STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TECHNICAL REPORT COVERSHEET

650-050-38
ENVIRONMENTAL
MANAGEMENT
08/22

PRELIMINARY POND SITING REPORT ADDENDUM

Florida Department of Transportation

District One

SR 29

Limits of Project: from North of New Market Road to SR 82

Collier County, Florida

Financial Management Number: 417540-6

ETDM Number: 3752

Date: March 2024

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

Alan S Eldridge
2024.03.19 17:52:03-04'00'

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1 INTRODUCTION

A Project Development and Environment (PD&E) Public Hearing was held on November 15, 2018, to present the Preferred Alternative and provide the public with the opportunity to review project documents and provide comments. Refinements to the Preferred Alternative have been made to meet the FDOT Design Manual (FDM) requirements and include the identification of stormwater management facilities (SMF), necessary to accommodate stormwater runoff. This Pond Siting Report (PSR) Addendum supplements the PSR dated August 2018 and specifically addresses the design refinements for the project.

The currently existing signalized intersection at New Market Road West and SR 29 has been revised to a roundabout at this location. A 10-foot shared use path has been added on the east side of the roadway from north of New Market Road West to SR 82, thus providing a 10-foot shared use path on both sides of the corridor. The mainline roadway improvements required for the proposed project will not require any additional right-of-way. As a result of criteria updates, the proposed design speeds, ranging from 50-60 mph, have been unified at 55 mph. Six SMFs have been identified. The six proposed SMFs will require approximately 20.3 acres of offsite right-of-way. Stormwater runoff will be conveyed to the proposed SMFs by an open drainage system within the existing mainline right-of-way.

Until PD&E LDCA is obtained, Navigational Beacons have been put in place on the analysis and design efforts which do not permit coordination with local municipalities. The preparation of this PSR Addendum is based on the best available information at the time of submittal including the PSR dated August 2018 data collection, initial coordination with Collier County from prior to October 2020, site specific geotechnical borings, aerial wetland delineations, coordination with the South Florida Water Management District (SFWMD), the CRAS Addendum (February 2024), CSER Addendum (March 2024), NRE (July 2018), NRE Addendum (September 2021), and USFWS RAI response (December 2023).

2 PROJECT DESCRIPTION

The project is in Collier County, north of Immokalee, on SR 29 between New Market Road and SR 82. This area falls within Sections 8, 9, 16, 17, 20, 21, 28 and 29, Township 46 South, Range 29 East. See **Appendix 1.1** and **Figure 1** for the **Project Location Map**.

Figure 1 Project Location Map

The project area is under the jurisdiction of SFWMD and lies within the Estero Bay and Everglades National Park basins. Refer to **Appendix 1.8** for the **SFWMD ERP Basin Boundaries Map**. The northern end of the project outfalls through the L-29 Canal which drains to FYE Pond and outfalls to Townsend Canal. The majority of the project area outfalls west to Fish Branch Creek which discharges to Lake Trafford, southwest of the project limits. Refer to **Appendix 1.7** for the **Collier County Stormwater Facilities Map**. The Immokalee United States Geologic Survey (USGS) Quadrangle Map contains the project area. Refer to **Appendix 1.2** for the **USGS Quadrangle Map**

SR 29 within the project limits is currently a two-lane rural typical section with roadside ditches that convey to cross drains. There is currently no formal treatment provided for roadway runoff. This project involves widening the existing two-lane undivided segment of SR 29 to four lanes to provide increased capacity between New Market Road and SR 82 in Collier County.

The proposed typical section consists of a four-lane divided highway with a 30-foot median, 10-foot shoulders (five-foot paved) and two 10-foot shared use paths, that increases the impervious area when compared to the PSR dated August 2018. See **Appendix 1.9** for the **Proposed Typical Section**.

An open drainage system utilizing swales will collect and convey stormwater runoff to offsite ponds for water quality treatment and attenuation.

The project area has a flat topography with fine sands and a high water table. The land use adjacent to the project area is primarily pasture and citrus groves with some low-density residential and institutional uses. Refer to **Appendix 1.3** for the **Land Use Map.**

This project contains an intersection on the east side with FPID 417540-5-52-01; a new roadway alignment for SR 29 to allow traffic to bypass downtown Immokalee. FPID 417540-5-52-01 is a "goes-with" project with FPID 417540-6-52-01 and the two projects will be on the same schedule for right of way acquisition and construction.

3 SOIL CHARACTERISTICS

Soils information was obtained from the USDA Natural Resources Conservation Service (NRCS) Soil Survey of Collier County, Florida. See **Figure 2** for **Project Soils Map** and **Table 1** for **Soils Map Legend**.

Figure 2 Project Soils Map

Table 1 - Soils Map Legend

Map Symbol	Soil Name	Hydrologic Group	Depth to Water Table (Feet)
7	Immokalee fine sand	B/D	0.5 – 1.5
8	Myakka fine sand	A/D	0.5 – 1.5
15	Pomello fine sand	A	1.5 – 3.5
16	Oldsmar fine sand	A/D	0.5 – 1.5
17	Basinger fine sand	A/D	0.25 – 1.5
22	Chobee, Winder, Gator soils	C/D	0
27	Holopaw fine sand	A/D	0.25 – 1.5
28	Pineda and Riviera fine sands	A/D	0
117	Immokalee fine sand-Urban land complex	B/D	0.5 – 1.5
125	Oldsmar fine sand-Urban land complex	A/D	0.5 – 1.5
130	Pomello fine sand-Urban land complex	A	1.5 – 3.5

Per the Soil Conservation Service (SCS) Soil Survey Mapping for Collier County, there are 11 soil units within the limits of the project, including the roadway corridor and the SMF and FPC site alternative locations. Soils in Hydrologic Groups A, A/D, B/D and C/D exist along the project corridor. Most of the project is within the A/D Hydrologic Group. The near surface soils are various fine sands with pockets of frequently ponded soils.

Additionally, Seasonal High Groundwater Table Estimates (SHGWT) were obtained from the project geotechnical engineer – Tierra. Refer to **Appendix 1.4** for a detailed **Soil Map** of the SMF and FPC sites and **Appendix 7.0** for site specific **Geotechnical Data**.

4 FLOODPLAIN INFORMATION

The project area is located within the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) number 12021C0135H. This map was last revised on May 16, 2012. Most of the project area falls within Zone AH. Refer to **Appendix 1.5** for the **FEMA FIRM Map**.

Figure 3 Project Floodplain Map

5 COORDINATION

The following is a summary of the coordination that has occurred during the preparation of this report. Specific information is provided in **Appendix 9.0 Correspondence**.

- SR 29 Regional Treatment Partnering Meetings on May 13, 2019, and February 11, 2020

- SR 29 Corridor Drainage Kickoff Meeting on March 9, 2020.
- Pond Siting Alternatives Review Meeting on April 7, 2020.
- Pre-Application Meeting with SFWMD on May 27, 2020.
- Email concurrence from Brent Setchell, P.E. on July 16, 2020, to approve coordination with stakeholders regarding the Regional Pond Alternatives in the Lake Trafford basin.
- SR 29 email communication from FDOT on June 28, 2023, to document the latest Navigational Beacons.
- Virtual meeting with SFWMD on January 24, 2024, to discuss drainage design criteria.

6 REFERENCES/RESOURCES

The following is a listing of references and resources utilized during the preparation of this report:

- Existing Studies/Plans/Reports
  - PD&E Preliminary PSR (August 2018)
  - CRAS Addendum (February 2024)
  - CSER Addendum (March 2024)
  - NRE (July 2018)
  - NRE Addendum (September 2021)
  - USFWS RAI response (December 2023)
- Technical Reference and Regulation Material
  - FDOT Drainage Manual
  - FDOT Drainage Design Guide
  - ERP Applicant's Handbook I
  - SFWMD ERP Applicants Handbook II
  - Soil Survey for Collier County, by NRCS
  - Flood Insurance Study and Flood Insurance Rate Maps, by FEMA
  - FAA Advisory Circular 150/5200-33C
- Aerial Photography and Survey

- Aerial photography maps by I.F. Rooks & Associates
- Electronic topographic files from Dewberry
- LiDAR
  - Project Report 140G0218F0179, prepared by Digital Aerial Solutions LLC and published by the USGS for Southwest Florida, dated 2018.

All references/resources, as well as the project design, utilize the NAVD 1988 datum.

7 RAINFALL DATA

Rainfall data was obtained from several sources. The FDOT 24-hour 25-year rainfall value (8.40 inches) and the FDOT 24-hour 100-year rainfall value (10.6 inches) were obtained from the Intensity-Duration-Frequency Curves for Zone 8 in the FDOT Drainage Manual. The 3-day 25-year rainfall depth (9.0 inches) was obtained from the SFWMD ERP Applicant's Handbook Vol. II. Conservatively, the FDOT 24-hour 100-year rainfall total (10.6 inches) was utilized in the SMF sizing calculations since this event has the largest rainfall value. Refer to **Appendix 1.6** for the **Rainfall Data**.

8 DESIGN TAILWATER ELEVATIONS

The following is a summary of the sources of design tailwater elevations.

- Seasonal high water (SHWT) elevations were obtained from Tierra Geotechnical Engineers – Joseph Antinori, P.E. and William Rovira, P.E.
- Seasonal high water (SHW) elevations in wetlands and at cross drains are in the process of being field delineated by FDA Environmental Scientists.

9 DRAINAGE DESIGN CRITERIA

- Normal Water Level (NWL) Establishment – The control elevation for the SMF sites is generally the SHWT elevation.
- Water Quality Treatment – Water quality criteria for the project are as specified in Part IV of the SFWMD ERP Applicant's Handbook II. For wet detention it is the greater of 1" of runoff from the basin area or

2.5" of runoff from the new impervious area. The dry retention criteria is 75 percent of the wet detention criteria. For this project the greater criteria was 1" of runoff from the basin area.

- Attenuation – Water quantity criteria for the project is as specified in Part III of the SFWMD ERP Applicant's Handbook II. The post-development discharge must be less than or equal to the pre-development discharge for the 25-year 72-hour storm event.
- Offsite Wet SMF Design – SMF berms will have a 20-foot width at a 1:20 slope. Side slopes will be 1:4 to a depth of two feet below the control elevation and then 1:2 to the bottom of the SMFs. Back slopes and tie-down slopes will be 1:3 maximum. The inside berm radius will be 50 feet (35 feet minimum). Skimmer devices will be used on all SMF control structures from no less than three inches below the control elevation to at or above the 100-year SMF peak stage. Turn-down bleeder devices will be used to discharge the water quality treatment volume. The back of berm elevation will be set to provide a minimum of one foot of freeboard over the 100-year peak stage.
- Tailwater and Outfall Conditions – Tailwater conditions for the SMFs utilize the SHW elevations of adjacent wetlands and cross drain stain lines observed in the field.
- Floodplain Encroachment Volume – Floodplain encroachment criteria for the project are as specified in the SFWMD Environmental Resource Permit Applicant's Handbook II.
- Hazardous Wildlife Attractants – SMF sites meet the criteria stated in Paragraphs 1.2 and 1.3 of the FAA Advisory Circular 150/5200-33C, as the closest SMF is at least 10,000 feet from the aircraft operations area at the Immokalee Regional Airport. However, the SMF sites do not have a five-mile separation distance to the aircraft operations area and do not meet the criteria stated in Paragraph 1.4. Mitigation strategies will be considered during design such as hardening and steepening of the pond's side slopes to reduce hazardous wildlife attractants.

10 EXISTING DRAINAGE CHARACTERISTICS

10.1 Watershed and Offsite Basin Descriptions

The project lies within the Estero Bay and Everglades National Park basins. The project area drains to two WBIDS: Townsend Canal (3235L) and Cow Slough (3278E). WBID 3235L is impaired for Nutrients (Macrophytes) and WBID 3278E is impaired for Escherichia coli and Iron. Roadway pavement does not contribute to any of these impairment parameters. The northern end of the project outfalls through the L-

29 Canal which drains to FYE Pond and then to Townsend Canal. The majority of the project area outfalls west to Fish Branch Creek which drains to Lake Trafford as part of the Cow Slough basin. The project corridor has been divided into seven basins based on existing drainage patterns. The basin numbering utilized in this report begins with Basin 601 and ends with Basin 607 to represent the sequential basin numbering for the FPID 417540-6 segment.

10.2 Roadway Drainage Basin Descriptions

The runoff from the existing roadway sheet flows to roadside ditches and conveys to the cross drains and then discharges to the outfalls.

10.2.1 Basin 601

In the existing condition, Basin 601 begins at New Market Road at Sta. 2100+78 and ends at a 36" RCP cross drain at Sta. 2119+92. Roadway runoff sheet flows directly into side ditches and is conveyed to a depressional area (elevation 31.4) at the downstream end of the 36" cross drain at Sta. 2119+92. The depressional area is located outside of the existing right of way, on the west side of SR 29, and outfalls to the west via a series of wetlands and manmade ditches. This basin ultimately drains to Fish Branch Creek and discharges into Lake Trafford. The existing impervious area is 1.49 acres.

In the proposed condition Basin 601 will continue to drain west to Fish Branch Creek and the proposed impervious area is 4.15 acres. Therefore, the added impervious for Basin 601 is 2.66 acres.

10.2.2 Basin 602

In the existing condition, Basin 602 begins at a 36" RCP cross drain at Sta. 2119+92 and ends at a double 48" RCP cross drain at Sta. 2133+21. Roadway runoff sheet flows directly into side ditches and is conveyed to a depressional area (elevation 30.6) at the downstream end of the double 48" cross drain at Sta. 2133+21. The depressional area is located outside of the existing right of way, on the west side of SR 29, and outfalls to the west via a series of wetlands and manmade ditches. This basin ultimately drains to Fish Branch Creek and discharges into Lake Trafford. The existing impervious area is 1.04 acres.

In the proposed condition Basin 602 will continue to drain west to Fish Branch Creek and the proposed impervious area is 2.88 acres. Therefore, the added impervious is 1.84 acres.

10.2.3 Basin 603

In the existing condition, Basin 603 begins at a double 48" RCP cross drain at Sta. 2133+21 and ends at a 36" RCP cross drain at Sta. 2162+37. Roadway runoff sheet flows directly into side ditches and is conveyed to a depressional area (elevation 31.0) at the downstream end of the 36" cross drain at Sta. 2162+37. The depressional area is located outside of the existing right of way, on the west side of SR 29, and outfalls to the west via a series of wetlands and manmade ditches. This basin ultimately drains to Fish Branch Creek and discharges into Lake Trafford. The existing impervious area is 2.28 acres.

In the proposed condition Basin 603 will continue to drain west to Fish Branch Creek. The proposed impervious is 6.33 acres. Therefore, the added impervious is 4.05 acres.

10.2.4 Basin 604

In the existing condition, Basin 604 begins at a 36" RCP cross drain. Sta. 2162+37 and ends at a 36" RCP cross drain at Sta. 2175+07. Roadway runoff sheet flows directly into side ditches and is conveyed to a depressional area (elevation 31.0) at the downstream end of the 36" cross drain at Sta. 2162+37. This is the same cross drain to which Basin 603 conveys. The depressional area is located outside of the existing right of way, on the west side of SR 29, and outfalls to the west via a series of wetlands and manmade ditches. This basin ultimately drains to Fish Branch Creek and discharges into Lake Trafford. The existing impervious area is 0.99 acres.

In the proposed condition Basin 604 will continue to drain west to Fish Branch Creek. The proposed impervious is 2.76 acres. Therefore, the added impervious is 1.77 acres.

10.2.5 Basin 605

In the existing condition, Basin 605 begins at a 36" RCP cross drain. Sta. 2175+07 and ends at a high point, near O'Quinn Road, at Sta. 2208+62. Roadway runoff sheet flows directly into side ditches and is conveyed to a depressional area (elevation 31.0) at the downstream end of the 36" cross drain at Sta. 2162+37. This is the same cross drain to which Basins 603 and 604 convey. The depressional area is located outside of the existing right of way, on the west side of SR 29, and outfalls to the west via a series of wetlands and manmade ditches. This basin ultimately drains to Fish Branch Creek and discharges into Lake Trafford. The existing impervious area is 2.62 acres.

In the proposed condition Basin 605 will continue to drain west to Fish Branch Creek. The proposed impervious is 7.28 acres. Therefore, the added impervious is 4.66 acres.

10.2.6 Basin 606

In the existing condition, Basin 606 begins at a high point, near O'Quinn Road, at Sta. 2208+62 and ends at a double 42" RCP cross drain at Sta. 2240+02. Roadway runoff sheet flows directly into side ditches and is conveyed to the north where the roadside ditch becomes the headwater of the L-29 Canal. The L-29 Canal drains to the north to FYE Pond and ultimately outfalls to Townsend Canal. The existing impervious area is 2.45 acres.

In the proposed condition Basin 606 will continue to drain into the L-29 Canal. The proposed impervious is 6.81 acres. Therefore, the added impervious is 4.36 acres.

10.2.7 Basin 607

In the existing condition, Basin 607 begins at a double 42" RCP cross drain. Sta. 2240+02 and ends at a double 42" RCP cross drain at Sta. 2257+19. Roadway runoff sheet flows directly into side ditches and is conveyed to the north where the roadside ditch becomes the headwater of the L-29 Canal. The L-29 Canal drains to the north to FYE Pond and ultimately outfalls to Townsend Canal. The existing impervious area is 1.34 acres.

In the proposed condition Basin 607 will continue to drain into the L-29 Canal. The proposed impervious is 3.72 acres. Therefore, the added impervious is 2.38 acres.

11 SMF ALTERNATIVES

Assumptions made for each of the SMF alternatives include:

- A minimum treatment depth of 0.5' due to construction tolerances.
- Inflow pipe costs are equal within the roadway right of way.
- Mitigation costs were estimated based on direct/indirect impacts as well as costs per credit that vary depending on the quality of the wetland.

Two alternatives for each basin were identified and analyzed. The results of the analysis are outlined in the tables below.

Hydraulic feasibility, wetland impacts, and right of way acquisition were considered when choosing a proposed SMF site. Some of the SMF sizing calculations indicate the SMF alternative being analyzed is not hydraulically feasible due to the length of the basin elevating the hydraulic grade line.

SHW elevations for the SMF sizing calculations were estimated from geotechnical borings performed in 2020 at the SMF alternative sites. Typically, the highest estimated SHW elevation on the SMF alternative was utilized in the SMF sizing calculations to produce a conservative SMF size and estimate of hydraulic feasibility. The seasonal high groundwater table is generally within one foot of the existing ground for many of the SMF sites, therefore, wet detention is the only method for treatment considered. Refer to **Appendix 7.0** for **Geotechnical Data**.

Biological indicators were not used to set SHW elevations at wetlands or on cross drains due to the environmental field work restriction set forth in the Navigational Beacons. It is anticipated that biological indicators to verify SHW elevations will not be able to be set and surveyed prior to the Phase II plans submittal and the 268 date to submit right of way requirements.

Additional SMF site specific information regarding cultural resources and contamination can be located in the Cultural Resource Assessment Survey Addendum Report (February 2024) and the Contamination Screening Evaluation Report Addendum (March 2024) provided under a separate cover.

Numerous potential SMF sites were considered. During the Pond Siting Meeting, the potential SMF sites were narrowed to two offsite SMFs per proposed basin. Properties with significant development were avoided as it was anticipated that the acquisition costs would be high.

Two regional alternatives related to the Fish Branch Creek outfall have been identified for consideration. However, due to the restrictions set forth in the Navigational Beacons, coordination with SFWMD, other local agencies, and property owners was not completed during the preparation of the Pond Siting Report. The intent of the two regional alternatives was for the Department to partner with other entities, including SFWMD and Collier County, to improve the water quality at the downstream end of Fish Branch Creek discharging into Lake Trafford to benefit the regional water quality. It is anticipated that further coordination regarding the regional alternatives with other stakeholders will not be able to be completed prior to the Phase II plans submittal and the 268 date to submit right of way requirements.

11.1 Basin 601A Alternative

Alternative 601A is a 1.5-acre offsite SMF located at approximately station 2116+50 on the west side of SR 29 on a large open parcel that is utilized for pasture. This SMF would discharge offsite to the north into an existing depression that currently serves as the outfall to Basin 601. The SHGWT elevation from the SMF boring is 32.3. This SMF is located directly adjacent to the proposed roadway right of way and the existing basin outfall and will not require an easement.

Alternative 601A was ranked high for protected species involvement due to the proximity to documented occurrences and availability of suitable habitat for listed species including the Florida panther, Florida scrub jay, crested caracara, and Florida bonneted bat. The involvement with wetlands or OSWs is anticipated to be none.

11.2 Basin 601B Alternative

Alternative 601B is a 2.3-acre offsite SMF located at approximately station 2116+00 on the east side of SR 29 on a large, wooded parcel that is undeveloped. This SMF would discharge back into the right of way and then convey north to the 36" cross drain at Sta. 2119+92 that discharges offsite to into an existing depression that currently serves as the outfall to Basin 601. The SHGWT elevation from the SMF boring is 32.4. This SMF is located directly adjacent to the proposed roadway right of way and will not require an easement.

Alternative 601B was ranked high for protected species involvement due to the proximity to documented occurrences and availability of suitable habitat for listed species including the Florida panther, Florida scrub jay, Florida bonneted bat, and gopher tortoise. The involvement with wetlands or OSWs is anticipated to be none.

