment - measured at 6.50 acres

Column 2: Volume = Encroachment area times average depth of 5.25' (Based on estimated average of 0-10.5' fill below floodplain depth to Exist. Ground El.)

Basin 9

Column 1: Portion of basin limits within Floodplain Encroachment - measured at 3.13 acres

Column 2: Volume = Encroachment area times average depth of 4.25' (Based on estimated average of 0-8.5' fill below floodplain depth to Exist. Ground El.)

Floodplain Encroachment Calculation Summary
Table 4-2 Calculation Basis

Basin 10A
- Column 1: Station 793+25.00 to 795+50.00 (North) (225') times 35' width of Floodplain Encroachment
- Column 2: Encroachment area times depth of 1.0' (Based on estimated average of 0-2.0' fill below floodplain depth to Exist. Ground El.)

Basin 10B - Connected to 10A
- Column 1: Station 793+07.00 to 797+15.00 (South) (408') times 30' width of Floodplain Encroachment
- Column 2: Volume = Encroachment area times depth of 2.0' (Based on estimated average of 0-4.0' fill below floodplain depth to Exist. Ground El.)

Basin 11
- Column 1: Station 829+35.00 to 836+50.00 (South) (715') times 40' width of Floodplain Encroachment
- Column 2: Volume = Encroachment area times depth of 3.0' (Based on estimated average of 0-6.0' fill below floodplain depth to Exist. Ground El.)

Basin 12A
- Column 1: Station 851+50.00 to 852+90.00 (North) (140') times 25' width of Floodplain Encroachment
- Column 2: Volume = Encroachment area times depth of 0.75' (Based on estimated average of 0-1.5' fill below floodplain depth to Exist. Ground El.)

Basin 12B - Connected to 12A
- Column 1: Station 853+40.00 to 854+50.00 (North) (110') times 15' width of Floodplain Encroachment
- Column 2: Volume = Encroachment area times depth of 0.75' (Based on estimated average of 0-1.5' fill below floodplain depth to Exist. Ground El.)

Basin 12C - Connected to 12B
- Column 1: Station 860+45.00 to 862+00.00 (North) (155') times 35' width of Floodplain Encroachment
- Column 2: Volume = Encroachment area times depth of 1.0' (Based on estimated average of 0-2.0' fill below floodplain depth to Exist. Ground El.)

Basin 12D - Connected to 12C
- Column 1: Station 862+45.00 to 866+35.00 (North) (390') times 25' width of Floodplain Encroachment
- Column 2: Volume = Encroachment area times depth of 1.0' (Based on estimated average of 0-2.0' fill below floodplain depth to Exist. Ground El.)

Basin 13A
- Column 1: Station 899+45.00 to 905+30.00 (North) (585') times 40' width of Floodplain Encroachment
- Column 2: Volume = Encroachment area times depth of 0.75' (Based on estimated average of 0-1.5' fill below floodplain depth to Exist. Ground El.)

Basin 13B - Connected to 13C
- Column 1: Station 888+20.00 to 892+65.00 (South) (445') times 45' width of Floodplain Encroachment
- Column 2: Volume = Encroachment area times depth of 1.5' (Based on estimated average of 0-3' fill below floodplain depth to Exist. Ground El.)

Basin 13C
- Column 1: Station 895+00.00 to 897+00.00 (South) (200') times 20' width of Floodplain Encroachment
- Column 2: Volume = Encroachment area times depth of 1.25' (Based on estimated average of 0-2.5' fill below floodplain depth to Exist. Ground El.)

Basin 13D
- Column 1: Station 900+20.00 to 904+85.00 (South) (465') times 30' width of Floodplain Encroachment
- Column 2: Volume = Encroachment area times depth of 1.5' (Based on estimated average of 0-3.0' fill below floodplain depth to Exist. Ground El.)

Basin 14A
- Column 1: Station 925+00.00 to 928+35.00 (North) (335') times 30' width of Floodplain Encroachment
- Column 2: Volume = Encroachment area times depth of 1.5' (Based on estimated average of 0-3.0' fill below floodplain depth to Exist. Ground El.)

Basin 14B - Connected to 14A
- Column 1: Station 928+35.00 to 930+05.00 (North) (170') times 45' width of Floodplain Encroachment
- Column 2: Volume = Encroachment area times depth of 1.25' (Based on estimated average of 0-2.5' fill below floodplain depth to Exist. Ground El.)

Basin 14C - Connected to 14A
- Column 1: Station 926+50.00 to 927+72.00 (South) (122') times 30' width of Floodplain Encroachment
- Column 2: Volume = Encroachment area times depth of 0.75' (Based on estimated average of 0-1.5' fill below floodplain depth to Exist. Ground El.)

Floodplain Calculations FPC-1A

```
*****************************************************************
**                              **
** Object to Object Volume Report -- Wed Dec 19 09:40:46 2018
**                              **
** From Object <Exist Ground 1> to Object <FPC-1A>
**                              **
** Prismoidal Volume
**                              **
**                              **
*****************************************************************
**                              **
**  Total Cut =             4226.054 Cubic Yards
**  Total Fill =            0.063 Cubic Yards
**  Area =                                     3589.960 Sq Yards
**  Balance =                                  4225.991 Cubic Yards
**                              **
** Elevation Range Used
** 88.000 to 89.000         Cut = 808.072      Fill = 0.000
** 89.000 to 90.000         Cut = 896.809      Fill = 0.000
** 90.000 to 91.000         Cut = 988.745      Fill = 0.000
** 91.000 to 92.000         Cut = 851.734      Fill = 0.003
** 92.000 to 92.100         Cut = 62.502       Fill = 0.000
**                              **
** No Quantity Depth Used
*****************************************************************
```

Floodplain compensation between elevation 91.0 to 92.1

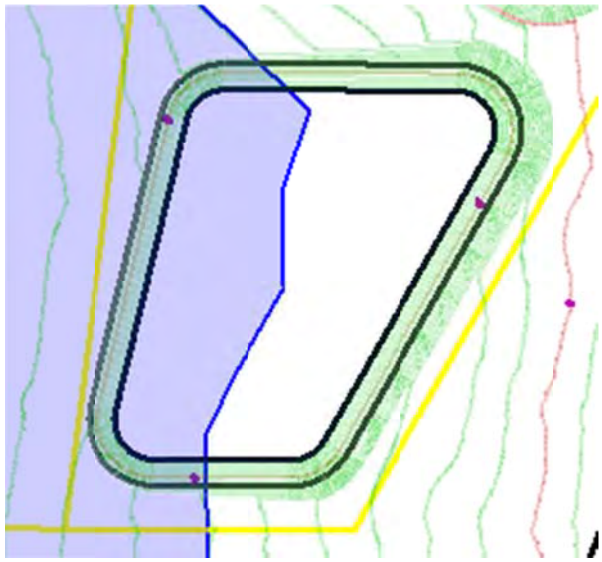
Required Floodplain Compensation

0.53 AC-FT

Proposed Floodplain Compensation

0.57 AC-FT

FPC-1A Grading Schematic



Floodplain Calculations FPC-1B

```
***************************************************************
**                            **
** Object to Object Volume Report -- Wed Dec 19 09:22:52 2018
**                            **
** From Object <Exist Ground 1> to Object <FPC-1B>
**                            **
** Prismoidal Volume
**                            **
**                            **
***************************************************************
**                            **
**  Total Cut =               5411.896 Cubic Yards
**  Total Fill =              0.026 Cubic Yards
**  Area =                                        3714.340 Sq Yards
**  Balance =                                     5411.870 Cubic Yards
**                            **
** Elevation Range Used
** 92.000 to 93.000           Cut = 676.263       Fill = 0.000
** 93.000 to 94.000           Cut = 777.909       Fill = 0.000
** 94.000 to 95.000           Cut = 886.646       Fill = 0.013
** 95.000 to 96.000           Cut = 976.854       Fill = 0.000
** 96.000 to 96.300           Cut = 295.243       Fill = 0.010
**                            **
** No Quantity Depth Used
***************************************************************
```

Floodplain compensation between elevation 95.0 to 96.3

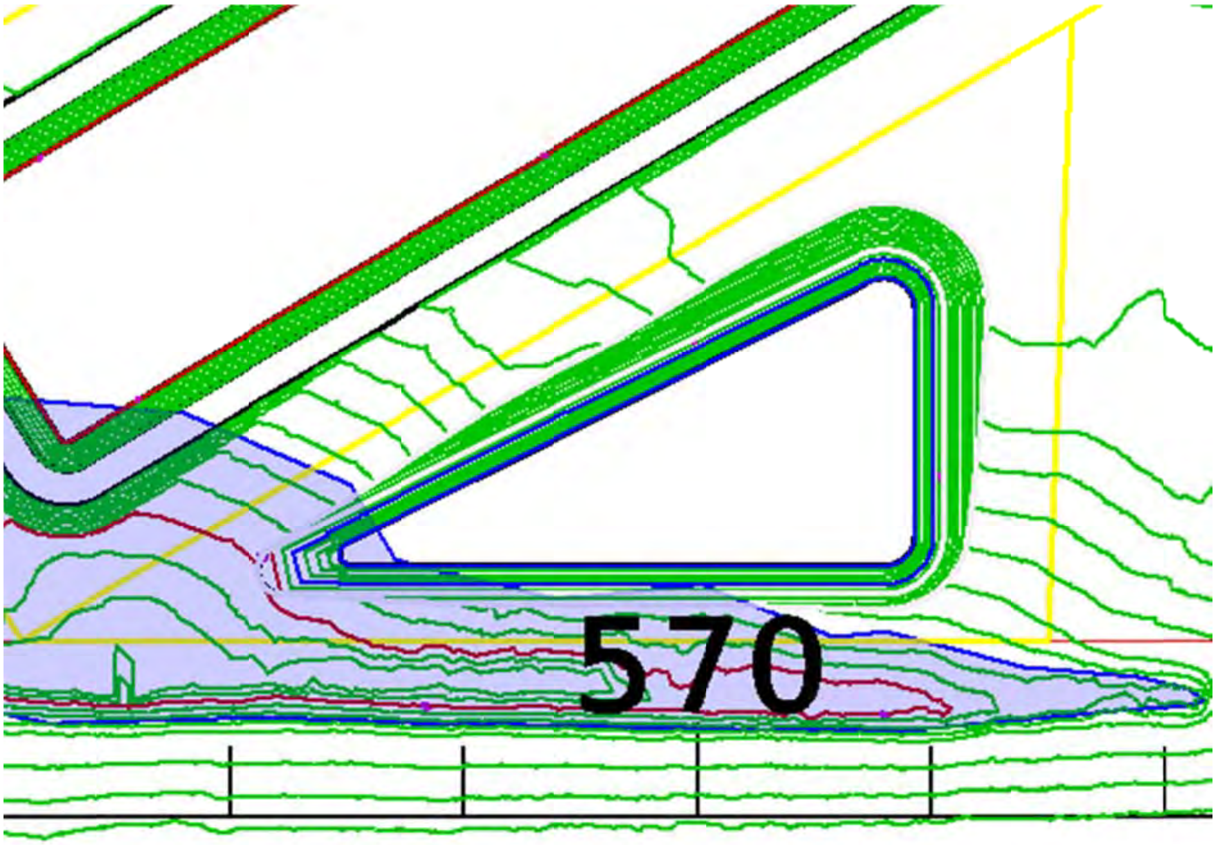
Required Floodplain Compensation

0.53 AC-FT

Proposed Floodplain Compensation

0.79 AC-FT

FPC-1B Grading Schematic



Floodplain Calculations FPC-1C

****

**	**	
** Object to Object Volume Report -- Wed Dec 19 09:29:14 2018		
**	**	
** From Object <Exist Ground 1> to Object <FPC-1C>		
**	**	
** Prismoidal Volume		
**	**	
**	**	
**		
**	**	
** Total Cut =	4580.813 Cubic Yards	
** Total Fill =	0.320 Cubic Yards	
** Area =		3736.042 Sq Yards
** Balance =		4580.493 Cubic Yards
**	**	
** Elevation Range Used		
** 88.000 to 89.000	Cut = 884.988	Fill = 0.000
** 89.000 to 90.000	Cut = 974.971	Fill = 0.000
** 90.000 to 91.000	Cut = 1066.786	Fill = 0.310
** 91.000 to 92.000	Cut = 983.038	Fill = 0.001
** 92.000 to 92.100	Cut = 79.246	Fill = 0.000
**	**	
** No Quantity Depth Used		
**		
	Floodplain compensation between elevation 91.0 to 92.1	

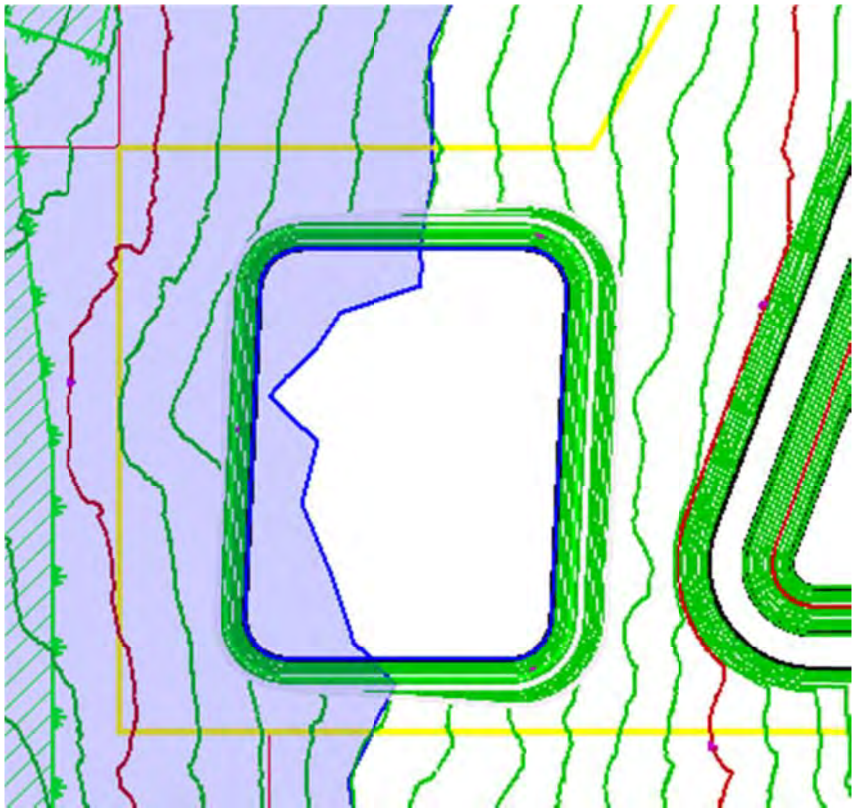
Required Floodplain Compensation

0.53 AC-FT

Proposed Floodplain Compensation

0.66 AC-FT

FPC-1C Grading Schematic



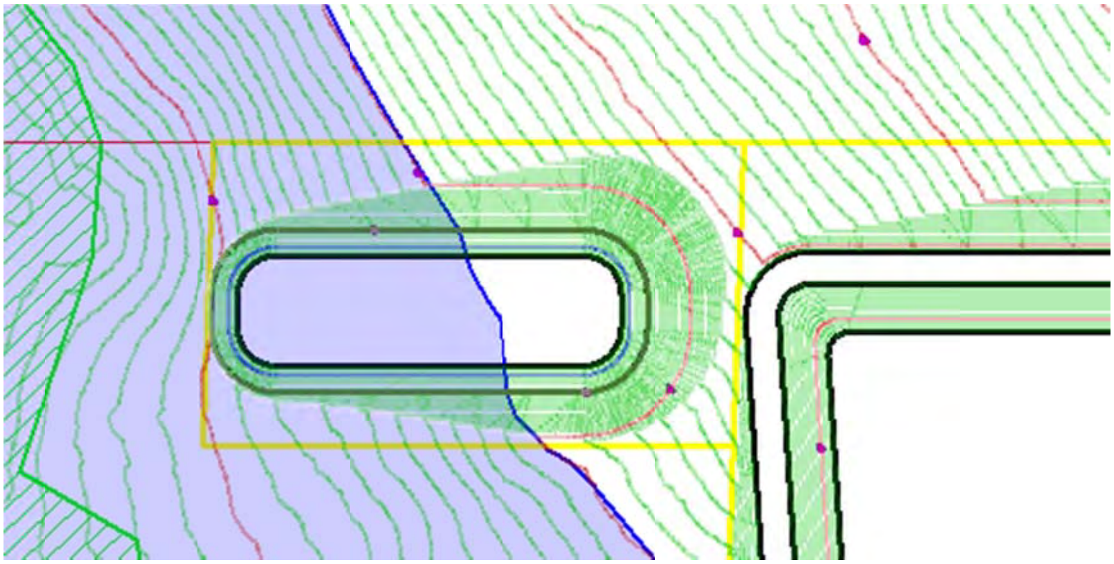
Floodplain Calculations FPC-2A

```
****************************************************************
**                              **
** Object to Object Volume Report -- Wed Dec 19 11:10:15 2018
**                              **
** From Object <Exist Ground 1> to Object <FPC-2A>
**                              **
** Prismoidal Volume
**                              **
**                              **
****************************************************************
**                              **
**  Total Cut =              4417.747 Cubic Yards
**  Total Fill =             0.077 Cubic Yards
**  Area =                                      2702.029 Sq Yards
**  Balance =                                   4417.670 Cubic Yards
**                              **
** Elevation Range Used
** 77.000 to 78.000          Cut = 354.079          Fill = 0.000
** 78.000 to 79.000          Cut = 420.482          Fill = 0.000
** 79.000 to 80.000          Cut = 490.464          Fill = 0.074
** 80.000 to 81.000          Cut = 532.136          Fill = 0.000
** 81.000 to 82.000          Cut = 521.424          Fill = 0.002
** 82.000 to 83.000          Cut = 491.322          Fill = 0.001
** 83.000 to 84.000          Cut = 449.905          Fill = 0.000
** 84.000 to 85.000          Cut = 395.625          Fill = 0.000
** 85.000 to 85.100          Cut = 36.147           Fill = 0.000
**                              **
** No Quantity Depth Used
****************************************************************
```

Floodplain compensation between elevation 80.0 to 85.1

Required Floodplain Compensation
1.14 AC-FT
Proposed Floodplain Compensation
1.50 AC-FT

FPC-2A Grading Schematic



Floodplain Calculations FPC-2B

****

** **

** Object to Object Volume Report -- Wed Dec 19 10:40:46 2018

** **

** From Object <Exist Ground 1> to Object <FPC-2B>

** **

** Prismoidal Volume

** **

** **

****

** **

** Total Cut =	10875.066 Cubic Yards	
** Total Fill =	107.462 Cubic Yards	
** Area =		9293.423 Sq Yards
** Balance =		10767.604 Cubic Yards
**	**	
** Elevation Range Used		
** 81.000 to 82.000	Cut = 2260.853	Fill = 0.945
** 82.000 to 83.000	Cut = 2397.598	Fill = 60.776
** 83.000 to 84.000	Cut = 2263.313	Fill = 45.565
** 84.000 to 85.000	Cut = 1869.563	Fill = 0.007
** 85.000 to 85.100	Cut = 142.864	Fill = 0.000

** **

** No Quantity Depth Used

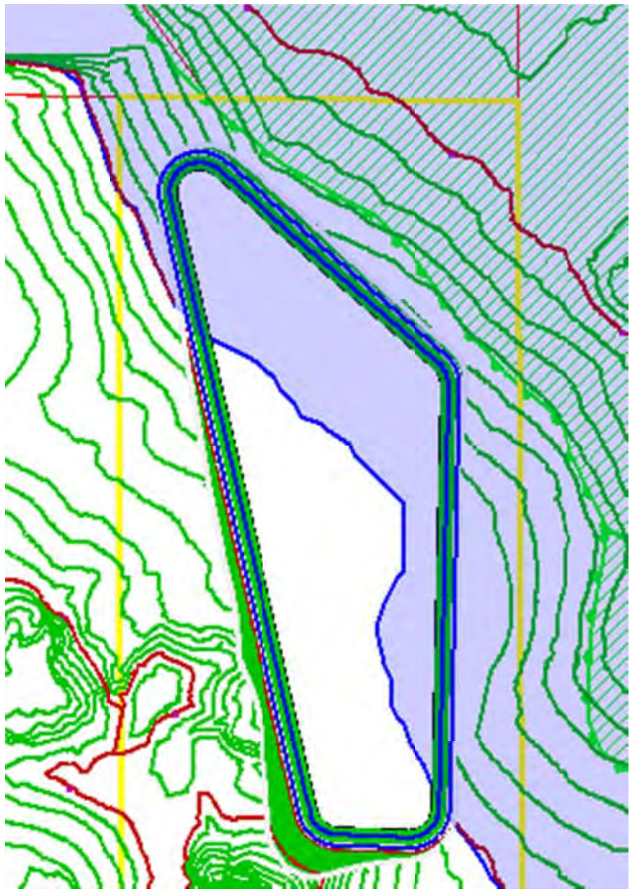
****

Floodplain compensation between elevation 84.0 to 85.1

Required Floodplain Compensation
1.14 AC-FT

Proposed Floodplain Compensation
1.25 AC-FT

FPC-2B Grading Schematic



Floodplain Calculations FPC-2C

****
** **
** Object to Object Volume Report -- Wed Dec 19 11:10:55 2018
** **
** From Object <Exist Ground 1> to Object <FPC-2C>
** **
** Prismoidal Volume
** **
** **
****
** **

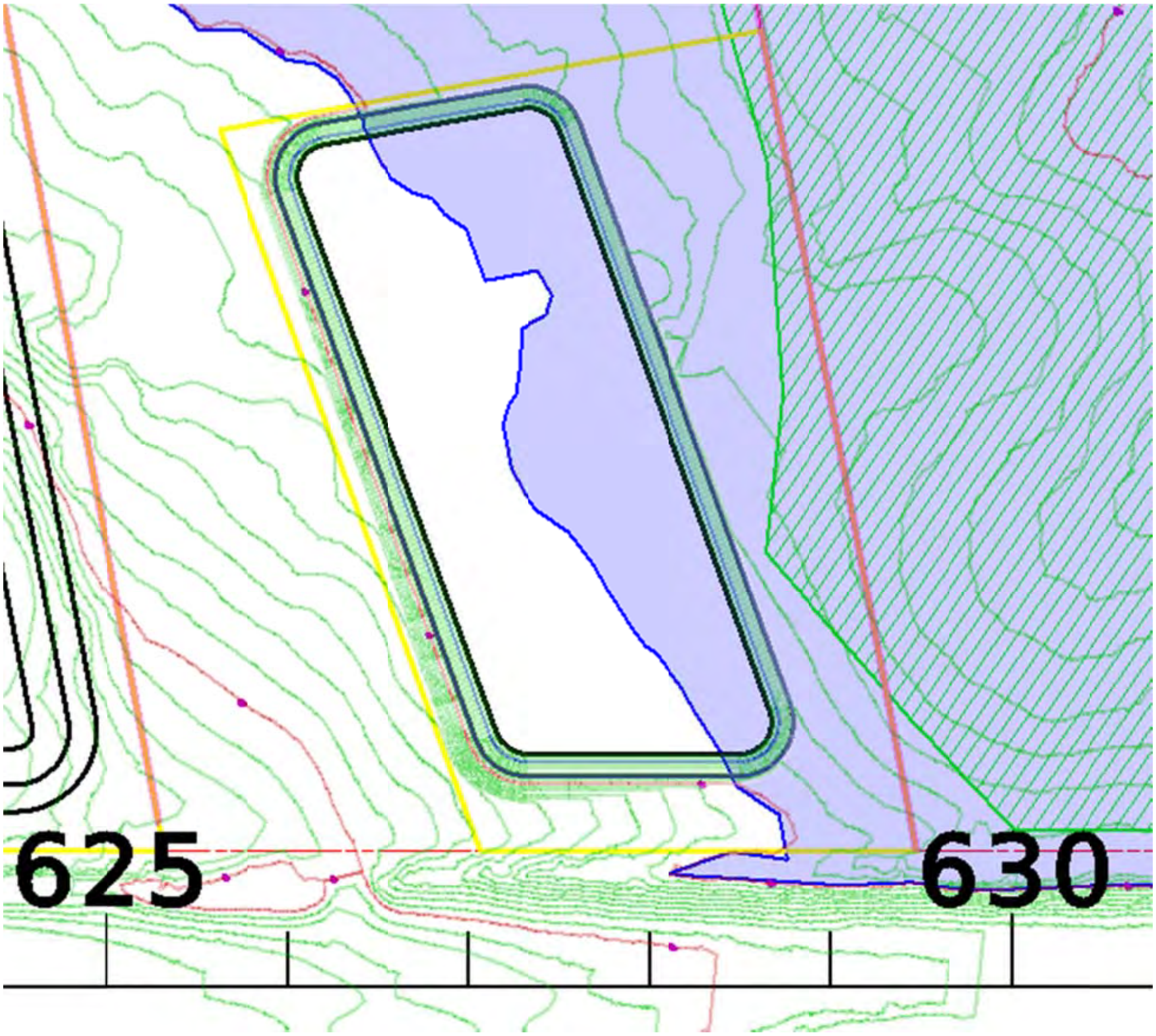
** Total Cut =	9772.787 Cubic Yards	
** Total Fill =	9.466 Cubic Yards	
** Area =		8089.985 Sq Yards
** Balance =		9763.321 Cubic Yards
**	**	
** Elevation Range Used		
** 81.000 to 82.000	Cut = 2054.769	Fill = 0.000
** 82.000 to 83.000	Cut = 2207.163	Fill = 0.000
** 83.000 to 84.000	Cut = 2300.737	Fill = 9.462
** 84.000 to 85.000	Cut = 1856.654	Fill = 0.000
** 85.000 to 85.100	Cut = 137.651	Fill = 0.000
**	**	

** No Quantity Depth Used
****

Floodplain compensation between elevation 84.0 to 85.1

Required Floodplain Compensation
1.14 AC-FT
Proposed Floodplain Compensation
1.24 AC-FT

FPC-2C Grading Schematic



Floodplain Calculations FPC-3-4A

****
** **
** Object to Object Volume Report -- Wed Dec 19 10:41:36 2018
** **
** From Object <Exist Ground 1> to Object <FPC-3-4A>
** **
** Prismoidal Volume
** **
** **
****
** **

** Total Cut =	25392.437 Cubic Yards	
** Total Fill =	54.080 Cubic Yards	
** Area =		11990.780 Sq Yards
** Balance =		25338.357 Cubic Yards
**	**	
** Elevation Range Used		
** 73.000 to 74.000	Cut = 2765.321	Fill = 0.001
** 74.000 to 75.000	Cut = 2860.125	Fill = 34.239
** 75.000 to 76.000	Cut = 2969.694	Fill = 19.829
** 76.000 to 77.000	Cut = 3033.125	Fill = 0.003
** 77.000 to 77.500	Cut = 1520.641	Fill = 0.000
**	**	

** No Quantity Depth Used
****

Floodplain compensation between elevation 76.0 to 77.5

Required Floodplain Compensation
2.65 AC-FT
Proposed Floodplain Compensation
2.82 AC-FT

FPC-3-4A Grading Schematic

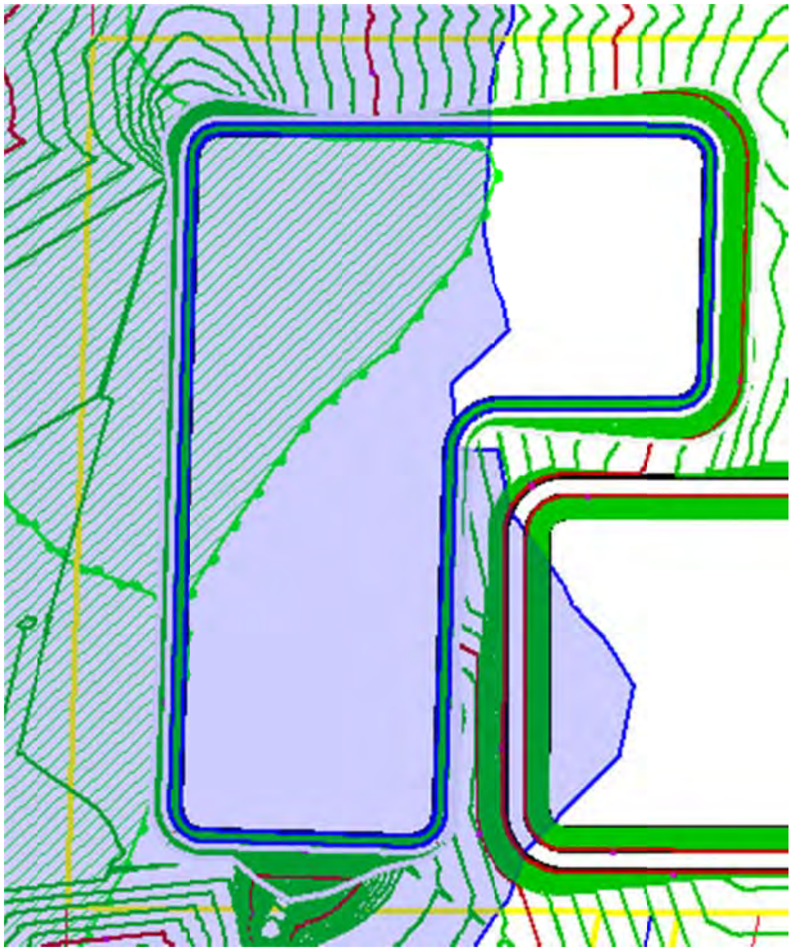
Floodplain Calculations FPC-3-4B

```
***************************************************************
**                              **
** Object to Object Volume Report -- Wed Dec 19 10:42:36 2018
**                              **
** From Object <Exist Ground 1> to Object <FPC-3-4B>
**                              **
** Prismoidal Volume
**                              **
**                              **
***************************************************************
**                              **
**  Total Cut =        18685.567 Cubic Yards
**  Total Fill =       1397.656 Cubic Yards
**  Area =                                 20307.285 Sq Yards
**  Balance =                              17287.910 Cubic Yards
**                              **
** Elevation Range Used
** 72.000 to 73.000     Cut = 4735.811     Fill = 171.061
** 73.000 to 74.000     Cut = 3146.833     Fill = 364.864
** 74.000 to 75.000     Cut = 2640.957     Fill = 144.926
** 75.000 to 76.000     Cut = 2187.603     Fill = 0.000
** 76.000 to 77.000     Cut = 1785.698     Fill = 0.000
** 77.000 to 78.000     Cut = 1476.376     Fill = 0.000
** 78.000 to 78.200     Cut = 259.212      Fill = 0.000
**                              **
** No Quantity Depth Used
***************************************************************
```

Floodplain compensation between elevation 75.0 to 78.2

Required Floodplain Compensation
2.65 AC-FT
Proposed Floodplain Compensation
3.54 AC-FT

FPC-3-4B Grading Schematic



Floodplain Calculations FPC-3-4C

****

** **

** Object to Object Volume Report -- Wed Dec 19 11:15:46 2018

** **

** From Object <Exist Ground 1> to Object <FPC-3-4C>

** **

** Prismoidal Volume

** **

** **

****

** **

** Total Cut =	14325.502 Cubic Yards	
** Total Fill =	17.826 Cubic Yards	
** Area =		7677.408 Sq Yards
** Balance =		14307.676 Cubic Yards
**	**	
** Elevation Range Used		
** 72.000 to 73.000	Cut = 1284.098	Fill = 0.000
** 73.000 to 74.000	Cut = 1448.395	Fill = 3.783
** 74.000 to 75.000	Cut = 1562.700	Fill = 14.029
** 75.000 to 76.000	Cut = 1530.225	Fill = 0.005
** 76.000 to 77.000	Cut = 1396.270	Fill = 0.000
** 77.000 to 78.000	Cut = 1302.374	Fill = 0.000
** 78.000 to 78.200	Cut = 253.296	Fill = 0.002

** **

** No Quantity Depth Used

****

Floodplain compensation between elevation 75.0 to 78.2

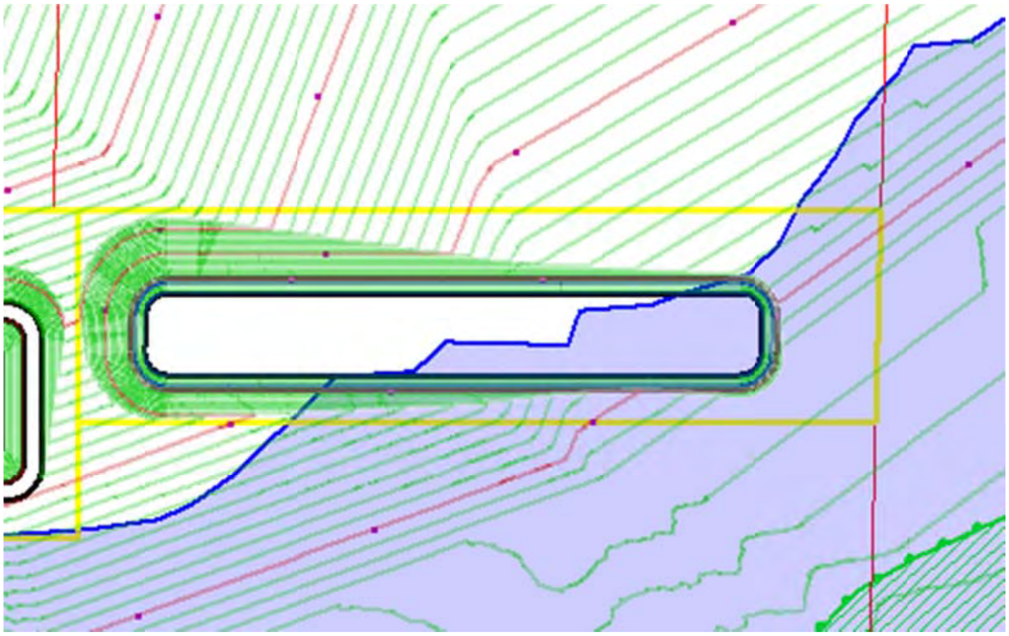
Required Floodplain Compensation

2.65 AC-FT

Proposed Floodplain Compensation

2.78 AC-FT

FPC-3-4C Grading Schematic



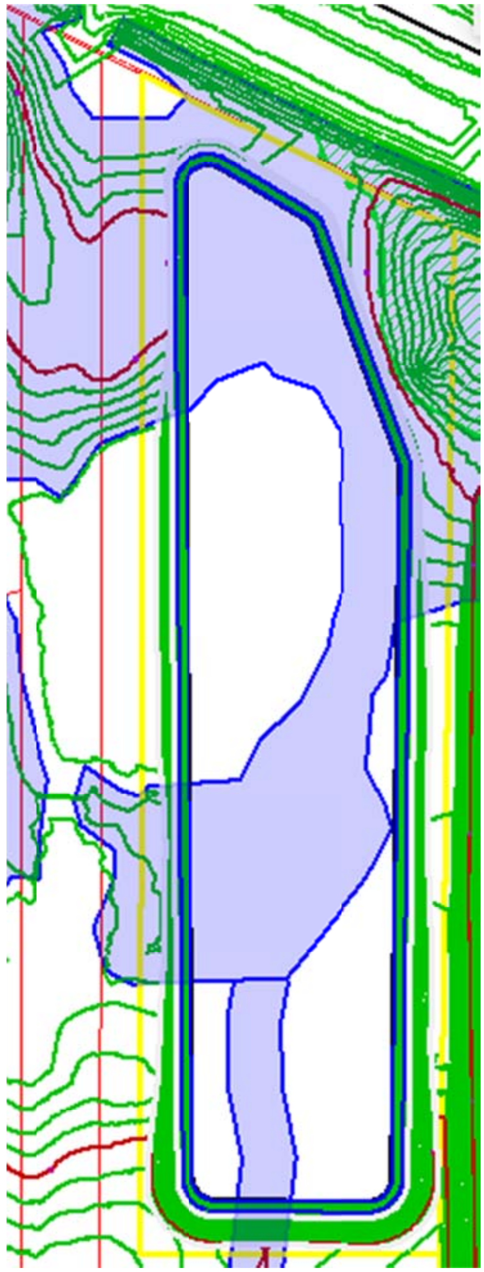
Floodplain Calculations FPC-5A

```
*****************************************************************
**                              **
** Object to Object Volume Report -- Wed Dec 19 10:45:31 2018
**                              **
** From Object <Exist Ground 1> to Object <FPC-5A>
**                              **
** Prismoidal Volume
**                              **
**                              **
*****************************************************************
**                              **
**  Total Cut =              27711.317 Cubic Yards
**  Total Fill =             0.058 Cubic Yards
**  Area =                                       17147.158 Sq Yards
**  Balance =                                    27711.259 Cubic Yards
**                              **
** Elevation Range Used
** 72.000 to 73.000           Cut = 4288.108       Fill = 0.000
** 73.000 to 74.000           Cut = 4553.707       Fill = 0.000
** 74.000 to 75.000           Cut = 4823.024       Fill = 0.000
** 75.000 to 76.000           Cut = 4877.421       Fill = 0.006
** 76.000 to 77.000           Cut = 4144.824       Fill = 0.023
** 77.000 to 77.400           Cut = 1340.450       Fill = 0.013
**                              **
** No Quantity Depth Used
*****************************************************************
```

Floodplain compensation between elevation 75.0 to 77.4

Required Floodplain Compensation
6.24 AC-FT
Proposed Floodplain Compensation
6.42 AC-FT

FPC-5A Grading Schematic



Floodplain Calculations FPC-5B

****

** **

** Object to Object Volume Report -- Wed Dec 19 10:47:24 2018

** **

** From Object <Exist Ground 1> to Object <FPC-5B>

** **

** Prismoidal Volume

** **

** **

****

** **

** Total Cut =	29014.984 Cubic Yards	
** Total Fill =	4.712 Cubic Yards	
** Area =		16818.253 Sq Yards
** Balance =		29010.272 Cubic Yards
**	**	
** Elevation Range Used		
** 72.000 to 73.000	Cut = 4195.523	Fill = 0.000
** 73.000 to 74.000	Cut = 4431.431	Fill = 0.000
** 74.000 to 75.000	Cut = 4655.933	Fill = 4.644
** 75.000 to 76.000	Cut = 4660.137	Fill = 0.000
** 76.000 to 77.000	Cut = 4236.024	Fill = 0.005
** 77.000 to 77.400	Cut = 1411.460	Fill = 0.001
**	**	

** No Quantity Depth Used

****

Floodplain compensation between elevation 75.0 to 77.4

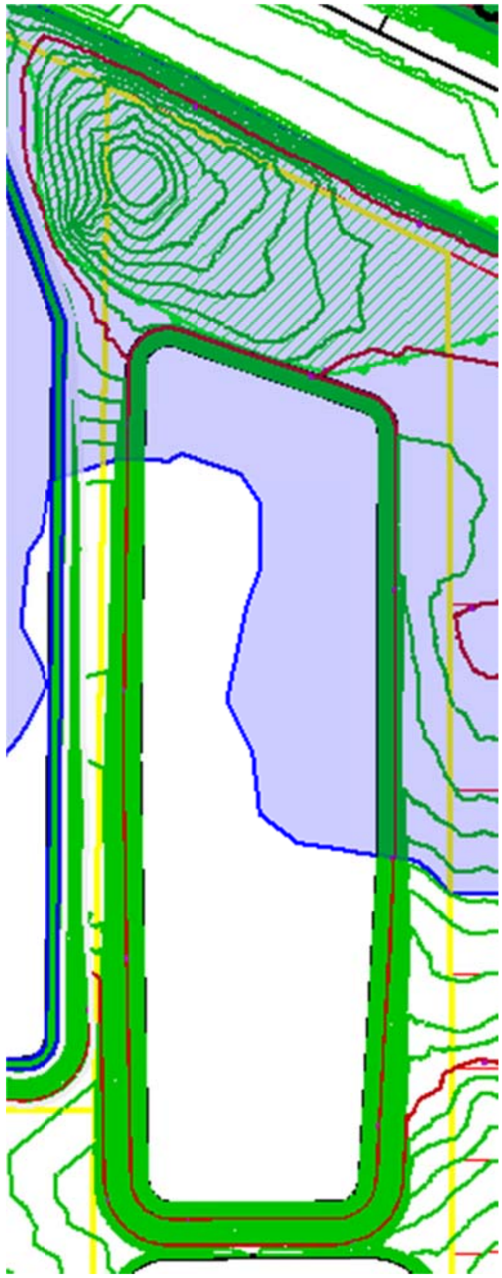
Required Floodplain Compensation

6.24 AC-FT

Proposed Floodplain Compensation

6.39 AC-FT

FPC-5B Grading Schematic



Floodplain Calculations FPC-5C

****

** **

** Object to Object Volume Report -- Wed Dec 19 11:16:46 2018

** **

** From Object <Exist Ground 1> to Object <FPC-5C>

** **

** Prismoidal Volume

** **

** **

****

**	**	
** Total Cut =	24532.250 Cubic Yards	
** Total Fill =	0.035 Cubic Yards	
** Area =		11895.286 Sq Yards
** Balance =		24532.215 Cubic Yards
**	**	
** Elevation Range Used		
** 70.000 to 71.000	Cut = 1925.022	Fill = 0.000
** 71.000 to 72.000	Cut = 2143.239	Fill = 0.000
** 72.000 to 73.000	Cut = 2365.173	Fill = 0.000
** 73.000 to 74.000	Cut = 2588.143	Fill = 0.000
** 74.000 to 75.000	Cut = 2663.214	Fill = 0.011
** 75.000 to 76.000	Cut = 2572.342	Fill = 0.000
** 76.000 to 77.000	Cut = 2338.351	Fill = 0.000
** 77.000 to 78.000	Cut = 2017.450	Fill = 0.003
** 78.000 to 78.200	Cut = 365.007	Fill = 0.005
**	**	

** No Quantity Depth Used

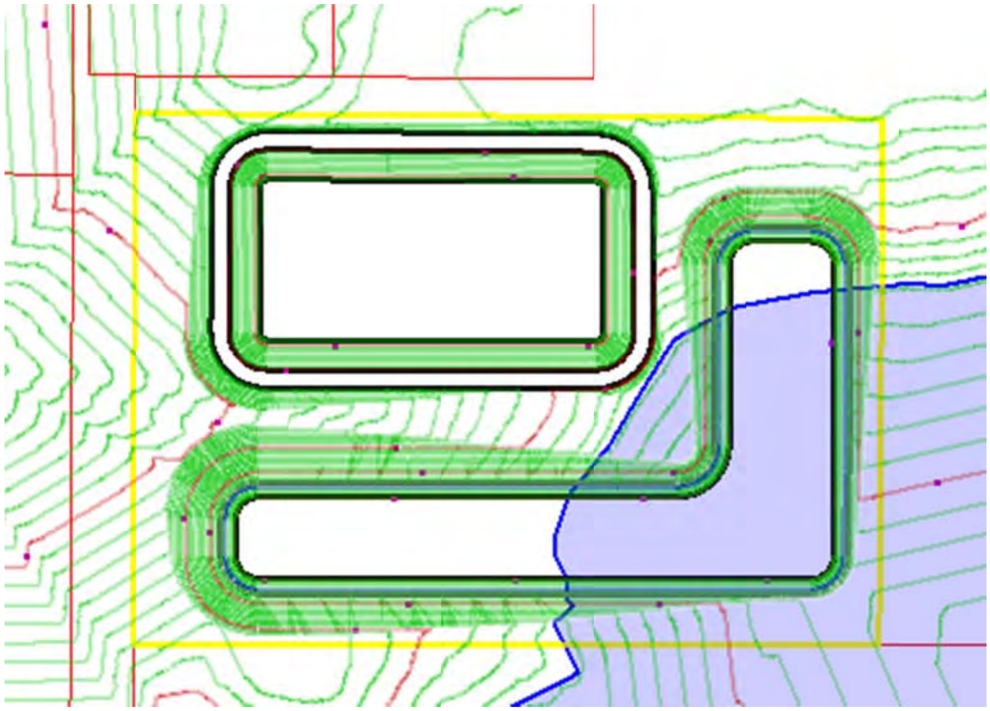
****

Floodplain compensation between elevation 73.0 to 78.2

Required Floodplain Compensation
6.24 AC-FT

Proposed Floodplain Compensation
7.78 AC-FT

FPC-5C Grading Schematic



Floodplain Calculations FPC-6-9A

****
** **
** Object to Object Volume Report -- Wed Dec 19 11:17:46 2018
** **
** From Object <Exist Ground 1> to Object <FPC-6-9A>
** **
** Prismoidal Volume
** **
** **
****
** **

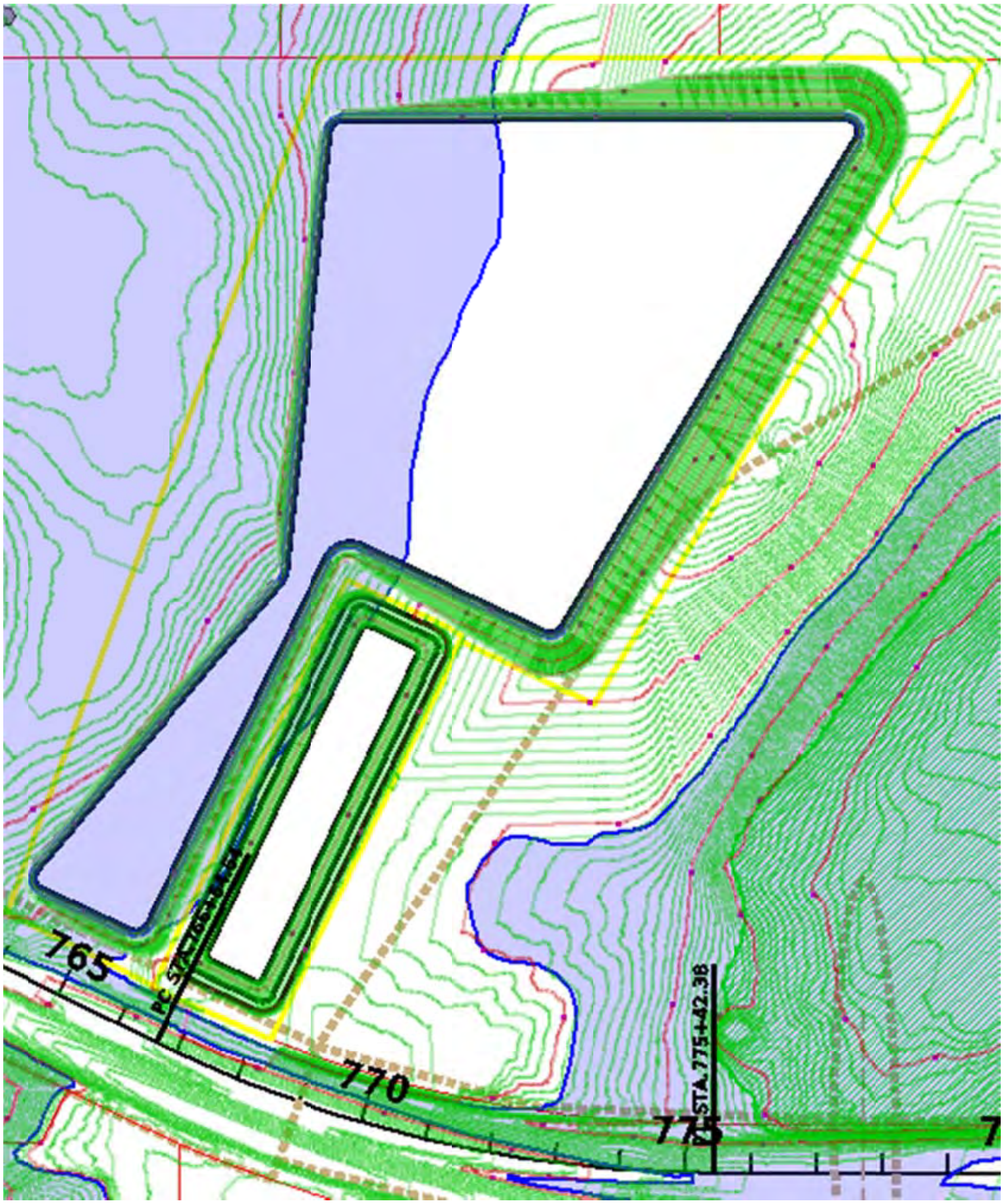
** Total Cut =	287010.868 Cubic Yards	
** Total Fill =	568.223 Cubic Yards	
** Area =		79381.477 Sq Yards
** Balance =		286442.645 Cubic Yards
**	**	
** Elevation Range Used		
** 64.000 to 65.000	Cut = 19325.172	Fill = 115.403
** 65.000 to 66.000	Cut = 19682.487	Fill = 281.440
** 66.000 to 67.000	Cut = 19458.075	Fill = 147.568
** 67.000 to 68.000	Cut = 18832.424	Fill = 0.000
** 68.000 to 69.000	Cut = 18120.827	Fill = 0.000
** 69.000 to 70.000	Cut = 17410.866	Fill = 0.001
** 70.000 to 71.000	Cut = 16673.267	Fill = 0.002
** 71.000 to 72.000	Cut = 15961.125	Fill = 0.000
** 72.000 to 73.000	Cut = 15033.299	Fill = 0.012
** 73.000 to 74.000	Cut = 14220.298	Fill = 0.002
** 74.000 to 74.500	Cut = 6832.724	Fill = 0.000
**	**	

** No Quantity Depth Used
****

Floodplain compensation between elevation 67.0 to 74.5

Required Floodplain Compensation
75.23 AC-FT
Proposed Floodplain Compensation
76.29 AC-FT

FPC-6-9A Grading Schematic



Floodplain Calculations FPC-6-9B

****

** **

** Object to Object Volume Report -- Wed Dec 19 10:54:16 2018

** **

** From Object <Exist Ground 1> to Object <FPC-6-9B>

** **

** Prismoidal Volume

** **

** **

****

** **

** Total Cut =	264671.617 Cubic Yards	
** Total Fill =	26.145 Cubic Yards	
** Area =		72405.995 Sq Yards
** Balance =		264645.472 Cubic Yards
**	**	
** Elevation Range Used		
** 64.000 to 65.000	Cut = 18642.559	Fill = 0.000
** 65.000 to 66.000	Cut = 19081.430	Fill = 12.210
** 66.000 to 67.000	Cut = 19427.659	Fill = 13.752
** 67.000 to 68.000	Cut = 19620.399	Fill = 0.008
** 68.000 to 69.000	Cut = 19650.458	Fill = 0.032
** 69.000 to 70.000	Cut = 19592.008	Fill = 0.003
** 70.000 to 71.000	Cut = 19486.477	Fill = 0.001
** 71.000 to 72.000	Cut = 18351.533	Fill = 0.040
** 72.000 to 73.000	Cut = 15940.075	Fill = 0.008
** 73.000 to 74.000	Cut = 13220.472	Fill = 0.018
** 74.000 to 74.500	Cut = 5621.843	Fill = 0.000
**	**	

** No Quantity Depth Used

****

Floodplain compensation between elevation 67.0 to 74.5

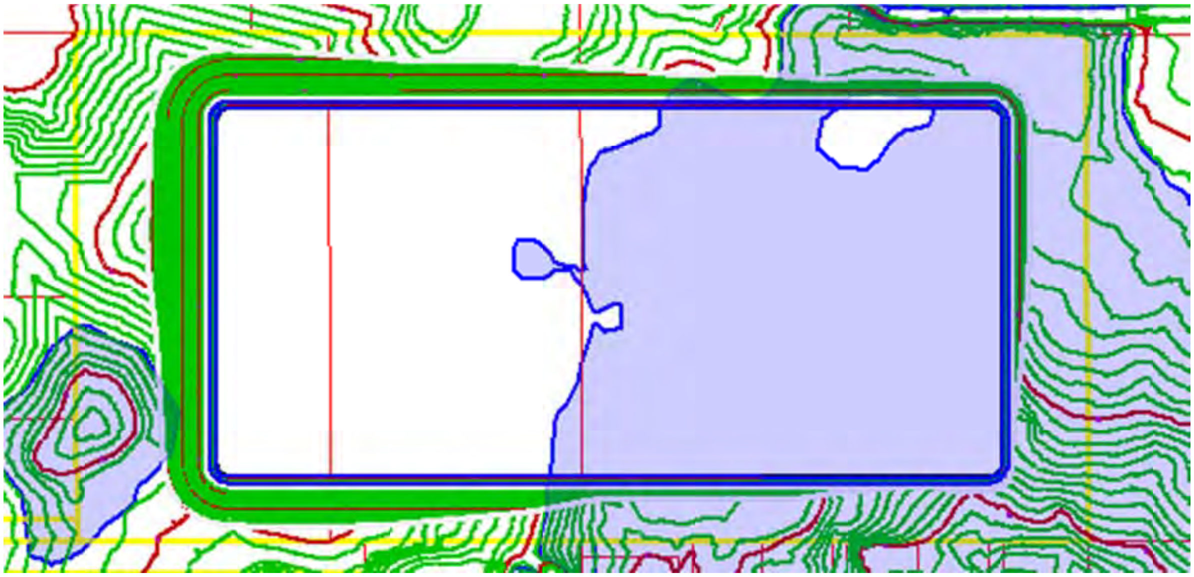
Required Floodplain Compensation

75.23 AC-FT

Proposed Floodplain Compensation

81.50 AC-FT

FPC-6-9B Grading Schematic



Floodplain Calculations FPC-6-9C

****
** **
** Object to Object Volume Report -- Wed Dec 19 10:54:46 2018
** **
** From Object <Exist Ground 1> to Object <FPC-6-9C>
** **
** Prismoidal Volume
** **
** **
****
** **
** Total Cut = 304075.898 Cubic Yards
** Total Fill = 9.713 Cubic Yards
** Area = 63178.845 Sq Yards
** Balance = 304066.186 Cubic Yards
** **
** Elevation Range Used

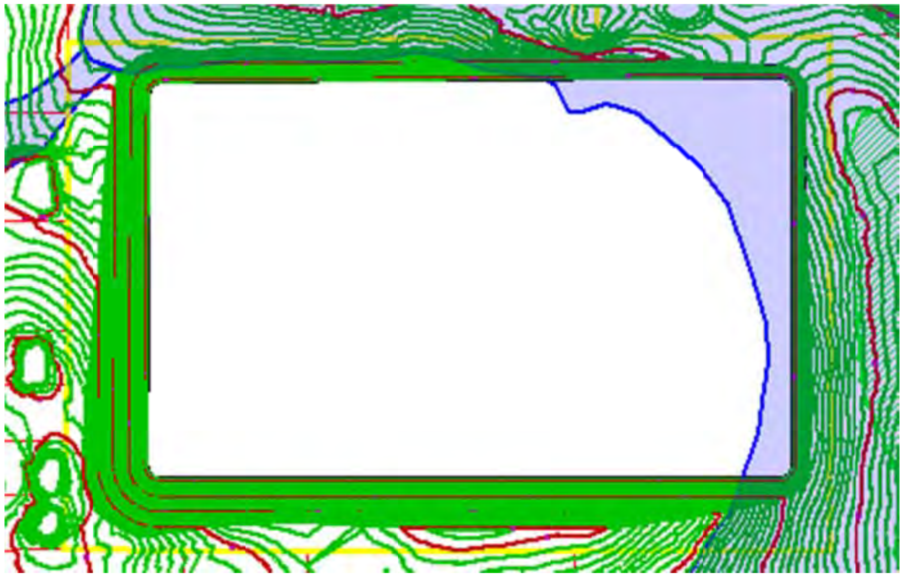
** 64.000 to 65.000	Cut = 16593.512	Fill = 0.000
** 65.000 to 66.000	Cut = 16998.368	Fill = 0.186
** 66.000 to 67.000	Cut = 17372.038	Fill = 9.439
** 67.000 to 68.000	Cut = 17625.084	Fill = 0.000
** 68.000 to 69.000	Cut = 17807.622	Fill = 0.000
** 69.000 to 70.000	Cut = 17904.906	Fill = 0.006
** 70.000 to 71.000	Cut = 17862.516	Fill = 0.022
** 71.000 to 72.000	Cut = 17757.429	Fill = 0.003
** 72.000 to 73.000	Cut = 17642.327	Fill = 0.000
** 73.000 to 74.000	Cut = 17461.919	Fill = 0.007
** 74.000 to 74.500	Cut = 8561.255	Fill = 0.000

** **
** No Quantity Depth Used
****

Floodplain compensation between elevation 67.0 to 74.5

Required Floodplain Compensation
75.23 AC-FT
Proposed Floodplain Compensation
82.20 AC-FT

FPC-6-9C Grading Schematic



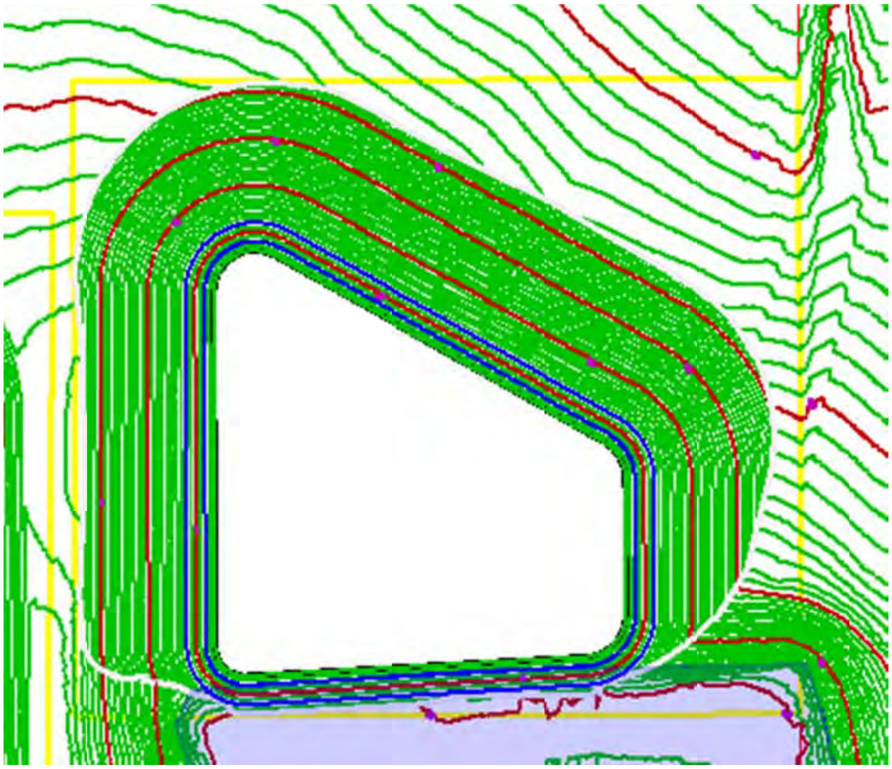
Floodplain Calculations FPC-10A

```
****************************************************************
**                                  **
** Object to Object Volume Report -- Wed Dec 19 10:57:17 2018
**                                  **
** From Object <Exist Ground 1> to Object <FPC-10A>
**                                  **
** Prismoidal Volume
**                                  **
**                                  **
****************************************************************
**                                  **
**  Total Cut =            14795.617 Cubic Yards
**  Total Fill =           1.939 Cubic Yards
**  Area =                                   3583.274 Sq Yards
**  Balance =                                14793.677 Cubic Yards
**                                  **
** Elevation Range Used
** 63.000 to 64.000        Cut = 948.654        Fill = 0.000
** 64.000 to 65.000        Cut = 1044.237       Fill = 0.000
** 65.000 to 66.000        Cut = 1141.075       Fill = 1.939
** 66.000 to 67.000        Cut = 1166.189       Fill = 0.000
** 67.000 to 67.100        Cut = 115.142        Fill = 0.000
**                                  **
** No Quantity Depth Used
****************************************************************
```

Floodplain compensation between elevation 66.0 to 67.1

Required Floodplain Compensation
0.74 AC-FT
Proposed Floodplain Compensation
0.79 AC-FT

FPC-10A Grading Schematic



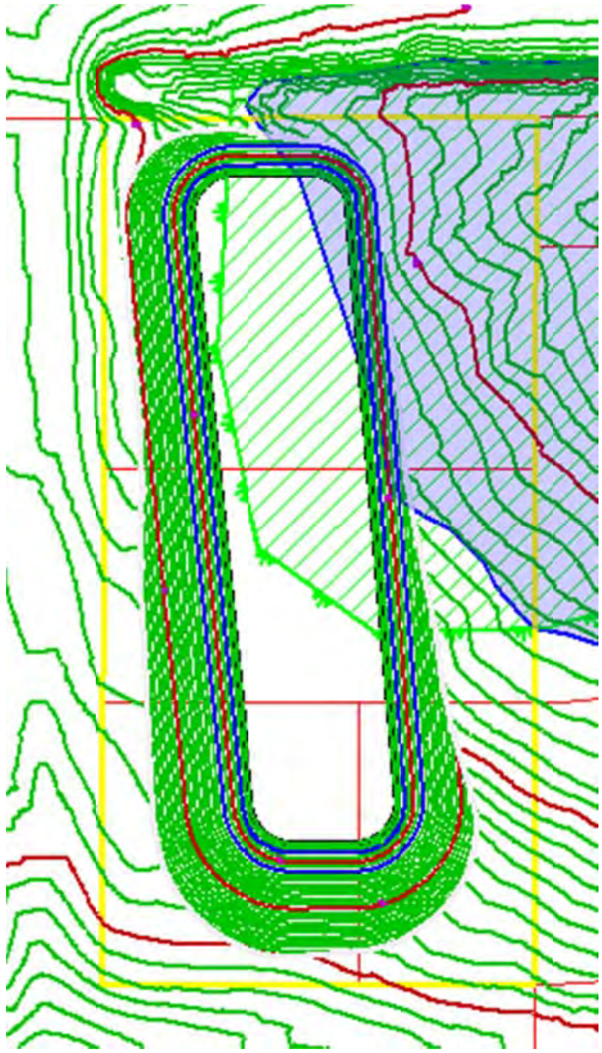
Floodplain Calculations FPC-10B

```
*****************************************************************
**                               **
** Object to Object Volume Report -- Wed Dec 19 10:58:19 2018
**                               **
** From Object <Exist Ground 1> to Object <FPC-10B>
**                               **
** Prismoidal Volume
**                               **
**                               **
*****************************************************************
**                               **
**  Total Cut =              7499.206 Cubic Yards
**  Total Fill =             0.183 Cubic Yards
**  Area =                                         4497.702 Sq Yards
**  Balance =                                      7499.023 Cubic Yards
**                               **
** Elevation Range Used
** 63.000 to 64.000          Cut = 720.127         Fill = 0.000
** 64.000 to 65.000          Cut = 823.379         Fill = 0.000
** 65.000 to 66.000          Cut = 930.116         Fill = 0.118
** 66.000 to 67.000          Cut = 1006.164        Fill = 0.024
** 67.000 to 67.300          Cut = 301.935         Fill = 0.007
**                               **
** No Quantity Depth Used
*****************************************************************
```

Floodplain compensation between elevation 66.0 to 67.3

Required Floodplain Compensation
0.74 AC-FT
Proposed Floodplain Compensation
0.81 AC-FT

FPC-10B Grading Schematic



Floodplain Calculations FPC-11A

****
** **
** Object to Object Volume Report -- Wed Dec 19 11:18:15 2018
** **
** From Object <Exist Ground 1> to Object <FPC-11A>
** **
** Prismoidal Volume
** **
** **
****
** **
** Total Cut = 6897.584 Cubic Yards
** Total Fill = 0.199 Cubic Yards
** Area = 3439.663 Sq Yards
** Balance = 6897.385 Cubic Yards
** **
** Elevation Range Used

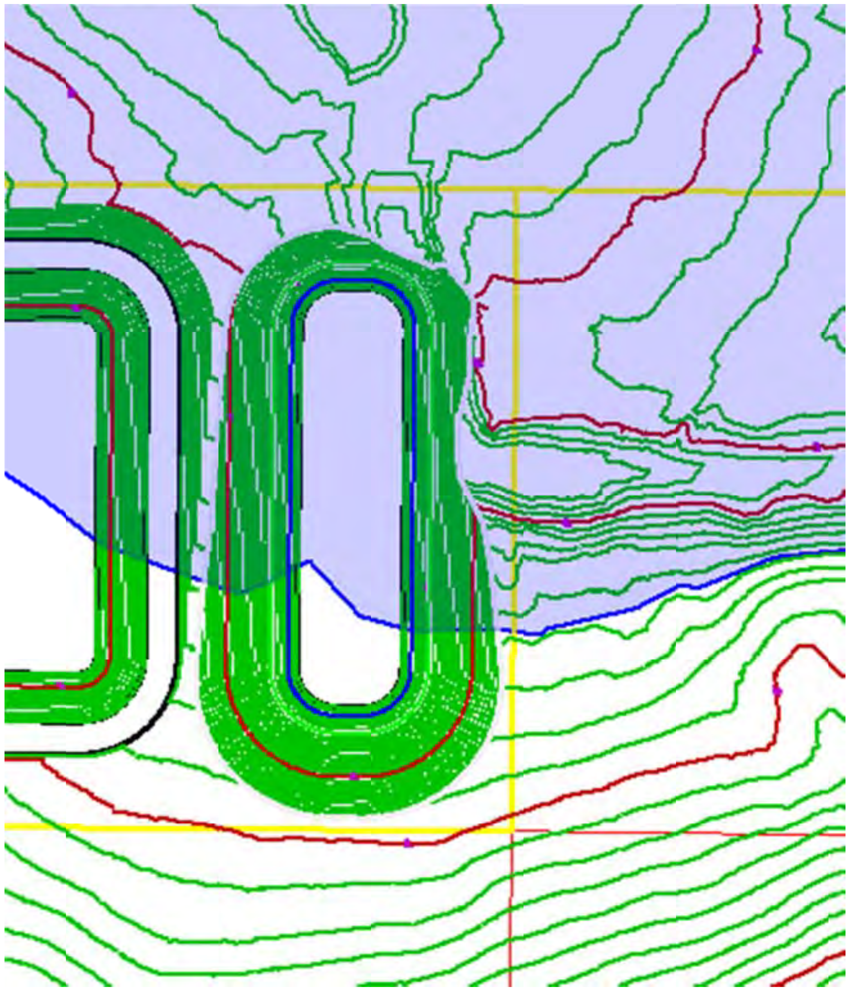
** 47.000 to 48.000	Cut = 370.303	Fill = 0.000
** 48.000 to 49.000	Cut = 440.834	Fill = 0.000
** 49.000 to 50.000	Cut = 515.081	Fill = 0.000
** 50.000 to 51.000	Cut = 593.050	Fill = 0.000
** 51.000 to 52.000	Cut = 674.746	Fill = 0.000
** 52.000 to 53.000	Cut = 747.067	Fill = 0.001
** 53.000 to 54.000	Cut = 760.969	Fill = 0.119
** 54.000 to 55.000	Cut = 773.087	Fill = 0.063
** 55.000 to 56.000	Cut = 717.998	Fill = 0.002
** 56.000 to 57.000	Cut = 593.185	Fill = 0.001
** 57.000 to 57.900	Cut = 412.722	Fill = 0.011

** **
** No Quantity Depth Used
****

Floodplain compensation between elevation 50.0 to 57.9

Required Floodplain Compensation
1.97 AC-FT
Proposed Floodplain Compensation
3.27 AC-FT

FPC-11A Grading Schematic



Floodplain Calculations FPC-11B

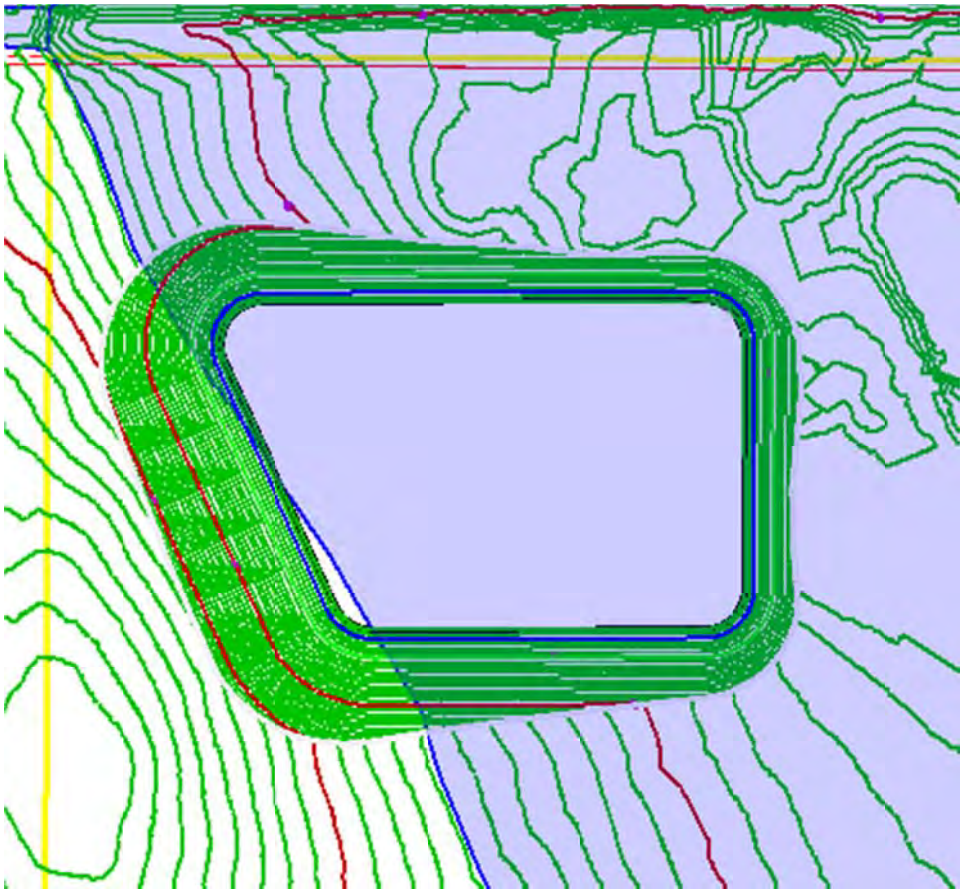
```
*************************************************************
**                                  **
** Object to Object Volume Report -- Wed Dec 19 11:02:24 2018
**                                  **
** From Object <Exist Ground 1> to Object <FPC-11B>
**                                  **
** Prismoidal Volume
**                                  **
**                                  **
*************************************************************
**                                  **
**  Total Cut =               10223.904 Cubic Yards
**  Total Fill =              0.000 Cubic Yards
**  Area =                                         4040.138 Sq Yards
**  Balance =                                      10223.904 Cubic Yards
**                                  **
** Elevation Range Used
** 47.000 to 48.000           Cut = 1086.122        Fill = 0.000
** 48.000 to 49.000           Cut = 1187.633        Fill = 0.000
** 49.000 to 50.000           Cut = 1292.861        Fill = 0.000
** 50.000 to 51.000           Cut = 1346.713        Fill = 0.000
** 51.000 to 52.000           Cut = 1346.713        Fill = 0.000
** 52.000 to 53.000           Cut = 1197.794        Fill = 0.000
** 53.000 to 54.000           Cut = 1028.154        Fill = 0.000
** 54.000 to 55.000           Cut = 775.119         Fill = 0.000
** 55.000 to 56.000           Cut = 516.041         Fill = 0.000
** 56.000 to 57.000           Cut = 300.014         Fill = 0.000
** 57.000 to 57.900           Cut = 121.196         Fill = 0.000
**                                  **
** No Quantity Depth Used
*************************************************************
```

Floodplain compensation between elevation 50.0 to 57.9

Required Floodplain Compensation
1.97 AC-FT

Proposed Floodplain Compensation
4.11 AC-FT

FPC-11B Grading Schematic



Floodplain Calculations FPC-12A

****

** **

** Object to Object Volume Report -- Wed Dec 19 11:04:31 2018

** **

** From Object <Exist Ground 1> to Object <FPC-12A>

** **

** Prismoidal Volume

** **

** **

****

** **

** Total Cut =	2915.103 Cubic Yards	
** Total Fill =	0.654 Cubic Yards	
** Area =		1691.862 Sq Yards
** Balance =		2914.448 Cubic Yards

** **

** Elevation Range Used		
** 90.000 to 91.000	Cut = 387.427	Fill = 0.000
** 91.000 to 92.000	Cut = 455.313	Fill = 0.000
** 92.000 to 93.000	Cut = 523.512	Fill = 0.654
** 93.000 to 94.000	Cut = 520.372	Fill = 0.000
** 94.000 to 94.300	Cut = 144.111	Fill = 0.000

** **

** No Quantity Depth Used

****

Floodplain compensation between elevation 93.0 to 94.3

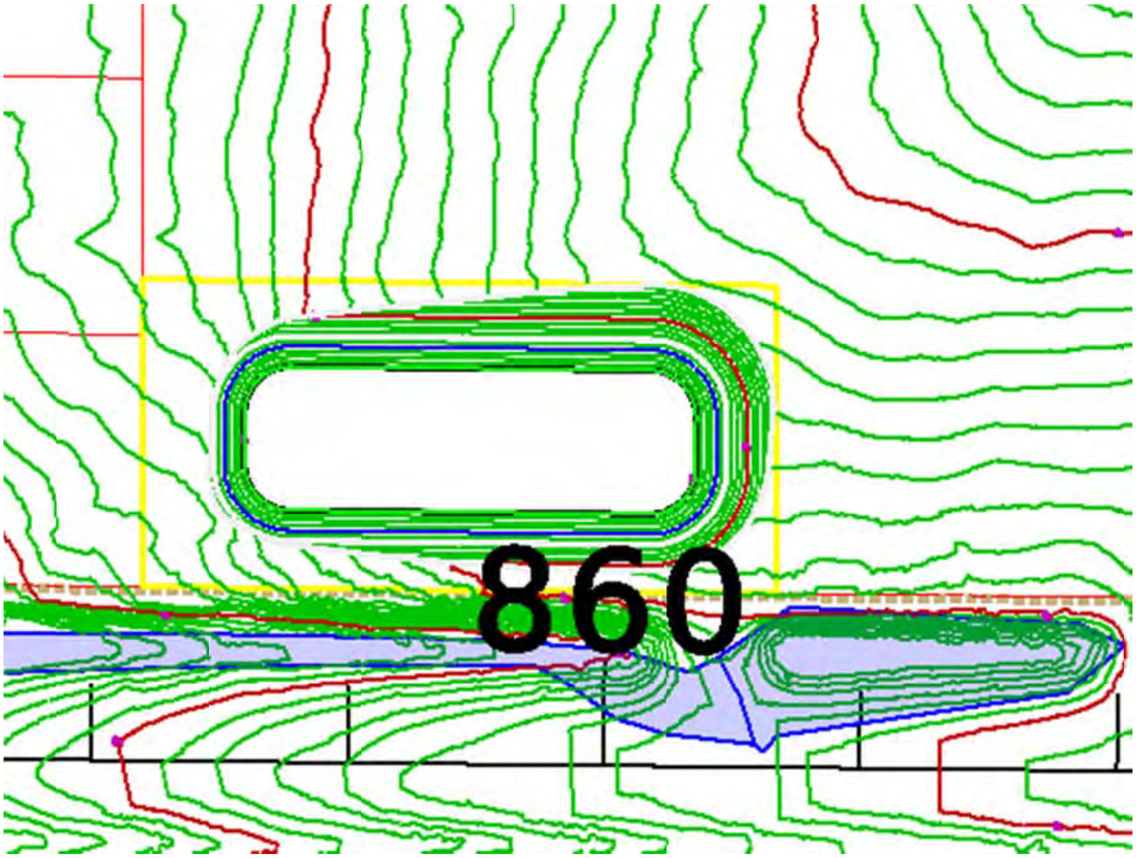
Required Floodplain Compensation

0.43 AC-FT

Proposed Floodplain Compensation

0.43 AC-FT

FPC-12A Grading Schematic



Floodplain Calculations FPC-12B

****
** **
** Object to Object Volume Report -- Wed Dec 19 11:05:11 2018
** **
** From Object <Exist Ground 1> to Object <FPC-12B>
** **
** Prismoidal Volume
** **
** **
****
** **