Table 2 - Summary of Basin 601 SMF Alternatives

SMF Properties	SMF Alternatives	
SMF NAME	**SMF 601A**	**SMF 601B**
SMF TYPE	Offsite Wet Detention	Offsite Wet Detention
LOCATION	2116+50	2116+00
SIDE (LT., RT.)	LT.	RT.
SMF AREA	1.5	2.3
EST. GROUND EL. (FT.) @ SMF SITE	33.2	35.2
PROPOSED LOWEST CRITICAL ELEVATION	37.39	37.39
EST. SHW ELEVATION	32.3	32.4
TREATMENT SYSTEM	Wet	Wet
SOILS NAME	Immokalee	Immokalee
HYDROLOGICAL SOIL GROUP	B/D	B/D
LAND USE	Improved Pasture	Woodland Pastures
RECORDED ARCHEOLOGICAL SITES	No	No
ARCHEOLOGICAL POTENTIAL (PREHISTORIC/HISTORIC)	Moderate/Low	Moderate-High/Low
RECORDED HISTORICAL STRUCTURES/RESOURCES	No	No
TENTATIVE CONTAMINATION HAZARD RANKING	No	Medium
PROTECTED & ENDANGERED SPECIES	High	High
WETLAND IMPACTS (AC.) - DIRECT	0.00	0.00
WETLAND IMPACTS (AC.) - INDIRECT	0.00	0.00
SURFACE WATER IMPACTS (AC.)	0.00	0.00
ESTIMATED MITIGATION COST	$22,800	$32,300
PROXIMITY TO OUTFALL (FT.)	265	240
SMF EASEMENTS REQUIRED	No	No
NUMBER OF PARCELS	1	1
PARTIAL (P) OR WHOLE TAKE (W)	P	P
ROW COST ESTIMATE	$61,000	$182,000
CONSTRUCTION COST ESTIMATE	$228,006	$324,003
TOTAL SMF ESTIMATED COSTS	**$311,106**	**$538,303**

Basin 601 Recommendation

With all items considered, SMF 601A was selected as the preferred alternative. It provides the best value balancing right of way acquisition costs against construction costs. Although the additional excavation of borrow material on SMF 601B could be utilized as embankment in the roadway widening areas, SMF 601A still has the lowest total SMF estimated costs, smaller SMF area footprint, and is ranked lower for contamination hazards.

11.3 Basin 602A Alternative

Alternative 602A is a 1.4-acre offsite SMF located at approximately station 2127+25 on the west side of SR 29 on a large open parcel that is utilized for pasture and appears to have previously been excavated for borrow material. This SMF would discharge back into the right of way and then convey north to the double 48" cross drain at Sta. 2133+21 that discharges offsite into an existing depression that currently serves as the outfall to Basin 602. The SHGWT was determined to be above ground elevation from the SMF borings. As a result, a SHGWT elevation of 30.7 was utilized in the analysis. This SMF is located directly adjacent to the proposed roadway right of way and will not require an easement.

Alternative 602A was ranked high for protected species involvement due to the proximity to documented occurrences and availability of suitable habitat for listed species including the Florida panther, wood stork, and Florida scrub jay. Due to the presence of the reservoir, it is anticipated to have high involvement with OSWs. Involvement with wetlands is anticipated to be none.

11.4 Basin 602B Alternative

Alternative 602B is a 2.1-acre offsite SMF located at approximately station 2122+50 on the east side of SR 29 on a large, open parcel that appears to be undeveloped. This SMF would discharge back into the right of way and then convey north to the double 48" cross drain at Sta. 2133+21 that discharges offsite into an existing depression that currently serves as the outfall to Basin 602. The SHGWT elevation from the SMF boring is 32.4. This SMF is located directly adjacent to the proposed roadway right of way and will not require an easement.

Due to the documented occurrences of listed species within and adjacent to Alternative 602B and availability of suitable habitat for listed species including the Florida panther, Florida scrub jay, crested caracara, gopher tortoise, and wood stork, this SMF site alternative was ranked high for protected species involvement. Involvement with OSWs is anticipated to be low. Involvement with wetlands is anticipated to be none.

Table 3 - Summary of Basin 602 SMF Alternatives

SMF Properties	SMF Alternatives	
SMF NAME	**SMF 602A**	**SMF 602B**
SMF TYPE	Offsite Wet Detention	Offsite Wet Detention
LOCATION	2127+25	2122+50
SIDE (LT., RT.)	LT.	RT.
SMF AREA	1.4	2.1
EST. GROUND EL. (FT.) @ SMF SITE	30.7	33.7
PROPOSED LOWEST CRITICAL ELEVATION	35.82	35.82
EST. SHW ELEVATION	ABG	32.4
TREATMENT SYSTEM	Wet	Wet
SOILS NAME	Pomello	Immokalee
HYDROLOGICAL SOIL GROUP	A	B/D
LAND USE	Reservoirs	Improved Pasture
RECORDED ARCHEOLOGICAL SITES	No	No
ARCHEOLOGICAL POTENTIAL (PREHISTORIC/HISTORIC)	Low/Low	Moderate-High/Low
RECORDED HISTORICAL STRUCTURES/RESOURCES	No	No
TENTATIVE CONTAMINATION HAZARD RANKING	No	Medium
PROTECTED & ENDANGERED SPECIES	High	High
WETLAND IMPACTS (AC.) - DIRECT	0.00	0.00
WETLAND IMPACTS (AC.) - INDIRECT	0.00	0.00
SURFACE WATER IMPACTS (AC.)	1.30	0.10
ESTIMATED MITIGATION COST	$98,800	$34,200
PROXIMITY TO OUTFALL (FT.)	480	100
SMF EASEMENTS REQUIRED	No	No
NUMBER OF PARCELS	1	1
PARTIAL (P) OR WHOLE TAKE (W)	P	P
ROW COST ESTIMATE	$129,000	$206,000
CONSTRUCTION COST ESTIMATE	$202,400	$284,023
TOTAL SMF ESTIMATED COSTS	**$430,200**	**$524,223**

Basin 602 Recommendation

With all items considered, SMF 602B was selected as the preferred alternative. It provides the best value balancing mitigation against right of way acquisition costs. While the estimated construction cost makes SMF 602B the higher cost alternative the site has a more clearly defined SHWGT elevation which gives greater confidence in the hydraulic feasibility of the SMF given the restrictions on setting SHW elevations based on biological indicators. Additionally, SMF 602B is on a parcel that the adjacent FPID 417540-5-52-01 is proposing to utilize to connect the new SR 29 bypass alignment into the existing SR 29 roadway. The SMF 602B location will allow for a more efficient conveyance of runoff within the basin from the adjacent FPID 417540-5-52-01 drainage system to the SMF for treatment and attenuation.

11.5 Basin 603A Alternative

Alternative 603A is a 3.6-acre offsite SMF located at approximately station 2139+00 on the west side of SR 29 on a large, wooded parcel that appears to be undeveloped. This SMF would discharge back into the right of way and then convey south to the double 48" cross drain at Sta. 2133+21 that discharges offsite into an existing depression that currently serves as the outfall to Basin 602. The SHGWT was determined to be above ground elevation from the SMF borings. As a result, a SHGWT elevation of 32.7 was utilized in the analysis. This SMF is located directly adjacent to the proposed roadway right of way and will not require an easement.

Due to the proximity of Alternative 603A to documented occurrences and availability of suitable habitat for listed species including the Florida panther and caracara, this pond site alternative was ranked high for protected species involvement. Involvement with wetlands or OSWs is anticipated to be none.

11.6 Basin 603B Alternative

Alternative 603B is a 4.1-acre offsite SMF located at approximately station 2154+00 on the west side of SR 29 on a large, open parcel that is utilized for pasture. This SMF would discharge back into the right of way and then convey north to the 36" cross drain at Sta. 2162+37 that discharges offsite into an existing depression that currently serves as the outfall to Basin 603. The SHGWT elevation utilized in the analysis, 33.45, is the average of two borings taken in the pond clearance area on the parcel. This SMF is located directly adjacent to the proposed roadway right of way and will not require an easement.

Alternative 603B was ranked high for protected species involvement due to the proximity to documented occurrences and availability of suitable habitat for listed species including the Florida panther, crested caracara, wood stork, and sandhill crane. Involvement with wetlands is anticipated to be low. Involvement with OSWs is anticipated to be low.

11.7 Combined Basin 603/604B Alternative

Alternative 603/604B is a 5.7-acre offsite SMF located at approximately station 2148+00 on the east side of SR 29 on a large, open parcel that is undeveloped. This SMF would discharge back into the right of way and then convey south to the double 48" cross drain at Sta. 2133+21 that discharges offsite into an existing depression that currently serves as the outfall to Basin 602. The SHGWT elevation from the SMF boring is 33.7. This SMF is located directly adjacent to the proposed roadway right of way and will not require an easement.

Alternative 603/604B was ranked high for protected species involvement due to the proximity to documented occurrences and availability of suitable habitat for listed species including the Florida panther, crested caracara, and wood stork. Involvement with OSWs is anticipated to be low. Involvement with wetlands is anticipated to be none.

Table 4 - Summary of Basin 603 SMF Alternatives

SMF Properties	SMF Alternatives		
SMF NAME	**SMF 603A**	**SMF 603B**	**SMF 603 / 604B**
SMF TYPE	Offsite Wet Detention	Offsite Wet Detention	Offsite Wet Detention
LOCATION	2139+00	2154+00	2148+00
SIDE (LT., RT.)	LT.	LT.	RT.
SMF AREA	3.6	4.1	5.7
EST. GROUND EL. (FT.) @ SMF SITE	32.7	33.7	35.0
PROPOSED LOWEST CRITICAL ELEVATION	37.06	37.06	37.06
EST. SHW ELEVATION	ABG	33.45	33.7
TREATMENT SYSTEM	Wet	Wet	Wet
SOILS NAME	Myakka, Basinger	Immokalee, Myakka	Myakka
HYDROLOGICAL SOIL GROUP	A/D	A/D, B/D	A/D, B/D
LAND USE	Woodland Pastures	Improved Pasture, Wetland, Marsh	Improved Pasture
RECORDED ARCHEOLOGICAL SITES	No	No	No
ARCHEOLOGICAL POTENTIAL (PREHISTORIC/HISTORIC)	Moderate/Low	Moderate/Moderate	Moderate-Low/Moderate
RECORDED HISTORICAL STRUCTURES/RESOURCES	No	No	No
TENTATIVE CONTAMINATION HAZARD RANKING	No	Low	Medium
PROTECTED & ENDANGERED SPECIES	High	High	High
WETLAND IMPACTS (AC.) - DIRECT	0.00	1.13	0.00
WETLAND IMPACTS (AC.) - INDIRECT	0.00	0.29	0.00
SURFACE WATER IMPACTS (AC.)	0.00	0.00	0.59
ESTIMATED MITIGATION COST	$51,300	$172,900	$89,300
PROXIMITY TO OUTFALL (FT.)	385	1,810	1,130
SMF EASEMENTS REQUIRED	No	No	No
NUMBER OF PARCELS	1	1	1
PARTIAL (P) OR WHOLE TAKE (W)	P	P	P
ROW COST ESTIMATE	$294,000	$276,000	$438,000
CONSTRUCTION COST ESTIMATE	$437,587	$493,456	$718,305
TOTAL SMF ESTIMATED COSTS	**$782,887**	**$942,356**	**$1,245,605**

Basin 603 Recommendation

With all items considered, SMF 603/604B was selected as the preferred alternative. It provides the best value when considering it is a combined basin pond that serves the stormwater needs of both Basins 603 and 604. Although SMF 603/604B is slightly larger in size than SMFs 603A and 603B, the additional excavation of borrow material could be utilized as embankment in the roadway widening areas, creating a value added. Additionally, SMF 603/604B has a more clearly defined SHWGT elevation than SMFs 603A and 603B which gives greater confidence in the hydraulic feasibility of the SMF given the restrictions on setting SHW elevations based on biological indicators. Finally, SMF 603/604B is on a parcel that the adjacent FPID 417540-5-52-01 is proposing to utilize to connect the new SR 29 bypass alignment into the existing SR 29 roadway. The SMF 603/604B location will allow for a more efficient conveyance of runoff within the basin from the adjacent FPID 417540-5-52-01 drainage system to the SMF for treatment and attenuation.

11.8 Basin 604A Alternative

Alternative 604A is a 1.6-acre offsite SMF located at approximately station 2163+00 on the east side of SR 29 on a large, agricultural parcel that appears to be utilized for citrus groves. This SMF would discharge back into the right of way and then convey directly to the 36" cross drain at Sta. 2162+37 that discharges offsite into an existing depression that currently serves as the outfall for Basins 603, 604 and 605. The SHGWT elevation from the SMF boring is 33.8. This SMF is located directly adjacent to the proposed roadway right of way and will not require an easement.

Alternative 604A was ranked high for protected species involvement due to the proximity to documented occurrences and availability of suitable habitat for listed species including the Florida panther, crested caracara, and the wood stork. Involvement with OSWs is anticipated to be medium. Involvement with wetlands is anticipated to be none.

11.9 Basin 604B Alternative

Alternative 604B is a 1.4-acre offsite SMF located at approximately station 2166+00 on the west side of SR 29 on a large, open parcel that is utilized for pasture and contains wetlands. This SMF would discharge back into the right of way and then convey south to the 36" cross drain at Sta. 2162+37 that discharges offsite into an existing depression that currently serves as the outfall for Basins 603, 604 and 605. The SHGWT

elevation from the SMF boring is 33.4. This SMF is located directly adjacent to the proposed roadway right of way and will not require an easement. Additionally, this SMF is located on a Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (TIITF) parcel and acquisition would be an administrative formality at no cost.

Alternative 604B was ranked high for protected species involvement due to the proximity to documented occurrences and availability of suitable habitat for listed species including the Florida panther, crested caracara, and wood stork. Involvement with wetlands is anticipated to be high. Involvement with OSWs is anticipated to be none.

11.10 Combined Basin 603/604B Alternative

Alternative 603/604B is a 5.7-acre offsite SMF located at approximately station 2148+00 on the east side of SR 29 on a large, open parcel that is undeveloped. This SMF would discharge back into the right of way and then convey south to the double 48" cross drain at Sta. 2133+21 that discharges offsite into an existing depression that currently serves as the outfall to Basin 602. The SHGWT elevation from the SMF boring is 33.7. This SMF is located directly adjacent to the proposed roadway right of way and will not require an easement.

Alternative 603/604B was ranked high for protected species involvement due to the proximity to documented occurrences and availability of suitable habitat for listed species including the Florida panther, crested caracara, and wood stork. Involvement with OSWs is anticipated to be low. Involvement with wetlands is anticipated to be none.

Table 5 - Summary of Basin 604 SMF Alternatives

SMF Properties	SMF Alternatives		
SMF NAME	**SMF 604A**	**SMF 604B**	**SMF 603 / 604B**
SMF TYPE	Offsite Wet Detention	Offsite Wet Detention	Offsite Wet Detention
LOCATION	2163+00	2166+00	2148+00
SIDE (LT., RT.)	RT.	LT.	RT.
SMF AREA	1.6	1.4	5.7
EST. GROUND EL. (FT.) @ SMF SITE	35.1	33.25	35.0
PROPOSED LOWEST CRITICAL ELEVATION	37.4	37.4	37.06
EST. SHW ELEVATION	33.8	33.4	33.7
TREATMENT SYSTEM	Wet	Wet	Wet
SOILS NAME	Basinger	Basinger	Myakka
HYDROLOGICAL SOIL GROUP	A/D	A/D	A/D, B/D
LAND USE	Citrus Groves	Improved Pasture and Wetland	Improved Pasture
RECORDED ARCHEOLOGICAL SITES	No	No	No
ARCHEOLOGICAL POTENTIAL (PREHISTORIC/HISTORIC)	Low/Low	Moderate-Low/Low	Moderate-Low/Moderate
RECORDED HISTORICAL STRUCTURES/RESOURCES	No	No	No
TENTATIVE CONTAMINATION HAZARD RANKING	Medium	Low	Medium
PROTECTED & ENDANGERED SPECIES	High	High	High
WETLAND IMPACTS (AC.) - DIRECT	0.00	1.40	0.00
WETLAND IMPACTS (AC.) - INDIRECT	0.00	0.29	0.00
SURFACE WATER IMPACTS (AC.)	0.27	0.00	0.59
ESTIMATED MITIGATION COST	$30,400	$203,300	$89,300
PROXIMITY TO OUTFALL (FT.)	10	240	1,130
SMF EASEMENTS REQUIRED	No	No	No
NUMBER OF PARCELS	1	1	1
PARTIAL (P) OR WHOLE TAKE (W)	P	P	P
ROW COST ESTIMATE	$145,000	$0	$438,000
CONSTRUCTION COST ESTIMATE	$197,272	$191,772	$718,305
TOTAL SMF ESTIMATED COSTS	**$372,672**	**$395,072**	**$1,245,605**

Basin 604 Recommendation

With all items considered, SMF 603/604B was selected as the preferred alternative. It provides the best value when considering it is a combined basin pond that serves the stormwater needs of both Basins 603 and 604. Although SMF 603/604B is larger in size than SMFs 604A and 604B, the additional excavation of borrow material could be utilized as embankment in the roadway widening areas, creating a value added. Additionally, SMF 603/604B is on a parcel that the adjacent FPID 417540-5-52-01 is proposing to utilize to connect the new SR 29 bypass alignment into the existing SR 29 roadway. The SMF 603/604B location will allow for a more efficient conveyance of runoff within the basin from the adjacent FPID 417540-5-52-01 drainage system to the SMF for treatment and attenuation.

11.11 Basin 605A Alternative

Alternative 605A is a 4.0-acre offsite SMF located at approximately station 2178+00 on the east side of SR 29 on a large, agricultural parcel that appears to be utilized for citrus groves. This SMF would discharge back into the right of way and then be piped, approximately 1,340-feet, to the 36" cross drain at Sta. 2162+37 that discharges offsite into an existing depression that currently serves as the outfall for Basins 603, 604 and 605. The SHGWT elevation utilized in the analysis is 35.7. This SMF is located directly adjacent to the proposed roadway right of way and will not require an easement.

Due to the proximity to documented occurrences and availability of suitable habitat for listed species including the Florida panther and wood stork, Alternative 605A was ranked high for protected species involvement. Involvement with OSWs is anticipated to be medium. Involvement with wetlands is anticipated to be none.

11.12 Basin 605B Alternative

Alternative 605B is a 4.7-acre offsite SMF located at approximately station 2194+00 on the west side of SR 29 on a large, open parcel that is utilized for pasture. This SMF would discharge back into the right of way and then be piped, approximately 3,000-feet, to the 36" cross drain at Sta. 2162+37 that discharges offsite into an existing depression that currently serves as the outfall for Basins 603, 604 and 605. One of the two geotechnical borings performed at the site determined the SHGWT to be above ground elevation. As a result, the SHGWT elevation utilized in the analysis, 38.7, is the higher of the two estimates provided and was not expected to be above ground. Due to the high SHGWT table estimate, this SMF is determined not to be

hydraulically feasible without use of a pond liner. The HGL is estimated to exceed the lowest critical elevation and the elevation at furthest point in the basin by over three feet. This SMF is located directly adjacent to the proposed roadway right of way and will not require an easement.

Due to the proximity to documented occurrences and availability of suitable habitat for listed species including the Florida panther, crested caracara, and wood stork, Alternative 605B was ranked high for protected species involvement. Involvement with OSWs is anticipated to be low. Involvement with wetlands is anticipated to be low.

Table 6 - Summary of Basin 605 SMF Alternatives

SMF Properties	SMF Alternatives	
SMF NAME	**SMF 605A**	**SMF 605B**
SMF TYPE	Offsite Wet Detention	Offsite Wet Detention
LOCATION	2178+00	2194+00
SIDE (LT., RT.)	RT.	LT.
SMF AREA	4.0	4.7
EST. GROUND EL. (FT.) @ SMF SITE	36.0	38.7
PROPOSED LOWEST CRITICAL ELEVATION	37.86	37.86
EST. SHW ELEVATION	35.7	38.7
TREATMENT SYSTEM	Wet	Wet
SOILS NAME	Oldsmar, Immokalee	Oldsmar
HYDROLOGICAL SOIL GROUP	A/D, B/D	A/D
LAND USE	Improved Pasture and Citrus Groves	Improved Pasture
RECORDED ARCHEOLOGICAL SITES	No	No
ARCHEOLOGICAL POTENTIAL (PREHISTORIC/HISTORIC)	Low-Moderate/Low	Moderate-High/Low
RECORDED HISTORICAL STRUCTURES/RESOURCES	No	No
TENTATIVE CONTAMINATION HAZARD RANKING	Medium	No
PROTECTED & ENDANGERED SPECIES	High	High
WETLAND IMPACTS (AC.) - DIRECT	0.00	1.05
WETLAND IMPACTS (AC.) - INDIRECT	0.00	0.13
SURFACE WATER IMPACTS (AC.)	0.49	0.00
ESTIMATED MITIGATION COST	$87,400	$47,500
PROXIMITY TO OUTFALL (FT.)	75	1,700
SMF EASEMENTS REQUIRED	No	No
NUMBER OF PARCELS	1	1
PARTIAL (P) OR WHOLE TAKE (W)	P	P
ROW COST ESTIMATE	$271,000	$411,000
CONSTRUCTION COST ESTIMATE	$521,751	N/A
TOTAL SMF ESTIMATED COSTS	**$880,151**	**Not Hydraulically Feasible**

Basin 605 Recommendation

With all items considered, SMF 605A was selected as the preferred alternative as it is the only hydraulically feasible alternative in Basin 605. SMF 605A does not have any archeological, biological, cultural, geotechnical, or hydraulic considerations that preclude it from being a viable option.