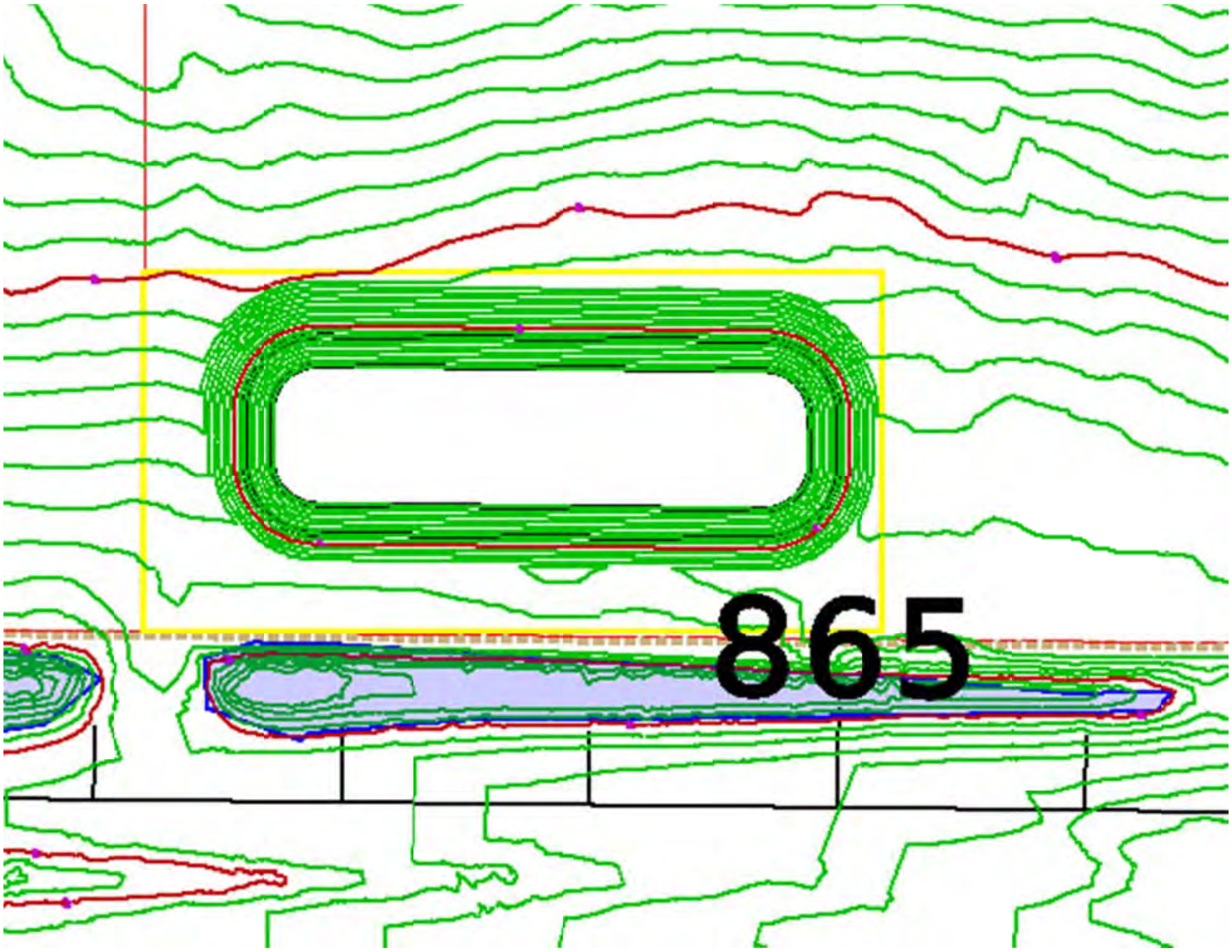
** Total Cut =	4331.481 Cubic Yards	
** Total Fill =	0.000 Cubic Yards	
** Area =		2047.432 Sq Yards
** Balance =		4331.481 Cubic Yards
**	**	
** Elevation Range Used		
** 91.000 to 92.000	Cut = 476.319	Fill = 0.000
** 92.000 to 93.000	Cut = 556.058	Fill = 0.000
** 93.000 to 94.000	Cut = 639.512	Fill = 0.000
** 94.000 to 95.000	Cut = 686.477	Fill = 0.000
**	**	

** No Quantity Depth Used
****

Floodplain compensation between elevation 94.0 to 95.0

Required Floodplain Compensation
0.43 AC-FT
Proposed Floodplain Compensation
0.43 AC-FT

FPC-12B Grading Schematic



Floodplain Calculations FPC-12C

****

** **

** Object to Object Volume Report -- Wed Dec 19 11:05:48 2018

** **

** From Object <Exist Ground 1> to Object <FPC-12C>

** **

** Prismoidal Volume

** **

** **

****

** **

** Total Cut =	4507.154 Cubic Yards	
** Total Fill =	0.000 Cubic Yards	
** Area =		1323.848 Sq Yards
** Balance =		4507.154 Cubic Yards
**	**	
** Elevation Range Used		
** 73.000 to 74.000	Cut = 293.061	Fill = 0.000
** 74.000 to 75.000	Cut = 349.624	Fill = 0.000
** 75.000 to 76.000	Cut = 409.904	Fill = 0.000
** 76.000 to 77.000	Cut = 441.283	Fill = 0.000
** 77.000 to 77.600	Cut = 264.770	Fill = 0.000
**	**	

** No Quantity Depth Used

****

Floodplain compensation between elevation 76.0 to 77.6

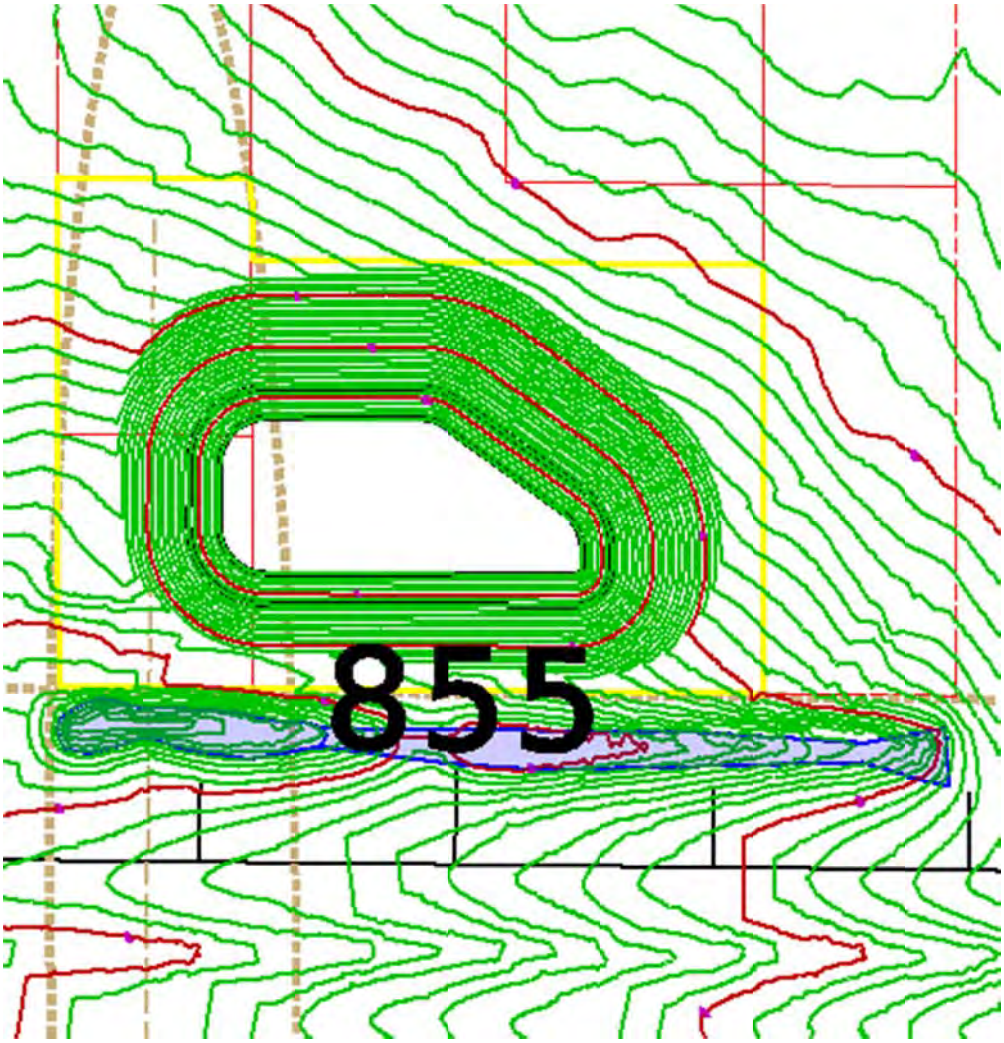
Required Floodplain Compensation

0.43 AC-FT

Proposed Floodplain Compensation

0.44 AC-FT

FPC-12C Grading Schematic



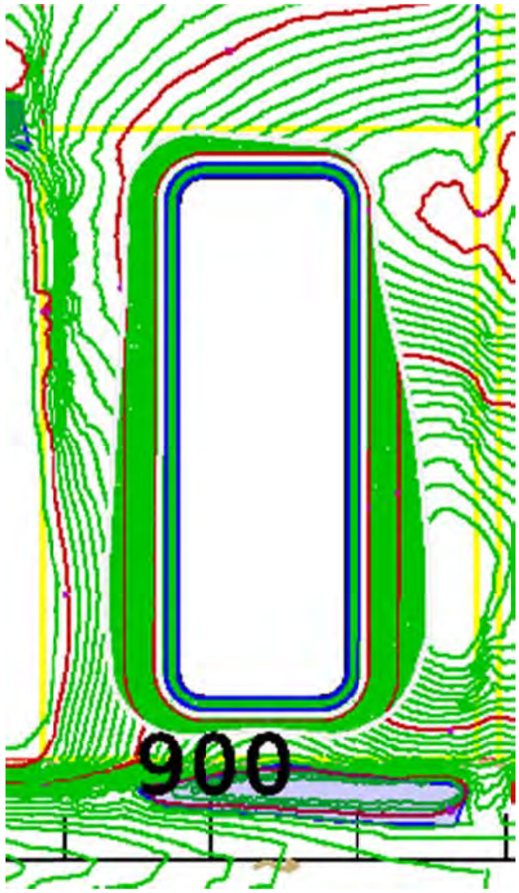
Floodplain Calculations FPC-13A

```
*************************************************************
**                          **
** Object to Object Volume Report -- Wed Dec 19 11:06:15 2018
**                          **
** From Object <Exist Ground 1> to Object <FPC-13A>
**                          **
** Prismoidal Volume
**                          **
**                          **
*************************************************************
**                          **
**  Total Cut =             15819.570 Cubic Yards
**  Total Fill =            0.000 Cubic Yards
**  Area =                                      5825.143 Sq Yards
**  Balance =                                   15819.570 Cubic Yards
**                          **
** Elevation Range Used
** 76.000 to 77.000          Cut = 1587.414     Fill = 0.000
** 77.000 to 78.000          Cut = 1726.409     Fill = 0.000
** 78.000 to 79.000          Cut = 1869.120     Fill = 0.000
** 79.000 to 80.000          Cut = 1941.714     Fill = 0.000
** 80.000 to 80.400          Cut = 776.686      Fill = 0.000
**                          **
** No Quantity Depth Used
*************************************************************
```

Floodplain compensation between elevation 79.0 to 80.4

Required Floodplain Compensation
1.68 AC-FT
Proposed Floodplain Compensation
1.68 AC-FT

FPC-13A Grading Schematic



Floodplain Calculations FPC-13B

****
** **
** Object to Object Volume Report -- Wed Dec 19 11:06:55 2018
** **
** From Object <Exist Ground 1> to Object <FPC-13B>
** **
** Prismoidal Volume
** **
** **
****
** **

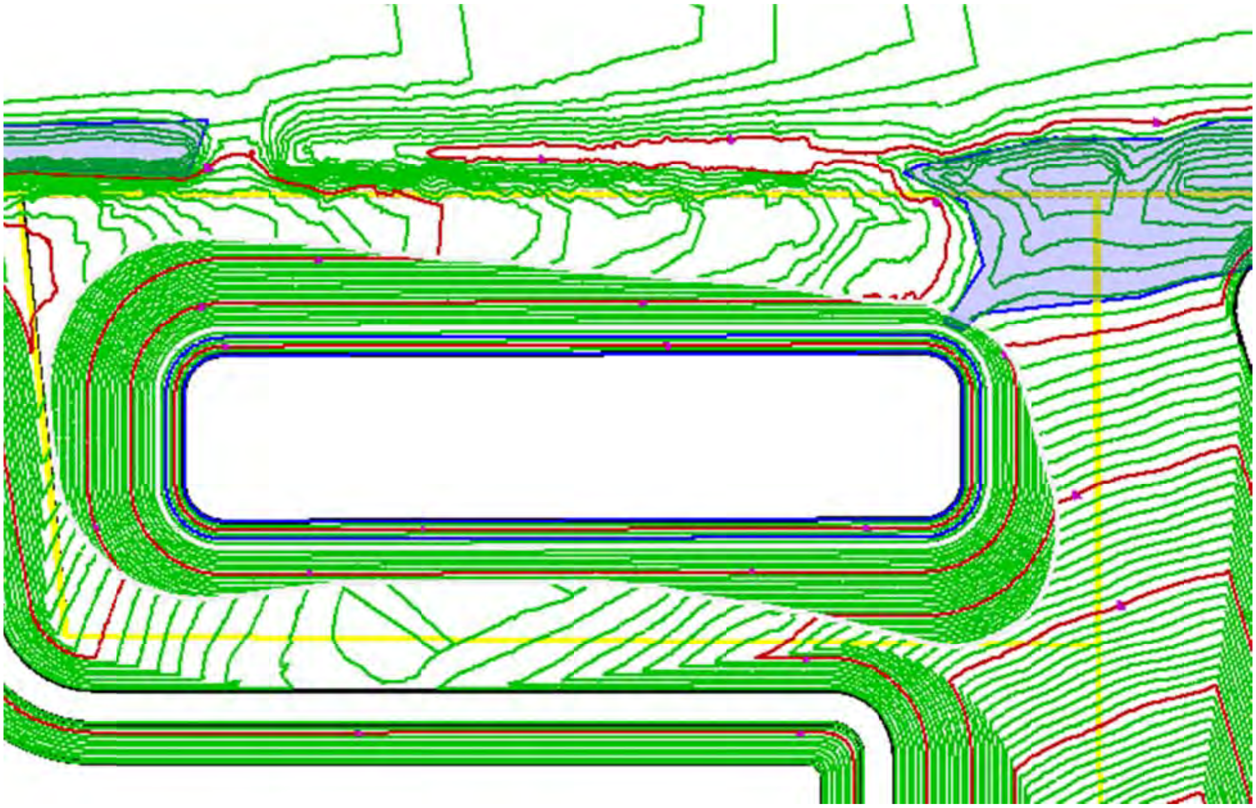
** Total Cut =	10646.617 Cubic Yards	
** Total Fill =	0.000 Cubic Yards	
** Area =		4136.268 Sq Yards
** Balance =		10646.617 Cubic Yards
**	**	
** Elevation Range Used		
** 74.000 to 75.000	Cut = 1054.084	Fill = 0.000
** 75.000 to 76.000	Cut = 1181.228	Fill = 0.000
** 76.000 to 77.000	Cut = 1312.088	Fill = 0.000
** 77.000 to 78.000	Cut = 1378.756	Fill = 0.000
** 78.000 to 79.000	Cut = 1378.756	Fill = 0.000
** 79.000 to 79.100	Cut = 137.843	Fill = 0.000
**	**	

** No Quantity Depth Used
****

Floodplain compensation between elevation 77.0 to 79.1

Required Floodplain Compensation
1.68 AC-FT
Proposed Floodplain Compensation
1.79 AC-FT

FPC-13B Grading Schematic



Floodplain Calculations FPC-13C

****

** **

** Object to Object Volume Report -- Wed Dec 19 11:07:04 2018

** **

** From Object <Exist Ground 1> to Object <FPC-13C>

** **

** Prismoidal Volume

** **

** **

****

** **

** Total Cut =	21811.230 Cubic Yards	
** Total Fill =	0.000 Cubic Yards	
** Area =		7153.798 Sq Yards
** Balance =		21811.230 Cubic Yards

** **

** Elevation Range Used

** 72.000 to 73.000	Cut = 1925.124	Fill = 0.000
** 73.000 to 74.000	Cut = 2106.191	Fill = 0.000
** 74.000 to 75.000	Cut = 2290.971	Fill = 0.000
** 75.000 to 76.000	Cut = 2684.599	Fill = 0.000
** 76.000 to 76.100	Cut = 238.460	Fill = 0.000

** **

** No Quantity Depth Used

****

Floodplain compensation between elevation 75.0 to 76.1

Required Floodplain Compensation

1.68 AC-FT

Proposed Floodplain Compensation

1.83 AC-FT

FPC-13C Grading Schematic

APPENDIX C

FDOT District 7 Right of Way Cost Estimates

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-1A/FPC-1A	District:	Seven
County:	Hernando	Segment:	08050000 & 08070000	Date:	6-Jun-18
State Rd.:	SR 50/US 98/SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	0	0	Business	0
Residential	0	0	Residential	0
Unimproved	1	1	Signs	0
			Special	0
Total Parcels	1	1	Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

							Amount	
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)		20,000	
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)		0	
3.							TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount	
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000	
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0	
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500	
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000	
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400	
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0	
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000	
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0	
12.								TOTAL PHASE 4B		$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount			x	120% * *Design plan stage*	=	0		
14. Water Retention & Mit. (1 Pond)		246,406	x	120% (0 Parcels w/o R/W Acq)		295,700		
15. SUBTOTAL				(Lines 13 &14)			278,900	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	33,500		
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	56,500		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	90,000	x	33%)	=	29,700		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x 18,000	=	18,000		
24. Other Condemn. Costs		1	x	$1,000	=	1,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		153,700	
26.						TOTAL PHASE 43		$432,600

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

Replacement Housing			Number		Amount		
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.			
36.			
37.	(All Phases)	TOTAL ESTIMATE	$530,500

Real Estate:	Stephen Cross	Signed:	Stephen Cross	Date:	06/18/18
Bus. Dam. :		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	D. Wade Brown	Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $530,500 Data Input Completion Date: 6/18/2018

REMARKS:

Takes Frontage/Access

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ______ Gaming 1: ______ Special Purpose: X Docs to RW: ______

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-1B/FPC-1B	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US98/SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial		
Residential	1	1
Unimproved	1	
Total Parcels	2	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

							Amount
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)		20,000
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)		0
3.						TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		0	x	120% * *Design plan stage*	=	0	
14. Water Retention & Mit. (2 Pond)		999,789	x	120% (0 Parcels w/o R/W Acq)		1,199,700	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			1,199,700
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	144,000	
17. Litigation Awards	(Factor	45%	x	40% of Line 15)	=	215,900	
18. Business Damages	(Claims	0	x	0)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	377,300	x	33%)	=	124,500	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	0) x 18,000	=	0	
24. Other Condemn. Costs		1	x	$1,000	=	1,000	
25. SUBTOTAL				(Lines 16 thru 24)	=		500,400
26.						TOTAL PHASE 43	$1,700,100

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)				TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $1,798,000

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	06/18/18
Bus. Dam. :		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $1,798,000 Data Input Completion Date: 6/18/2018

REMARKS:

Property is located at the signalized intersection of NE quadrant of SR 50 & Bypass (0.6 acres of the 2 ac commercial corner would be located on adjacent property)

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:
Work Program Update: ______ Gaming 1: ______ Special Purpose: X Docs to RW: ______
Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-1C/FPC-1C	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US 98/SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	1	1
Unimproved	0	0
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0
3.					TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		133,515	x	120% * *Design plan stage*	=	160,200	
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)	=	0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			160,200
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	19,200	
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	32,400	
18. Business Damages	(Claims	0	x	0)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	51,600	x	33%)	=	17,000	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	0) x 18,000	=	0	
24. Other Condemn. Costs		1	x	$1,000	=	1,000	
25. SUBTOTAL				(Lines 16 thru 24)	=		84,600
26.						TOTAL PHASE 43	$244,800

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)				TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $342,700

Real Estate:	Stephen Cross	Signed:	[signature]	Date: 06/18/18
Bus. Dam.:		Signed:		Date:
Relocation:		Signed:		Date:
Overall Review:	D. Wade Brown	Signed:	[signature]	Date: 06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $342,700 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ______ Gaming 1: ______ Special Purpose: X Docs to RW: ______

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-2A/FPC-2A +Ease	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US 98/SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	1	1
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

					Amount
1. Direct Labor Cost	(Parcels	1	x	20,000 = Rate)	20,000
2. Indirect Overhead	(Parcels	1	x	0 = Rate)	0
3.				TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		139,453	x	120% * *Design plan stage*	=	167,300	
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			167,300
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	20,100	
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	33,900	
18. Business Damages	(Claims	0	x	0)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	54,000	x	33%)	=	17,800	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x 18,000	=	18,000	
24. Other Condemn. Costs		1	x	$1,000	=	1,000	
25. SUBTOTAL				(Lines 16 thru 24)	=		105,800
26.						TOTAL PHASE 43	$273,100

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)				TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $371,000

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	06/18/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $371,000 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

- ___ Type A - indicates the most confidence
- ___ Type B - indicates above average confidence
- X Type C - indicates below average confidence
- ___ Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ___ Gaming 1: ___ Special Purpose: X Docs to RW: ___

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-2B/FPC-2B	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR50/US 98/SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	1	1	Business	0
Residential	0	0	Residential	0
Unimproved	0	0	Signs	0
			Special	0
Total Parcels	1	1	Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000	
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

							Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		344,397	x	120%	* *Design plan stage*	=	413,300		
14. Water Retention & Mit. (0 Ponds)		0	x	120%	(0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)					(Lines 13 &14)			413,300	
16. Admin. Settlements	(Factor	20%	x	60%	of Line 15)	=	49,600		
17. Litigation Awards	(Factor	45%	x	45%	of Line 15)	=	83,700		
18. Business Damages	(Claims	0	x	0)		=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)		=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)		=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)		=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	133,300	x	33%)		=	44,000		
23. Owner Expert Witness	(Comm.+Unimp.)	1	+	0) x	18,000	=	18,000		
24. Other Condemn. Costs		1	x	$1,000		=	1,000		
25. SUBTOTAL					(Lines 16 thru 24)	=		211,300	
26.							TOTAL PHASE 43		$624,600

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

Replacement Housing			Number		Amount		
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.
36.
37. (All Phases) TOTAL ESTIMATE $722,500

Real Estate:	Stephen Cross	Signed:	*[signature]*	Date:	06/18/18
Bus. Dam. :		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	*[signature]*	Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $722,500 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ______ Gaming 1: ______ Special Purpose: X Docs to RW: ______

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-2C/FPC-2C	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	0	2
Total Parcels	0	2

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	2	x	20,000 =	Rate)	40,000	
2. Indirect Overhead	(Parcels	2	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$40,000

R/W OPS (PHASE 4B)

								Amount	
4. Appraisal Fees Through Trial				2	Parcels	x	30,000 =	60,000	
5. Business Damage CPA Fees Through Trial				0	Claims	x	19,000 =	0	
6. Court Reporter & Process Servers	50%	x	2 =	1	Parcels	x	500 =	500	
7. Expert Witness	75%	x	2 =	2	Parcels	x	30,000 =	60,000	
8. Mediators	75%	x	2 =	2	Parcels	x	2,400 =	4,800	
9. Demolition, Asb. Abate., Survey, etc.				0	Imprvmet	x	15,000 =	0	
10. Miscellaneous Contracts				1	Per Project	x	15,000 =	15,000	
11. Appraisal Fee Review				1	Parcels	x	5,000 =	5,000	
12.							TOTAL PHASE 4B		$145,300

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		233,851	x	120% * *Design plan stage*	=	280,600		
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			280,600	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	33,700		
17. Litigation Awards	(Factor	45%	x	40% of Line 15)	=	50,500		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	2	x	$15,000)	=	30,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	84,200	x	33%)	=	27,800		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	2) x 18,000	=	36,000		
24. Other Condemn. Costs		2	x	$1,000	=	2,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		180,000	
26.						TOTAL PHASE 43		$460,600

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.
36.
37. (All Phases) TOTAL ESTIMATE $645,900

Real Estate:	Stephen Cross	Signed:		Date:	06/18/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:		Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $645,900 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ______ Gaming 1: ______ Special Purpose: X Docs to RW: ______

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-3A/FPC-3-4A	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	1	1	Business	0
Residential	0	0	Residential	0
Unimproved	0	0	Signs	0
			Special	0
Total Parcels	1	1	Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0
3.						TOTAL PHASE 41 $20,000

R/W OPS (PHASE 4B)

								Amount
4. Appraisal Fees Through Trial				1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial				1	Claims	x	19,000 =	19,000
6. Court Reporter & Process Servers	50%	x	1 =	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1 =	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1 =	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.				0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts				1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review				0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B $96,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		175,921	x	120% * *Design plan stage*	=	211,100	
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			211,100
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	25,300	
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	42,700	
18. Business Damages	(Claims	1	x	0)	=	50,000	
19. Bus. Damages Incrs.	(Factor	25%	x	$ 50,000)	=	12,500	
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000	
21. Owner CPA Fees	(Claims	1	x	$16,000)	=	16,000	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	80,500	x	33%)	=	26,600	
23. Owner Expert Witness	(Comm.+Unimp.)	1	+	0) x 18,000	=	18,000	
24. Other Condemn. Costs		1	x	$1,000	=	1,000	
25. SUBTOTAL				(Lines 16 thru 24)	=		207,100
26.						TOTAL PHASE 43	$418,200

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42 $0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)					TOTAL PHASE 45 $0
34. Relocation Services Cost			$0	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $535,100

Real Estate:	Stephen Cross	Signed:	Date:	12/17/18
Bus. Dam.:		Signed:	Date:	
Relocation:		Signed:	Date:	
Overall Review:	D. Wade Brown	Signed:	Date:	12/17/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $535,100 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

- ___ Type A - indicates the most confidence
- ___ Type B - indicates above average confidence
- X Type C - indicates below average confidence
- ___ Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: ___ Special Purpose: X Docs to RW: ___

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-3B/FPC-3-4B + Ease	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	0	0	Business	0
Residential	1	1	Residential	0
Unimproved	0	0	Signs	0
			Special	0
Total Parcels	1	1	Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000	
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		222,252	x	120% * *Design plan stage*	=	266,700		
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			266,700	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	32,000		
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	54,000		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	86,000	x	33%)	=	28,400		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	0) x 18,000	=	0		
24. Other Condemn. Costs		1	x	$1,000	=	1,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		130,400	
26.						TOTAL PHASE 43		$397,100

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.
36.
37. (All Phases) TOTAL ESTIMATE $495,000

Real Estate:	Stephen Cross	Signed:	Stephen Cross	Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:		Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $495,000 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-3C/FPC-3-4C + Ease	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	1	1
Residential	0	0
Unimproved	0	0
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0
3.					TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		300,410	x	120% * *Design plan stage*	=	360,500	
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			360,500
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	43,300	
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	73,000	
18. Business Damages	(Claims	0	x	0)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	116,300	x	33%)	=	38,400	
23. Owner Expert Witness	(Comm.+Unimp.)	1	+	0) x 18,000	=	18,000	
24. Other Condemn. Costs		1	x	$1,000	=	1,000	
25. SUBTOTAL				(Lines 16 thru 24)	=		188,700
26.						TOTAL PHASE 43	$549,200

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)				TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $647,100

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:		Date:	12/17/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $647,100 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-4A	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	0	0	Business	0
Residential	1	1	Residential	0
Unimproved	0	0	Signs	0
			Special	0
Total Parcels	1	1	Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0
3.					TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		90,323	x	120% * *Design plan stage*	=	108,400		
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			108,400	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	13,000		
17. Litigation Awards	(Factor	45%	x	40% of Line 15)	=	19,500		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	32,500	x	33%)	=	10,700		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x 18,000	=	18,000		
24. Other Condemn. Costs		1	x	$1,000	=	1,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		77,200	
26.						TOTAL PHASE 43		$185,600

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.
36.
37. (All Phases) TOTAL ESTIMATE $283,500

Real Estate:	Stephen Cross	Signed:		Date:	12/17/18
Bus. Dam. :		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:		Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $283,500 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-4B	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	2	2
Unimproved	1	1
Total Parcels	3	3

Estimated Relocatees:	
Business	0
Residential	3
Signs	0
Special	0
Total Relocatees	3

R/W SUPPORT COSTS (PHASE 41)

						Amount
1. Direct Labor Cost	(Parcels	3	x	20,000 =	Rate)	60,000
2. Indirect Overhead	(Parcels	3	x	0 =	Rate)	0
3.						TOTAL PHASE 41 $60,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					3	Parcels	x	30,000 =	90,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	3	=	2	Parcels	x	500 =	1,000
7. Expert Witness	75%	x	3	=	2	Parcels	x	30,000 =	60,000
8. Mediators	75%	x	3	=	2	Parcels	x	2,400 =	4,800
9. Demolition, Asb. Abate., Survey, etc.					2	Imprvmet	x	15,000 =	30,000
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					1	Parcels	x	5,000 =	5,000
12.									TOTAL PHASE 4B $205,800

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		501,612	x	120% * *Design plan stage*	=	601,900	
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			601,900
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	72,200	
17. Litigation Awards	(Factor	45%	x	40% of Line 15)	=	108,300	
18. Business Damages	(Claims	0	x	0)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees	(Parcels	3	x	$15,000)	=	45,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	180,500	x	33%)	=	59,600	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x 18,000	=	18,000	
24. Other Condemn. Costs		3	x	$1,000	=	3,000	
25. SUBTOTAL				(Lines 16 thru 24)	=		306,100
26.						TOTAL PHASE 43	$908,000

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42 $0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	2	=	70,000
29. Tenant	$25,000	x	1	=	25,000
Move Costs					
30. Residential	$5,000	x	3	=	15,000
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)					TOTAL PHASE 45 $110,000
34. Relocation Services Cost			$11,000	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $1,283,800

Real Estate:	Stephen Cross	Signed:	[signature]	Date: 06/18/18
Bus. Dam. :		Signed:		Date:
Relocation:	Stephen Cross	Signed:	[signature]	Date: 06/18/18
Overall Review:	D. Wade Brown	Signed:	[signature]	Date: 06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $1,283,800 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-4C	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	1	1
Unimproved	0	0
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000	
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount	
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000	
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0	
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500	
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000	
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400	
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0	
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000	
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0	
12.								TOTAL PHASE 4B		$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		87,278	x	120% * *Design plan stage*	=	104,700		
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			104,700	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	12,600		
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	21,200		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	33,800	x	33%)	=	11,200		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	0) x 18,000	=	0		
24. Other Condemn. Costs		1	x	$1,000	=	1,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		61,000	
26.						TOTAL PHASE 43		$165,700

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.
36.
37. (All Phases) TOTAL ESTIMATE $263,600

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	06/18/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $263,600 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ______ Gaming 1: ______ Special Purpose: X Docs to RW: ______

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-5A/FPC-5A	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	0	0	Business	0
Residential	0	0	Residential	0
Unimproved	2	2	Signs	0
			Special	0
Total Parcels	2	2	Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41) — Amount

1. Direct Labor Cost	(Parcels	2	x	20,000 =	Rate)	40,000
2. Indirect Overhead	(Parcels	2	x	0 =	Rate)	0
3.					TOTAL PHASE 41	$40,000

R/W OPS (PHASE 4B) — Amount

4. Appraisal Fees Through Trial				2	Parcels	x	30,000 =	60,000
5. Business Damage CPA Fees Through Trial				0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	2 =	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	2 =	2	Parcels	x	30,000 =	60,000
8. Mediators	75%	x	2 =	2	Parcels	x	2,400 =	4,800
9. Demolition, Asb. Abate., Survey, etc.				0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts				1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review				1	Parcels	x	5,000 =	5,000
12.					TOTAL PHASE 4B			$145,300

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		257,420	x	120% * *Design plan stage*	=	308,900	
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			308,900
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	37,100	
17. Litigation Awards	(Factor	45%	x	40% of Line 15)	=	55,600	
18. Business Damages	(Claims	0	x	0)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees	(Parcels	2	x	$15,000)	=	30,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	92,700	x	33%)	=	30,600	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	2) x 18,000	=	36,000	
24. Other Condemn. Costs		2	x	$1,000	=	2,000	
25. SUBTOTAL				(Lines 16 thru 24)	=		191,300
26.						TOTAL PHASE 43	$500,200

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)				TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $685,500

Real Estate:	Stephen Cross	Signed:		Date:	12/17/18
Bus. Dam. :		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:		Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $685,500 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

- ___ Type A - indicates the most confidence
- ___ Type B - indicates above average confidence
- X Type C - indicates below average confidence
- ___ Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:
Work Program Update: X Gaming 1: ___ Special Purpose: X Docs to RW: ___
Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-5B/FPC-5B	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	0	0	Business	0
Residential	0	0	Residential	0
Unimproved	1	1	Signs	0
			Special	0
Total Parcels	1	1	Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000	
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

								Amount	
4. Appraisal Fees Through Trial				1	Parcels	x	30,000 =	30,000	
5. Business Damage CPA Fees Through Trial				0	Claims	x	19,000 =	0	
6. Court Reporter & Process Servers	50%	x	1 =	1	Parcels	x	500 =	500	
7. Expert Witness	75%	x	1 =	1	Parcels	x	30,000 =	30,000	
8. Mediators	75%	x	1 =	1	Parcels	x	2,400 =	2,400	
9. Demolition, Asb. Abate., Survey, etc.				0	Imprvmet	x	15,000 =	0	
10. Miscellaneous Contracts				1	Per Project	x	15,000 =	15,000	
11. Appraisal Fee Review				0	Parcels	x	5,000 =	0	
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		217,043	x	120% * *Design plan stage*	=	260,500		
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			260,500	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	31,300		
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	52,800		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	84,100	x	33%)	=	27,800		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x 18,000	=	18,000		
24. Other Condemn. Costs		1	x	$1,000	=	1,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		145,900	
26.						TOTAL PHASE 43		$406,400

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x		=			
29. Tenant	$25,000	x		=			
Move Costs							
30. Residential	$5,000	x		=			
31. Business/Farm	$40,000	x		=			
32. Personal Property	$3,000	x		=			
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			(Not in Phase Total)				

35.			
36.			
37.	(All Phases)	TOTAL ESTIMATE	$504,300

Real Estate:	Stephen Cross	Signed:		Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:		Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $504,300 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update:	X	Gaming 1:		Special Purpose:	X	Docs to RW:	

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-5C/FPC-5C	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	0	0	Business	0
Residential	1	1	Residential	2
Unimproved	0	0	Signs	0
			Special	0
Total Parcels	1	1	Total Relocatees	2

R/W SUPPORT COSTS (PHASE 41) — Amount

1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0
3.					TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

								Amount
4. Appraisal Fees Through Trial				1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial				0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1 =	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1 =	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1 =	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.				2	Imprvmet	x	15,000 =	30,000
10. Miscellaneous Contracts				1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review				0	Parcels	x	5,000 =	0
12.							TOTAL PHASE 4B	$107,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		650,000	x	120% * *Design plan stage*	=	780,000	
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			780,000
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	93,600	
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	158,000	
18. Business Damages	(Claims	0	x	0)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	251,600	x	33%)	=	83,000	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	0) x 18,000	=	0	
24. Other Condemn. Costs		1	x	$1,000	=	1,000	
25. SUBTOTAL				(Lines 16 thru 24)	=		350,600
26.						TOTAL PHASE 43	$1,130,600

** Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

Replacement Housing			Number		Amount
28. Owner	$35,000	x	1	=	35,000
29. Tenant	$25,000	x	1	=	25,000
Move Costs					
30. Residential	$5,000	x	2	=	10,000
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)				TOTAL PHASE 45	$70,000
34. Relocation Services Cost			$7,000	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $1,328,500

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $1,328,500 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:
Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:
Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	FPC-6-9A	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	0	0	Business	0
Residential	0	0	Residential	0
Unimproved	1	1	Signs	0
			Special	0
Total Parcels	1	1	Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000	
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount	
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000	
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0	
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500	
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000	
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400	
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0	
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000	
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0	
12.								TOTAL PHASE 4B		$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		479,069	x	120% * *Design plan stage*	=	574,900		
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			574,900	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	69,000		
17. Litigation Awards	(Factor	45%	x	40% of Line 15)	=	103,500		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	172,500	x	33%)	=	56,900		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x 18,000	=	18,000		
24. Other Condemn. Costs		1	x	$1,000	=	1,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		263,400	
26.						TOTAL PHASE 43		$838,300

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.
36.
37. (All Phases) TOTAL ESTIMATE $936,200

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $936,200 0 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	FPC-6-9B + Ease	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	0	0	Business	0
Residential	1	1	Residential	0
Unimproved	3	3	Signs	0
			Special	0
Total Parcels	4	4	Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41) — Amount

1. Direct Labor Cost	(Parcels	4	x	20,000 =	Rate)	80,000
2. Indirect Overhead	(Parcels	4	x	0 =	Rate)	0
3.					TOTAL PHASE 41	$80,000

R/W OPS (PHASE 4B)

								Amount
4. Appraisal Fees Through Trial				4	Parcels	x	30,000 =	120,000
5. Business Damage CPA Fees Through Trial				0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	4 =	2	Parcels	x	500 =	1,000
7. Expert Witness	75%	x	4 =	3	Parcels	x	30,000 =	90,000
8. Mediators	75%	x	4 =	3	Parcels	x	2,400 =	7,200
9. Demolition, Asb. Abate., Survey, etc.				0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts				1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review				1	Parcels	x	5,000 =	5,000
12.							TOTAL PHASE 4B	$238,200

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		457,095	x	120% * *Design plan stage*	=	548,500	
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			548,500
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	65,800	
17. Litigation Awards	(Factor	45%	x	40% of Line 15)	=	98,700	
18. Business Damages	(Claims	0	x	0)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees	(Parcels	4	x	$15,000)	=	60,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	164,500	x	33%)	=	54,300	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	3) x 18,000	=	54,000	
24. Other Condemn. Costs		4	x	$1,000	=	4,000	
25. SUBTOTAL				(Lines 16 thru 24)	=		336,800
26.						TOTAL PHASE 43	$885,300

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

Replacement Housing			Number		Amount
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)				TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $1,203,500

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Bus. Dam. :		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $1,203,500 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

- ____ Type A - indicates the most confidence
- ____ Type B - indicates above average confidence
- X Type C - indicates below average confidence
- ____ Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: ____ Special Purpose: X Docs to RW: ____

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	FPC-6-9C	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	1	1
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

							Amount
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)		20,000
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)		0
3.						TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount	
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000	
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0	
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500	
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000	
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400	
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0	
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000	
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0	
12.								TOTAL PHASE 4B		$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		333,484	x	120% * *Design plan stage*	=	400,200		
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			400,200	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	48,000		
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	81,000		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	129,000	x	33%)	=	42,600		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x 18,000	=	18,000		
24. Other Condemn. Costs		1	x	$1,000	=	1,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		205,600	
26.						TOTAL PHASE 43		$605,800

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.
36.
37. (All Phases) TOTAL ESTIMATE $703,700

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Bus. Dam. :		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $703,700 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-6A	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	0	0	Business	0
Residential	0	0	Residential	0
Unimproved	1	1	Signs	0
			Special	0
Total Parcels	1	1	Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000	
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		175,505	x	120% * *Design plan stage*	=	210,600		
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			210,600	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	25,300		
17. Litigation Awards	(Factor	45%	x	40% of Line 15)	=	37,900		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	63,200	x	33%)	=	20,900		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x 18,000	=	18,000		
24. Other Condemn. Costs		1	x	$1,000	=	1,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		118,100	
26.						TOTAL PHASE 43		$328,700

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.
36.
37. (All Phases) TOTAL ESTIMATE $426,600

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $426,600 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-6B	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	1	1
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0
3.						TOTAL PHASE 41 $20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					2	Imprvmet	x	15,000 =	30,000
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$107,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		106,771	x	120% * *Design plan stage*	=	128,100	
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			128,100
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	15,400	
17. Litigation Awards	(Factor	45%	x	40% of Line 15)	=	23,100	
18. Business Damages	(Claims	0	x	0)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	38,500	x	33%)	=	12,700	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x 18,000	=	18,000	
24. Other Condemn. Costs		1	x	$1,000	=	1,000	
25. SUBTOTAL				(Lines 16 thru 24)	=		85,200
26.						TOTAL PHASE 43	$213,300

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)				TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $341,200

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Bus. Dam. :		Signed:		Date:	
Relocation:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $341,200 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-6C + Ease	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	1	1
Unimproved	0	0
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000	
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount	
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000	
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0	
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500	
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000	
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400	
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0	
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000	
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0	
12.								TOTAL PHASE 4B		$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		93,186	x	120% * *Design plan stage*	=	111,800		
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			111,800	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	13,400		
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	22,600		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	36,000	x	33%)	=	11,900		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	0) x 18,000	=	0		
24. Other Condemn. Costs		1	x	$1,000	=	1,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		63,900	
26.						TOTAL PHASE 43		$175,700

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.			
36.			
37.	(All Phases)	TOTAL ESTIMATE	$273,600

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	06/18/18
Bus. Dam. :		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $273,600 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ______ Gaming 1: ______ Special Purpose: X Docs to RW: ______

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-7A/SMF-8A	District:	Seven		
County:	Hernando	Segment:	N/A	Date:	6-Jun-18		
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A		
Project Des.	SR 50 from Brooksville Bypass to I-75						

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	0	0	Business	0
Residential	0	0	Residential	0
Unimproved	2	2	Signs	0
			Special	0
Total Parcels	2	2	Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	2	x	20,000 =	Rate)	40,000	
2. Indirect Overhead	(Parcels	2	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$40,000

R/W OPS (PHASE 4B)

								Amount
4. Appraisal Fees Through Trial				2	Parcels	x	30,000 =	60,000
5. Business Damage CPA Fees Through Trial				0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	2 =	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	2 =	2	Parcels	x	30,000 =	60,000
8. Mediators	75%	x	2 =	2	Parcels	x	2,400 =	4,800
9. Demolition, Asb. Abate., Survey, etc.				0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts				1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review				1	Parcels	x	5,000 =	5,000
12.							TOTAL PHASE 4B	$145,300

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		115,885	x	120% * *Design plan stage*	=	139,100	
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			139,100
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	16,700	
17. Litigation Awards	(Factor	45%	x	40% of Line 15)	=	25,000	
18. Business Damages	(Claims	0	x	0)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees	(Parcels	2	x	$15,000)	=	30,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	41,700	x	33%)	=	13,800	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	2) x 18,000	=	36,000	
24. Other Condemn. Costs		2	x	$1,000	=	2,000	
25. SUBTOTAL				(Lines 16 thru 24)	=		123,500
26.						TOTAL PHASE 43	$262,600

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)				TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $447,900

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	06/18/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $447,900 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ______ Gaming 1: ______ Special Purpose: X Docs to RW: ______

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-7B/SMF-8B + Ease	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	1	1
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

					Amount
1. Direct Labor Cost	(Parcels	1	x	20,000 = Rate)	20,000
2. Indirect Overhead	(Parcels	1	x	0 = Rate)	0
3.				TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

								Amount
4. Appraisal Fees Through Trial				1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial				0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1 =	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1 =	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1 =	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.				0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts				1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review				0	Parcels	x	5,000 =	0
12.							TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

							Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		86,432	x	120%	* *Design plan stage*	=	103,700	
14. Water Retention & Mit. (0 Ponds)		0	x	120%	(0 Parcels w/o R/W Acq)		0	
15. SUBTOTAL (57,648 SF)					(Lines 13 &14)			103,700
16. Admin. Settlements	(Factor	20%	x	60%	of Line 15)	=	12,400	
17. Litigation Awards	(Factor	45%	x	45%	of Line 15)	=	21,000	
18. Business Damages	(Claims	0	x	0)		=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)		=	0	
20. Owner Appr. Fees	(Parcels	1	x	$15,000)		=	15,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)		=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	33,400	x	33%)		=	11,000	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x	18,000	=	18,000	
24. Other Condemn. Costs		1	x	$1,000		=	1,000	
25. SUBTOTAL					(Lines 16 thru 24)	=		78,400
26.							TOTAL PHASE 43	$182,100

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

Replacement Housing			Number		Amount
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)				TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $280,000

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	06/18/18
Bus. Dam. :		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $280,000 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ____ Gaming 1: ____ Special Purpose: X Docs to RW: ____

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-7C/SMF-8C	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US98/SR700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	0	1
Total Parcels	0	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0
3.					TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		72,020	x	120% * *Design plan stage*	=	86,400		
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)	=	0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			86,400	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	10,400		
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	17,500		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	27,900	x	33%)	=	9,200		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x 18,000	=	18,000		
24. Other Condemn. Costs		1	x	$1,000	=	1,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		71,100	
26.						TOTAL PHASE 43		$157,500

** Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

Replacement Housing			Number		Amount
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0

33. (Lines 28 thru 32) — TOTAL PHASE 45 — $0

34. Relocation Services Cost — $0 (Not in Phase Total)

35.
36.
37. (All Phases) — TOTAL ESTIMATE — $255,400

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	06/18/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $255,400 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ______ Gaming 1: ______ Special Purpose: X Docs to RW: ______

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-9A	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	0	0	Business	0
Residential	0	0	Residential	0
Unimproved	1	1	Signs	0
			Special	0
Total Parcels	1	1	Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000	
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

								Amount	
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

							Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		66,030	x	120%	* *Design plan stage*	=	79,200		
14. Water Retention & Mit. (0 Ponds)		0	x	120%	(0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)					(Lines 13 &14)			79,200	
16. Admin. Settlements	(Factor	20%	x	60%	of Line 15)	=	9,500		
17. Litigation Awards	(Factor	45%	x	40%	of Line 15)	=	14,300		
18. Business Damages	(Claims	0	x	0)		=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)		=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)		=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)		=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	23,800	x	33%)		=	7,900		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x	18,000	=	18,000		
24. Other Condemn. Costs		1	x	$1,000		=	1,000		
25. SUBTOTAL					(Lines 16 thru 24)	=		65,700	
26.							TOTAL PHASE 43		$144,900

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.			
36.			
37.	(All Phases)	TOTAL ESTIMATE	$242,800

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $242,800 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update:	X	Gaming 1:		Special Purpose:	X	Docs to RW:	

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-9B	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	0	0	Business	0
Residential	0	0	Residential	0
Unimproved	1	1	Signs	0
			Special	0
Total Parcels	1	1	Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0
3.						TOTAL PHASE 41 $20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.									TOTAL PHASE 4B $77,900

R/W LAND COSTS (PHASE 43)

							Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		89,600	x	120%	* *Design plan stage*	=	107,500	
14. Water Retention & Mit. (0 Ponds)		0	x	120%	(0 Parcels w/o R/W Acq)		0	
15. SUBTOTAL (57,648 SF)					(Lines 13 &14)			107,500
16. Admin. Settlements	(Factor	20%	x	60%	of Line 15)	=	12,900	
17. Litigation Awards	(Factor	45%	x	40%	of Line 15)	=	19,400	
18. Business Damages	(Claims	0	x	0)		=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)		=	0	
20. Owner Appr. Fees	(Parcels	1	x	$15,000)		=	15,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)		=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	32,300	x	33%)		=	10,700	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x	18,000	=	18,000	
24. Other Condemn. Costs		1	x	$1,000		=	1,000	
25. SUBTOTAL					(Lines 16 thru 24)	=		77,000
26.							TOTAL PHASE 43	$184,500

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42 $0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)					TOTAL PHASE 45 $0
34. Relocation Services Cost			$0	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $282,400

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $282,400 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-9C + Ease	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	0	0	Business	0
Residential	0	0	Residential	0
Unimproved	2	2	Signs	0
			Special	0
Total Parcels	2	2	Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	2	x	20,000 =	Rate)	40,000	
2. Indirect Overhead	(Parcels	2	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$40,000

R/W OPS (PHASE 4B)

									Amount	
4. Appraisal Fees Through Trial					2	Parcels	x	30,000 =	60,000	
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0	
6. Court Reporter & Process Servers	50%	x	2	=	1	Parcels	x	500 =	500	
7. Expert Witness	75%	x	2	=	2	Parcels	x	30,000 =	60,000	
8. Mediators	75%	x	2	=	2	Parcels	x	2,400 =	4,800	
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0	
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000	
11. Appraisal Fee Review					1	Parcels	x	5,000 =	5,000	
12.								TOTAL PHASE 4B		$145,300

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		113,012	x	120% * *Design plan stage*	=	135,600		
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			135,600	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	16,300		
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	27,500		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	2	x	$15,000)	=	30,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	43,800	x	33%)	=	14,500		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	2) x 18,000	=	36,000		
24. Other Condemn. Costs		2	x	$1,000	=	2,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		126,300	
26.						TOTAL PHASE 43		$261,900

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

Replacement Housing			Number		Amount		
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.			
36.			
37.	(All Phases)	TOTAL ESTIMATE	$447,200

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	06/18/18
Bus. Dam. :		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $447,200 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ____ Gaming 1: ____ Special Purpose: X Docs to RW: ____

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-10A	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	1	1
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41) — Amount

1. Direct Labor Cost (Parcels 1 x 20,000 = Rate) 20,000
2. Indirect Overhead (Parcels 1 x 0 = Rate) 0
3.

TOTAL PHASE 41 $20,000

R/W OPS (PHASE 4B) — Amount

4. Appraisal Fees Through Trial				1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial				0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1 =	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1 =	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1 =	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.				0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts				1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review				0	Parcels	x	5,000 =	0
12.								

TOTAL PHASE 4B $77,900

R/W LAND COSTS (PHASE 43)

					Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount	211,926	x	120%	* *Design plan stage*	= 254,300	
14. Water Retention & Mit. (0 Ponds)	0	x	120%	(0 Parcels w/o R/W Acq)	0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)		254,300
16. Admin. Settlements (Factor	20%	x	60%	of Line 15)	= 30,500	
17. Litigation Awards (Factor	45%	x	45%	of Line 15)	= 51,500	
18. Business Damages (Claims	0	x	0)		= 0	
19. Bus. Damages Incrs. (Factor	25%	x	$ -)		= 0	
20. Owner Appr. Fees (Parcels	1	x	$15,000)		= 15,000	
21. Owner CPA Fees (Claims	0	x	$16,000)		= 0	
22. Defend.Atty Fees (Sum of Lines 16, 17 & 19)	82,000	x	33%)		= 27,100	
23. Owner Expert Witness (Comm.+Unimp.)	0	+	1) x	18,000	= 18,000	
24. Other Condemn. Costs	1	x	$1,000		= 1,000	
25. SUBTOTAL				(Lines 16 thru 24)	=	143,100
26.						

TOTAL PHASE 43 $397,400

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels $20,000 x 0

TOTAL PHASE 42 $0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)					

TOTAL PHASE 45 $0

34. Relocation Services Cost $0 (Not in Phase Total)

35.
36.
37. (All Phases) TOTAL ESTIMATE $495,300

Real Estate:	Stephen Cross	Signed:	Date:	06/18/18
Bus. Dam.:		Signed:	Date:	
Relocation:		Signed:	Date:	
Overall Review:	D. Wade Brown	Signed:	Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $495,300 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

- ___ Type A - indicates the most confidence
- ___ Type B - indicates above average confidence
- X Type C - indicates below average confidence
- ___ Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ___ Gaming 1: ___ Special Purpose: X Docs to RW: ___

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-10B	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	2	2
Total Parcels	2	2

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount
1. Direct Labor Cost	(Parcels	2	x	20,000 =	Rate)	40,000
2. Indirect Overhead	(Parcels	2	x	0 =	Rate)	0
3.					TOTAL PHASE 41	$40,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					2	Parcels	x	30,000 =	60,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	2	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	2	=	2	Parcels	x	30,000 =	60,000
8. Mediators	75%	x	2	=	2	Parcels	x	2,400 =	4,800
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					1	Parcels	x	5,000 =	5,000
12.								TOTAL PHASE 4B	$145,300

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		340,366	x	120% * *Design plan stage*	=	408,400	
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			408,400
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	49,000	
17. Litigation Awards	(Factor	45%	x	40% of Line 15)	=	73,500	
18. Business Damages	(Claims	0	x	0)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees	(Parcels	2	x	$15,000)	=	30,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	122,500	x	33%)	=	40,400	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	2) x 18,000	=	36,000	
24. Other Condemn. Costs		2	x	$1,000	=	2,000	
25. SUBTOTAL				(Lines 16 thru 24)	=		230,900
26.						TOTAL PHASE 43	$639,300

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)				TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $824,600

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	06/18/18
Bus. Dam. :		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $824,600 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ______ Gaming 1: ______ Special Purpose: X Docs to RW: ______

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	FPC-10A	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	1	1
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

							Amount	
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)		20,000	
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)		0	
3.							TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

								Amount	
4. Appraisal Fees Through Trial				1	Parcels	x	30,000 =	30,000	
5. Business Damage CPA Fees Through Trial				0	Claims	x	19,000 =	0	
6. Court Reporter & Process Servers	50%	x	1 =	1	Parcels	x	500 =	500	
7. Expert Witness	75%	x	1 =	1	Parcels	x	30,000 =	30,000	
8. Mediators	75%	x	1 =	1	Parcels	x	2,400 =	2,400	
9. Demolition, Asb. Abate., Survey, etc.				0	Imprvmet	x	15,000 =	0	
10. Miscellaneous Contracts				1	Per Project	x	15,000 =	15,000	
11. Appraisal Fee Review				0	Parcels	x	5,000 =	0	
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		84,003	x	120% * *Design plan stage*	=	100,800		
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			100,800	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	12,100		
17. Litigation Awards	(Factor	45%	x	40% of Line 15)	=	18,100		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	30,200	x	33%)	=	10,000		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x 18,000	=	18,000		
24. Other Condemn. Costs		1	x	$1,000	=	1,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		74,200	
26.						TOTAL PHASE 43		$175,000

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.
36.
37. (All Phases) TOTAL ESTIMATE $272,900

Real Estate:	Stephen Cross	Signed:		Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:		Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $272,900 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	FPC-10B	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	2	2
Unimproved	2	2
Total Parcels	4	4

Estimated Relocatees:	
Business	0
Residential	2
Signs	0
Special	0
Total Relocatees	2

R/W SUPPORT COSTS (PHASE 41)

						Amount
1. Direct Labor Cost	(Parcels	4	x	20,000 =	Rate)	80,000
2. Indirect Overhead	(Parcels	4	x	0 =	Rate)	0
3.						TOTAL PHASE 41 $80,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					4	Parcels	x	30,000 =	120,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	4	=	2	Parcels	x	500 =	1,000
7. Expert Witness	75%	x	4	=	3	Parcels	x	30,000 =	90,000
8. Mediators	75%	x	4	=	3	Parcels	x	2,400 =	7,200
9. Demolition, Asb. Abate., Survey, etc.					2	Imprvmet	x	15,000 =	30,000
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					1	Parcels	x	5,000 =	5,000
12.									TOTAL PHASE 4B $268,200

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		596,190	x	120% * *Design plan stage*	=	715,400	
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			715,400
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	85,800	
17. Litigation Awards	(Factor	45%	x	40% of Line 15)	=	128,800	
18. Business Damages	(Claims	0	x	0)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees	(Parcels	4	x	$15,000)	=	60,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	214,600	x	33%)	=	70,800	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	2) x 18,000	=	36,000	
24. Other Condemn. Costs		4	x	$1,000	=	4,000	
25. SUBTOTAL				(Lines 16 thru 24)	=		385,400
26.						TOTAL PHASE 43 $1,100,800	

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42 $0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	2	=	70,000
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	2	=	10,000
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)					TOTAL PHASE 45 $80,000
34. Relocation Services Cost			$8,000	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $1,529,000

Real Estate:	Stephen Cross	Signed:	Date:	12/17/18
Bus. Dam. :		Signed:	Date:	
Relocation:	Stephen Cross	Signed:	Date:	12/17/18
Overall Review:	D. Wade Brown	Signed:	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $1,529,000 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	FPC-10C	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	0	0	Business	0
Residential	5	5	Residential	5
Unimproved	1	1	Signs	0
			Special	0
Total Parcels	6	6	Total Relocatees	5

R/W SUPPORT COSTS (PHASE 41)

						Amount
1. Direct Labor Cost	(Parcels	6	x	20,000 =	Rate)	120,000
2. Indirect Overhead	(Parcels	6	x	0 =	Rate)	0
3.						TOTAL PHASE 41 $120,000

R/W OPS (PHASE 4B)

								Amount
4. Appraisal Fees Through Trial				6	Parcels	x	30,000 =	180,000
5. Business Damage CPA Fees Through Trial				0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	6 =	3	Parcels	x	500 =	1,500
7. Expert Witness	75%	x	6 =	5	Parcels	x	30,000 =	150,000
8. Mediators	75%	x	6 =	5	Parcels	x	2,400 =	12,000
9. Demolition, Asb. Abate., Survey, etc.				2	Imprvmet	x	15,000 =	30,000
10. Miscellaneous Contracts				1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review				2	Parcels	x	5,000 =	10,000
12.							TOTAL PHASE 4B	$398,500

R/W LAND COSTS (PHASE 43)

							Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		1,264,058	x	120%	* *Design plan stage*	=	1,516,900	
14. Water Retention & Mit. (0 Ponds)		0	x	120%	(0 Parcels w/o R/W Acq)		0	
15. SUBTOTAL (57,648 SF)					(Lines 13 &14)			1,516,900
16. Admin. Settlements	(Factor	20%	x	60%	of Line 15)	=	182,000	
17. Litigation Awards	(Factor	45%	x	40%	of Line 15)	=	273,000	
18. Business Damages	(Claims	0	x	0)		=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)		=	0	
20. Owner Appr. Fees	(Parcels	6	x	$15,000)		=	90,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)		=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	455,000	x	33%)		=	150,200	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x	18,000	=	18,000	
24. Other Condemn. Costs		6	x	$1,000		=	6,000	
25. SUBTOTAL					(Lines 16 thru 24)	=		719,200
26.							TOTAL PHASE 43	$2,236,100

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels $20,000 x 0 — TOTAL PHASE 42 $0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	3	=	105,000
29. Tenant	$25,000	x	2	=	50,000
Move Costs					
30. Residential	$5,000	x	5	=	25,000
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)					TOTAL PHASE 45 $180,000
34. Relocation Services Cost			$18,000	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $2,934,600

Real Estate:	Stephen Cross	Signed:		Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:	Stephen Cross	Signed:		Date:	12/17/18
Overall Review:	D. Wade Brown	Signed:		Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $2,934,600 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:
Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:
Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-11A/FPC-11A	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	1	1
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0
3.					TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

								Amount
4. Appraisal Fees Through Trial				1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial				0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1 =	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1 =	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1 =	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.				0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts				1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review				0	Parcels	x	5,000 =	0
12.							TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		93,444	x	120%	* *Design plan stage* =	112,100	
14. Water Retention & Mit. (0 Ponds)		0	x	120%	(0 Parcels w/o R/W Acq)	0	
15. SUBTOTAL (57,648 SF)					(Lines 13 &14)		112,100
16. Admin. Settlements	(Factor	20%	x	60%	of Line 15) =	13,500	
17. Litigation Awards	(Factor	45%	x	45%	of Line 15) =	22,700	
18. Business Damages	(Claims	0	x	0)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	36,200	x	33%)	=	11,900	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x	18,000 =	18,000	
24. Other Condemn. Costs		1	x	$1,000	=	1,000	
25. SUBTOTAL					(Lines 16 thru 24) =		82,100
26.						TOTAL PHASE 43	$194,200

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)				TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $292,100

Real Estate:	Stephen Cross	Signed:	Stephen Cross	Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $292,100 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:
Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:
Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-11B/FPC-11B	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	1	1
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

							Amount	
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)		20,000	
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)		0	
3.							TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

								Amount	
4. Appraisal Fees Through Trial				1	Parcels	x	30,000 =	30,000	
5. Business Damage CPA Fees Through Trial				0	Claims	x	19,000 =	0	
6. Court Reporter & Process Servers	50%	x	1 =	1	Parcels	x	500 =	500	
7. Expert Witness	75%	x	1 =	1	Parcels	x	30,000 =	30,000	
8. Mediators	75%	x	1 =	1	Parcels	x	2,400 =	2,400	
9. Demolition, Asb. Abate., Survey, etc.				0	Imprvmet	x	15,000 =	0	
10. Miscellaneous Contracts				1	Per Project	x	15,000 =	15,000	
11. Appraisal Fee Review				0	Parcels	x	5,000 =	0	
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		183,287	x	120% * *Design plan stage*	=	219,900		
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			219,900	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	26,400		
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	44,500		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	70,900	x	33%)	=	23,400		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x 18,000	=	18,000		
24. Other Condemn. Costs		1	x	$1,000	=	1,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		128,300	
26.						TOTAL PHASE 43		$348,200

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.			
36.			
37.	(All Phases)	TOTAL ESTIMATE	$446,100

Real Estate:	Stephen Cross	Signed:	Stephen Cross	Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	D. Wade Brown	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $446,100 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-12A	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	1	1
Unimproved	0	0
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000	
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount	
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000	
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0	
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500	
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000	
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400	
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0	
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000	
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0	
12.								TOTAL PHASE 4B		$77,900

R/W LAND COSTS (PHASE 43)

							Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		94,757	x	120%	* *Design plan stage*	=	113,700		
14. Water Retention & Mit. (0 Ponds)		0	x	120%	(0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)					(Lines 13 &14)			113,700	
16. Admin. Settlements	(Factor	20%	x	60%	of Line 15)	=	13,600		
17. Litigation Awards	(Factor	45%	x	45%	of Line 15)	=	23,000		
18. Business Damages	(Claims	0	x	0)		=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)		=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)		=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)		=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	36,600	x	33%)		=	12,100		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	0) x	18,000	=	0		
24. Other Condemn. Costs		1	x	$1,000		=	1,000		
25. SUBTOTAL					(Lines 16 thru 24)	=		64,700	
26.							TOTAL PHASE 43		$178,400

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.
36.
37. (All Phases) TOTAL ESTIMATE $276,300

Real Estate:	Stephen Cross	Signed:		Date:	06/18/18
Bus. Dam. :		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:		Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $276,300 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ______ Gaming 1: ______ Special Purpose: X Docs to RW: ______

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-12B	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	1	1
Unimproved	0	0
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	2
Signs	0
Special	0
Total Relocatees	2

R/W SUPPORT COSTS (PHASE 41)

						Amount
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0
3.					TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					1	Imprvmet	x	15,000 =	15,000
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$92,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		389,648	x	120%	* *Design plan stage* =	467,600		
14. Water Retention & Mit. (0 Ponds)		0	x	120%	(0 Parcels w/o R/W Acq)	0		
15. SUBTOTAL (57,648 SF)					(Lines 13 &14)		467,600	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	56,100		
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	94,700		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	150,800	x	33%)	=	49,800		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	0) x 18,000	=	0		
24. Other Condemn. Costs		1	x	$1,000	=	1,000		
25. SUBTOTAL					(Lines 16 thru 24) =		216,600	
26.						TOTAL PHASE 43		$684,200

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	1	=	25,000
Move Costs					
30. Residential	$5,000	x	1	=	5,000
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)				TOTAL PHASE 45	$30,000
34. Relocation Services Cost			$3,000	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $827,100

Real Estate:	Stephen Cross	Signed:		Date:	06/18/18
Bus. Dam.:		Signed:		Date:	
Relocation:	Stephen Cross	Signed:		Date:	06/18/18
Overall Review:	D. Wade Brown	Signed:		Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $827,100 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ______ Gaming 1: ______ Special Purpose: X Docs to RW: ______

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	FPC-12A	District:	Seven		
County:	Hernando	Segment:	N/A	Date:	17-Dec-18		
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A		
Project Des.	SR 50 from Brooksville Bypass to I-75						

Parcels	Gross	Net
Commercial	0	0
Residential	1	1
Unimproved	0	0
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

					Amount	
1. Direct Labor Cost	(Parcels	1	x	20,000 = Rate)	20,000	
2. Indirect Overhead	(Parcels	1	x	0 = Rate)	0	
3.					TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

							Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		64,821	x	120%	* *Design plan stage*	=	77,800		
14. Water Retention & Mit. (0 Ponds)		0	x	120%	(0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)					(Lines 13 &14)			77,800	
16. Admin. Settlements	(Factor	20%	x	60%	of Line 15)	=	9,300		
17. Litigation Awards	(Factor	45%	x	45%	of Line 15)	=	15,800		
18. Business Damages	(Claims	0	x	0)		=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)		=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)		=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)		=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	25,100	x	33%)		=	8,300		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	0) x	18,000	=	0		
24. Other Condemn. Costs		1	x	$1,000		=	1,000		
25. SUBTOTAL					(Lines 16 thru 24)	=		49,400	
26.							TOTAL PHASE 43		$127,200

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.
36.
37. (All Phases) TOTAL ESTIMATE $225,100

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $225,100 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	FPC-12B	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	1	1
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000	
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

							Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		21,640	x	120%	* *Design plan stage*	=	26,000		
14. Water Retention & Mit. (0 Ponds)		0	x	120%	(0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)					(Lines 13 &14)			26,000	
16. Admin. Settlements	(Factor	20%	x	60%	of Line 15)	=	3,100		
17. Litigation Awards	(Factor	45%	x	45%	of Line 15)	=	5,300		
18. Business Damages	(Claims	0	x	0)		=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)		=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)		=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)		=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	8,400	x	33%)		=	2,800		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x	18,000	=	18,000		
24. Other Condemn. Costs		1	x	$1,000		=	1,000		
25. SUBTOTAL					(Lines 16 thru 24)	=		45,200	
26.							TOTAL PHASE 43		$71,200

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0

33. (Lines 28 thru 32) — TOTAL PHASE 45 $0
34. Relocation Services Cost $0 (Not in Phase Total)

35.
36.
37. (All Phases) TOTAL ESTIMATE $169,100

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $169,100 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: ____ Special Purpose: X Docs to RW: ____

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	FPC-12C	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	3	3
Unimproved	0	0
Total Parcels	3	3

Estimated Relocatees:	
Business	0
Residential	2
Signs	0
Special	0
Total Relocatees	2

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	3	x	20,000 =	Rate)	60,000	
2. Indirect Overhead	(Parcels	3	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$60,000

R/W OPS (PHASE 4B)

										Amount	
4. Appraisal Fees Through Trial					3	Parcels	x	30,000 =		90,000	
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =		0	
6. Court Reporter & Process Servers	50%	x	3	=	2	Parcels	x	500 =		1,000	
7. Expert Witness	75%	x	3	=	2	Parcels	x	30,000 =		60,000	
8. Mediators	75%	x	3	=	2	Parcels	x	2,400 =		4,800	
9. Demolition, Asb. Abate., Survey, etc.					2	Imprvmet	x	15,000 =		30,000	
10. Miscellaneous Contracts					1	Per Project	x	15,000 =		15,000	
11. Appraisal Fee Review					1	Parcels	x	5,000 =		5,000	
12.									TOTAL PHASE 4B		$205,800

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		443,309	x	120% * *Design plan stage*	=	532,000		
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			532,000	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	63,800		
17. Litigation Awards	(Factor	45%	x	40% of Line 15)	=	95,800		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	3	x	$15,000)	=	45,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	159,600	x	33%)	=	52,700		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	0) x 18,000	=	0		
24. Other Condemn. Costs		3	x	$1,000	=	3,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		260,300	
26.						TOTAL PHASE 43		$792,300

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

Replacement Housing			Number		Amount		
28. Owner	$35,000	x	2	=	70,000		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$70,000
34. Relocation Services Cost			$7,000	(Not in Phase Total)			

35.
36.
37. (All Phases) TOTAL ESTIMATE $1,128,100

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $1,128,100 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-13A + Ease	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	0	0	Business	0
Residential	2	2	Residential	0
Unimproved	0	0	Signs	0
			Special	0
Total Parcels	2	2	Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	2	x	20,000 =	Rate)	40,000	
2. Indirect Overhead	(Parcels	2	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$40,000

R/W OPS (PHASE 4B)

									Amount	
4. Appraisal Fees Through Trial					2	Parcels	x	30,000 =	60,000	
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0	
6. Court Reporter & Process Servers	50%	x	2	=	1	Parcels	x	500 =	500	
7. Expert Witness	75%	x	2	=	2	Parcels	x	30,000 =	60,000	
8. Mediators	75%	x	2	=	2	Parcels	x	2,400 =	4,800	
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0	
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000	
11. Appraisal Fee Review					1	Parcels	x	5,000 =	5,000	
12.								TOTAL PHASE 4B		$145,300

R/W LAND COSTS (PHASE 43)

							Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		124,812	x	120%	* *Design plan stage*	=	149,800		
14. Water Retention & Mit. (0 Ponds)		0	x	120%	(0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)					(Lines 13 &14)			149,800	
16. Admin. Settlements	(Factor	20%	x	60%	of Line 15)	=	18,000		
17. Litigation Awards	(Factor	45%	x	45%	of Line 15)	=	30,300		
18. Business Damages	(Claims	0	x	0)		=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)		=	0		
20. Owner Appr. Fees	(Parcels	2	x	$15,000)		=	30,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)		=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	48,300	x	33%)		=	15,900		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	0) x	18,000	=	0		
24. Other Condemn. Costs		2	x	$1,000		=	2,000		
25. SUBTOTAL					(Lines 16 thru 24)	=		96,200	
26.							TOTAL PHASE 43		$246,000

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.
36.
37. (All Phases) TOTAL ESTIMATE $431,300

Real Estate:	Stephen Cross	Signed:	Stephen Cross	Date:	06/18/18
Bus. Dam. :		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:		Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $431,300 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ______ Gaming 1: ______ Special Purpose: X Docs to RW: ______

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-13B	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	1	1
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0
3.						TOTAL PHASE 41 $20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.									TOTAL PHASE 4B $77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		149,788	x	120% * *Design plan stage*	=	179,700	
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0	
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			179,700
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	21,600	
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	36,400	
18. Business Damages	(Claims	0	x	0)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	58,000	x	33%)	=	19,100	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x 18,000	=	18,000	
24. Other Condemn. Costs		1	x	$1,000	=	1,000	
25. SUBTOTAL				(Lines 16 thru 24)	=		111,100
26.						TOTAL PHASE 43	$290,800

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42 $0

RELOCATION COSTS (PHASE 45)

Replacement Housing			Number		Amount
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)					TOTAL PHASE 45 $0
34. Relocation Services Cost			$0	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $388,700

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	06/18/18
Bus. Dam. :		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $388,700 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ______ Gaming 1: ______ Special Purpose: X Docs to RW: ______

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-13C	District:	Seven
County:	Hernando	Segment:	N/A	Date:	6-Jun-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	1	1
Unimproved	1	1
Total Parcels	2	2

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount
1. Direct Labor Cost	(Parcels	2	x	20,000 =	Rate)	40,000
2. Indirect Overhead	(Parcels	2	x	0 =	Rate)	0
3.						TOTAL PHASE 41 $40,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					2	Parcels	x	30,000 =	60,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	2	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	2	=	2	Parcels	x	30,000 =	60,000
8. Mediators	75%	x	2	=	2	Parcels	x	2,400 =	4,800
9. Demolition, Asb. Abate., Survey, etc.					1	Imprvmet	x	15,000 =	15,000
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					1	Parcels	x	5,000 =	5,000
12.									TOTAL PHASE 4B $160,300

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		650,000	x	120%	* *Design plan stage* =	780,000	
14. Water Retention & Mit. (0 Ponds)		0	x	120%	(0 Parcels w/o R/W Acq)	0	
15. SUBTOTAL (57,648 SF)					(Lines 13 &14)		780,000
16. Admin. Settlements	(Factor	20%	x	60%	of Line 15) =	93,600	
17. Litigation Awards	(Factor	45%	x	40%	of Line 15) =	140,400	
18. Business Damages	(Claims	0	x	0)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees	(Parcels	2	x	$15,000)	=	30,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	234,000	x	33%)	=	77,200	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x	18,000 =	18,000	
24. Other Condemn. Costs		2	x	$1,000	=	2,000	
25. SUBTOTAL					(Lines 16 thru 24) =		361,200
26.						TOTAL PHASE 43	$1,141,200

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42 $0

RELOCATION COSTS (PHASE 45)

Replacement Housing			Number		Amount
28. Owner	$35,000	x	1	=	35,000
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	1	=	5,000
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)					TOTAL PHASE 45 $40,000
34. Relocation Services Cost			$4,000	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $1,381,500

Real Estate:	Stephen Cross	Signed:	Date:	06/18/18
Bus. Dam.:		Signed:	Date:	
Relocation:		Signed:	Date:	
Overall Review:	D. Wade Brown	Signed:	Date:	06/18/18