11.13 Basin 606A Alternative

Alternative 606A is a 4.4-acre offsite SMF located at approximately station 2230+00 on the west side of SR 29 on a large, open parcel that is utilized for pasture. This SMF would discharge back into the right of way and then northward to the L-29 canal. The SHGWT elevation from the SMF boring is 37.6. This SMF, while hydraulically feasible, does not provide the required one foot of freeboard above the hydraulic grade line (HGL) at the lowest critical elevation in the basin. The utilization of this SMF would require a design variation to allow for a reduction in the available freeboard. Currently this SMF provides 0.50' of freeboard above the HGL at the lowest point in the basin. This SMF is located directly adjacent to the proposed roadway right of way and will not require an easement.

Due to the availability of suitable habitat for listed species including the Florida panther and crested caracara, Alternative 606A was ranked high for protected species involvement. Involvement with OSWs and wetlands is anticipated to be none.

11.14 Basin 606B Alternative

Alternative 606B is a 3.1-acre offsite SMF located at approximately station 2238+50 on the east side of SR 29 on a large, former agricultural parcel that appears to now be utilized as a large solar energy center operated by Florida Power and Light. This SMF would discharge back into the right of way and then northward to the L-29 canal. The SHGWT elevation from the SMF boring is 35.6. This SMF is located directly adjacent to the proposed roadway right of way and will not require an easement.

Due to the availability of suitable habitat for listed species such as the Florida panther, Alternative 606B was ranked high for protected species involvement. Involvement with OSWs is anticipated to be none. Involvement with wetlands is anticipated to be none.

Table 7 - Summary of Basin 606 SMF Alternatives

SMF Properties	SMF Alternatives	
SMF NAME	**SMF 606A**	**SMF 606B**
SMF TYPE	Offsite Wet Detention	Offsite Wet Detention
LOCATION	2230+00	2238+50
SIDE (LT., RT.)	LT.	RT.
SMF AREA	4.4	3.1
EST. GROUND EL. (FT.) @ SMF SITE	37.7	35.9
PROPOSED LOWEST CRITICAL ELEVATION	39.78	39.78
EST. SHW ELEVATION	37.6	35.6
TREATMENT SYSTEM	Wet	Wet
SOILS NAME	Oldsmar	Oldsmar, Holopaw
HYDROLOGICAL SOIL GROUP	A/D	A/D
LAND USE	Improved Pasture	Citrus Groves and Wetland
RECORDED ARCHEOLOGICAL SITES	No	No
ARCHEOLOGICAL POTENTIAL (PREHISTORIC/HISTORIC)	Low/Low	Low/Low
RECORDED HISTORICAL STRUCTURES/RESOURCES	No	No
TENTATIVE CONTAMINATION HAZARD RANKING	No	Medium
PROTECTED & ENDANGERED SPECIES	High	High
WETLAND IMPACTS (AC.) - DIRECT	0.00	0.00
WETLAND IMPACTS (AC.) - INDIRECT	0.00	0.00
SURFACE WATER IMPACTS (AC.)	0.00	0.74
ESTIMATED MITIGATION COST	$121,600	$0
PROXIMITY TO OUTFALL (FT.)	730	15
SMF EASEMENTS REQUIRED	No	No
NUMBER OF PARCELS	1	1
PARTIAL (P) OR WHOLE TAKE (W)	P	P
ROW COST ESTIMATE	$297,000	$909,000
CONSTRUCTION COST ESTIMATE	$534,508	$311,404
TOTAL SMF ESTIMATED COSTS	**$953,108**	**$1,220,404**

Basin 606 Recommendation

With all items considered, SMF 606A was selected as the preferred alternative. It provides a lower contamination ranking and is located on a parcel that is currently vacant and undeveloped. While the site for SMF 606B has a more clearly defined SHWGT elevation and lower mitigation cost, it has recently been developed by Florida Power and Light to serve as the Immokalee Solar Energy Center and now contains 236,260 photo voltaic solar panels that power approximately 15,000 homes. The recommended SMF 606A site is hydraulically feasible and does not have any archeological, biological, cultural, or geotechnical considerations that preclude it from being a viable option.

11.15 Basin 607A Alternative

Alternative 607A is a 2.6-acre offsite SMF located at approximately station 2244+50 on the west side of SR 29 on a large, agricultural parcel that appears to be utilized for row crops. This SMF would discharge back into the right of way and then northward to the L-29 canal. The SHGWT elevation from the SMF boring is 36.3. This SMF is located directly adjacent to the proposed roadway right of way and will not require an easement.

Due to the availability of suitable habitat for listed species including the Florida panther and wood stork, Alternative 607A was ranked high for protected species involvement. Involvement with OSWs is anticipated to be low. Involvement with wetlands is anticipated to be none.

11.16 Basin 607B Alternative

Alternative 607B is a 2.6-acre offsite SMF located at approximately station 2253+00 on the west side of SR 29 on a large, agricultural parcel that appears to be utilized for citrus groves. This SMF would discharge back into the right of way and then northward to the L-29 canal. The SHGWT elevation from the SMF boring is 36.9. This SMF is not located directly adjacent to the proposed roadway right of way and will require an easement.

Due to the availability of suitable habitat for listed species including the Florida panther and wood stork, Alternative 607B was ranked high for protected species involvement. Involvement with OSWs is anticipated to be medium. Involvement with wetlands is anticipated to be none.

Table 8 - Summary of Basin 607 SMF Alternatives

SMF Properties	SMF Alternatives	
SMF NAME	**SMF 607A**	**SMF 607B**
SMF TYPE	Offsite Wet Detention	Offsite Wet Detention
LOCATION	2244+50	2253+00
SIDE (LT., RT.)	LT.	LT.
SMF AREA	2.6	2.6
EST. GROUND EL. (FT.) @ SMF SITE	36.3	36.8
PROPOSED LOWEST CRITICAL ELEVATION	40.86	40.86
EST. SHW ELEVATION	36.3	36.9
TREATMENT SYSTEM	Wet	Wet
SOILS NAME	Oldsmar	Oldsmar
HYDROLOGICAL SOIL GROUP	A/D	A/D
LAND USE	Row Crops and Citrus Groves	Citrus Groves
RECORDED ARCHEOLOGICAL SITES	No	No
ARCHEOLOGICAL POTENTIAL (PREHISTORIC/HISTORIC)	Low/Low	Moderate-High/Low
RECORDED HISTORICAL STRUCTURES/RESOURCES	No	Yes
TENTATIVE CONTAMINATION HAZARD RANKING	Low	Low
PROTECTED & ENDANGERED SPECIES	High	High
WETLAND IMPACTS (AC.) - DIRECT	0.00	0.00
WETLAND IMPACTS (AC.) - INDIRECT	0.00	0.00
SURFACE WATER IMPACTS (AC.)	0.29	0.29
ESTIMATED MITIGATION COST	$38,000	$123,500
PROXIMITY TO OUTFALL (FT.)	180	350
SMF EASEMENTS REQUIRED	No	Yes
NUMBER OF PARCELS	1	1
PARTIAL (P) OR WHOLE TAKE (W)	P	P
ROW COST ESTIMATE	$189,000	$220,000
CONSTRUCTION COST ESTIMATE	$304,417	$487,010
TOTAL SMF ESTIMATED COSTS	**$531,417**	**$830,510**

Basin 607 Recommendation

With all items considered, SMF 607A was selected as the preferred alternative. It provides the best value balancing mitigation against right of way acquisition costs. Although SMF 607A is slightly larger in size than SMF 607B, the additional excavation of borrow material could be utilized as embankment in the roadway widening areas, creating a value added. Additionally, the parcel for SMF 607B includes a recorded historical structure with a higher ranking for archeological potential. SMF 607A is ranked low for archeological potential and doesn't include a recorded historical structure on its parcel. Accordingly, SMF 607A has less of a potential impact on any existing cultural resource.

12 ENVIRONMENTAL LOOK AROUND

An environmental look around was performed to identify regional opportunities that would benefit the project as well as stakeholders. A concept that was presented prior to the commencement of the design phase was to divert runoff from Fish Branch Creek via a pipe system to a new water quality SMF adjacent to the creek that would provide treatment for the runoff and then discharge directly back into Fish Branch Creek via a pipe at the most downstream location before it outfalls into the wetlands surrounding Lake Trafford. This concept would involve partnering with Collier County who identified improvement to the water quality in Lake Trafford and the Level of Service (LOS) of Fish Branch Creek in its Comprehensive Watershed Improvement Plan (CWIP) projects. At the Pond Siting Alternative Review meeting it was decided that this idea should be explored further, and two sites were selected for consideration. During a telephone conversation with Robert Wiley of Collier County, he indicated that the County would be interested in partnering on a regional concept and that along with the SMF they are also considering the possibility of a dual purpose, water quality SMF/recreational park. During the initial pre-application meeting with SFWMD the regional concept was presented, and they were receptive to the idea. For the concept to be permittable SFWMD requested the drainage basin be the same pre/post and no basin shifting occur, dry pre-treatment be incorporated into the ditch design along SR 29 before any runoff leaves the FDOT right of way, and the pre/post attenuation requirement be met at the discharge points from the FDOT right of way. Further coordination with Collier County and SFWMD was planned to thoroughly investigate and analyze this concept. However, in October 2020 this project was placed on hold and later restricted with the Navigational Beacons that directed no coordination take place with SFWMD, other local agencies, and local property owners. At the time of this report, the two regional alternative SMF sites that were selected for

consideration have been analyzed via desktop review for archaeological, biological, and cultural parameters but have not been field reviewed. Site specific geotechnical data was collected on the regional SMF sites prior to October 2020. It is anticipated that further coordination regarding the regional alternatives with other stakeholders will not be able to be completed prior to the Phase II plans submittal and the 268 date to submit right of way requirements. Each of the regional alternative SMFs are discussed below, however, based on the restrictions of the Navigational Beacons and the compressed project timeline, the regional alternative concept is not the recommended approach for stormwater management on this project.

12.1 North Regional SMF Alternative

The North Regional SMF Alternative is a 9.9-acre offsite SMF located at approximately station 2105+00 and 5,120-feet west of SR 29 on a large, open parcel that is utilized for pasture. This SMF provides the treatment volume for the section of SR 29 in the Cow Slough basin (3278E), roadway basins 601 through 605. To provide the water quality, runoff would be diverted from Fish Branch Creek via a pipe system into the treatment only SMF adjacent to the creek, and then discharge directly back into Fish Branch Creek via a pipe at the most downstream location before it outfalls into the wetlands surrounding Lake Trafford. Both geotechnical borings performed at the site determined the SHGWT to be at or above ground elevation. As a result, the SHGWT elevation utilized in the analysis, 30.4, is the higher of the two estimates provided. This SMF is not located directly adjacent to the proposed roadway right of way and will require an easement.

Due to the proximity to documented black bears and the availability of suitable habitat for listed species including the Florida panther, crested caracara, wood stork, and Florida bonneted bat, the North Regional SMF Alternative was ranked high for protected species involvement. Involvement with OSWs is anticipated to be low. Involvement with wetlands is anticipated to be none.

12.2 South Regional SMF Alternative

The South Regional SMF Alternative is an 8.6-acre offsite SMF located at approximately station 2065+00 and 5,280-feet west of SR 29 on a large, open parcel that is utilized for pasture and also contains wetlands. This SMF provides the treatment volume for the section of SR 29 in the Cow Slough basin (3278E), roadway basins 601 through 605. To provide the water quality, runoff would be diverted from Fish Branch Creek via a pipe system into the treatment only SMF adjacent to the creek, and then discharge directly back into Fish Branch Creek via a pipe at the most downstream location before it outfalls into the wetlands surrounding Lake

Trafford. Both geotechnical borings performed at the site determined the SHGWT to be above ground elevation. As a result, the SHGWT elevation utilized in the analysis, 21.4, is the higher of the two estimates provided. This SMF is not located directly adjacent to the proposed roadway right of way and will require an easement.

Due to the proximity to documented occurrences of black bears and the availability of suitable habitat for listed species including the Florida panther, crested caracara, wood stork, Everglade snail kite, and Florida bonneted bat, the South Regional SMF Alternative was ranked high for listed species involvement. Involvement with wetlands is anticipated to be high. Involvement with OSWs is anticipated to be none.

Table 9 - Summary of Regional SMF Alternatives

SMF Properties	SMF Alternatives	
SMF NAME	North Regional SMF	South Regional SMF
SMF TYPE	Offsite Wet Detention	Offsite Wet Detention
LOCATION	North of Lake Trafford	South of Lake Trafford
SIDE (LT., RT.)	LT.	LT.
SMF AREA	9.91	8.6
EST. GROUND EL. (FT.) @ SMF SITE	30.3	21.4
PROPOSED LOWEST CRITICAL ELEVATION	37.39	37.39
EST. SHW ELEVATION	ABG	ABG
TREATMENT SYSTEM	Wet	Wet
SOILS NAME	Immokalee, Basinger	Pineda, Immokalee
HYDROLOGICAL SOIL GROUP	B/D, A/D	A/D, B/D
LAND USE	Improved Pasture	Improved Pasture, Cypress, Wetland, Marsh
RECORDED ARCHEOLOGICAL SITES	No	Yes
ARCHEOLOGICAL POTENTIAL (PREHISTORIC/HISTORIC)	Moderate-Low/Low	Moderate-High/Low
RECORDED HISTORICAL STRUCTURES/RESOURCES	No	No
TENTATIVE CONTAMINATION HAZARD RANKING	Low	No
PROTECTED & ENDANGERED SPECIES	High	High
WETLAND IMPACTS (AC.) - DIRECT	0.00	6.89
WETLAND IMPACTS (AC.) - INDIRECT	0.00	0.79
SURFACE WATER IMPACTS (AC.)	0.34	0.00
ESTIMATED MITIGATION COST	$123,500	$796,100
PROXIMITY TO OUTFALL (FT.)	50	50
SMF EASEMENTS REQUIRED	Yes	Yes
NUMBER OF PARCELS	1	1
PARTIAL (P) OR WHOLE TAKE (W)	P	P
ROW COST ESTIMATE	$719,000	$607,000
CONSTRUCTION COST ESTIMATE	$1,020,608	$1,059,205
TOTAL SMF ESTIMATED COSTS	**$1,863,108**	**$2,462,305**

13 FLOODPLAIN ENCROACHMENT/COMPENSATION

The project area is located within the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) number 12021C0135H. This map was last revised on May 16, 2012. Refer to **Appendix 1.5** for the **FEMA FIRM Map**. It shows that most of the roadway is inside of the 100-year floodplain and floodplain compensation will be required. Refer to **Appendix 3.2** for **Floodplain Calculations**.

Each of the offsite FPCs discussed below were selected for consideration due to being outside of the FEMA 100-year floodplain shape and having favorable soils based on an initial review of the NRCS soil survey. However, after site specific geotechnical borings were performed in 2020 at the FPC alternative sites, the results provided unfavorable SHGWT elevations conducive to floodplain compensation. Refer to **Appendix 7.0** for **Geotechnical Data**. Accordingly, neither of the FPC alternative sites analyzed are recommended for floodplain compensation on this project. Floodplain compensation cannot be done entirely within the proposed roadway right of way and compensation will be a combination of cup for cup compensation within the SR 29 right of way and ICPR modeling.

13.1 FPC Alternative 1

FPC Alternative 1 is a 2.81 Ac. FPC site located near Station 2196+50 on the west side of SR 29 on a large open parcel that is utilized for pasture. The parcel that this FPC is located on is the same as SMF 605B. This FPC is not located directly adjacent to SMF 605B or the proposed roadway right of way and will require an easement. From the FEMA FIRM Maps, the floodplain surrounding the FPC is designated as a Special Flood Hazard Area (SFHA) and the 100-year flood elevation is estimated to be 36.5 by overlaying the FEMA FIRM Maps onto LiDAR contours and comparing that to the Base Flood Elevation (BFE) lines on the FIRM Maps. Both geotechnical borings performed at the site determined the SHGWT to be above ground elevation. At the location of the FPC the site varies in existing ground elevation from 34 to 38.5 and the borings indicate that the SHGWT varies similar to the terrain. Based on the estimated 100-year floodplain elevation and the varying site SHGWT elevations, FPC Alternative 1 is not a viable location for floodplain compensation.

Due to the proximity to documented occurrences and availability of suitable habitat for listed species including the Florida panther, crested caracara, and wood stork, FPC Alternative 1 was ranked high for protected species involvement. Involvement with OSWs is anticipated to be low. Involvement with wetlands is anticipated to be low.

13.2 FPC Alternative 2

FPC Alternative 2 is a 3.37 Ac. FPC site located near Station 2204+00 on the west side of SR 29 on a large open parcel that is utilized for a rural residence. The location of the FPC on the parcel will not impact the existing residence or require a whole take of the parcel. This FPC is not located directly adjacent to the proposed roadway right of way and will require an easement. From the FEMA FIRM Maps, the floodplain surrounding the FPC is designated as Zone AH and the 100-year flood elevation is estimated to be 39.0 by overlaying the FEMA FIRM Maps onto LiDAR contours and comparing that to the Base Flood Elevation (BFE) lines on the FIRM Maps. Two geotechnical borings were performed at the site to determine the SHGWT elevation and the higher of the two elevations, 39.1, was utilized in the analysis. Based on the estimated 100-year floodplain elevation and the estimated site SHGWT elevation, FPC Alternative 2 is not a viable location for floodplain compensation.

Due to being entirely located within the Secondary Zone of the Florida panther and proximity to documented panther activity, FPC Alternative 2 was ranked high for protected species involvement. Involvement with OSWs and wetlands is anticipated to be none.

Table 10 - Summary of FPC Alternatives

FPC Properties	FPC Alternatives	
FPC NAME	FPC Alt 1	FPC Alt 2
LOCATION	2196+50	2204+00
SIDE (LT., RT.)	LT.	LT.
FPC AREA	2.81	3.37
EST. GROUND EL. (FT.) @ FPC SITE	36.8	39.8
EST. SHW ELEVATION	38.6	39.1
EST. 100-YEAR FLOODPLAIN ELEVATION	36.5	39.0
LAND USE	Rural Residential, Improved Pasture, Herbaceous (Dry Prairie)	Rural Residential
RECORDED ARCHEOLOGICAL SITES	No	No
ARCHEOLOGICAL POTENTIAL (PREHISTORIC/HISTORIC)	Moderate-High/Low	Low-Moderate/Low
RECORDED HISTORICAL STRUCTURES/RESOURCES	No	No
TENTATIVE CONTAMINATION HAZARD RANKING	No	Low
PROTECTED & ENDANGERED SPECIES	High	High
WETLAND IMPACTS (AC.) - DIRECT	0.75	0.00
WETLAND IMPACTS (AC.) - INDIRECT	0.37	0.00
SURFACE WATER IMPACTS (AC.)	0.00	0.00
ESTIMATED MITIGATION COST	$49,400	$0.00
FPC EASEMENTS REQUIRED	Yes	Yes
NUMBER OF PARCELS	1	1
PARTIAL (P) OR WHOLE TAKE (W)	P	P
ROW COST ESTIMATE	$289,000	$388,000
CONSTRUCTION COST ESTIMATE	N/A	N/A
TOTAL FPC ESTIMATED COSTS	**$338,400**	**$388,000**

Appendix 1.0

Miscellaneous Maps and Data

1.1 Project Location Map


29
82
END
PD&E LIMITS
Immokalee
Regional
Airport
29
846
29
BEGIN
PD&E LIMITS
Legend
PD&E Preferred Alternative
Concurrent Design Sections
South of CR 846 to SR 29
Bypass Junction
South of New Market RoadWest
to SR 82
N

1.2 USGS Quadrangle Map

USGS science for a changing world

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

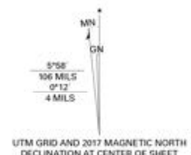
The National Map US Topo

IMMOKALEE QUADRANGLE
FLORIDA - COLLIER COUNTY
7.5-MINUTE SERIES

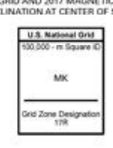
Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 17R

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

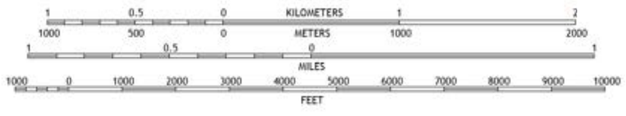
Imagery	NAIP, April 2015 - February	2016
Roads	U.S. Census Bureau,	2016
Names	GNIS, 2008 -	2018
Hydrography	National Hydrography Dataset, 2003 -	2017
Contours	National Elevation Dataset,	2012
Boundaries	Multiple sources; see metadata file 2014 -	2016
Public Land Survey System	BLM,	2017
Wetlands	FWS National Wetlands Inventory 2002 -	2010



UTM GRID AND 2017 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET



SCALE 1:24 000



CONTOUR INTERVAL 5 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.18

ROAD CLASSIFICATION

Expressway	Local Connector
Secondary Hwy	Local Road
Ramp	4WD
Interstate Route	US Route / State Route

IMMOKALEE, FL
2018

NSN 7643016360871
NGA REF NO. USGSX24K21736

1.3 Land Use Map

Legend

- Right-of-Way
- Pond Site Alternatives
- Pond Clearance Areas

Land Use and Land Cover (FLUCFCS)

- 1180: Rural Residential
- 1230: Mixed Units, Fixed and Mobile Home Units
- 1710: Educational Facilities
- 2110: Improved Pastures
- 2130: Woodland Pastures
- 2140: Row Crops
- 2210: Citrus Groves
- 3100: Herbaceous (Dry Prairie)
- 5300: Reservoirs
- 6170: Mixed Wetland Hardwoods
- 6190: Exotic Wetland Hardwoods
- 6410: Freshwater Marshes

WESTCLOX RD

JOHNSON RD

NEW MARKET RD

29

82

601A 602A 603A 603B 604B FPC Alt 1 605B FPC Alt 2 606A 607A 607B

601B 602B 603/604B 604A 605A 606B

BEGIN PROJECT

END PROJECT

Aerial Imagery: 12/09/2020

FDOT

Land Cover and Land Use
(Off-site Pond and FPC Alternatives)

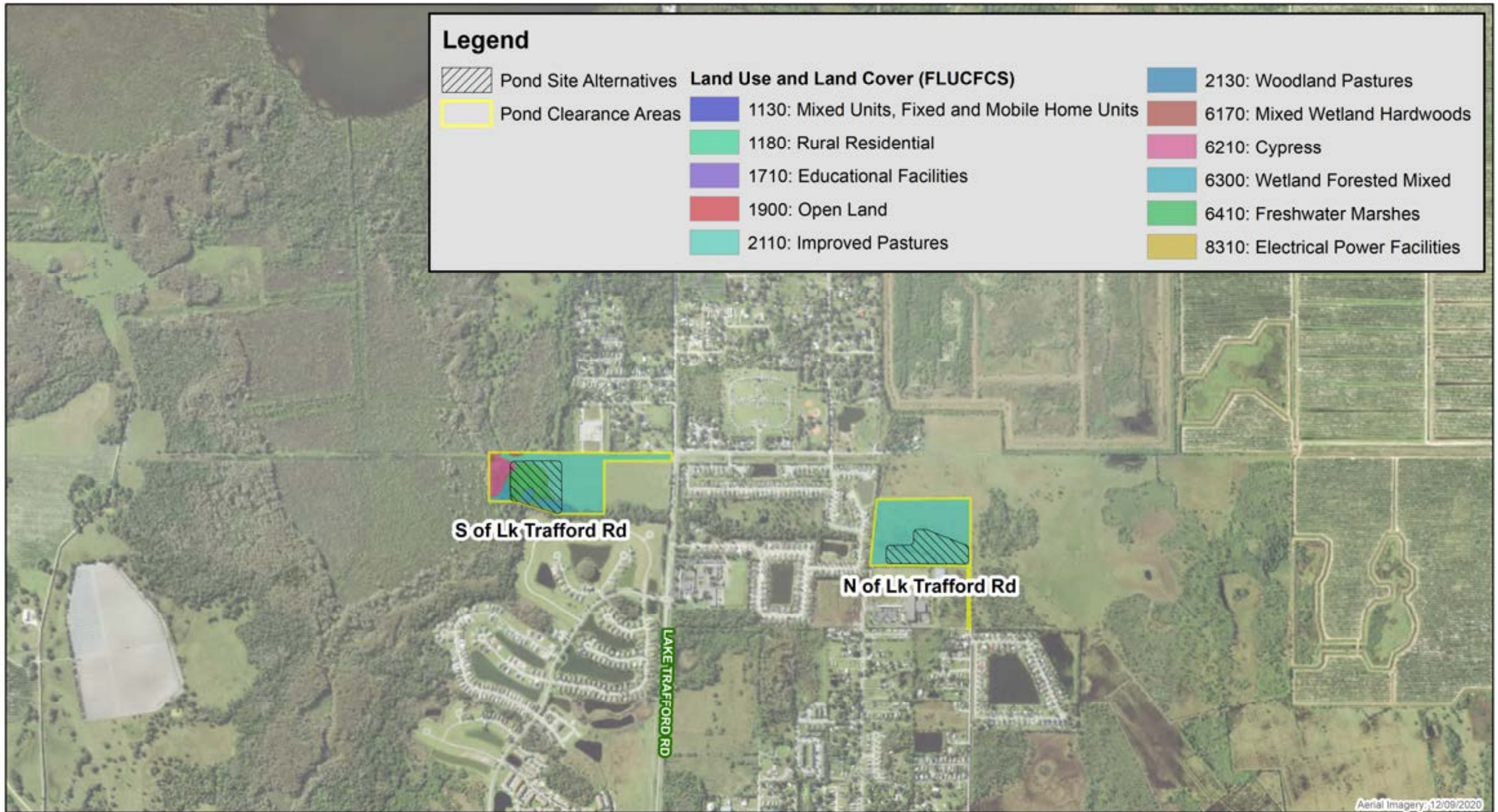
FPID # 417540-6-52-01 SR 29 from New Market Rd to SR 82
Pond Siting Report
Collier County, FL

Data Source:
- FDA - SFWMD
- ESRI

1 inch = 1,350 feet

Coordinate System: NAD 1983
Florida State Plane East

Document Path: \\pafile02\cadd\Projects\Worksets_ORD\FDOT\417540652\01\Permits\Data-GIS\mxd\PSR Figures\2023 Updates\Figure A2a - FLUCFCS_rev0.mxd



FDOT

Land Cover and Land Use
(Regional Pond Alternatives)

FPID # 417540-6-52-01 SR 29 from New Market Rd to SR 82
Pond Siting Report
Collier County, FL

Data Source:
- FDA - SFWMD
- ESRI

1 inch = 1,350 feet

Coordinate System: NAD 1983
Florida State Plane East

Document Path: \\pafile02\cadd\Projects\Worksets_ORD\FDOT\417540652201\Permits\Data-GIS\mxd\PSR Figures\2023 Updates\Figure A2b - FLUCFCS_Regional_rev0.mxd

1.4 Soil Map

Legend

- Right-of-Way
- Pond Site Alternatives
- Pond Clearance Areas
- Hydric Soils

NRCS Soil Type

- BASINGER FINE SAND, 0 TO 2 PERCENT SLOPES
- CHOBEE, WINDER, GATOR SOILS, FREQUENTLY PONDED, 0 TO 1 PERCENT SLOPES
- HOLOPAW FINE SAND, 0 TO 2 PERCENT SLOPES
- IMMOKALEE FINE SAND, 0 TO 2 PERCENT SLOPES
- IMMOKALEE FINE SAND-URBAN LAND COMPLEX, 0 TO 2 PERCENT SLOPES
- MYAKKA FINE SAND, 0 TO 2 PERCENT SLOPES
- OLDSMAR FINE SAND, 0 TO 2 PERCENT SLOPES
- OLDSMAR FINE SAND-URBAN LAND COMPLEX, 0 TO 2 PERCENT SLOPES
- POMELLO FINE SAND, 0 TO 2 PERCENT SLOPES
- POMELLO FINE SAND-URBAN LAND COMPLEX, 0 TO 2 PERCENT SLOPES

WESTCLOX RD
JOHNSON RD
NEW MARKET RD
29
82
601A
602A
603A
603B
604B
FPC Alt 1
FPC Alt 2
605B
606A
607A
607B
601B
602B
603/604B
604A
605A
606B
BEGIN PROJECT
END PROJECT

Aerial Imagery: 12/09/2020

FDOT

NRCS Soil Types
(Off-site Pond and FPC Alternatives)

FPID # 417540-6-52-01 SR 29 from New Market Rd to SR 82
Pond Siting Report
Collier County, FL

Data Source:
- FDA - NRCS
- ESRI

1 inch = 1,350 feet

Coordinate System: NAD 1983
Florida State Plane East

Document Path: \\pafile02\cadd\Projects\Worksets_ORD\FDOT\417540652\01\Permits\Data-GIS\mxd\PSR Figures\2023 Updates\Figure A3a - Soils_rev0.mxd

Legend

- Pond Site Alternatives
- Pond Clearance Areas
- Hydric Soils

NRCS Soil Type

- BASINGER FINE SAND, 0 TO 2 PERCENT SLOPES
- IMMOKALEE FINE SAND, 0 TO 2 PERCENT SLOPES
- IMMOKALEE FINE SAND-URBAN LAND COMPLEX, 0 TO 2 PERCENT SLOPES
- PINEDA-RIVIERA FINE SANDS ASSOCIATION, 0 TO 2 PERCENT SLOPES
- WINDER, RIVIERA, LIMESTONE SUBSTRATUM, AND CHOBEE SOILS, FREQUENTLY PONDED, 0 TO 1 PERCENT SLOPES

S of Lk Trafford Rd

N of Lk Trafford Rd

LAKE TRAFFORD RD

Aerial Imagery: 12/09/2020

FDOT

NRCS Soil Types (Regional Pond Alternatives)

FPID # 417540-6-52-01 SR 29 from New Market Rd to SR 82
Pond Siting Report
Collier County, FL

Data Source:
- FDA - SFWMD
- ESRI

1 inch = 1,350 feet

Coordinate System: NAD 1983
Florida State Plane East

Document Path: \\pafile02\cadd\Projects\Worksets_ORD\FDOT\417540652019\Permits\Data-GIS\mxd\PSR Figures\2023 Updates\Figure A3b - Soils_Regional_rev0.mxd

1.5 FEMA FIRM Map

National Flood Hazard Layer FIRMette

FEMA

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99*
	With BFE or Depth *Zone AE, AO, AH, VE, AR*
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
	Future Conditions 1% Annual Chance Flood Hazard *Zone X*
	Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
	Area with Flood Risk due to Levee *Zone D*
OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard *Zone X*
	Effective LOMRs
	Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
OTHER FEATURES	20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
	Coastal Transect
	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
MAP PANELS	Digital Data Available
	No Digital Data Available
	Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

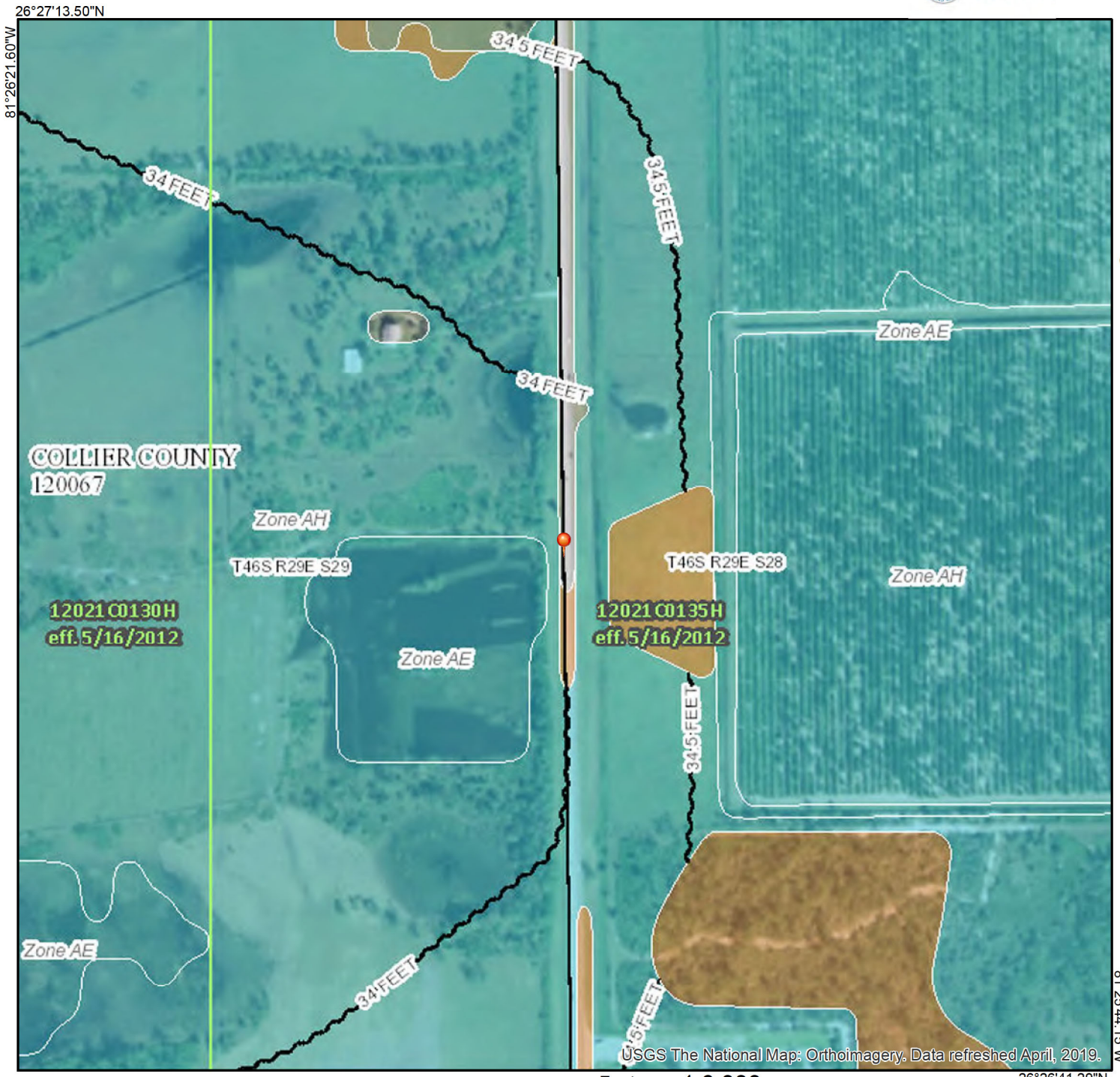
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/5/2020 at 1:51:24 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/5/2020 at 1:53:01 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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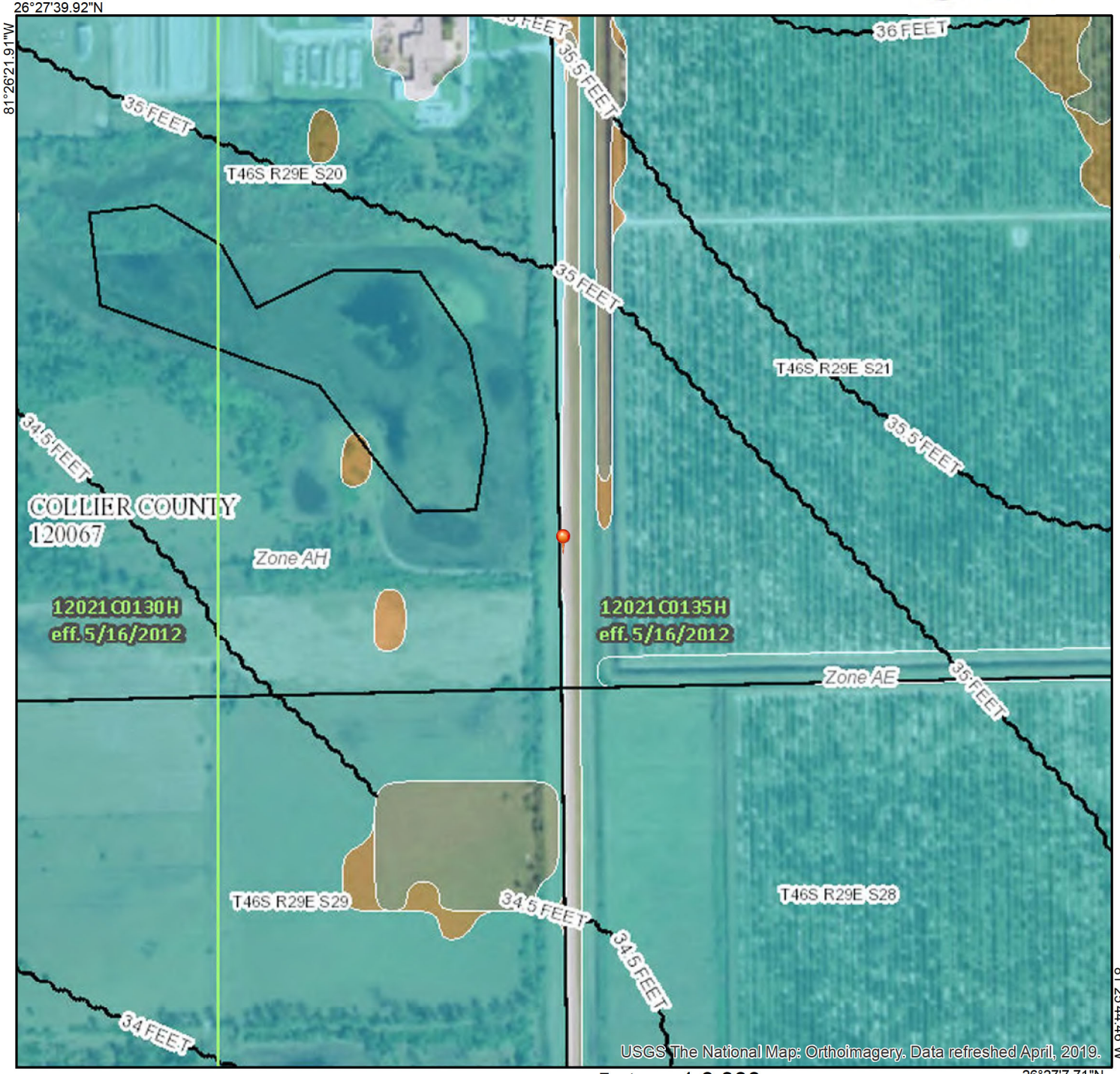
National Flood Hazard Layer FIRMette

FEMA



0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

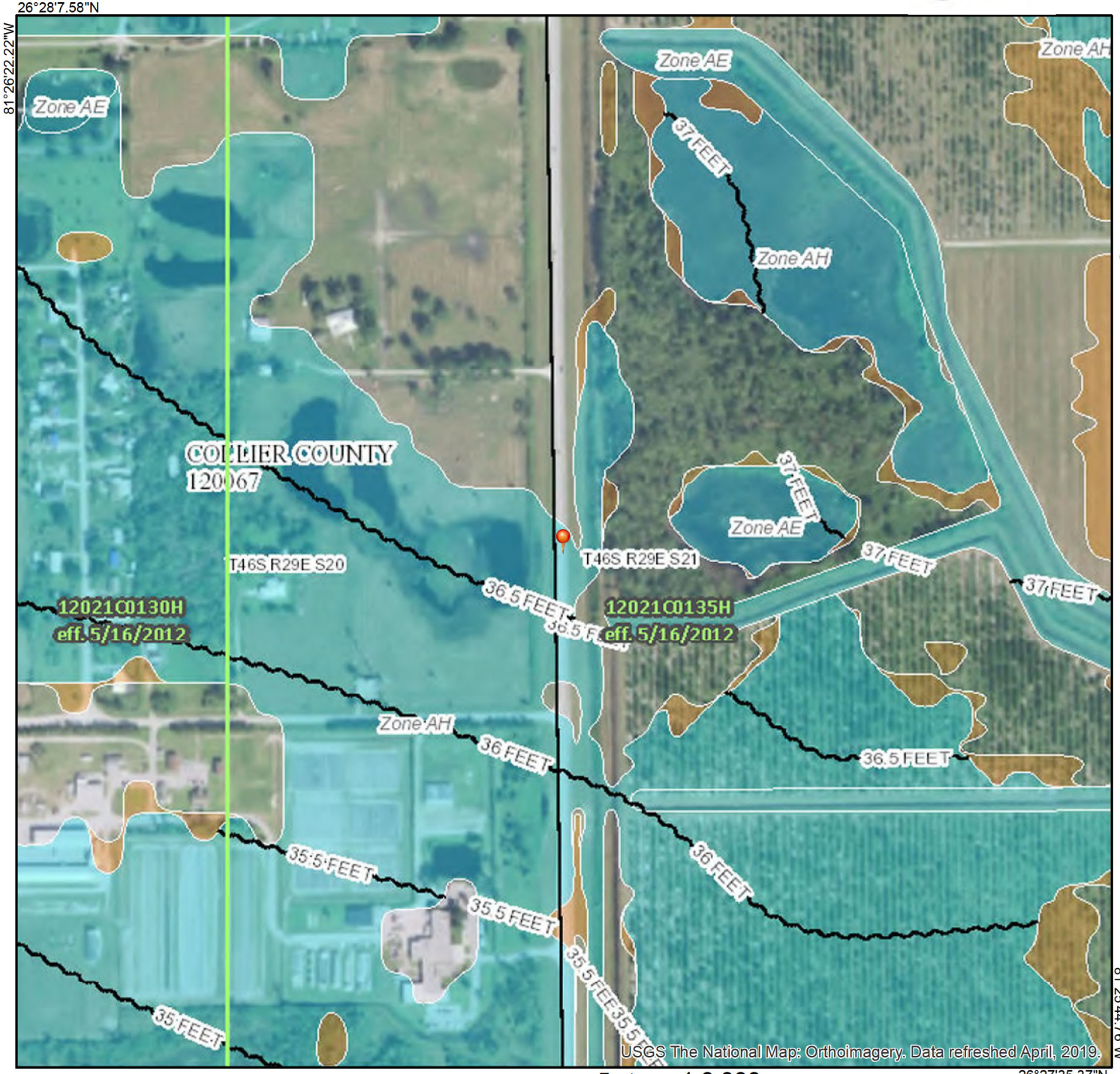
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/5/2020 at 1:54:41 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA



Feet

0 250 500 1,000 1,500 2,000

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

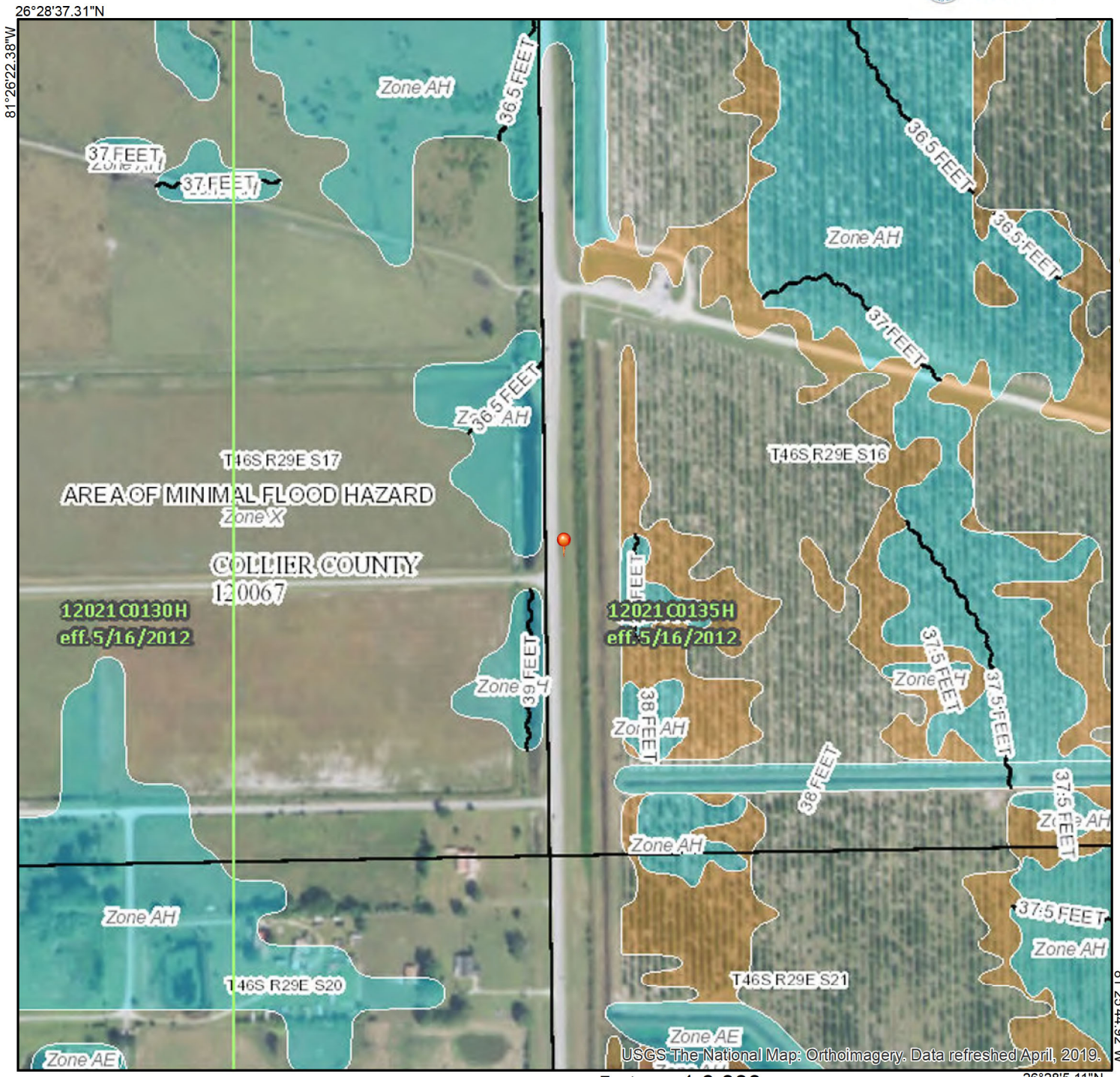
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/5/2020 at 1:56:49 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

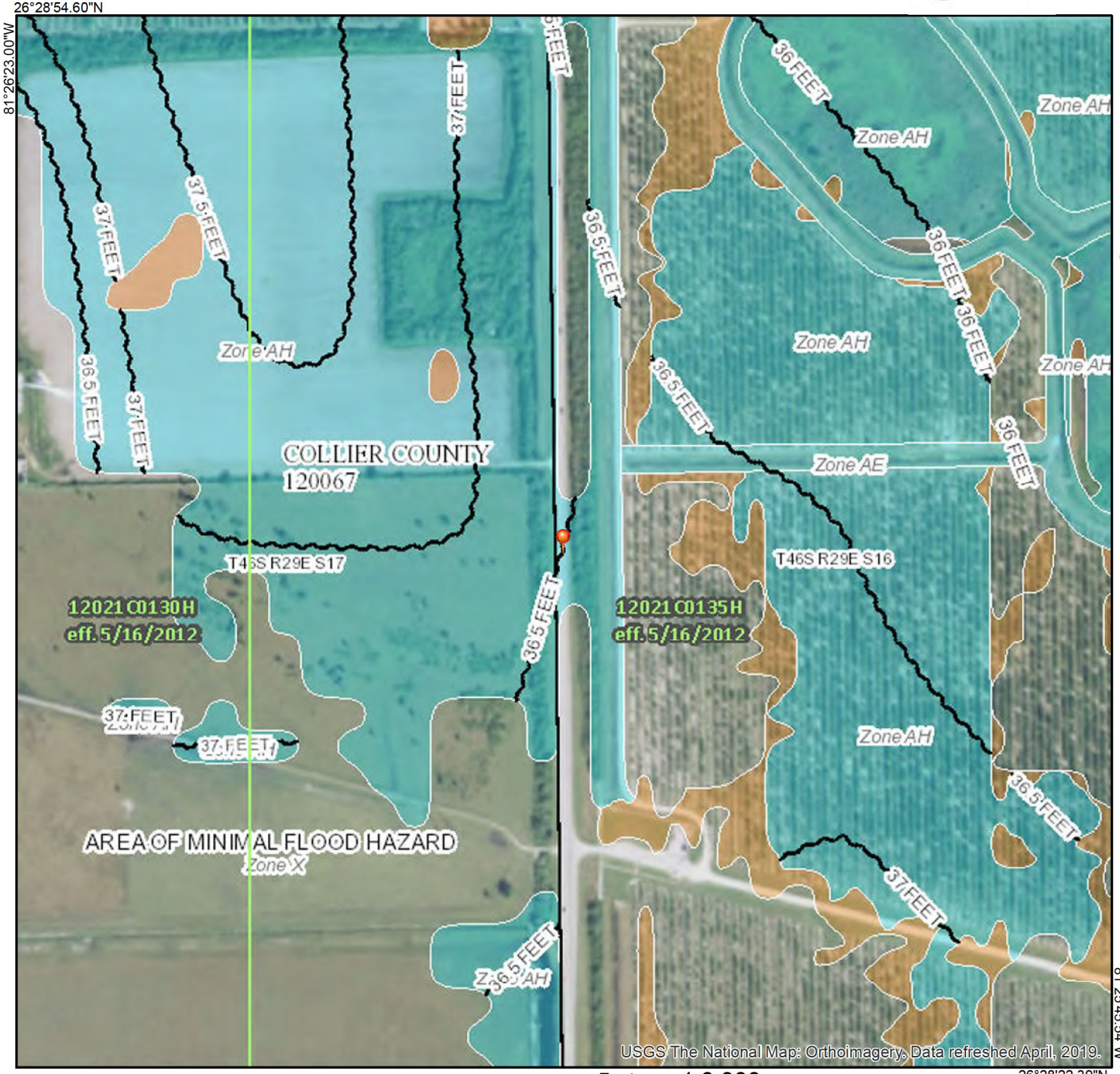
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/5/2020 at 1:59:33 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA



0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

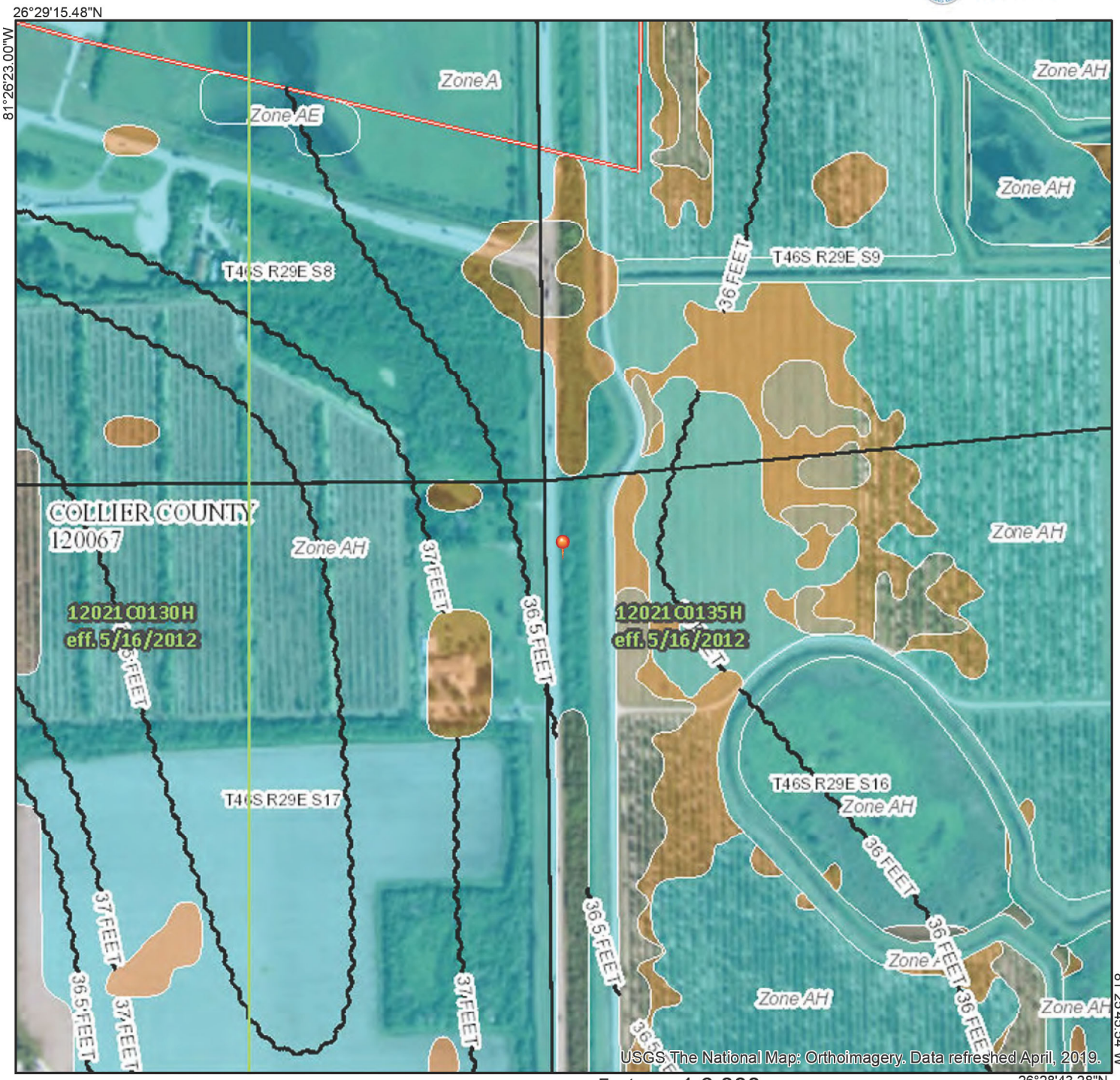
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/5/2020 at 2:01:51 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/5/2020 at 2:02:43 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

1.6 Rainfall Data

NOAA Atlas 14, Volume 9, Version 2
Location name: Immokalee, Florida, USA*
Latitude: 26.4609°, Longitude: -81.4344°
Elevation: 37 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.538 (0.427-0.678)	0.609 (0.483-0.769)	0.726 (0.574-0.919)	0.824 (0.648-1.05)	0.958 (0.731-1.26)	1.06 (0.794-1.43)	1.17 (0.848-1.62)	1.27 (0.889-1.82)	1.42 (0.953-2.10)	1.52 (1.00-2.30)
10-min	0.788 (0.626-0.993)	0.892 (0.708-1.13)	1.06 (0.841-1.35)	1.21 (0.949-1.53)	1.40 (1.07-1.85)	1.56 (1.16-2.09)	1.71 (1.24-2.36)	1.86 (1.30-2.67)	2.07 (1.40-3.07)	2.23 (1.47-3.37)
15-min	0.961 (0.763-1.21)	1.09 (0.863-1.37)	1.30 (1.03-1.64)	1.47 (1.16-1.87)	1.71 (1.31-2.26)	1.90 (1.42-2.55)	2.08 (1.51-2.88)	2.27 (1.59-3.26)	2.53 (1.70-3.74)	2.72 (1.79-4.11)
30-min	1.48 (1.17-1.86)	1.67 (1.33-2.11)	1.99 (1.58-2.52)	2.26 (1.78-2.88)	2.63 (2.01-3.47)	2.92 (2.18-3.92)	3.21 (2.32-4.44)	3.50 (2.44-5.01)	3.89 (2.62-5.76)	4.18 (2.75-6.33)
60-min	1.95 (1.55-2.46)	2.20 (1.74-2.77)	2.61 (2.06-3.30)	2.95 (2.32-3.76)	3.43 (2.62-4.54)	3.81 (2.85-5.12)	4.19 (3.04-5.81)	4.58 (3.20-6.56)	5.10 (3.44-7.56)	5.50 (3.62-8.32)
2-hr	2.42 (1.94-3.04)	2.72 (2.17-3.41)	3.22 (2.56-4.05)	3.64 (2.88-4.61)	4.24 (3.26-5.56)	4.70 (3.54-6.28)	5.17 (3.78-7.13)	5.66 (3.98-8.06)	6.32 (4.29-9.31)	6.82 (4.52-10.3)
3-hr	2.65 (2.12-3.31)	2.98 (2.39-3.72)	3.54 (2.82-4.43)	4.01 (3.18-5.05)	4.68 (3.62-6.13)	5.21 (3.94-6.95)	5.76 (4.22-7.91)	6.33 (4.47-8.99)	7.10 (4.84-10.4)	7.70 (5.12-11.5)
6-hr	3.00 (2.43-3.72)	3.42 (2.75-4.24)	4.14 (3.32-5.15)	4.76 (3.80-5.95)	5.66 (4.40-7.39)	6.38 (4.88-8.48)	7.13 (5.27-9.78)	7.92 (5.64-11.2)	9.02 (6.20-13.2)	9.88 (6.63-14.7)
12-hr	3.33 (2.70-4.10)	3.89 (3.15-4.80)	4.86 (3.93-6.01)	5.72 (4.59-7.10)	6.96 (5.48-9.08)	7.98 (6.12-10.8)	9.06 (6.74-12.4)	10.2 (7.31-14.4)	11.8 (8.16-17.2)	13.0 (8.80-19.3)
24-hr	3.79 (3.09-4.64)	4.44 (3.62-5.44)	5.60 (4.55-6.88)	6.65 (5.37-8.21)	8.20 (6.50-10.7)	9.50 (7.35-12.5)	10.9 (8.16-14.8)	12.4 (8.94-17.4)	14.5 (10.1-21.0)	16.1 (11.0-23.7)
2-day	4.49 (3.68-5.46)	5.16 (4.23-6.28)	6.38 (5.22-7.79)	7.51 (6.10-9.21)	9.22 (7.37-12.0)	10.7 (8.33-14.0)	12.3 (9.26-16.6)	14.0 (10.2-19.5)	16.4 (11.6-23.7)	18.4 (12.6-26.8)
3-day	5.00 (4.11-6.04)	5.74 (4.72-6.96)	7.08 (5.81-8.61)	8.30 (6.78-10.1)	10.1 (8.12-13.1)	11.7 (9.14-15.3)	13.3 (10.1-18.0)	15.1 (11.1-21.0)	17.7 (12.5-25.4)	19.7 (13.6-28.7)
4-day	5.45 (4.50-6.58)	6.27 (5.17-7.57)	7.71 (6.34-9.34)	9.00 (7.39-11.0)	10.9 (8.75-14.0)	12.5 (9.80-16.3)	14.2 (10.8-19.0)	16.0 (11.7-22.2)	18.8 (13.2-26.8)	20.7 (14.2-29.9)
7-day	6.75 (5.60-8.10)	7.67 (6.36-9.22)	9.25 (7.64-11.1)	10.6 (8.73-12.9)	12.6 (10.1-16.0)	14.2 (11.2-18.3)	15.9 (12.1-21.1)	17.7 (13.0-24.3)	20.2 (14.3-28.6)	22.1 (15.3-31.9)
10-day	7.97 (6.63-9.54)	8.95 (7.44-10.7)	10.6 (8.78-12.7)	12.0 (9.90-14.5)	14.0 (11.3-17.6)	15.6 (12.3-20.0)	17.3 (13.2-22.8)	19.0 (14.0-26.9)	21.4 (15.2-30.1)	23.2 (16.1-33.3)
20-day	11.5 (9.63-13.7)	12.7 (10.6-15.1)	14.6 (12.1-17.4)	16.1 (13.4-19.3)	18.2 (14.7-22.6)	19.8 (15.7-25.1)	21.4 (16.5-27.9)	23.1 (17.1-31.1)	25.2 (18.0-35.1)	26.8 (18.8-38.2)
30-day	14.4 (12.1-17.1)	15.8 (13.3-18.7)	18.0 (15.1-21.4)	19.8 (16.5-23.6)	22.1 (17.8-27.3)	23.8 (18.9-29.9)	25.5 (19.6-32.9)	27.1 (20.1-36.3)	29.1 (20.9-40.3)	30.5 (21.5-43.3)
45-day	18.1 (15.2-21.3)	19.9 (16.7-23.4)	22.6 (19.0-26.8)	24.8 (20.7-29.5)	27.5 (22.2-33.5)	29.4 (23.3-36.8)	31.2 (24.0-40.0)	32.8 (24.4-43.6)	34.8 (25.0-47.8)	36.1 (25.5-51.0)
60-day	21.1 (17.9-24.9)	23.3 (19.7-27.4)	26.7 (22.4-31.5)	29.2 (24.5-34.7)	32.4 (26.3-39.3)	34.5 (27.5-43.8)	36.5 (28.2-46.6)	38.2 (28.5-50.5)	40.2 (29.0-55.0)	41.4 (29.3-58.4)

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

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

Please refer to NOAA Atlas 14 document for more information.

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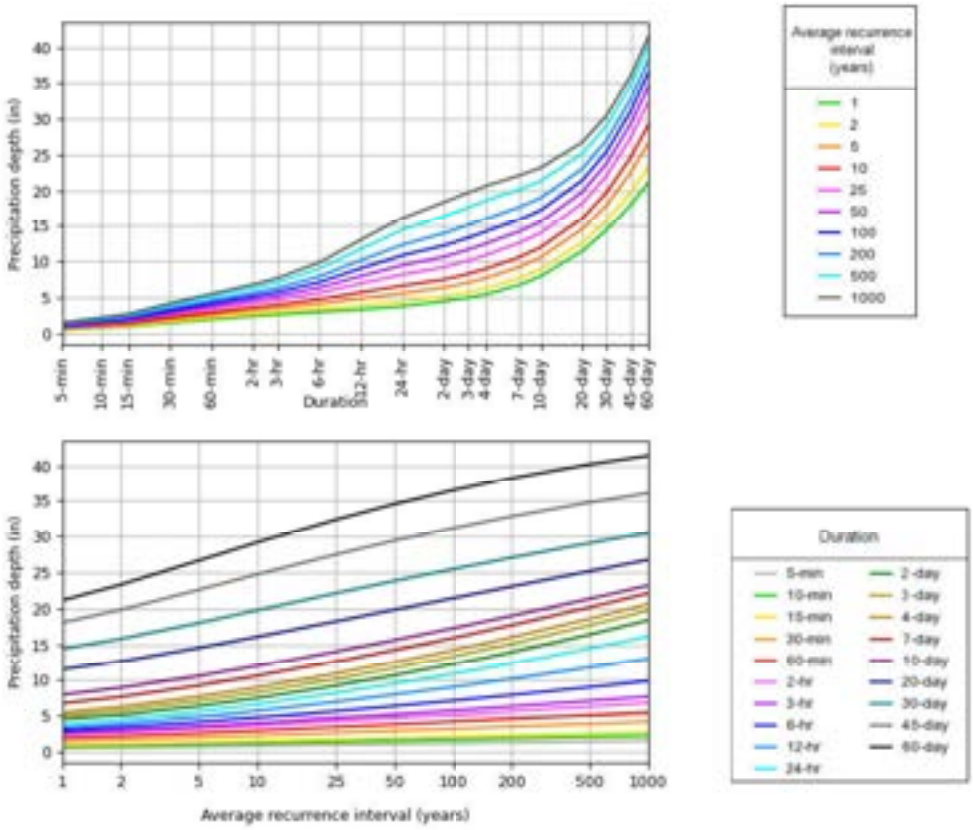
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 26.4609°, Longitude: -81.4344°



NOAA Atlas 14, Volume 9, Version 2

Created (GMT): Fri Mar 1 15:29:45 2024

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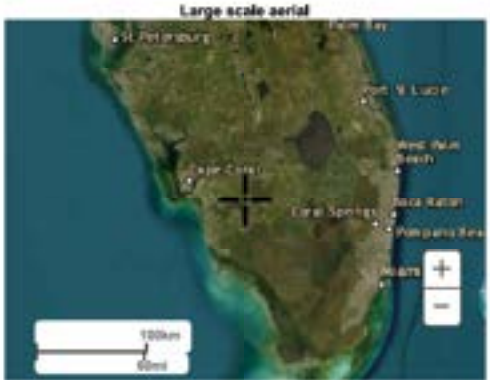
Maps & aerials