Cost Estimate Sequence #: Dated: 6/18/2018 In the Amount of $ $1,381,500 Data Input Completion Date: 6/18/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: ____ Gaming 1: ____ Special Purpose: X Docs to RW: ____

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	FPC-13A	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	1	1
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000	
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

								Amount	
4. Appraisal Fees Through Trial				1	Parcels	x	30,000 =	30,000	
5. Business Damage CPA Fees Through Trial				0	Claims	x	19,000 =	0	
6. Court Reporter & Process Servers	50%	x	1 =	1	Parcels	x	500 =	500	
7. Expert Witness	75%	x	1 =	1	Parcels	x	30,000 =	30,000	
8. Mediators	75%	x	1 =	1	Parcels	x	2,400 =	2,400	
9. Demolition, Asb. Abate., Survey, etc.				0	Imprvmet	x	15,000 =	0	
10. Miscellaneous Contracts				1	Per Project	x	15,000 =	15,000	
11. Appraisal Fee Review				0	Parcels	x	5,000 =	0	
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		127,585	x	120% * *Design plan stage*	=	153,100		
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			153,100	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	18,400		
17. Litigation Awards	(Factor	45%	x	40% of Line 15)	=	27,600		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	46,000	x	33%)	=	15,200		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x 18,000	=	18,000		
24. Other Condemn. Costs		1	x	$1,000	=	1,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		95,200	
26.						TOTAL PHASE 43		$248,300

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.
36.
37. (All Phases) TOTAL ESTIMATE $346,200

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Bus. Dam. :		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $346,200 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	FPC-13B	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	1	1
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

					Amount
1. Direct Labor Cost	(Parcels	1	x	20,000 = Rate)	20,000
2. Indirect Overhead	(Parcels	1	x	0 = Rate)	0
3.				TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

									Amount
4. Appraisal Fees Through Trial					1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1	=	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1	=	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1	=	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review					0	Parcels	x	5,000 =	0
12.								TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount		49,082	x	120%	* *Design plan stage* =	58,900	
14. Water Retention & Mit. (0 Ponds)		0	x	120%	(0 Parcels w/o R/W Acq)	0	
15. SUBTOTAL (57,648 SF)					(Lines 13 &14)		58,900
16. Admin. Settlements	(Factor	20%	x	60%	of Line 15) =	7,100	
17. Litigation Awards	(Factor	45%	x	40%	of Line 15) =	10,600	
18. Business Damages	(Claims	0	x	0)	=	0	
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000	
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	17,700	x	33%)	=	5,800	
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	1) x	18,000 =	18,000	
24. Other Condemn. Costs		1	x	$1,000	=	1,000	
25. SUBTOTAL					(Lines 16 thru 24) =		57,500
26.						TOTAL PHASE 43	$116,400

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0
33. (Lines 28 thru 32)				TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)	

35.
36.
37. (All Phases) TOTAL ESTIMATE $214,300

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $214,300 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	FPC-13C	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A

Project Des. SR 50 from Brooksville Bypass to I-75

Parcels	Gross	Net	Estimated Relocatees:	
Commercial	0	0	Business	0
Residential	1	1	Residential	0
Unimproved	0	0	Signs	0
			Special	0
Total Parcels	1	1	Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41) — Amount

1. Direct Labor Cost (Parcels 1 x 20,000 = Rate) 20,000
2. Indirect Overhead (Parcels 1 x 0 = Rate) 0
3. TOTAL PHASE 41 $20,000

R/W OPS (PHASE 4B) — Amount

								Amount
4. Appraisal Fees Through Trial				1	Parcels	x	30,000 =	30,000
5. Business Damage CPA Fees Through Trial				0	Claims	x	19,000 =	0
6. Court Reporter & Process Servers	50%	x	1 =	1	Parcels	x	500 =	500
7. Expert Witness	75%	x	1 =	1	Parcels	x	30,000 =	30,000
8. Mediators	75%	x	1 =	1	Parcels	x	2,400 =	2,400
9. Demolition, Asb. Abate., Survey, etc.				0	Imprvmet	x	15,000 =	0
10. Miscellaneous Contracts				1	Per Project	x	15,000 =	15,000
11. Appraisal Fee Review				0	Parcels	x	5,000 =	0
12.							TOTAL PHASE 4B	$77,900

R/W LAND COSTS (PHASE 43)

					Amount	Subtotal
13. Land, Improvements & Severance Damages and Cost to Cure Amount	154,180	x	120% * *Design plan stage*	=	185,000	
14. Water Retention & Mit. (0 Ponds)	0	x	120% (0 Parcels w/o R/W Acq)		0	
15. SUBTOTAL (57,648 SF)			(Lines 13 &14)			185,000
16. Admin. Settlements (Factor	20%	x	60% of Line 15)	=	22,200	
17. Litigation Awards (Factor	45%	x	45% of Line 15)	=	37,500	
18. Business Damages (Claims	0	x	0)	=	0	
19. Bus. Damages Incrs. (Factor	25%	x	$ -)	=	0	
20. Owner Appr. Fees (Parcels	1	x	$15,000)	=	15,000	
21. Owner CPA Fees (Claims	0	x	$16,000)	=	0	
22. Defend.Atty Fees (Sum of Lines 16, 17 & 19)	59,700	x	33%)	=	19,700	
23. Owner Expert Witness (Comm.+Unimp.)	0	+	0) x 18,000	=	0	
24. Other Condemn. Costs	1	x	$1,000	=	1,000	
25. SUBTOTAL			(Lines 16 thru 24)	=		95,400
26.					TOTAL PHASE 43	$280,400

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels $20,000 x 0 — TOTAL PHASE 42 $0

RELOCATION COSTS (PHASE 45)

			Number		Amount
Replacement Housing					
28. Owner	$35,000	x	0	=	0
29. Tenant	$25,000	x	0	=	0
Move Costs					
30. Residential	$5,000	x	0	=	0
31. Business/Farm	$40,000	x	0	=	0
32. Personal Property	$3,000	x	0	=	0

33. (Lines 28 thru 32) — TOTAL PHASE 45 $0
34. Relocation Services Cost $0 (Not in Phase Total)
35.
36.
37. (All Phases) TOTAL ESTIMATE $378,300

Real Estate:	Stephen Cross	Signed:	[signature]	Date: 12/17/18
Bus. Dam.:		Signed:		Date:
Relocation:		Signed:		Date:
Overall Review:	D. Wade Brown	Signed:	[signature]	Date: 12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $378,300 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

- ___ Type A - indicates the most confidence
- ___ Type B - indicates above average confidence
- X Type C - indicates below average confidence
- ___ Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: ___ Special Purpose: X Docs to RW: ___

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-14A/FPC-14A	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	1	1
Unimproved	0	0
Total Parcels	1	1

Estimated Relocatees:	
Business	0
Residential	1
Signs	0
Special	0
Total Relocatees	1

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	1	x	20,000 =	Rate)	20,000	
2. Indirect Overhead	(Parcels	1	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$20,000

R/W OPS (PHASE 4B)

								Amount	
4. Appraisal Fees Through Trial				1	Parcels	x	30,000 =	30,000	
5. Business Damage CPA Fees Through Trial				0	Claims	x	19,000 =	0	
6. Court Reporter & Process Servers	50%	x	1 =	1	Parcels	x	500 =	500	
7. Expert Witness	75%	x	1 =	1	Parcels	x	30,000 =	30,000	
8. Mediators	75%	x	1 =	1	Parcels	x	2,400 =	2,400	
9. Demolition, Asb. Abate., Survey, etc.				1	Imprvmet	x	15,000 =	15,000	
10. Miscellaneous Contracts				1	Per Project	x	15,000 =	15,000	
11. Appraisal Fee Review				0	Parcels	x	5,000 =	0	
12.							TOTAL PHASE 4B		$92,900

R/W LAND COSTS (PHASE 43)

						Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		550,000	x	120% * *Design plan stage*	=	660,000		
14. Water Retention & Mit. (0 Ponds)		0	x	120% (0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)				(Lines 13 &14)			660,000	
16. Admin. Settlements	(Factor	20%	x	60% of Line 15)	=	79,200		
17. Litigation Awards	(Factor	45%	x	45% of Line 15)	=	133,700		
18. Business Damages	(Claims	0	x	0)	=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)	=	0		
20. Owner Appr. Fees	(Parcels	1	x	$15,000)	=	15,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)	=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	212,900	x	33%)	=	70,300		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	0) x 18,000	=	0		
24. Other Condemn. Costs		1	x	$1,000	=	1,000		
25. SUBTOTAL				(Lines 16 thru 24)	=		299,200	
26.						TOTAL PHASE 43		$959,200

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

			Number		Amount		
Replacement Housing							
28. Owner	$35,000	x	1	=	35,000		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	1	=	5,000		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$40,000
34. Relocation Services Cost			$4,000	(Not in Phase Total)			

35.
36.
37. (All Phases) TOTAL ESTIMATE $1,112,100

Real Estate:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Bus. Dam.:		Signed:		Date:	
Relocation:	Stephen Cross	Signed:	[signature]	Date:	12/17/18
Overall Review:	D. Wade Brown	Signed:	[signature]	Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $1,112,100 Data Input Completion Date: 12/17/2018

REMARKS:

The following indicates the estimator's confidence in the above estimate:

	Type A - indicates the most confidence
	Type B - indicates above average confidence
X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN RIGHT OF WAY COST ESTIMATE

FM#:	430051-1	Alternate:	SMF-14B/ FPC-14B	District:	Seven
County:	Hernando	Segment:	N/A	Date:	17-Dec-18
State Rd.:	SR 50/US 98/ SR 700	FAP#:	N/A	C.E. Sequence	N/A
Project Des.	SR 50 from Brooksville Bypass to I-75				

Parcels	Gross	Net
Commercial	0	0
Residential	0	0
Unimproved	5	5
Total Parcels	5	5

Estimated Relocatees:	
Business	0
Residential	0
Signs	0
Special	0
Total Relocatees	0

R/W SUPPORT COSTS (PHASE 41)

						Amount	
1. Direct Labor Cost	(Parcels	5	x	20,000 =	Rate)	100,000	
2. Indirect Overhead	(Parcels	5	x	0 =	Rate)	0	
3.						TOTAL PHASE 41	$100,000

R/W OPS (PHASE 4B)

									Amount	
4. Appraisal Fees Through Trial					5	Parcels	x	30,000 =	150,000	
5. Business Damage CPA Fees Through Trial					0	Claims	x	19,000 =	0	
6. Court Reporter & Process Servers	50%	x	5	=	3	Parcels	x	500 =	1,500	
7. Expert Witness	75%	x	5	=	4	Parcels	x	30,000 =	120,000	
8. Mediators	75%	x	5	=	4	Parcels	x	2,400 =	9,600	
9. Demolition, Asb. Abate., Survey, etc.					0	Imprvmet	x	15,000 =	0	
10. Miscellaneous Contracts					1	Per Project	x	15,000 =	15,000	
11. Appraisal Fee Review					2	Parcels	x	5,000 =	10,000	
12.								TOTAL PHASE 4B		$306,100

R/W LAND COSTS (PHASE 43)

							Amount	Subtotal	
13. Land, Improvements & Severance Damages and Cost to Cure Amount		753,644	x	120%	* *Design plan stage*	=	904,400		
14. Water Retention & Mit. (0 Ponds)		0	x	120%	(0 Parcels w/o R/W Acq)		0		
15. SUBTOTAL (57,648 SF)					(Lines 13 &14)			904,400	
16. Admin. Settlements	(Factor	20%	x	60%	of Line 15)	=	108,500		
17. Litigation Awards	(Factor	45%	x	40%	of Line 15)	=	162,800		
18. Business Damages	(Claims	0	x	0)		=	0		
19. Bus. Damages Incrs.	(Factor	25%	x	$ -)		=	0		
20. Owner Appr. Fees	(Parcels	5	x	$15,000)		=	75,000		
21. Owner CPA Fees	(Claims	0	x	$16,000)		=	0		
22. Defend.Atty Fees	(Sum of Lines 16, 17 & 19)	271,300	x	33%)		=	89,500		
23. Owner Expert Witness	(Comm.+Unimp.)	0	+	5) x	18,000	=	90,000		
24. Other Condemn. Costs		5	x	$1,000		=	5,000		
25. SUBTOTAL					(Lines 16 thru 24)	=		530,800	
26.							TOTAL PHASE 43		$1,435,200

* *Design contingency for design plan stage:*
(1) PD&E plans - 120% (2) 30% plans - 115% (3) 60% plans - 110% (4) 90% plans -105% (5) 268 Date -100%

R/W ACQUISITION CONSULTANT (PHASE 42)

27. Acquisition Consultant-50% of parcels	$20,000	x	0	TOTAL PHASE 42	$0

RELOCATION COSTS (PHASE 45)

Replacement Housing			Number		Amount		
28. Owner	$35,000	x	0	=	0		
29. Tenant	$25,000	x	0	=	0		
Move Costs							
30. Residential	$5,000	x	0	=	0		
31. Business/Farm	$40,000	x	0	=	0		
32. Personal Property	$3,000	x	0	=	0		
33. (Lines 28 thru 32)						TOTAL PHASE 45	$0
34. Relocation Services Cost			$0	(Not in Phase Total)			

35.
36.
37. (All Phases) TOTAL ESTIMATE $1,841,300

Real Estate:	Stephen Cross	Signed:		Date:	12/17/18
Bus. Dam. :		Signed:		Date:	
Relocation:		Signed:		Date:	
Overall Review:	D. Wade Brown	Signed:		Date:	12/17/18

Cost Estimate Sequence #: Dated: 12/17/2018 In the Amount of $ $1,841,300 Data Input Completion Date: 12/17/2018

REMARKS:

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X	Type C - indicates below average confidence
	Type D - indicates the least or no confidence

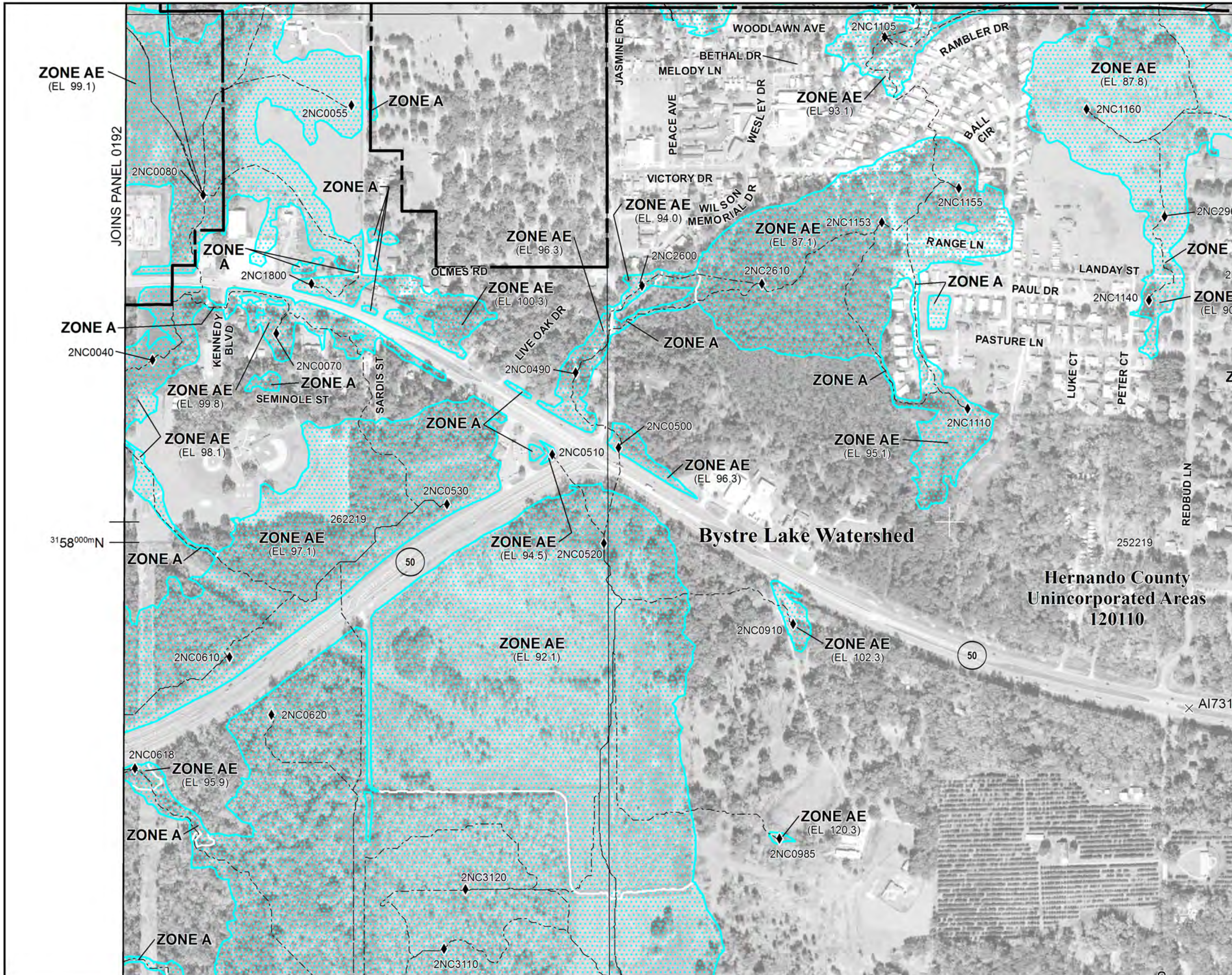
The following indicates the Department's purpose for this estimate:

Work Program Update: X Gaming 1: Special Purpose: X Docs to RW:

Comments:

APPENDIX D

FEMA FIRM Maps/Flood Investigation Documentation



MAP SCALE 1" = 500'

0 250 500 750 1,000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0211D

FIRM

FLOOD INSURANCE RATE MAP

HERNANDO COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 211 OF 410

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BROOKSVILLE, CITY OF	120333	0211	D
HERNANDO COUNTY	120110	0211	D

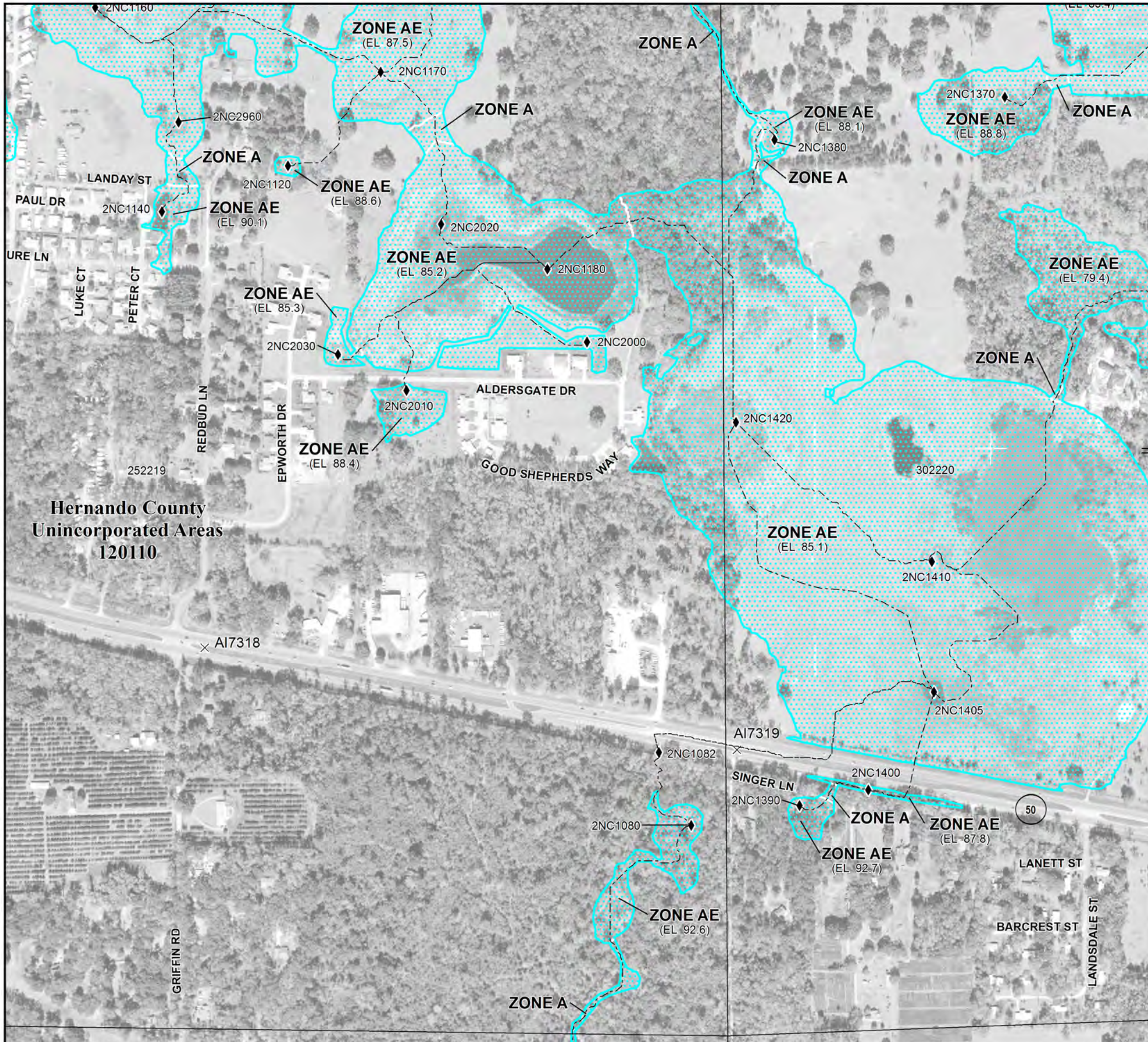
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
12053C0211D

EFFECTIVE DATE
FEBRUARY 2, 2012

Federal Emergency Management Agency

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



JOINS PANEL 0212

1530000 FT

MAP SCALE 1" = 500'

0 250 500 750 1,000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0211D

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

PANEL 211 OF 410

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BROOKSVILLE, CITY OF	120333	0211	D
HERNANDO COUNTY	120110	0211	D

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
12053C0211D

EFFECTIVE DATE
FEBRUARY 2, 2012

Federal Emergency Management Agency

1-800-638-6620.

MAP SCALE 1" = 500'

0 250 500 750 1,000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0212D

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

PANEL 212 OF 410

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BROOKSVILLE, CITY OF	120333	0212	D
HERNANDO COUNTY	120110	0212	D

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
12053C0212D

EFFECTIVE DATE
FEBRUARY 2, 2012

Federal Emergency Management Agency

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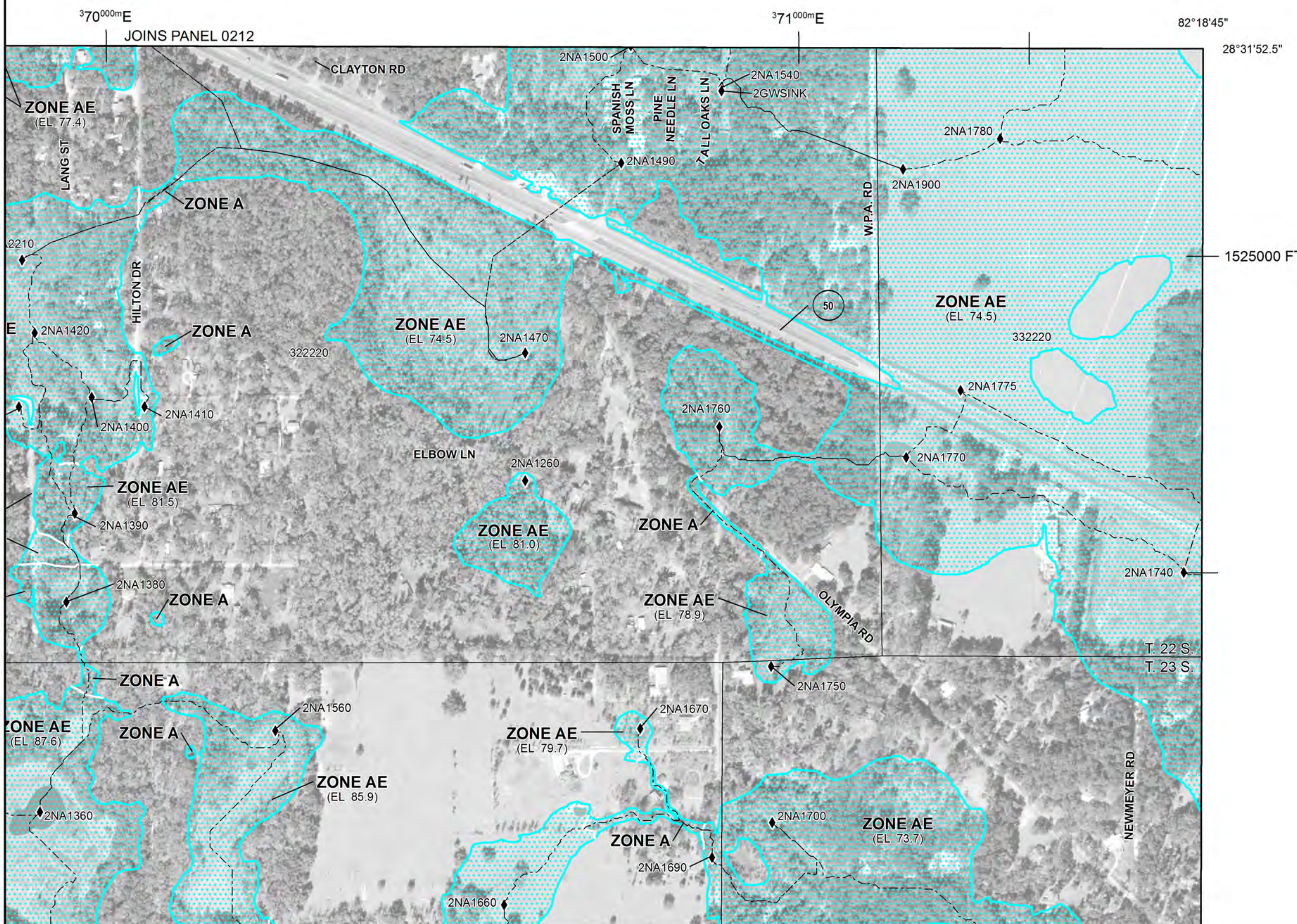

1-800-638-6620.

MAP SCALE 1" = 500'

0 250 500 750 1,000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0214D

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

PANEL 214 OF 410

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HERNANDO COUNTY	120110	0214	D

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
12053C0214D

EFFECTIVE DATE
FEBRUARY 2, 2012

Federal Emergency Management Agency

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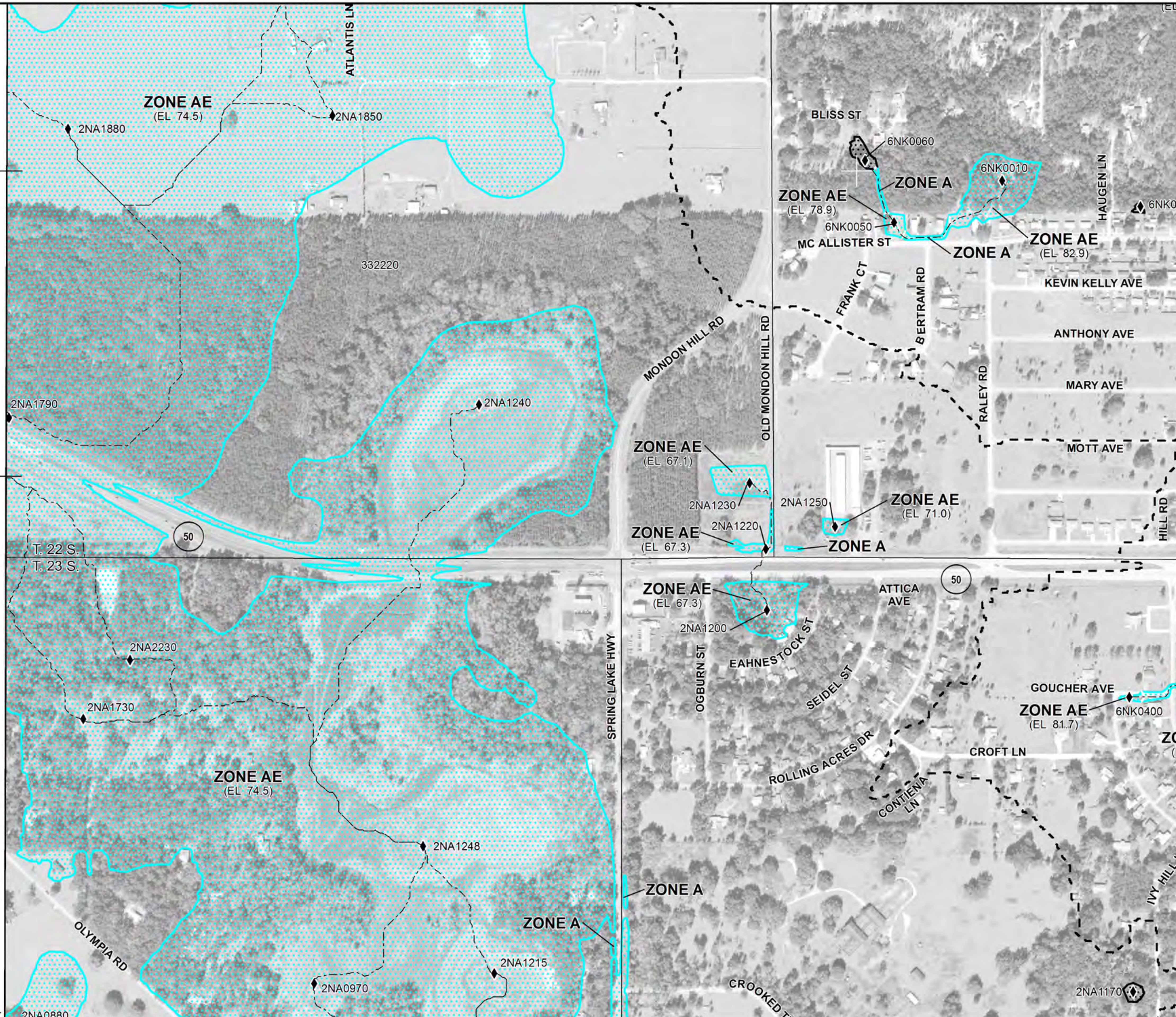

MAP SCALE 1" = 500'

0 250 500 750 1,000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0218D

FIRM

FLOOD INSURANCE RATE MAP

HERNANDO COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 218 OF 410

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HERNANDO COUNTY	120110	0218	D

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
12053C0218D

EFFECTIVE DATE
FEBRUARY 2, 2012

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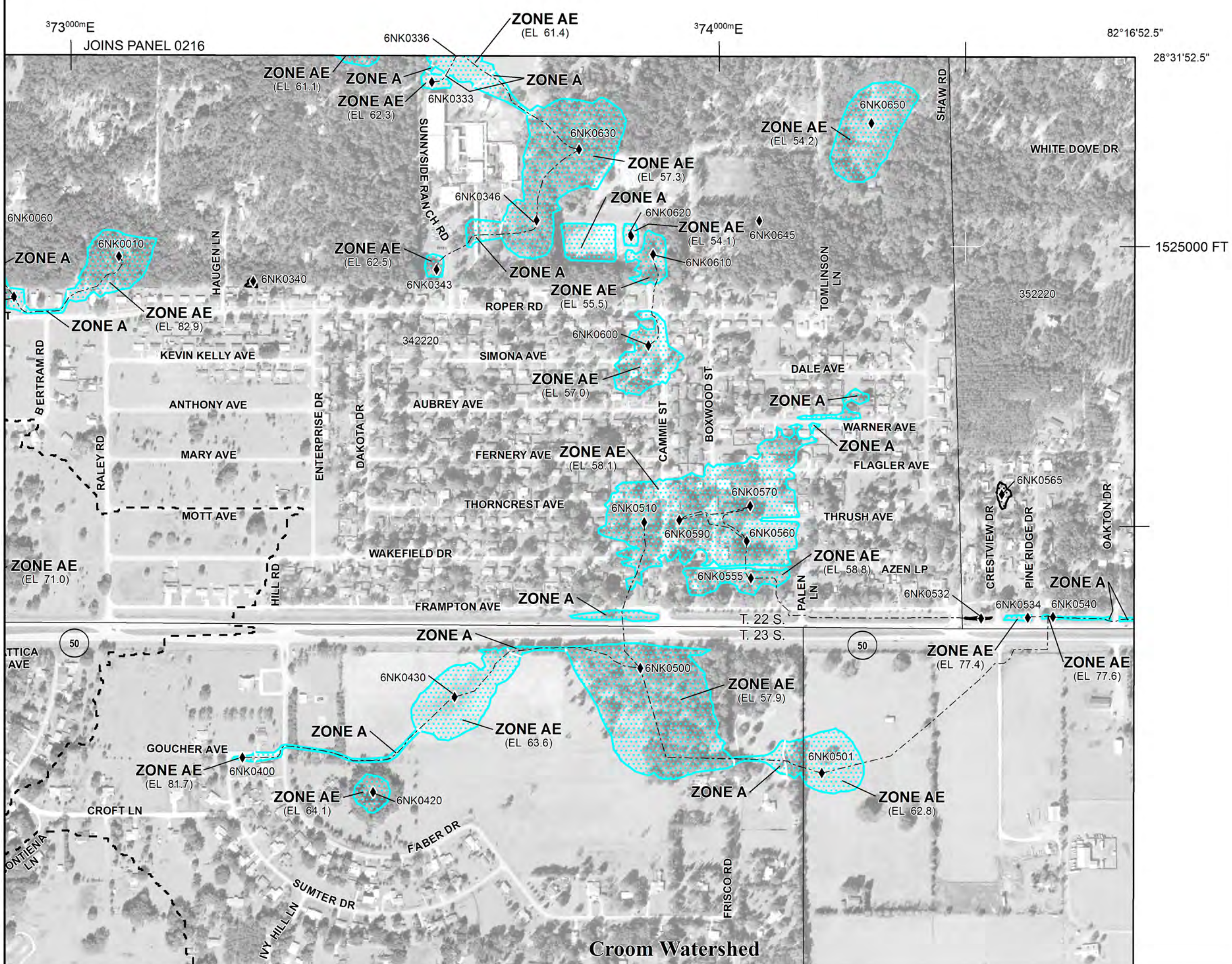

MAP SCALE 1" = 500'

0 250 500 750 1,000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0218D

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

PANEL 218 OF 410

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HERNANDO COUNTY	120110	0218	D

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
12053C0218D

EFFECTIVE DATE
FEBRUARY 2, 2012

Federal Emergency Management Agency

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

1-800-638-6620.

MAP SCALE 1" = 500'

0 250 500 750 1,000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0219D

FIRM

FLOOD INSURANCE RATE MAP

HERNANDO COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 219 OF 410

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HERNANDO COUNTY	120110	0219	D

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
12053C0219D

EFFECTIVE DATE
FEBRUARY 2, 2012

Federal Emergency Management Agency

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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0219D

FIRM

FLOOD INSURANCE RATE MAP

HERNANDO COUNTY, FLORIDA

AND INCORPORATED AREAS

PANEL 219 OF 410

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HERNANDO COUNTY	120110	0219	D

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
12053C0219D

EFFECTIVE DATE
FEBRUARY 2, 2012

Federal Emergency Management Agency

Flood Investigation Complaint Locations

FLOOD INVESTIGATION INVENTORY SHEET
Flood Investigation # 0806192006827

Entry Date: 6/19/2006 5:05:05 PM
Revised Date: 7/8/2010 8:35:26 AM
Completed By: Tom Ward, PBS&J

SECTION I: LOCATION

County - Hernando
State Road - SR 50, SR 50A, SR 700
Road Description - 4 lane(s), Principal Arterial, Roadside Ditches
Roadway Separation - Divided w/Traversable Median
Direction of Travel - Two-Way
Functional System of Road - Rural
Specific Classification of Road - Principal Arterial
Roadway Drainage - Roadside Ditches

Flooding Condition - On-System

Local Road Subject to Flooding - Dorsey Smith Rd
Business Name:
Business/Private Property Address Subject to Flooding -

Location:
Latitude: 28.535084
Longitude: -82.335649

Section/Township/Range - 30 / 22S / 20E
Project is Active - Yes

SECTION II: PROBLEM DESCRIPTION

Date of Original Complaint -
Complainant Name -
Problem Description - Unknown

Details of the Problem - On April 27, 2000 a field review was conducted at the subject project. Present at the site were Carlos Lopez, Laura Mcintosh and Kristine Kaub. The existing drainage system consist of roadside swales with ditch blocks for stormwater management purposes. The crossdrain at Dorsey Smith Road was observed to be in good condition. The crossdrain under SR 50 was also in good condition except at the pipe outfall. Runoff has created about a one foot sump at the downstream headwall. No siltation was found and a highwater stain was seen about three inches above the pipe flowline. This section of SR 50 was constructed about four years ago and there is no evidence or history of drainage problems within the right-of-way.

Frequency of Flooding - Unknown
Source for Frequency Data - Unknown

Historic High Water - No historic high water data was available.
A highwater stain was seen about three inches above the pipe flowline.
Flooding Event High Water - No event high water was recorded.

History of Problem -

Other Communications

Communication Date	Type	Communication From	Communication To	Communication Attachment Name
5/23/2000	Communication Memo	Carlos Lopez, FDOT, District Drainage Engineer	John Escobio, FDOT, Project Manager	SR50 @ Dorsey Rd Memo.pdf

SECTION III: PROBLEM ANALYSIS

Attachments

Attachment	Attachment Type	Attachment Description
SR 50 Cross Sections.pdf	Project Plans	Cross Sections
SWFWMD_Sect 29.pdf	SWFWMD Contour Map	SWFWMD Map. Section 29
SWFWMD_Sect 32.pdf	SWFWMD Contour Map	SWFWMD Map. Section 32
Plan Sheets.pdf	Project Plans	Plan sheets including design recommendations in red.
SWFWMD_Sect 30.pdf	SWFWMD Contour Map	SWFWMD Map Section 30
SWFWMD_Sect 31.pdf	SWFWMD Contour Map	SWFWMD Map Section 31
192114031_Drainage Map 1.pdf	FDOT Drainage Map	Drainage Map 1
192114055_Drainage Map 2.pdf	FDOT Drainage Map	Drainage Map 2

SECTION IV: CONCLUSIONS AND RECOMMENDATIONS

Recommendation: Below are the design recommendations for the project: 1. Construct 5 ft x 5 ft. sand cement riprap at culvert outfall, Sta. 673+83 Lt, with D-4 filter fabric, index No. 199 & 281. 2. Sta. 673+55, 20 ft. Lt; construct ditch bottom inlet Type C (traversable (w)), grate elevation 80.2 ft., flow line elevation 77.0 ft. Label inlet as S-I. 3.Construct 30 ft. of 18” RCP from S-1 to existing manhole at Sta. 673+83, 15ft Rt. Set flow line elevation at existing manhole at 76.6 ft.

Recommendation Date: 5/23/2000

Project Ranking:

ROADWAY FLOODING MATRIX

Ranking of the roadway hazard level based on accident data, ADT, depth and location of water, and site specific factors. **(Weight Factor = 10)**	3
Ranking of the operational impacts (i.e. magnitude of vehicle speed reduction, ADT, frequency of flooding, availability of detour route, and cost to FDOT to handle problem, etc.) **(Weight Factor = 7)**	6
Ranking of the nuisance factor to the public and FDOT. **(Weight Factor = 3)**	6
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	2
Ranking of the costs to cure the problem, if any. **(Weight Factor = 5)**	9
Total Score	**145**

PRIVATE PROPERTY FLOODING MATRIX

Ranking of the potential financial impacts versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0
Ranking of the hazard level versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0
Ranking of the nuisance factor to the private property as well as FDOT. **(Weight Factor = 5)**	0
Ranking of the costs to FDOT to cure the problem versus the financial impact to the private property if not cured. **(Weight Factor = 10)**	0
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Total Score	**0**

FLOOD INVESTIGATION INVENTORY SHEET

Flood Investigation # 0806192006317

Entry Date: 6/19/2006 4:56:17 PM
Revised Date: 7/8/2010 8:29:41 AM
Completed By: Tom Ward, PBS&J

SECTION I: LOCATION

County - Hernando
State Road - SR 50, SR 50A, SR 700
Road Description - 4 lane(s), Principal Arterial, Roadside Ditches
Roadway Separation - Divided w/Traversable Median
Direction of Travel - Two-Way
Functional System of Road - Rural
Specific Classification of Road - Principal Arterial
Roadway Drainage - Roadside Ditches

Flooding Condition - Off-System

Local Road Subject to Flooding - Tall Oaks Lane
Business Name: Blanche's Project I
Business/Private Property Address Subject to Flooding -
25143 Cortez Boulevard
Brooksville , FL 34601

Location:
Latitude: 28.529489
Longitude: -82.322319

Section/Township/Range - 32 / 22S / 20E
Project is Active - Yes

SECTION II: PROBLEM DESCRIPTION

Date of Original Complaint -
Complainant Name - Ray Bome
Problem Description - Property Flooding

Details of the Problem - Description of Problem was not available. Photos of property give the only evidence.

Frequency of Flooding - Unknown
Source for Frequency Data - Unknown

Historic High Water - No historic high water data was available.

Flooding Event High Water - No event high water was recorded.

History of Problem -

SECTION III: PROBLEM ANALYSIS

Attachments

Attachment	Attachment Type	Attachment Description
Survey Log.pdf	Site Map	Survey Log of Project
siteelevations.pdf	Site Map	Site elevations
191105644_DrainageMap01.pdf	FDOT Drainage Map	
191105823_ROW.pdf	Other Data	Right of Way Map
191105851_SWFWMD01.pdf	SWFWMD Contour Map	

SECTION IV: CONCLUSIONS AND RECOMMENDATIONS

Recommendation: Can not draw conlusion or give recommendation base on evidence given.

Recommendation Date: 12/7/2006

Project Ranking:

ROADWAY FLOODING MATRIX

Ranking of the roadway hazard level based on accident data, ADT, depth and location of water, and site specific factors. **(Weight Factor = 10)**	0
Ranking of the operational impacts (i.e. magnitude of vehicle speed reduction, ADT, frequency of flooding, availability of detour route, and cost to FDOT to handle problem, etc.) **(Weight Factor = 7)**	0
Ranking of the nuisance factor to the public and FDOT. **(Weight Factor = 3)**	0
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Ranking of the costs to cure the problem, if any. **(Weight Factor = 5)**	0
Total Score	**0**

PRIVATE PROPERTY FLOODING MATRIX

Ranking of the potential financial impacts versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0

Ranking of the hazard level versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0
Ranking of the nuisance factor to the private property as well as FDOT. **(Weight Factor = 5)**	0
Ranking of the costs to FDOT to cure the problem versus the financial impact to the private property if not cured. **(Weight Factor = 10)**	0
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Total Score	**0**

FLOOD INVESTIGATION INVENTORY SHEET

Flood Investigation # 0806042010344

Entry Date: 6/4/2010 7:41:09 AM
Revised Date:
Completed By: Stephanie Hildreth, HDR

SECTION I: LOCATION

County - Hernando
State Road - SR 50, SR 700
Road Description - 4 lane(s), Principal Arterial, Roadside Ditches
Roadway Separation - Divided w/Traversable Median
Direction of Travel - Two-Way
Functional System of Road - Rural
Specific Classification of Road - Principal Arterial
Roadway Drainage - Roadside Ditches

Flooding Condition - Off-System

Local Road Subject to Flooding -
Business Name:
Business/Private Property Address Subject to Flooding -

Location:
Latitude: 28.522931
Longitude: -82.300753

Section/Township/Range - 3 / 23S / 20E
Project is Active - Yes

SECTION II: PROBLEM DESCRIPTION

Date of Original Complaint -
Complainant Name -
Problem Description - Standing Water

Details of the Problem - The flooding site is a depression on the south side of SR 50 approximately 750 feet east of Spring Lake Highway (Mondon Hill Road on north side of SR 50).

Local residents began complaining of higher water levels in the low area at the time of construction of SR 50. The improvements included four additional lanes and the project was accepted August 24, 1995.

Two drainage related features were included within the subject basin to mitigate for the added lanes. A large pit north of SR 50 has been constructed to mitigate for floodplain impacts associated with embankment placed within the floodplain and a series of ditch blocks have been constructed in the roadway ditches to attenuate for runoff increases associated with new pavement area.

The site is located at the bottom of a large depression which has no outlet other than seepage. The drainage basin is developed with subdivision streets, houses, businesses, parking lots, and SR 50. Ponding is to be expected in this low area.

Frequency of Flooding - Several times per year
Source for Frequency Data - Local Resident/Person Interviewed

Historic High Water - A historic high water of 68.5 ft located at Unknown was documented by Drainage Maps.
State Project 08070-3514 Drainage Map indicates the 100-year Design Highwater elevation to be 68.5 feet in the flooding area. These stages would result in water depths over 5 feet. Source of this stage is unknown. However, it is supported by information included on the Drainage Map of the original Mondon Hill Road project (State Project 0863-250). That map is based on a survey done in 1955 and it indicates the extreme high water to be 69.1 feet. It was normal practice at that time to obtain these elevations from high water marks or information provided by local residents. It should be noted that most of the development within this drainage basin has probably occurred since that map was produced.
Flooding Event High Water - No event high water was recorded.

History of Problem -

SECTION III: PROBLEM ANALYSIS

Attachments

Attachment	Attachment Type	Attachment Description
Hernando_SR 50 east Spring Lake RD.pdf	Other Data	Drainage Report Regarding Flooding Complaint
Exist Road & Pond Plan.PDF	Project Plans	Project Plans
map_ gaines.pdf	Site Map	Map

SECTION IV: CONCLUSIONS AND RECOMMENDATIONS

Recommendation:

In consideration of the total basin size, terrain relief, and the numerous storage cells provided in the roadway ditches, it is believed that the high water stages experienced during and after the roadway project were most significant due to the abnormal rainfall.

If improvements are deemed necessary, the following modifications will provide some benefit:

* Place a weir immediately east of the north end of S-7 with a 0.5' notch at elevation 64.5 and a top elevation of 66.0. This will force more water into the pond where it will remain long enough to provide filtration which will supplement that provided in the flooding area.

* Inspect storage cells to determine which are not infiltrate in an acceptable manner. Remove the top 0.2' of soil from the bottom of those identified.

Recommendation Date:

Project Ranking:

ROADWAY FLOODING MATRIX

Ranking of the roadway hazard level based on accident data, ADT, depth and location of water, and site specific factors. **(Weight Factor = 10)**	0
Ranking of the operational impacts (i.e. magnitude of vehicle speed reduction, ADT, frequency of flooding, availability of detour route, and cost to FDOT to handle problem, etc.) **(Weight Factor = 7)**	0
Ranking of the nuisance factor to the public and FDOT. **(Weight Factor = 3)**	0
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Ranking of the costs to cure the problem, if any. **(Weight Factor = 5)**	0
Total Score	**0**

PRIVATE PROPERTY FLOODING MATRIX

Ranking of the potential financial impacts versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0
Ranking of the hazard level versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0
Ranking of the nuisance factor to the private property as well as FDOT. **(Weight Factor = 5)**	0
Ranking of the costs to FDOT to cure the problem versus the financial impact to the private property if not cured. **(Weight Factor = 10)**	0
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Total Score	**0**

FLOOD INVESTIGATION INVENTORY SHEET

Flood Investigation # 0806092017259

Entry Date: 6/9/2017 5:49:21 PM
Revised Date: 8/21/2017 1:52:22 PM
Completed By: Anita Wang, FDOT

SECTION I: LOCATION

County - Hernando
State Road - SR 50, SR 700
Road Description - 4 lane(s), Principal Arterial, Roadside Ditches
Roadway Separation - Divided w/Traversable Median
Direction of Travel - Two-Way
Functional System of Road - Rural
Specific Classification of Road - Principal Arterial
Roadway Drainage - Roadside Ditches

Flooding Condition - Off-System

Local Road Subject to Flooding - WPA Road
Business Name: Gordon Farm
Business/Private Property Address Subject to Flooding -
SWC Cortez & WPA
Brooksville , FL

Location:
Latitude: 28.52614
Longitude: -82.31619

Section/Township/Range - 33 / 22N / 20E
Project is Active - Yes

SECTION II: PROBLEM DESCRIPTION

Date of Original Complaint - 1/25/2016
Complainant Name -
Problem Description - Property Flooding

Details of the Problem - Parcel owner claims that site flooding caused by cross drain and undefined ROW ditch.

Frequency of Flooding - Unknown
Source for Frequency Data - FDOT Maintenance

Historic High Water - No historic high water data was available.

Flooding Event High Water - The original complaint was made by , Gordon Farm on 1/25/2016. An event high water of was recorded by null on unkonown date.

History of Problem - Brooksville maintenance staff reported this

Persons Interviewed

Site Visit Date - 1/25/2016
Site Inspection By - ,
Interviewee(s) - Chuck Greif ,
Site Visit Conditions - Not Applicable

Observed High Water - No observed high water was observed on the date of the site visit.

Site Visit Details -

SECTION III: PROBLEM ANALYSIS

Current Problem Analysis

Current Problem Analysis:

Front half of parcel low topographically and under flood zone AE (flood EL 74.5). ROW ditch may need more analysis to better contain ROW drainage

Outfall Description: Closed Basin
Responsible Entity for Maintenance of Outfall: Property Owner

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Attachments

Attachment	Attachment Type	Attachment Description

GIS contours.pdf	Other Data	contour map
fema-gis.JPG	FEMA Flood Map	FEMA zone AE

SECTION IV: CONCLUSIONS AND RECOMMENDATIONS

Recommendation:

When scoping for upcoming resurfacing or other roadway project in this area, please add in this location for analysis of our ditch system

(currently PD&E project #430051-1 ongoing)

Recommendation Date: 8/21/2017

Project Ranking:

ROADWAY FLOODING MATRIX

Ranking of the roadway hazard level based on accident data, ADT, depth and location of water, and site specific factors. **(Weight Factor = 10)**	0
Ranking of the operational impacts (i.e. magnitude of vehicle speed reduction, ADT, frequency of flooding, availability of detour route, and cost to FDOT to handle problem, etc.) **(Weight Factor = 7)**	0
Ranking of the nuisance factor to the public and FDOT. **(Weight Factor = 3)**	0
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	0
Ranking of the costs to cure the problem, if any. **(Weight Factor = 5)**	0
Total Score	**0**

PRIVATE PROPERTY FLOODING MATRIX

Ranking of the potential financial impacts versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	1
Ranking of the hazard level versus the flooding frequency that impacts the private property. **(Weight Factor = 10)**	0

Ranking of the nuisance factor to the private property as well as FDOT. **(Weight Factor = 5)**	2
Ranking of the costs to FDOT to cure the problem versus the financial impact to the private property if not cured. **(Weight Factor = 10)**	1
Ranking of the length of time before scheduled roadway improvements that will also provide remedy, are to be let to contract. **(Weight Factor = 5)**	4
Total Score	**50**

APPENDIX E

Bystre Lake Watershed Floodplain Justification Report

BYSTRE LAKE WATERSHED
FLOODPLAIN JUSTIFICATION REPORT

Prepared for:

Southwest Florida Water Management District &

Hernando County

Prepared by:

URS Corporation

7650 West Courtney Campbell Causeway
Tampa, Florida 33607-1462

March 31, 2010

Watershed Management Program Final Results Disclaimer

This information was developed in accordance with the Southwest Florida Water Management District's Watershed Management Program Guidelines and Specifications (G&S). The G&S define the watershed parameters used to develop a computer model that simulates projected surface water levels. The model includes watershed and rainfall event simulation parameters such as a design rainfall event and associated antecedent moisture conditions. This information, including projected surface water levels, was reviewed for substantial conformance with G&S, through a public review and comment period, and refined based on comments. The parameters and models are revised periodically based upon updated information and issued Environmental Resource Permits (ERPs). The District will consider site specific details and other refinements during the regulatory review process to revise model parameters and results. Therefore, the District cannot guarantee its completeness and shall not be liable for any damages suffered as a result of using this information. Those interested in using this information should contact the District for the current version of a model and results for a specific watershed. ERP applicants are encouraged to schedule a pre-application meeting(s) with the District's Regulatory staff to discuss the use of any watershed study/model in a subsequent ERP application. If you have questions, please contact the Southwest Florida Water Management District's Engineering Section at 352-796-7211 ext. 4232.

Link to the District's G&S:
http://www.swfwmd.state.fl.us/documents/plans/watershed_guidesspecs.pdf

CERTIFICATION OF COMPLIANCE	
Project Name:	Bystre Lake Watershed
Statement of Work No.;	Mapping Activity Statement 1A (contract 06CC0000045)
Interagency Agreement No.:	Not Applicable
CTP Agreement No.:	EMA-2002-GR-5067 and EMA-2004-GR-5021
Statement/Agreement Date:	June 25, 2004
Certification Date:	March 31, 2010

Tasks/Activities Covered by This Certification (check all that apply)

☒	**Entire Project**
☒	**Topographic Data Development**
☒	**Hydrologic Analyses**
☒	**Hydraulic Analyses**
☐	**Coastal Flood Hazard Analyses**
☒	**Floodplain Mapping**
☐	**Other (Specify):**

This is to certify that the work summarized above was completed in accordance with the statement/agreement cited above and all amendments thereto, together with all such modifications, either written or oral, as the Regional Project Officer and/or Assistance Officer or their representative have directed, as such modifications affect the statement/ agreement, and that all such work has been accomplished in accordance with the provisions contained in *Guidelines and Specifications for Flood Hazard Mapping Partners* cited in the contract document, and in accordance with sound and accepted engineering practices within the contract provisions for respective phases of the work.

Name: Elizabeth R. Geurink, P.E.

Title: Senior Water Resources Engineer

Firm/Agency Represented: URS

Registration No.: 51941

Signature: Elizabeth R Geurink

This form must be signed by a representative of the firm contracted to perform the work who is registered as a Professional Engineer or by the responsible official of a government agency.

Figure M-11. Certification of Compliance Form

PROFESSIONAL SEAL

I hereby certify that the report Bystre Lake Watershed Floodplain Justification and associated floodplain elevations and extents for Bystre Lake Watershed (K765) contained within the attached external hard drive dated March 31, 2010 has been completed in accordance with the requirements and guidelines specified in Southwest Florida Water Management District's – Watershed Management program – Guidelines and specifications for watershed management Plan (August 2002).

The attached engineering calculations were prepared by URS Corporation Southern (URS) within the limits prescribed by our client using standard engineering procedures in a manner consistent with the skill and level of professional care exercised by other professionals practicing in the same locality under similar circumstances. Information provided to URS by client representatives, agents and other consultants has been accepted in good faith and is assumed to be accurate.

Signed: ________________

Elizabeth R. Geurink, P.E.
Registered Professional Engineer
Florida License No. 51941

Date: 3/31/2010

BYSTRE LAKE PRELIMINARY JUSTIFICATION REPORT
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TABLES

FIGURES

BYSTRE LAKE WATERSHED
FLOODPLAIN JUSTIFICATION REPORT (K765)

1.0 INTRODUCTION

The Southwest Florida Water Management District (SWFWMD) together with Hernando County contracted the URS team to develop watershed management plan for the Bystre Lake Watershed. The purpose of the Floodplain Justification Report is to detail the reasonableness of modeled floodplain elevations generated using updated model data for the watershed. This report modifies and updates the previous floodplain developed in 2006. This report also addresses peer review comments supplied by Halcrow, Inc. (Halcrow, 2009) and by District internal reviews.

1.1 Project Location and General Description

Located in eastern Hernando County, just southeast of Brooksville, the Bystre Lake Watershed is primarily rural with the majority of development concentrated in the City of Brooksville. The watershed is a closed basin with all runoff collecting in Bystre Lake and surrounding low-lying areas. The watershed comprises approximately 27.5 square miles and includes a portion of the City of Brooksville, which lies in the northwest part of the watershed (see Figure 1-1: Location Map). With the exception of some urban areas in the northwest, the watershed is primarily undeveloped and is characterized by rolling hills and populated by upland hardwood hammocks. State Road (SR) 50, which runs from east to west, bisects the watershed.

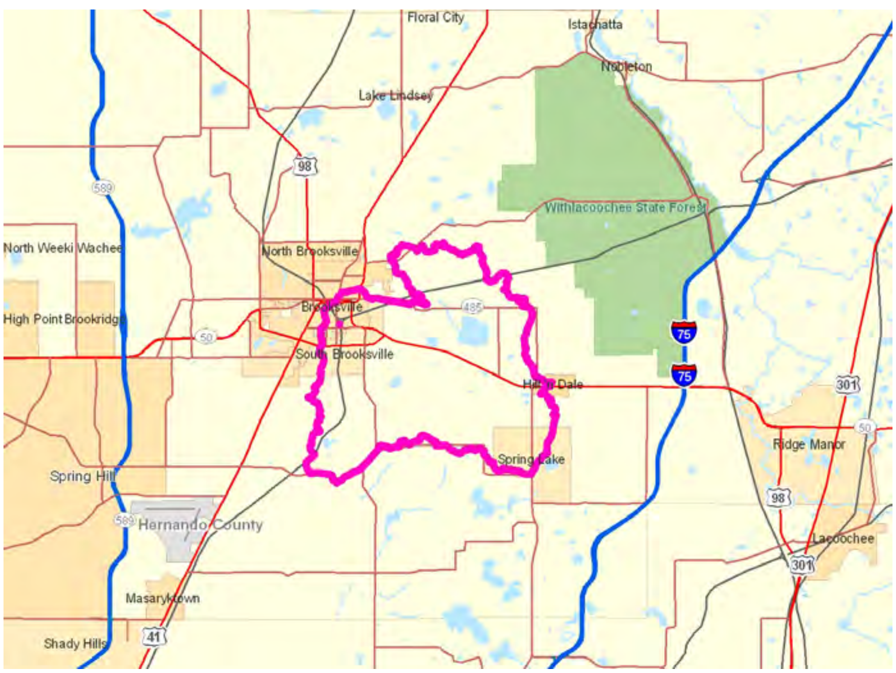


Figure 1.1 Location Map

2.0 WATERSHED DESCRIPTION

2.1 Characterization of the Watershed

Physiographically, the watershed is located on the Brooksville Ridge, which tends to be characterized by rolling terrain, upland hardwood tree species, and thicker sections of clay layers. Elevations range from 23 to 271 feet-NAVD88. Although it is essentially a closed basin, the Bystre Lake Watershed is part of the larger Withlacoochee River Basin. During exceptionally large storm events, or during an exceptionally heavy rainy season, levels within Bystre Lake could possibly stage up high enough so that low lying wet prairies are inundated and eventually overtop the basin divides flowing north towards Blue Sink.

There are no major rivers or streams within the watershed as indicated by its internally drained characteristics. Most man made hydrologic features occur towards the City of Brooksville. The large number of small lakes, sinkholes, wetlands, prairie, and depressions define the surface water resources of this watershed, as seen in Figure 2-1. Seven open waterbodies larger than 5 acres lie within the watershed. Bystre Lake is the largest open waterbody, encompassing 139 acres, followed by Garrison Lake and Irvin Lake each comprising roughly 21 acres.

Table 2-1 shows the number and size of waterbodies larger than 5 acres by subwatershed (subwatershed regions are presented in Figure 3.1):

Table 2-1: Summary Statistics of Large Waterbody Features (acres)

	SUBWATERSHED									Total
WATERBODIES	A	B	C	D	E	F	G	H	I	(acres)
Bystre Lake	139.2									139.2
Garrison Lake			21.3							21.3
Irvin Lake			21.1							21.1
Unnamed Lake (north of Lk Meadows Drive)			13.6							13.6
Unnamed Lake (east of WPA Road) NA1930 -HW	12.2									12.2
Cedar Lane Detention NC1334			6.2							6.2
Golf Course Pond NC1920			6.2							6.2
Tot. Lake Area, acre	151.4	0	68.4	0	0	0	0	0	0	219.8

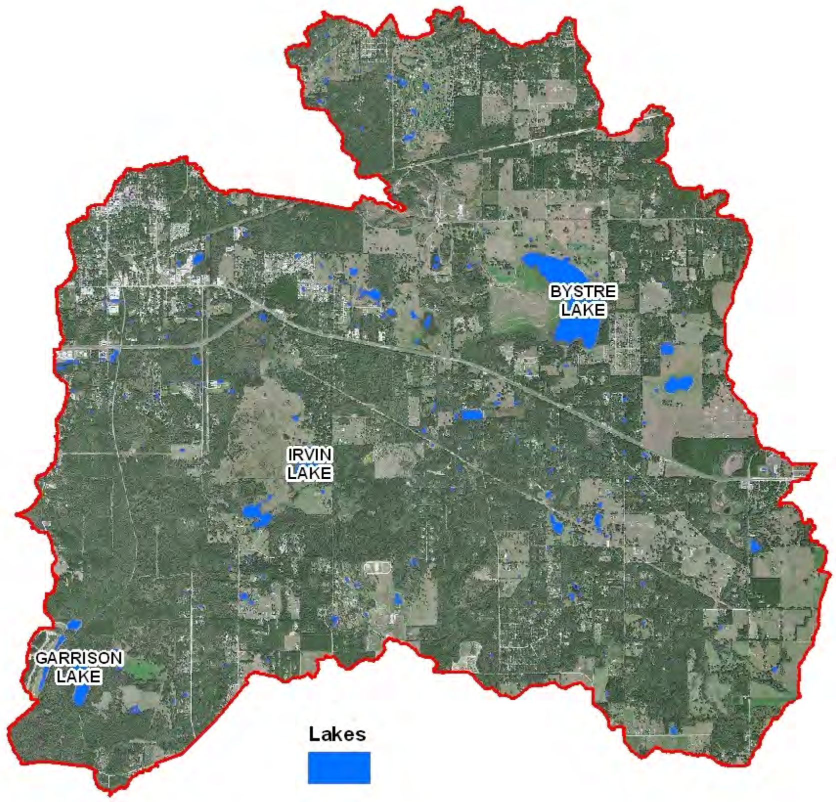


Figure 2.1 Lakes

2.2 Soil Characterization

The General Soils Map found within the US Department of Agriculture's Soil Conservation Service documents describes two different soil associations within the watershed. The divide between the two soil associations is generally located east of Bystre Lake. The western association is described as Nobleton-Bichton-Flemington. It includes nearly level to sloping, well drained and somewhat poorly drained and poorly drained fine sandy loams to sands less than 40 inches thick over loamy clayey material. The east and southwest portion of the watershed is classified as Arrndondo-Sparr-Kendrick. It includes nearly level to sloping; well drained and somewhat poorly drained soils that are sandy to a depth of 20 to more than 40 inches over loamy material.

Hydrologic soil group A accounts for 18% of the watershed (primarily in subwatersheds A and G), B/D soils account for 14%. Hydrologic soil group C makes up 34% of the watershed, while D soils and water account for 34% (see Figure 2-2: Soils).

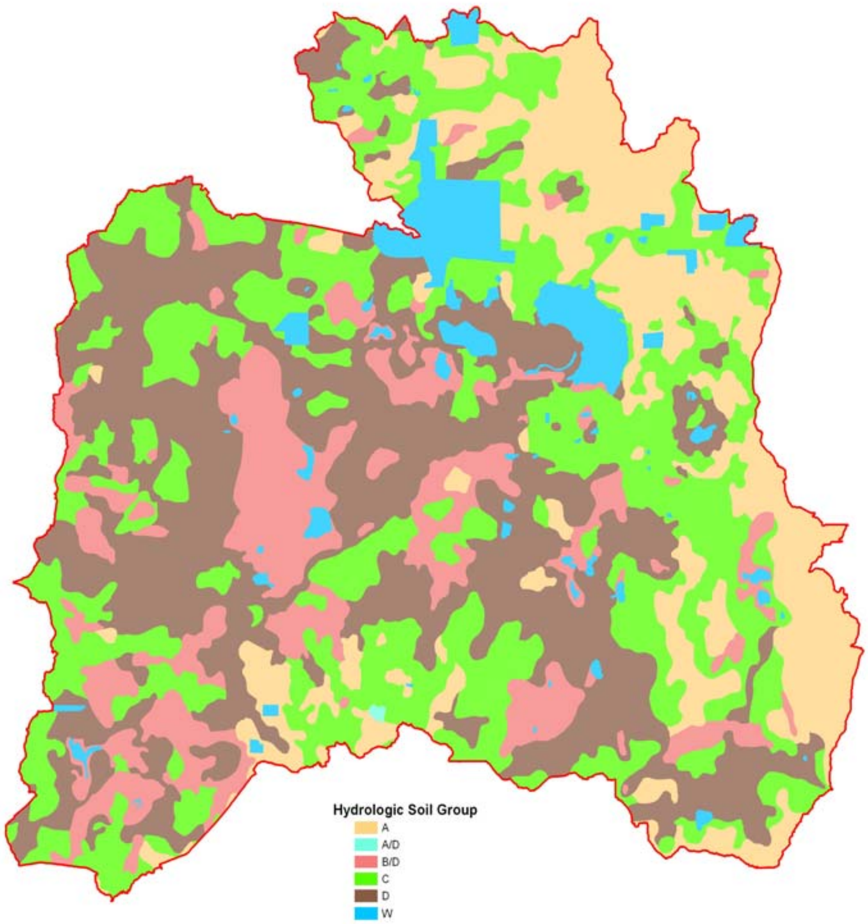


Figure 2.2 Soils

2.3 Land Use Characterization

The Bystre Lake Watershed is primarily rural with urban areas being represented by the City of Brooksville in the west (see Figure 2-3: Land Use). Roughly 36% of the watershed remains in Upland Forest, while Urban and Agriculture land uses comprise 32% and 24%, respectively. Water land use accounts for only 2%, and 4% are classified as wetland. Transportation and Utilities land use comprise 1% of the watershed.

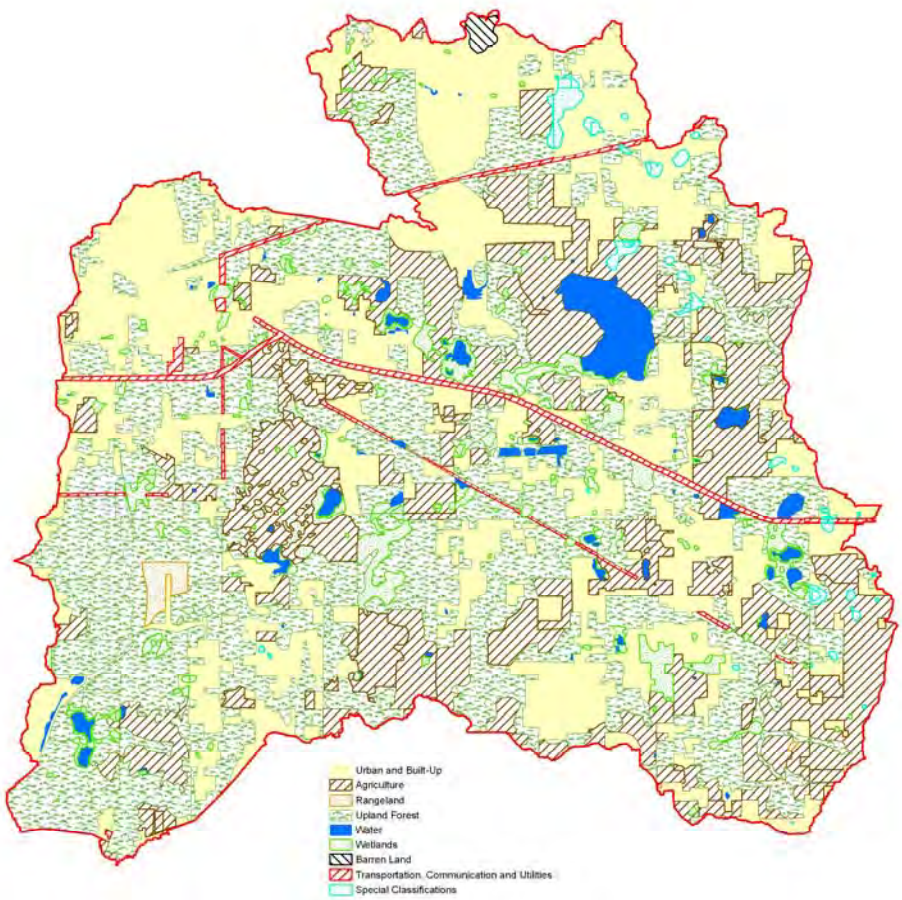


Figure 2.3 Land Use

3.0 WATERSHED MODEL DEVELOPMENT

The following sections describe the development of the Bystre Lake Watershed model. Stage-area curves for simulating flooded surface storage were estimated using the Arc-Hydro tool “Drainage Area Characterization” and a 5-foot grid created from the Bystre Lake Terrain. Stage increments are typically defined at 1-foot intervals, except where greater detail was desired at the lower end of the curve. Irregular cross-sections for channels and basin-to-basin weirs were extracted from the Bystre Lake Terrain, incorporating the thinning tool provided by SWFWMD at a 0.25 ft thinning tolerance. Culvert inverts were established from field survey, as-built plans, construction plans, and estimated from DTM where necessary.

The Bystre Lake Watershed Model includes the following:

- ✓ 446 Subbasins
- ✓ 522 Junction Nodes (including boundary nodes)
- ✓ 1029 Reaches
    - o 183 Culvert reaches (some of which are multiple-pipe)
    - o 740 Weir reaches
    - o 79 Channel reaches
    - o 21 Drop Structures
    - o 2 Drainage well discharges
    - o 4 Sinkhole/Floridan discharges
- ✓ 36 Percolation Links (not included in geodatabase network_arc feature)

3.1 Subbasin Delineation Process

Subbasins were delineated using a raster grid created from the Bystre Lake Terrain. The raster image was created from the Terrain using a 5 foot pixel base. This created a coverage of 25 square feet per pixel. The grid was used in Arc_Hydro, established for ESRI ArcMap 9.2. The process for creation of Bystre Lake subbasins included (but was not limited to) the following steps. Once the listed steps were concluded, additional subbasin delineation was done manually in GIS using permit and survey data. (See Figure 3.1)

1. Level DEM
2. DEM Reconditioning
3. Assign Stream Slope
4. Sink Prescreening
5. Sink Evaluation
6. Depression Evaluation
7. Sink Selection
8. Fill Sinks
9. Flow Direction
10. Flow Direction with Sinks
11. Adjust Flow Direction in Lakes

12. Flow Accumulation
13. Stream Definition
14. Stream Segmentation
15. Drainage Line from Stream
16. Stream Segmentation from Drainage Line
17. Sink Segmentation
18. Catchment Grid Delineation
19. Catchment Polygon Processing

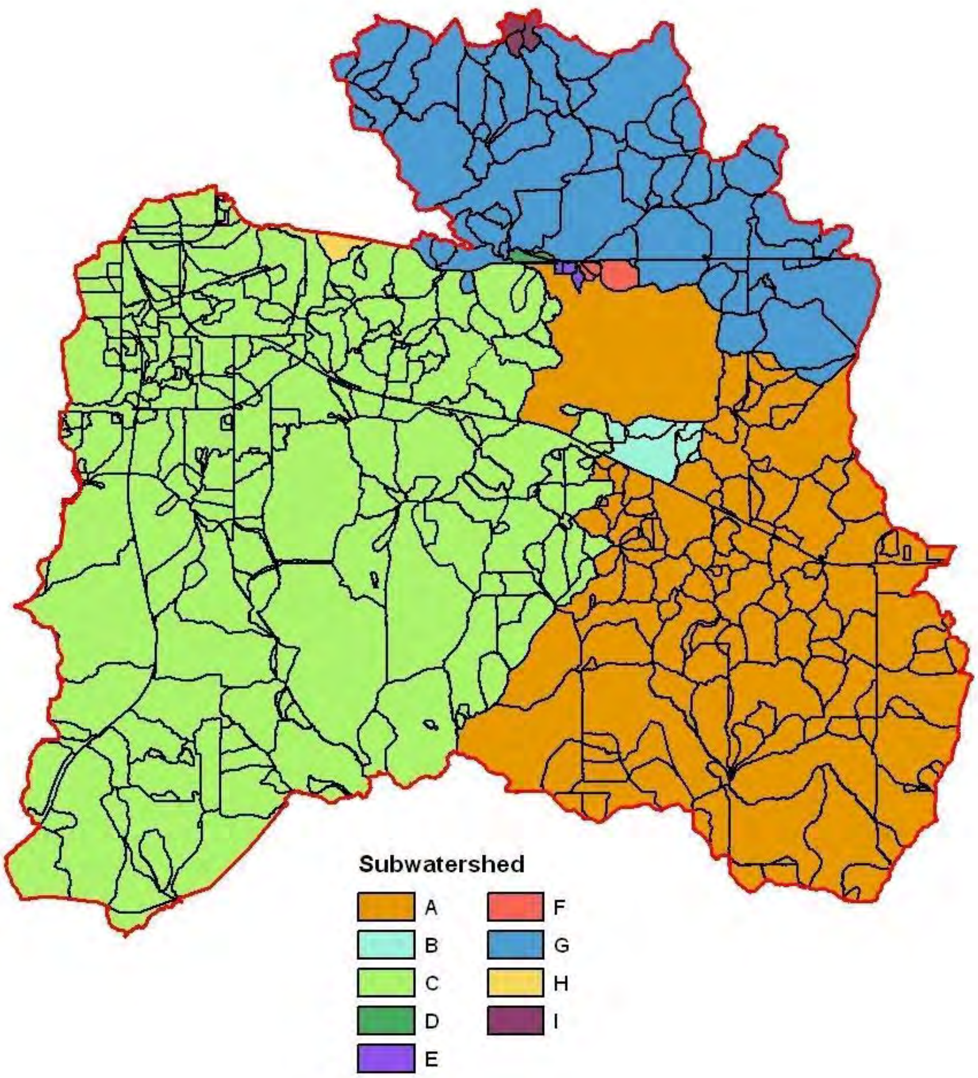


Figure 3.1 Subbasins

3.2 Hydrologic and Hydraulic

In the previous (2006) Watershed Study and Floodplain Analysis, the primary source for elevation model/topography used in subbasin delineation and runoff characterization were SWFWMD aerial maps at 1"=200' scale with 1-foot contours and limited spot elevations. Some structure survey data, provided primarily from the SWFWMD, were also utilized for hydraulic definition. Surface runoff (rainfall excess) was computed using SCS curve number methodology and did not account for percolation discharges through sandy excessively drained (HSG A) soils.

The 2008-2010 watershed maintenance update revised the digital elevation model using a 2007 LiDAR-based DTM. The level of subbasin discretization was also increased to explicitly model isolated storage areas (wetlands, dry depressions) of 1-acre or greater surface area, with a capacity to retain at least 2-feet of water. Additional survey was collected in some areas and ERP files were used to define new stormwater management areas and connectivity in recently developed areas. Green-Ampt infiltration was used to estimate runoff instead of the SCS method in the previous model. This was accomplished by using ICPR PercPack, which is designed to model percolation at appropriate natural depressions and retention ponds. SSURGO data was used to define reasonable values for percolation parameters.

3.2.1 Green-Ampt Methodology

The methodology for calculating rainfall excess was the Green-Ampt rainfall excess method using the SCS Unit Hydrograph Method. Rainfall was based on Florida Type II Modified Distribution for the 24-hour events, while the 5-day events were distributed according to G&S Table 4: 5 – Day Rainfall Distribution. Subbasin hydrographs were based on the dimensionless 256 Unit Hydrograph. The Green-Ampt rainfall excess is calculated in 3 parts:

1. Rain falling on directly connected impervious areas (DCIA). After subtracting an initial abstraction of 0.1" for each independent rainfall event, 100% runoff occurs from the DCIAs
2. Impervious areas that are not directly connected are assumed to drain on pervious area. This area is equal to the percent impervious minus the percent DCIA. Like DCIA, 0.1" is subtracted from each independent rainfall event for the initial abstraction.
3. The Green-Ampt equation is used to determine infiltration rates for pervious area. Rainfall excess is the amount of rainfall plus flow from impervious areas draining onto pervious areas minus the amount of infiltration.

3.2.2 Green-Ampt Procedures- Options

There are several options available when using Arc Hydro to support Green-Ampt modeling in ICPR. The options are grouped in two major categories:

1 Where the excess rainfall is calculated:
- Arc Hydro
- ICPR

2 Which rainfall event is analyzed:
- Design event with uniform rain over all subbasins
- Design event with distributed rain over each subbasin
- Observed rain event

The combination of the two groups provides six separate options for modeling.

1. Data preparation for Green-Ampt processing
2. Spatial Processing for Green-Ampt Analyses
3. Arc Hydro Green-Ampt excess rainfall computations
4. Arc Hydro Green-Ampt with design rainfall over each subbasin
5. Arc Hydro Green-Ampt with observed (radar) rainfall
6. ICPR Green-Ampt excess rainfall computations

Land use and soils data were provided and available in the enterprise geodatabase by SWFWMD. This includes both spatial components (soil and land use polygon layers) and corresponding parameter tables (Landuse Lookup that defines land use parameters and Soil Lookup that defines soil parameters – See table 3-2-1 for a partial example of the Soil Lookup table and 3-2-2 for a partial example of the Landuse Lookup tables used).

The subbasins for analyses are derived using Arc Hydro tools. Only the subbasin polygon feature class, with proper HydroID assigned, is needed to support basic Green-Ampt computations.

Table 3-2-1: Example of Soil Lookup Table

MUKEY	COMP_NAME	HYDGRP	Ksat inch/hr	Porosity	SSt (in)	SSu (in)	WTDAnnMin
321046	Pompano	D	13.00	0.45	0.00	2.05	0.00
321047	Tavares	A	28.02	0.43	14.63	2.05	145.00
321048	Immokalee	B/D	13.00	0.44	0.12	2.05	7.00
321049	Okeelanta	B/D	13.00	0.44	0.00	11.81	0.00
321050	Lake	A	13.00	0.45	24.32	2.05	203.00
321051	Lake	A	13.00	0.45	24.32	2.05	203.00
321052	Arredondo	A	13.00	0.41	17.44	2.05	203.00
321053	Arredondo	A	13.00	0.41	17.44	2.05	203.00
321054	Kendrick	A	13.00	0.42	12.07	2.05	203.00

Table 3-2-2: Example of Landuse Lookup Table

FLUCCSCODE	Description	Manning	DCIA	%Impervious
1100	Residential-Low Density	0.16	0.00	10.00
1190	Low Density Under Construction	0.16	0.00	5.00
1200	Residential-Med Density	0.13	5.00	15.00
1290	Med Density Under Construction	0.13	2.00	20.00
1300	Residential-High Density	0.08	20.00	70.00
1400	Commercial	0.05	50.00	70.00
1490	Commercial And Services Under Construction	0.05	50.00	70.00
1500	Industrial	0.07	72.00	77.00
1600	Extractive	0.30	0.00	0.00

Manual revisions were made to a small number of subbasins for Cutoff Depth, DCIA and % Impervious default parameters, using aerial mapping as a basis. Typically adjustments were made to wet ponds, reducing cutoff depth to less than 1- foot, and increasing DCIA and % Impervious to 100 for the wet pond area. Notes are included in the model files in all cases where Green-Ampt parameters have been manually revised.

Affected subbasins include:

- A1210
- C0780
- G0220
- G1270
- G1345

3.3 Verification Rainfall

Successful calibration of model parameters requires accurate and reliable historical records for both rainfall and stream or lake stage data. Research was done to obtain rainfall and stream/lake data for the Bystre Lake Watershed. Unfortunately, only intermittent data has been collected at several locations, typically as part of a special purpose or limited data collection effort (program). Due to the lack of major rivers, streams, creeks or other discharge points, there are no discharge gauging stations within the Bystre Lake watershed. Bystre Lake has several staff gages, one of which (Station 147) has a substantial period of record dating back to 1985 and is part of the ongoing monitoring program of the SWFWMD. Even those records, however, are not continuous or daily stage records.

With the understanding that selected model parameters would be based on reasonable literature and SWFWMD database values, a verification rainfall was selected for use in validating model results against what little observed data were available. The 2004 Hurricane Frances Doppler (NEXRAD) data were used to develop a rainfall input for model simulation and peak stage comparison. As only ten subbasins have 2004 high water mark records, it was concluded that there was a lack of accurate and reliable historical data available to truly calibrate or verify the Bystre Lake Watershed Model.

3.4 Runoff Hydrograph Generation

3.4.1 Time of Concentration

The time of concentration is defined as the time for runoff to travel from the hydraulically most distant point of the watershed to a point of interest (node point) within the watershed. The time of concentration for each subbasin was the sum of one or more of the following types of flow regimes; sheet flow, shallow concentrated flow and open channel flow. Characteristics that influence time of concentration are surface roughness, channel shape, and slope.

3.4.2 Rainfall

The rainfall amounts for the 100- year, 24, 72, 120-hour and 168-hour storm events are shown in Table 3.3.2. The 24-hour rainfall amount is from SWFWMD's Environmental Resource Permitting Information Manual. The 100-year, 120-hour was obtained from *Table 3: Rainfall Volumes for 1-Day, 500-Year; and 5-Day Events by County* located in the SWFWMD's Watershed Management Program Guidelines and Specifications. The 100-year, 72- and 168–hour events are from the US Department of Commerce Technical Paper No. 49.

Table 3-4-2: Frequency, Duration and Rainfall Used in Analysis

Frequency (Year)	Duration (Hour)	Rainfall (in)
100	24	12.5
100	72	14.3
100	120	16.8
100	168	18.0

3.4.3 Rainfall Distribution

Distribution of the volume for the 24-hour event is based on the Florida Type II Modified Distribution. The volumes for the 120-hour are based on the 5-day dimensionless curve *Table 4: 5-Day Rainfall Distribution* located in the SWFWMD's Watershed Management Program Guidelines and Specifications. The distributions for the 72-hour and 168-hour events are based on the FDOT distributions.

3.4.4 Shape Factor

The shape factor accounts for the effect of watershed storage. A shape factor of 256, widely accepted for modeling projects throughout Hernando County, was utilized because of the mild to moderate slopes that occur within the subject project.

3.5 Hydraulics

The Bystre Lake watershed was subdivided into 446 subbasins. Each subbasin is connected to the whole by pipes, drop structures, weirs and/or channels. The predominant hydraulic connection type is the irregular weir, representing overtopping of closed subbasins through topographic saddles read from the DEM. Where overland travel paths were very long and/or where overtopping flows have cut relatively shallow concentrated flow channels, hydraulic conveyance has been modeled as open channel flow. As previously stated, the hydraulic network comprised 740 weirs, 183 culverts, 79 channels and 21 drop structures.

3.6 Storage

3.6.1 Lake and Pond Storage

The stage-area curves defining surface storage were calculated using Arc Hydro tools developed in ArcGIS 9.0 (ArcMap) and the 3D Analyst extension based on the 2007 LiDAR topographic data provided by SWFWMD. Completion of the staging area program creates a spreadsheet in a geodatabase for each subbasin. Each subbasin has the minimum and maximum elevation, a listing of all elevations between the minimum and maximum in increments of 1 foot, and the subbasin area (2D area - not 3D area) corresponding to each elevation.

3.6.2 Open Channel Storage

There are no major channels within the watershed; however minor channels have been added within some subbasins to provide a more accurate basis for floodplain delineation between semi-closed subbasins. The open channels added to the model have been defined with a bank-to-bank cross section and vertical wall end points. The area defined by the channel width and length within each subbasin has been subtracted from the subbasin stage-area curves to prevent duplication of simulated storage. The following subbasins have had adjustments made to the Arc Hydro-generated stage-area curves:

A0773	C0430	C0983
A0777	C0440	C1212
A0830	C0460	C1217
A1150	C0480	C1220
A2040	C0560	C1222
C0026	C0570	C1275
C0030	C0840	C1280
C0090	C0855	C1340
C0150	C0860	C2700
C0390	C0920	C3320
C0395	C0930	
C0400	C0950	

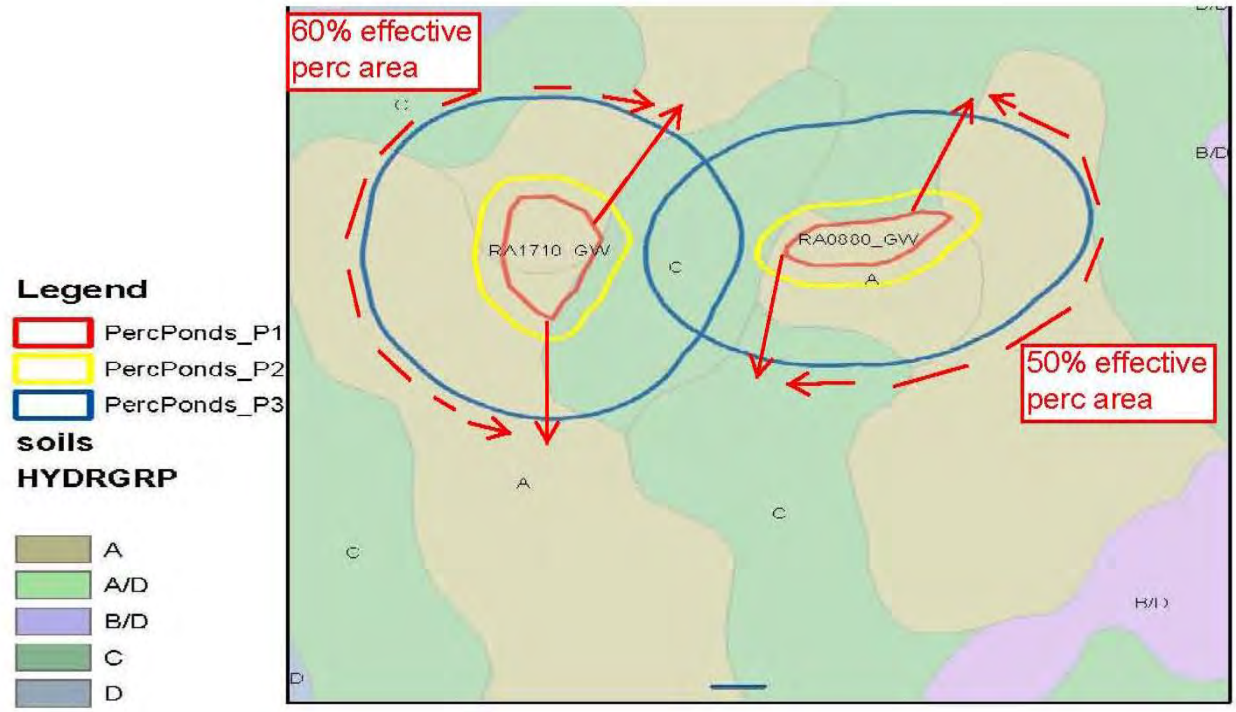
3.7 Percolation as an Outfall

Unlike the previous 2006 model, percolation was included as an outfall in areas of the watershed dominated by Type A soils. The following criteria were applied to determine whether percolation would be simulated:

1. HSG A soils present in 70% of subbasin
   - If "yes", does simulated inundation area lie predominantly on HSG A soils/pervious surfaces?
     - Percolation modeled
   - If "no", does simulated inundation area lie over HSG A soil/pervious surfaces?
     - If "yes" percolation modeled
     - If "no" percolation not modeled
2. For subbasins passing Criteria 1:
   - Seasonal High Water Table elevation > 3 below land surface?
     - If "yes" horizontal and vertical flow simulated
     - If "no" percolation not modeled

Percolation was included at 36 natural depressions and dry ponds within the watershed (see Figure 3.7). Table 3-7 presents the major percolation parameters input to the model. Percolation was modeled using the Perc-Pack ICPR module, applying methods consistent with Streamline Technologies technical guidance (Singhofen, 2009). Percolation polygons located close together or with overlapping horizontal percolation (P2,P3) zones have been subjected to perimeter reduction for model input. Effective percolation perimeter values (P1_EFF, P2_EFF and P3_EFF) were computed as the fraction of the polygon not competing with adjacent percolation nodes or poorly drained soils. The "Effective Perimeter" values have been input to the model rather than the GIS-generated perimeter values (P1, P2, and P3), as shown in the example graphic below. Percolation polygons and attributes associated with model input parameterization are included in the geodatabase. This method is slightly more conservative than the Singhofen method, as it discounts the significantly reduced percolation that may yet take place along the intersected percolation zones.

Where available, geotechnical information from SWFWMD Environmental Resource Permits (ERPs) was utilized. In most areas general information from the SSURGO database was used to obtain and/or compute the percolation parameters. Vertical and horizontal conductivity values were derived using District-supplied methodology supplied in Appendix B.



OBJECTID	Name	AquiferBE	WTE	Ann Recharge	HorCond	VertCond	EffPor	SuctionH	LayThick
31	RA1710_GW	30.00	60.00	0.00	52.51	35.01	0.39	2.05	6.80
32	RA0880_GW	30.00	62.00	0.00	36.00	24.00	0.38	2.05	7.00

OBJECTID	Name	P1	P2	P3	D12	D23	N12	N23	FRAC_EFF	P1_EFF	P2_EFF	P3_EFF
31	RA1710_GW	1534.53	2162.59	4674.80	100	400	20	40	0.60	920.719	1297.554	2804.883
32	RA0880_GW	1394.40	2022.54	4535.11	100	400	20	40	0.50	697.200	1011.271	2267.554

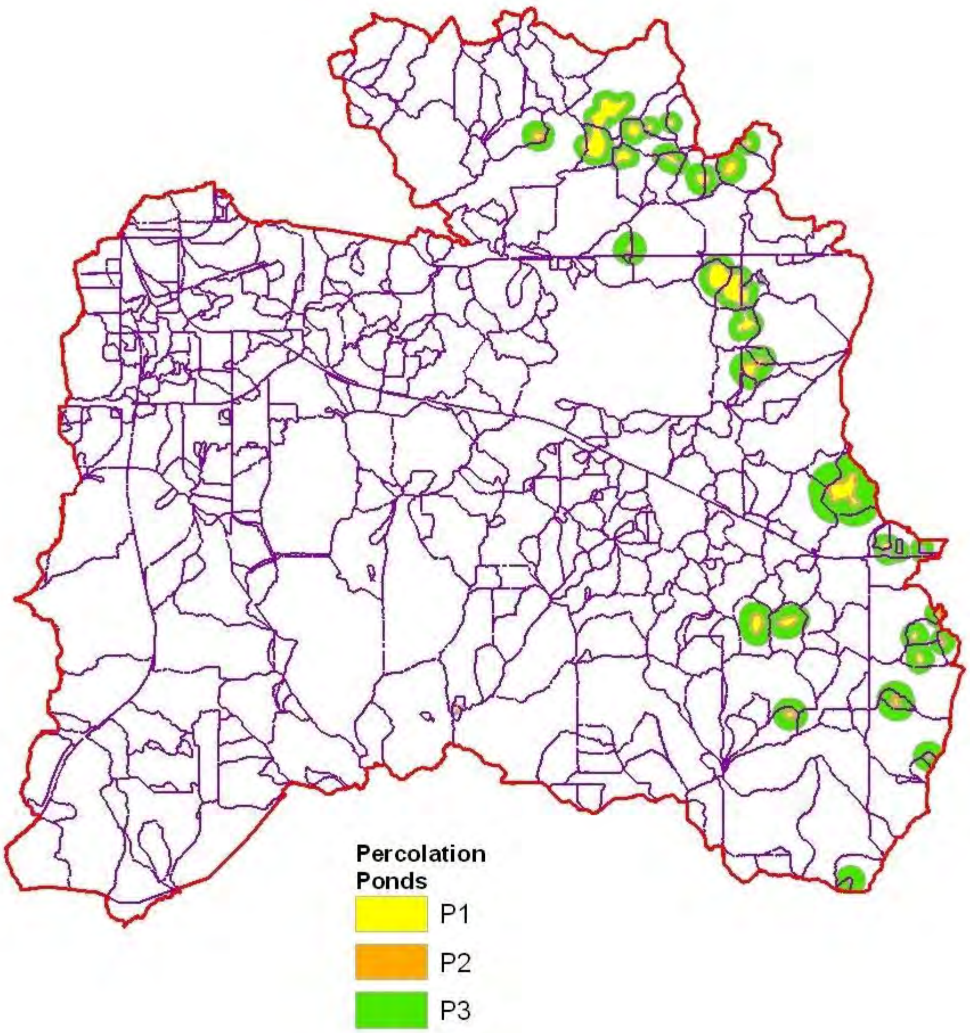


Figure 3.7 Percolation Areas

Table 3-7: Percolation Parameterization

Reach	From Node	To Node	Water Table (FtNAVD88)	Horiz. Cond. (ft/day)	Vert. Cond. (ft/day)	Porosity (fraction)	Suction Head (inch)	Notes
RA0610_GW	NA0610	GWSink	69.11	19.56	13.04	0.37	2.05	SSURGO data
RA0660_GW	NA0660	GWSink	80.00	19.56	13.04	0.38	2.05	SSURGO data
RA0880_GW	NA0880	GWsink	62.00	36.00	24.00	0.38	2.05	SSURGO data
RA0960_GW	NA0960	GWSink	71.00	19.56	13.04	0.37	2.05	SSURGO data
RA0990_GW	NA0990	GWSink	63.84	19.56	13.04	0.37	2.05	SSURGO data
RA1000_GW	NA1000	GWSink	67.67	19.56	13.04	0.37	2.05	SSURGO data
RA1020_GW	NA1020	GWSink	65.20	19.56	13.04	0.37	2.05	SSURGO data
RA1160_GW	NA1160	GWSink	64.30	36.00	24.00	0.37	2.05	SSURGO data
RA1170_GW	NA1170	GWSink	62.70	19.56	13.04	0.38	2.05	SSURGO data
RA1210_GW	NA1210	GWSink	60.00	52.51	35.01	0.39	2.05	SSURGO data
RA1220_GW	NA1220	GWSink	61.00	52.51	35.01	0.39	2.05	SSURGO data
RA1230_GW	NA1230	GWSink	60.80	52.51	35.01	0.39	2.05	SSURGO data
RA1250_GW	NA1250	GWSink	60.80	52.51	35.01	0.39	2.05	SSURGO data
RA1710_GW	NA1710	GWSink	60.00	52.51	35.01	0.39	2.05	SSURGO data
RA1850_GW	NA1850	GWSink	59.24	52.51	35.01	0.39	2.05	SSURGO data
RA1970_GW	NA1970	GWSink	55.58	19.56	13.04	0.37	2.05	SSURGO data
RA1980_GW	NA1980	GWSink	55.90	19.56	13.04	0.38	2.05	SSURGO data
RC1010_GW	NC1010	GWsink	223.00	19.56	13.04	0.37	2.05	SSURGO data
RG0060_GW	NG0060	GWSink	53.17	19.56	13.04	0.37	2.05	SSURGO data
RG0220_GW	NG0220	GWSink	53.51	19.56	13.04	0.37	2.05	SSURGO data
RG1090_GW	NG1090	GWSink	49.42	36.00	24.00	0.39	2.05	SSURGO data
RG1235_GW	NG1235	GWSink	67.60	52.51	35.01	0.39	2.05	SSURGO data
RG1250_GW	NG1250	GWSink	51.14	19.56	13.04	0.37	2.05	SSURGO data
RG1280_GW	NG1280	GWSink	61.25	52.51	35.01	0.39	2.05	SSURGO data
RG1300_GW	NG1300	GWSink	52.96	19.56	13.04	0.37	2.05	SSURGO data
RG1320_GW	NG1320	GWSink	49.88	19.56	13.04	0.37	2.05	SSURGO data
RG1355_GW	NG1355	GWSink	49.85	19.56	13.04	0.37	2.05	SSURGO data
RG1360_GW	NG1360	GWSink	49.72	19.56	13.04	0.37	2.05	SSURGO data
RG1365_GW	NG1365	GWSink	49.47	52.51	35.01	0.39	2.05	SSURGO data

Table 3-7: Percolation Parameterization

Reach	From Node	To Node	Water Table (FtNAVD88)	Horiz. Cond. (ft/day)	Vert. Cond. (ft/day)	Porosity (fraction)	Suction Head (inch)	Notes
RG1850_GW	NG1850	GWSink	47.60	19.56	13.04	0.38	2.05	SSURGO data
RG1970_GW	NG1970	GWSink	48.36	19.56	13.04	0.37	2.05	SSURGO data
RG1980_GW	NG1980	GWSink	48.32	19.56	13.04	0.37	2.05	SSURGO data
RG1990_GW	NG1990	GWSink	48.25	19.56	13.04	0.37	2.05	SSURGO data
RG2030_GW	NG2030	GWSink	47.70	19.56	13.04	0.40	2.05	SSURGO data
RG2040_GW	NG2040	GWSink	48.80	19.56	13.04	0.37	2.05	SSURGO data
RG2050_GW	NG2050	GWSink	48.00	19.56	13.04	0.37	2.05	SSURGO data

3.8 Other Outfalls to Groundwater

Additional outfalls to the Floridan Aquifer are included in the model to define:

- Existing 8-inch diameter drainage wells (2) in Griffin Prairie subbasin C0990 - The first drainage well is modeled using a rating curve based on an 8-inch diameter orifice opening with a control elevation of 82.0 feet-NAVD88 and free discharge conditions. The second well is reported to be poorly maintained/damaged and is assumed to have 95% reduction in discharge capacity, based on the same rating curve.
- Field identified sinks within subbasins A0910, A1540, C0740 and C0994 – flow through the sinks are estimated using rating curves derived from equivalent orifice discharge. Orifice size has been adjusted for subbasin A0910, C0740, and C0994 sinks using Hurricane Frances (2004) high water marks collected by SWFWMD based on vegetative indicators on the subject properties. The A1540 sink equivalent orifice diameter is estimated using anecdotal Hurricane Frances flood stage information received from Country Lake Estates residents during the June 16, 2009 public meeting.

3.9 Boundary Conditions

A surface water boundary condition for Bystre Lake Watershed was defined at two locations. Information from consultants evaluating adjacent watersheds was used to verify whether or not overtopping watershed flow from Bystre Lake Watershed to adjacent watersheds would be subject to backwater effects, based on their modeling and whether adjacent watersheds would contribute flow into Bystre Lake Watershed. In each case, relatively free outfall conditions are anticipated, and a reasonable constant tailwater stage condition was established using SWFWMD contour data and digital orthography. No flood flow contribution from adjacent watersheds was indicated.

The following potential surface water outfall locations were defined for the watershed:

- Subwatershed H to the Blue Sink Watershed: via roadway overtopping and a small cross-drain under Mondon Hill Road. A time variable stage-history dataset supplied by TBE Inc has been utilized for the Blue Sink tailwater condition. Bystre Lake Watershed will contribute flow to Blue Sink Watershed under 100-year and 500-year flood conditions. Flow time series were supplied to TBE for 100-year and 500-year single and multi-day events.
- Subwatershed G to the Croom Watershed: via overland flow near Richbarn Road. A constant tailwater stage of 77.0 feet-NAVD88 has been assigned. Modeling indicates no watershed interchange up through the 500-year, 5-day event.

3.10 Initial Water Elevations

For the Bystre Lake Watershed, the 2004 aerials were overlain onto the DTM. The resolution of these aerials is sufficient to distinguish between upland and wetland vegetation. In many instances, a clear distinction between wetland and upland vegetation is visible. This technique is frequently used in the delineation of wetlands for planning purposes. The elevation at which this transition or boundary occurs was read from the DTM and utilized as the starting elevation. This would represent the seasonal high water elevation.

In instances where there is no vegetative indication, surface water boundaries were also used. It is known that in the month and year in which the aerials were flown, the county was experiencing normal to wet conditions, and the use of water surface boundaries would be a good indication of normal water levels within the watershed. In instances where no vegetative or water boundaries were present, the lowest point as indicated by the DTM was used for the starting condition.

ERP data was utilized, as available, for seasonal high water table/starting elevations for stormwater management areas. A final source, September 2004 potentiometric surface maps supplied by SWFWMD, were compared to lowest point values from the DTM to further adjust starting elevations where appropriate.

Starting elevations were determined on a subbasin basis; therefore, each subbasin could theoretically have a different starting elevation. However, this was not universally true as some of the subbasins are hydraulically connected and thus would exhibit the same starting elevation. Figure 3.9 serves as an illustration of starting elevation determination for Bystre Lake (Node NA2040).

2008 Aerial Waterline estimated at 67.1 (ft –NAVD88)

2004 Aerial Waterline estimated at 71.5 (ft –NAVD88)

Node Name	Normal High (ft-NAVD88)	2004 Aerial Imagery (ft-NAVD88)	SHWT* (ft-NAVD88)
NA2040 – Bystre Lake	70.1	71.5	72

* Edge of wetlands

Figure 3.9

4.0 MODEL VALIDATION

Insufficient data were available to either calibrate or verify the model, as previously discussed; however several methods have been applied to validate the reasonableness of simulated flood stages. These methods are described in the following sections.

4.1 Flood Problem Areas

Table 4-1 shows flooding complaints compiled and provided by the SWFWMD. While the complaint records are not an exhaustive account of flooding within the Bystre Lake Watershed, they provide a corroboration of the model results where simulated inundation areas coincide with complaint records. It should be noted that the X-Y coordinates are based on owner property locations and are not necessarily located at the precise flood location. For example, reported flooding at Patrick Street is simulated over the low saddle of the roadway, but the complaint location points provided are not correlated to the low road area. Associated modeled subbasins are therefore noted in the table.

4.2 High Water Mark Database

In addition to flood complaint records, a database of high water marks (October 2009) was supplied by the SWFWMD, containing within the Bystre lake watershed, 195 high water points of various types and sources, ranging from 1949 to 2009. Some marks were of questionable quality due to unknown vertical datum and others represented basin conditions prior to significant hydraulic improvements along major roadways, yet good correlation was observed between simulated and historic high water stages in many areas. In general, 100-year design event flood stages would be expected to be at least as high as observed high water elevation to date. High water marks for the 2004 Hurricane season were also used in conjunction with the Hurricane Frances model simulation to corroborate simulated stages and to estimate discharge through identified sinks. Table 4-2 lists those high water marks recorded from 1960 forward. Point types are defined as follows:

DHW-Design high water	NHW – Normal high water	EHW-Extreme high water
PWL-Present Water level	HW- High water	PEAK- Peak water level
IND- Indicator (typically stain lines or bio-indicators)		NR – Not recorded

Table 4-1: Bystre Lake Watershed Flooding Complaints

Location	Owner Name	Date	XCoord	YCoord	Subbasin
Spring Lake Highway	Lee Ann Owen	07/24/2007	558613.34	1511362.28	A0670
Artis Property		09/22/1998	555167.37	1513410.28	A0710
Dauphin Dr/Neff Lake Rd	Anna Messenger	06/15/2004	553414.52	1514223.90	A0010
Casey Road		11/12/1998	549016.07	1515244.83	A0770
Casey Road	Dreama Schuler	08/27/2002	548148.86	1515564.39	A0730
Kaufman Road		10/05/1998	549823.21	1516757.57	A0830
Mccray Property		09/22/1998	550002.76	1517161.06	A0830
Garmisch Hills	Dave Millendorf	07/03/2002	538196.51	1518180.11	C0950
Olymia Road		02/16/1998	558840.28	1519258.69	A1150
Neff Lake Rd	Marilyn Bates	08/14/2002	552358.64	1521696.51	A1650
Singer Lane	Gary Weeks	01/28/2003	544410.34	1525006.24	C1275
Countryside Estates MHP pond	Syl Tenbarge	07/01/2002	552917.93	1526351.02	A1500
Witmore Property-drainage ditch		12/02/1996	531211.67	1527418.24	C0330
Mitchell Road	Laray Mott	09/15/2004	531700.68	1528043.86	C0337
Jersey Lily Restaurant	Earl Ferguson	12/30/1997	531482.19	1528326.35	C1650
Oxley Road	George Feaster	08/16/2001	534132.20	1528388.56	C0378
Oxley Road	Dwain Erickson	05/21/2002	533856.35	1528589.41	C0355
Wpa Rd	Evelyn Henderson	07/10/2002	554923.55	1528935.28	A1960
Mitchell Road		03/12/1996	531455.36	1529131.40	C0360
Pasture Lane	Rev Foltz	06/17/2002	541619.43	1530121.92	C2030
Patrick Street	Steve Maniaci	10/01/2004	542050.97	1540008.42	G1610
Patrick Street	Steve Maniaci	09/26/2001	542087.56	1540921.34	G1550

Table 4-2: Bystre Lake Watershed High Water Marks

XCoord	YCoord	Source	Elev. Ft_NAVD	Event Date	Point Type	Subbasin
537604.720	1529883.880	FDOT_08002-3502	87.84	1964A	PWL	C0520
534784.610	1528399.660	FDOT_08002-3502	99.17	1964A	PWL	C0378
531647.250	1529918.980	FDOT_08002-3502	112.97	NR	EHW	C0370
532124.200	1532381.690	FDOT_08002-3502	120.37	NR	EHW	C0395
532808.200	1531210.080	FDOT_08002-3502	110.27	NR	EHW	C0401
533142.220	1530255.740	FDOT_08002-3502	104.67	NR	EHW	C0580
533842.070	1531218.030	FDOT_08002-3502	109.17	NR	EHW	C0560
533481.090	1532657.640	FDOT_08002-3502	125.87	NR	EHW	C0450
535595.510	1533388.270	FDOT_08002-3502	106.97	NR	EHW	C0032
536117.970	1531235.110	FDOT_08002-3502	98.77	NR	EHW	C0040
531679.160	1527556.420	FDOT_08002-3502	110.07	NR	HW	C0330
532063.890	1527570.610	FDOT_08002-3502	113.27	NR	HW	C0340
531647.250	1529918.980	FDOT_08002-3502	111.67	NR	HW	C0370
532098.340	1532477.380	FDOT_08002-3502	125.67	NR	HW	C0390
533142.220	1530255.740	FDOT_08002-3502	99.87	NR	HW	C0580
533985.220	1529866.050	FDOT_08002-3502	97.47	NR	HW	C2700
533026.570	1534922.820	FDOT_08002-3502	152.27	NR	HW	C0425
533185.400	1535181.430	FDOT_08002-3502	157.67	NR	HW	C0420
536117.970	1531235.110	FDOT_08002-3502	97.67	NR	HW	C0040
537604.720	1529883.880	FDOT_08002-3502	94.67	NR	HW	C0520
532808.200	1531210.080	FDOT_08002-3502	106.77	NR	NHW	C0401
533842.070	1531218.030	FDOT_08002-3502	108.67	NR	NHW	C0560
533481.090	1532657.640	FDOT_08002-3502	121.77	NR	NHW	C0450
535595.510	1533388.270	FDOT_08002-3502	104.77	NR	NHW	C0032
535677.330	1525643.240	FDOT_08002-3502	114.17	NR	HW	C0670
535639.150	1524120.140	FDOT_08002-3502	140.17	NR	HW	C0960
536979.720	1528659.920	FDOT_08002-3502	94.57	NR	HW	C0700
531479.827	1532849.098	FDOT_08520-3603	133.77	NR	HW	C3320
532667.325	1531847.831	FDOT_08520-3603	117.17	NR	EHW	C0400

Table 4-2: Bystre Lake Watershed High Water Marks

XCoord	YCoord	Source	Elev. Ft_NAVD	Event Date	Point Type	Subbasin
532667.325	1531847.831	FDOT_08520-3603	115.07	NR	HW	C0400
532356.093	1530547.256	FDOT_08520-3603	109.57	NR	EHW	C0380
532358.037	1530543.980	FDOT_08520-3603	100.57	NR	NHW	C0380
533552.595	1532399.592	FDOT_08520-3603	123.07	NR	EHW	C0460
533552.595	1532399.592	FDOT_08520-3603	117.27	NR	NHW	C0460
532427.812	1532204.807	FDOT_08520-3603	120.97	NR	EHW	C0399
532427.812	1532204.807	FDOT_08520-3603	118.87	NR	HW	C0399
532427.812	1532204.807	FDOT_08520-3603	116.60	NR	PWL	C0399
559523.080	1523067.553	FDOT_08070-3514	67.67	NR	DHW	A1220
552734.146	1531510.635	SWFWMD Engineering FB#19/1, page 20	80.39	1960	HW	A2040
551572.691	1528580.598	SWFWMD Engineering FB#19/1, page 21	79.06	1960	HW	A2040
550983.522	1528299.049	SWFWMD Engineering FB#19/1, page 21	75.02	1974	HW	A2040
552343.925	1531214.169	SWFWMD Engineering FB#19/1, page 20	70.42	05/06/1980	PWL	A2040
532562.398	1515683.477	SWFWMD Engineering FB#15/3, page 21, SWFWMD	103.13	2004	IND	C0255
532603.213	1515615.701	SWFWMD Engineering FB#15/3, page 21, SWFWMD	103.14	2004	IND	C0255
531864.001	1515489.572	SWFWMD Engineering FB#15/3, page 21, SWFWMD	102.44	NR	IND	C0165
531864.357	1515446.932	SWFWMD Engineering FB#15/3, page 21, SWFWMD	102.54	NR	IND	C0165
532610.889	1515623.506	SWFWMD Engineering FB#15/3, page 21, SWFWMD	102.50	NR	IND	C0255
540715.314	1523650.626	SWFWMD Hydrologic Data Section	90.30	9/6/1988	PEAK	C2900
551086.377	1532406.772	SWFWMD Hydrologic Data Section	71.39	9/21/1994	PEAK	A2040
551898.352	1528619.150	SWFWMD Hydrologic Data Section	76.25	9/28/2004	PEAK	A2040
554192.941	1532291.950	SWFWMD, LiDAR referenced elevation from photo	75.11	2004	HW	G0220
552891.346	1534268.270	SWFWMD, LiDAR referenced elevation from photo	75.67	2004	HW	G1345
552438.690	1528704.517	SWFWMD Engineering FB# 15/3, page 53. Gage referenced elevation.	76.47	2004	IND	A2040
549907.380	1526832.835	SWFWMD Engineering FB# 15/3, page 54.	76.12	2004	IND	B0070

Table 4-2: Bystre Lake Watershed High Water Marks

XCoord	YCoord	Source	Elev. Ft_NAVD	Event Date	Point Type	Subbasin
		LiDAR referenced elevation.				
549937.189	1526742.332	SWFWMD Engineering FB# 15/3, page 54. LiDAR referenced elevation.	76.06	2004	IND	B0070
550282.340	1523541.981	SWFWMD, LiDAR referenced elevation from photo	84.15	1998	HW	A1380
532926.952	1523950.266	SWFWMD Engineering FB#10/11, page 60	106.49	2004	IND	C0740
532925.133	1523958.236	SWFWMD Engineering FB#10/11, page 60	106.52	2004	IND	C0740
532902.874	1523981.191	SWFWMD Engineering FB#10/11, page 60	106.52	2004	IND	C0740
532958.749	1523959.024	SWFWMD Engineering FB#10/11, page 60	106.49	2004	IND	C0740
532965.166	1523958.975	SWFWMD Engineering FB#10/11, page 60	106.52	2004	IND	C0740
532787.963	1523880.411	SWFWMD Engineering FB#10/11, page 60	106.44	2004	IND	C0740
532793.571	1523868.225	SWFWMD Engineering FB#10/11, page 60	106.44	2004	IND	C0740
532769.104	1523876.800	SWFWMD Engineering FB#10/11, page 60	106.45	2004	IND	C0740
533156.799	1525031.854	SWFWMD Engineering FB#15/4, page 11	105.08	2004	IND	C0994
533156.291	1525039.604	SWFWMD Engineering FB#15/4, page 11	105.28	2004	IND	C0994
532940.744	1516801.778	SWFWMD Engineering FB#15/4, page 13	103.31	2004	IND	C0840
532914.268	1516798.350	SWFWMD Engineering FB#15/4, page 13	103.24	2004	IND	C0840
533257.873	1516806.404	SWFWMD Engineering FB#15/4, page 13	103.10	2004	IND	C0860
533253.711	1516828.566	SWFWMD Engineering FB#15/4, page 13	103.27	2004	IND	C0860
533267.119	1516836.637	SWFWMD Engineering FB#15/4, page 13	103.44	2004	IND	C0860
533271.108	1516843.591	SWFWMD Engineering FB#15/4, page 13	103.26	2004	IND	C0860
533599.562	1517354.720	SWFWMD Engineering FB#15/4, page 14	103.04	2004	IND	C0860
533564.814	1517484.998	SWFWMD Engineering FB#15/4, page 14	103.04	2004	IND	C0860
533527.241	1517544.471	SWFWMD Engineering FB#15/4, page 14	103.04	2004	IND	C0860
533626.652	1517426.127	SWFWMD Engineering FB#15/4, page 14	94.09	07/07/2009	PWL	C0860
533284.215	1516805.968	SWFWMD Engineering FB#15/4, page 14	96.71	07/07/2009	PWL	C0860
532007.785	1515960.624	SWFWMD Engineering FB#15/4, page 15	97.09	07/07/2009	PWL	C0840
532077.007	1515815.710	SWFWMD Engineering FB#15/4, page 13	97.61	07/07/2009	PWL	C0255
546613.012	1526625.482	LiDAR-derived elev per location from landowner: Tammy Schmaltz, 7187 Cedar Ln	77.18	2004	HW	C1340
546660.242	1526467.122	LiDAR-derived elev per location from landowner: Tammy Schmaltz, 7187 Cedar Ln	77.22	2004	HW	C1340

Table 4-2: Bystre Lake Watershed High Water Marks

XCoord	YCoord	Source	Elev. Ft_NAVD	Event Date	Point Type	Subbasin
555870.921	1518596.518	SWFWMD Engineering FB#15/4, page 16	76.24	2004	IND	A0910
555938.185	1518527.432	SWFWMD Engineering FB#15/4, page 16	76.26	2004	IND	A0910
555961.463	1518389.872	SWFWMD Engineering FB#15/4, page 16	76.26	2004	IND	A0910
555877.805	1518501.186	SWFWMD Engineering FB#15/4, page 16	76.34	2004	IND	A0910
556277.612	1518474.052	SWFWMD Engineering FB#15/4, page 16	76.08	2004	IND	A0910
556233.923	1518411.925	SWFWMD Engineering FB#15/4, page 16	76.18	2004	IND	A0910
556182.393	1518421.832	SWFWMD Engineering FB#15/4, page 17	76.14	2004	IND	A0910
556286.340	1518423.747	SWFWMD Engineering FB#15/4, page 17	76.18	2004	IND	A0910
556357.293	1518638.313	SWFWMD Engineering FB#15/4, page 17	76.08	2004	IND	A0910
556448.585	1518585.606	SWFWMD Engineering FB#15/4, page 17	75.98	2004	IND	A0910
556776.436	1518943.388	SWFWMD Engineering FB#15/4, page 17	74.14	2004	IND	A0940
556948.906	1518872.179	SWFWMD Engineering FB#15/4, page 17	74.48	2004	IND	A0940
556983.242	1518877.595	SWFWMD Engineering FB#15/4, page 17	74.12	2004	IND	A0940
556789.566	1519046.937	SWFWMD Engineering FB#15/4, page 17	74.21	2004	IND	A0940
556267.713	1518598.569	SWFWMD Engineering FB#15/4, page 16	74.88	07/08/2009	PWL	A0910
556918.170	1519100.780	SWFWMD Engineering FB#15/4, page 17	69.32	07/08/2009	PWL	A0940

4.3 Hurricane Frances (2004)

Although not considered a calibration or verification event, the model input was run under Doppler radar-generated rainfall datasets from Hurricane Frances (2004) to review resultant peak stages for reasonability and comparison to recorded flood complaints and high water marks. A comparison of simulated flood stages at locations with high water or flood complaint data are presented in Table 4-3. Comparison of simulated and observed values shows good correlation for most values (0.2 to 0.9 feet variance). Poorest correlation (underestimation) is observed at Preston Road (NG1345) where the culvert may have become obstructed during the storm and at WPA Road (NG0220). The WPA Road high water mark is cited as the edge of water on the road from a photo, subsequently tied into the DEM using the photo location. Simulated Frances flood stages do approach the low road elevation of 73.1 north of the data point. It is possible the photo location is imprecise. Initial condition assumptions made for design event modeling were typically based on September 2004 potentiometric data and aerial mapping and thus were not adjusted for the Frances simulation.

Table 4-3: Hurricane Frances High Water Marks

Basin	Node	Point Type	HWM Elev. Ft_NAVD88	Frances Simulated Peak Stage Ft_NAVD88	Comment
A0910	NA0910	IND	76.2	76.4	Lane property
A0910	NA0910	IND	76.3	76.4	Lane property
A0910	NA0910	IND	76.3	76.4	Lane property
A0910	NA0910	IND	76.3	76.4	Lane property
A0910	NA0910	IND	76.1	76.4	Lane property
A0910	NA0910	IND	76.2	76.4	Lane property
A0910	NA0910	IND	76.1	76.4	Lane property
A0910	NA0910	IND	76.2	76.4	Lane property
A0910	NA0910	IND	76.1	76.4	Lane property
A0910	NA0910	IND	76.0	76.4	Lane property
A0940	NA0940	IND	74.1	74.5	Lane property
A0940	NA0940	IND	74.5	74.5	Lane property
A0940	NA0940	IND	74.1	74.5	Lane property
A0940	NA0940	IND	74.2	74.5	Lane property
A2040	NA2040	PEAK	77.1	75.3	HWM is peak recorded stage at gage
A2040	NA2040	IND	76.5	75.3	Bystre Lake
B0070	NB0070	IND	76.1	75.3	
B0070	NB0070	IND	76.1	75.3	
G0220	NG0220	HW	75.1	72.4	Edge of water C/L WPA Rd
G1345	NG1345	HW	75.7	68.4	Edge of water C/L Preston Rd
G1550	NG1550	FC	------	76.0	Reported flooding of Patrick Rd – low elev =75.7 ft NAVD88
C0255	NC0255	IND	103.1	102.9	2007 source date, McAteer property
C0255	NC0255	IND	103.1	102.9	2007 source date, McAteer property
C0740	NC0740	IND	106.5	106.5	Dorsett property

Basin	Node	Point Type	HWM Elev. Ft_NAVD88	Frances Simulated Peak Stage Ft_NAVD88	Comment
C0740	NC0740	IND	106.5	106.5	Dorsett property
C0740	NC0740	IND	106.5	106.5	Dorsett property
C0740	NC0740	IND	106.5	106.5	Dorsett property
C0740	NC0740	IND	106.5	106.5	Dorsett property
C0740	NC0740	IND	106.4	106.5	Dorsett property
C0740	NC0740	IND	106.4	106.5	Dorsett property
C0740	NC0740	IND	106.5	106.5	Dorsett property
C0994	NC0994	IND	105.1	106.4	Dorsett property rock pit
C0994	NC0994	IND	105.3	106.4	Dorsett property rock pit
C0840	NC0840	IND	103.3	102.8	2009 field review, McAteer property
C0840	NC0840	IND	103.2	102.8	2009 field review, McAteer property
C0860	NC0858	IND	103.1	102.8	2009 field review, McAteer property
C0860	NC0858	IND	103.3	102.8	2009 field review, McAteer property
C0860	NC0858	IND	103.3	102.8	2009 field review, McAteer property
C0860	NC0858	IND	103.4	102.8	2009 field review, McAteer property
C0860	NC0858	IND	103.0	102.8	2009 field review, McAteer property
C0860	NC0858	IND	103.0	102.8	2009 field review, McAteer property
C0860	NC0858	IND	103.0	102.8	2009 field review, McAteer property
C1340	NC1340	HW	77.2	78.6	Landowner estimate tied to LiDAR
C1340	NC1340	HW	77.2	78.6	Landowner estimate tied to LiDAR

5.0 JUSTIFICATION

For the justification of Bystre Lake Watershed floodplain, URS evaluated various 100-year storm events. In most subbasin areas, the 100-year, 24-hour event was used if no high water mark or other irrefutable flood data were available to compare with model results. The 100-year, 24 hour event also correlated well with existing high water marks in many subbasins.

The 100-year, multi-day event was applied to large closed subbasins and hydraulically connected systems of similar hydrology (i.e. poorly draining soils and similar land cover). The Bystre Lake subbasin (A2040), had high water marks recorded above the 100-year, 24-hour simulated stage. The multi-day event was also applied to the Griffin Prairie region. The 100-year, 5-day event was selected to represent the multi-day scenario since it was used in previous model evaluations and had reasonable correlation to the high water mark data. Figure 5.1 identifies the subbasins proposed for flood stage delineation using multi-day versus single-day rainfall events.

The following 82 subbasins were mapped using the 5-day event:

- A0940
- A0950
- A0970
- A1145
- A1150
- A1190
- A1215
- A1240
- A1248
- A1470
- A1490
- A1500
- A1520
- A1540
- A1730
- A1740
- A1750
- A1760
- A1770
- A1775
- A1780
- A1790
- A1850
- A1860
- A1880
- A1900
- A1920
- A1930
- A1940
- A1960
- A1970
- A1980
- A1990
- A1995
- A2030
- A2040
- A2230
- B0010
- B0040
- B0050
- B0070
- B0080
- C0620
- C0650
- C0700
- C0910
- C0940
- C0950
- C0960
- C0985
- C0990
- C1212
- C1215
- C1470
- C1480
- C1490
- C2900
- C2950
- C3100
- C3110
- C3120
- F0040
- G0030
- G0040
- G0050
- G0110
- G0160
- G0170
- G0220
- G1240
- G1270
- G1280
- G1300
- G1310
- G1345
- G1870
- G1990
- G2030
- G2040
- G2050
- G2085
- G2095

5.1 Comparison of Storm Events and High Water Marks

As part of the multi-day event evaluation, several 100-year return frequency events were simulated with various durations. Table 5-1 shows the comparison of peak 100-year stage for all Bystre Lake Watershed subbasins with high water mark data.

Appendix A contains a similar comparison of peak nodal stages for all simulated 100-year events, regardless of whether high water mark data were available.

Table 5-1: Comparison of Storm Events with High Water Marks
NM denotes "Not Modeled"

Node	SWFWMD 100 YR 24 Hour (FT NAVD88)	SWFWMD 100 YR 3 Day (FT – NAVD88)	SWFWMD 100 YR 5 Day (FT – NAVD88)	SWFWMD 100 YR 7 Day (FT – NAVD88)	Type	High Water Mark (FT – NAVD88)	Location
NA0910	77.90	77.13	77.75	77.06	PWL	74.88	Lane Property
NA0910	77.90	77.13	77.75	77.06	IND	76.24	Lane Property
NA0910	77.90	77.13	77.75	77.06	IND	76.26	Lane Property
NA0910	77.90	77.13	77.75	77.06	IND	76.26	Lane Property
NA0910	77.90	77.13	77.75	77.06	IND	76.34	Lane Property
NA0910	77.90	77.13	77.75	77.06	IND	76.08	Lane Property
NA0910	77.90	77.13	77.75	77.06	IND	76.18	Lane Property
NA0910	77.90	77.13	77.75	77.06	IND	76.14	Lane Property
NA0910	77.90	77.13	77.75	77.06	IND	76.18	Lane Property
NA0910	77.90	77.13	77.75	77.06	IND	76.08	Lane Property
NA0910	77.90	77.13	77.75	77.06	IND	75.98	Lane Property
NA0940	76.31	75.34	76.11	75.27	PWL	69.32	Lane Property
NA0940	76.31	75.34	76.11	75.27	IND	74.14	Lane Property
NA0940	76.31	75.34	76.11	75.27	IND	74.48	Lane Property
NA0940	76.31	75.34	76.11	75.27	IND	74.12	Lane Property
NA0940	76.31	75.34	76.11	75.27	IND	74.21	Lane Property
NA1220	67.21	68.82	67.94	70.13	DHW	67.67	Cortez Blvd (SR50)@ Old Mondon Hill Road
NA1380	84.74	84.55	84.74	84.53	HW	84.15	Holden Dr @ Sun Hill Ln
NA2040	77.47	77.79	78.17	78.48	HW	75.02	Bystre Lake
NA2040	77.47	77.79	78.17	78.48	HW	79.06	Bystre Lake
NA2040	77.47	77.79	78.17	78.48	PEAK	76.25	Bystre Lake
NA2040	77.47	77.79	78.17	78.48	IND	76.47	Bystre Lake
NA2040	77.47	77.79	78.17	78.48	PWL	70.42	Bystre Lake
NA2040	77.47	77.79	78.17	78.48	HW	80.39	Bystre Lake
NA2040	77.47	77.79	78.17	78.48	PEAK	71.39	Bystre Lake
NB0070	77.47	77.79	78.16	78.47	IND	76.06	Cortez Blvd(SR50) west of Lang St

Table 5-1: Comparison of Storm Events with High Water Marks
NM denotes "Not Modeled"

Node	SWFWMD 100 YR 24 Hour (FT NAVD88)	SWFWMD 100 YR 3 Day (FT – NAVD88)	SWFWMD 100 YR 5 Day (FT – NAVD88)	SWFWMD 100 YR 7 Day (FT – NAVD88)	Type	High Water Mark (FT – NAVD88)	Location
NB0070	77.47	77.79	78.16	78.47	IND	76.12	Cortez Blvd(SR50) west of Lang St
NC0032	107.55	105.58	106.97	104.94	EHW	106.97	Power easement north of Tanglewood Dr
NC0032	107.55	105.58	106.97	104.94	NHW	104.77	Power easement north of Tanglewood Dr
NC0040	98.04	97.84	97.95	97.82	EHW	98.77	Jefferson St (SR50A) nr Kennedy Blvd
NC0040	98.04	97.84	97.95	97.82	HW	97.67	Jefferson St (SR50A) nr Kennedy Blvd
NC0165	104.02	104.69	104.60	105.01	IND	102.54	McAteer property
NC0165	104.02	104.69	104.60	105.01	IND	102.44	McAteer property
NC0255	104.02	104.69	104.60	105.01	IND	103.14	McAteer property
NC0255	104.02	104.69	104.60	105.01	IND	102.5	McAteer property
NC0255	104.02	104.69	104.60	105.01	IND	103.13	McAteer property
NC0255	104.02	104.69	104.60	105.01	PWL	97.61	McAteer property-pond
NC0265	104.02	104.69	104.61	105.01	PWL	97.09	McAteer property-ditch
NC0330	113.46	110.14	112.64	109.74	HW	110.07	Mitchell Road
NC0340	113.42	109.46	111.79	108.83	HW	113.27	RR east of Mitchell Rd
NC0370	114.69	112.85	114.46	112.47	EHW	112.97	Main St (CR445)
NC0370	114.69	112.85	114.46	112.47	HW	111.67	Main St (CR445)
NC0378	99.54	95.74	97.88	95.46	PWL	99.17	Cortez Blvd west of Emerson
NC0380	112.61	107.76	111.66	106.99	NHW	100.57	RR culvert
NC0380	112.61	107.76	111.66	106.99	EHW	109.57	Ditch south of Russell St & east of Main St
NC0390	128.23	124.31	126.79	123.77	HW	125.67	Ditch south of Russell St & east of Main St
NC0395	123.51	120.04	122.42	119.43	EHW	120.37	Ditch south of Russell St & east of Main St
NC0399	123.06	119.54	122.03	118.99	EHW	120.97	Ditch south of Russell St & east of Main St

Table 5-1: Comparison of Storm Events with High Water Marks
NM denotes "Not Modeled"

Node	SWFWMD 100 YR 24 Hour (FT NAVD88)	SWFWMD 100 YR 3 Day (FT – NAVD88)	SWFWMD 100 YR 5 Day (FT – NAVD88)	SWFWMD 100 YR 7 Day (FT – NAVD88)	Type	High Water Mark (FT – NAVD88)	Location
NC0399	123.06	119.54	122.03	118.99	HW	118.87	Ditch south of Russell St & east of Main St
NC0399	123.06	119.54	122.03	118.99	PWL	116.6	Ditch south of Russell St & east of Main St
NC0400	113.78	112.95	113.59	112.72	EHW	117.17	Ditch south of Scott St @ Hazel Ave
NC0400	113.78	112.95	113.59	112.72	HW	115.07	Ditch south of Scott St @ Hazel Ave
NC0401	111.61	105.95	108.48	105.52	EHW	110.27	MLK Jr Blvd E. nr Hazel Ave
NC0401	111.61	105.95	108.48	105.52	NHW	106.77	MLK Jr Blvd E. nr Hazel Ave
NC0420	152.20	148.85	150.16	148.61	HW	157.67	Ft Dade Ave E. (CR 484)
NC0425	150.00	146.21	148.21	145.9	HW	152.27	Jefferson St (SR50A) east of Bell Ave
NC0450	123.74	120.73	123.21	119.77	EHW	125.87	ACL Street west of JeffersonSt
NC0450	123.74	120.73	123.21	119.77	NHW	121.77	ACL Street west of JeffersonSt
NC0460	117.06	114.33	116.59	113.68	EHW	123.07	South Street west of Jefferson St
NC0460	117.06	114.33	116.59	113.68	NHW	117.27	South Street west of Jefferson St
NC0520	92.01	91.74	92.71	92.44	HW	94.67	Cortez Blvd (SR50) west of Jefferson St.
NC0520	92.01	91.74	92.71	92.44	PWL	87.84	Cortez Blvd (SR50) west of Jefferson St.
NC0560	103.80	101.68	103.09	101.13	EHW	109.17	MLK Jr Blvd E. east of Twigg St
NC0560	103.80	101.68	103.09	101.13	NHW	108.67	MLK Jr Blvd E. east of Twigg St
NC0580	102.23	101.61	101.80	101.46	EHW	104.67	Josephine St
NC0580	102.23	101.61	101.80	101.46	HW	99.87	Josephine St
NC0670	118.63	112.69	113.76	112.41	HW	114.17	Emerson Rd (CR581) north of Mitchell Rd
NC0700	92.01	91.74	92.71	92.44	HW	94.57	South of Cortez Blvd (SR50)
NC0740	109.43	111.06	109.84	112.2	IND	106.49	Dorsett Property
NC0740	109.43	111.06	109.84	112.2	IND	106.52	Dorsett Property
NC0740	109.43	111.06	109.84	112.2	IND	106.52	Dorsett Property

Table 5-1: Comparison of Storm Events with High Water Marks

NM denotes "Not Modeled"

Node	SWFWMD 100 YR 24 Hour (FT NAVD88)	SWFWMD 100 YR 3 Day (FT – NAVD88)	SWFWMD 100 YR 5 Day (FT – NAVD88)	SWFWMD 100 YR 7 Day (FT – NAVD88)	Type	High Water Mark (FT – NAVD88)	Location
NC0740	109.43	111.06	109.84	112.2	IND	106.49	Dorsett Property
NC0740	109.43	111.06	109.84	112.2	IND	106.52	Dorsett Property
NC0740	109.43	111.06	109.84	112.2	IND	106.44	Dorsett Property
NC0740	109.43	111.06	109.84	112.2	IND	106.44	Dorsett Property
NC0740	109.43	111.06	109.84	112.2	IND	106.45	Dorsett Property
NC0960	92.01	91.74	92.71	92.45	HW	140.17	Emerson Rd (CR581) south of Mitchell Rd
NC0994	109.42	NM	109.83	NM	IND	105.08	Dorsett Property rock pit
NC0994	109.42	NM	109.83	NM	IND	105.28	Dorsett Property rock pit
NC0840	104.02	104.69	104.60	105.01	IND	103.31	McAteer property
NC0840	104.02	104.69	104.60	105.01	IND	103.24	McAteer property
NC0858	103.98	104.68	104.59	104.99	IND	103.1	McAteer property
NC0858	103.98	104.68	104.59	104.99	IND	103.27	McAteer property
NC0858	103.98	104.68	104.59	104.99	IND	103.44	McAteer property
NC0858	103.98	104.68	104.59	104.99	IND	103.26	McAteer property
NC0858	103.98	104.68	104.59	104.99	IND	103.04	McAteer property
NC0858	103.98	104.68	104.59	104.99	IND	103.04	McAteer property
NC0858	103.98	104.68	104.59	104.99	IND	103.04	McAteer property
NC0858	103.98	104.68	104.59	104.99	PWL	94.09	McAteer property
NC0858	103.98	104.68	104.59	104.99	PWL	96.71	McAteer property
NC1340	80.54	NM	80.59	NM	HW	77.18	Schmaltz property
NC1340	80.54	NM	80.59	NM	HW	77.22	Schmaltz property
NC2700	101.22	100.56	100.95	100.1	HW	97.47	Newgate St east of Twigg St
NC2900	92.00	91.73	92.71	92.44	PEAK	90.3	Irvin Lake
NC3320	133.19	131.64	132.62	131.14	HW	133.77	Central Ave west of Main St
NG0220	77.43	71.29	77.98	76.76	HW	75.11	WPA Road south of O'Neill Rd
NG1345	77.44	74.94	77.99	77.28	HW	75.67	Preston Road north of Mondon Hill Rd (CR484)

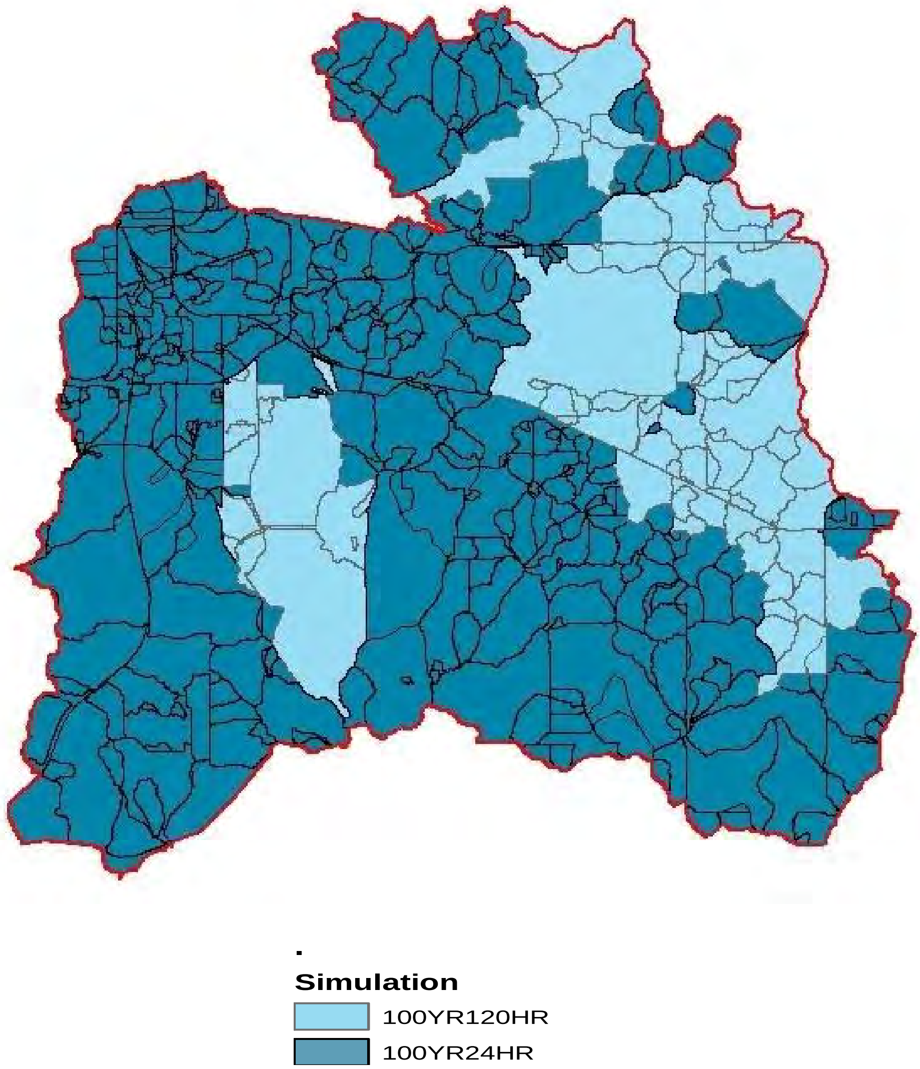


Figure 5.1 Rainfall Events Utilized in Floodplain Delineation

6.0 FLOODPLAIN DELINEATION

Based on physical parameters, the ICPR model produces stage elevation data for the various storm events for nodes throughout the watershed. Each subbasin was processed to determine the areal extent of flood mapping through comparison of nodal flood stages to the DEM. Preliminary floodplains were plotted for single day and multiday events and compared to high water mark data to identify the most appropriate storm event.

Floodplain delineation is based on several factors, depending on the terrain. For closed and semi-closed subbasins, level pool flood stages are assigned throughout the subbasin. For channel systems, flood zone extent is based on flood stages at each channel node, with flood stages interpolated between channel nodes based on modeled channel flow depth and the terrain. Transition flood zone is delineated to denote shallow overland flow paths where flooded depressions overtop and spillover to the next downstream pool. The extent of transition flood zone is determined using engineering judgment with consideration of peak flow being carried and underlying terrain.

The 100-year, 24-hour storm event was selected for the proposed floodplain throughout most of the watershed, being considered as providing reasonable indication of flood hazard. The 120-hour duration event was applied to large closed basins, the Bystre Lake subbasin (A2040) being the most notable, where high water marks were recorded above the 100-year, 24-hour simulated stage and to subbasins that were hydraulically connected and of similar hydrology (i.e. poorly draining soils and similar land cover). The multi-day event was applied as well to the Griffin Prairie region. The 100-year, 5-day event was selected to represent the multi-day scenario since it was used in previous model evaluations and had reasonable correlation to the high water mark data. Figure 5.1 identifies the subbasins proposed for flood stage delineation using multi-day versus single-day rainfall events.

The resultant 2010 floodplain map presented in Figure 6.1-1 is an inundation graphic representing a combination of 1-day and multi-day peak flood elevations. The eighty-two (82) multi-day subbasins shown in Figure 5-1 are listed specifically in Section 5.0 of this report.
The total acreage of 2010 modeled floodplain (Figure 6.1-1) is 4,200 acres which comprises both the base flood and transition flood zone designations.

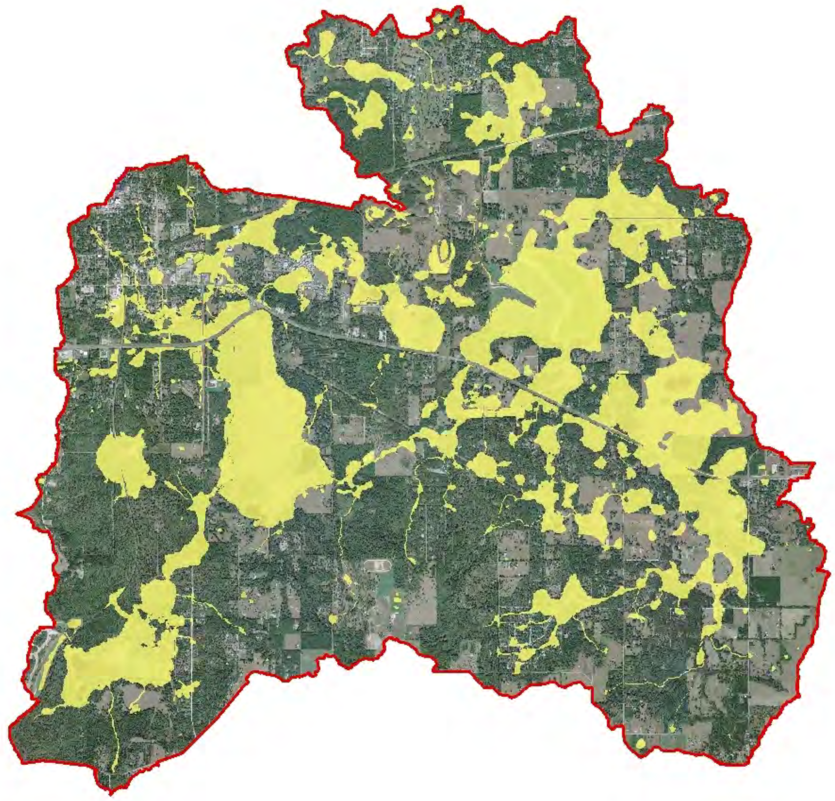


Figure 6.1-1 2010 Modeled Floodplain

6.1 Comparison to FEMA BFE

The currently effective FEMA floodplain (Figure 6.1-2) shows a total floodplain area within the watershed to be approximately 1,644 acres. The comparison shows an increase in the total area that is considered to be within the 100-year floodplain. The 2010 model, utilizing the techniques outlined in this report, shows a total zone AE floodplain area of approximately 4,094 acres. Estimated and transitional floodplain zones comprise an additional 106 acres (refer to Table 6-1). The majority of the new floodplain area is associated with ponds, depression areas and transitional flow areas that were not mapped previously by FEMA.

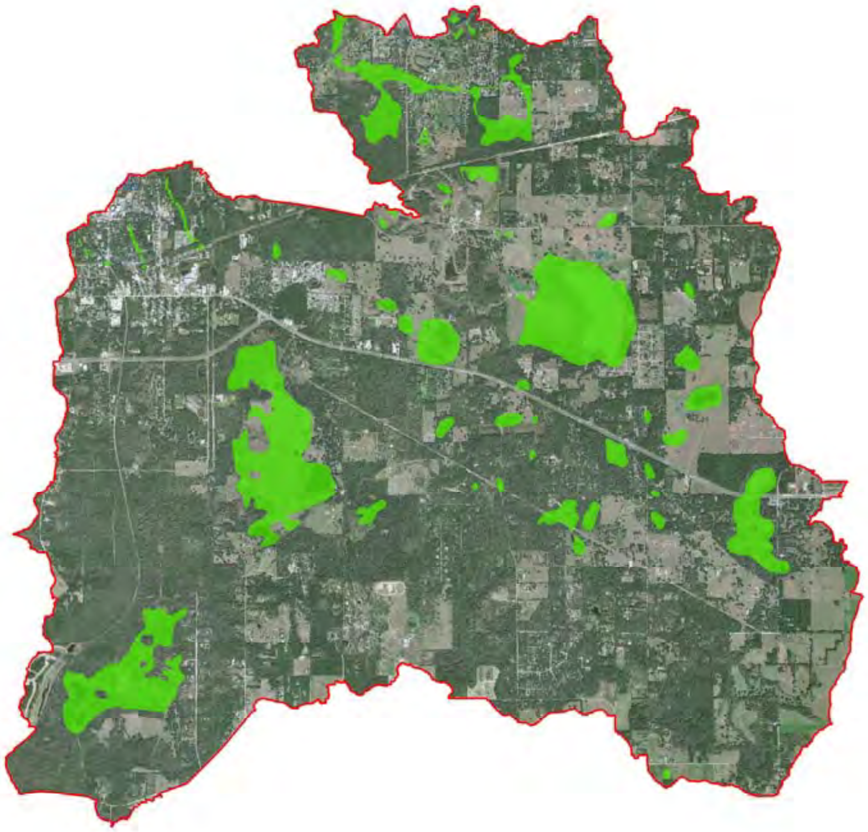


Figure 6.1-2 Existing FEMA Floodplain

Table 6-1: Floodplain Comparison

Floodplain	Area (acres)	Area (sq. miles)
FEMA	1,645	2.57
2006	5,602	8.75
2010	4,200	6.56

7.0 CONCLUSIONS

URS has updated the Bystre Lake Watershed model utilizing the Green-Ampt methodology and percolation as an outfall for predominantly HSG A soil areas and comparisons to high water marks to evaluate various 100-year storm events for developing the floodplain. In most subbasin areas, the 100-year, 24-hour event was used if no high water mark or irrefutable flood data was available to compare with model results. The 100-year, multi-day event was used for 82 subbasins, generally the larger closed basin areas that had high water mark data that provided better stage match than the 100-year, 24-hour event and hydrologically similar basins with hydraulic connections to those basins. The 100-year, 5-day event was selected to represent the multi-day scenario because it was used in previous model evaluations and had better correlation to the high water mark data.

The mapped floodplain represents the culmination of a physically-based, dynamic hydrologic and hydraulic model and the best available terrain data.