Small scale terrain

Large scale terrain

Large scale map

Large scale aerial



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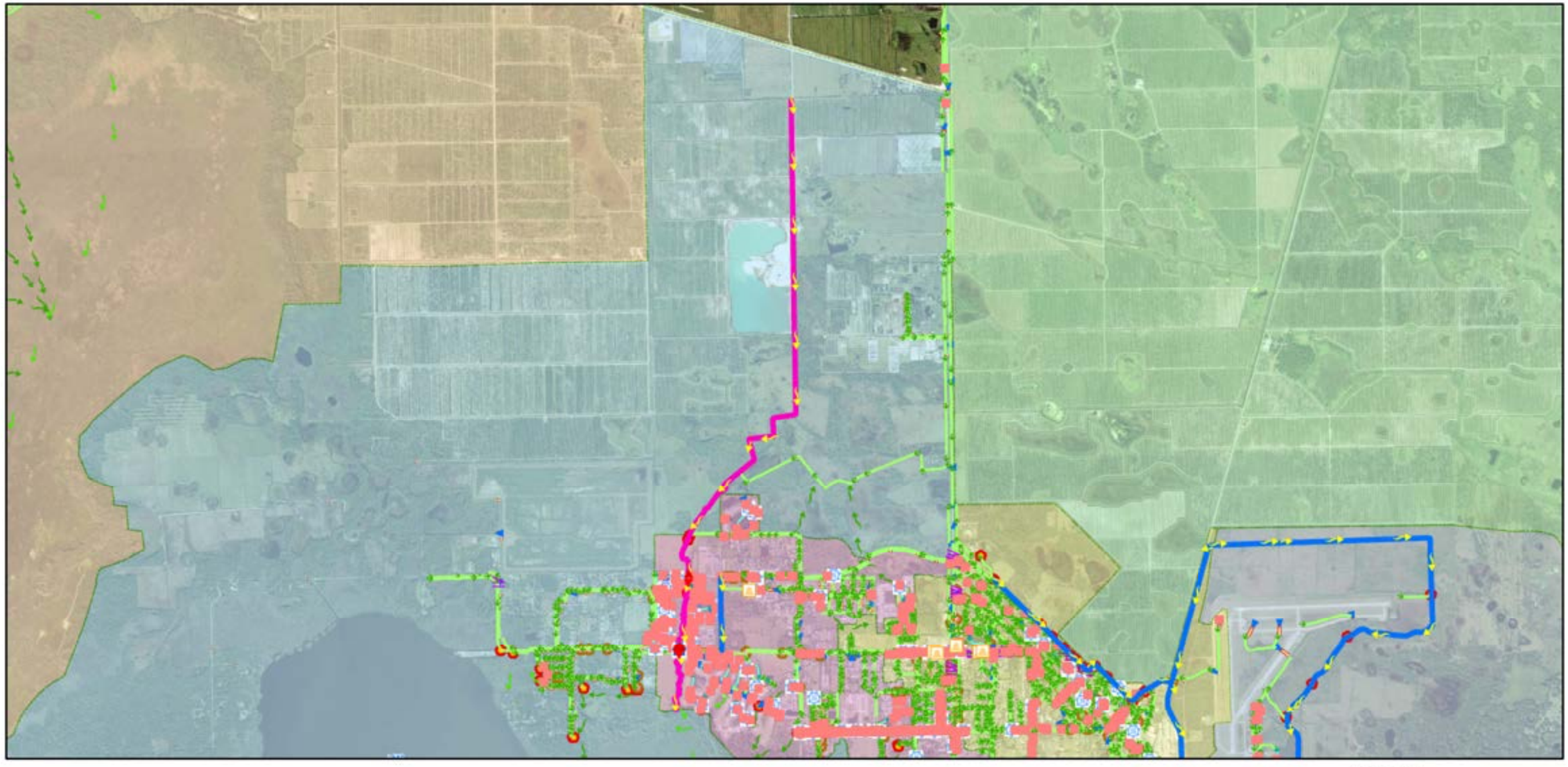
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

1.7 Collier County Stormwater Facilities Map

Collier County Stormwater Management Facilites



Bridges
- Bridge Over Pipe
- Inlets
- Junction Boxes

Jurisdiction for Channel Facility
- Collier County
- Private
- Unmaintained

Flowway
- Marsh, Wetland, Corps Wetland, Swamp and Bog
- Pipe And Culvert

Bridge UnderType
- Bridge Crossing Channel
- Bridge Flow Equalizer
- Bridge Over Pipe
- Fixed Stage Weir

- Inlets
- Junction Boxes
- Flume
- Channel CL

Flowway
- Marsh, Wetland, Corps Wetland, Swamp and Bog
- Pipe And Culvert
- Lake CL

- InFlow
- Outfall

Subbasins
- Barron River Canal Basin (North)
- Cocohatchee River Canal Basin
- Corkscrew Slough Basin
- Okaloacoochee Slough Basin
- Urban Immokalee Basin East
- Urban Immokalee Basin West

World Imagery
Low Resolution 15m Imagery
High Resolution 60cm Imagery
High Resolution 30cm Imagery
Citations
9.6m Resolution Metadata

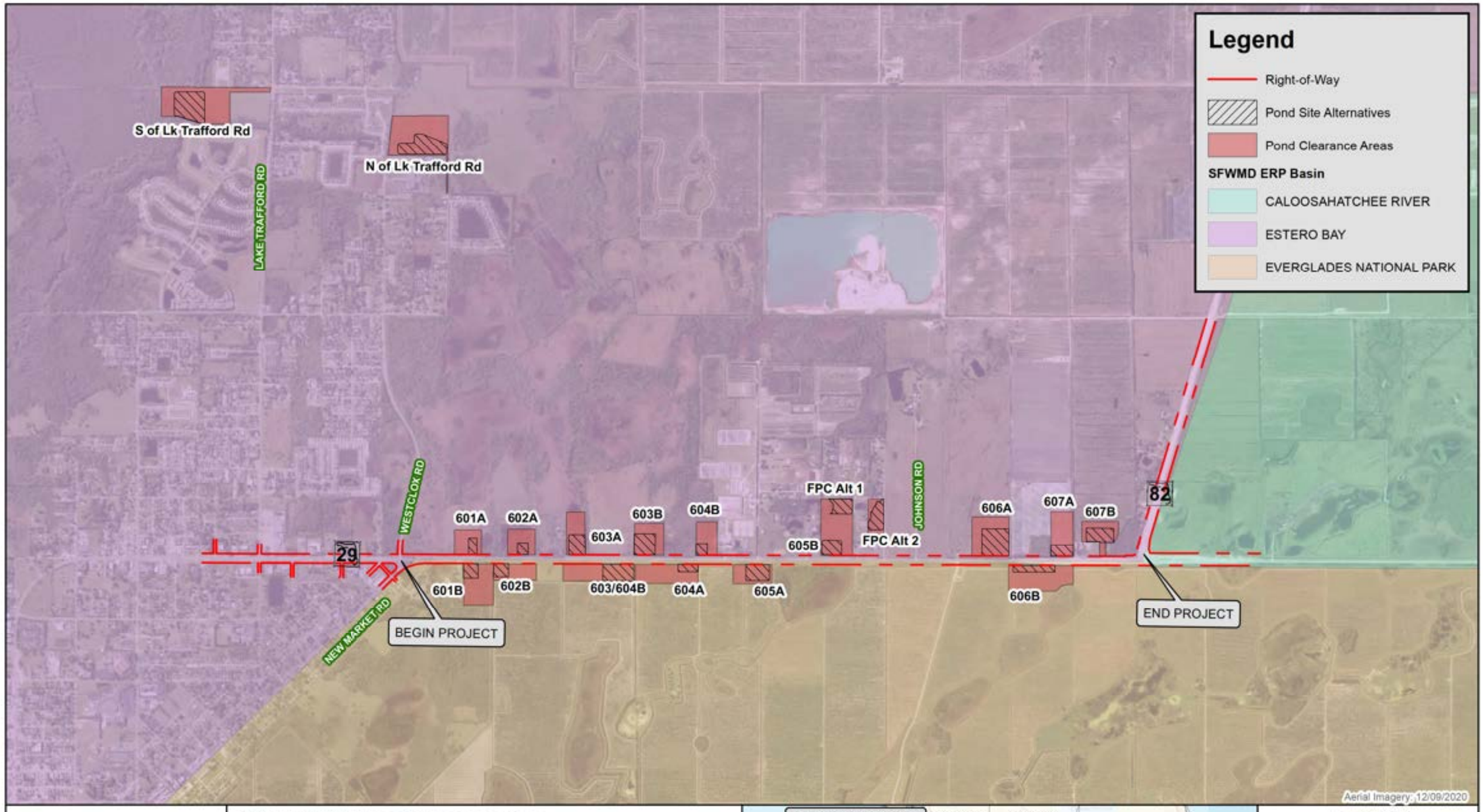
1:44,662

0 0.45 0.9 1.8 mi

0 0.75 1.5 3 km

Collier county GMD, State of Florida, Maxar

1.8 SFWMD ERP Basin Boundaries Map



SFWMD ERP Basin Boundaries
FPID # 417540-6-52-01
SR 29 from N of New Market Rd to SR 82
Pond Siting Report
Collier County, FL

Data Source:
- FDA - SFWMD
- ESRI

1 inch = 2,000 feet

Coordinate System: NAD 1983
Florida State Plane East

Document Path: \\pafile02\cadd\Projects\Worksets_ORD\FDOT\417540652\01\Permits\Data-GIS\mxd\PSR Figures\2023 Updates\Figure A5b - S

1.9 Proposed Typical Section

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
(X) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) N/A : L.A. FACILITY
(X) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
(X) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

(_) NATIONAL HIGHWAY SYSTEM
(X) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
(X) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

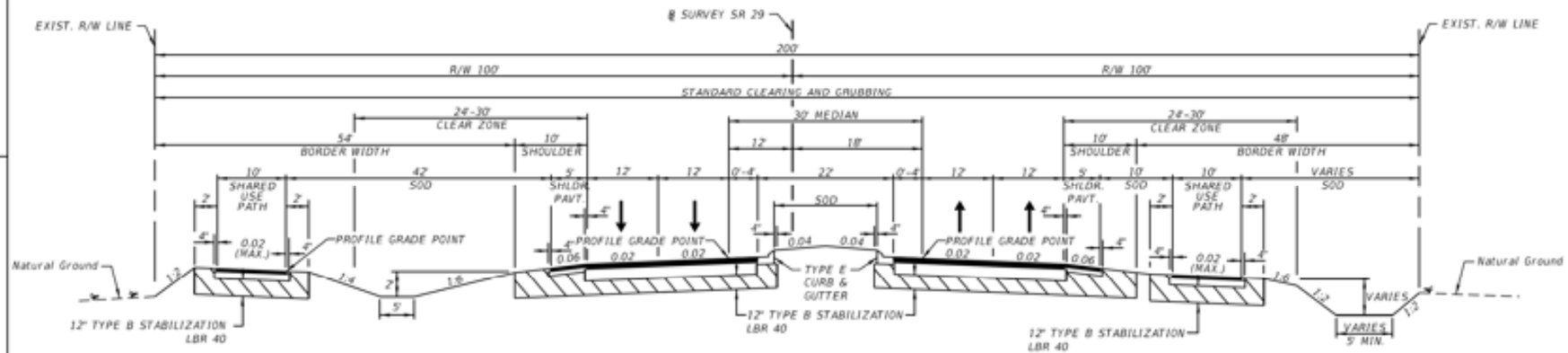
CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

NONE

TYPICAL SECTION No. 1



TYPICAL SECTION
SR 29
MP 39.522 TO MP 40.131 (CONNECT TO FPID 417540-5)
(STA. 2088+40.00 TO STA. 2120+34.87)

MP 40.867 (CONNECT TO FPID 417540-5) TO MP 42.727
(STA. 2159+02.71 TO STA. 2256+80.00)

TRAFFIC DATA

CURRENT YEAR = 2024 AADT = 20400
ESTIMATED OPENING YEAR = 2028 AADT = 22000
ESTIMATED DESIGN YEAR = 2048 AADT = 30300
K = 9.5% D = 58.5% T = 11.9% (24 HOUR)
DESIGN HOUR T = 5.95%
DESIGN/TARGET/POSTED SPEED = 45 MPH MP 39.522 TO MP 40.131
(STA. 2088+40.00 TO STA. 2120+34.87)
CONTEXT CLASSIFICATION = C3C
DESIGN/TARGET/POSTED SPEED = 55 MPH MP 40.867 TO MP 42.386
(STA. 2159+02.71 TO STA. 2230+12.00)
45 MPH MP 42.386 TO MP 42.727
(STA. 2230+12.00 TO STA. 2256+80.00)
CONTEXT CLASSIFICATION = C2

FINANCIAL PROJECT ID	SHEET NO.
417540-6-52-01	2

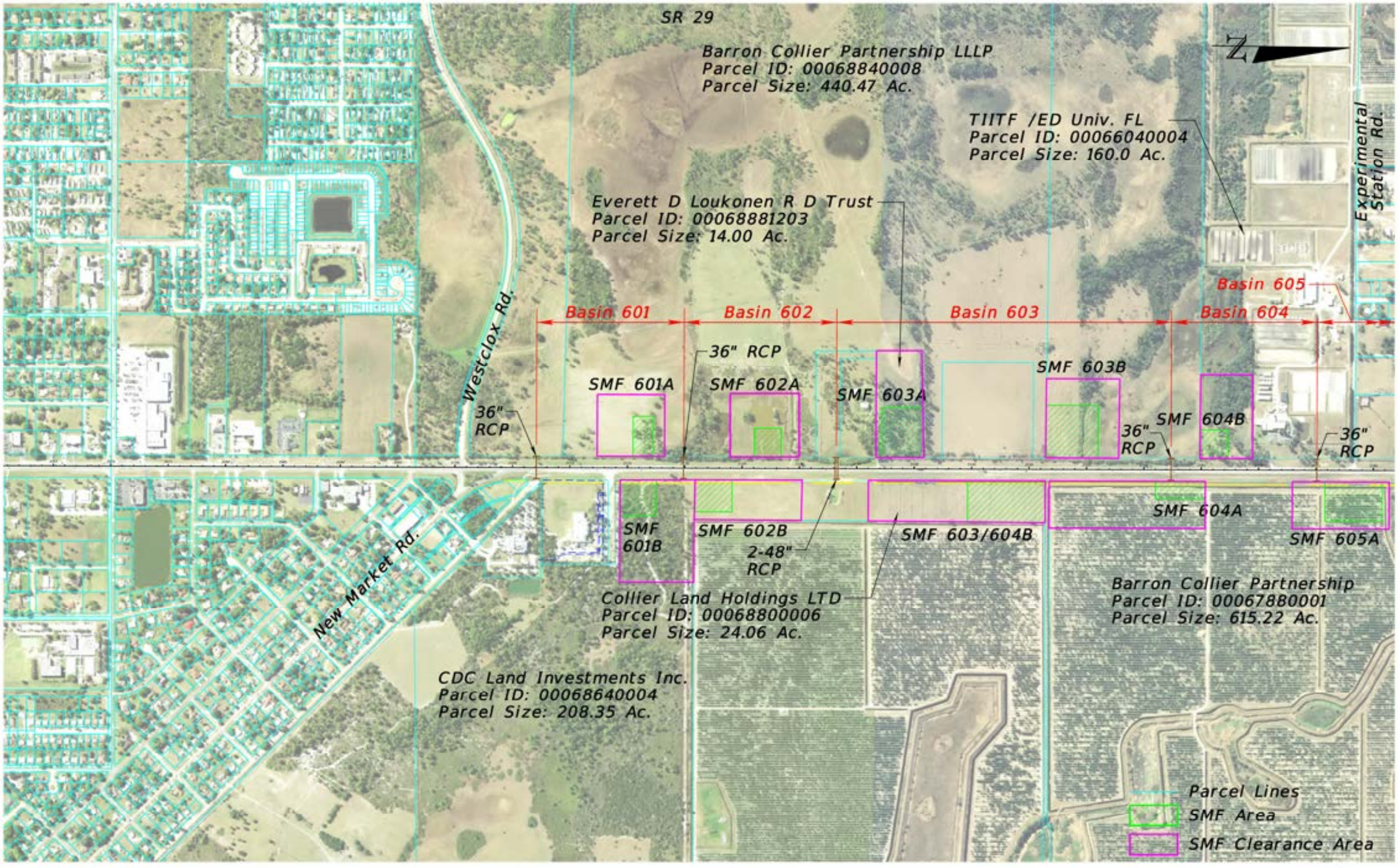
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

2/22/2024 8:52:42 AM kstinn
K:\FDOT\417540\5201\Roadway\TYP040301.dgn

Appendix 2.0

Figures

2.1 Overall SMF and FPC Exhibits



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

FALLER, DAVIS & ASSOCIATES, INC
4200 W. CYPRESS ST., SUITE 500
TAMPA, FLORIDA 33607-4168
ALAN S. ELDRIDGE, P.E. NO.: 77067

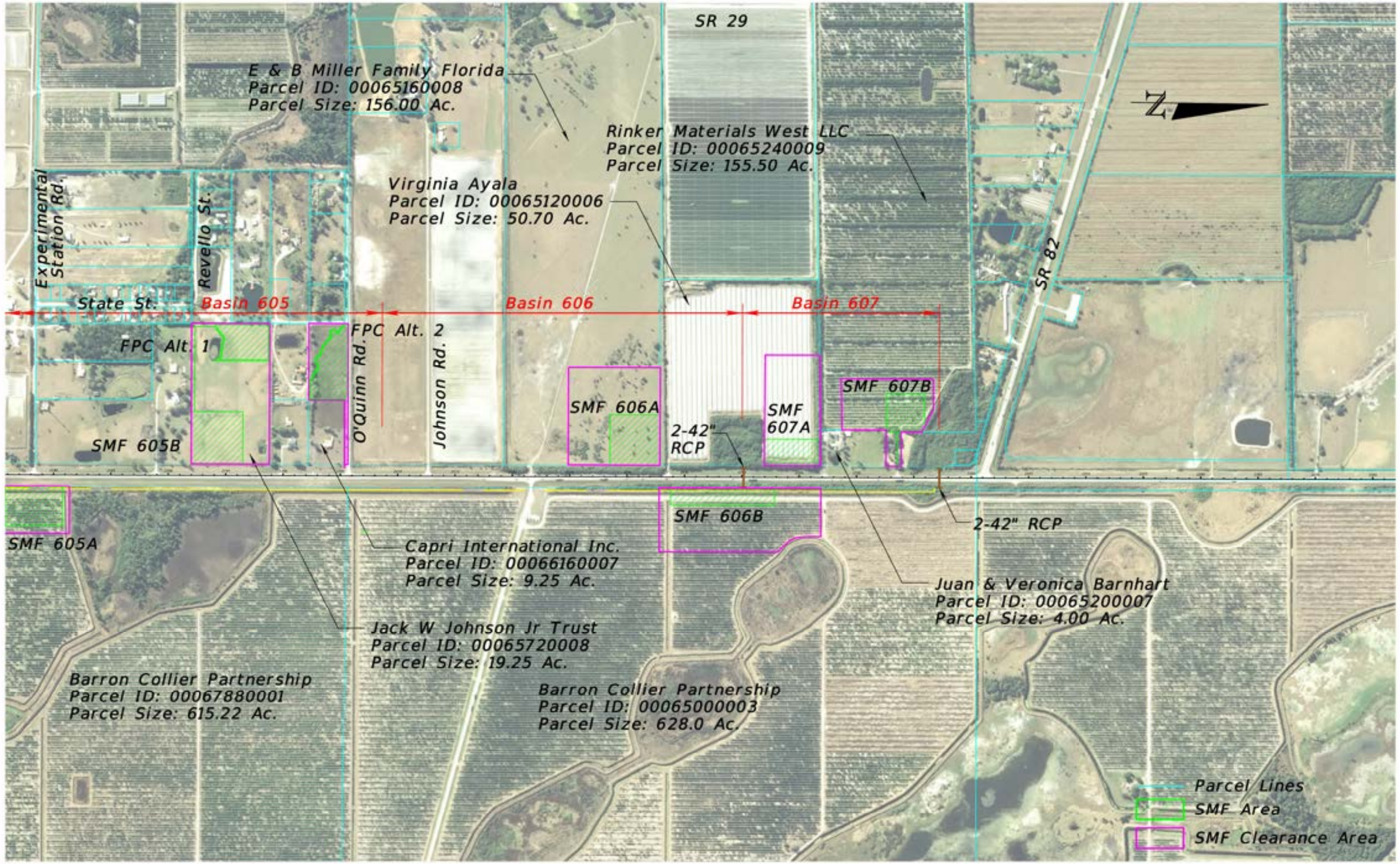
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 29	COLLIER	417540-6-52-01

SMF LOCATIONS (1)

SHEET NO.

aeldridge 7/13/2023 10:26:26 AM Parcels 1 X:\FDOT\417540652O1\Drainage\CADD\Pond Sites\PONDS.dgn