Due to limited gage data within the watershed, there is a need for additional monitoring of lake levels and known flood areas within the watershed, especially following major storm or El Nino type events. The need for additional monitoring is supported by the following:

- The majority of the Bystre Lake watershed is closed or semi-closed basins
- There is significant depression storage within the watershed
- There are significant areas of HSG A soils

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APPENDIX A

Comparison of Node Results for Four 100-Year Return Frequency Simulations (Note: NM denotes "Not Modeled")				
NODE	100YR1D (Ft NAVD)	100YR3D (Ft NAVD)	100YR5D (Ft NAVD)	100YR7D (Ft NAVD)
NA0005	198.35	197.89	198.12	197.84
NA0010	153.24	151.01	152.61	150.72
NA0030	139.79	138.26	139.40	138.08
NA0040	123.98	120.46	122.85	120.11
NA0600	160.53	160.30	160.39	160.29
NA0610	174.86	174.31	173.96	174.28
NA0620	161.59	161.27	161.41	161.25
NA0630	77.74	76.05	76.59	76.33
NA0640	185.73	185.24	185.49	185.27
NA0650	175.07	NM	174.98	NM
NA0660	200.71	201.67	201.69	201.68
NA0667	114.57	112.82	113.90	112.64
NA0670	153.84	151.94	153.20	152.39
NA0680	187.75	187.49	187.63	187.57
NA0690	116.19	113.70	115.40	113.40
NA0700	87.98	86.87	87.57	86.86
NA0710	87.99	86.87	87.58	86.87
NA0715	208.95	209.77	210.55	211.40
NA0720	85.11	84.04	84.76	84.00
NA0730	120.81	120.40	120.63	119.22
NA0740	125.14	124.76	125.06	124.74
NA0745	121.36	120.44	121.28	120.43
NA0746	116.38	NM	116.30	NM
NA0747	109.03	NM	108.93	NM
NA0748	99.46	NM	99.34	NM
NA0749	96.03	NM	95.91	NM
NA0750	106.66	106.00	106.51	105.97
NA0751	92.96	NM	92.65	NM
NA0760	113.13	112.72	113.02	112.70
NA0770	110.51	106.96	109.77	106.32
NA0773	122.61	NM	122.01	NM
NA0774	106.45	NM	106.23	NM
NA0775	107.86	104.35	106.64	104.16
NA0776	106.13	NM	104.88	NM
NA0777	103.57	NM	102.75	NM
NA0778	99.70	NM	98.90	NM
NA0779	95.49	NM	94.71	NM
NA0780	93.42	NM	92.94	NM
NA0820	163.73	163.46	163.58	163.44
NA0830	92.93	92.04	92.63	91.96
NA0840	92.90	92.04	92.60	91.96
NA0860	89.27	88.17	88.91	88.07
NA0870	85.82	83.66	85.13	83.45
NA0880	71.50	73.36	72.78	74.20

Comparison of Node Results for Four 100-Year Return Frequency Simulations (Note: NM denotes "Not Modeled")				
NODE	100YR1D (Ft NAVD)	100YR3D (Ft NAVD)	100YR5D (Ft NAVD)	100YR7D (Ft NAVD)
NA0890	107.01	106.86	106.97	106.84
NA0900	85.65	85.38	85.58	85.34
NA0910	77.90	77.13	77.75	77.06
NA0920	83.61	82.81	83.31	82.77
NA0925	83.35	80.92	82.37	80.81
NA0926	80.75	NM	79.60	NM
NA0927	77.22	NM	76.92	NM
NA0928	75.11	NM	74.81	NM
NA0930	78.97	78.82	78.92	78.80
NA0940	76.31	75.34	76.11	75.27
NA0950	73.93	73.28	74.43	73.70
NA0960	86.74	87.10	87.24	87.21
NA0970	71.71	71.55	74.43	73.70
NA0990	105.74	106.02	105.44	106.47
NA1000	90.29	90.38	90.18	90.44
NA1020	86.09	85.89	85.65	85.91
NA1140	73.55	72.09	74.43	73.70
NA1145	73.30	NM	74.43	NM
NA1150	72.42	72.02	74.43	73.70
NA1160	86.77	87.63	86.60	88.04
NA1170	110.42	111.15	110.51	111.45
NA1190	71.74	71.57	74.43	73.70
NA1200	67.23	68.82	67.94	70.13
NA1210	93.69	93.70	93.68	93.69
NA1215	71.72	71.56	74.43	73.70
NA1220	67.21	68.82	67.94	70.13
NA1230	67.09	68.82	67.94	70.13
NA1240	70.68	71.30	74.43	73.08
NA1248	71.71	71.55	74.43	73.70
NA1250	71.00	73.06	71.60	73.05
NA1260	80.96	81.62	82.36	82.76
NA1280	119.06	118.84	118.89	118.81
NA1290	170.51	170.32	170.39	170.31
NA1319	87.61	87.28	87.59	87.23
NA1320	87.58	87.25	87.55	87.21
NA1330	101.35	101.34	101.48	101.57
NA1340	91.75	91.80	91.84	91.79
NA1350	87.56	87.25	87.54	87.21
NA1360	87.55	87.24	87.53	87.20
NA1380	84.74	84.55	84.74	84.53
NA1390	81.44	81.23	81.44	81.21
NA1400	80.77	80.87	81.04	80.84
NA1410	80.77	80.87	81.04	80.84
NA1420	80.77	80.87	81.04	80.84

Comparison of Node Results for Four 100-Year Return Frequency Simulations (Note: NM denotes "Not Modeled")				
NODE	**100YR1D (Ft NAVD)**	**100YR3D (Ft NAVD)**	**100YR5D (Ft NAVD)**	**100YR7D (Ft NAVD)**
NA1430	77.40	77.56	77.71	77.78
NA1440	77.40	77.56	77.71	77.78
NA1450	77.40	77.56	77.71	77.78
NA1460	77.40	77.56	77.71	77.78
NA1470	72.73	73.64	74.45	75.69
NA1480	77.40	77.56	77.71	77.78
NA1490	70.68	71.03	74.43	73.72
NA1500	70.68	71.03	74.43	73.72
NA1510	76.17	76.14	76.23	76.12
NA1520	70.68	71.03	74.43	73.72
NA1540	70.68	71.03	74.43	73.72
NA1560	85.87	85.61	85.77	85.57
NA1570	80.77	80.84	81.13	80.85
NA1580	84.32	84.26	84.40	84.22
NA1600	84.33	84.26	84.40	84.22
NA1610	83.31	83.16	83.32	83.12
NA1630	80.77	80.83	81.11	80.84
NA1640	80.76	80.83	81.11	80.84
NA1650	80.76	80.83	81.11	80.84
NA1660	80.75	80.82	81.09	80.82
NA1670	79.63	79.55	79.61	79.54
NA1690	73.66	74.85	76.16	76.37
NA1700	73.66	74.85	76.16	76.37
NA1710	70.05	72.06	71.78	75.48
NA1720	73.66	74.85	76.16	76.36
NA1730	71.64	71.52	74.43	73.70
NA1740	71.60	71.50	74.43	73.70
NA1750	78.73	78.65	78.81	78.61
NA1760	71.77	71.60	74.43	73.71
NA1770	71.60	70.92	74.43	73.71
NA1775	70.68	NM	74.43	NM
NA1780	70.68	71.03	74.43	73.72
NA1790	70.68	71.03	74.43	73.71
NA1850	70.68	71.03	74.43	73.71
NA1860	70.68	71.03	74.43	73.71
NA1880	70.68	71.03	74.43	73.71
NA1900	70.68	71.03	74.43	73.72
NA1920	65.21	64.93	74.43	73.73
NA1930	64.13	62.56	74.43	73.73
NA1940	73.31	74.23	76.07	76.66
NA1960	73.90	74.33	76.08	76.68
NA1970	76.56	76.89	76.93	76.91
NA1980	71.58	73.93	76.10	76.71
NA1990	71.58	73.93	76.10	76.71

Comparison of Node Results for Four 100-Year Return Frequency Simulations (Note: NM denotes "Not Modeled")				
NODE	100YR1D (Ft NAVD)	100YR3D (Ft NAVD)	100YR5D (Ft NAVD)	100YR7D (Ft NAVD)
NA1995	71.58	73.93	76.11	76.72
NA2030	71.58	73.93	76.11	76.73
NA2031	97.77	NM	97.71	NM
NA2032	92.16	98.20	92.10	98.08
NA2033	89.16	NM	89.10	NM
NA2034	85.33	NM	86.32	NM
NA2035	85.33	86.46	86.32	86.43
NA2040	77.47	77.79	78.17	78.48
NA2100	85.22	85.07	85.22	85.04
NA2200	80.77	80.87	81.04	80.84
NA2210	80.76	80.86	81.03	80.84
NA2220	82.27	82.09	82.28	82.04
NA2230	71.62	71.51	74.43	73.70
NB0010	78.23	78.28	78.32	78.47
NB0030	82.50	82.80	82.83	83.33
NB0040	79.81	79.78	79.86	79.76
NB0050	77.47	77.79	78.16	78.47
NB0070	77.47	77.79	78.16	78.47
NB0080	77.47	77.79	78.16	78.48
NC0000	195.02	195.02	195.04	195.02
NC0001	150.33	149.43	150.01	149.25
NC0005	145.77	145.55	145.65	145.53
NC0010	140.52	133.93	136.56	133.67
NC0020	139.08	133.23	135.99	132.82
NC0023	133.32	131.76	132.62	131.59
NC0026	124.57	119.14	121.87	118.64
NC0028	119.88	117.98	118.95	117.42
NC0029	114.48	NM	113.55	NM
NC0030	113.50	107.05	113.04	106.17
NC0032	107.55	105.58	106.97	104.94
NC0040	98.04	97.84	97.95	97.82
NC0050	103.18	102.30	102.68	102.25
NC0055	99.09	98.78	98.87	98.76
NC0060	98.76	98.26	98.52	98.17
NC0065	97.56	96.97	97.67	96.79
NC0067	96.48	NM	96.69	NM
NC0070	99.72	99.72	99.75	99.72
NC0080	99.08	98.41	98.77	98.32
NC0090	96.46	96.17	96.66	96.10
NC0092	96.43	NM	96.60	NM
NC0100	190.03	188.65	189.46	188.57
NC0101	187.01	NM	186.94	NM
NC0103	157.72	NM	157.62	NM
NC0105	140.69	NM	140.59	NM

Comparison of Node Results for Four 100-Year Return Frequency Simulations (Note: NM denotes "Not Modeled")				
NODE	100YR1D (Ft NAVD)	100YR3D (Ft NAVD)	100YR5D (Ft NAVD)	100YR7D (Ft NAVD)
NC0107	121.41	NM	121.26	NM
NC0109	110.88	NM	110.79	NM
NC0110	98.54	96.17	98.02	96.10
NC0120	109.35	108.79	109.15	108.74
NC0130	115.02	114.83	116.11	114.81
NC0140	117.91	117.50	117.68	117.46
NC0146	104.02	104.69	104.60	105.01
NC0150	104.03	104.70	104.61	105.01
NC0160	104.03	104.70	104.61	105.01
NC0165	104.02	104.69	104.60	105.01
NC0170	112.69	112.93	113.17	113.21
NC0180	104.03	104.70	104.61	105.01
NC0190	111.12	110.60	110.89	110.54
NC0210	167.43	167.06	167.23	167.07
NC0220	114.81	114.54	114.67	114.51
NC0240	104.02	104.69	104.60	105.01
NC0250	104.02	104.69	104.60	105.01
NC0255	104.02	104.69	104.60	105.01
NC0265	104.02	104.69	104.61	105.01
NC0275	145.40	145.23	145.30	145.21
NC0280	206.91	206.98	207.01	207.00
NC0290	109.44	111.06	109.84	112.20
NC0300	109.44	111.06	109.84	112.20
NC0315	133.33	132.89	133.08	132.85
NC0320	126.48	123.88	124.90	123.55
NC0330	113.46	110.14	112.64	109.74
NC0335	103.32	103.81	104.45	104.75
NC0337	114.73	111.75	113.45	111.66
NC0340	113.42	109.46	111.79	108.83
NC0345	105.39	102.60	104.97	101.92
NC0355	105.27	104.78	105.02	104.71
NC0360	112.62	110.46	111.66	110.38
NC0370	114.69	112.85	114.46	112.47
NC0375	98.72	96.93	97.42	96.99
NC0376	98.72	96.93	97.42	96.99
NC0378	99.54	95.74	97.88	95.46
NC0380	112.61	107.76	111.66	106.99
NC0385	130.64	128.16	129.67	127.97
NC0390	128.23	124.31	126.79	123.77
NC0393	126.96	122.65	124.85	122.16
NC0394	124.80	121.59	123.56	121.30
NC0395	123.51	120.04	122.42	119.43
NC0398	117.97	116.97	117.77	116.82
NC0399	123.06	119.54	122.03	118.99

Comparison of Node Results for Four 100-Year Return Frequency Simulations
(Note: NM **denotes "Not Modeled")**

NODE	100YR1D (Ft NAVD)	100YR3D (Ft NAVD)	100YR5D (Ft NAVD)	100YR7D (Ft NAVD)
NC0400	113.78	112.95	113.59	112.72
NC0401	111.61	105.95	108.48	105.52
NC0402	106.08	104.18	105.12	103.99
NC0404	104.98	NM	104.33	NM
NC0410	160.56	156.88	158.20	156.67
NC0420	152.20	148.85	150.16	148.61
NC0425	150.00	146.21	148.21	145.90
NC0428	145.22	140.70	142.89	140.35
NC0429	142.86	139.90	141.42	139.70
NC0430	132.81	125.84	130.56	125.37
NC0431	135.34	NM	133.59	NM
NC0434	127.70	NM	127.70	NM
NC0435	113.51	107.08	113.05	106.29
NC0438	128.98	125.36	127.14	125.04
NC0440	126.75	124.34	126.14	123.80
NC0450	123.74	120.73	123.21	119.77
NC0455	118.89	116.17	118.00	115.76
NC0458	121.27	NM	120.87	NM
NC0460	117.06	114.33	116.59	113.68
NC0465	115.50	112.52	114.37	112.23
NC0480	110.39	104.96	106.89	104.62
NC0485	106.90	104.44	105.81	104.17
NC0490	96.27	94.81	95.96	94.65
NC0500	96.27	94.46	95.78	94.01
NC0510	94.50	91.74	92.71	92.44
NC0520	92.01	91.74	92.71	92.44
NC0530	97.06	93.76	95.58	93.66
NC0535	105.72	105.51	105.66	105.48
NC0540	104.58	103.49	104.24	103.44
NC0550	98.79	96.04	98.12	95.76
NC0555	99.40	99.35	99.42	99.41
NC0560	103.80	101.68	103.09	101.13
NC0565	102.31	101.25	102.01	100.89
NC0570	104.53	103.26	104.17	102.81
NC0580	102.23	101.61	101.80	101.46
NC0585	101.61	100.83	101.25	100.59
NC0590	101.17	100.44	100.89	99.89
NC0594	106.04	106.10	106.14	106.10
NC0598	101.13	100.44	101.04	99.55
NC0599	100.87	NM	100.01	NM
NC0600	98.80	96.04	98.12	95.76
NC0610	97.06	94.09	95.58	94.07
NC0618	95.88	95.29	95.75	95.20
NC0620	92.01	91.74	92.71	92.44

Comparison of Node Results for Four 100-Year Return Frequency Simulations (Note: NM denotes "Not Modeled")				
NODE	**100YR1D (Ft NAVD)**	**100YR3D (Ft NAVD)**	**100YR5D (Ft NAVD)**	**100YR7D (Ft NAVD)**
NC0650	92.04	91.74	92.71	92.44
NC0660	138.54	135.55	137.07	135.30
NC0670	118.63	112.69	113.76	112.41
NC0680	107.96	100.63	107.59	100.50
NC0700	92.01	91.74	92.71	92.44
NC0710	142.30	141.19	141.59	141.13
NC0720	92.01	91.74	92.71	92.45
NC0730	153.02	152.73	152.85	152.70
NC0740	109.43	111.06	109.84	112.20
NC0745	109.43	NM	109.84	NM
NC0748	110.74	NM	110.55	NM
NC0780	193.79	192.34	193.83	193.86
NC0790	186.42	185.66	186.15	185.86
NC0791	183.74	183.42	183.61	183.52
NC0800	218.04	217.99	218.04	218.06
NC0815	161.14	163.59	160.52	163.65
NC0816	154.55	NM	154.42	NM
NC0817	139.87	NM	139.73	NM
NC0818	128.89	NM	128.74	NM
NC0820	123.27	122.97	123.05	122.91
NC0830	104.02	104.69	104.60	105.01
NC0835	118.13	117.85	117.98	117.82
NC0840	104.02	104.69	104.60	105.01
NC0845	115.46	114.08	115.06	113.91
NC0850	103.99	104.69	104.60	105.00
NC0855	113.83	110.54	113.70	110.70
NC0858	103.98	104.68	104.59	104.99
NC0860	103.94	104.66	104.54	104.95
NC0862	103.81	NM	104.44	NM
NC0900	147.77	141.91	142.57	141.81
NC0910	102.43	102.17	102.28	102.15
NC0920	103.76	101.68	104.42	102.81
NC0921	102.89	NM	103.54	NM
NC0922	101.52	NM	102.16	NM
NC0924	98.72	NM	99.23	NM
NC0930	96.89	96.90	97.08	97.26
NC0935	95.43	95.03	95.65	95.78
NC0937	92.41	NM	93.05	NM
NC0940	92.01	91.74	92.71	92.44
NC0950	92.01	91.74	92.71	92.44
NC0960	92.01	91.74	92.71	92.45
NC0970	124.66	124.36	124.49	124.34
NC0980	104.95	104.33	104.65	104.24
NC0981	102.05	99.65	100.91	99.42

Comparison of Node Results for Four 100-Year Return Frequency Simulations (Note: NM denotes "Not Modeled")				
NODE	**100YR1D (Ft NAVD)**	**100YR3D (Ft NAVD)**	**100YR5D (Ft NAVD)**	**100YR7D (Ft NAVD)**
NC0982	99.76	NM	98.60	NM
NC0983	95.44	94.83	95.12	94.76
NC0984	95.43	94.81	95.11	94.74
NC0985	120.40	120.11	120.22	120.09
NC0990	92.01	91.74	92.71	92.44
NC0994	109.42	NM	109.83	NM
NC1000	181.57	181.58	181.67	181.56
NC1010	256.29	258.18	256.02	258.63
NC1020	252.03	252.06	252.08	252.06
NC1030	208.74	207.99	208.81	207.96
NC1045	107.42	106.64	107.09	106.32
NC1050	106.04	105.30	105.62	105.24
NC1052	92.82	NM	92.71	NM
NC1060	112.53	111.93	112.24	111.86
NC1070	120.77	120.13	120.50	120.05
NC1080	92.58	85.91	90.10	86.36
NC1082	88.91	85.64	88.12	86.02
NC1090	96.42	96.16	96.59	96.10
NC1100	88.69	88.51	88.65	88.51
NC1105	93.10	92.93	93.04	92.90
NC1110	95.05	94.56	94.88	94.45
NC1120	88.54	88.56	88.61	88.54
NC1130	87.45	87.32	87.57	87.31
NC1140	90.03	89.70	89.86	89.67
NC1153	87.04	87.54	88.27	88.85
NC1155	87.04	87.54	88.27	88.85
NC1160	87.79	87.52	88.01	87.53
NC1170	87.44	87.31	87.56	87.31
NC1180	85.15	85.27	85.65	85.48
NC1190	100.16	98.66	99.84	97.88
NC1200	112.33	111.60	112.04	111.50
NC1210	112.06	111.23	111.61	111.16
NC1212	92.01	91.74	92.71	92.45
NC1215	92.00	91.73	92.71	92.44
NC1216	146.69	NM	146.80	NM
NC1217	139.77	NM	139.86	NM
NC1218	91.92	91.62	92.59	92.29
NC1219	110.08	NM	109.90	NM
NC1220	91.59	88.71	92.29	88.82
NC1221	91.22	NM	91.92	NM
NC1222	90.65	NM	91.30	NM
NC1223	89.91	NM	90.45	NM
NC1225	88.54	NM	88.68	NM
NC1230	90.63	90.16	90.38	90.51

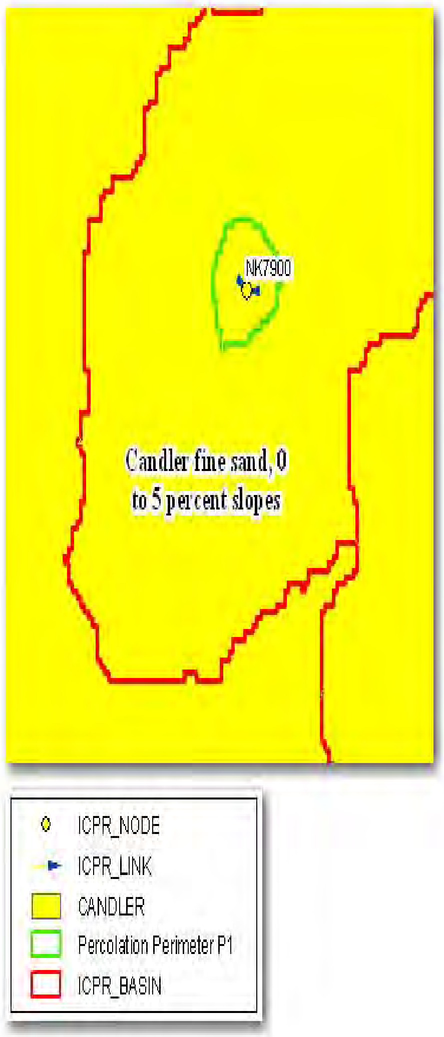
Comparison of Node Results for Four 100-Year Return Frequency Simulations (Note: NM denotes "Not Modeled")				
NODE	100YR1D (Ft NAVD)	100YR3D (Ft NAVD)	100YR5D (Ft NAVD)	100YR7D (Ft NAVD)
NC1240	99.94	99.64	99.77	99.62
NC1250	89.65	90.16	90.20	90.50
NC1260	89.65	90.16	90.20	90.50
NC1270	88.12	87.86	87.99	88.17
NC1272	87.28	87.54	87.94	87.94
NC1275	86.79	78.74	87.40	78.88
NC1277	86.01	NM	86.21	NM
NC1280	85.32	NM	85.24	NM
NC1282	80.62	NM	80.67	NM
NC1290	88.62	88.31	88.52	88.26
NC1300	77.62	77.63	77.71	77.78
NC1310	77.40	77.56	77.71	77.78
NC1320	77.40	77.56	77.71	77.78
NC1330	82.20	82.06	82.12	82.05
NC1332	80.58	NM	80.63	NM
NC1334	80.59	77.85	80.64	78.65
NC1335	80.57	77.85	80.62	78.65
NC1336	80.57	NM	80.62	NM
NC1340	80.54	77.85	80.59	78.65
NC1342	79.81	NM	79.86	NM
NC1345	77.48	NM	78.23	NM
NC1350	73.61	NM	74.16	NM
NC1360	83.39	82.15	85.23	83.79
NC1370	88.77	88.82	88.88	88.82
NC1380	88.02	87.63	87.83	87.61
NC1390	92.63	92.34	92.47	92.32
NC1400	87.74	85.25	85.62	85.46
NC1405	85.08	85.24	85.61	85.45
NC1410	85.08	85.24	85.61	85.45
NC1420	85.08	NM	85.62	NM
NC1440	79.40	79.50	84.99	85.39
NC1470	73.19	73.81	78.17	78.48
NC1480	73.19	73.81	78.17	78.48
NC1490	77.47	77.79	78.17	78.48
NC1500	99.00	98.93	99.13	98.89
NC1510	88.25	88.84	89.31	89.83
NC1600	134.36	134.11	134.24	134.09
NC1610	131.53	131.44	131.47	131.43
NC1620	131.23	130.03	130.96	130.02
NC1630	127.72	125.80	127.57	125.78
NC1640	148.54	147.61	148.19	147.51
NC1650	126.57	126.22	126.36	126.19
NC1700	115.98	115.63	115.77	115.60
NC1710	113.25	113.54	113.65	113.72

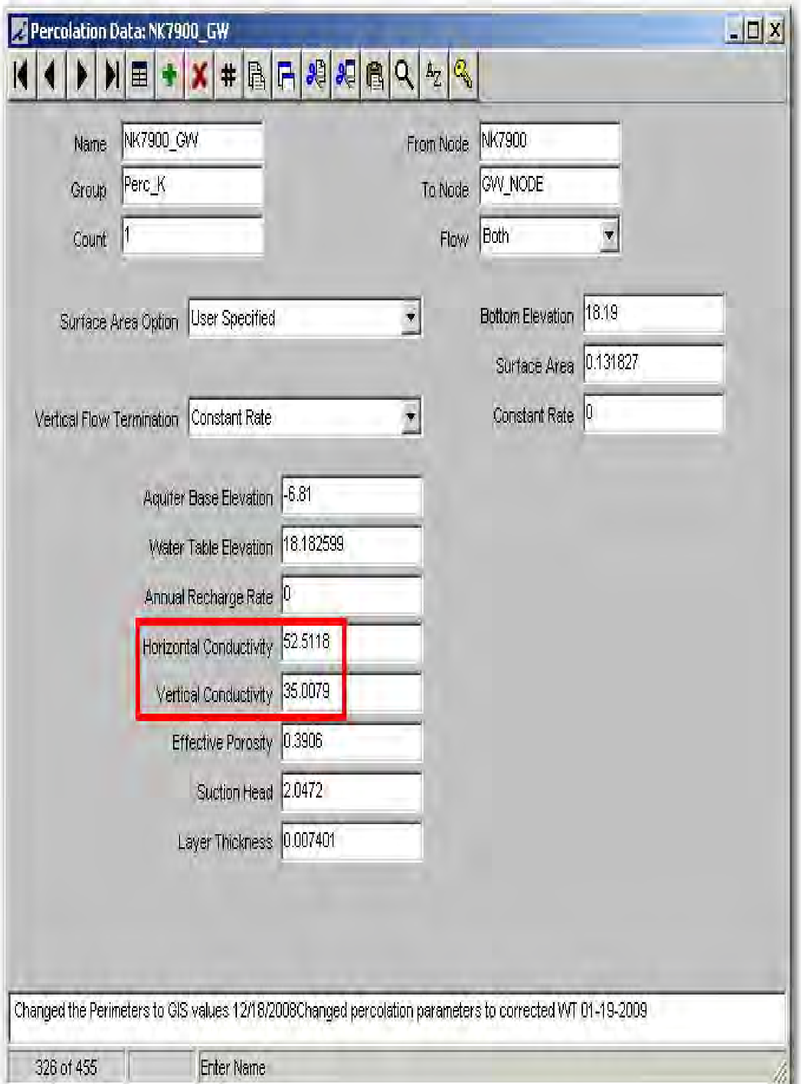
Comparison of Node Results for Four 100-Year Return Frequency Simulations (Note: NM denotes "Not Modeled")				
NODE	**100YR1D (Ft NAVD)**	**100YR3D (Ft NAVD)**	**100YR5D (Ft NAVD)**	**100YR7D (Ft NAVD)**
NC1800	100.27	100.27	100.30	100.26
NC1900	147.46	147.25	147.36	147.22
NC1910	126.29	125.94	126.11	125.91
NC1920	140.12	140.31	140.55	140.32
NC2000	85.15	85.27	85.65	85.48
NC2010	88.37	85.99	87.12	85.77
NC2020	85.16	85.28	85.65	85.48
NC2030	85.29	85.28	85.65	85.48
NC2100	109.45	108.96	109.21	108.94
NC2110	109.41	108.96	109.19	108.94
NC2200	114.70	113.70	114.47	113.67
NC2210	115.95	115.46	115.68	115.42
NC2220	140.65	140.16	140.38	140.12
NC2230	122.50	122.28	122.38	122.26
NC2240	121.81	121.40	121.57	121.37
NC2250	112.61	110.05	111.66	110.01
NC2260	107.57	107.96	108.42	108.61
NC2300	128.24	128.27	128.35	128.25
NC2310	124.20	124.04	124.10	124.03
NC2400	137.63	137.26	137.46	137.20
NC2500	127.46	126.50	127.17	126.28
NC2510	126.66	123.88	126.08	123.88
NC2600	93.95	93.76	93.85	93.74
NC2610	87.04	87.54	88.27	88.85
NC2700	101.22	100.56	100.95	100.10
NC2710	101.29	100.56	100.99	100.09
NC2800	88.68	88.51	88.65	88.51
NC2810	92.46	92.40	92.45	92.39
NC2820	93.14	92.94	93.07	92.91
NC2830	94.07	93.67	93.87	93.63
NC2900	92.00	91.73	92.71	92.44
NC2910	95.67	93.68	95.74	93.66
NC2920	90.83	90.65	90.76	90.62
NC2930	86.01	83.61	86.21	83.60
NC2940	88.62	88.31	88.53	88.26
NC2950	93.09	93.42	93.69	94.03
NC2960	87.79	87.66	88.01	87.63
NC3000	112.03	110.38	111.67	109.75
NC3010	162.93	162.50	162.71	162.45
NC3100	92.24	91.92	92.71	92.44
NC3110	92.01	91.74	92.71	92.44
NC3120	92.01	91.74	92.71	92.44
NC3130	96.42	96.17	96.60	96.10
NC3200	98.81	97.79	98.15	97.77

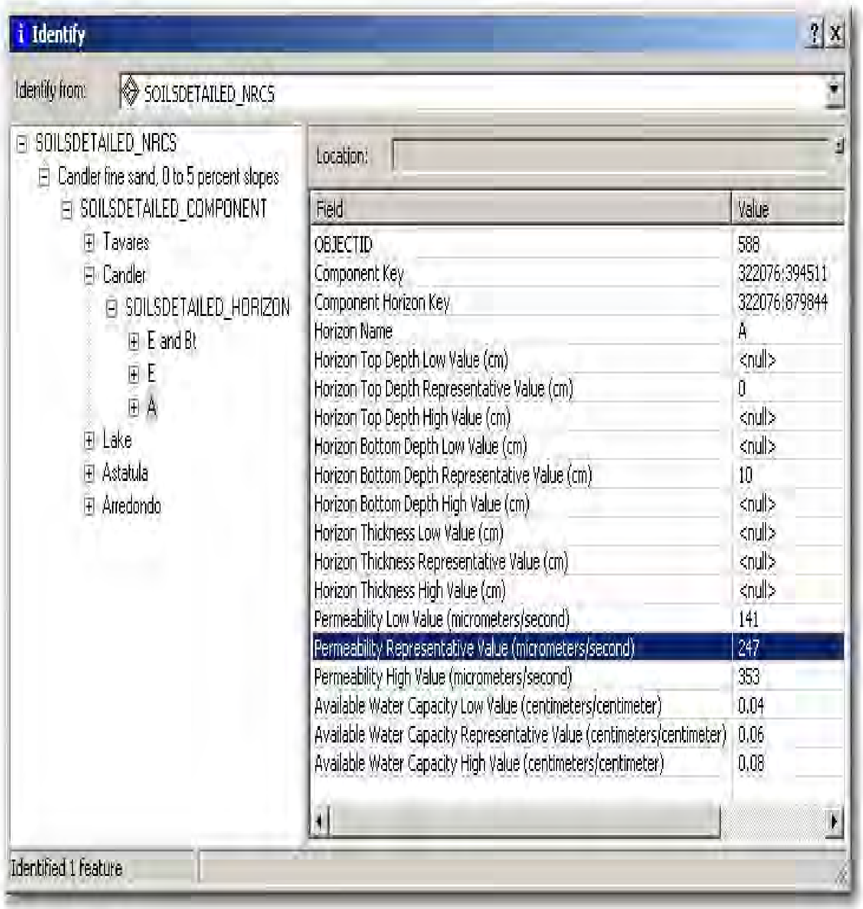
Comparison of Node Results for Four 100-Year Return Frequency Simulations (Note: NM denotes "Not Modeled")				
NODE	**100YR1D (Ft NAVD)**	**100YR3D (Ft NAVD)**	**100YR5D (Ft NAVD)**	**100YR7D (Ft NAVD)**
NC3300	138.60	137.90	138.22	137.84
NC3310	136.30	135.52	136.19	135.28
NC3315	136.07	134.73	135.32	134.59
NC3320	133.19	131.64	132.62	131.14
NC3330	131.31	130.89	131.07	130.86
ND0010	103.88	103.64	103.75	103.62
ND0020	101.66	99.36	100.59	99.10
ND0030	100.49	99.31	100.33	99.06
NE0010	96.43	96.98	97.57	98.02
NE0020	102.73	102.56	102.66	102.54
NE0030	95.74	96.53	97.26	97.94
NF0010	100.06	100.03	100.11	100.02
NF0020	98.98	98.88	98.94	98.87
NF0040	77.47	77.79	78.17	78.48
NG0030	77.43	74.90	77.98	76.76
NG0040	77.43	72.02	77.98	76.77
NG0050	77.43	72.02	77.98	76.77
NG0060	76.45	76.75	76.20	76.83
NG0110	91.25	86.61	93.27	88.10
NG0160	77.44	72.29	77.99	77.27
NG0170	77.44	72.29	77.99	77.27
NG0180	94.55	94.30	94.43	94.29
NG0190	77.82	77.85	78.13	78.67
NG0220	77.43	71.29	77.98	76.76
NG0999	77.00	77.00	77.00	77.00
NG1090	79.51	80.88	79.70	80.96
NG1235	77.49	77.74	78.13	78.67
NG1240	77.47	77.78	78.16	78.48
NG1250	80.48	80.45	80.46	80.46
NG1270	77.44	74.97	77.99	77.29
NG1280	77.43	67.56	77.98	76.76
NG1300	77.43	69.93	77.98	76.76
NG1310	77.43	73.83	77.98	76.77
NG1320	73.33	73.84	73.06	76.10
NG1340	101.96	101.74	101.83	101.72
NG1345	77.44	74.94	77.99	77.28
NG1355	72.26	72.72	71.63	72.73
NG1360	70.89	71.08	70.88	72.37
NG1365	74.88	75.58	74.41	76.10
NG1520	95.64	95.75	95.84	95.79
NG1530	114.98	114.61	114.79	114.56
NG1540	94.71	94.72	94.85	94.78
NG1550	78.74	79.30	79.36	79.84
NG1560	101.46	101.50	101.52	101.52

Comparison of Node Results for Four 100-Year Return Frequency Simulations (Note: NM denotes "Not Modeled")				
NODE	**100YR1D (Ft NAVD)**	**100YR3D (Ft NAVD)**	**100YR5D (Ft NAVD)**	**100YR7D (Ft NAVD)**
NG1580	93.83	93.66	93.74	93.64
NG1590	89.37	88.96	89.18	88.92
NG1600	81.02	81.80	82.43	82.77
NG1610	78.74	79.30	79.36	79.84
NG1630	97.18	NM	97.28	NM
NG1640	89.55	91.96	91.29	93.30
NG1650	98.87	99.66	100.50	101.13
NG1660	102.79	102.53	102.63	102.52
NG1680	104.29	105.11	105.98	106.73
NG1720	93.30	93.98	94.68	95.27
NG1730	87.53	87.35	87.66	87.29
NG1740	76.23	78.10	80.06	81.64
NG1750	77.85	78.54	79.26	79.85
NG1820	61.33	61.16	61.27	61.27
NG1850	61.06	60.95	61.04	61.27
NG1870	58.78	59.53	60.38	61.27
NG1880	74.87	75.68	76.45	77.21
NG1890	72.55	73.35	74.17	74.90
NG1910	98.35	97.95	98.14	97.91
NG1920	78.74	79.30	79.36	79.83
NG1930	77.11	76.90	76.99	77.34
NG1940	69.69	68.11	69.51	69.81
NG1950	68.27	67.43	68.07	68.40
NG1970	63.92	62.55	62.21	64.70
NG1980	56.01	NM	55.40	NM
NG1990	56.35	55.91	56.13	61.27
NG2030	58.78	59.53	60.38	61.27
NG2040	58.80	60.07	59.02	61.27
NG2050	58.78	59.53	60.38	61.27
NG2070	63.26	62.92	63.14	63.24
NG2085	59.75	59.53	60.38	61.28
NG2095	64.19	64.10	64.24	64.07
NH0010	96.34	96.11	96.50	96.05
NH0999	89.53	89.00	88.63	89.00
NI0010	62.89	68.76	66.20	70.36
NI0020	69.32	NM	70.70	NM
NI0030	69.66	NM	70.71	NM

APPENDIX B


NK7900
Candler fine sand, 0 to 5 percent slopes
ICPR_NODE
ICPR_LINK
CANDLER
Percolation Perimeter P1
ICPR_BASIN


Percolation Data: NK7900_GW
Name NK7900_GW
Group Perc_K
Count 1
From Node NK7900
To Node GW_NODE
Flow Both
Surface Area Option User Specified
Bottom Elevation 18.19
Surface Area 0.131827
Vertical Flow Termination Constant Rate
Constant Rate 0
Aquifer Base Elevation -6.81
Water Table Elevation 18.182599
Annual Recharge Rate 0
Horizontal Conductivity 52.5118
Vertical Conductivity 35.0079
Effective Porosity 0.3906
Suction Head 2.0472
Layer Thickness 0.007401
Changed the Perimeters to GIS values 12/18/2008Changed percolation parameters to corrected WT 01-19-2009
326 of 455
Enter Name



Unit Conversion :

1 micrometer = 0.000001 meters

1 meter = 3.28084 feet

1 day = 86400 seconds

1 micrometer/second = 0.000001 x 3.28084 x 86400 = **0.283464576** feet/day

Then, cut it in half (safety factor = 0.5)

The **conversion factor** = **0.5** x **0.283464576 = 0.141732288**

Therefore, the VERTICAL CONDUCTIVITY for Candler fine sand with 0 to 5 percent slopes is:

247 micrometers/second = 247 x **0.141732288 =** 35.007875136 ft/day

Then, **HORIZONTAL CONDUCTIVITY** = **1.5** x **VERTICAL CONDUCTIVITY** = 1.5 x 35.01 = 52.51 ft/day

APPENDIX F

Justification for Updates to the FEMA Floodplain as a Result of Watershed Management Program for the Croom Watershed (B206)

FINAL

JUSTIFICATION FOR UPDATES
TO THE FEMA FLOODPLAIN
AS A RESULT OF WATERSHED MANAGEMENT PROGRAM
FOR THE
CROOM WATERSHED (B206)

Prepared for

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
2379 Broad Street
Brooksville, Florida 34604-6899

HERNANDO COUNTY
1525 East Jefferson Street
Brooksville, Florida 34601

Prepared by

Watershed Concepts with:

TBE Group, Inc.
20203 Cortez Boulevard
Brooksville, Florida 34601

March 3, 2010

Thomas A. Shoopman, P.E.
Florida P.E. #32332

AECOM
7785 Baymeadows Way
Suite 201
Jacksonville, FL 32256
www.aecom.com

904 271 2900 tel
904 271 2899 fax

March 3, 2010

Mr. Gene Altman, PE
Southwest Florida Water Management District
2379 Broad Street
Brooksville, Florida 34604-6899

RE: Agreement 06CC0000049
Refinement of Watershed Parameters and Models
Croom Watershed
Final Justification Report Dated March 3, 2010, Final Supporting Geodatabase and Final Simulation Model

Dear Mr. Altman:

We are pleased to submit the enclosed Final Justification Report, final supporting geodatabase and final simulation models for the Watershed Update for the Croom Watershed.

We appreciate this opportunity working with you and look forward to completion of the project.

Should there be any questions regarding this report please contact me at your convenience.

Respectfully Submitted,

Watershed Concepts

Thomas A. Shoopman
Senior Engineer
Florida P.E. #32332
March 3, 2010

cc: John Burnett

Table of Contents

1.0 INTRODUCTION

Croom Watershed Evaluation is a multi-year Watershed Management Program project for the Southwest Florida Water Management District (SWFWMD). The study consists of Digital Topographic Information, Watershed Evaluation, and Watershed Management Plan elements. The Federal Emergency Management Agency (FEMA) is a cooperative funding agency with the District for completing this watershed management program and developing preliminary Digital Flood Insurance Rate Maps (DFIRM) and its supporting documentation. TBE Group, Inc. originally received authorization from the District to develop the Croom Watershed Management Program under project number M105. Under current work order (B206), Watershed Concepts and TBE updated the Croom watershed evaluation and floodplain modeling, which includes the following:

- Updating the Croom model based on the latest LiDAR data that were not available when the original model was developed
- Computing the hydrological component of the model utilizing the Green & Ampt runoff method while the original model used CN method
- Incorporating percolation for natural depressions and retention ponds in type A soil.

Current floodplain mapping was developed based on the updated Croom model. This report outlines the justification for the model results.

2.0 GUIDELINES & SPECIFICATIONS

The watershed management activities used to develop floodplain data were conducted in general accordance with the following documents:

- *SWFWMD Guidelines & Specifications (G&S), August 2002 with addendums*
- *FEMA Guidelines & Specifications for Flood Mapping Partners, 2003*

3.0 WATERSHED DESCRIPTION

The Croom Watershed is approximately 24.6 square miles and is located in east central Hernando County (**Figure 1**). State Road 50 is a major highway that runs across the southern portion of the watershed. The Croom watershed is roughly bounded by a high ridge with no major cross-watershed boundary flows. Ground elevations in the watershed range from 257.4’ (NAVD 88) on the boundary to 37.3’ (NAVD 88) in northern depressional areas (**Figure 2**). There are no major named hydrographic features in the watershed. There are various smaller hydrographic features including incised channels, wetland areas, wet ponds, DRAs, etc. distributed throughout the watershed. The watershed consists of a majority of A type deep sandy soils with sections of poorly drained C and D type soils located primarily in the west portion where wetland features and significant water bodies are prevalent (**Figure 3**). Landuse types include mostly forest and agricultural use with sparsely distributed low-density residential and commercial use (**Figure 4**). There are approximately 228 acres of Effective Approximate FEMA flood hazard (Zone A) delineated in the Croom Watershed (**Figure 5**). FEMA Zone A delineations were taken directly from quad map data for select areas in the watershed.

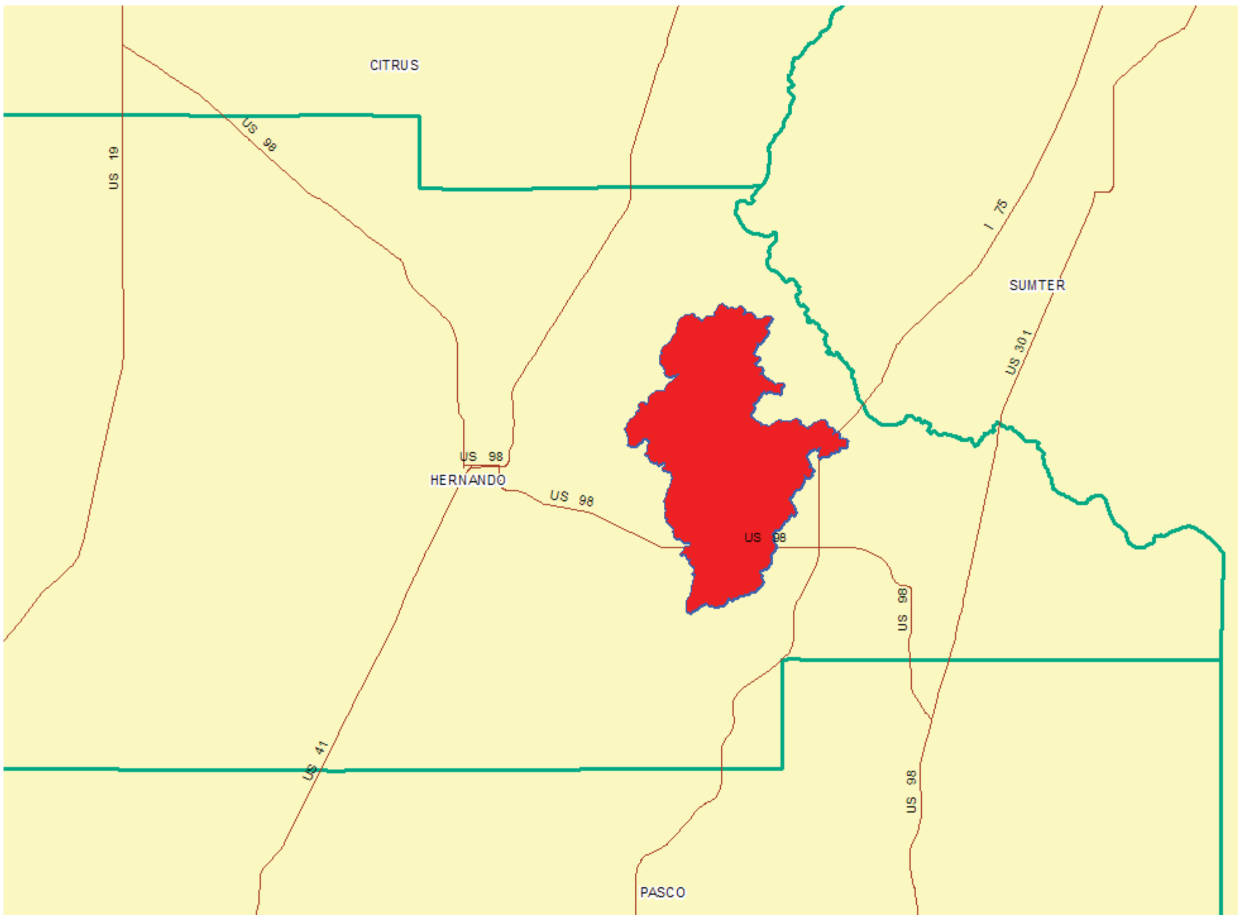


Figure 1 – Location Map

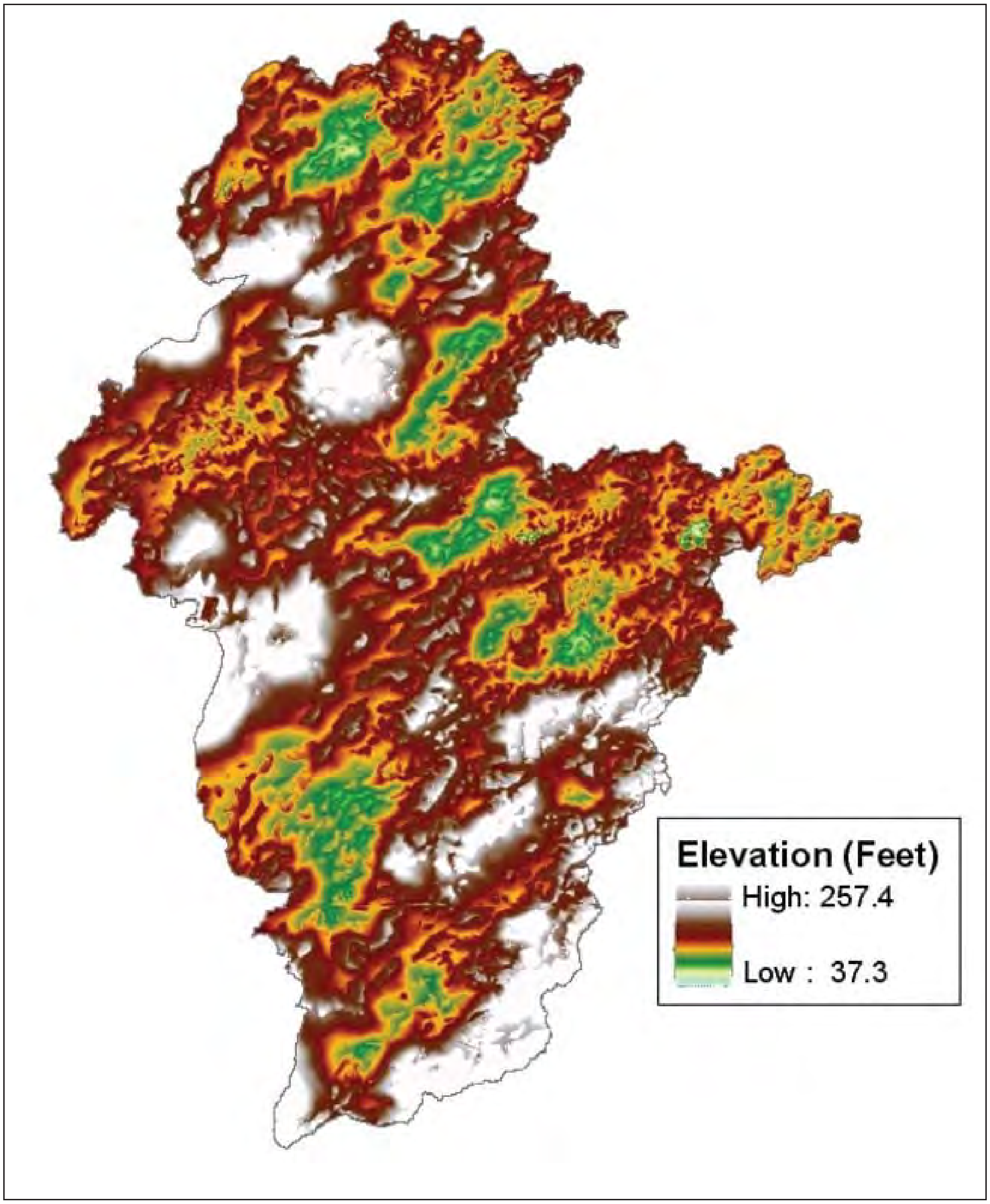


Figure 2 - Topography

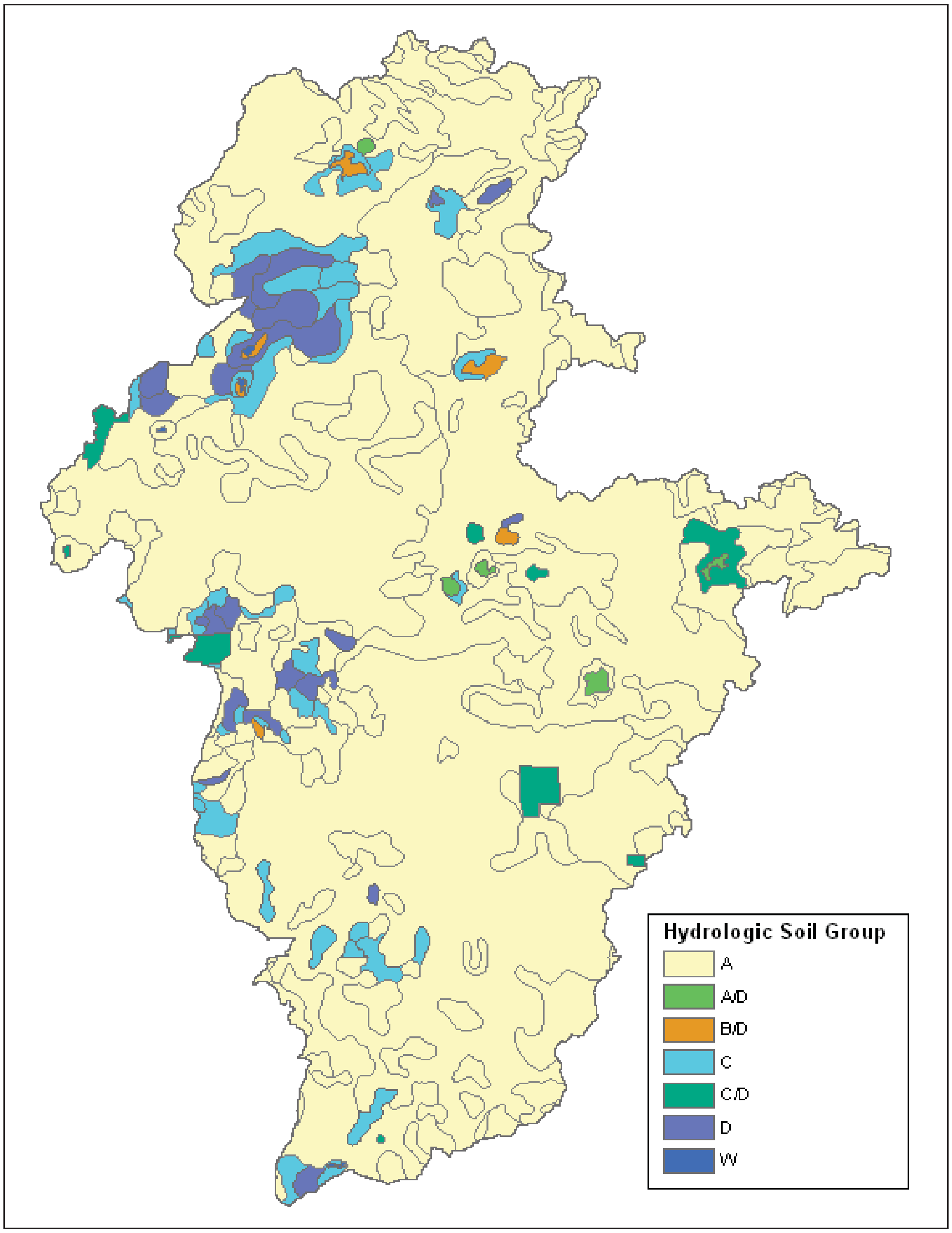


Figure 3 – Soils data

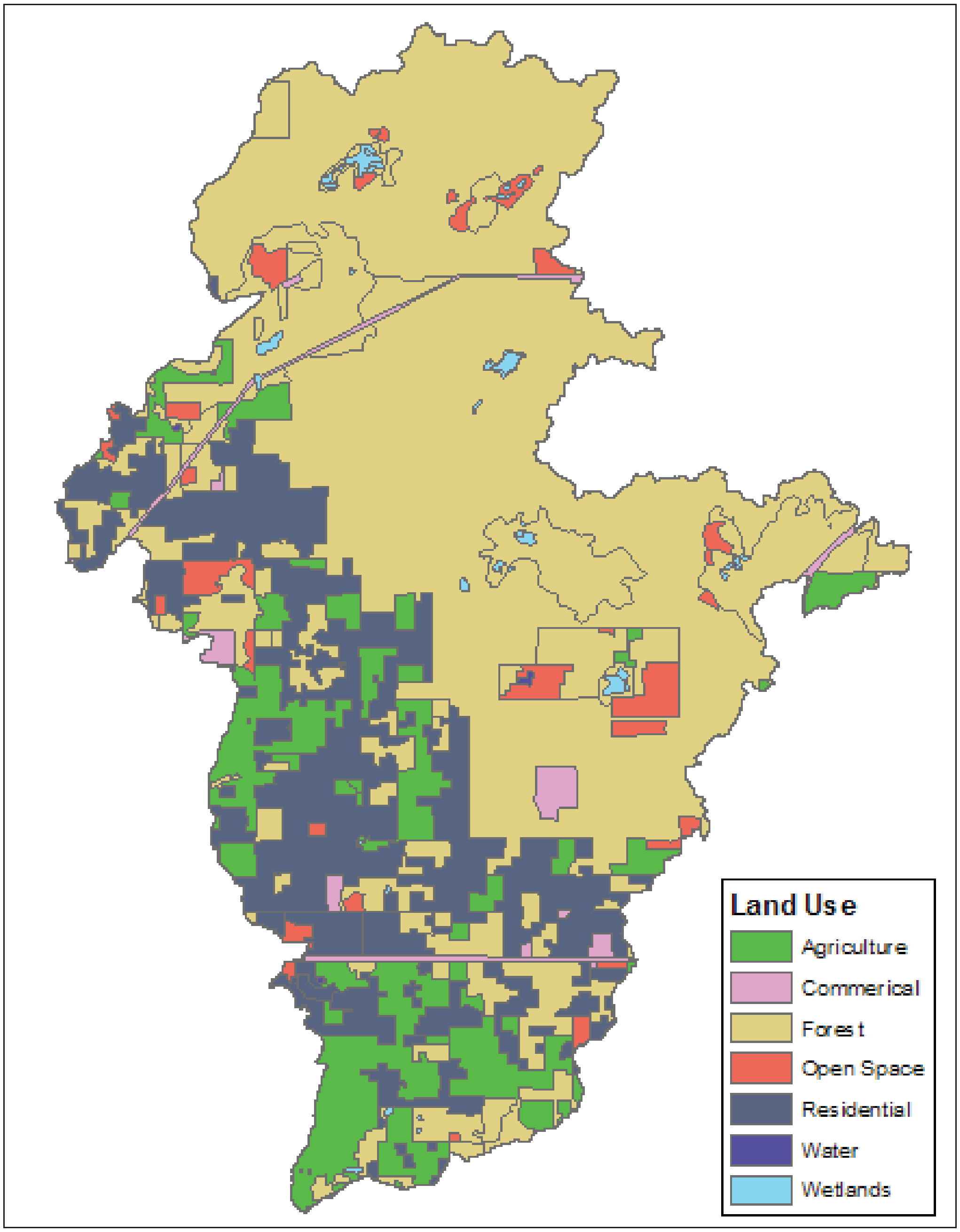


Figure 4 - Landuse

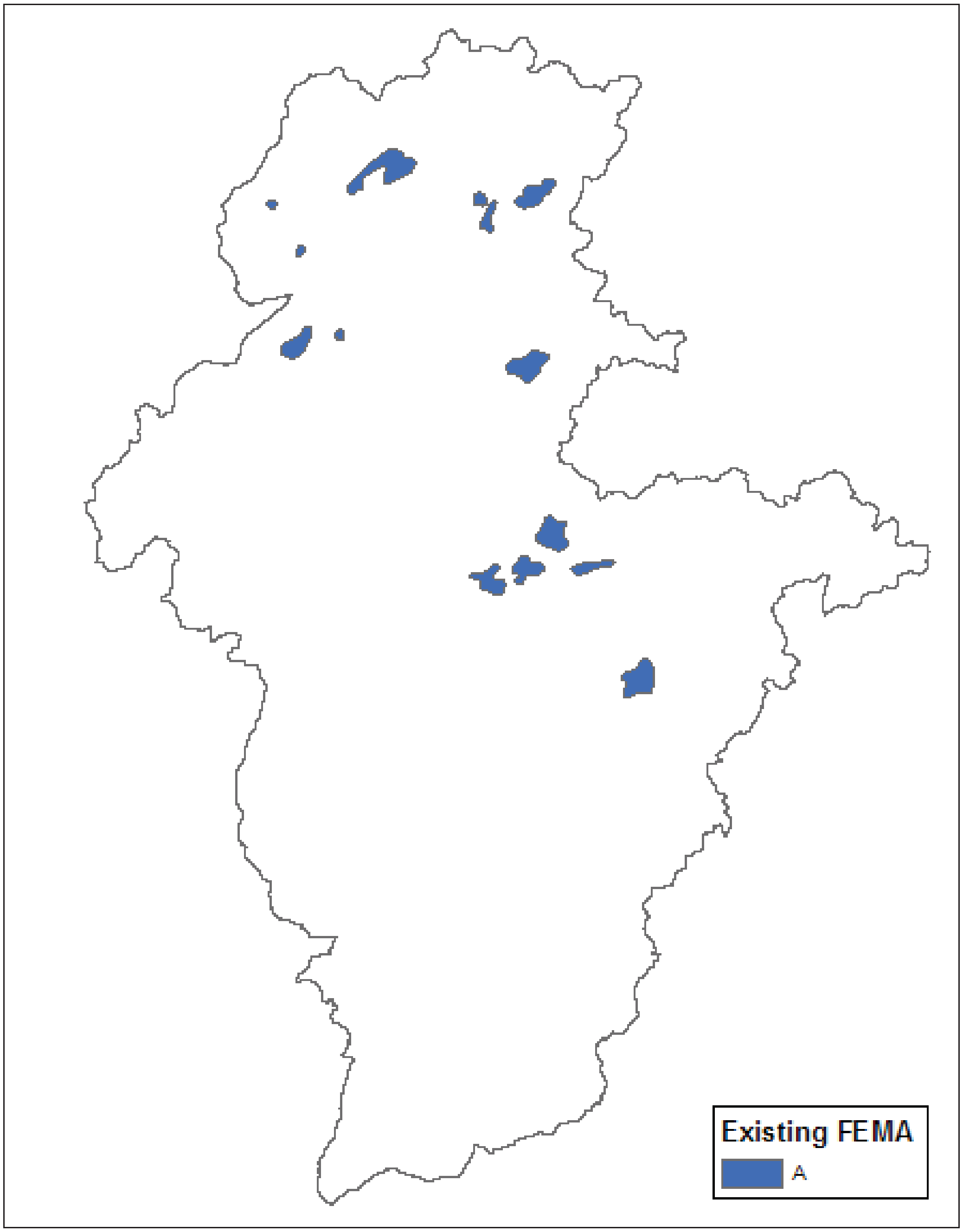


Figure 5 – FEMA Flood Hazard

4.0 FLOODPLAIN MODEL DEVELOPMENT METHODOLOGY

To provide a greater level of detail to the determination of flood risk in the Croom Watershed, several aspects of the Watershed Management Program have been revised. The following section will touch on some of the notable changes from the previous (2006) update, in addition to outlining any assumptions made in the process.

The SWFWMD provided the consultants with LiDAR data acquired during the month of January, 2007. Also flown at the same time are 1 foot pixel size natural color aerial photography. ESRI Terrain feature classes were built by SWFWMD for each watershed and 5 foot pixel size rasters were exported from these for use with ArcHydro. The LiDAR terrain datasets are not updated with recent (Post-January 2007) as-built data.

Surveys performed for the 2006 effort were utilized in the current modeling to maintain a minimum level of detail. Additional site visits for field verification were performed to verify some other locations. No additional surveys were performed for the current effort.

ArcHydro geoprocessing was used with input of the raster representation of the LiDAR to create catchments, junctions, and reaches for the watershed. Additional functions within ArcHydro were utilized to calculate other necessary features and parameters for model development. These parameters include Time of Concentration longest flow paths, node storage, irregular weir and cross section points, Green and Ampt runoff parameters, and real storm event (Hurricane Frances Doppler) data development.

Hydrologic parameterization was performed with guidance from the SWFWMD G&S. Subbasins were delineated where depressional storage was at or above 2 feet and where drainage area was at or above 1 acre. Impervious area was based on the latest Landuse coverage available from SWFWMD and a lookup table provided by SWFWMD. Reasonableness of table values were verified throughout the watershed by comparing the Landuse polygons versus the 2007 aerial imagery. Time of Concentration was estimated using the longest travel time flow path (TR-55 methodology). A peaking factor of 256 was used throughout the watershed due to the rural nature of the subbasin.

For determination of initial conditions for water bodies in the watershed, a combination of methods was used to determine initial stages. These methods include comparison of historic aerial photographs (El Nino 1998, 2004) in known wet seasons versus current 2007 aerial and tree line (biological) indicators. For Type A soil depressions, the starting water surface elevations are set to the lowest ground elevation.

The hydrologic model used to calculate Base Flood Elevations is ICPR v3.10 sp 2, by Streamline Technologies. This model was preferred by the SWFWMD because of its ability to accurately model ponding areas and ease of use. Also, the recently added percolation and Green and Ampt runoff integration make the model an all-encompassing package for this modeling effort.

Attendees to the Public meetings held at SWFWMD offered their opinions of the newly calculated flood risk represented by the new floodplain mapping. Dale Tracy, a newly impacted property owner, expressed an opinion that the flooding calculated on his parcel appeared unreasonable. Field reconnaissance of the property by Larry Fluty of Cardno TBE was conducted to assess the soil characteristics of the area. Soil samples taken at the site revealed the presence of Candler fine sands of hydrologic group 'A' where the NRCS soil base map shows a Nobleton fine sand of hydrologic group 'C'. Adjustment was made to the soils layer and percolation was modeled for this area with the final results shown in Figure 6.

Figure 6 – Tracy Property

5.0 VERIFICATION AND VALIDATION DATA

The Croom model results were verified and validated based on the High Water Mark data available within the watershed. SWFWMD provided Watershed Concepts with a high-water-mark geodatabase from numerous sources. This data was used for the Croom model verification and validation.

5.1 MODEL VERIFICATION

The verification is based on comparison of the design storm event results and the Hurricane Frances event which occurred from September 4, 2004 to September 7, 2004. The rainfall in each of the sub-basins in this watershed was calculated from recorded National Weather Service (NWS) Doppler radar at the Tampa and Melbourne sites. The rainfall amounts were recorded by the several rain gauges throughout the county. The Doppler radar of the rainfall was also recorded during this time period. These recording data were used to calculate the rainfall within each of the sub-basins throughout the watershed. The rain gauge data was used to adjust the Doppler radar rain to provide input for the watershed model. Gauge-adjusted radar rainfall data maintains volume accuracy at the gauge locations while retaining special information from the radar data.

The rainfall acquired for Hurricane Frances was 15-minute incremental data for the four days, 385 data points for each sub-basin. The incremental rainfall data provided was reformatted to the cumulative rainfall input file format for ICPR and imported into a hydrograph library for the watershed. The hydrograph library was then imported into the ICPR model for the watershed.

5.2 MODEL VALIDATION

For this report, validation is defined as the comparison of the design storm event results with high water marks within the watershed. Table 1 summarizes the 100-year-1-day, 3-day, 5-day, 7-day and Hurricane Frances modeling results and available high water marks for Croom watershed.

Table 1 - Summary of Model Results and the Available High Water Marks (provided by SWFWMD) in Croom

NODE NAME	100-YR 1-day	100-YR 3-day	100-YR 5-day	100-YR 7-day	Frances	HWM	Date
NM0130	59.46	59.21	59.40	59.06	57.72	58.17	1964
NC0460	117.88	115.13	117.06	115.64	113.58	117.17	1958
NC0450	122.87	122.52	122.69	122.52	122.14	140.97	1958
NK0120	73.56	73.22	73.50	73.33	70.99	73.17	1958
NM0112	59.56	58.40	58.68	58.35	58.31	62.17	1964

For nodes NM0130, NC0460, NK0120, AND NM0112 the modeled 100-year 1-Day model flood stages are near the actual gaged flood stages. Therefore, the modeled 100-year 1-Day model flood stage is considered a reasonable projection of flood stage.

5.3 FLOOD COMPLAINTS

There are two flood complaints listed in the geodatabase that has been provided by SWFWMD. There were no flood elevations or detailed descriptions associated with the complaints. The cause of the flooding is unclear.

The illustrations following show flood complaints the first which consisted of water in house, and based on various field inspections, this area of the Hill ’n Dale subdivision had a history of storm water problems (**Figure 6**), and the second which was a general flood complaint, which consists of an area located in a depression (**Figure 7**).

Figure 7 – Area of Hill ’n Dale Subdivision

Figure 8 - General flood complaint located in a depression

The mapped flood plain based on the model data show that the two flood complaints within the Croom watershed have been identified as flooding areas. In conclusion with the results of the model verification and validation the model results are reasonable based on the level of detail and assumptions used to develop the model.

6.0 FLOODPLAIN JUSTIFICATION

For the SWFWMD WMP projects, the floodplains are delineated based on the100-year 1-day storm event unless evidence available supports using multi-day events. For the Croom watershed, the peak stages resulting from the 100-year 1-day storm event were used to determine the 100-year floodplain in all subbasins for lack of sufficient high water mark data to justify mapping a multi-day event.

7.0 CONCLUSIONS

The existing FEMA flood hazard covers 227.7 acres, and the new 2009 modeled floodplain covers approximately 646 acres. The graphic below illustrates the areas of the two floodplains and the following discussion provides a summary of the reasons for the differences.

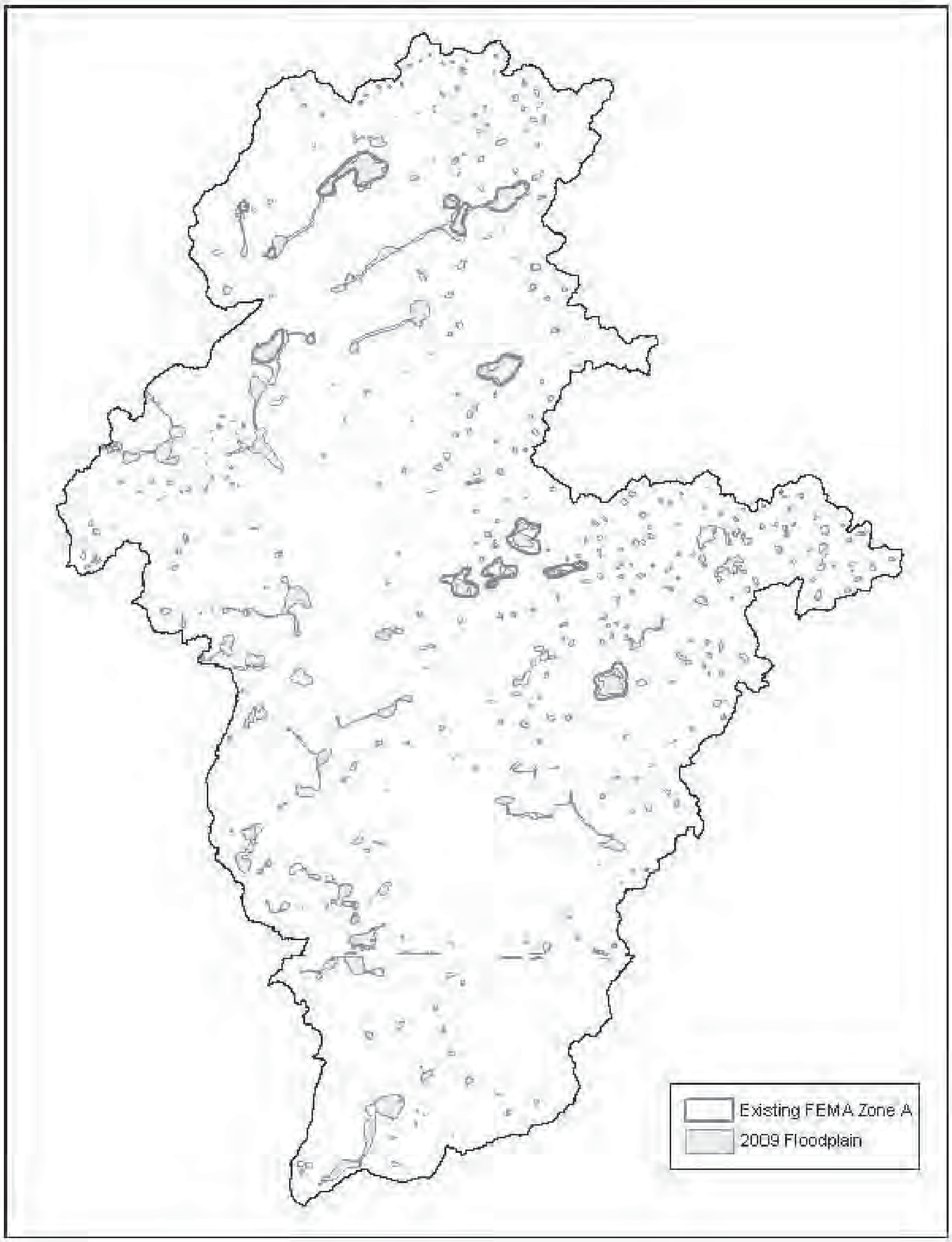


Figure 9 – Existing Zone A compared to 2009 Floodplain

The main reason for the differences between the existing FEMA flood hazard and the 2009 Floodplain are as follows:

- FEMA mapped the areas based on very basic approximate methods, which was based identifying major lakes, and wetland areas and did not identify smaller depressions
- The 2009 effort identifies additional flood risk, based on better detailed topographic information, and more detailed modeling techniques.

The justification for each subbasin and its associated flood polygons is shown in the following Appendix B.

Appendix A

Comment_No	Comments	Response	Source
1	Blue Sink, Bystre Lake, Toachodka watershed boundaries are collinear with Croom, Withlacoochee River boundary not available at time of review.	This has been reviewed. Croom is topologically correct with its neighbor watersheds	SWFWMD
2	100Yr-24Hr ICPR mass balance report % error checks okay.	This has been verified	SWFWMD
3	No floodplain delineated, 2004 potentiometric surface elevation is ~57.5', topograghy ~ 51.6'	Standing water was found in 1998 aerials for this location. Initial conditions have been adjusted to match 1998 inundation elevation and perc has been turned off at this location.	SWFWMD
3.1	Reviewer notes no standing water in 1998 imagery and no floodplain delineated. 2004 potentiometric surface is ~57.5'. Confirm model input and explain why no floodplain in subbasin K0660.	Model input confirmed correct. No water on 2004 aerials either - it is likely that the 2004 pot map surface at this basin is the result of an interpolation between known elevations and not a true reading.	SWFWMD
4	No floodplain delineated in waterbody, 2004 pot surface ~58.7', water surface elevation ~57.2'.	Initial stage for node has been set to pot surface elevation of ~58.7'	SWFWMD
5	Check 1 day elevation as compared to 5 day. 1 day and 5 day elevations for junctions in area are close.	Elevations for 1 day and 5 day storms are often different with one being higher than the other in certain situations. In this area, conditions came together which resulted in very similar peak stages for both storm events.	SWFWMD
6	Potential missing culvert, 2006 imagery indicates drop inlet in median with headwall on north side of SR50.	Culvert data added based on available as-built and field recon data	SWFWMD
6.1	No flow in culvert, culvert inverts in model are ~ 73' and 76', terrain information indicates gound elevations ~ 53' to 55'. Correct culvert inverts or explain why they are set ~ 20' higher than terrain.	Culvert data was incorrectly translated from roadway plans. The correct data is now included in the model and GIS	SWFWMD
7	Missing culvert as noted in previous review.	Culvert is entirely in basin K0510 and serves as drainage for the median which has been hydrologically routed	SWFWMD
8	Floodplain not delineated, this issue is noted in numerous locations but comments were not added to review.	In many areas floodplains were reduced or removed completely due to the use of GreenAmp hydrology and precolation groundwater routing.	SWFWMD
8.1	NK0532 floodplain elevation is 76.79' and is above terrain elevation 76.04'. Why is floodplain not delineated?	Floodplain does not meet mapping criteria based on 1:500 map scale	SWFWMD
9	Missing culvert as previously identified. SR 50 collection system data from ERP was not included.	ERP data does not show pipe cross at this location. Site visit performed July 11th also verified no structure present.	SWFWMD
9.1	What was the results of 07/11/08 site visit indentified in Comment # 9? Edit response to Comment #No.9.	Response has been updated	SWFWMD
10	Many missing cross drains at intersection of side roads along SR50.	A site visit was performed on July 11th and culvert information was gathered.	SWFWMD
10.1	Was information collected on 07/11/08 added to GIS and model?	Culvert RK0532 was input into GIS and Model based on findings of July 11th field recon	SWFWMD
11	ERP information not used for catchment delineation, etc.	Basin, node, and link added based on ERP data.	SWFWMD
12	SR50 runoff being routed to ERP #017107000.	Basin subdivided and appropriate nodes and links added.	SWFWMD
13	FEMA Flood Hazard Zone, no floodplain identified in current study.	Area was studied in the model but was found to not have significant flooding when GreenAmp and percolation were taken into account.	SWFWMD
14	Glass wall ~0.5'	Transition A zone added	SWFWMD
15	Glass wall > 0.5'	Transition A zone added	SWFWMD
16	Review was not all encompassing as much of the geodatabase was not populated.	Database has been populated	SWFWMD
17	Basin in GIS not in ICPR	basin name typo has been resolved	KHA
18	May need to verify DCIA and IA %s assumed from land use. A rough check of the impervious coverage for this basin resulted in approx. 8% coverage. 19.206% IA coverage was assumed.	Wetlands in the landuse file have been taken into account in the determination of DCIA and percent inmpervious in this basin and this has produced reasonable floodplain results	KHA
19	May need to verify DCIA and IA %s assumed from land use. A rough check of the impervious coverage for this basin resulted in approx. 35-40% coverage. 68.12% IA coverage was assumed.	Impervious area has been reduced for this subbasin	KHA
20	May need to verify DCIA and IA %s assumed from land use. A rough check of the impervious coverage for this basin resulted in approx. 0.9% coverage. 5.073% IA coverage was assumed.	Wetlands in the landuse file have been taken into account in the determination of DCIA and percent inmpervious in this basin and this has produced reasonable floodplain results	KHA
21	DS Inv = 63.72 and DS Nd IS and Low stage = 67.3, may need to adjust IS.	Initial stage has been adjusted	KHA
22	DS Inv = 68.92 and DS Nd IS and Low stage = 68.93, may need to adjust IS.	Initial stage has been adjusted	KHA
23	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
24	Manning's value of 0.023. Are these the only CMPs that are in the basin; all other pipes have Manning's values of 0.013?	These are the only CMPs that are modeled in the watershed	KHA
25	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
26	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
27	Manning's value of 0.023. Are these the only CMPs that are in the basin; all other pipes have Manning's values of 0.013?	These are the only CMPs that are modeled in the watershed	KHA
28	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
29	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
30	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
31	DS Inv = 74.3 and DS Nd IS and Low stage = 75.66, may need to adjust IS.	Initial stage and storage have been adjusted for this node	KHA
32	Link name in GIS does not match ICPR. Also nodes associated with this link do not match between ICPR and GIS.	Naming discrepancies for these elements have been resolved in the latest Geodatabase	KHA
33	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
34	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
35	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
36	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
37	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
38	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
39	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
40	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
41	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
42	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
43	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
44	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
45	Link has no US and DS node information in GIS	Link US node and DS node information is available in related table REACHGN	KHA
46	Node name in GIS does not match GIS	Node name is now consistent between GIS and Model	KHA
47	ICPR Tc = 51.1, KHA Tc = 39.1	Time of concentration values have been calculated using the TR-55 methodology, utilizing average slope along each flowpath. Values have been reviewed and appear to be reasonable	KHA
48	Clarify Multiple Flood Zones within Basin	Disconnected flood zones in smaller depressions have been mapped at node elevation and set as approximate A zones	KHA
49	Basin should be divided. The depressional area not connected to the Basin node appears as though it could potentially connect to the adjacent basin, NF0240.	Basin boundary has been redrawn and, as a result, depression is no longer isolated from flooding	KHA
49.1	Response to 49 should identify what corrective measures were used.	Response has been updated	SWFWMD
50	Clarify Multiple Flood Zones within Basin	Disconnected flood zones in smaller depressions have been mapped at node elevation and set as approximate A zones	KHA
51	ICPR Tc = 68.6, KHA Tc = 54.0	Time of concentration values have been calculated using the TR-55 methodology, utilizing average slope along each flowpath. Values have been reviewed and appear to be reasonable	KHA

Comment_No	Comments	Response	Source
52	ICPR Tc = 58.8, KHA Tc = 49.8	Time of concentration values have been calculated using the TR-55 methodology, utilizing average slope along each flowpath. Values have been reviewed and appear to be reasonable	KHA
53	Clarify Multiple Flood Zones within Basin	Disconnected flood zones in smaller depressions have been mapped at node elevation and set as approximate A zones	KHA
54	Clarify Multiple Flood Zones within Basin	Disconnected flood zones in smaller depressions have been mapped at node elevation and set as approximate A zones	KHA
55	Clarify Multiple Flood Zones within Basin	Disconnected flood zones in smaller depressions have been mapped at node elevation and set as approximate A zones	KHA
56	ICPR Tc = 40.7, KHA Tc = 29.0	Time of concentration values have been calculated using the TR-55 methodology, utilizing average slope along each flowpath. Values have been reviewed and appear to be reasonable	KHA
57	ICPR Tc = 44.0, KHA Tc = 34.3	Time of concentration values have been calculated using the TR-55 methodology, utilizing average slope along each flowpath. Values have been reviewed and appear to be reasonable	KHA
58	Clarify Multiple Flood Zones within Basin	Disconnected flood zones in smaller depressions have been mapped at node elevation and set as approximate A zones	KHA
59	Clarify Multiple Flood Zones within Basin	Disconnected flood zones in smaller depressions have been mapped at node elevation and set as approximate A zones	KHA
60	ICPR Tc = 33.0, KHA Tc = 28.6	Time of concentration values have been calculated using the TR-55 methodology, utilizing average slope along each flowpath. Values have been reviewed and appear to be reasonable	KHA
61	Clarify Multiple Flood Zones within Basin	Disconnected flood zones in smaller depressions have been mapped at node elevation and set as approximate A zones	KHA
62	ICPR Tc = 40.8, KHA Tc = 31.9	Time of concentration values have been calculated using the TR-55 methodology, utilizing average slope along each flowpath. Values have been reviewed and appear to be reasonable	KHA
63	Time of Concentration values generally seem high. Verify maximum length used for sheet flow, the roughness coefficient, and the rainfall intensity.	Time of concentration values have been calculated using the TR-55 methodology, utilizing average slope along each flowpath. Values have been reviewed and appear to be reasonable	KHA
64	Node name in ICPR does not match GIS	Node name is now consistent between GIS and Model	KHA
65	The aquifer depth was modeled at a constant elevationof 0. This assumption may not be appropriate in all cases.	The aquifer elevation has been set to 10' below water table elevation per SWFWMD guidance	KHA
66	The study assumes no "perching affect of clays or other restrictive layers. The depth to aquifer & water table may be over estimated in some areas.	Best available data has been used in the application of percolation in Croom. Parameters used to model percolation are influenced by evidence suggesting adjustment of parameters is needed, like, soil test data, water on orthos, tree lines, etc	KHA
66.1	Provide response to Comment #66.	Comment #66 has been responded to.	SWFWMD
67	Tc's generally seem high. Please verify max length used in sheet flow calculation and evaluate applicability on a basin by basin basis.	Time of concentration values have been calculated using the TR-55 methodology, utilizing average slope along each flowpath. Values have been reviewed and appear to be reasonable	KHA
68	100yr 1 day storm peak in ICPR does not match GIS, please confirm results shown in GIS.	Mapping shown in GIS now matches latest model peak stages for 100-year 1-day simulation	KHA
69	100yr 1 day storm peak in ICPR does not match GIS, please confirm results shown in GIS.	Mapping shown in GIS now matches latest model peak stages for 100-year 1-day simulation	KHA
70	100yr 1 day storm peak in ICPR does not match GIS, please confirm results shown in GIS.	Mapping shown in GIS now matches latest model peak stages for 100-year 1-day simulation	KHA
71	100yr 1 day storm peak in ICPR does not match GIS, please confirm results shown in GIS.	Mapping shown in GIS now matches latest model peak stages for 100-year 1-day simulation	KHA
72	It would be beneficial to validate the 2008 model using high water marks and rainfall data from a storm event with a rainfall depth and duration similar to the 100yr, 24hr storm; however, this data does not appear to be available for this watershed.	Agreed	KHA
73	Please Clarify why some of the 7-day results are highlighted and noted as unavailable results in Table 4 of Justification Report.	The 7-day simulation had not been run for these particular nodes at the time of the report, however, now the simulation information is provided	KHA
74	Please add discussion in Justification Report regarding the basins which utilize multi-day events in establishment of flood elevations.	There are no basins in the Croom watershed which have highwatermark data available to justify using a multi-day storm event for establishing floodplain.	KHA
75	Please verify that the extents of all mapped floodplains correspond to the elevations from the ICPR model.	Mapping shown in GIS now matches latest model peak stages for 100-year 1-day simulation	KHA
76	Please ensure that floodplain elevations in GIS correspond to ICPR results.	Mapping shown in GIS now matches latest model peak stages for 100-year 1-day simulation	KHA
77	How are the widths of transition flood zones established, is it related to mas top width of flow over overland flow weirs in ICPR model? Methodology for sizing of these areas should be explained.	These approximate transitional zones are hand drawn to represent a smooth transition between an US floodplain flowing to a floodplain DS. They have been drawn starting with the top with at overflow and tapering to reasonably meet the DS floodplain.	KHA
77.1	Provide discussion on criteria used to delineate transition zones.	Transition zones were delineated where flow between catchments exceeds 5 cfs and the length of the zone is not excessive for the amount of flow being conveyed.	SWFWMD
78	Please document the source of the rainfall distribution and depths used in modeling of the multi-day events.	The SWFWMD 5 day rainfall distribution is used for the 3-,5-, and 7-day storm events and the rainfall totals for the storms were derived from TP-49 isopluvial maps	KHA
78.1	This is follow-up to the response to Comment #78. The SWFWMD does not have 3 & 7-day rainfall distributions. If the 5-day distribution was used for the 3 & 7-day simulations then the model should be ran using FDOT distributions.	The FDOT 72- and 168 hour distibutions are being used for the 3- and 7-day runs.	SWFWMD
79	Mapped floodplain appears to extend to approximately 57.75, while the ICPR and GIS models note the flood elevation to be 57.04. Please verify floodplain extents.	Mapping shown in GIS now matches latest model peak stages for 100-year 1-day simulation	KHA
80	Mapped floodplain appears to extend to approximately 63.35, while the ICPR and GIS models note the flood elevation to be 62.83. Please verify floodplain extents.	Mapping shown in GIS now matches latest model peak stages for 100-year 1-day simulation	KHA
81	R1642220000001300000 - Louis Smolie - In the Flooplain? Request Screenshot of Floodzone with aerial in background. Pictures submitted facing North. Please scan and return.	Screenshot was created but not sent to resident	Public Meeting
82	R0342320000002200000 - Dale Tracy - Is my structure in floodplain? Parcel has floodplain. Requests screenshot of his parcel. Watershed Concepts to mail screenshot.	Screenshot was created but not sent to resident. Resident has been contacted since public meeting regarding his property.	Public Meeting
82.1	Comment date 07/30/09; Mr. Tracy attended will provide vertical elevation information surveyed by Green PLS and geotechnical information including soil borings.	Mr. Tracy did not provide the referenced by him at the public meeting. Larry Fluty visited his property to gather the data in the field.	Public Meeting
82.2	Comment date 10/26/09; Mr. Tracy did not provide data discussed in Comment No 82.1. TBE met with Mr. Tracy and conducted site visit. What was the results?	Larry Flluty took soil samples and determined that current NRCS soil delineation is incorrect. Model and GIS layers have been revised to reflect field observations. Flooding has decreased on the Tracy Property.	SWFWMD
82.3	Comment No. 82 Response is "Screenshot was created and sent to resident". Watershed Concepts did not transmit screenshots as response fields indicate. Correct all response fields to reflect who & when maps were transmitted.	Response fields have been corrected	SWFWMD
83	R0242320701600000110 - Terrence Watkinson - Culvert missing - need field verification at White Rd and Paddock Dr. John Burnett to will investigate and coordinate with Watershed Concepts	John Burnett furnished info for additional structure. The information reduced the flood elevation for one parcel. This change is reflected in the model and GIS	Public Meeting
84	R1142320000001100030 - James Blackburn - Mr Blackburn was inquiring about a letter he recieved stating he was in the proposed floodplain. He would like documentation stating he is out of the floodzone(a letter)	Letter was provided to resident	Public Meeting
85	R1642220705600000080 - Walter Eastmond - Manufactured home is in 2008 preliminary floodplain. Would like someone from regulartory dept. to come out and see what can be done to raise property	Photos were provided to Mark Fulkerson and resident was relayed to a member of the SWFWMD Regulatory group	Public Meeting
86	Provide justification for transition zone or remove it.	Transition zone has been edited to terminate in approximate Zone A	SWFWMD

Comment_No	Comments	Response	Source
87	Justification report is to be specific to Croom Watershed. Remove references and information left over from other watersheds unless it is specific to interaction with Croom.	References to McKethan Watershed have been removed	SWFWMD
88	Report identifies multi-day event was used to delineate the 100-year floodplain. If so, identify specific subbasins that it was used to delineate the 100-year floodplain. If not, then identify the multi-day was not used.	Report has been revised to say that only the 1-day results were mapped in Croom.	SWFWMD
89	Add Hernando County acknowledgment on the Justification Report cover page.	Hernando County is acknowledged on Justification Report cover.	SWFWMD
90	Include a copy of the final Peer Review report in the Report Directory.	The Peer review report has been moved to the reports folder in the submittal package	SWFWMD
91	Transition zone indicates Oakton Drive is inundated	Transition Zone has been revised	SWFWMD
92	Floodplain is extensive in this area. Verify that DCIA & impervious parameters are correct; identify what if any chnages are made.	Floodplain has been reduced by adjusting DCIA values for this area based on the results of our Weeki Wachee DCIA sensitivity analyses.	SWFWMD

Appendix B

MODEL SUBBASIN ID	MODEL JUNCTION ID	SUBBASIN AREA (ACRES)	SUBBASIN PREDOMINANT LANDUSE (RESIDENTIAL, COMMERCIAL, INSTITUTIONAL, AGRICULTURAL, OPEN SPACE OTHERS)	SUBBASIN PRIMARY MODELED FLOOD FEATURE (DEPRESSION, WET POND, WETLAND, DRA, ROADSIDE SWALE)	SUBBASIN DISCHARGE CONDITIONS (CLOSED BASIN OR POSITIVE OUTFALL)	SUBBASIN INITIAL STAGE ASSUMPTION	SUBBASIN PERCOLATION INCORPORATED IN MODELING (Y OR N)	MODELED FLOODPLAIN STORM EVENT	MODELED FLOODPLAIN STORM DEPTH (INCHES)	MODELED FLOODPLAIN STORM DISTRIBUTION	SUBBASIN VERIFICATION/VALIDATION DATA AVAILABLE (YES OR NO - IF YES PROVIDE DETAILS)	FEMA ZONE (A, X500, ETC.)	FEMA ACRES (ACRES)	FEMA % OF TOTAL AREA (ACRES)	MODELED FLOODPLAIN ELEVATION (FEET NAVD)	MODELED FLOODPLAIN AREA (ACRES)	MODELED FLOODPLAIN % OF TOTAL AREA (ACRES)	MODELED FLOODPLAIN MAX DEPTH (FEET)	TRANSITIONAL (ESTIMATED) FLOODPLAIN AREA (ACRES)	TOTAL FLOODPLAIN AREA - MODELED PLUS TRANSITIONAL (ACRES)	TOTAL FLOODPLAIN % OF TOTAL AREA (ACRES)	FLOODPLAIN DIFFERENCE - MODELED MINUS FEMA (ACRES)	APPARENT FLOOD IMPACT	MODELED FLOODPLAIN REASONABLE BASED ON AVAILABLE INFORMATION?
A0010	NA0010	4.38	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	81.88	0.10	2.25%	1.68	0.00	0.10	2.25%	0.10		YES
A0020	NA0020	4.07	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.72	0.20	4.96%	0.89	0.00	0.20	4.96%	0.20		YES
A0030	NA0030	11.17	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.56	0.27	2.39%	0.58	0.00	0.27	2.39%	0.27		YES
A0040	NA0040	4.93	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	66.72	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0050	NA0050	21.89	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	60.37	0.00	0.01%	0.10	0.00	0.00	0.01%	0.00		YES
A0060	NA0060	4.65	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	64.28	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0070	NA0070	12.92	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	70.55	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0080	NA0080	13.02	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	85.33	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0090	NA0090	14.66	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.03	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0100	NA0100	26.99	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.13	0.06	0.22%	0.51	0.00	0.06	0.22%	0.06		YES
A0110	NA0110	41.88	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.68	0.44	1.05%	0.80	0.00	0.44	1.05%	0.44		YES
A0120	NA0120	22.63	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.37	0.16	0.73%	0.42	0.00	0.16	0.73%	0.16		YES
A0130	NA0130	9.69	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	79.11	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0140	NA0140	42.44	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	69.23	0.36	0.86%	1.57	0.00	0.36	0.86%	0.36		YES
A0150	NA0150	3.54	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	88.36	0.23	6.58%	1.16	0.00	0.23	6.58%	0.23		YES
A0160	NA0160	3.32	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	50.27	0.12	3.73%	2.05	0.00	0.12	3.73%	0.12		YES
A0170	NA0170	63.88	Forests	WETLAND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	48.58	4.29	6.71%	5.29	0.00	4.29	6.71%	4.29		YES
A0175	NA0175	57.37	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	50.66	0.57	0.99%	1.09	0.00	0.57	0.99%	0.57		YES
A0180	NA0180	2.86	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	93.02	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
A0190	NA0190	19.40	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	79.48	0.04	0.21%	0.16	0.00	0.04	0.21%	0.04		YES
A0200	NA0200	34.64	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	64.92	0.87	2.50%	1.15	0.00	0.87	2.50%	0.87		YES
A0220	NA0220	42.99	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.02	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0230	NA0230	32.87	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	109.93	1.53	4.66%	3.20	0.00	1.53	4.66%	1.53		YES
A0240	NA0240	61.36	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	89.57	1.04	1.69%	1.40	0.00	1.04	1.69%	1.04		YES
A0250	NA0250	40.30	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	93.26	1.55	3.84%	2.36	0.00	1.55	3.84%	1.55		YES
A0260	NA0260	22.13	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	98.55	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0263	NA0263	19.97	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	0.06	0.30%	60.85	0.15	0.73%	6.58	0.00	0.15	0.73%	0.09		YES
A0266	NA0266	5.71	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	1.78	31.20%	41.79	0.10	1.84%	4.00	0.00	0.10	1.84%	-1.68		YES
A0270	NA0270	42.61	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	0.73	1.72%	68.3	1.93	4.53%	17.45	1.01	2.94	6.91%	2.21		YES
A0275	NA0275	8.48	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.12	0.04	0.46%	1.82	0.00	0.04	0.46%	0.04		YES
A0280	NA0280	5.89	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	70.61	0.23	3.85%	1.06	0.00	0.23	3.85%	0.23		YES
A0290	NA0290	44.76	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	66.59	0.56	1.25%	0.97	0.00	0.56	1.25%	0.56		YES
A0300	NA0300	46.84	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	70.17	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0305	NA0305	11.10	Wetland/Marshes/Mixed	WETLAND	POSITIVE OUTFALL	Initial stage set to 44' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	5.81	52.34%	49.62	4.71	42.44%	7.86	0.00	4.71	42.44%	-1.10		YES
A0310	NA0310	4.58	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.21	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0320	NA0320	16.52	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	75.19	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0330	NA0330	15.68	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	0.00	0.03%	101.5	5.39	34.37%	9.24	0.00	5.39	34.38%	5.39		YES
A0332	NA0332	127.75	Forests	WETLAND	POSITIVE OUTFALL	Initial stage set to 44.8' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	5.34	4.18%	49.62	4.41	3.45%	6.38	5.16	9.57	7.49%	4.24		YES
A0334	NA0334	11.08	Forests	WETLAND	POSITIVE OUTFALL	Initial stage set to 46.6' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	2.28	20.53%	49.62	1.29	11.60%	5.93	0.00	1.29	11.60%	-0.99		YES
A0336	NA0336	7.56	Forests	WETLAND	POSITIVE OUTFALL	Initial stage set to 46.5' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	3.15	41.66%	49.62	1.95	25.79%	5.37	0.00	1.95	25.79%	-1.20		YES
A0337	NA0337	14.86	Forests	WETLAND	POSITIVE OUTFALL	Initial stage set to 44' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	7.46	50.22%	49.62	6.13	41.23%	8.97	0.00	6.13	41.23%	-1.34		YES
A0338	NA0338	74.06	Forests	WETLAND	POSITIVE OUTFALL	Initial stage set to 44.4' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	1.39	1.88%	49.62	2.73	3.69%	7.14	0.00	2.73	3.69%	1.34		YES
A0340	NA0340	83.52	Forests	WETLAND	POSITIVE OUTFALL	Initial stage set to 44' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	16.62	19.90%	49.62	15.51	18.57%	10.37	0.00	15.51	18.57%	-1.10		YES
A0350	NA0350	51.42	Open Lands	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	2.21	4.31%	101.51	3.44	6.69%	13.35	0.00	3.44	6.69%	1.23		YES
A0400	NA0400	7.92	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	94.79	0.31	3.86%	1.04	0.00	0.31	3.86%	0.31		YES
A0410	NA0410	8.07	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	95.76	0.20	2.53%	0.93	0.00	0.20	2.53%	0.20		YES
A0420	NA0420	17.88	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	91.08	0.12	0.67%	0.83	0.00	0.12	0.67%	0.12		YES
A0430	NA0430	7.91	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	91.79	0.28	3.53%	1.30	0.00	0.28	3.53%	0.28		YES
A0440	NA0440	3.29	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	100.26	0.20	5.98%	0.90	0.00	0.20	5.98%	0.20		YES
A0450	NA0450	3.97	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	90.45	0.17	4.28%	1.23	0.00	0.17	4.28%	0.17		YES
A0455	NA0455	4.74	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.47	0.05	0.95%	0.78	0.00	0.05	0.95%	0.05		YES
A0460	NA0460	26.93	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.21	0.56	2.08%	0.94	0.00	0.56	2.08%	0.56		YES
A0470	NA0470	5.91	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	85.51	0.25	4.23%	0.72	0.00	0.25	4.23%	0.25		YES
A0480	NA0480	47.59	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	74.96	0.39	0.82%	0.64	0.00	0.39	0.82%	0.39		YES
A0490	NA0490	6.82	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	70.85	0.06	0.84%	0.75	0.00	0.06	0.84%	0.06		YES
A0495	NA0495	19.92	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.86	0.17	0.85%	0.66	0.00	0.17	0.85%	0.17		YES
A0500	NA0500	7.52	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	69.56	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0505	NA0505	2.78	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	93.79	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
A0510	NA0510	15.55	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.97	0.30	1.92%	1.11	0.00	0.30	1.92%	0.30		YES
A0520	NA0520	20.86	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	78.19	0.35	1.70%	1.29	0.00	0.35	1.70%	0.35		YES

MODEL SUBBASIN ID	MODEL JUNCTION ID	SUBBASIN AREA (ACRES)	SUBBASIN PREDOMINANT LANDUSE (RESIDENTIAL, COMMERCIAL, INSTITUTIONAL, AGRICULTURAL, OPEN SPACE OTHERS)	SUBBASIN PRIMARY MODELED FLOOD FEATURE (DEPRESSION, WET POND, WETLAND, DRA, ROADSIDE SWALE)	SUBBASIN DISCHARGE CONDITIONS (CLOSED BASIN OR POSITIVE OUTFALL)	SUBBASIN INITIAL STAGE ASSUMPTION	SUBBASIN PERCOLATION INCORPORATED IN MODELING (Y OR N)	MODELED FLOODPLAIN STORM EVENT	MODELED FLOODPLAIN STORM DEPTH (INCHES)	MODELED FLOODPLAIN STORM DISTRIBUTION	SUBBASIN VERIFICATION/VALIDATION DATA AVAILABLE (YES OR NO - IF YES PROVIDE DETAILS)	FEMA ZONE (A, X500, ETC.)	FEMA ACRES (ACRES)	FEMA % OF TOTAL AREA (ACRES)	MODELED FLOODPLAIN ELEVATION (FEET NAVD)	MODELED FLOODPLAIN AREA (ACRES)	MODELED FLOODPLAIN % OF TOTAL AREA (ACRES)	MODELED FLOODPLAIN MAX DEPTH (FEET)	TRANSITIONAL (ESTIMATED) FLOODPLAIN AREA (ACRES)	TOTAL FLOODPLAIN AREA - MODELED PLUS TRANSITIONAL (ACRES)	TOTAL FLOODPLAIN % OF TOTAL AREA (ACRES)	FLOODPLAIN DIFFERENCE - MODELED MINUS FEMA (ACRES)	APPARENT FLOOD IMPACT	MODELED FLOODPLAIN REASONABLE BASED ON AVAILABLE INFORMATION?
A0530	NA0530	7.00	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	63.13	0.28	4.07%	1.18	0.00	0.28	4.07%	0.28		YES
A0540	NA0540	12.67	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	63.11	0.45	3.55%	1.20	0.00	0.45	3.55%	0.45		YES
A0600	NA0600	16.75	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	79.17	0.36	2.15%	1.02	0.00	0.36	2.15%	0.36		YES
A0610	NA0610	5.92	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.91	0.12	2.03%	0.86	0.00	0.12	2.03%	0.12		YES
A0620	NA0620	5.08	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.48	0.25	5.02%	1.07	0.00	0.25	5.02%	0.25		YES
A0640	NA0640	17.87	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	67.84	0.45	2.54%	1.66	0.00	0.45	2.54%	0.45		YES
A0650	NA0650	10.95	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.3	0.74	6.75%	1.12	0.00	0.74	6.75%	0.74		YES
A0655	NA0655	38.71	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	61.16	0.70	1.81%	2.55	0.00	0.70	1.81%	0.70		YES
A0660	NA0660	14.58	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	58.77	0.49	3.33%	1.16	0.00	0.49	3.33%	0.49		YES
A0670	NA0670	18.66	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	95.2	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0700	NA0700	23.11	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	67.44	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0705	NA0705	8.73	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	68.31	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0710	NA0710	23.70	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	68.11	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0720	NA0720	18.10	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	59.43	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0722	NA0722	1.43	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	68.25	0.03	2.08%	2.02	0.00	0.03	2.08%	0.03		YES
A0724	NA0724	13.11	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	66.08	0.05	0.36%	2.84	0.00	0.05	0.36%	0.05		YES
A0726	NA0726	3.60	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	61.68	0.05	1.45%	4.26	0.00	0.05	1.45%	0.05		YES
A0728	NA0728	6.09	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.35	0.11	1.76%	3.13	0.00	0.11	1.76%	0.11		YES
A0729	NA0729	7.24	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.47	0.30	4.12%	1.26	0.00	0.30	4.12%	0.30		YES
A0730	NA0730	8.38	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.08	0.65	7.77%	1.04	0.00	0.65	7.77%	0.65		YES
A0740	NA0740	18.19	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	63.93	0.19	1.06%	0.68	0.00	0.19	1.06%	0.19		YES
A0750	NA0750	9.19	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.67	0.26	2.83%	1.53	0.00	0.26	2.83%	0.26		YES
A0760	NA0760	60.54	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	55.41	1.35	2.23%	1.91	0.00	1.35	2.23%	1.35		YES
A0770	NA0770	23.14	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.73	1.06	4.59%	1.83	0.00	1.06	4.59%	1.06		YES
A0780	NA0780	20.33	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	64.44	0.61	3.01%	1.19	0.00	0.61	3.01%	0.61		YES
A0790	NA0790	18.64	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	53.66	0.68	3.67%	1.79	0.00	0.68	3.67%	0.68		YES
A0800	NA0800	15.70	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	55.9	0.62	3.92%	1.04	0.00	0.62	3.92%	0.62		YES
A0810	NA0810	12.38	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	83.8	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
A0820	NA0820	33.57	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	63.74	0.52	1.54%	1.52	0.00	0.52	1.54%	0.52		YES
A0830	NA0830	49.67	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	50.34	1.20	2.42%	1.95	0.00	1.20	2.42%	1.20		YES
A0840	NA0840	20.17	Forests	WETLAND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	6.81	33.76%	49.39	5.94	29.46%	9.01	0.00	5.94	29.46%	-0.87		YES
A0850	NA0850	15.99	Forests	WETLAND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	3.75	23.44%	49.39	3.77	23.58%	8.22	0.00	3.77	23.58%	0.02		YES
A0860	NA0860	2.09	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	107.55	0.14	6.62%	0.96	0.00	0.14	6.62%	0.14		YES
A0870	NA0870	31.31	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	69.68	0.63	2.02%	1.52	0.00	0.63	2.02%	0.63		YES
A0875	NA0875	1.89	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.18	0.05	2.73%	2.84	0.00	0.05	2.73%	0.05		YES
A0880	NA0880	75.36	Forests	WETLAND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	10.03	13.32%	49.39	9.33	12.38%	8.08	0.27	9.60	12.74%	-0.43		YES
A0885	NA0885	3.11	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	72.4	0.14	4.43%	1.17	0.00	0.14	4.43%	0.14		YES
A0890	NA0890	39.34	Forests	WETLAND	CLOSED BASIN	Initial stage set to 46' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	4.92	12.50%	50.76	3.86	9.80%	6.43	0.00	3.86	9.80%	-1.06		YES
A0900	NA0900	56.49	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.78	0.95	1.69%	2.08	0.00	0.95	1.69%	0.95		YES
A0910	NA0910	9.19	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.24	0.29	3.11%	2.16	0.00	0.29	3.11%	0.29		YES
A0920	NA0920	35.86	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	105.41	2.59	7.21%	10.29	0.00	2.59	7.22%	2.59		YES
A0930	NA0930	236.55	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	61.23	11.58	4.90%	9.98	5.70	17.28	7.31%	17.28		YES
A0940	NA0940	47.82	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	63.48	0.93	1.95%	1.32	0.00	0.93	1.95%	0.93		YES
A0950	NA0950	53.77	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.96	0.89	1.66%	1.65	0.00	0.89	1.66%	0.89		YES
A0955	NA0955	52.08	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	102.46	2.48	4.77%	4.42	0.00	2.49	4.77%	2.49		YES
A0960	NA0960	8.07	Forests	WETLAND	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	101.19	1.60	19.81%	11.97	0.03	1.63	20.15%	1.63		YES
A0963	NA0963	30.85	Forests	CHANNEL	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	86.69	0.77	2.49%	1.42	0.95	1.72	5.57%	1.72	ROAD	YES
A0966	NA0966	15.78	Forests	CHANNEL	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.2	2.80	17.77%	1.66	0.00	2.80	17.77%	2.80		YES
A0970	NA0970	25.26	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.05	3.12	12.37%	5.55	0.00	3.12	12.37%	3.12		YES
A0975	NA0975	4.60	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	72.95	0.87	18.99%	3.37	0.00	0.88	19.03%	0.88		YES
A0980	NA0980	30.08	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.2	1.48	4.91%	0.81	0.00	1.48	4.91%	1.48		YES
A0990	NA0990	12.15	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	2.10	17.32%	53.14	3.73	30.69%	5.96	0.00	3.73	30.70%	1.63		YES
A1000	NA1000	142.19	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	6.60	4.64%	53.15	15.65	11.01%	5.34	3.42	19.07	13.41%	12.46		YES
B0010	NB0010	38.99	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	2.02	5.19%	99.96	1.69	4.34%	11.13	0.00	1.69	4.34%	-0.33		YES
B0015	NB0015	1.71	Open Lands	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	173.13	0.36	21.19%	5.81	0.00	0.36	21.19%	0.36		YES
B0020	NB0020	203.02	Forests	WETLAND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	17.76	8.75%	85.45	28.28	13.93%	8.32	0.97	29.25	14.41%	11.49		YES
B0030	NB0030	22.93	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	146.43	0.26	1.13%	0.78	0.00	0.26	1.13%	0.26		YES
B0040	NB0040	31.89	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	112.48	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
B0050	NB0050	77.52	Forests	WETLAND	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.07	6.22	8.02%	9.92	2.15	8.37	10.79%	8.37		YES
B0060	NB0060	34.70	Forests	WET POND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.06	2.93	8.44%	9.61	0.00	2.93	8.44%	2.93	YARD	YES
B0070	NB0070	11.54	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	87.7	2.39	20.69%	2.18	0.00	2.39	20.69%	2.39		YES
B0080	NB0080	18.55	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	143.05	0.16	0.88%	1.87	0.00	0.16	0.88%	0.16		YES
B0090	NB0090	24.10	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	97.06	0.12	0.51%	0.78	0.00	0.12	0.51%	0.12		YES
B0095	NB0095	64.36	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	72.18	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
B0100	NB0100	58.82	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	64.74	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
B0110	NB0110	22.97	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.52	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
B0120	NB0120	5.09	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.27	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
B0130	NB0130	3.38	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	72.88	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
B0200	NB0200	25.68	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	86.44	0.32	1.23%	2.18	0.00	0.32	1.23%	0.32		YES
B0210	NB0210	13.36	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	97.61	0.26	1.91%	1.54	0.00	0.26	1.91%	0.26		YES
B0220	NB0220	4.05	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.23	0.07	1.61%	0.64	0.00	0.07	1.61%	0.07		YES
B0230	NB0230	11.42	Agricultural	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	83.46	0.25	2.16%	1.66	0.00	0.25	2.16%	0.25	YARD	YES
B0240	NB0240	7.33	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	67.35	0.06	0.76%	0.80	0.00	0.06	0.76%	0.06		YES
B0250	NB0250	6.96	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.24	0.00	0.06%	0.04	0.00	0.00	0.06%	0.00		YES
B0260	NB0260	3.12	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	74.16	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
B0270	NB0270	7.10	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	72.02	2.03	28.54%	3.41	0.00	2.03	28.55%	2.03		YES
B0300	NB0300	74.92	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.4	16.26	21.70%	9.51	1.61	17.87	23.85%	17.87	BUILDING, YARD	YES
B0303	NB0303	1.87	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	72.24	0.00	0.02%	0.00	0.00	0.00	0.02%	0.00		YES
B0305	NB0305	6.28	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.06	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
C0007	NC0007	1.02	Residential	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	97.71	0.29	27.94%	2.69	0.00	0.29	27.94%	0.29	YARD	YES
C0010	NC0010	3.53	Open Lands	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	99.27	1.24	34.99%	4.28	0.00	1.24	35.00%	1.24		YES
C0015	NC0015	21.79	Residential	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	94.73	0.92	4.23%	2.50	0.10	1.03	4.71%	1.03	YARD	YES
C0030	NC0030	20.26	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	91.01	4.70	23.18%	3.58	0.46	5.16	25.45%	5.16	ROAD	YES
C0035	NC0035	11.49	Agricultural	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	113.61	1.25	10.92%	3.46	0.00	1.25	10.92%	1.25		YES
C0050	NC0050	98.33	Agricultural	WETLAND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.21	4.47	4.54%	7.71	0.81	5.27	5.36%	5.27		YES
C0060	NC0060	50.90	Agricultural	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	83.78	9.24	18.14%	8.54	0.91	10.15	19.93%	10.15	HOUSE, YARD	YES
C0070	NC0070	14.03	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	83.78	2.72	19.37%	5.58	0.00	2.72	19.37%	2.72		YES
C0080	NC0080	7.18	Forests	ROADSIDE SWALE	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	85.26	0.00	0.04%	0.10	0.00	0.00	0.04%	0.00		YES
C0090	NC0090	5.45	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	79.22	0.04	0.80%	0.50	0.00	0.04	0.80%	0.04		YES
C0100	NC0100	8.51	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	75.01	0.11	1.30%	0.80	0.00	0.11	1.30%	0.11		YES
C0110	NC0110	6.03	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.38	0.23	3.84%	0.72	0.00	0.23	3.84%	0.23		YES
C0120	NC0120	40.29	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	69.58	0.11	0.28%	0.46	0.00	0.11	0.28%	0.11		YES
C0130	NC0130	8.75	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.1	0.04	0.42%	0.85	0.00	0.04	0.42%	0.04		YES
C0140	NC0140	2.33	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.77	0.07	3.14%	0.33	0.00	0.07	3.14%	0.07		YES
C0150	NC0150	18.12	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	72.36	0.61	3.36%	2.03	0.00	0.61	3.36%	0.61		YES
C0160	NC0160	1.96	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	75.89	0.00	0.02%	0.00	0.00	0.00	0.02%	0.00		YES
C0170	NC0170	10.24	Forests	ROADSIDE SWALE	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.34	0.08	0.77%	0.32	0.00	0.08	0.77%	0.08		YES
C0175	NC0175	4.70	Open Lands	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	72.24	0.20	4.25%	1.04	0.00	0.20	4.25%	0.20		YES
C0180	NC0180	36.83	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.83	0.57	1.55%	0.58	0.00	0.57	1.55%	0.57		YES
C0190	NC0190	14.12	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.45	0.60	4.22%	0.69	0.00	0.60	4.22%	0.60		YES
C0200	NC0200	69.71	Open Lands	ROADSIDE SWALE	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.79	0.13	0.19%	1.19	0.00	0.13	0.19%	0.13		YES
C0210	NC0210	50.11	Residential	ROADSIDE SWALE	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	74.37	0.55	1.09%	1.31	0.00	0.55	1.09%	0.55		YES
C0220	NC0220	35.10	Residential	ROADSIDE SWALE	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	83.36	0.14	0.40%	1.07	0.00	0.14	0.40%	0.14		YES
C0225	NC0225	12.41	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	74.57	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0230	NC0230	46.59	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	68.95	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0240	NC0240	8.70	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	66.47	0.31	3.61%	1.39	0.00	0.31	3.61%	0.31		YES
C0250	NC0250	17.27	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	87.41	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES

MODEL SUBBASIN ID	MODEL JUNCTION ID	SUBBASIN AREA (ACRES)	SUBBASIN PREDOMINANT LANDUSE (RESIDENTIAL, COMMERCIAL, INSTITUTIONAL, AGRICULTURAL, OPEN SPACE OTHERS)	SUBBASIN PRIMARY MODELED FLOOD FEATURE (DEPRESSION, WET POND, WETLAND, DRA, ROADSIDE SWALE)	SUBBASIN DISCHARGE CONDITIONS (CLOSED BASIN OR POSITIVE OUTFALL)	SUBBASIN INITIAL STAGE ASSUMPTION	SUBBASIN PERCOLATION INCORPORATED IN MODELING (Y OR N)	MODELED FLOODPLAIN STORM EVENT	MODELED FLOODPLAIN STORM DEPTH (INCHES)	MODELED FLOODPLAIN STORM DISTRIBUTION	SUBBASIN VERIFICATION/VALIDATION DATA AVAILABLE (YES OR NO - IF YES PROVIDE DETAILS)	FEMA ZONE (A, X500, ETC.)	FEMA ACRES (ACRES)	FEMA % OF TOTAL AREA (ACRES)	MODELED FLOODPLAIN ELEVATION (FEET NAVD)	MODELED FLOODPLAIN AREA (ACRES)	MODELED FLOODPLAIN % OF TOTAL AREA (ACRES)	MODELED FLOODPLAIN MAX DEPTH (FEET)	TRANSITIONAL (ESTIMATED) FLOODPLAIN AREA (ACRES)	TOTAL FLOODPLAIN AREA - MODELED PLUS TRANSITIONAL (ACRES)	TOTAL FLOODPLAIN % OF TOTAL AREA (ACRES)	FLOODPLAIN DIFFERENCE - MODELED MINUS FEMA (ACRES)	APPARENT FLOOD IMPACT	MODELED FLOODPLAIN REASONABLE BASED ON AVAILABLE INFORMATION?
C0260	NC0260	22.82	Residential	ROADSIDE SWALE	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.25	0.41	1.78%	2.16	0.00	0.41	1.78%	0.41		YES
C0270	NC0270	6.87	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	81.94	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0280	NC0280	14.21	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	74.69	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0285	NC0285	2.46	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	75.2	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0290	NC0290	11.44	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.59	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0300	NC0300	19.71	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	66.21	0.18	0.90%	0.78	0.00	0.18	0.90%	0.18		YES
C0310	NC0310	5.06	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.65	0.05	0.99%	0.56	0.00	0.05	0.99%	0.05		YES
C0320	NC0320	5.06	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	85.25	0.03	0.65%	0.69	0.00	0.03	0.65%	0.03		YES
C0330	NC0330	13.70	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	69.43	0.47	3.45%	2.35	0.12	0.60	4.36%	0.60		YES
C0340	NC0340	5.39	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	67.65	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0350	NC0350	9.33	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	65.8	0.23	2.43%	1.39	0.00	0.23	2.43%	0.23		YES
C0355	NC0355	6.57	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	89.82	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
C0360	NC0360	46.19	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.76	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0365	NC0365	8.91	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.55	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0370	NC0370	4.61	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	70.06	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
C0380	NC0380	11.52	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	70.07	0.15	1.34%	0.52	0.00	0.15	1.34%	0.15		YES
C0390	NC0390	4.99	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	66.59	0.28	5.59%	0.73	0.00	0.28	5.59%	0.28		YES
C0400	NC0400	59.52	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	127.04	8.13	13.66%	27.01	0.00	8.13	13.66%	8.13	YARD	YES
C0405	NC0405	10.46	Agricultural	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	200.84	0.26	2.48%	1.80	0.00	0.26	2.48%	0.26		YES
C0410	NC0410	16.26	Agricultural	WETLAND	CLOSED BASIN	Initial stage set to 147' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	149.04	1.20	7.36%	7.70	0.00	1.20	7.36%	1.20		YES
C0420	NC0420	20.23	Agricultural	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	144.79	1.82	9.01%	4.05	0.01	1.84	9.07%	1.84	ROAD	YES
C0430	NC0430	1.50	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	175.59	0.09	6.32%	3.55	0.00	0.09	6.32%	0.09		YES
C0440	NC0440	15.33	Agricultural	ROADSIDE SWALE	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	127.53	0.66	4.29%	2.80	0.00	0.66	4.29%	0.66	ROAD	YES
C0450	NC0450	51.35	Agricultural	ROADSIDE SWALE	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	A High Water Elevation of 140.95' is referenced from SWFWMD HWM database. The model result of 122.93' is lower in elevation. This data can be used qualitatively as an indicator of where flood stages could be expected to occur and therefore where one would consider it reasonable to have a flood hazard elevation near these levels.		0.00	0.00%	122.87	0.82	1.59%	2.55	3.43	4.25	8.27%	4.25	ROAD	YES
C0460	NC0460	31.29	Residential	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	A High Water Elevation of 117.15' is referenced from SWFWMD HWM database. The model result of 117.87' is slightly higher in elevation. This data can be used qualitatively as an indicator of where flood stages could be expected to occur and therefore where one would consider it reasonable to have a flood hazard elevation near these levels.		0.00	0.00%	117.88	5.88	18.78%	7.47	0.34	6.21	19.86%	6.21	HOUSE, ROAD	YES
C0463	NC0463	36.76	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	104.48	1.14	3.11%	2.07	0.00	1.14	3.11%	1.14	ROAD	YES
C0467	NC0467	1.49	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	116.51	0.05	3.21%	1.32	0.00	0.05	3.21%	0.05		YES
C0470	NC0470	10.65	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	121.44	0.23	2.12%	0.76	0.00	0.23	2.12%	0.23		YES
C0475	NC0475	54.03	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	90.12	1.69	3.14%	1.76	0.00	1.69	3.14%	1.69		YES
C0478	NC0478	10.86	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	114.12	0.51	4.72%	2.92	0.00	0.51	4.72%	0.51		YES
C0480	NC0480	25.07	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	96.23	0.96	3.84%	7.88	0.74	1.70	6.79%	1.70		YES
C0490	NC0490	38.87	Residential	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	112.03	0.71	1.82%	2.66	0.00	0.71	1.83%	0.71	ROAD	YES
C0600	NC0600	4.38	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	97.53	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
C0610	NC0610	25.38	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.05	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0615	NC0615	11.59	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	88.47	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0620	NC0620	11.65	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.11	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0630	NC0630	7.56	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	92.64	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
C0640	NC0640	5.22	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	91.14	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
C0650	NC0650	6.62	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	81.76	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
C0670	NC0670	9.60	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	63.89	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0680	NC0680	18.19	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	86.59	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0690	NC0690	15.25	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	78.96	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0700	NC0700	36.57	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.5	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0705	NC0705	2.28	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	85.38	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0710	NC0710	48.85	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.22	0.89	1.83%	0.77	0.00	0.89	1.83%	0.89		YES
C0720	NC0720	32.99	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	81.01	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
C0730	NC0730	29.09	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.68	1.14	3.91%	1.13	0.15	1.29	4.44%	1.29		YES
C0735	NC0735	12.71	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	97.65	0.13	1.06%	0.89	0.00	0.13	1.06%	0.13		YES
C0737	NC0737	1.43	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.44	0.66	46.11%	12.33	0.00	0.66	46.11%	0.66	YARD	YES
C0740	NC0740	163.09	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.44	13.87	8.50%	11.39	2.98	16.84	10.33%	16.84	HOUSE, ROAD, YARD	YES
C0750	NC0750	1.99	Commercial/Industrial	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	119.27	0.55	27.46%	4.14	0.00	0.55	27.46%	0.55		YES
C0760	NC0760	1.81	Commercial/Industrial	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	113.54	0.30	16.77%	5.41	0.00	0.30	16.77%	0.30		YES
C0770	NC0770	26.37	Commercial/Industrial	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	100.6	6.10	23.12%	11.45	0.17	6.27	23.78%	6.27		YES
D0010	ND0010	26.57	Residential	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	75.25	0.40	1.51%	1.03	0.00	0.40	1.51%	0.40	YARD	YES
D0015	ND0015	7.41	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	75.18	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
D0020	ND0020	12.89	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	74.39	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
D0025	ND0025	6.49	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.88	0.07	1.13%	2.63	0.00	0.07	1.13%	0.07		YES
D0030	ND0030	130.94	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	70.49	1.29	0.99%	1.82	0.00	1.29	0.99%	1.29		YES
D0040	ND0040	9.58	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.85	0.93	9.71%	8.45	0.00	0.93	9.71%	0.93	YARD	YES
D0050	ND0050	6.01	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	72.84	0.27	4.46%	1.67	0.00	0.27	4.46%	0.27		YES
D0060	ND0060	8.13	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	72.68	0.38	4.64%	0.94	0.00	0.38	4.64%	0.38		YES
D0070	ND0070	5.59	Residential	ROADSIDE SWALE	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.28	0.55	9.91%	1.26	0.00	0.55	9.91%	0.55	HOUSE	YES
E0010	NE0010	36.07	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	92.04	0.89	2.48%	1.74	0.00	0.89	2.48%	0.89		YES
E0020	NE0020	35.03	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	88.55	1.69	4.81%	1.16	0.00	1.69	4.81%	1.69		YES
E0030	NE0030	17.14	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	87.22	0.57	3.33%	0.81	0.00	0.57	3.33%	0.57		YES
E0040	NE0040	26.20	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	83.36	0.54	2.08%	2.10	0.00	0.54	2.08%	0.54		YES
E0050	NE0050	4.42	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	94.87	0.14	3.21%	1.11	0.00	0.14	3.21%	0.14		YES
E0060	NE0060	10.14	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.81	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
E0070	NE0070	3.60	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	91.68	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
E0080	NE0080	19.89	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	86.85	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
E0090	NE0090	7.44	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	95.5	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
E0110	NE0110	19.99	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.21	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
E0120	NE0120	22.20	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	81.29	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
E0130	NE0130	16.48	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	83.08	0.01	0.05%	0.05	0.00	0.01	0.05%	0.01		YES
E0140	NE0140	79.04	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	63.43	0.97	1.23%	3.36	0.00	0.97	1.23%	0.97		YES
E0150	NE0150	8.39	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	93.95	0.48	5.66%	0.93	0.00	0.48	5.66%	0.48		YES
E0160	NE0160	15.06	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	91.95	0.67	4.44%	1.08	0.00	0.67	4.44%	0.67		YES
E0170	NE0170	11.30	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	91.58	0.33	2.94%	1.29	0.00	0.33	2.94%	0.33		YES
E0180	NE0180	17.44	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	65.38	0.18	1.05%	5.04	0.00	0.18	1.05%	0.18		YES
E0190	NE0190	13.19	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	122.68	0.00	0.01%	0.17	0.00	0.00	0.01%	0.00		YES
E0200	NE0200	4.92	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	90.77	0.16	3.28%	1.20	0.00	0.16	3.28%	0.16		YES
E0210	NE0210	19.20	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	88.42	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
E0220	NE0220	6.72	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	81.4	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
E0230	NE0230	38.68	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.17	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
E0240	NE0240	13.95	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	94.74	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
E0250	NE0250	9.65	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	85.87	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
E0260	NE0260	28.33	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	75.44	0.22	0.77%	3.12	0.00	0.22	0.77%	0.22		YES
E0270	NE0270	18.78	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	93.01	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
E0280	NE0280	6.84	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.97	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
E0285	NE0285	59.47	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.55	0.28	0.47%	1.40	0.00	0.28	0.47%	0.28		YES
E0290	NE0290	77.65	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	75.61	0.43	0.55%	0.89	0.00	0.43	0.55%	0.43		YES
E0310	NE0310	39.28	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.44	0.87	2.22%	2.58	0.00	0.87	2.22%	0.87		YES
E0320	NE0320	5.25	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	88.19	0.21	3.99%	0.98	0.00	0.21	3.99%	0.21		YES
E0330	NE0330	10.91	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	87.31	0.46	4.24%	1.07	0.00	0.46	4.24%	0.46		YES
E0335	NE0335	5.62	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	64.54	0.32	5.71%	3.31	0.00	0.32	5.71%	0.32		YES
E0340	NE0340	32.92	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	64.54	0.43	1.31%	2.83	0.00	0.43	1.31%	0.43		YES
E0350	NE0350	3.38	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	95.45	0.24	7.08%	1.11	0.00	0.24	7.08%	0.24		YES

MODEL SUBBASIN ID	MODEL JUNCTION ID	SUBBASIN AREA (ACRES)	SUBBASIN PREDOMINANT LANDUSE (RESIDENTIAL, COMMERCIAL, INSTITUTIONAL, AGRICULTURAL, OPEN SPACE OTHERS)	SUBBASIN PRIMARY MODELED FLOOD FEATURE (DEPRESSION, WET POND, WETLAND, DRA, ROADSIDE SWALE)	SUBBASIN DISCHARGE CONDITIONS (CLOSED BASIN OR POSITIVE OUTFALL)	SUBBASIN INITIAL STAGE ASSUMPTION	SUBBASIN PERCOLATION INCORPORATED IN MODELING (Y OR N)	MODELED FLOODPLAIN STORM EVENT	MODELED FLOODPLAIN STORM DEPTH (INCHES)	MODELED FLOODPLAIN STORM DISTRIBUTION	SUBBASIN VERIFICATION/VALIDATION DATA AVAILABLE (YES OR NO - IF YES PROVIDE DETAILS)	FEMA ZONE (A, X500, ETC.)	FEMA ACRES (ACRES)	FEMA % OF TOTAL AREA (ACRES)	MODELED FLOODPLAIN ELEVATION (FEET NAVD)	MODELED FLOODPLAIN AREA (ACRES)	MODELED FLOODPLAIN % OF TOTAL AREA (ACRES)	MODELED FLOODPLAIN MAX DEPTH (FEET)	TRANSITIONAL (ESTIMATED) FLOODPLAIN AREA (ACRES)	TOTAL FLOODPLAIN AREA - MODELED PLUS TRANSITIONAL (ACRES)	TOTAL FLOODPLAIN % OF TOTAL AREA (ACRES)	FLOODPLAIN DIFFERENCE - MODELED MINUS FEMA (ACRES)	APPARENT FLOOD IMPACT	MODELED FLOODPLAIN REASONABLE BASED ON AVAILABLE INFORMATION?
E0360	NE0360	10.95	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	89.49	0.48	4.38%	1.15	0.00	0.48	4.38%	0.48		YES
E0370	NE0370	4.88	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	89.47	0.20	4.06%	1.31	0.00	0.20	4.06%	0.20		YES
E0380	NE0380	29.06	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	60.83	0.87	3.00%	1.45	0.00	0.87	3.00%	0.87		YES
E0385	NE0385	2.97	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	63.32	0.17	5.77%	2.04	0.00	0.17	5.77%	0.17		YES
E0390	NE0390	94.09	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	54.02	1.17	1.25%	1.64	0.00	1.17	1.25%	1.17		YES
E0400	NE0400	49.08	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	56.42	1.14	2.32%	1.29	0.00	1.14	2.32%	1.14		YES
E0410	NE0410	9.64	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	128.63	0.14	1.50%	0.83	0.00	0.14	1.50%	0.14		YES
E0420	NE0420	2.20	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	128.05	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
E0425	NE0425	33.47	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	57.45	0.51	1.52%	0.61	0.00	0.51	1.52%	0.51		YES
E0430	NE0430	13.56	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	54.52	0.39	2.91%	1.05	0.00	0.39	2.91%	0.39		YES
E0440	NE0440	108.52	Forests	WETLAND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	51.85	1.96	1.80%	4.69	0.00	1.96	1.80%	1.96		YES
E0443	NE0443	89.90	Forests	WETLAND	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	4.64	5.16%	51.88	3.19	3.55%	3.67	0.00	3.19	3.55%	-1.44		YES
E0445	NE0445	14.94	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	57.22	0.47	3.14%	1.71	0.00	0.47	3.14%	0.47		YES
E0447	NE0447	93.98	Forests	WETLAND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	9.60	10.22%	51.88	7.18	7.64%	4.62	0.00	7.18	7.64%	-2.43		YES
E0448	NE0448	25.75	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	81.45	0.38	1.49%	2.18	0.00	0.38	1.49%	0.38		YES
E0450	NE0450	52.50	Forests	WETLAND	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	11.92	22.70%	51.88	8.37	15.93%	5.10	0.00	8.37	15.93%	-3.55		YES
F0010	NF0010	51.92	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	87.79	0.60	1.16%	1.25	0.00	0.60	1.16%	0.60	YARD	YES
F0030	NF0030	6.03	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.43	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
F0035	NF0035	4.95	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	122.6	0.16	3.21%	2.67	0.00	0.16	3.27%	0.16		YES
F0040	NF0040	130.55	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	85.51	5.05	3.87%	4.35	1.37	6.43	4.92%	6.43	HOUSE, YARD	YES
F0050	NF0050	64.74	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	79.37	1.49	2.30%	1.96	0.63	2.12	3.28%	2.12		YES
F0060	NF0060	16.99	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	89.68	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
F0070	NF0070	22.53	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.42	0.07	0.31%	0.17	0.00	0.07	0.31%	0.07		YES
F0080	NF0080	14.57	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	96.79	0.56	3.82%	0.62	0.00	0.56	3.82%	0.56		YES
F0085	NF0085	76.81	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	87.77	3.95	5.15%	3.73	0.00	3.96	5.15%	3.96	HOUSE, ROAD, YARD	YES
F0090	NF0090	23.05	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	86.74	1.35	5.87%	1.68	0.07	1.42	6.17%	1.42	ROAD	YES
F0100	NF0100	56.66	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.89	0.72	1.27%	1.19	0.00	0.72	1.27%	0.72		YES
F0105	NF0105	34.27	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	75.65	0.56	1.64%	2.49	0.00	0.56	1.64%	0.56		YES
F0110	NF0110	29.45	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.41	0.64	2.16%	1.55	0.00	0.64	2.16%	0.64		YES
F0120	NF0120	51.51	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.01	0.19	0.36%	0.68	0.00	0.19	0.36%	0.19		YES
F0130	NF0130	77.01	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.07	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
F0140	NF0140	1.94	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	97.87	0.18	9.47%	0.81	0.00	0.18	9.47%	0.18		YES
F0150	NF0150	21.65	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.07	0.56	2.57%	1.86	0.00	0.56	2.57%	0.56		YES
F0160	NF0160	11.28	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	1.88	16.65%	54.75	0.99	8.77%	2.05	0.00	0.99	8.77%	-0.89		YES
F0165	NF0165	61.34	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	72.53	0.28	0.46%	0.47	0.00	0.28	0.46%	0.28		YES
F0170	NF0170	172.14	Forests	WETLAND	CLOSED BASIN	Initial stage set to 46' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	16.31	9.47%	50.43	7.57	4.40%	8.16	0.00	7.57	4.40%	-8.73		YES
F0180	NF0180	12.11	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	86.14	0.65	5.39%	1.03	0.00	0.65	5.39%	0.65		YES
F0185	NF0185	3.42	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	72.68	0.62	18.18%	9.25	0.00	0.62	18.18%	0.62		YES
F0190	NF0190	39.39	Forests	WETLAND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	11.11	28.22%	49.8	4.90	12.43%	5.20	0.00	4.90	12.43%	-6.22		YES
F0200	NF0200	10.95	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	65.09	0.63	5.74%	12.83	0.00	0.63	5.74%	0.63		YES
F0210	NF0210	5.06	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	83.4	0.40	7.84%	2.00	0.00	0.40	7.84%	0.40		YES
F0220	NF0220	4.18	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	89.67	0.12	2.84%	1.53	0.00	0.12	2.84%	0.12		YES
F0230	NF0230	20.80	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.62	0.58	2.77%	1.88	0.00	0.58	2.77%	0.58		YES
F0240	NF0240	83.89	Forests	WETLAND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	6.62	7.89%	48.27	2.55	3.04%	4.95	0.00	2.56	3.05%	-4.06		YES
F0285	NF0285	4.87	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	81.25	0.40	8.18%	0.98	0.00	0.40	8.18%	0.40		YES
F0300	NF0300	7.96	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	89.98	0.25	3.10%	1.43	0.00	0.25	3.10%	0.25		YES
F0305	NF0305	12.43	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	90.01	0.82	6.56%	1.19	0.00	0.82	6.56%	0.82		YES
F0310	NF0310	11.71	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	87.31	0.79	6.72%	1.17	0.00	0.79	6.72%	0.79		YES
F0315	NF0315	12.35	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	89.67	0.31	2.52%	1.61	0.00	0.31	2.52%	0.31		YES
F0320	NF0320	30.91	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.27	0.77	2.49%	1.44	0.00	0.77	2.49%	0.77		YES
F0325	NF0325	5.79	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	69.79	0.23	3.98%	0.94	0.00	0.23	3.98%	0.23		YES
F0330	NF0330	29.71	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	69.13	0.62	2.09%	2.33	0.00	0.62	2.09%	0.62		YES
F0340	NF0340	14.67	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	68.23	0.46	3.11%	1.62	0.00	0.46	3.11%	0.46		YES
F0350	NF0350	2.79	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.92	0.26	9.42%	0.87	0.00	0.26	9.42%	0.26		YES
F0375	NF0375	4.24	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	88.78	0.32	7.45%	1.08	0.00	0.32	7.45%	0.32		YES
F0380	NF0380	34.02	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.37	0.87	2.55%	1.47	0.00	0.87	2.55%	0.87		YES
F0385	NF0385	4.51	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	79.8	0.35	7.79%	1.04	0.00	0.35	7.79%	0.35		YES
F0400	NF0400	15.62	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.56	0.58	3.70%	1.11	0.00	0.58	3.70%	0.58		YES
F0410	NF0410	6.49	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.88	0.42	6.42%	1.24	0.00	0.42	6.42%	0.42		YES
F0415	NF0415	1.26	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.36	0.05	3.72%	2.17	0.00	0.05	3.72%	0.05		YES
F0420	NF0420	8.76	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	61.83	0.14	1.56%	3.57	0.00	0.14	1.56%	0.14		YES
F0430	NF0430	23.59	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	87.96	0.56	2.37%	1.43	0.00	0.56	2.37%	0.56		YES
F0435	NF0435	5.38	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	85.26	0.40	7.43%	1.05	0.00	0.40	7.43%	0.40		YES
F0440	NF0440	1.33	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.74	0.07	5.39%	1.75	0.00	0.07	5.39%	0.07		YES
F0444	NF0444	3.24	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	70.61	0.11	3.55%	1.35	0.00	0.11	3.55%	0.11		YES
F0446	NF0446	10.33	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	0.09	0.91%	55.08	0.12	1.14%	6.86	0.00	0.12	1.14%	0.02		YES
F0448	NF0448	11.53	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	69.65	0.32	2.74%	1.39	0.00	0.32	2.74%	0.32		YES
F0450	NF0450	8.35	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	1.56	18.68%	44.79	0.12	1.43%	4.31	0.00	0.12	1.43%	-1.44		YES
F0452	NF0452	7.26	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	2.79	38.47%	44.37	0.22	3.09%	4.11	0.00	0.22	3.09%	-2.57		YES
F0454	NF0454	1.51	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	1.38	91.84%	45.39	0.12	7.84%	5.01	0.00	0.12	7.84%	-1.27		YES
F0456	NF0456	1.90	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	1.62	85.10%	45.39	0.48	25.29%	6.88	0.00	0.48	25.29%	-1.14		YES
F0458	NF0458	5.90	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	0.87	14.68%	45.39	0.25	4.20%	7.96	0.00	0.25	4.20%	-0.62		YES
F0460	NF0460	6.41	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	3.48	54.24%	48.57	0.79	12.39%	11.30	0.00	0.79	12.39%	-2.68		YES
F0470	NF0470	1.30	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	79.57	0.06	4.82%	1.43	0.00	0.06	4.82%	0.06		YES
F0475	NF0475	20.89	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	79.69	0.56	2.70%	1.42	0.00	0.56	2.70%	0.56		YES
F0480	NF0480	26.43	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.21	0.77	2.93%	1.20	0.00	0.77	2.93%	0.77		YES
F0485	NF0485	8.37	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	65.51	0.10	1.20%	4.09	0.00	0.10	1.20%	0.10		YES
F0490	NF0490	10.67	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.52	0.43	4.02%	1.23	0.00	0.43	4.02%	0.43		YES
F0500	NF0500	83.90	Forests	WETLAND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	19.10	22.77%	45.91	7.14	8.51%	6.93	0.11	7.24	8.63%	-11.86		YES
G0010	NG0010	23.44	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.43	0.70	2.98%	1.58	0.00	0.70	2.98%	0.70		YES
G0020	NG0020	21.52	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	69.52	0.74	3.46%	1.21	0.00	0.74	3.46%	0.74		YES
G0030	NG0030	4.19	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	68.15	0.25	6.07%	0.66	0.00	0.25	6.07%	0.25		YES
G0040	NG0040	88.98	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	57.2	4.22	4.74%	2.25	0.00	4.22	4.74%	4.22		YES
G0050	NG0050	18.12	Open Lands	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	67.36	0.55	3.05%	1.50	0.00	0.55	3.05%	0.55		YES
G0080	NG0080	7.25	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	56.08	0.66	9.07%	0.92	0.00	0.66	9.07%	0.66		YES
G0100	NG0100	2.47	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	98.68	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
G0110	NG0110	28.44	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	88.56	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
G0120	NG0120	26.17	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.31	0.33	1.27%	1.30	0.00	0.33	1.27%	0.33		YES
G0130	NG0130	4.57	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.78	0.27	5.99%	0.91	0.00	0.27	5.99%	0.27		YES
G0140	NG0140	7.49	Open Lands	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.19	0.13	1.69%	0.68	0.00	0.13	1.69%	0.13		YES
G0180	NG0180	24.38	Open Lands	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	56.92	0.64	2.64%	1.13	0.00	0.64	2.64%	0.64		YES
G0200	NG0200	91.81	Forests	WETLAND	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	56.23	3.86	4.20%	2.40	0.00	3.86	4.20%	3.86		YES
H0010	NH0010	9.37	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	92.38	0.22	2.36%	0.88	0.00	0.22	2.36%	0.22		YES
H0020	NH0020	15.98	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.39	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
H0030	NH0030	33.64	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	72.24	0.19	0.55%	0.72	0.00	0.19	0.55%	0.19		YES
H0040	NH0040	12.96	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.14	0.30	2.28%	1.63	0.00	0.30	2.28%	0.30		YES
H0050	NH0050	3.87	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	91.75	0.27	6.92%	1.12	0.00	0.27	6.92%	0.27		YES
H0060	NH0060	7.06	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.66	0.43	6.06%	1.29	0.00	0.43	6.06%	0.43		YES
H0070	NH0070	14.04	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.53	0.34	2.45%	0.96	0.00	0.34	2.45%	0.34		YES
H0110	NH0110	6.91	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.42	0.46	6.70%	4.34	0.00	0.46	6.70%	0.46		YES
H0143	NH0143	8.73	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.71	0.22	2.47%	2.33	0.00	0.22	2.47%	0.22		YES
H0145	NH0145	2.71	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	91.97	0.26	9.73%	0.79	0.00	0.26	9.73%	0.26		YES
H0150	NH0150	82.58	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	70.51	2.37	2.87%	1.85	0.00	2.37	2.87%	2.37		YES
H0192	NH0192	11.36	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	92.48	0.86	7.62%	2.28	0.00	0.86	7.62%	0.86		YES
H0195	NH0195	16.31	Forests	WETLAND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	48.59	2.91	17.83%	8.49	0.00	2.91	17.83%	2.91		YES
H0198	NH0198	3.97	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	69.39	0.34	8.49%	4.19	0.00	0.34	8.52%	0.34		YES
H0200	NH0200	32.37	Forests	WETLAND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	48.59	5.73	17.70%	10.47	0.05	5.78	17.85%	5.78		YES

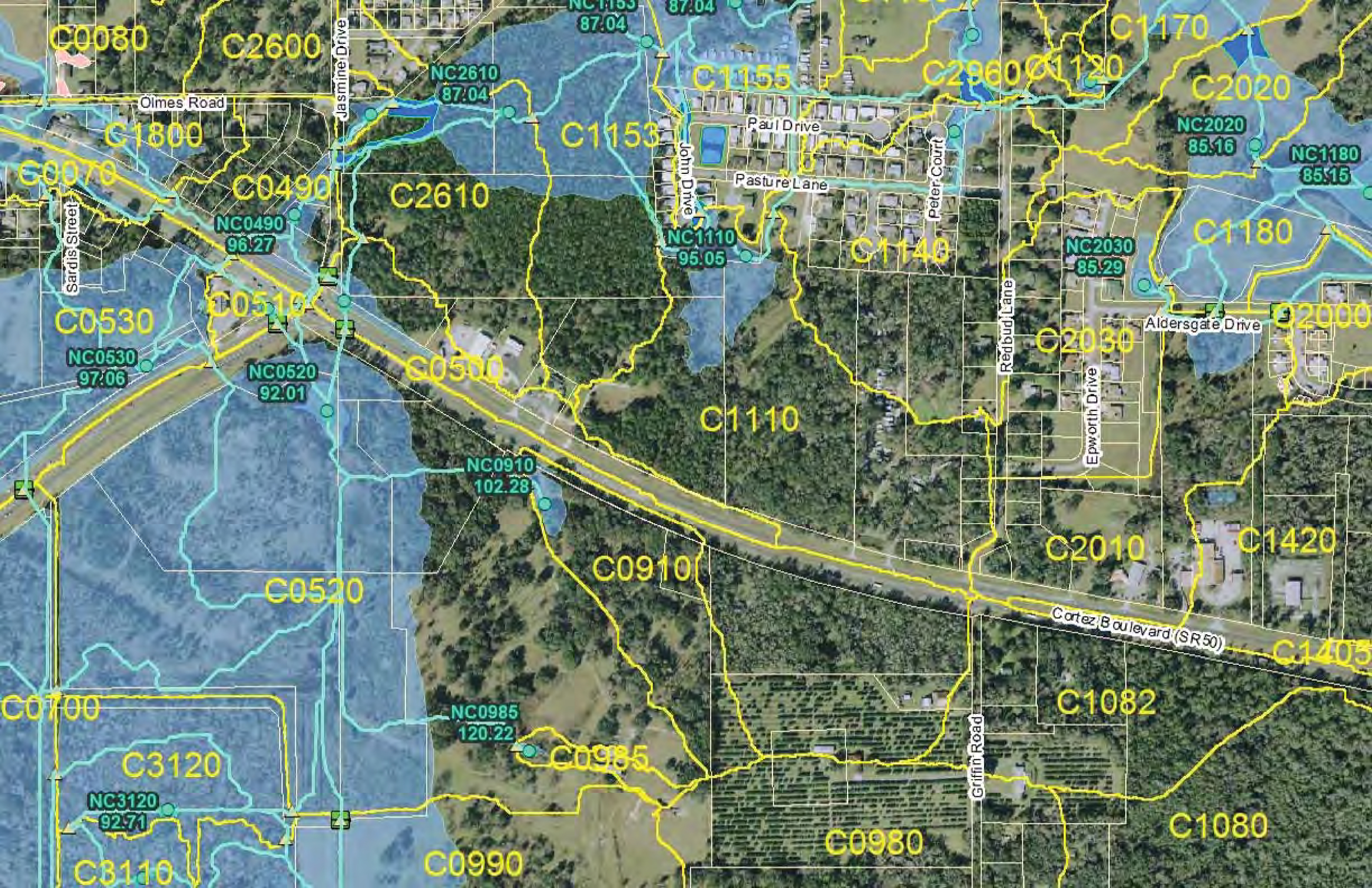
MODEL SUBBASIN ID	MODEL JUNCTION ID	SUBBASIN AREA (ACRES)	SUBBASIN PREDOMINANT LANDUSE (RESIDENTIAL, COMMERCIAL, INSTITUTIONAL, AGRICULTURAL, OPEN SPACE OTHERS)	SUBBASIN PRIMARY MODELED FLOOD FEATURE (DEPRESSION, WET POND, WETLAND, DRA, ROADSIDE SWALE)	SUBBASIN DISCHARGE CONDITIONS (CLOSED BASIN OR POSITIVE OUTFALL)	SUBBASIN INITIAL STAGE ASSUMPTION	SUBBASIN PERCOLATION INCORPORATED IN MODELING (Y OR N)	MODELED FLOODPLAIN STORM EVENT	MODELED FLOODPLAIN STORM DEPTH (INCHES)	MODELED FLOODPLAIN STORM DISTRIBUTION	SUBBASIN VERIFICATION/VALIDATION DATA AVAILABLE (YES OR NO - IF YES PROVIDE DETAILS)	FEMA ZONE (A, X500, ETC.)	FEMA ACRES (ACRES)	FEMA % OF TOTAL AREA (ACRES)	MODELED FLOODPLAIN ELEVATION (FEET NAVD)	MODELED FLOODPLAIN AREA (ACRES)	MODELED FLOODPLAIN % OF TOTAL AREA (ACRES)	MODELED FLOODPLAIN MAX DEPTH (FEET)	TRANSITIONAL (ESTIMATED) FLOODPLAIN AREA (ACRES)	TOTAL FLOODPLAIN AREA - MODELED PLUS TRANSITIONAL (ACRES)	TOTAL FLOODPLAIN % OF TOTAL AREA (ACRES)	FLOODPLAIN DIFFERENCE - MODELED MINUS FEMA (ACRES)	APPARENT FLOOD IMPACT	MODELED FLOODPLAIN REASONABLE BASED ON AVAILABLE INFORMATION?
H0210	NH0210	25.13	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	75.62	1.50	5.98%	1.45	0.00	1.50	5.98%	1.50		YES
H0220	NH0220	5.29	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	79.45	0.98	18.43%	7.41	0.00	0.98	18.43%	0.98		YES
H0230	NH0230	5.05	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.75	1.33	26.40%	2.68	0.00	1.33	26.40%	1.33		YES
H0292	NH0292	5.57	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	81.11	0.21	3.69%	1.02	0.00	0.21	3.69%	0.21		YES
H0295	NH0295	8.69	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.01	0.34	3.91%	1.11	0.00	0.34	3.91%	0.34		YES
H0300	NH0300	45.86	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	75.43	8.87	19.35%	5.29	0.27	9.15	19.94%	9.15		YES
J0020	NJ0020	65.22	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	78.64	1.38	2.11%	2.14	0.00	1.38	2.11%	1.38		YES
J0050	NJ0050	28.99	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.34	0.74	2.55%	1.48	0.00	0.74	2.55%	0.74		YES
J0055	NJ0055	6.55	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	83.97	0.37	5.72%	1.29	0.00	0.37	5.72%	0.37		YES
J0060	NJ0060	7.51	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	74.65	0.49	6.54%	1.17	0.00	0.49	6.54%	0.49		YES
J0080	NJ0080	23.69	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	94.15	0.34	1.45%	0.70	0.00	0.34	1.45%	0.34		YES
J0090	NJ0090	11.69	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	121.23	0.22	1.85%	1.21	0.00	0.22	1.85%	0.22		YES
J0100	NJ0100	37.15	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	89.15	1.19	3.21%	0.92	0.00	1.19	3.21%	1.19		YES
J0110	NJ0110	15.87	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	78.99	0.32	1.99%	1.70	0.00	0.32	1.99%	0.32		YES
J0120	NJ0120	19.80	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	74.6	0.60	3.02%	1.08	0.00	0.60	3.02%	0.60		YES
J0160	NJ0160	30.67	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	78.59	0.29	0.94%	1.06	0.00	0.29	0.94%	0.29		YES
J0162	NJ0162	5.86	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	83.94	0.19	3.27%	1.29	0.00	0.19	3.27%	0.19		YES
J0165	NJ0165	27.92	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.21	1.94	6.96%	1.21	0.00	1.94	6.96%	1.94		YES
J0170	NJ0170	78.80	Open Lands	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	57.75	1.41	1.79%	3.46	0.00	1.41	1.79%	1.41		YES
J0180	NJ0180	34.65	Forests	LAKE	CLOSED BASIN	Initial stage set to 47' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	6.60	19.04%	48.81	1.49	4.30%	7.59	0.00	1.49	4.30%	-5.11		YES
J0190	NJ0190	23.39	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	104.75	0.17	0.73%	0.73	0.00	0.17	0.73%	0.17		YES
J0195	NJ0195	6.28	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	91.26	0.40	6.44%	1.80	0.00	0.40	6.44%	0.40	HOUSE	YES
J0200	NJ0200	12.15	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	86.66	0.44	3.65%	0.87	0.00	0.44	3.65%	0.44		YES
J0210	NJ0210	7.03	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	78.94	0.44	6.21%	1.29	0.00	0.44	6.21%	0.44		YES
J0220	NJ0220	2.18	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	55.62	0.08	3.69%	2.54	0.00	0.08	3.69%	0.08		YES
J0292	NJ0292	20.25	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.49	0.24	1.19%	6.26	0.00	0.24	1.19%	0.24		YES
J0295	NJ0295	19.54	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	66.25	0.39	1.99%	1.83	0.00	0.39	1.99%	0.39		YES
J0298	NJ0298	16.36	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	68.71	0.16	0.95%	3.61	0.00	0.16	0.97%	0.16		YES
J0300	NJ0300	71.98	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	59.39	1.51	2.10%	2.52	1.15	2.66	3.70%	2.66		YES
J0310	NJ0310	7.69	Agricultural	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	56.23	0.91	11.78%	3.26	0.06	0.96	12.54%	0.96		YES
J0320	NJ0320	4.41	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	72.23	0.38	8.60%	0.94	0.00	0.38	8.60%	0.38		YES
J0330	NJ0330	7.86	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	66.89	0.34	4.30%	1.33	0.00	0.34	4.30%	0.34		YES
J0340	NJ0340	7.17	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	66.81	0.25	3.49%	0.86	0.00	0.25	3.49%	0.25		YES
J0350	NJ0350	4.91	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	63.21	0.34	6.89%	1.04	0.00	0.34	6.89%	0.34		YES
J0360	NJ0360	15.53	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	65.42	0.71	4.58%	1.21	0.00	0.71	4.58%	0.71		YES
J0400	NJ0400	8.99	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	100.02	1.30	14.49%	2.15	0.02	1.32	14.72%	1.32		YES
J0410	NJ0410	8.24	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	94.73	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
J0420	NJ0420	2.21	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	113.68	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
J0425	NJ0425	3.04	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	123.03	0.22	7.17%	0.94	0.00	0.22	7.17%	0.22		YES
J0430	NJ0430	24.85	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	106.09	0.40	1.60%	0.49	0.00	0.40	1.60%	0.40		YES
J0440	NJ0440	7.31	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	98.5	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
J0450	NJ0450	107.41	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	85.16	3.41	3.17%	5.98	2.17	5.57	5.19%	5.57		YES
J0455	NJ0455	28.82	Commercial/Industrial	DRA	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	105.14	1.27	4.40%	7.14	0.00	1.27	4.41%	1.27		YES
J0460	NJ0460	13.84	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	91.96	0.98	7.05%	1.58	0.31	1.29	9.31%	1.29		YES
J0465	NJ0465	5.02	Commercial/Industrial	DRA	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	121.29	0.56	11.24%	4.39	0.00	0.56	11.25%	0.56		YES
J0480	NJ0480	4.42	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	113.09	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
J0490	NJ0490	15.66	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	79.36	0.34	2.18%	1.15	0.00	0.34	2.18%	0.34		YES
J0500	NJ0500	20.37	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.32	0.00	0.00%	0.09	0.00	0.00	0.00%	0.00		YES
J0505	NJ0505	25.88	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.04	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
J0520	NJ0520	12.35	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	78.12	1.05	8.48%	0.73	0.00	1.05	8.48%	1.05		YES
J0540	NJ0540	14.55	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.59	0.17	1.14%	0.38	0.00	0.17	1.14%	0.17		YES
J0555	NJ0555	4.23	Commercial/Industrial	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	135.15	0.34	7.91%	11.30	0.00	0.34	7.91%	0.34		YES
J0600	NJ0600	53.02	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.81	1.14	2.15%	2.99	0.00	1.14	2.15%	1.14		YES
J0620	NJ0620	40.06	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	60.71	0.81	2.03%	1.70	0.00	0.81	2.03%	0.81		YES
J0700	NJ0700	193.23	Forests	LAKE	CLOSED BASIN	Initial stage set to 47' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	22.34	11.56%	48.81	12.58	6.51%	6.37	0.00	12.58	6.51%	-9.76		YES
K0010	NK0010	26.70	Open Lands	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.84	2.19	8.21%	2.36	0.00	2.20	8.22%	2.20	HOUSE, YARD	YES
K0050	NK0050	14.82	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	78.89	0.24	1.60%	4.87	0.12	0.36	2.42%	0.36	YARD	YES
K0060	NK0060	20.16	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.71	0.26	1.27%	0.48	0.07	0.33	1.63%	0.33		YES
K0070	NK0070	21.24	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.35	1.51	7.10%	1.00	0.00	1.51	7.10%	1.51	HOUSE	YES
K0080	NK0080	39.67	Agricultural	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	70.96	5.79	14.59%	3.98	0.00	5.79	14.59%	5.79	BUILDING	YES
K0085	NK0085	16.50	Agricultural	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.01	3.05	18.46%	2.54	0.00	3.05	18.46%	3.05	BUILDING	YES
K0090	NK0090	135.99	Agricultural	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.58	4.65	3.42%	4.65	0.00	4.65	3.42%	4.65	HOUSE	YES
K0120	NK0120	16.17	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	A High Water Elevation of 73.15' is referenced from SWFWMD HWM database. The model result of 73.58' is slightly higher in elevation. This data can be used qualitatively as an indicator of where flood stages could be expected to occur and therefore where one would consider it reasonable to have a flood hazard elevation near these levels.		0.00	0.00%	73.56	2.18	13.51%	4.63	0.00	2.18	13.51%	2.18		YES
K0130	NK0130	29.27	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	68.59	0.31	1.06%	2.49	0.00	0.31	1.06%	0.31		YES
K0150	NK0150	16.82	Agricultural	WETLAND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	126.57	0.22	1.33%	3.15	0.00	0.22	1.34%	0.22		YES
K0155	NK0155	8.14	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	112.14	0.13	1.57%	5.53	0.21	0.33	4.10%	0.33		YES
K0160	NK0160	92.15	Agricultural	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	Location is a Documented Flooding Area where a record of a flooding complaint has been logged by SWFWMD. There is an area of floodplain delineated at depression of this location. This data can be used qualitatively as an indicator of where flooding could occur and therefore where one would consider it reasonable to have a flood hazard.		0.00	0.00%	89.58	5.40	5.86%	8.35	1.02	6.42	6.96%	6.42	HOUSE	YES
K0175	NK0175	40.75	Agricultural	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.29	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0180	NK0180	58.78	Agricultural	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	72.87	0.24	0.41%	0.41	0.00	0.24	0.41%	0.24		YES
K0190	NK0190	31.14	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	81.99	0.71	2.28%	1.11	0.00	0.71	2.28%	0.71	YARD	YES
K0200	NK0200	34.82	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.15	1.00	2.88%	1.06	0.00	1.00	2.88%	1.00		YES
K0210	NK0210	20.83	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.47	0.62	2.96%	1.15	0.00	0.62	2.96%	0.62		YES
K0245	NK0245	1.53	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.07	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0250	NK0250	129.85	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	64.27	5.67	4.37%	2.67	0.95	6.63	5.10%	6.63	HOUSE, YARD	YES
K0260	NK0260	72.51	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	55.46	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0270	NK0270	11.14	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	65.4	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0280	NK0280	8.60	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	61.4	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0285	NK0285	7.03	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	60.37	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0290	NK0290	3.81	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	60.18	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
K0320	NK0320	57.88	Residential	WETLAND	CLOSED BASIN	Initial stage set to 49' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	49.56	1.39	2.40%	6.81	0.00	1.39	2.40%	1.39		YES
K0330	NK0330	27.11	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	61.04	1.51	5.57%	5.81	0.21	1.72	6.33%	1.72		YES
K0333	NK0333	6.92	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.28	0.23	3.29%	2.84	0.00	0.23	3.30%	0.23		YES