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

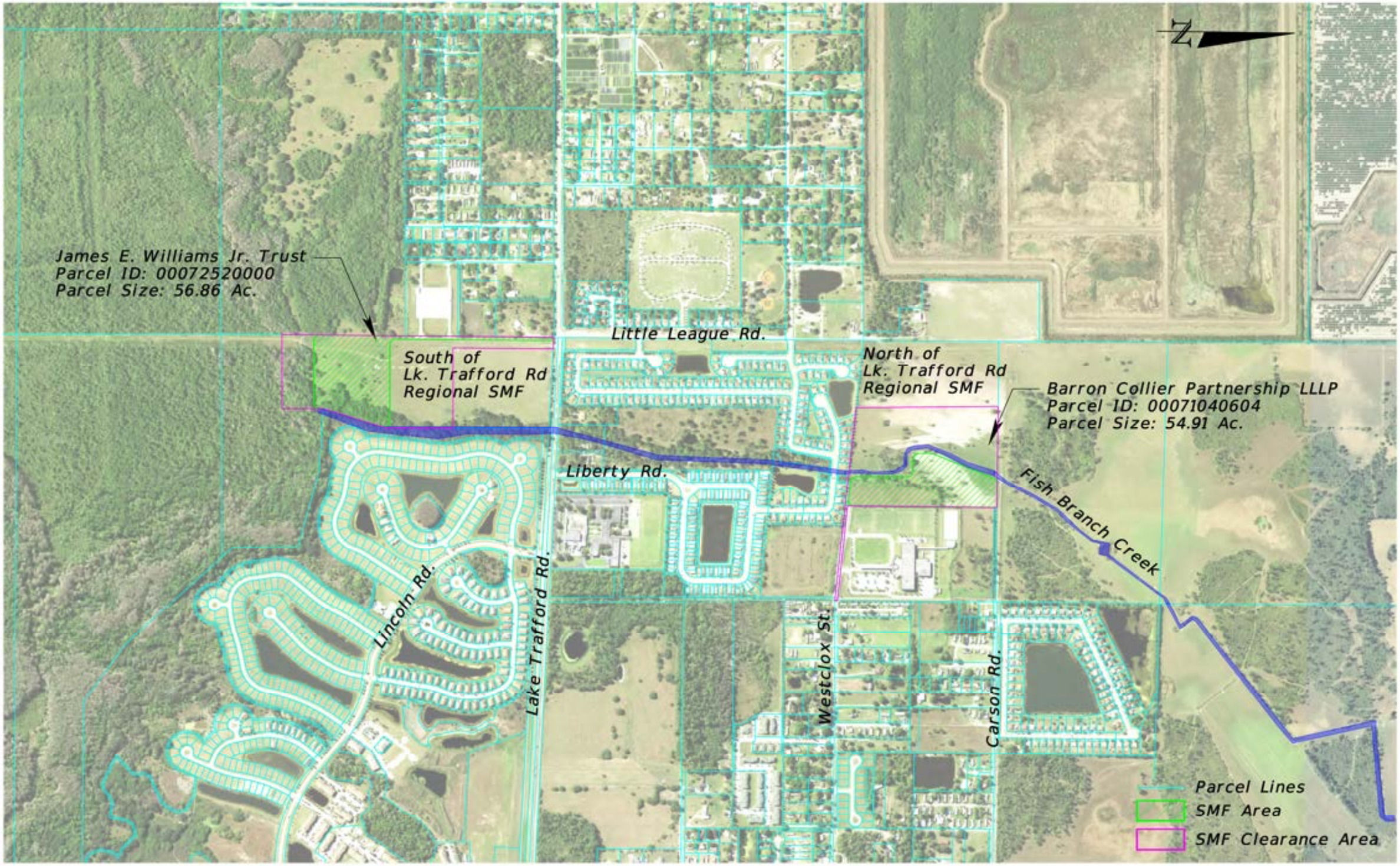
FALLER, DAVIS & ASSOCIATES, INC
4200 W. CYPRESS ST., SUITE 500
TAMPA, FLORIDA 33607-4168
ALAN S. ELDRIDGE, P.E. NO.: 77067

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 29	COLLIER	417540-6-52-01

SMF LOCATIONS (2)

SHEET NO.



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

FALLER, DAVIS & ASSOCIATES, INC
4200 W. CYPRESS ST., SUITE 500
TAMPA, FLORIDA 33607-4168
ALAN S. ELDRIDGE, P.E. NO.: 77067

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 29	COLLIER	417540-6-52-01

SMF LOCATIONS (3)

SHEET NO.

aeldridge 7/13/2023 11:31:53 AM Parcels 3 X:\FDOT\417540652O1\Drainage\CADD\Pond Sites\PONDS.dgn

2.2 Individual SMF and FPC Exhibits

Figure 1	SR 29	SMF 601A

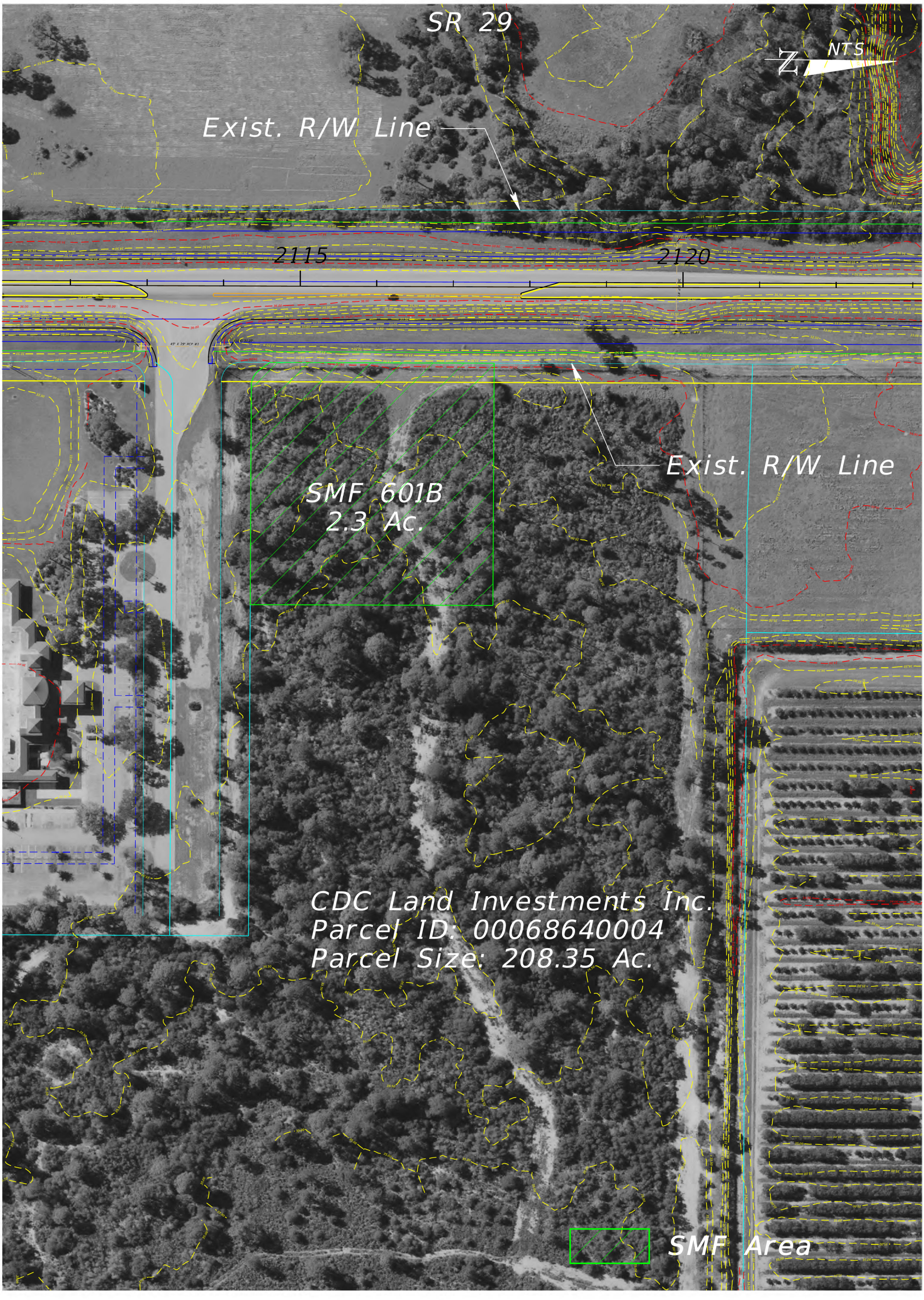


Figure 2	SR 29	SMF 601B

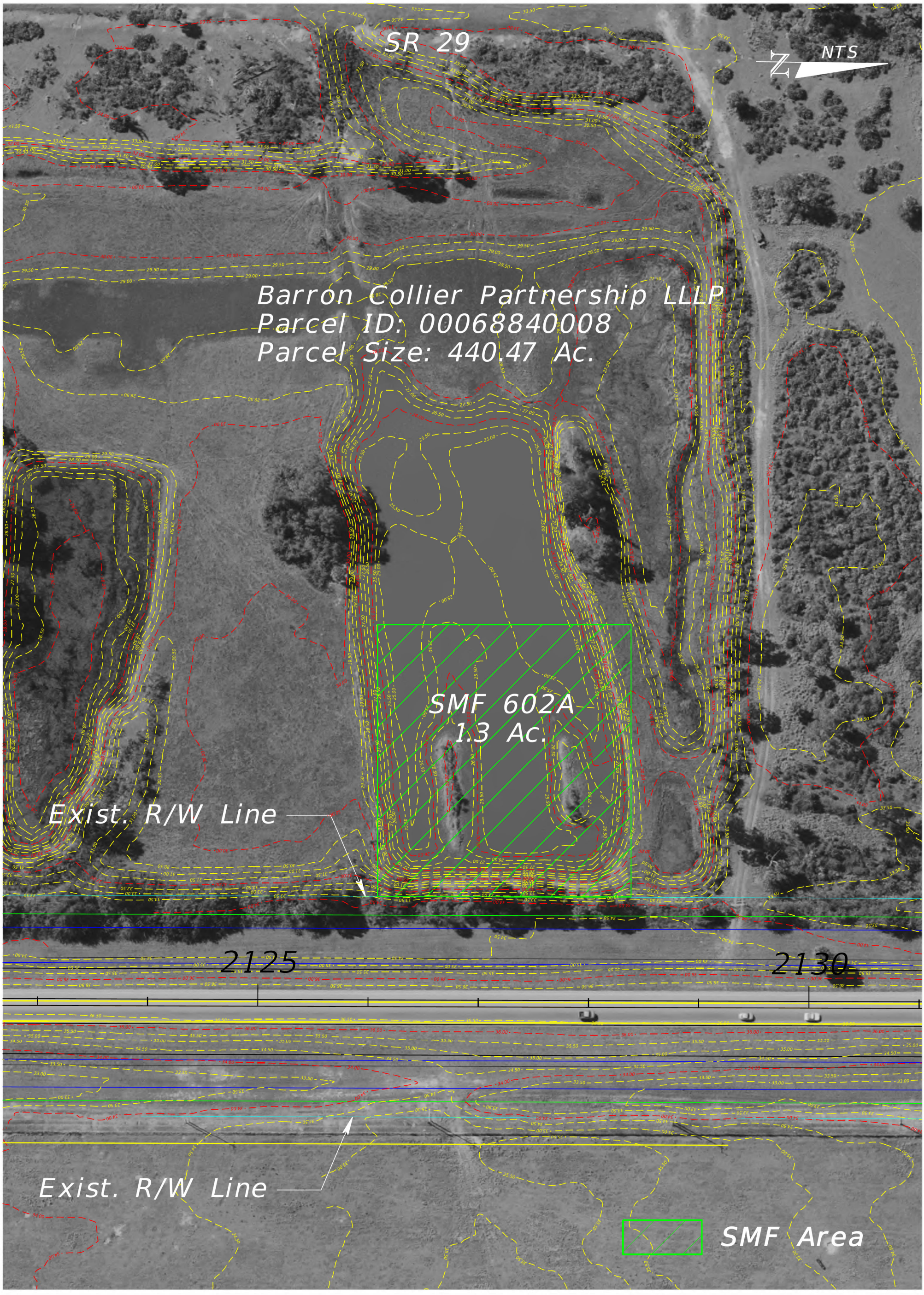


Figure 3	SR 29	SMF 602A

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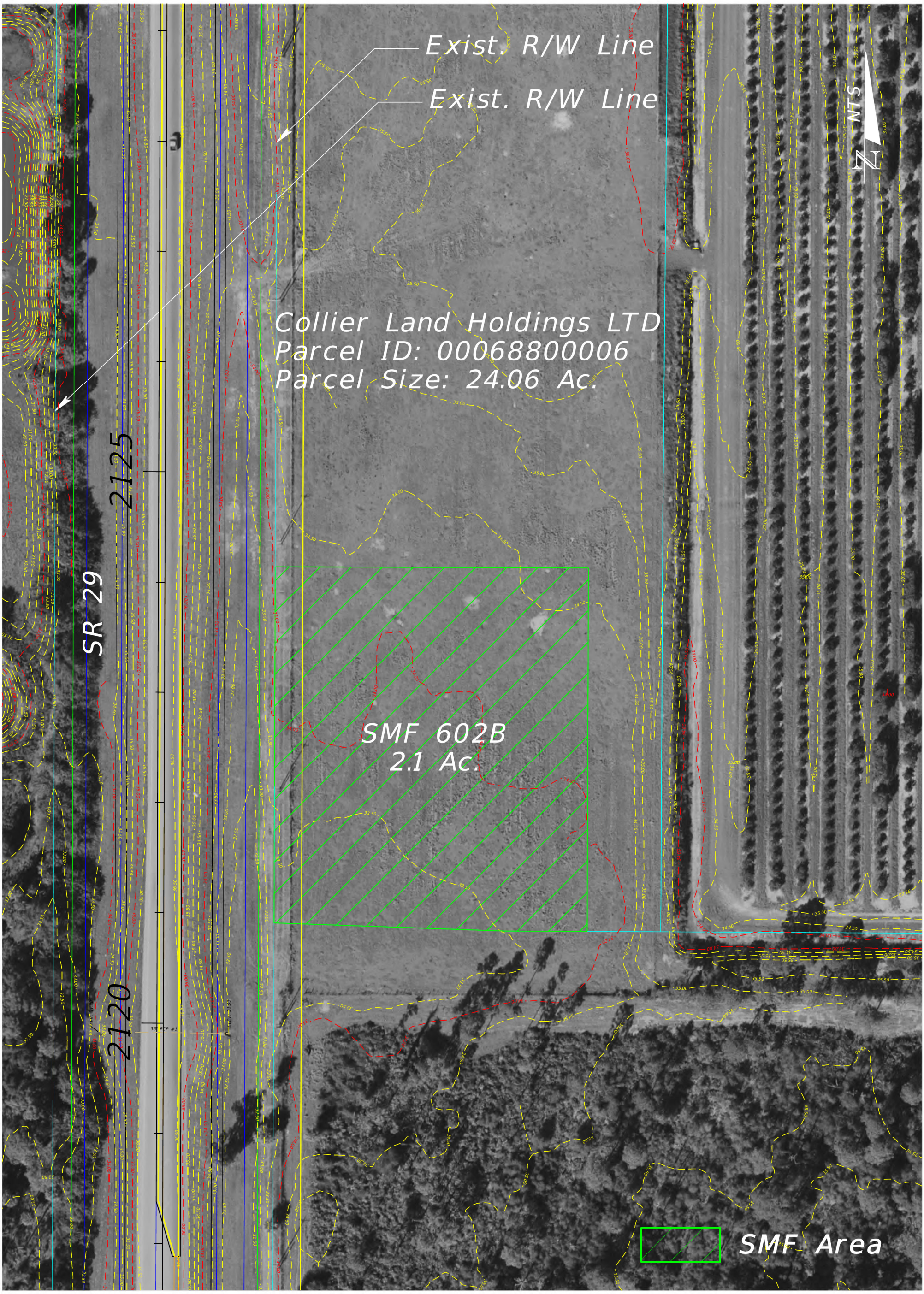