MODEL SUBBASIN ID	MODEL JUNCTION ID	SUBBASIN AREA (ACRES)	SUBBASIN PREDOMINANT LANDUSE (RESIDENTIAL, COMMERCIAL, INSTITUTIONAL, AGRICULTURAL, OPEN SPACE OTHERS)	SUBBASIN PRIMARY MODELED FLOOD FEATURE (DEPRESSION, WET POND, WETLAND, DRA, ROADSIDE SWALE)	SUBBASIN DISCHARGE CONDITIONS (CLOSED BASIN OR POSITIVE OUTFALL)	SUBBASIN INITIAL STAGE ASSUMPTION	SUBBASIN PERCOLATION INCORPORATED IN MODELING (Y OR N)	MODELED FLOODPLAIN STORM EVENT	MODELED FLOODPLAIN STORM DEPTH (INCHES)	MODELED FLOODPLAIN STORM DISTRIBUTION	SUBBASIN VERIFICATION/VALIDATION DATA AVAILABLE (YES OR NO - IF YES PROVIDE DETAILS)	FEMA ZONE (A, X500, ETC.)	FEMA ACRES (ACRES)	FEMA % OF TOTAL AREA (ACRES)	MODELED FLOODPLAIN ELEVATION (FEET NAVD)	MODELED FLOODPLAIN AREA (ACRES)	MODELED FLOODPLAIN % OF TOTAL AREA (ACRES)	MODELED FLOODPLAIN MAX DEPTH (FEET)	TRANSITIONAL (ESTIMATED) FLOODPLAIN AREA (ACRES)	TOTAL FLOODPLAIN AREA - MODELED PLUS TRANSITIONAL (ACRES)	TOTAL FLOODPLAIN % OF TOTAL AREA (ACRES)	FLOODPLAIN DIFFERENCE - MODELED MINUS FEMA (ACRES)	APPARENT FLOOD IMPACT	MODELED FLOODPLAIN REASONABLE BASED ON AVAILABLE INFORMATION?
K0336	NK0336	6.51	Commercial/Industrial	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	61.38	1.54	23.59%	1.89	0.03	1.57	24.11%	1.57		YES
K0340	NK0340	3.82	Residential	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	87.31	0.04	1.07%	0.29	0.00	0.04	1.07%	0.04		YES
K0343	NK0343	12.38	Residential	DRA	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.43	0.35	2.83%	5.26	0.00	0.35	2.85%	0.35	PARKING LOT	YES
K0346	NK0346	6.29	Commercial/Industrial	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	57.23	1.71	27.12%	3.41	0.28	1.99	31.61%	1.99	PARKING LOT	YES
K0350	NK0350	35.15	Residential	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	65.94	3.24	9.22%	2.47	0.00	3.24	9.23%	3.24		YES
K0400	NK0400	27.04	Residential	ROADSIDE SWALE	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	81.67	0.06	0.24%	2.42	0.00	0.07	0.25%	0.07		YES
K0420	NK0420	23.36	Residential	WETLAND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	64.1	0.59	2.51%	10.79	0.00	0.59	2.51%	0.59		YES
K0430	NK0430	30.18	Agricultural	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	63.52	3.14	10.39%	2.97	0.42	3.56	11.78%	3.56	ROAD, YARD	YES
K0440	NK0440	101.48	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.85	1.28	1.26%	0.82	0.00	1.28	1.26%	1.28		YES
K0500	NK0500	118.29	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	57.89	8.80	7.44%	8.87	0.49	9.28	7.85%	9.28	YARD	YES
K0501	NK0501	57.65	Open Lands	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.74	2.24	3.89%	1.28	0.00	2.24	3.89%	2.24		YES
K0510	NK0510	42.92	Residential	DRA	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	58.06	2.97	6.91%	10.60	0.00	2.97	6.91%	2.97	HOUSE, ROAD, YARD	YES
K0532	NK0532	1.21	Residential	ROADSIDE SWALE	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.75	0.03	2.15%	0.71	0.00	0.03	2.15%	0.03		YES
K0534	NK0534	1.98	Residential	ROADSIDE SWALE	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.32	0.08	3.87%	1.95	0.00	0.08	3.87%	0.08		YES
K0536	NK0536	8.81	Forests	ROADSIDE SWALE	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	94.91	0.19	2.11%	2.55	0.00	0.19	2.11%	0.19		YES
K0538	NK0538	1.15	Residential	ROADSIDE SWALE	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	94.21	0.12	10.79%	3.09	0.00	0.13	10.93%	0.13		YES
K0540	NK0540	17.62	Residential	ROADSIDE SWALE	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.51	0.04	0.21%	1.23	0.18	0.22	1.25%	0.22		YES
K0545	NK0545	11.36	Forests	ROADSIDE SWALE	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	98.77	0.00	0.00%	0.97	0.00	0.00	0.00%	0.00		YES
K0550	NK0550	40.40	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	93.41	0.44	1.09%	1.21	0.00	0.44	1.09%	0.44		YES
K0555	NK0555	5.69	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	58.74	1.19	20.85%	2.74	0.00	1.19	20.85%	1.19	HOUSE, ROAD, YARD	YES
K0560	NK0560	10.96	Residential	DRA	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	58.07	2.15	19.62%	12.53	0.00	2.15	19.62%	2.15	HOUSE, ROAD, YARD	YES
K0565	NK0565	19.40	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.77	0.14	0.71%	0.45	0.00	0.14	0.71%	0.14		YES
K0570	NK0570	33.28	Residential	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	58.07	3.68	11.05%	4.51	0.00	3.68	11.05%	3.68	HOUSE, ROAD, YARD	YES
K0590	NK0590	4.01	Residential	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	58.07	2.40	59.96%	3.76	0.00	2.40	59.96%	2.40	HOUSE, ROAD, YARD	YES
K0600	NK0600	43.75	Residential	DRA	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	Location is a Documented Flooding Area where a record of a flooding complaint has been logged by SWFWMD. There is an area of floodplain delineated at this location. This data can be used qualitatively as an indicator of where flooding could occur and therefore where one would consider it reasonable to have a flood hazard.		0.00	0.00%	56.93	1.90	4.33%	9.78	0.00	1.90	4.33%	1.90	HOUSE, ROAD, YARD	YES
K0610	NK0610	9.86	Commercial/Industrial	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	55.43	0.81	8.20%	1.48	0.00	0.81	8.20%	0.81		YES
K0620	NK0620	3.00	Open Lands	DRA	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	54.04	1.29	42.88%	3.18	0.00	1.29	42.88%	1.29		YES
K0630	NK0630	19.46	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	57.23	4.70	24.17%	3.53	0.40	5.10	26.21%	5.10		YES
K0640	NK0640	1.78	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	55.13	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0645	NK0645	2.36	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	56.13	0.01	0.62%	0.99	0.00	0.01	0.62%	0.01		YES
K0650	NK0650	79.91	Forests	WETLAND	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	54.11	3.20	4.00%	8.00	0.00	3.20	4.00%	3.20	YARD	YES
K0660	NK0660	18.42	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	51.56	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0700	NK0700	10.21	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	95.9	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0705	NK0705	1.02	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	83.08	0.00	0.04%	0.00	0.00	0.00	0.04%	0.00		YES
K0710	NK0710	105.63	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	69.97	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0720	NK0720	57.84	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	90.27	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0730	NK0730	46.08	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	88.05	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0740	NK0740	20.49	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.29	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0750	NK0750	30.04	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	83.61	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0760	NK0760	122.66	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	47.51	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0800	NK0800	11.07	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	93.35	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0805	NK0805	9.60	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	92.66	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0810	NK0810	34.91	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	85.66	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0830	NK0830	16.28	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.15	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0840	NK0840	17.80	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	68.28	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0850	NK0850	12.21	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.07	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0855	NK0855	9.33	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.64	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
K0860	NK0860	23.84	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.64	0.04	0.16%	0.14	0.00	0.04	0.16%	0.04		YES
K0870	NK0870	10.56	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	68.34	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
K0895	NK0895	26.78	Residential	DEPRESSION	CLOSED BASIN	Initial stage set to 49' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	49	0.46	1.74%	0.44	0.00	0.46	1.74%	0.46		YES
K0900	NK0900	8.87	Residential	DEPRESSION	CLOSED BASIN	Initial stage set to 48.8' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	48.8	0.50	5.60%	2.71	0.00	0.50	5.60%	0.50		YES
L0010	NL0010	14.20	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	104.9	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
L0020	NL0020	14.71	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	87.84	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
L0030	NL0030	22.11	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	99.7	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
L0040	NL0040	16.40	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	89.22	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
L0060	NL0060	40.63	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.93	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
L0070	NL0070	27.29	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	81.22	0.25	0.90%	1.43	0.00	0.25	0.90%	0.25	YARD	YES
L0100	NL0100	20.86	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	133.93	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
L0110	NL0110	46.63	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	119.6	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
L0120	NL0120	42.30	Residential	ROADSIDE SWALE	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	101.36	0.09	0.22%	2.24	0.00	0.09	0.22%	0.09		YES
L0150	NL0150	13.32	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	104.02	0.59	4.43%	1.25	0.00	0.59	4.43%	0.59	YARD	YES
L0155	NL0155	2.20	Commercial/Industrial	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	104.41	0.19	8.79%	1.38	0.00	0.19	8.79%	0.19	BUILDING	YES
L0160	NL0160	15.23	Commercial/Industrial	DRA	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	100.41	0.53	3.50%	8.73	0.00	0.53	3.50%	0.53		YES
L0170	NL0170	2.88	Commercial/Industrial	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	100.74	0.34	11.65%	3.55	0.01	0.35	12.09%	0.35	PARKING LOT	YES
L0180	NL0180	2.36	Commercial/Industrial	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	102.36	0.13	5.61%	2.99	0.00	0.13	5.63%	0.13		YES
L0190	NL0190	18.48	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.89	0.44	2.39%	1.14	0.00	0.44	2.39%	0.44		YES
L0230	NL0230	27.20	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	87.72	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
L0240	NL0240	10.18	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	81.55	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
L0252	NL0252	16.58	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.3	0.00	0.00%	0.90	0.00	0.00	0.00%	0.00		YES
L0255	NL0255	17.28	Forests	ROADSIDE SWALE	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	83.35	0.00	0.00%	1.05	0.00	0.00	0.00%	0.00		YES
L0257	NL0257	14.88	Residential	ROADSIDE SWALE	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	80.39	0.14	0.93%	2.24	0.00	0.14	0.93%	0.14		YES
L0258	NL0258	1.69	Commercial/Industrial	DRA	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	88.55	0.12	7.15%	4.43	0.00	0.12	7.15%	0.12		YES
L0260	NL0260	61.39	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.07	1.86	3.03%	2.05	0.12	1.98	3.22%	1.98	YARD	YES
L0293	NL0293	9.16	Commercial/Industrial	ROADSIDE SWALE	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	86.72	0.38	4.18%	2.45	0.00	0.38	4.18%	0.38	ROAD	YES
L0297	NL0297	2.81	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	84.46	0.13	4.56%	2.66	0.00	0.13	4.56%	0.13		YES
L0300	NL0300	39.93	Forests	ROADSIDE SWALE	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	79.06	0.53	1.33%	3.40	0.00	0.53	1.33%	0.53		YES
L0310	NL0310	25.66	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	78.82	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
L0320	NL0320	62.80	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	91.04	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
L0330	NL0330	38.49	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	92.68	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
L0340	NL0340	12.09	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	90.25	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
L0380	NL0380	43.54	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.35	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
L0390	NL0390	41.46	Agricultural	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.55	1.18	2.85%	0.94	0.00	1.18	2.85%	1.18	HOUSE	YES
L0400	NL0400	20.79	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	79.13	0.31	1.50%	0.52	0.00	0.31	1.50%	0.31		YES
L0410	NL0410	12.30	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	61.67	0.15	1.25%	0.74	0.00	0.15	1.25%	0.15		YES
L0420	NL0420	48.51	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	73.23	0.60	1.24%	0.61	0.00	0.60	1.24%	0.60		YES
L0430	NL0430	15.07	Residential	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	61.47	0.24	1.56%	0.96	0.00	0.24	1.56%	0.24		YES
L0450	NL0450	20.37	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	70.7	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
L0460	NL0460	8.46	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.65	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
L0470	NL0470	3.67	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.83	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
L0500	NL0500	14.68	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	99.22	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES

MODEL SUBBASIN ID	MODEL JUNCTION ID	SUBBASIN AREA (ACRES)	SUBBASIN PREDOMINANT LANDUSE (RESIDENTIAL, COMMERCIAL, INSTITUTIONAL, AGRICULTURAL, OPEN SPACE OTHERS)	SUBBASIN PRIMARY MODELED FLOOD FEATURE (DEPRESSION, WET POND, WETLAND, DRA, ROADSIDE SWALE)	SUBBASIN DISCHARGE CONDITIONS (CLOSED BASIN OR POSITIVE OUTFALL)	SUBBASIN INITIAL STAGE ASSUMPTION	SUBBASIN PERCOLATION INCORPORATED IN MODELING (Y OR N)	MODELED FLOODPLAIN STORM EVENT	MODELED FLOODPLAIN STORM DEPTH (INCHES)	MODELED FLOODPLAIN STORM DISTRIBUTION	SUBBASIN VERIFICATION/VALIDATION DATA AVAILABLE (YES OR NO - IF YES PROVIDE DETAILS)	FEMA ZONE (A, X500, ETC.)	FEMA ACRES (ACRES)	FEMA % OF TOTAL AREA (ACRES)	MODELED FLOODPLAIN ELEVATION (FEET NAVD)	MODELED FLOODPLAIN AREA (ACRES)	MODELED FLOODPLAIN % OF TOTAL AREA (ACRES)	MODELED FLOODPLAIN MAX DEPTH (FEET)	TRANSITIONAL (ESTIMATED) FLOODPLAIN AREA (ACRES)	TOTAL FLOODPLAIN AREA - MODELED PLUS TRANSITIONAL (ACRES)	TOTAL FLOODPLAIN % OF TOTAL AREA (ACRES)	FLOODPLAIN DIFFERENCE - MODELED MINUS FEMA (ACRES)	APPARENT FLOOD IMPACT	MODELED FLOODPLAIN REASONABLE BASED ON AVAILABLE INFORMATION?
L0550	NL0550	91.22	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	127.11	0.63	0.69%	1.92	0.00	0.63	0.69%	0.63		YES
L0570	NL0570	36.66	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	125.61	0.58	1.59%	2.57	0.00	0.58	1.59%	0.58		YES
L0600	NL0600	3.01	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	159.54	0.12	3.96%	2.18	0.00	0.12	3.96%	0.12		YES
L0625	NL0625	12.74	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	118.25	0.09	0.73%	0.88	0.00	0.09	0.73%	0.09		YES
L0630	NL0630	156.43	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	74.99	1.17	0.75%	1.11	0.00	1.17	0.75%	1.17		YES
L0650	NL0650	58.95	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	59.29	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
L0660	NL0660	56.14	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	53.42	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
L0670	NL0670	22.99	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	58.86	0.54	2.34%	1.41	0.00	0.54	2.34%	0.54		YES
L0700	NL0700	35.90	Agricultural	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	82.13	1.13	3.16%	1.44	0.00	1.13	3.16%	1.13		YES
L0720	NL0720	101.31	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.76	2.42	2.39%	2.21	0.00	2.42	2.39%	2.42		YES
L0730	NL0730	18.39	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.62	3.06	16.66%	6.21	0.00	3.06	16.66%	3.06	ROAD	YES
L0750	NL0750	3.12	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	181.64	0.41	13.14%	3.28	0.00	0.41	13.14%	0.41		YES
L0760	NL0760	6.14	Agricultural	WETLAND	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	176.95	0.94	15.37%	7.85	0.00	0.94	15.37%	0.94		YES
L0770	NL0770	3.88	Agricultural	WETLAND	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	175.81	1.05	27.07%	8.29	0.00	1.05	27.07%	1.05		YES
L0821	NL0821	22.91	Agricultural	CHANNEL	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	130.27	0.13	0.57%	1.74	0.00	0.13	0.57%	0.13		YES
L0822	NL0822	11.12	Forests	CHANNEL	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	119.82	1.23	11.05%	1.56	0.00	1.23	11.05%	1.23		YES
L0823	NL0823	14.82	Agricultural	CHANNEL	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	110.81	4.05	27.35%	1.42	0.00	4.05	27.35%	4.05	YARD	YES
L0824	NL0824	33.10	Agricultural	DEPRESSION	POSITIVE OUTFALL	Initial stage set to 47' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	102.29	4.36	13.16%	1.52	0.01	4.37	13.19%	4.37		YES
L0825	NL0825	4.21	Forests	CHANNEL	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	99.61	0.63	14.95%	3.09	0.10	0.73	17.43%	0.73		YES
L0826	NL0826	3.47	Forests	CHANNEL	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	94.08	0.94	27.00%	2.63	0.00	0.94	27.00%	0.94		YES
L0827	NL0827	2.72	Forests	CHANNEL	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	86.38	1.22	44.91%	2.43	0.00	1.22	44.91%	1.22		YES
L0828	NL0828	9.14	Forests	CHANNEL	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.93	4.11	44.99%	1.39	0.00	4.11	44.99%	4.11	ROAD	YES
L0829	NL0829	3.76	Agricultural	CHANNEL	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	71.92	3.07	81.64%	2.84	0.00	3.07	81.64%	3.07		YES
L0830	NL0830	151.27	Agricultural	WET POND	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	64.02	2.65	1.76%	7.26	0.00	2.66	1.76%	2.66	ROAD	YES
L0850	NL0850	67.10	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	85.56	0.85	1.26%	0.92	0.00	0.85	1.26%	0.85		YES
L0860	NL0860	4.46	Residential	DEPRESSION	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	79.92	0.32	7.17%	4.34	0.00	0.32	7.17%	0.32		YES
L0870	NL0870	5.56	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	111.05	0.17	2.98%	2.42	0.00	0.17	2.98%	0.17		YES
L0880	NL0880	2.60	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	97.39	0.12	4.53%	2.21	0.00	0.12	4.53%	0.12		YES
L0892	NL0892	1.44	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	110.05	0.06	3.91%	2.38	0.00	0.06	3.91%	0.06		YES
L0895	NL0895	12.89	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.62	0.58	4.51%	5.51	0.00	0.58	4.51%	0.58	ROAD	YES
L0900	NL0900	91.54	Agricultural	DEPRESSION	CLOSED BASIN	Initial stage set to 54.4' NAVD88 based on comparison of El Nino imagery and 1' LiDAR Contours	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.62	13.26	14.48%	10.37	0.05	13.31	14.54%	13.31	ROAD	YES
M0010	NM0010	5.51	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	76.52	1.64	29.73%	7.07	0.00	1.64	29.73%	1.64		YES
M0025	NM0025	2.80	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	96.5	0.20	7.03%	1.14	0.00	0.20	7.03%	0.20		YES
M0030	NM0030	12.93	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	72.29	0.44	3.44%	2.13	0.00	0.44	3.44%	0.44		YES
M0050	NM0050	17.49	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	70.89	0.33	1.87%	0.83	0.00	0.33	1.87%	0.33		YES
M0060	NM0060	46.55	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	68.79	1.13	2.43%	1.40	0.00	1.13	2.43%	1.13		YES
M0070	NM0070	33.57	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.15	0.58	1.74%	1.95	0.00	0.58	1.74%	0.58		YES
M0072	NM0072	4.54	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.79	0.25	5.43%	1.28	0.00	0.25	5.43%	0.25		YES
M0075	NM0075	1.73	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	78.44	0.18	10.41%	0.60	0.00	0.18	10.41%	0.18		YES
M0080	NM0080	13.70	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	66.51	0.46	3.35%	1.23	0.00	0.46	3.35%	0.46		YES
M0095	NM0095	9.09	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	68.65	0.52	5.72%	1.37	0.00	0.52	5.72%	0.52		YES
M0100	NM0100	14.81	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	68.54	1.21	8.17%	1.01	0.00	1.21	8.17%	1.21		YES
M0112	NM0112	3.08	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	A High Water Elevation of 62.15' is referenced from SWFWMD HWM database. The model result of 59.64' is lower in elevation. This data can be used qualitatively as an indicator of where flood stages could be expected to occur and therefore where one would consider it reasonable to have a flood hazard elevation near these levels.		0.00	0.00%	59.56	0.14	4.51%	1.34	0.00	0.14	4.51%	0.14		YES
M0115	NM0115	10.42	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	60.29	0.37	3.54%	1.22	0.00	0.37	3.54%	0.37		YES
M0120	NM0120	49.98	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	51.74	1.83	3.66%	5.72	0.00	1.83	3.66%	1.83		YES
M0125	NM0125	7.67	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	62.73	0.25	3.20%	1.17	0.00	0.25	3.20%	0.25		YES
M0130	NM0130	10.60	Forests	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	A High Water Elevation of 58.17' is referenced from SWFWMD HWM database. The model result of 59.48' is higher in elevation. This data can be used qualitatively as an indicator of where flood stages could be expected to occur and therefore where one would consider it reasonable to have a flood hazard elevation near or above these levels.		0.00	0.00%	59.46	1.54	14.50%	2.96	0.00	1.54	14.50%	1.54		YES
M0140	NM0140	4.90	Commercial/Industrial	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	68.83	0.00	0.00%	1.19	0.00	0.00	0.00%	0.00		YES
M0141	NM0141	6.79	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	70.07	0.48	7.11%	1.71	0.00	0.48	7.11%	0.48		YES
M0142	NM0142	11.18	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	67.61	0.79	7.07%	0.89	0.00	0.79	7.07%	0.79		YES
M0150	NM0150	5.32	Agricultural	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	68.02	0.24	4.56%	0.52	0.00	0.24	4.56%	0.24		YES
M0152	NM0152	1.74	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	59.03	0.06	3.34%	2.54	0.00	0.06	3.34%	0.06		YES
M0155	NM0155	23.74	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	63.76	1.39	5.86%	3.06	0.21	1.60	6.73%	1.60		YES
M0160	NM0160	34.24	Agricultural	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	64.79	1.50	4.38%	1.62	0.00	1.50	4.38%	1.50		YES
M0170	NM0170	8.46	Agricultural	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	67.22	0.55	6.44%	1.30	0.00	0.55	6.44%	0.55		YES
M0175	NM0175	8.61	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	77.17	0.63	7.35%	1.06	0.00	0.63	7.35%	0.63		YES
M0180	NM0180	24.55	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	60.35	0.73	2.98%	2.15	0.00	0.73	2.98%	0.73		YES
M0195	NM0195	23.80	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	60.55	0.76	3.18%	2.46	0.00	0.76	3.18%	0.76		YES
M0200	NM0200	14.01	Agricultural	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	58.85	0.64	4.54%	1.49	0.00	0.64	4.54%	0.64		YES
N0010	NN0010	24.63	Residential	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	107.48	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
N0030	NN0030	2.54	Commercial/Industrial	DRA	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	115.18	0.38	14.93%	3.09	0.00	0.38	14.93%	0.38		YES
N0035	NN0035	18.65	Commercial/Industrial	DRA	POSITIVE OUTFALL	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	118.59	0.91	4.89%	9.99	0.00	0.91	4.90%	0.91		YES
N0050	NN0050	12.04	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	118.86	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
N0060	NN0060	30.56	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	108.62	0.42	1.38%	1.54	0.00	0.42	1.38%	0.42		YES
N0070	NN0070	41.15	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	90.23	0.68	1.66%	1.65	0.00	0.68	1.66%	0.68		YES
N0080	NN0080	32.68	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	65.86	0.80	2.44%	3.51	0.00	0.80	2.44%	0.80		YES
N0120	NN0120	19.98	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	130.74	0.15	0.76%	1.07	0.00	0.15	0.76%	0.15		YES
N0130	NN0130	22.56	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	122.23	0.24	1.05%	0.85	0.00	0.24	1.05%	0.24		YES
N0140	NN0140	31.19	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	100.91	0.67	2.16%	1.37	0.00	0.67	2.16%	0.67		YES
N0150	NN0150	31.36	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	98.91	0.58	1.86%	1.34	0.00	0.58	1.86%	0.58		YES
N0160	NN0160	9.22	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	109.08	0.37	3.97%	1.19	0.00	0.37	3.97%	0.37		YES
N0170	NN0170	5.39	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	95.19	0.18	3.28%	1.08	0.00	0.18	3.28%	0.18		YES
N0200	NN0200	64.17	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	85.99	1.28	1.99%	1.94	0.00	1.28	1.99%	1.28		YES
N0220	NN0220	6.15	Residential	DEPRESSION	POSITIVE OUTFALL	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	102.89	0.11	1.73%	2.35	0.00	0.11	1.73%	0.11		YES
N0230	NN0230	1.89	Commercial/Industrial	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	101.02	0.14	7.33%	2.78	0.00	0.14	7.33%	0.14		YES
N0240	NN0240	3.05	Agricultural	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	110.67	0.21	6.87%	1.13	0.00	0.21	6.87%	0.21	YARD	YES
N0250	NN0250	4.69	Commercial/Industrial	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	99.61	0.15	3.28%	4.55	0.00	0.15	3.28%	0.15		YES
N0270	NN0270	3.31	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	113.83	0.00	0.01%	0.00	0.00	0.00	0.01%	0.00		YES
N0280	NN0280	10.05	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	111.02	0.02	0.24%	0.13	0.00	0.02	0.24%	0.02		YES
N0300	NN0300	5.36	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	105.01	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00		YES
N0320	NN0320	6.20	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	99.76	0.12	1.99%	0.26	0.00	0.12	1.99%	0.12		YES
N0395	NN0395	2.35	Agricultural	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	112.66	0.00	0.02%	0.02	0.00	0.00	0.02%	0.00		YES
N0400	NN0400	159.68	Forests	DEPRESSION	CLOSED BASIN	DRY	Y	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	65.86	5.10	3.20%	5.70	2.43	7.53	4.72%	7.53		YES
P0020	NP0020	12.02	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	85.18	0.24	1.98%	1.14	0.00	0.24	1.98%	0.24		YES
P0030	NP0030	12.67	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO		0.00	0.00%	79.12	0.46	3.59%	0.99	0.00	0.46	3.59%	0.46		YES
P0040	NP0040	62.78	Forests	DEPRESSION	CLOSED BASIN	DRY	N	100 YR / 24 HR	12.4	SCS II FLMOD	NO	A	4.95	7.89%	50.16	1.53	2.43%	4.44	0.00	1.53	2.43%	-3.42		YES

APPENDIX G

Bystre Lake and Croom Watersheds
Nodal Diagrams and Contours



C0080
C2600
Jasmine Drive
NC2610
87.04
C1155
C2960
C1120
C1170
C2020
Olmes Road
C1800
C1153
Paul Drive
John Drive
Peter Court
NC2020
85.16
NC1180
85.15
C0070
C0490
C2610
Pasture Lane
Sardis Street
NC0490
96.27
NC1110
95.05
C1140
NC2030
85.29
C1180
C0530
C0510
Redbud Lane
Aldersgate Drive
C2000
C2030
NC0530
97.06
NC0520
92.01
C0500
Epworth Drive
C1110
NC0910
102.28
C0910
C2010
C1420
C0520
Cortez Boulevard (SR 50)
C1405
C0700
NC0985
120.22
C1082
C3120
C0985
Griffin Road
NC3120
92.71
C1080
C0980
C3110
C0990

C2000
NC1420
85.08
C1440
C2010
C1420
NC1410
85.08
C1410
A2040
C1405
NC1405
85.08
C1082
C1490
NC1082
88.91
Cortez Boulevard (SR50)
Irwin Street
Singer Lane
?near singer lane
NC1080
92.58
C1400
Landsdale Street
NC1345
77.48
C1480
C1390
NC1480
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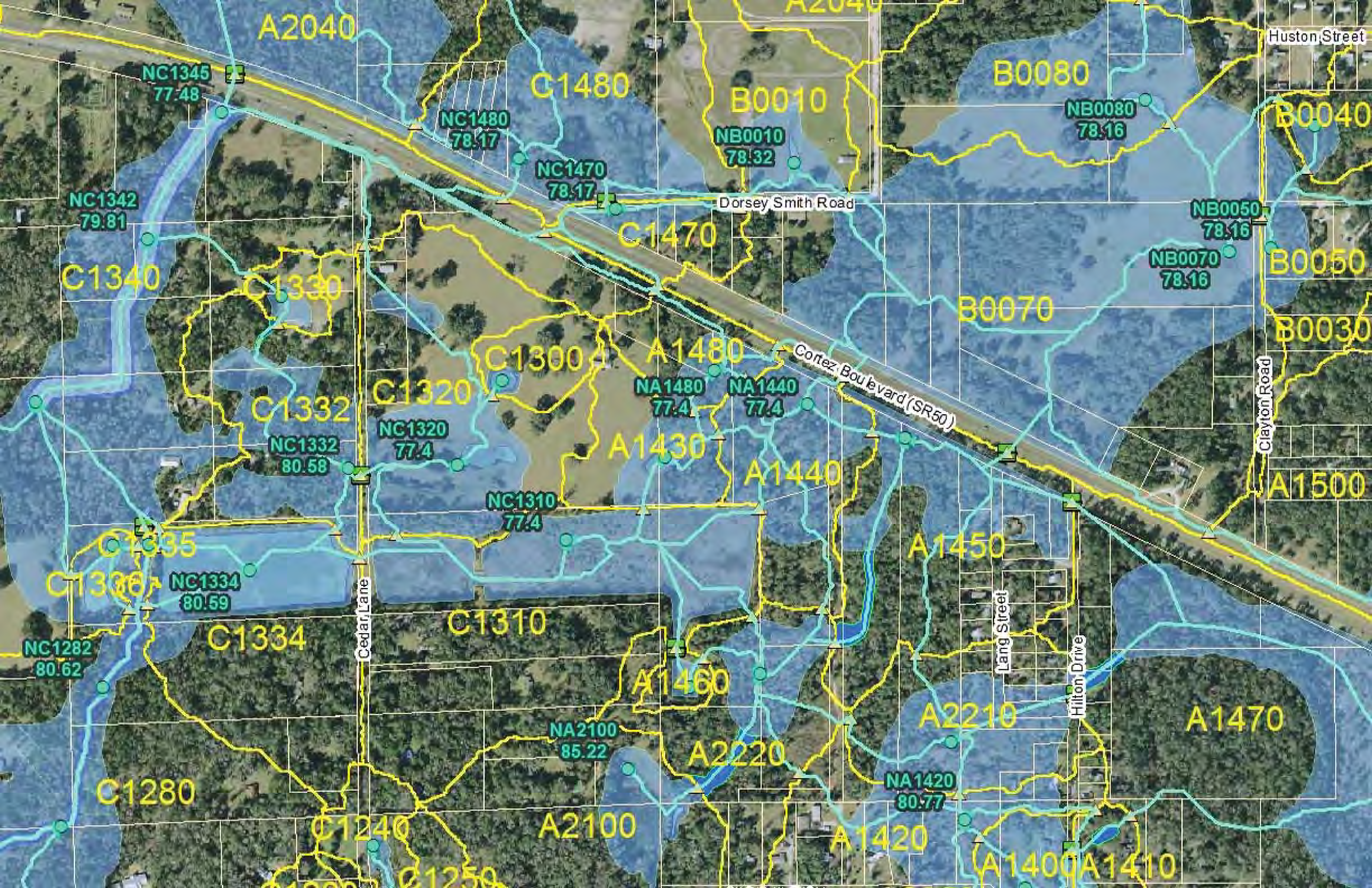

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NC1470
78.17
Dorsey Smith Road
NC1342
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NB0050
78.16
C1470
NB0070
78.16
B0050
C1340
C1330
B0070
B0030
C1300
A1480
Cortez Boulevard (SR50)
NA1480
77.4
NA1440
77.4
C1332
C1320
NC1320
77.4
Clayton Road
NC1332
80.58
A1430
A1440
A1500
NC1310
77.4
C1335
A1450
C1336
NC1334
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Cedar Lane
C1310
Lang Street
NC1282
80.62
C1334
Hilton Drive
A1460
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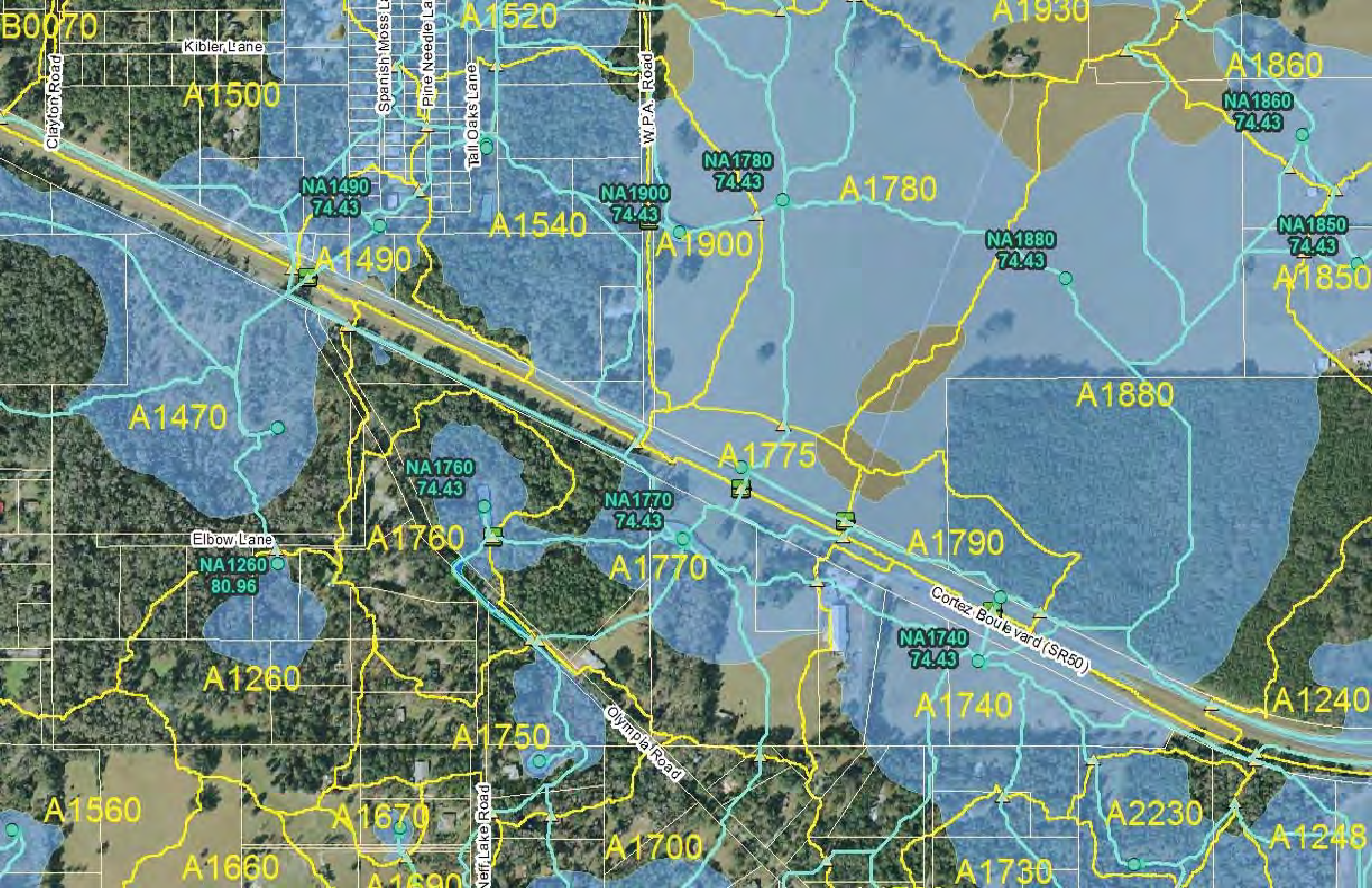
A1410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Pine Needle Ln
Tall Oaks Lane
W.P.A. Road
Clayton Road
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A1500
NA1860
74.43
NA1780
74.43
NA1490
74.43
NA1900
74.43
A1780
A1540
A1900
NA1850
74.43
NA1880
74.43
A1490
A1850
A1880
A1470
A1775
NA1760
74.43
NA1770
74.43
A1790
Elbow Lane
A1760
NA1260
80.96
A1770
Cortez Boulevard (SR50)
NA1740
74.43
A1260
A1740
A1240
A1750
Olympia Road
A1560
A1670
Neff Lake Road
A2230
A1248
A1700
A1660
A1730

A1850
A1880
A1790
A1240
A1230
Bertram Road
NA1230
67.09
A1220
Mott Avenue
Mott Avenue
A1250
A1210
Raley Road
NA1220
67.21
NA1250
71
A1740
Frampton Avenue
Cortez Boulevard (SR50)
Attica Avenue
A2230
NA2230
74.43
Ogburn Street
A1200
NA1730
74.43
Seidel Street
A1730
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Rolling Acres Drive
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Spring Lake Hwy (CR541)
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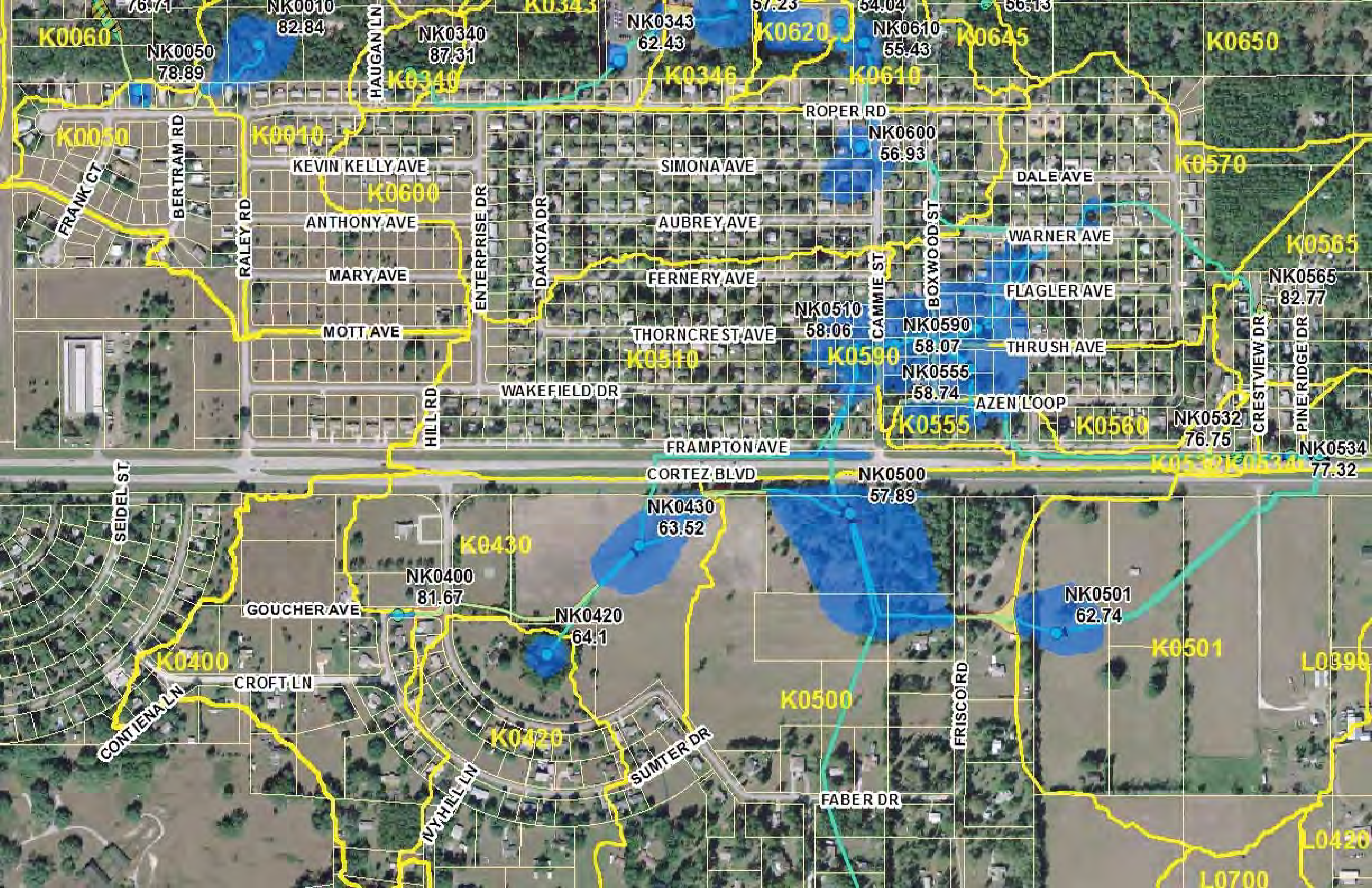

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NK0050
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HAUGAN LN
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NK0610
55.43
K0645
K0650
K0340
K0346
K0610
ROPER RD
K0050
BERTRAM RD
K0010
NK0600
56.93
KEVIN KELLY AVE
SIMONA AVE
K0570
DALE AVE
K0600
FRANK CT
RALEY RD
ENTERPRISE DR
DAKOTA DR
ANTHONY AVE
AUBREY AVE
BOXWOOD ST
WARNER AVE
K0565
MARY AVE
FERNERY AVE
CAMMIE ST
FLAGLER AVE
NK0565
82.77
NK0510
58.06
NK0590
58.07
MOTT AVE
THORNCREST AVE
THRUSH AVE
CRESTVIEW DR
PINE RIDGE DR
K0510
K0590
NK0555
58.74
WAKEFIELD DR
AZEN LOOP
HILL RD
K0555
K0560
NK0532
76.75
NK0534
77.32
FRAMPTON AVE
CORTEZ BLVD
NK0500
57.89
SEIDEL ST
NK0430
63.52
K0430
NK0400
81.67
GOUCHER AVE
NK0420
64.1
NK0501
62.74
K0501
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CONTIENA LN
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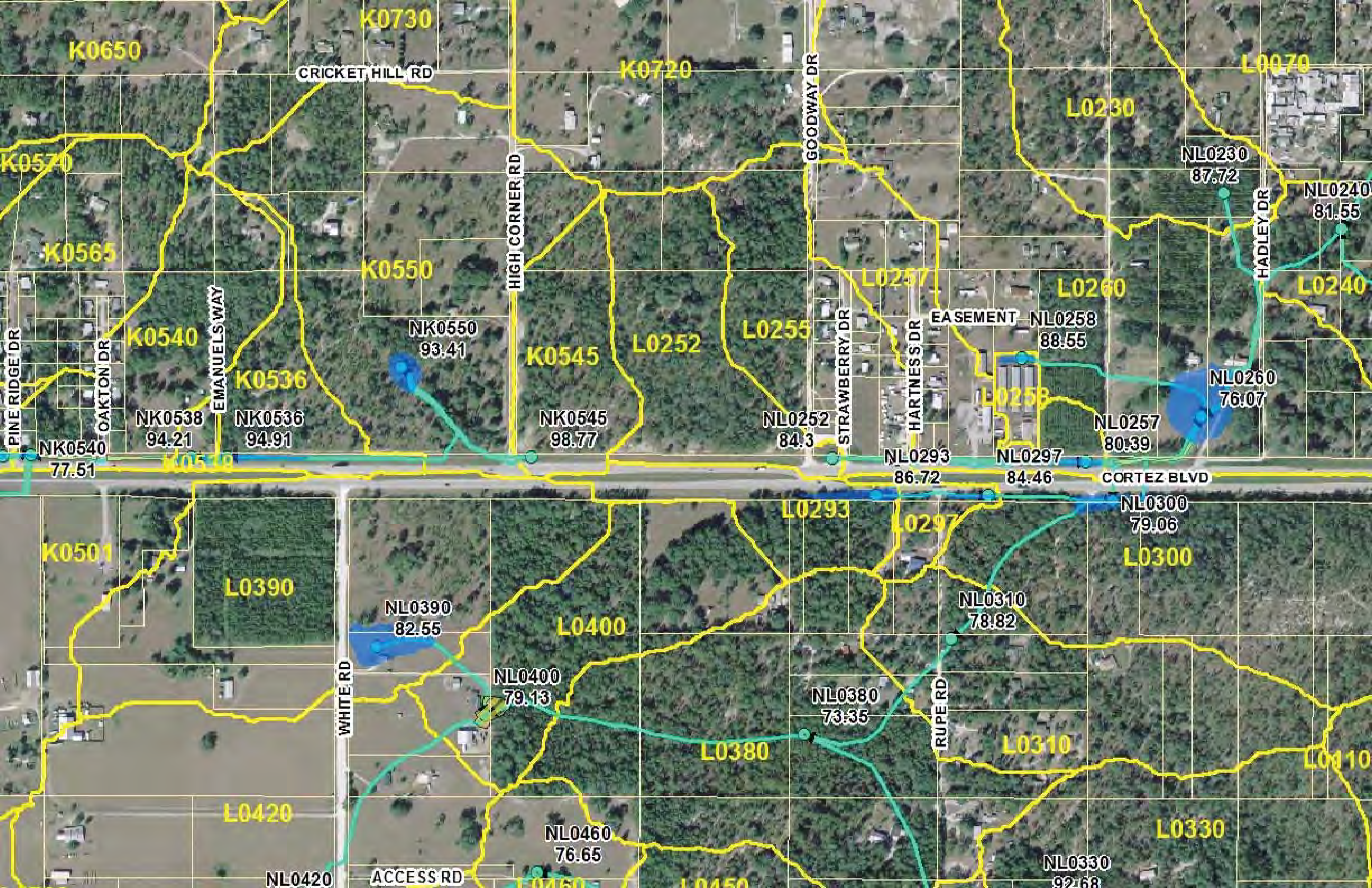
SUMTER DR
FABER DR
IVY HILL LN
L0420
L0700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K0650
CRICKET HILL RD
K0720
GOODWAY DR
L0070
L0230
K0570
HIGH CORNER RD
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87.72
NL0240
81.55
HADLEY DR
K0565
K0550
L0257
L0260
L0240
EMANUELS WAY
PINE RIDGE DR
OAKTON DR
K0540
NK0550
93.41
K0545
L0252
L0255
STRAWBERRY DR
HARTNESS DR
EASEMENT
NL0258
88.55
K0536
NL0260
76.07
L0258
NK0538
94.21
NK0536
94.91
NK0545
98.77
NL0252
84.3
NL0257
80.39
NK0540
77.51
K0538
NL0293
86.72
NL0297
84.46
CORTEZ BLVD
NL0300
79.06
L0293
L0297
K0501
L0300
L0390
NL0390
82.55
L0400
NL0310
78.82
WHITE RD
NL0400
79.13
NL0380
73.35
RUPE RD
L0380
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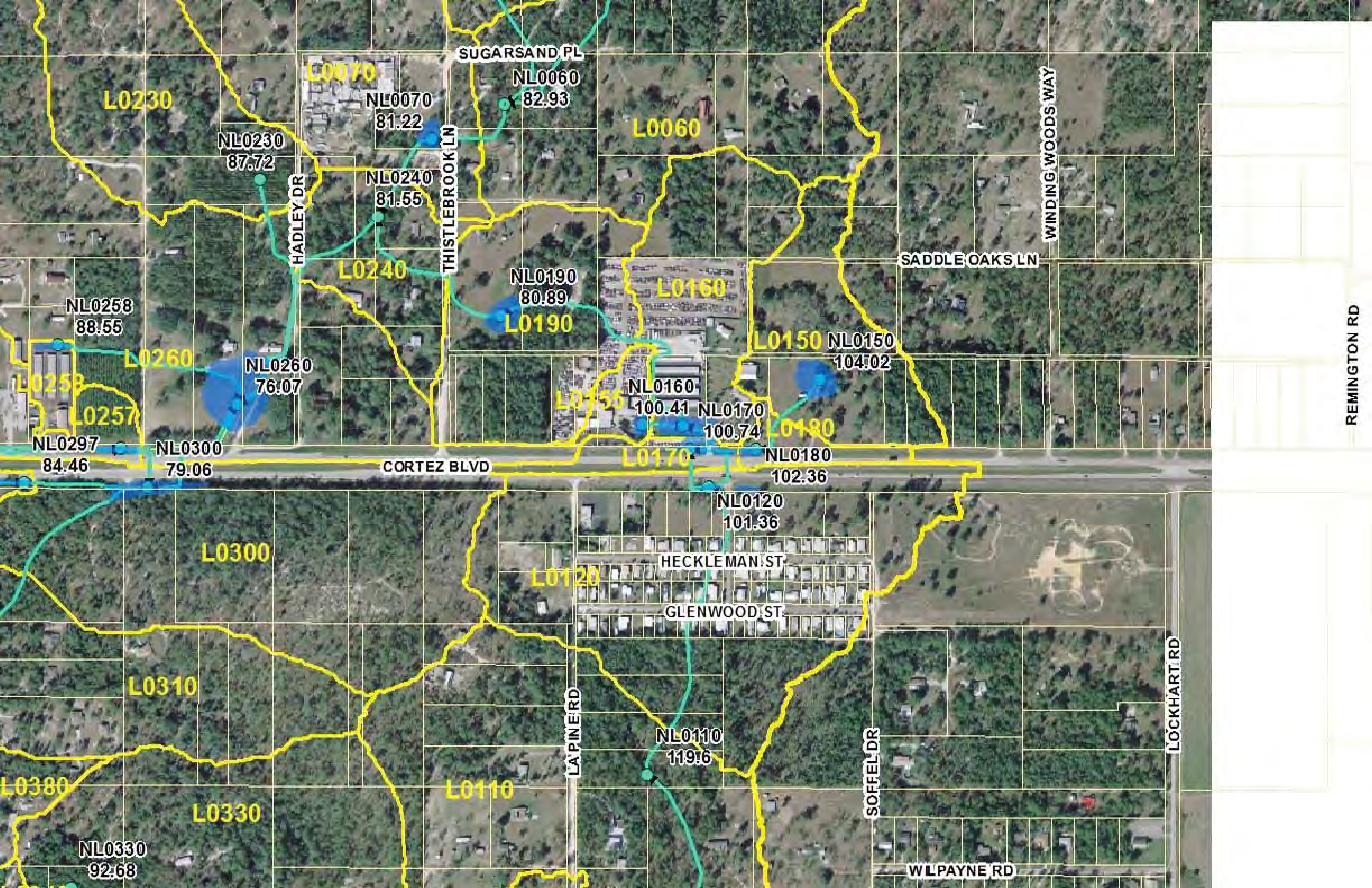
NL0330
92.68
NL0420
ACCESS RD
L0460
L0450



SUGARSAND PL
L0070
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82.93
L0230
NL0070
81.22
L0060
NL0230
87.72
NL0240
81.55
HADLEY DR
THISTLEBROOK LN
WINDING WOODS WAY
SADDLE OAKS LN
L0240
NL0190
80.89
L0160
NL0258
88.55
L0190
L0150
NL0150
104.02
L0260
NL0260
76.07
L0258
L0155
NL0160
100.41
NL0170
100.74
L0257
L0180
REMINGTON RD
NL0297
84.46
NL0300
79.06
L0170
NL0180
102.36
CORTEZ BLVD
NL0120
101.36
L0300
HECKLEMAN ST
L0120
GLENWOOD ST
L0310
LAPINE RD
NL0110
119.6
LOCKHART RD
SOFFEL DR
L0380
L0110
L0330
NL0330
92.68
WILPAYNE RD

Range Lane
Olmes Road
NC2600
93.95
NC2610
87.04
NC1120
88.54
Landay Street
Paul Drive
NC1140
90.03
NC2020
85.16
Live Oak Drive
Jasmine Drive
John Drive
Pasture Lane
Peter Court
Sardis Street
Jefferson Street (SR50A)
NC1110
95.05
Redbud Lane
NC2030
85.29
NC0500
96.27
NC0510
94.5
NC0530
97.06
Aldersgate
Epworth Drive
Cortez Boulevard (SR50)
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NC0910
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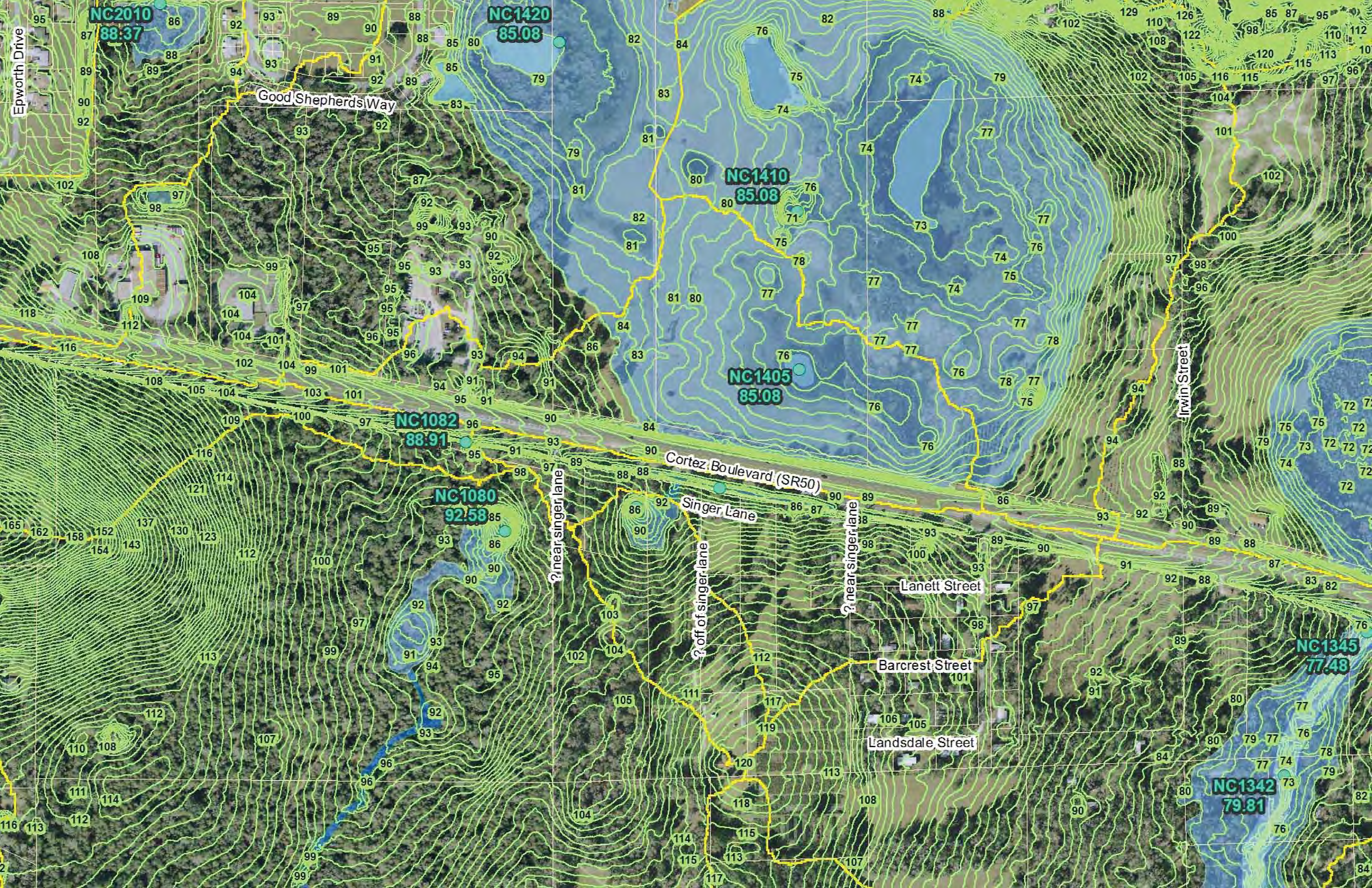
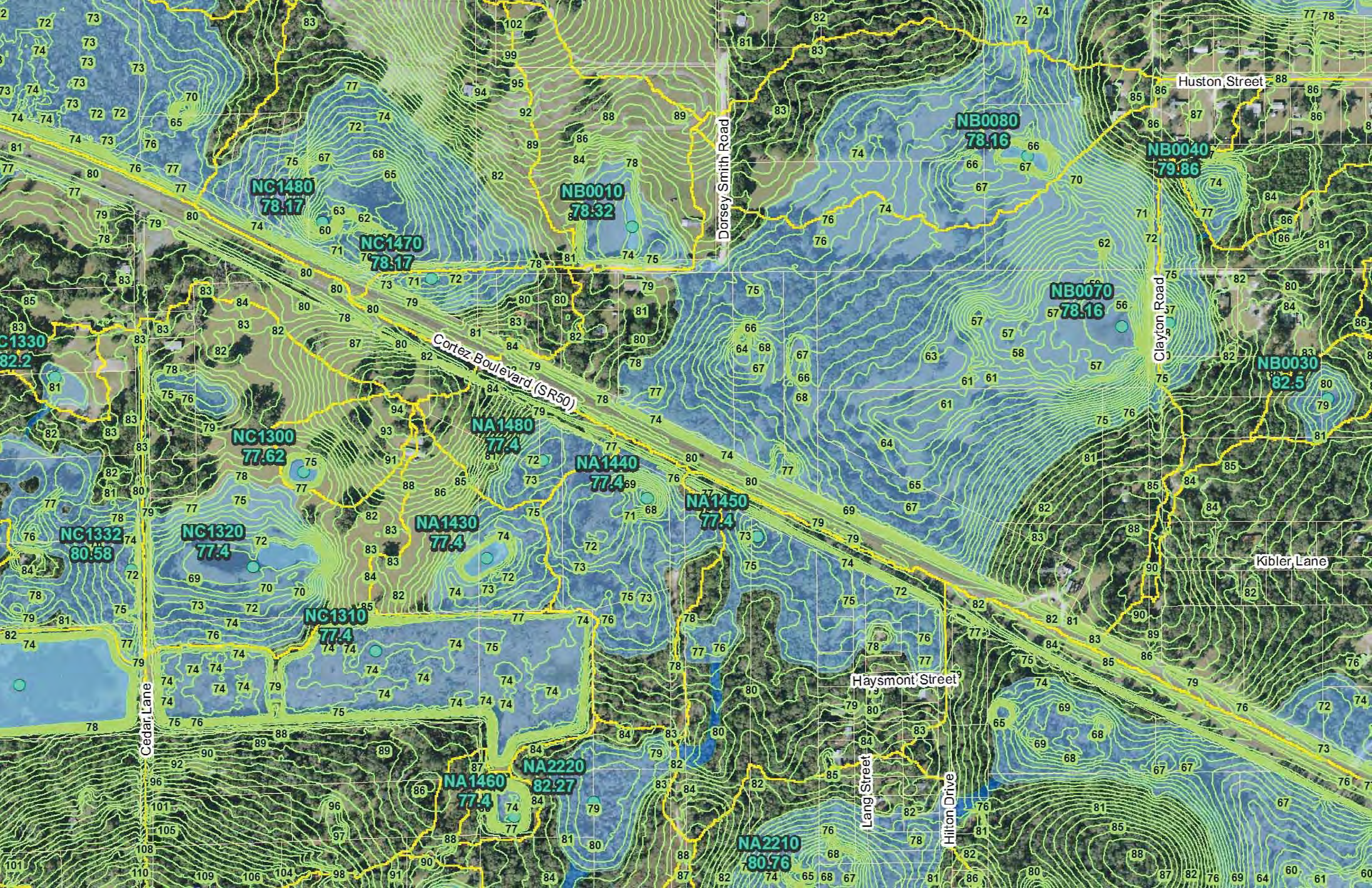
120.22
NC3120
92.71
Griffin Road



Epworth Drive
NC2010
88.37
NC1420
85.08
Good Shepherds Way
NC1410
85.08
NC1405
85.08
NC1082
88.91
Cortez Boulevard (SR50)
Singer Lane
NC1080
92.58
? near singer lane
? off of singer lane
? near singer lane
Lanett Street
Barcrest Street
Landsdale Street
Irwin Street
NC1345
77.48
NC1342
79.81



Huston Street
Dorsey Smith Road
Clayton Road
Cortez Boulevard (SR50)
Kibler Lane
Haysmont Street
Cedar Lane
Lang Street
Hilton Drive
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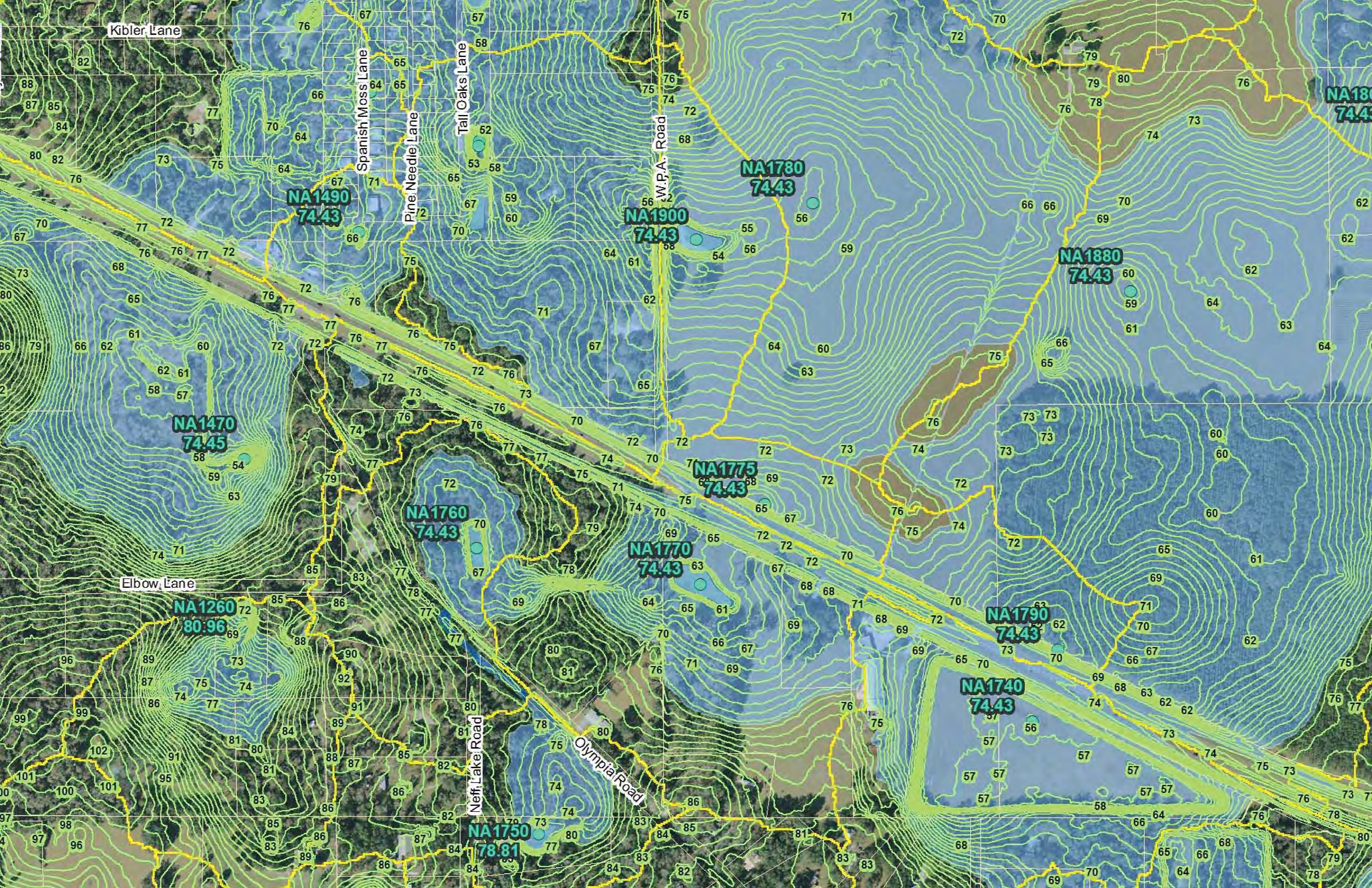

Kibler Lane
Spanish Moss Lane
Pine Needle Lane
Tall Oaks Lane
W.P.A. Road
Elbow Lane
Olympia Road
Neff Lake Road
NA1490 74.43
NA1780 74.43
NA1900 74.43
NA1880 74.43
NA1470 74.45
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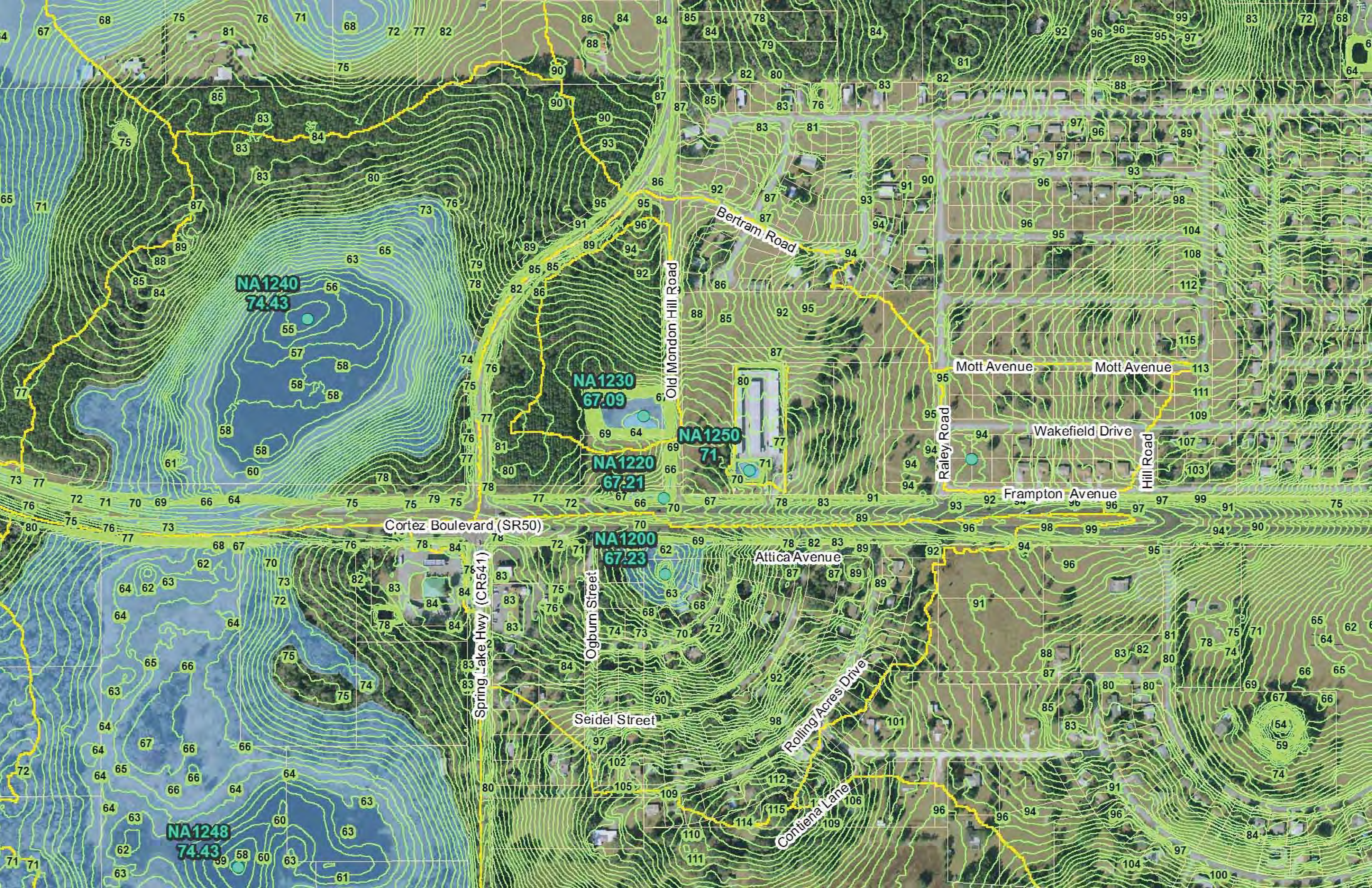
NA1770 74.43
NA1260 80.96
NA1790 74.43
NA1740 74.43
NA1750 78.81



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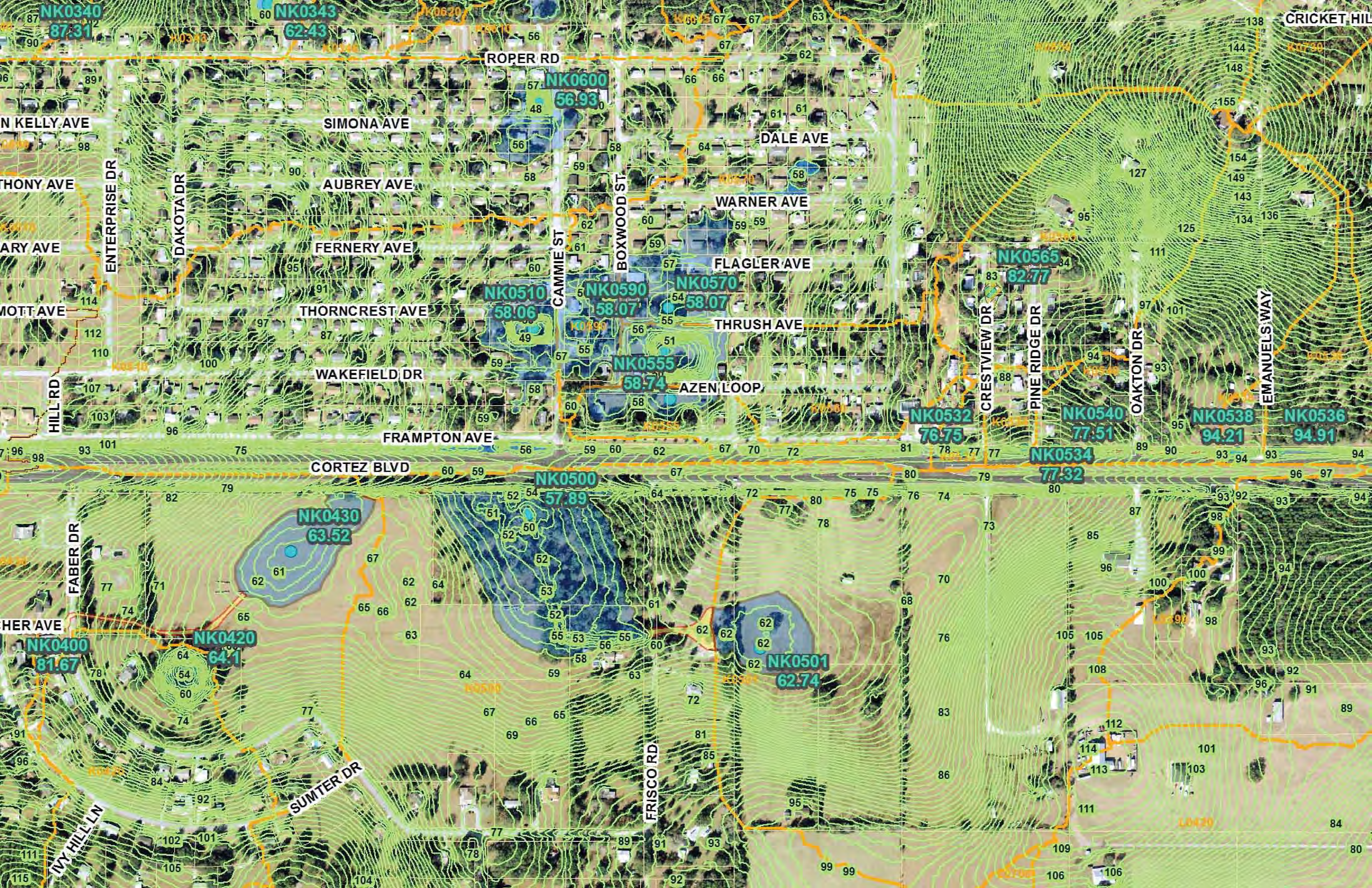
74.43
NA1230
67.09
NA1250
71
NA1220
67.21
NA1200
67.23
NA1248
74.43
Bertram Road
Old Mondon Hill Road
Mott Avenue
Mott Avenue
Wakefield Drive
Raley Road
Hill Road
Frampton Avenue
Cortez Boulevard (SR50)
Attica Avenue
Spring Lake Hwy (CR541)
Ogburn Street
Seidel Street
Rolling Acres Drive
Contiena Lane



NK0340
87.31
NK0343
62.43
ROPER RD
CRICKET HIL
NK0600
56.93
N KELLY AVE
SIMONA AVE
DALE AVE
THONY AVE
AUBREY AVE
WARNER AVE
ARY AVE
FERNERY AVE
FLAGLER AVE
ENTERPRISE DR
DAKOTA DR
CAMMIE ST
BOXWOOD ST
NK0565
82.77
NK0510
58.06
NK0590
58.07
NK0570
58.07
MOTT AVE
THORNCREST AVE
THRUSH AVE
WAKEFIELD DR
NK0555
58.74
AZEN LOOP
HILL RD
CRESTVIEW DR
PINE RIDGE DR
OAKTON DR
EMANUELS WAY
NK0532
76.75
NK0540
77.51
NK0538
94.21
NK0536
94.91
FRAMPTON AVE
NK0534
77.32
CORTEZ BLVD
NK0500
57.89
NK0430
63.52
FABER DR
HER AVE
NK0420
64.1
NK0400
81.67
NK0501
62.74
SUMTER DR
FRISCO RD
IVY HILL LN

CRICKET HILL RD
SUGARSAND PL
HIGH CORNER RD
GOODWAY DR
STRAWBERRY DR
HARTNESS DR
EASEMENT
HADLEY DR
THISTLEBROOK LN
CORTEZ BLVD
RUPE RD
LA PINE RD
NL0060
82.93
NL0070
81.22
NL0230
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80.89
NK0550
93.41
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80.39
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86.72
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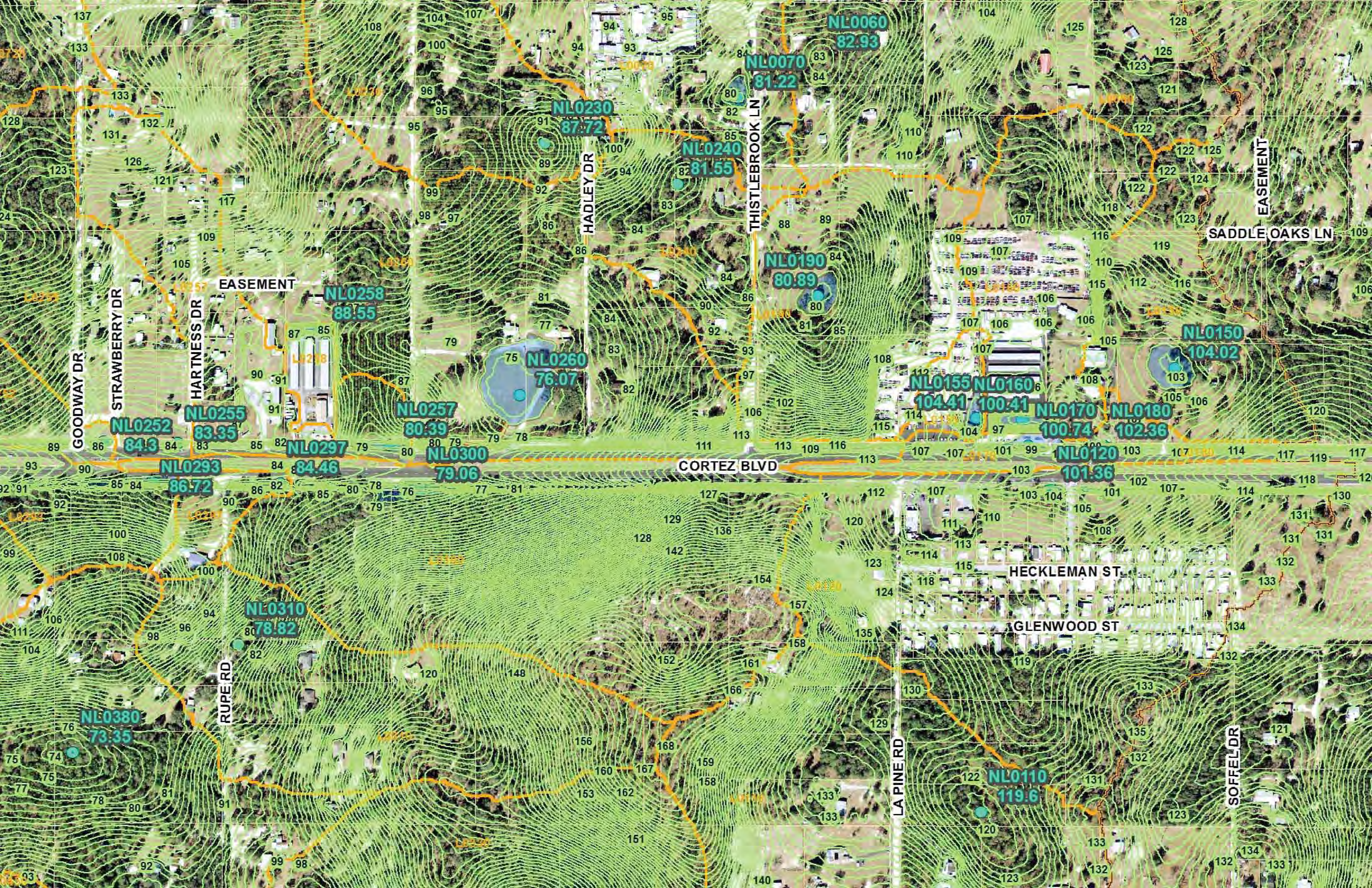

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NL0255 83.35
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NL0293 86.72
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NL0120 101.36
NL0310 78.82
NL0380 73.35
NL0110 119.6
HADLEY DR
THISTLEBROOK LN
EASEMENT
SADDLE OAKS LN
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STRAWBERRY DR
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LA PINE RD
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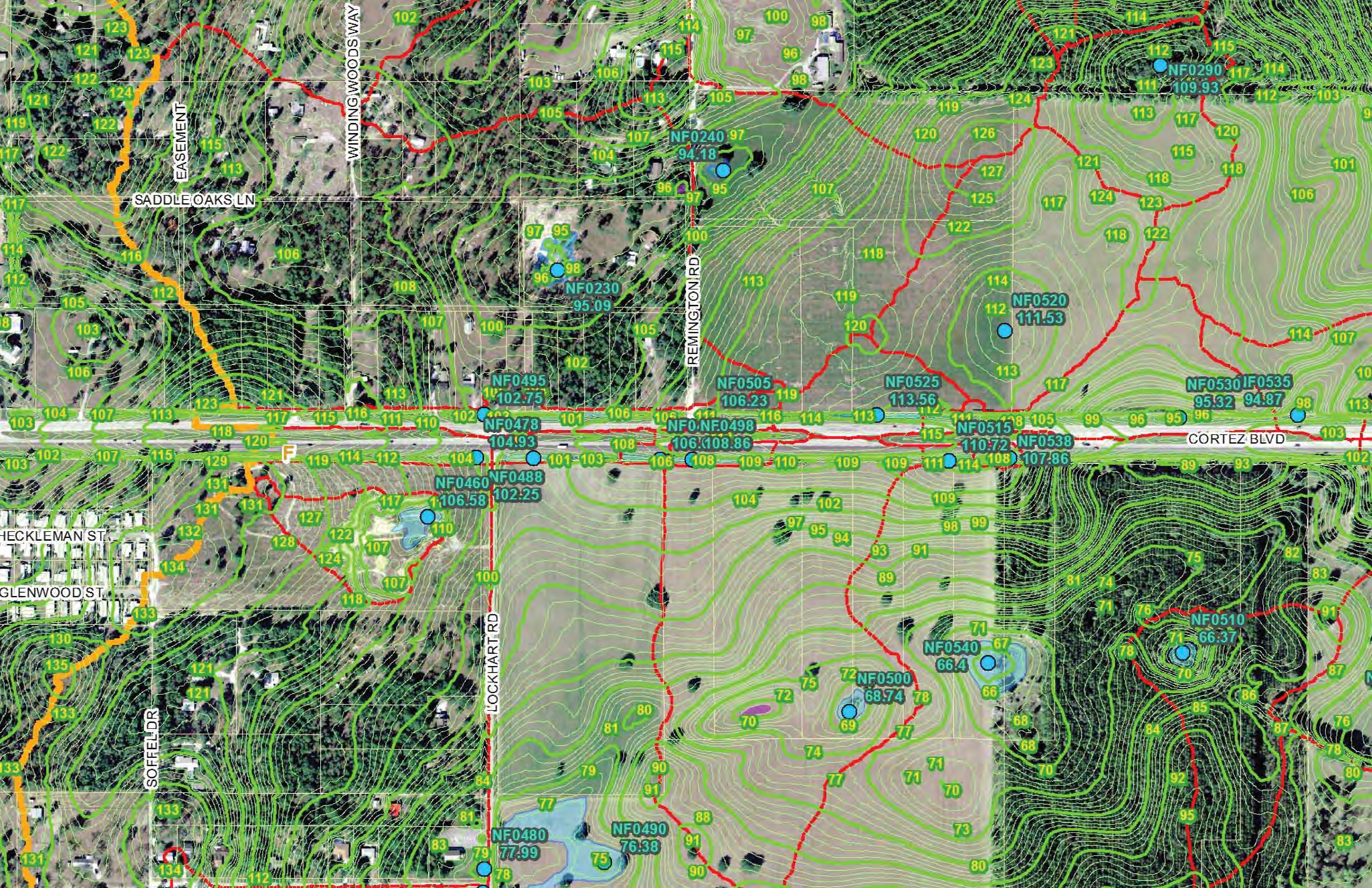

WINDING WOODS WAY
EASEMENT
SADDLE OAKS LN
REMINGTON RD
CORTEZ BLVD
LOCKHART RD
HECKLEMAN ST
GLENWOOD ST
SOFFEL DR
NF0290 109.93
NF0240 94.18
NF0230 95.09
NF0520 111.53
NF0495 102.75
NF0505 106.23
NF0525 113.56
NF0530 95.32
NF0535 94.87
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NF0515 110.72
NF0538 107.86
NF0460 106.58
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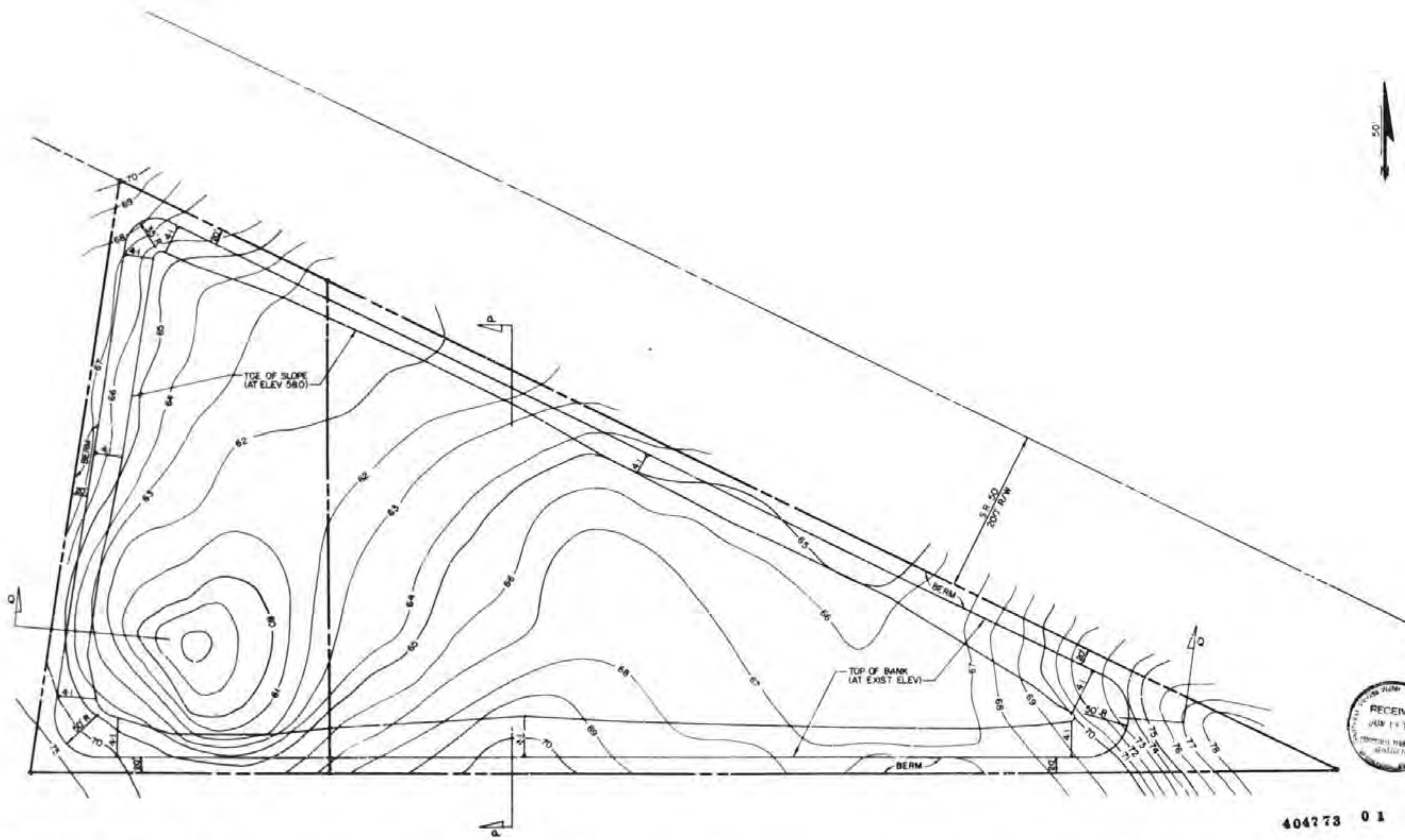
APPENDIX H

ERP: #4773.001

08050-3511	22A



404773 01

POST, BUCKLEY, SCHUH & JERNIGAN
ENGINEERING · PLANNING · ARCHITECTURE

SK/RR	6-94		CW/MA	6-94
MAI	6-94		RR	6-94

MARK A. ISAAK, P.E.

FLORIDA DEPARTMENT OF TRANSPORTATION

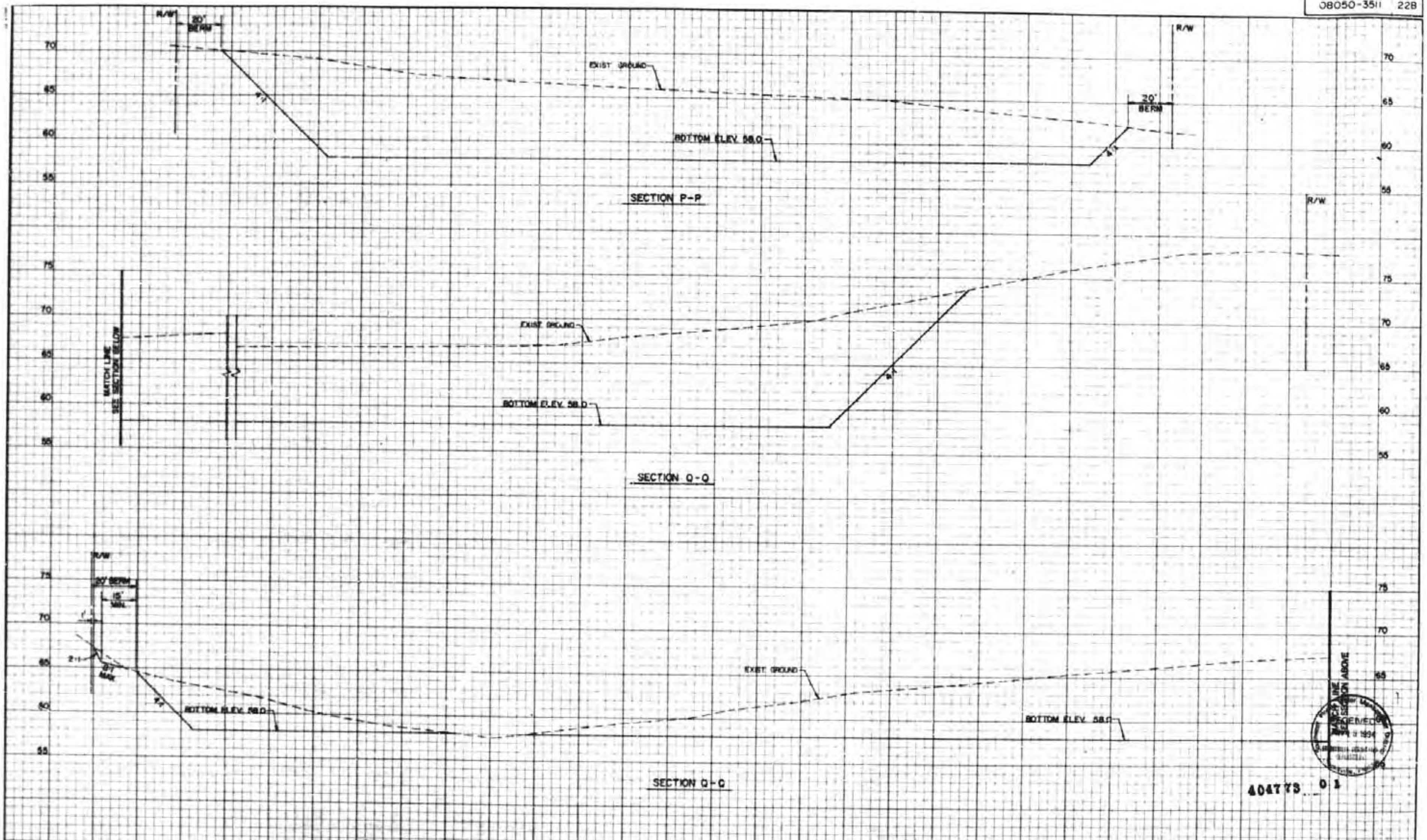
APPROVED BY:

DATE:

FLOODPLAIN COMPENSATION SITES

23

STATE PROJECT NO.	SHEET NO.
08050-3511	228



REVISIONS

FLORIDA DEPARTMENT OF TRANSPORTATION

FLOODPLAIN COMPENSATION SITES 24

PERMIT NO. 404773.01

SWFWMD ENGINEERING WORKSHEET
FOR FLOODPLAIN COMPENSATION SITES

Page 1 of 1

PERMIT NAME SR 50 IMPROVEMENTS, SECTIONS 6 & 7

					TOTALS	
BASIN NO. - POND NO.	0 OR C	302	302	409		1
POND DATA	POND BOTTOM ELEVATION	74.0	75.0	58.0		
POND DATA	SEASONAL HIGH WATER ELEVATION	74.0[1]	75.0[1]	58.0[1]		
POND DATA	CONTROL DEVICE ELEVATION	N/A	N/A	N/A		
POND DATA	DESIGN LOW WATER ELEVATION	N/A	N/A	N/A		
POND DATA	WEIR INVERT ELEVATION	N/A	N/A	N/A		
POND DATA	DESIGN HIGH WATER ELEVATION (100 yr/24 hr)	80.03	79.83	75.90		
POND DATA	TOP OF BANK ELEVATION	Existing Grnd.-Varies	85.0	Existing Grnd.-Varies		
POND DATA	AREA AT TOP OF BANK (AC)	8.4	4.6	1.5	14.50	2
POND DATA	VOLUME AT DHW (AC-FT)	61.0*	60.2*	33.2*		
POND DATA	VOLUME AT TOB (AC-FT)	*Additional volume added to SWMM Model within listed subbasin				
QUANTITY – 25YR/24HR DISCHARGE RATES	WEIR WIDTH (FT)	Not applicable - Closed Basin criteria applies				
QUANTITY – 25YR/24HR DISCHARGE RATES	PRE-DEVELOPED (CFS)					
QUANTITY – 25YR/24HR DISCHARGE RATES	POST-DEVELOPED (CFS)					
QUANTITY – 100YR/24HR RETENTION VOLUMES	PROVIDED (AC-FT)	See 100-Yr. floodplain data shown below				
QUANTITY – 100YR/24HR RETENTION VOLUMES	REQUIRED (AC-FT)					
QUALITY	TREATMENT AREA (AC) OFW? Y OR N					
QUALITY	TREATMENT VOL. REQUIRED (AC-FT)	See SWFWMD engineering worksheets for roadside swale treatment data.				
QUALITY	TREATMENT VOL. PROVIDED (AC-FT)					
QUALITY	METHOD OF TREATMENT	[illegible]				3
QUALITY	CONTROL DEVICE TYPE					
QUALITY	CONTROL DEVICE DIMENSIONS					
QUALITY	RECOVERY TIME (HRS)					
100 YEAR FLOODPLAIN	ENCROACHMENT (AC-FT)	68.64 AF for entire project			68.64	4
100 YEAR FLOODPLAIN	COMPENSATION (AC-FT)	61.0	60.2	33.2	154.40	5

Comments:

Evaluator:

Supervisor:

62

Rev. 8/9/91

[1] Existing low ground elevation

BASIN 102		BASIN 302		BASIN 409	
ELEVATION	ACRES	ELEVATION	ACRES	ELEVATION	ACRES
74.0	4.0	72.0	9.0	58.0	11.4
75.0	11.2	74.0	9.0	60.0	11.3
76.0	11.4	76.0	11.6	62.0	10.0
77.0	11.6	77.0	11.8	65.0	5.5
78.0	10.7	78.0	11.3	66.0	1.5
79.0	9.9	79.0	9.7		
80.0	8.4	80.0	4.6		

PBSJ POST, BUCKLEY, SCHUH & JERNIGAN, INC.

STORAGE COMPENSATION FOR MODEL

TABLE 3-6 277

25 . 10

APPENDIX I

Preliminary Cultural Resource Assessment Probability Analysis Technical Memorandum

PRELIMINARY CULTURAL RESOURCE ASSESSMENT PROBABILITY ANALYSIS TECHNICAL MEMORANDUM

PROPOSED STORMWATER MANAGEMENT FACILITIES (SMF) & FLOODPLAIN COMPENSATION (FPC) SITES STATE ROAD (SR) 50 FROM BROOKSVILLE/SR 50A/ JEFFERSON STREET TO I-75 HERNANDO COUNTY, FLORIDA

Financial Project ID No.: 430051-1-22-01

Prepared for:

Florida Department of Transportation
District Seven
11201 North McKinley Drive
Tampa, Florida 33612-6456

January 2019

PRELIMINARY CULTURAL RESOURCE ASSESSMENT PROBABILITY ANALYSIS TECHNICAL MEMORANDUM

PROPOSED STORMWATER MANAGEMENT FACILITIES (SMF) & FLOODPLAIN COMPENSATION (FPC) SITES STATE ROAD (SR) 50 FROM BROOKSVILLE/SR 50A/ JEFFERSON STREET TO I-75 HERNANDO COUNTY, FLORIDA

Financial Project ID No.: 430051-1-22-01

Prepared for:

Florida Department of Transportation
District Seven
11201 North McKinley Drive
Tampa, Florida 33612-6456

Prepared by:

Archaeological Consultants, Inc.
8110 Blaikie Court, Suite A
Sarasota, Florida 34240

In association with:

American Consulting Engineers of Florida, LLC
2818 Cypress Ridge Boulevard, Suite 200
Wesley Chapel, FL 33544

January 2019

PRELIMINARY CULTURAL RESOURCE ASSESSMENT
PROBABILITY ANALYSIS
TECHNICAL MEMORANDUM
PROPOSED STORMWATER MANAGEMENT FACILITIES (SMF) &
FLOODPLAIN COMPENSATION (FPC) SITES
STATE ROAD (SR) 50 FROM BROOKSVILLE/SR 50A/
JEFFERSON STREET TO I-75
HERNANDO COUNTY, FLORIDA
Financial Project ID No.: 430051-1-22-01

1.0 INTRODUCTION

The purpose of this study was to determine, preliminarily, if any significant or potentially significant cultural resources, including archaeological sites and historic resources, will be impacted by the construction of a total 61 proposed Stormwater Management Facilities (SMF) and Floodplain Compensation (FPC) sites associated with improvements to the State Road (SR) 50 from Brooksville/SR 50A/Jefferson Street to I-75 in Hernando County (**Figure 1**). Known or potentially significant cultural resources are defined as those sites that are listed, determined eligible, or considered potentially eligible for listing in the National Register of Historic Places (NRHP). All work was conducted in compliance with the provisions of the *National Historic Preservation Act of 1966* (Public Law 89-665), as amended, and the implementing regulations 36 CFR 800, as well as with the provisions contained in the revised Chapter 267, *Florida Statutes* (*FS*).

The study methodology included a review of Florida Master Site File (FMSF) records, NRHP listings, relevant cultural resource assessment survey (CRAS) reports, the U.S. Department of Agriculture's (USDA) *Soil Survey of Hernando County, Florida* (USDA 1977), as well as the United States Geological Survey (USGS) Brooksville SE and St. Catherine quadrangle maps (USGS 1954a, 1954b). Relevant CRAS reports included the Project Development and Environment (PD&E) Study for SR 50 from the Brooksville Bypass to I-75 (Archaeological Consultants, Inc. [ACI] 2015), the 1989 archaeological survey of SR 50/50A (Ballo 1989), the CRAS for SR 50 PD&E Study Reevaluation from US 19 to the East of the SR 50/50A Intersection (ACI 2003), and the CRAS of Cortez Boulevard (Dickinson 2007). Survey of pond sites and mitigation areas were also reviewed (ACI 1993, 1994, 2019), as well as a historic building update (ACI 2012).

As a result of the preliminary study, there are two previously recorded archaeological sites and one historic resource (50 years of age or older) identified within the proposed SMF/FPC sites. There are also two archaeological sites and one historic resource recorded adjacent the SMF/FPC sites. In addition, several SMF/FPC sites have either a low to moderate or moderate potential for the discovery of additional archaeological sites. Twenty-nine of the proposed SMF/FPC sites either have historic resources within or adjacent that will need to be recorded and or updated in the FMSF. This information is summarized in **Tables 1 and 2 and Figures 2-7**.

In conclusion, no proposed SMF/FPC site should be avoided due to cultural resource issues. Following the selection of preferred SMF/FPC sites, systematic archaeological field survey is recommended; historical/architectural field survey is also recommended.

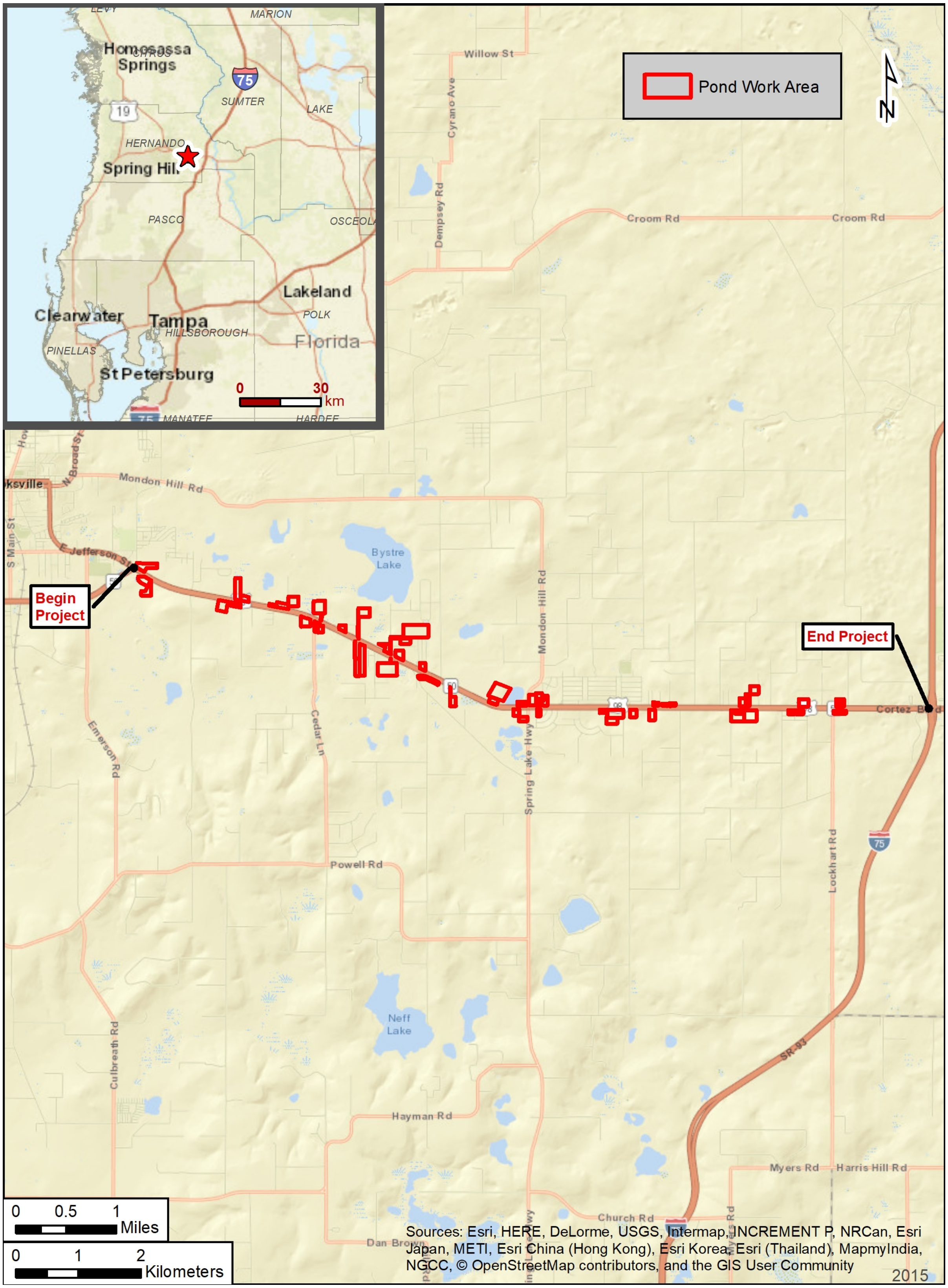


Figure 1. Location of the proposed SMF/FPC Sites, Hernando County.

2.0 DESCRIPTION OF KNOWN ARCHAEOLOGICAL AND HISTORIC RESOURCES AND SITE POTENTIAL

Archaeological Sites: A check of the FMSF digital database (January 2018) indicated that two previously recorded archaeological sites are located within several of the proposed SMF/FPC sites, three are adjacent, and others are within one half mile to them (**Figures 2-7; Table 1**).

Based upon the results of previous archaeological surveys in the vicinity, an understanding of known patterns of aboriginal settlement in the general region, as well as an examination of the USGS quadrangle maps (USGS 1954a, 1954b) and the USDA soil survey for Hernando County (USDA 1977), each of the proposed SMF/FPC sites was evaluated for archaeological site potential. Each was reviewed and assigned to one of three site potential categories: low, low to moderate, and moderate; there were no high potential areas.

Many environmental factors had a direct influence upon site location selection. Among these variables are soil drainage, distance to freshwater, relative topography, and proximity to food and other resources including stone and clay. On the basis of the aforementioned projects, it has been repeatedly demonstrated that archaeological sites are most often located near permanent or semi-permanent sources of water. In addition, prehistoric sites are found, more often than not, on better drained soils, and at the better drained margins of wetland features such as swamps, sinkholes, wet prairies, lakes and ponds. In areas characterized by poorly drained soils, sites tend to be located in areas of slightly higher elevation.

Table 1. Previously recorded archaeological sites located within, adjacent to, or within one half mile of the proposed SMF/FPC sites. Grey indicates sites within the proposed SMF/FPC sites.

SITE #	SITE NAME	SITE TYPE	CULTURE	SHPO EVAL.
8HE00240	Sardis Road	Artifact scatter	Prehistoric	Not evaluated
8HE00229	Lockhart Borrow	Single artifact	Prehistoric	Not evaluated
8HE00230	FDOT Park	Artifact scatter	Prehistoric	Not evaluated
8HE00231	Pond Edge	Single artifact	Prehistoric	Not evaluated
8HE00232	Hidden Pond	Single artifact	Prehistoric	Not evaluated
8HE00233	WPA Road	Artifact scatter	Prehistoric	Not evaluated
8HE00234	Clayton Road	Artifact scatter	Prehistoric	Not evaluated
8HE00235	Dorsey Smith Road	Artifact scatter	Prehistoric	Not evaluated
8HE00236	Hilton Cedar	Lithic scatter	Prehistoric	Not evaluated
8HE00270	Choacachatte Town	Historic town	Seminole	Not evaluated
8HE00272	Experimental Farm	Building remains	Spanish-American War, 1898-1916	Not evaluated
8HE00280	Sicily	Habitation	Spanish-American War, 1898-1916	Not evaluated
8HE00630	Desolation Row	Artifact scatter	20th c. American, 1900-present	Insufficient information

Historic Resources: Background research indicated one previously recorded historic resource (50 years of age or older) located within the proposed SMF/FPC sites and one immediately adjacent (**Table 2**). Historic resource 24321 Cortez Blvd (8HE00720) is located within proposed SMF-4B and was also evaluated by the State Historic Preservation Officer (SHPO) as ineligible for listing in the NRHP. In addition, one linear resource, SR 50 (8HE00742) is located adjacent to most proposed SMF/FPC sites and was also evaluated by the SHPO as ineligible for listing in the NRHP.

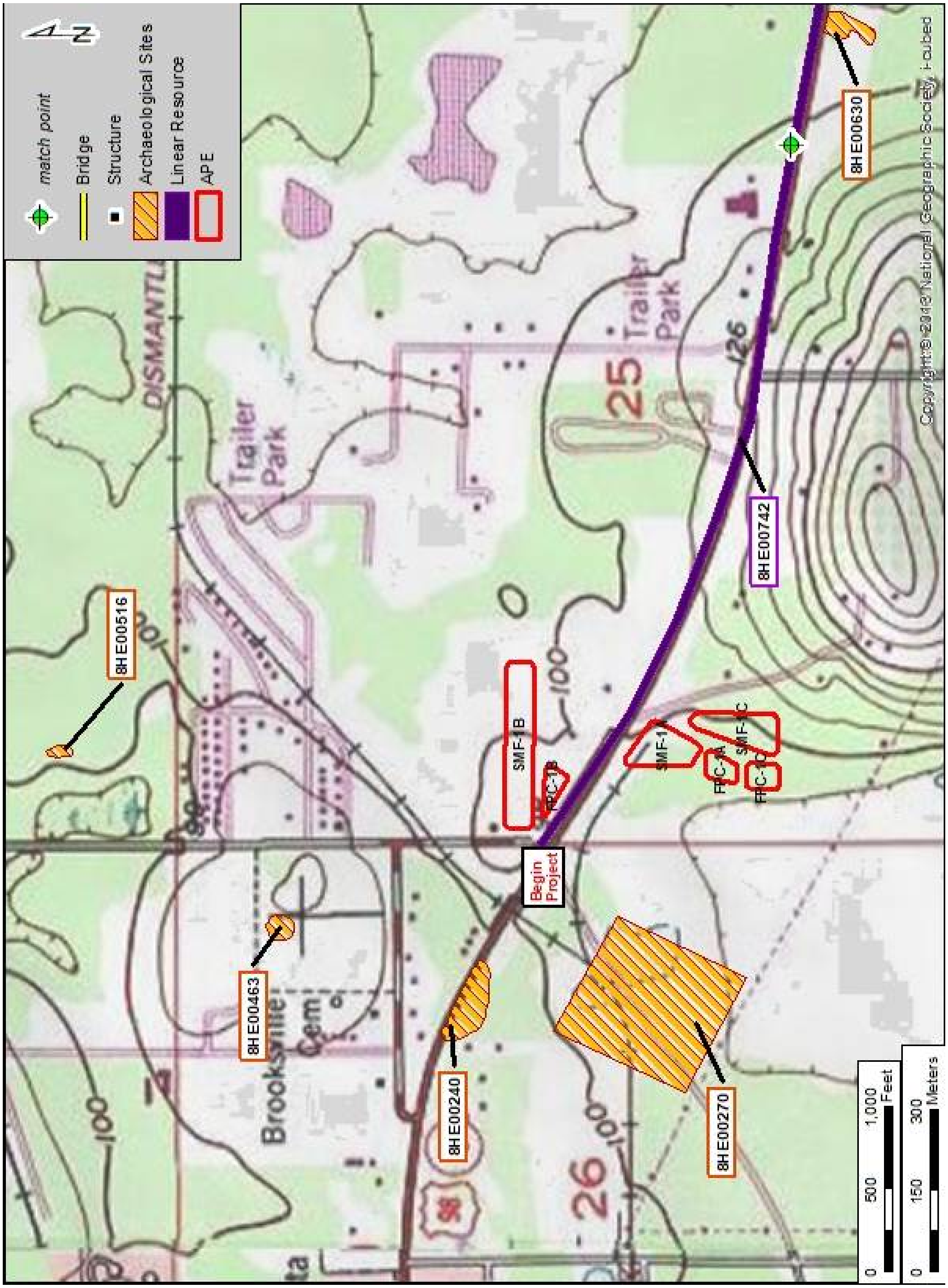


Figure 2. Previously recorded cultural resources within or in close proximity to the proposed SMF/FPC sites.

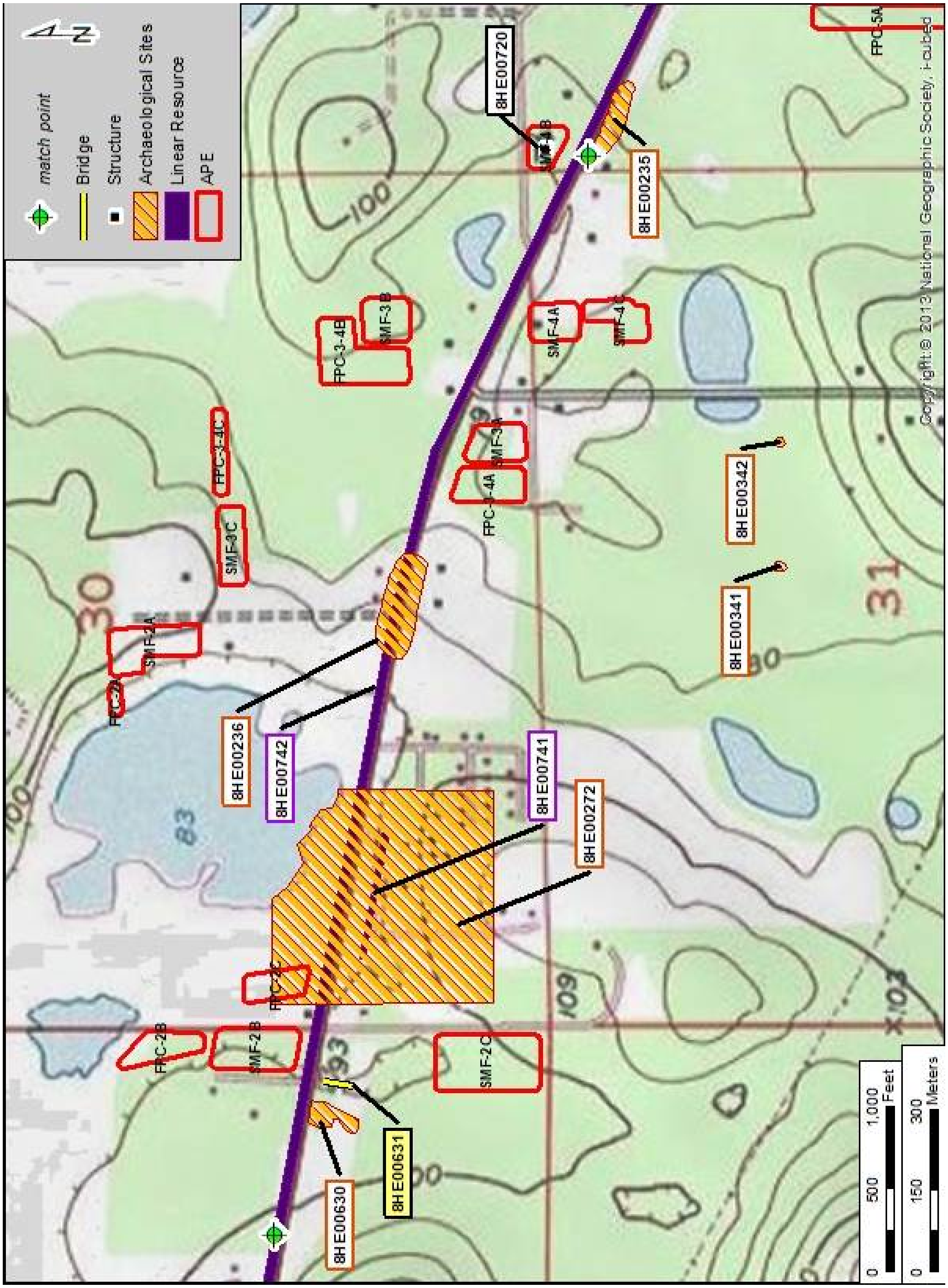


Figure 3. Previously recorded cultural resources within or in close proximity to the proposed SMF/FPC sites.

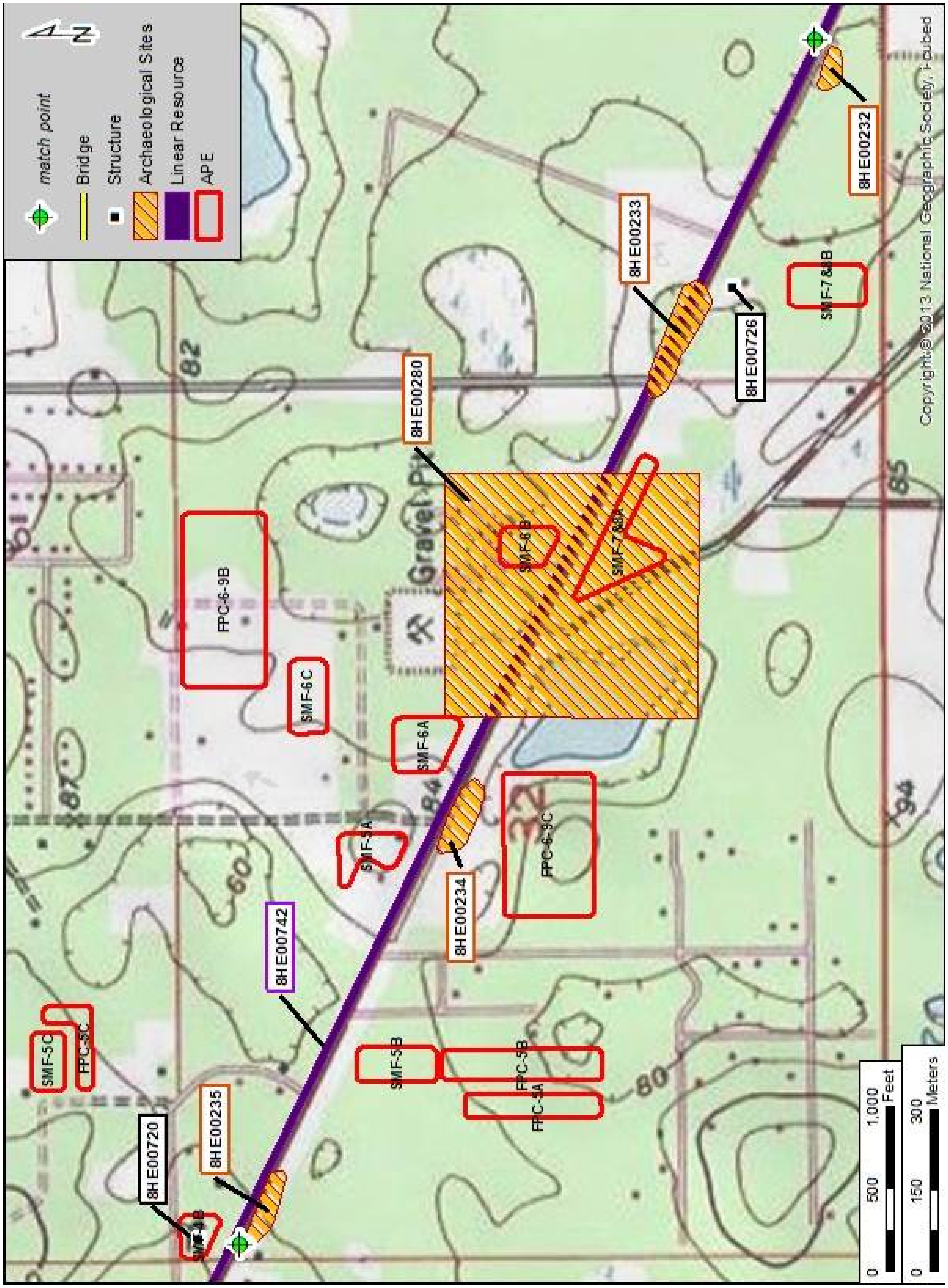


Figure 4. Previously recorded cultural resources within or in close proximity to the proposed SMF/FPC sites.

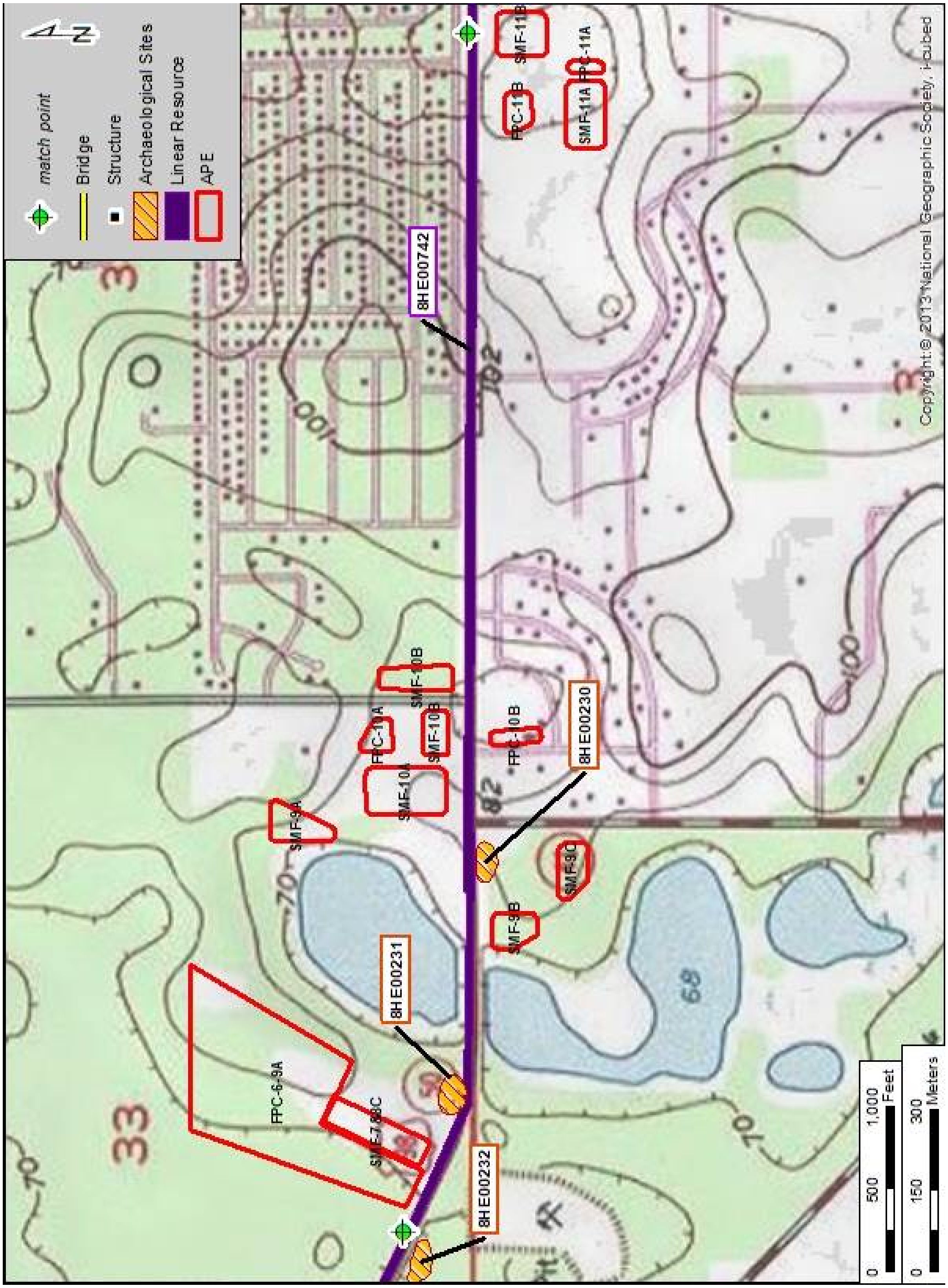


Figure 5. Previously recorded cultural resources within or in close proximity to the proposed SMF/FPC sites.

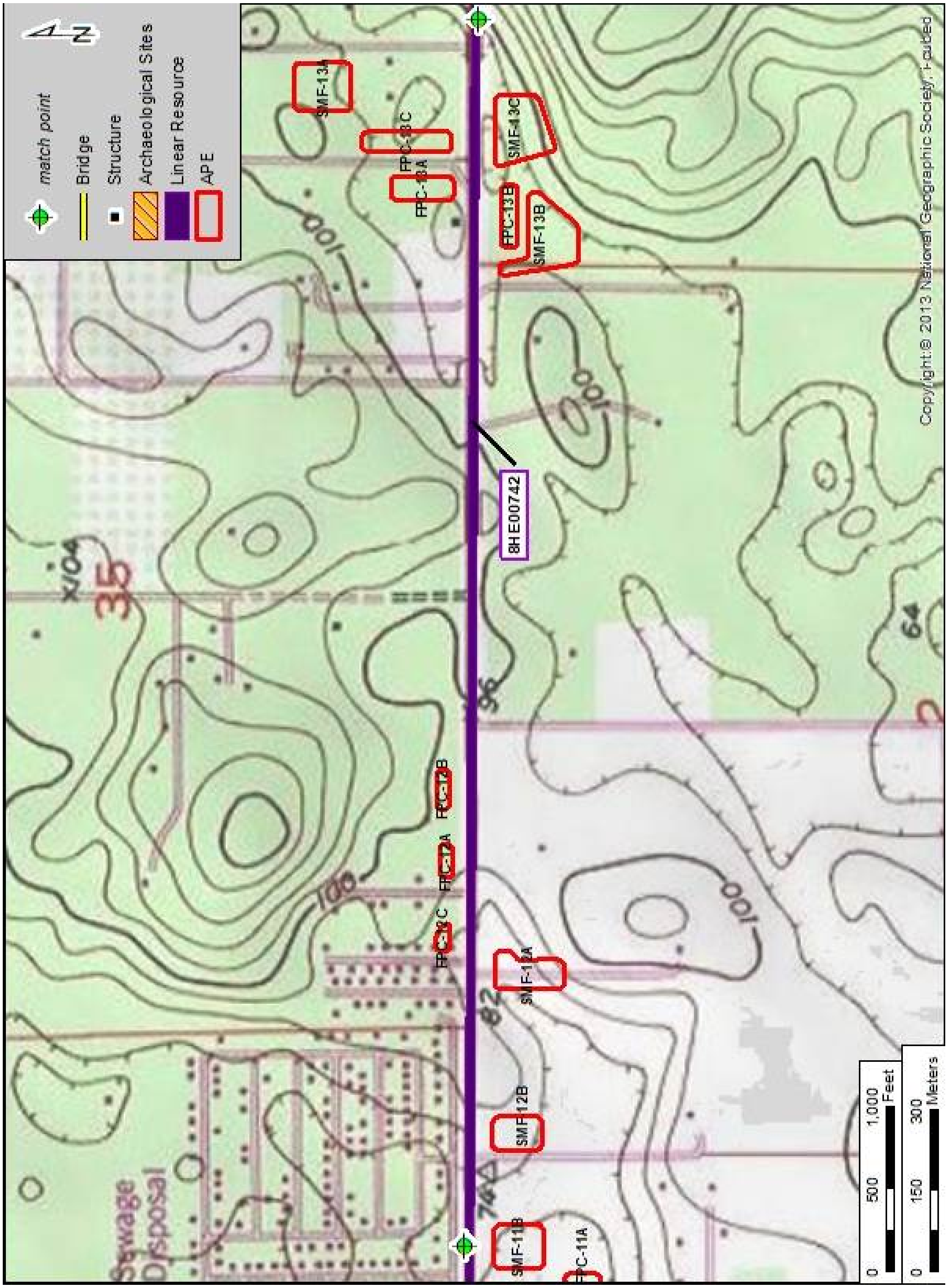


Figure 6. Previously recorded cultural resources within or in close proximity to the proposed SMF/FPC sites.

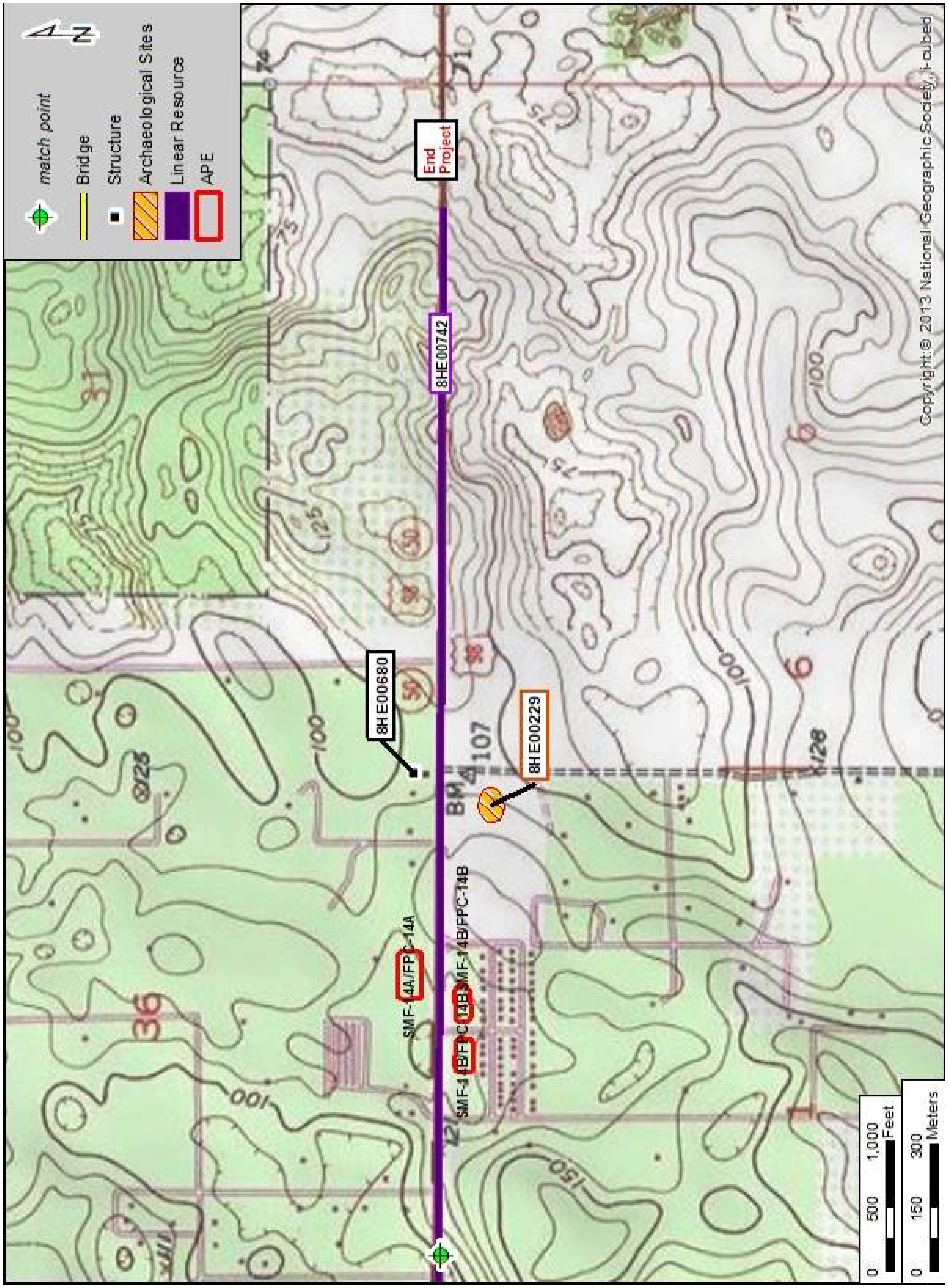


Figure 7. Previously recorded cultural resources within or in close proximity to the proposed SMF/FPC sites.

The potential for newly identified historic resources was determined by examining the appropriate USGS quadrangle maps, property appraiser records (Emerson 2017 and updated in January 2019), historic aerial imagery, and the SR 50 CRAS (ACI 2015). Based on this research, approximately 29 historic resources were identified within or adjacent to the proposed SMF/FPC sites.

Table 2. Archaeological and historic data.

SMF/ FPC	ZAP*	Comments (i.e. soils, vegetation, drainage, previously recorded sites, etc.)
SMF-1A	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; adjacent to a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE; portion of old RR bed within SMF
	Low	Historical: no previously recorded sites; 8HE00742 adjacent
SMF-1B	Low- Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands north of a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE two historic buildings adjacent
	Moderate	Historical: no previously recorded sites; two historic buildings adjacent
SMF-1C	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands adjacent to a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
FPC-1A	Low- Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands adjacent to a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites
FPC-1B	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Moderate	Historical: no previously recorded sites; 8HE00742 adjacent and one historic building adjacent
FPC-1C	Low- Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands adjacent to a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
SMF-2A	Moderate	Prehistoric Archaeological: on uplands adjacent to freshwater
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites
SMF-2B	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; partially within a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites; 8HE00742 adjacent
SMF-2C	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; partially within a relic sink and on uplands
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
FPC-2A	Low- Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands adjacent to freshwater
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE

SMF/ FPC	ZAP*	Comments (i.e. soils, vegetation, drainage, previously recorded sites, etc.)
FPC-2B	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
FPC-2C	Moderate	Prehistoric Archaeological: 8HE00272 within a portion of FPC
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent
SMF-3A	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Moderate	Historical: no previously recorded sites within; 8HE00742 and one historic building adjacent
SMF-3B	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
SMF-3C	Low-Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands east of freshwater
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
FPC-3-4A	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent
FPC-3-4B	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
FPC-3-4C	Low-Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands east of a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
SMF-4A	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Moderate	Historical: no previously recorded sites within or adjacent to APE; one historic building adjacent
SMF-4B	Low-Moderate	Prehistoric Archaeological: no previously recorded sites within APE; northeast of a wetland on uplands and north of 8HE00235
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Moderate	Historical: 8HE00720 within; 8HE00742 adjacent
SMF-4C	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE

SMF/ FPC	ZAP*	Comments (i.e. soils, vegetation, drainage, previously recorded sites, etc.)
SMF-5A	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Moderate	Historical: no previously recorded sites within or adjacent to APE; 8HE00742 and one historic building adjacent and one within
SMF-5B	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
SMF-5C	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; uplands west of a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Moderate	Historical: no previously recorded sites within or adjacent to APE; one historic building adjacent
FPC-5A	Low-Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE on uplands adjacent to relic sinks
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
FPC-5B	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands north of relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Moderate	Historical: no previously recorded sites within or adjacent to APE; one historic building adjacent
FPC-5C	Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands west of relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
SMF-6A	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within; 8HE00280 (general vicinity site) adjacent
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within APE; 8HE00742 adjacent
SMF-6B	Low - Moderate	Prehistoric Archaeological: SMF is within site 8HE00280 (a general vicinity site type site)
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent to APE
SMF-6C	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
FPC-6-9A	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands between relic sinks
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE

SMF/ FPC	ZAP*	Comments (i.e. soils, vegetation, drainage, previously recorded sites, etc.)
FPC-6-9B	Low-Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands north of relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Moderate	Historical: no previously recorded sites within or adjacent to APE; one historic building within
FPC-6-9C	Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; uplands west of a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
SMF-7&8A	Low - Moderate	Prehistoric Archaeological: SMF within 8HE00280 (a general vicinity type site)
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent to APE
SMF-7&8B	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands adjacent to a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Moderate	Historical: no previously recorded sites within or adjacent to APE; one historic building adjacent
SMF-7&8C	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands between two relic sinks
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent to APE
SMF-9A	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; uplands adjacent to lake
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within APE
SMF-9B	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; uplands adjacent to lake
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent
SMF-9C	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; uplands east of lake
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
SMF-10A	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands east of lake
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent to APE
SMF-10B	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands adjacent to relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent to APE
FPC-10A	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands east of lake
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE

SMF/ FPC	ZAP*	Comments (i.e. soils, vegetation, drainage, previously recorded sites, etc.)
FPC-10B	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands east of lake
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent to APE
SMF-11A	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; within a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
SMF-11B	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; within relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
FPC 11A	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; within a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
FPC 11B	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; within relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
SMF-12A	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; uplands between relic sinks
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent to APE
SMF-12B	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; on uplands adjacent to relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent to APE
FPC-12A	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Moderate	Historical: no previously recorded sites within; 8HE00742 and one historic building adjacent to APE
FPC-12B	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; within relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent to APE
FPC-12C	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Moderate	Historical: no previously recorded sites within; 8HE00742 and two historic buildings adjacent to APE
SMF-13A	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; uplands adjacent to relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Moderate	Historical: no previously recorded sites within or adjacent to APE; one historic building adjacent

SMF/ FPC	ZAP*	Comments (i.e. soils, vegetation, drainage, previously recorded sites, etc.)
SMF-13B	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; uplands adjacent to a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within or adjacent to APE
SMF-13C	Low - Moderate	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; uplands adjacent to a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent to APE
FPC-13A	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; within a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Moderate	Historical: no previously recorded sites within; 8HE00742 and one historic building adjacent to APE
FPC-13B	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; within a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent to APE
FPC-13C	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; within a relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent to APE
SMF-14A/ FPC-14A	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; partially within relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent to APE
SMF-14B/ FPC-14B	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE; within relic sink
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Moderate	Historical: no previously recorded sites within; 8HE00742 and one historic building adjacent to APE
SMF-14C/ FPC-14C	Low	Prehistoric Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historic Archaeological: no previously recorded sites within or adjacent to APE
	Low	Historical: no previously recorded sites within; 8HE00742 adjacent to APE

* Zone of Archaeological Potential

3.0 CONCLUSIONS AND RECOMMENDATIONS

In conclusion, no proposed SMF/FPC site should be avoided due to cultural resource issues. Following the selection of preferred SMF/FPC sites, systematic archaeological field survey is recommended in accordance with the guidelines and standards promulgated by the Florida Department of Transportation (FDOT) and Florida Division of Historical Resources (FDHR). The selected SMF/FPC sites considered to have a low potential also should be surveyed and judgmentally tested. Historical/architectural field survey is also recommended.

4.0 BIBLIOGRAPHY

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United States Geological Survey (USGS)

1954a Brooksville SE, Florida. Photorevised 1988.

1954b St. Catherine, Florida. Photorevised 1988.

APPENDIX J

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 401872**

Date:	1/28/2015
Time:	11:00
Project Name:	FDOT SR50 Brooksville Bypass to I-75 - PD&E Study
Attendees:	Richard Alt, Chaz LaRiche, Andrew Goldsmith - American Consulting Engineers agoldsmith@acp-fl.com, Chris Salicco, ACE csalicco@acp-fl.com; Bill Adams, ACE; Stephanie Pierce, FDOT

County:	Hernando	**Sec/Twp/Rge:**	22/25/19 30/22/20 & 25, 32, 33, 34, 35, 36 / 22 / 20
Total Land Acreage:	ROW	**Project Acreage:**	acres

Prior On-Site/Off-Site Permit Activity:
- Existing 4 lane rural highway
- 40004773.001, 44004306.002

Project Overview:
- Widen to 6 lane urban and rural

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 jurisdictional wetlands.
- 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.
- If the project is located in a county which is listed as a coastal county under the Coastal Zone Management Act (CZM) and the project has wetland impacts, it will require a noticing period once the permit application is deemed complete. Wetland and/or surface waters impacts less than 1 acre in size will require a 10 day noticing period, prior to the issuance of the permit. Wetland and/or surface water impacts greater than 1 acre in size will require a 30 day noticing period, prior to the issuance of the permit. Permits could be issued as early as the 11th or 31st day, but staffs' schedule and workload will determine the actual issuance date.

Site Information Discussion: (SHW Levels, Floodplain, Tailwater Conditions, Adjacent Off-Site Contributing Sources, Receiving Waterbody, etc.)
- Existing roadway/intersections
- WBIDs need to be independently verified by the consultant - WBID – 1329E and 1329F – impaired for mercury.

Water Quantity Discussions: (Basin Description, Storm Event, Pre/Post Volume, Pre/Post Discharge, etc.)
- Demonstrate that 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.

Water Quality Discussions: (Type of Treatment, Technical Characteristics, Non-presumptive Alternatives, etc.)

- Provide water quality treatment for entire project area and all contributing off-site flows.
- 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.
- Also replace treatment function of existing ditches to be filled.
- Will acknowledge compensatory treatment to offset pollutant loads associated with portions of the project area that cannot be physically treated.

Sovereign Lands Discussion: (Determining Location, Correct Form of Authorization, Content of Application, Assessment of Fees, Coordination with FDEP)

- N/A

Operation and Maintenance/Legal Information: (Ownership or Perpetual Control, O&M Entity, O&M Instructions, Homeowner Association Documents, Coastal Zone requirements, etc.)

- The permit must be issued to the property owner(s).
- Provide proof of ownership in the form of a deed or contract for sale.
- Provide appropriate O&M instructions.
- Provide detailed construction surface water management plan.

Application Type and Fee Required:

- SWERP – Sections A, C, and E of the ERP Application.
- < 10 acres of project area and no wetland or surface water impacts - $273.00 Online Submittal
- < 10 acres of project area and < 1 acre of wetland or surface water impacts - $

Other: (Future Pre-Application Meetings, Fast Track, Submittal Date, Construction Start Date, Required District Permits – WUP, WOD, Well Construction, etc.)

- In accordance with Rule 40D-1.603(2), F.A.C., no later than 30 days after submittal of an initial application of an Individual surface water management permit the applicant shall publish at the applicant's expense a notice of the District's receipt of the application in a newspaper having general circulation as defined in Chapter 50, F.S., in the county or counties in which the activity is proposed. Please provide documentation that such noticing has been accomplished. Note that the published notices of receipt for an ERP must be in accordance with the language provided in Rule 40D-1.603(11), F.A.C., and receipt of an affidavit establishing proof of this publication will be considered a completeness item of this ERP Application. Per Rule 40D-1.603(13), F.A.C., this must be received before the application will be considered complete and the 60-day timeframe for taking agency action on the application will commence.

40D-1.603(13) – “Applicants required to publish a notice of receipt of application must provide to the District a publisher’s affidavit establishing proof of publication pursuant to Sections 50.041and 50.051, F.S., before the application will be considered complete and the applicable timeframe for taking agency action on the application will commence.”

- provide a copy of the legal description (of all applicable parcels within the project area) in one of the following forms:
  a. Deed with complete Legal Description attachment.
  b. Plat.
  c. Boundary survey of the property(s) with a sketch.

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.

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 406543**

Date:	03/21/2019
Time:	11:00
Project Name:	FDOT SR50 BKV Bypass - I75 PD&E Study
District Engineer:	Buddy Wood
District ES:	Al Gagne
Attendees:	Andrew Goldsmith, Chris Salicco, Bill Adams (American Consulting Engineers)

County:	Hernando	**Sec/Twp/Rge:**	22/25/19; 25,30,32,33,34,35,36/22/20
Total Land Acreage:	200 acres	**Project Acreage:**	200 acres

Prior On-Site/Off-Site Permit Activity:

- MSSW No. 40004773.001; ERP No. 4404306.002

Project Overview:

- Widening an existing 4-lane road to 6-lanes.

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 jurisdictional wetlands and surface waters.
- Provide appropriate mitigation using UMAM for impacts, if applicable. Entire site is located within the Withlacoochee River ERP Basin. Mitigation banks that serve this area include the Boars Head, Green Swamp, Crooked River, Hilochee and Withlacoochee Mitigation banks.
- Demonstrate elimination and reduction of wetland impacts.
- Maintain minimum 15 foot, average 25 foot wetland conservation area setback or address secondary impacts.
- If the project is proposing to attenuate/treat in wetlands. Please demonstrate that adverse impacts to the wetland hydro-periods will not occur by providing hydrographs of the 2.33 year mean annual storm. The graph should start and end at the pop-off elevation with Existing Condition and Proposed Condition hydrographs superimposed for comparison. Please provide a supporting narrative for the hydrographs explaining any variations that are shown. The invert of the agricultural ditches may be the existing 'pop-off' elevation, or SHWL of the wetland and may need to be considered when designing the storm water management system.
- Determine SHWL's at pond locations, wetlands, and OSWs.
- Determine normal pool elevations of wetlands.
- Determine 'pop-off' locations and elevations of wetlands.
- 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.)

- Existing roadway
- Watersheds- Bystre Lake (WBID 1329W)- appears to be impaired for nutrients; Withlacoochee River (WBID 1329E)- does not appear to be impaired for nutrients; Withlacoochee River (WBID 1329F)- does not appear to be impaired for nutrients.
- WBIDs need to be independently verified by the consultant
- Possibly discharging to impaired waters.
- May discharge to a closed basin
- Document/justify SHWE's at pond locations, wetlands, and OSWs.

- Determine normal pool elevations of wetlands.
- Determine 'pop-off' locations and elevations of wetlands.
- Provide documentation to support tailwater conditions for quality and quantity design
- Proposed control structures in wetlands should be consistent with existing 'pop-off' elevations of wetlands; demonstrate no adverse impacts to wetland hydroperiod for up to 2.33yr mean annual storm.
- Any wells on site should be identified and their future use/abandonment must be designated.
- Stormwater retention and detention systems are classified as moderate sanitary hazards with respect to public and private drinking water wells. Stormwater treatment facilities shall not be constructed within 100 feet of an existing public water supply well and shall not be constructed within 75 feet of an existing private drinking water well. Subsection 4.2, A.H.V.II.
- District GIS identifies existing Well Construction Permits (WCP) in the area.
- District data collection sites may be impacted by proposed construction. Contact the District's Data Steward at Data.Maps@watermatters.org under the subject line "PRIORITY ERP Data Evaluation" to coordinate relocation of District data collection site.

Water Quantity Discussions: (Basin Description, Storm Event, Pre/Post Volume, Pre/Post Discharge, etc.)

- 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, 24-hour 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]
- It appears, from District GIS layers, that there are known flooding complaints along this portion of right-of-way.

Water Quality Discussions: (Type of Treatment, Technical Characteristics, Non-presumptive Alternatives, etc.)

- Provide water quality treatment for any existing permitted area and any new travel lanes.
- 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.
- Also, replace treatment function of existing ditches to be filled.
- <u>Presumptive Water Quality Treatment for Alterations to Existing Public Roadway Projects:</u>
  -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 that is proposed to be connected to a treatment pond will require treatment for an area equal to the co-mingled existing & new impervious (times ½" for dry treatment or 1" for wet treatment). This applies whether or not equivalent treatment concepts are used.
  -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 new impervious area only. 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 only. 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.
-Existing treatment capacity displaced by any road project will require additional compensating volume. Refer to Subsection 4.5(c), A.H.V.II.

- Will acknowledge compensatory treatment to offset pollutant loads associated with portions of the project area that cannot be physically treated.
- <u>Net improvement</u>
  -Refer to rule 62-330.301(2), F.A.C.
  -WBID ___ impaired for _______.   Please verify accuracy of WBID boundaries and status of impairment.
  -The application must demonstrate a net improvement for nutrients. Applicant may 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. Refer to ERP Applicant's Handbook Vol. II Subsection 4.1(g).
  -Effluent filtration is known to be ineffective for treating nutrient related impairments, unless special nutrient adsorption media provided. However, please note special nutrient adsorption media has extremely low conductivity values compared to typical sand type effluent filtration filter media. Note: if treatment volume required for net improvement is less than the treatment volume required for 'presumptive' treatment, then use of effluent filtration is ok.

Sovereign Lands Discussion: (Determining Location, Correct Form of Authorization, Content of Application, Assessment of Fees, Coordination with FDEP)

- If the project is located within state owned sovereign submerged lands (SSSL), 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.

Operation and Maintenance/Legal Information: (Ownership or Perpetual Control, O&M Entity, O&M Instructions, Homeowner Association Documents, Coastal Zone requirements, etc.)

- The permit must be issued to entity that owns or controls the property.
- Provide evidence of ownership or control by deed, easement, contract for purchase, etc. Evidence of ownership or control must include a legal description. A Property Appraiser summary of the legal description is NOT acceptable.

Application Type and Fee Required:

- SWERP – Sections A, C, and E of the ERP Application.
- Major Modification: < 640 acres of project area and < 50 acre of wetland or surface water impacts - $1,552.88 Online Submittal
- Consult the fee schedule for different thresholds.

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 Rules 61G15-23.005 and 61G15-23.004 (Digital), F.A.C. The following text is required by the Florida Board of Professional Engineers (FBPE) to meet this requirement when a digitally created seal is not used and must appear where the signature would normally appear:

  ELECTRONIC (Manifest): *[NAME] State of Florida, Professional Engineer, License No. [NUMBER] This item has been electronically signed and sealed by [NAME] on the date indicated here 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*

  DIGITAL: *[NAME] State of Florida, Professional Engineer, License No. [NUMBER]; This item has been digitally signed and sealed by [NAME] on the date indicated here using a Digital Signature; Printed copies of this document are not considered signed and sealed and the signature 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.
- Demonstrate that excavation of any stormwater ponds does not breach an aquitard (see Subsection 2.1.1, A.H.V.II) such that it would allow for lesser quality water to pass, either way, between the two systems. In those geographical areas of the District where there is not an aquitard present, the depth of the pond(s) shall not be excavated to within two (2) feet of the underlying limestone which is part of a drinking water aquifer. [Refer to Subsection 5.4.1(b), A.H.V.II]