Figure 4	SR 29	SMF 602B

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Figure 5	SR 29	SMF 603A

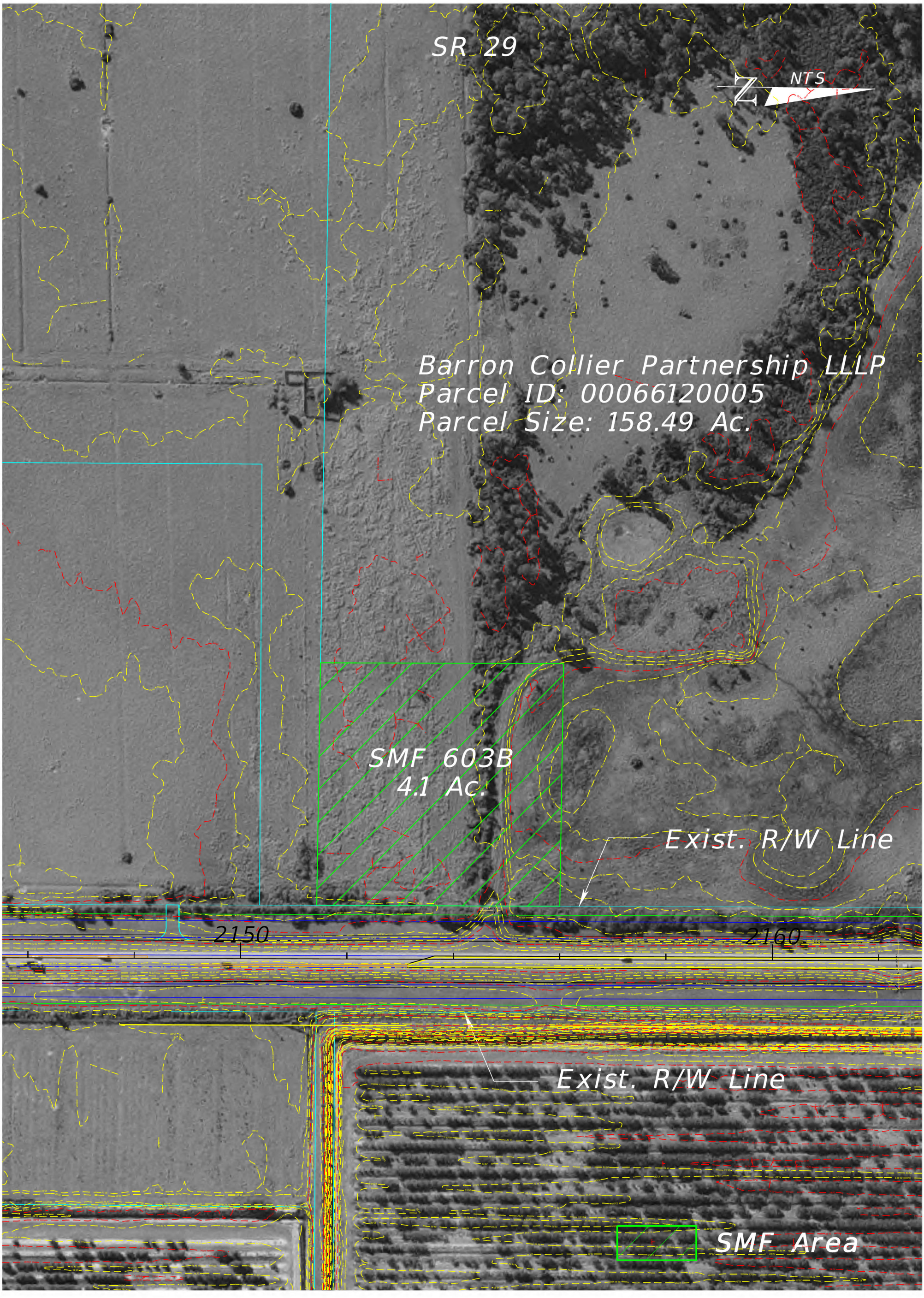

Figure 6	SR 29	SMF 603B

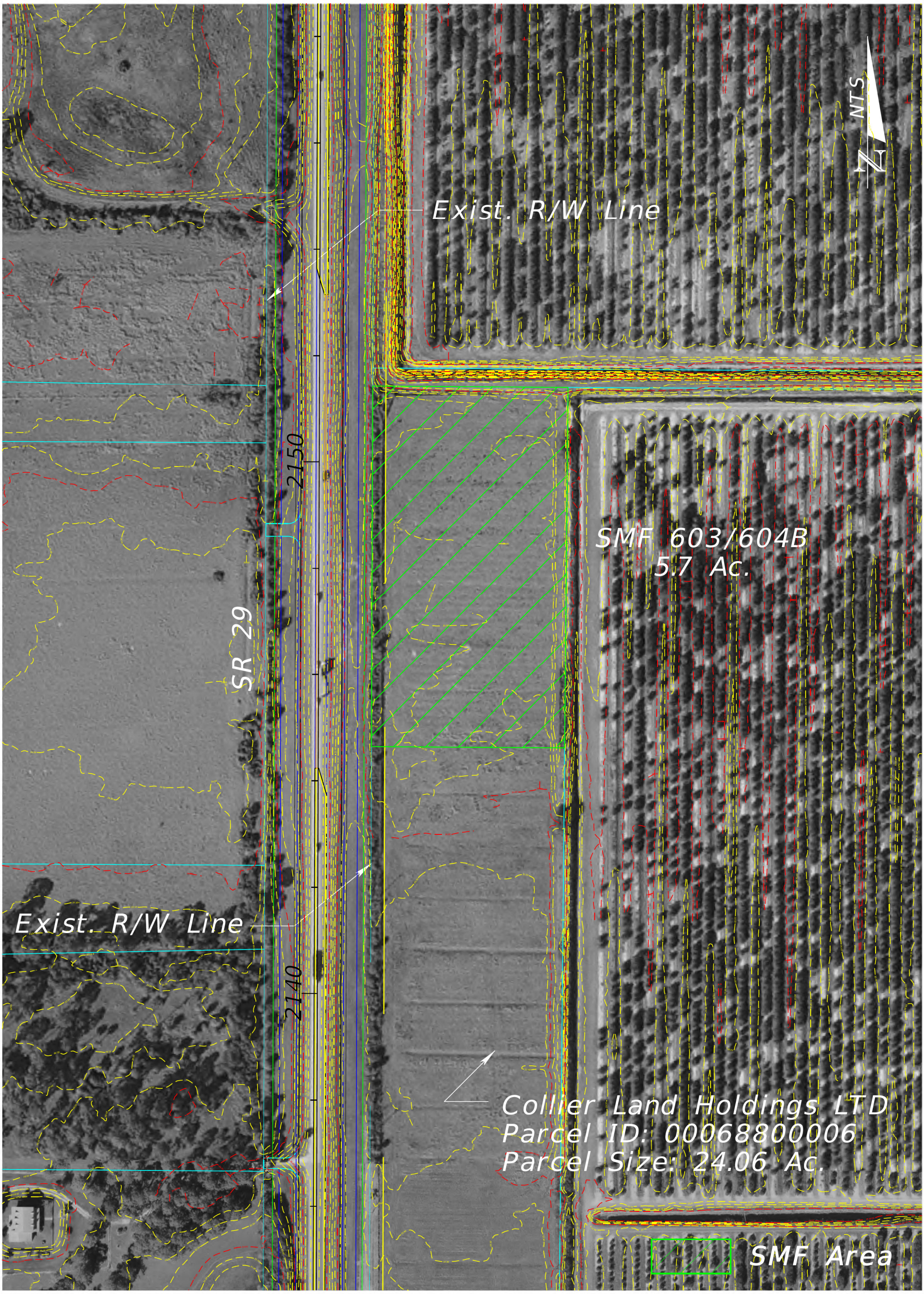

Figure 7	SR 29	SMF 603/604B

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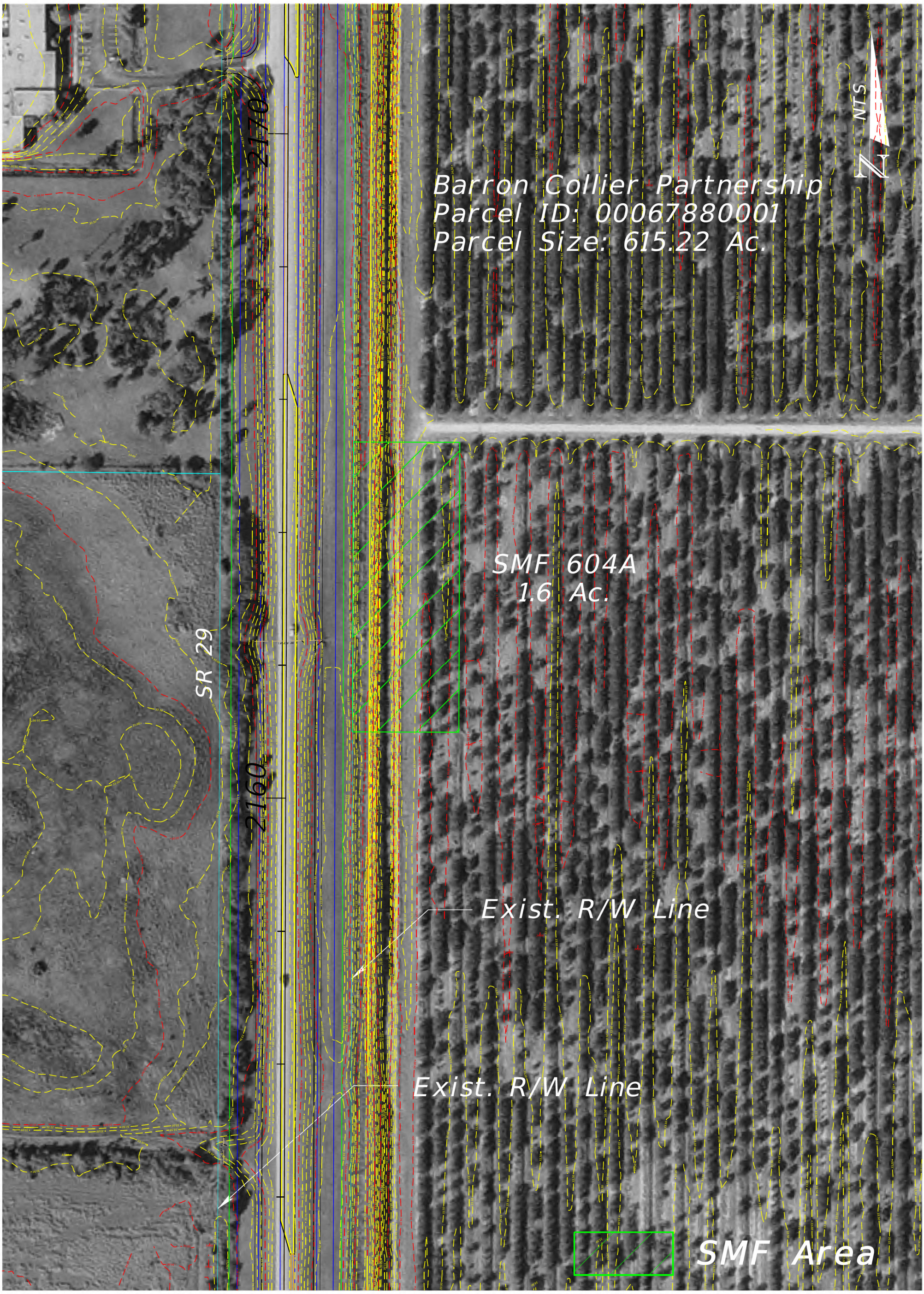

Figure 8	SR 29	SMF 604A

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Figure 9	SR 29	SMF 604B

Figure 10	SR 29	SMF 605A

gbrown 7/13/2023 2:23:04 PM X:\FDOT\41754065201\Drainage\CADD\Pond Figures\PONDS.dgn

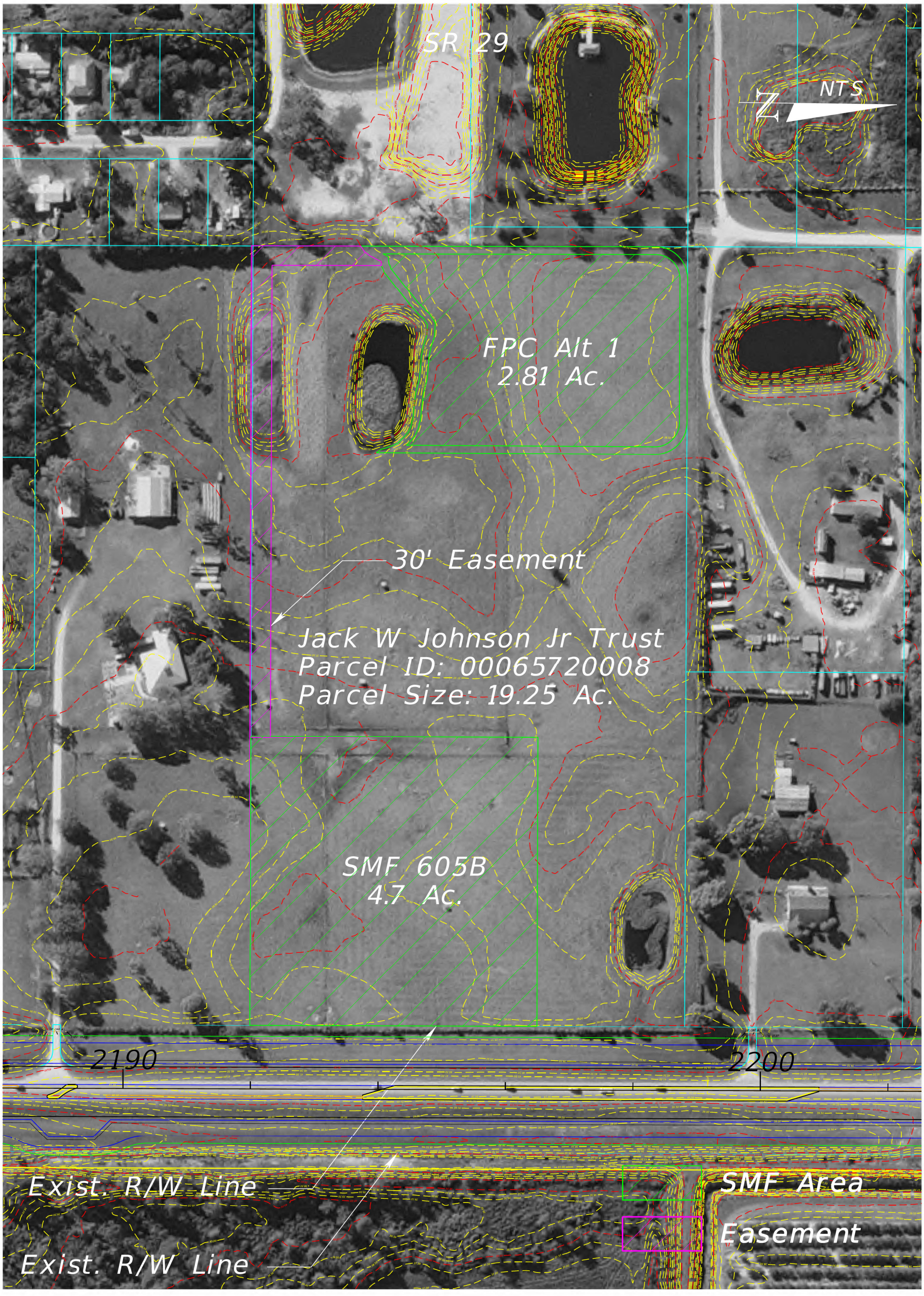


Figure 11	SR 29	SMF 605B/FPC Alt. 1

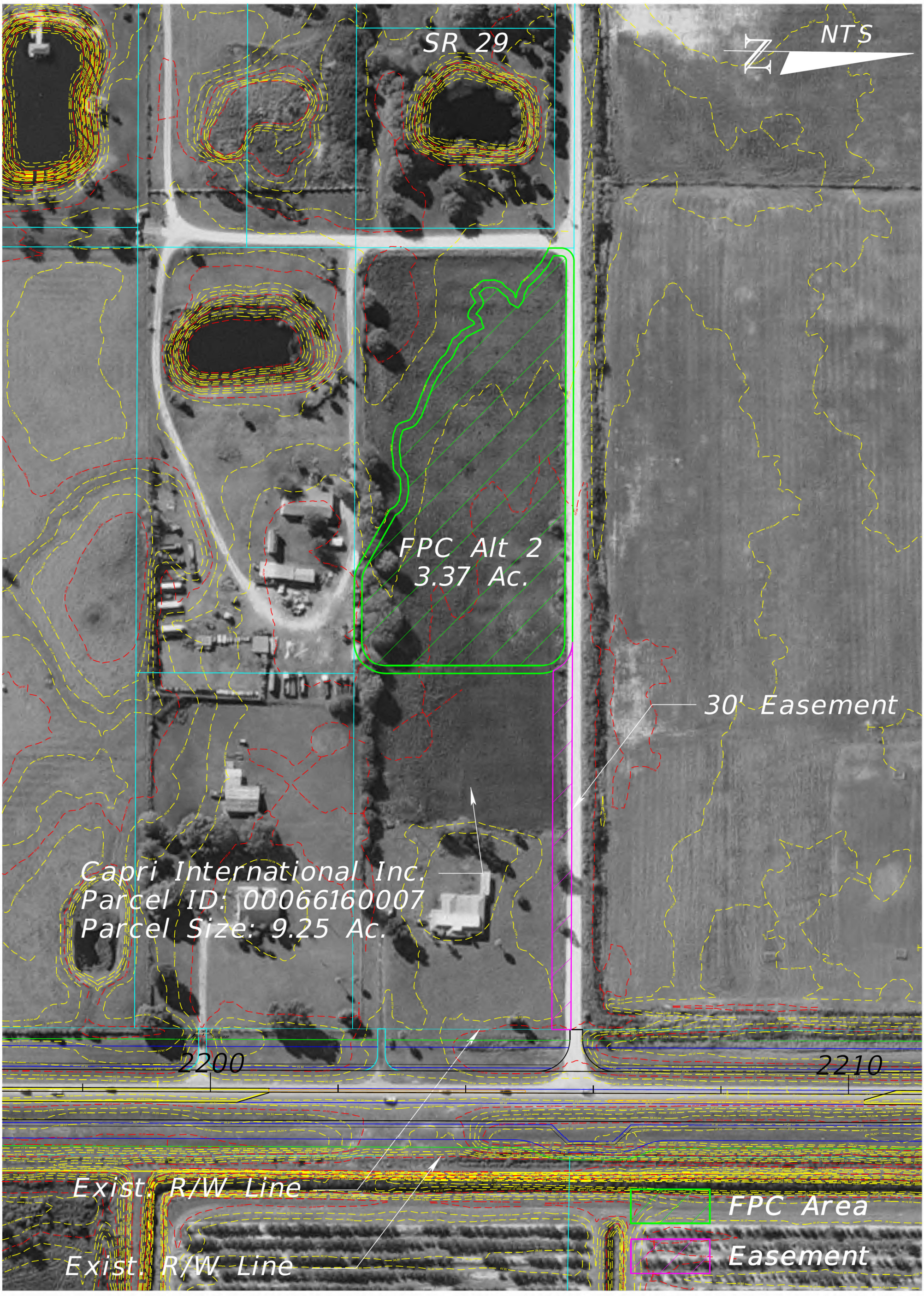


Figure 12	SR 29	FPC Alt 2

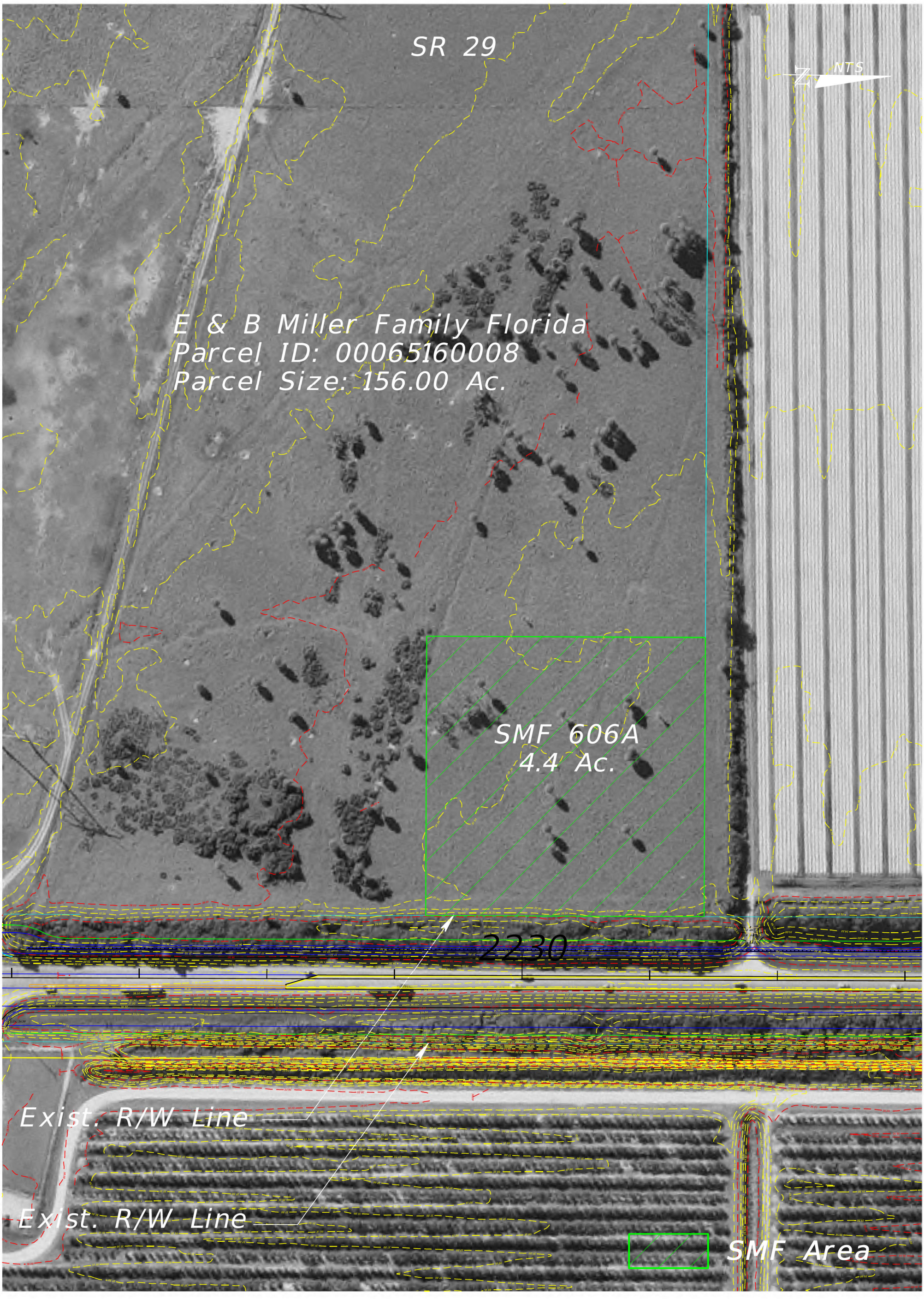


Figure 13	SR 29	SMF 606A

gbrown 7/13/2023 3:08:17 PM X:\FDOT\41754065201\Drainage\CADD\Pond Figures\PONDS.dgn

Figure 14	SR 29	SMF 606B

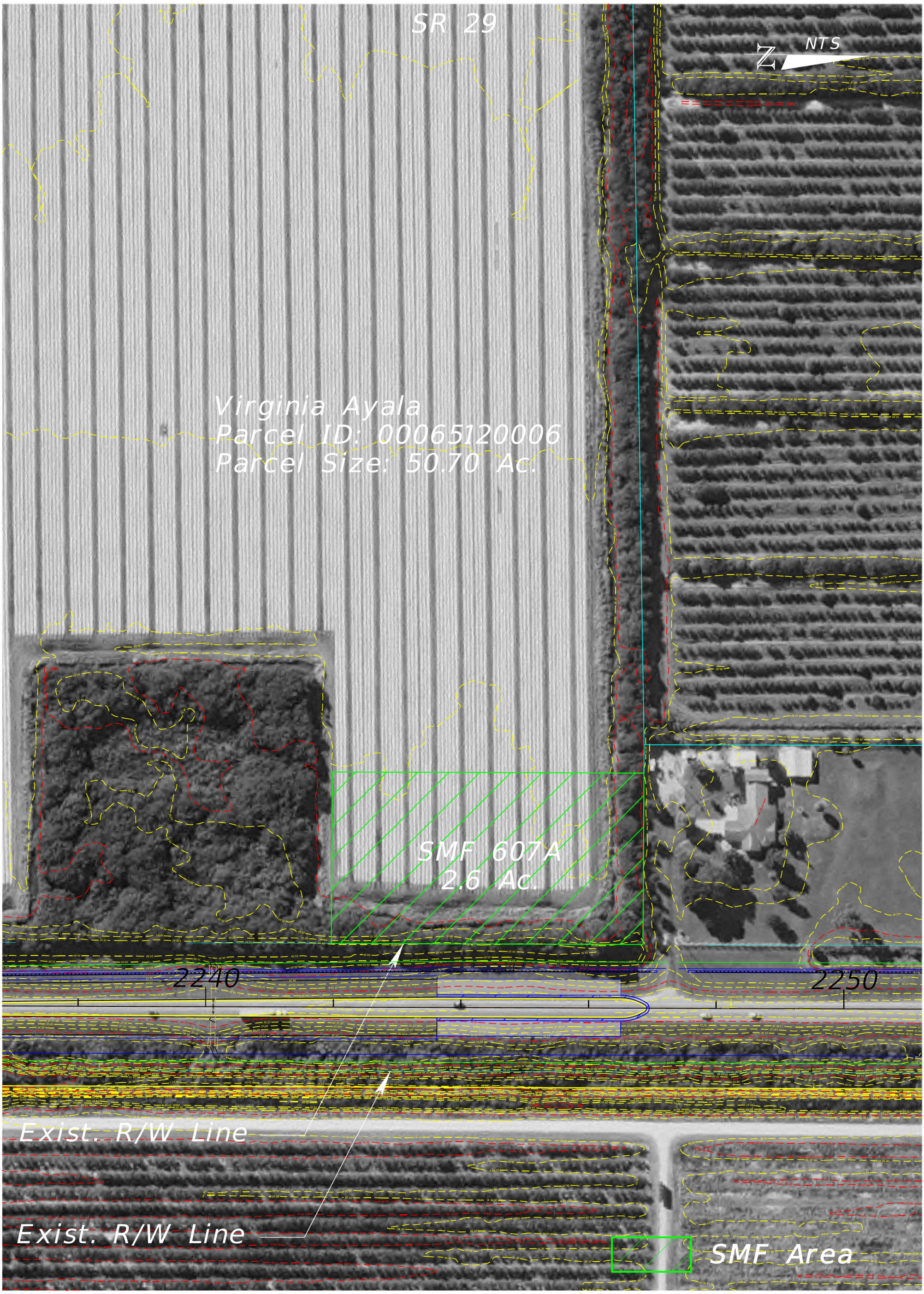


Figure 15	SR 29	SMF 607A

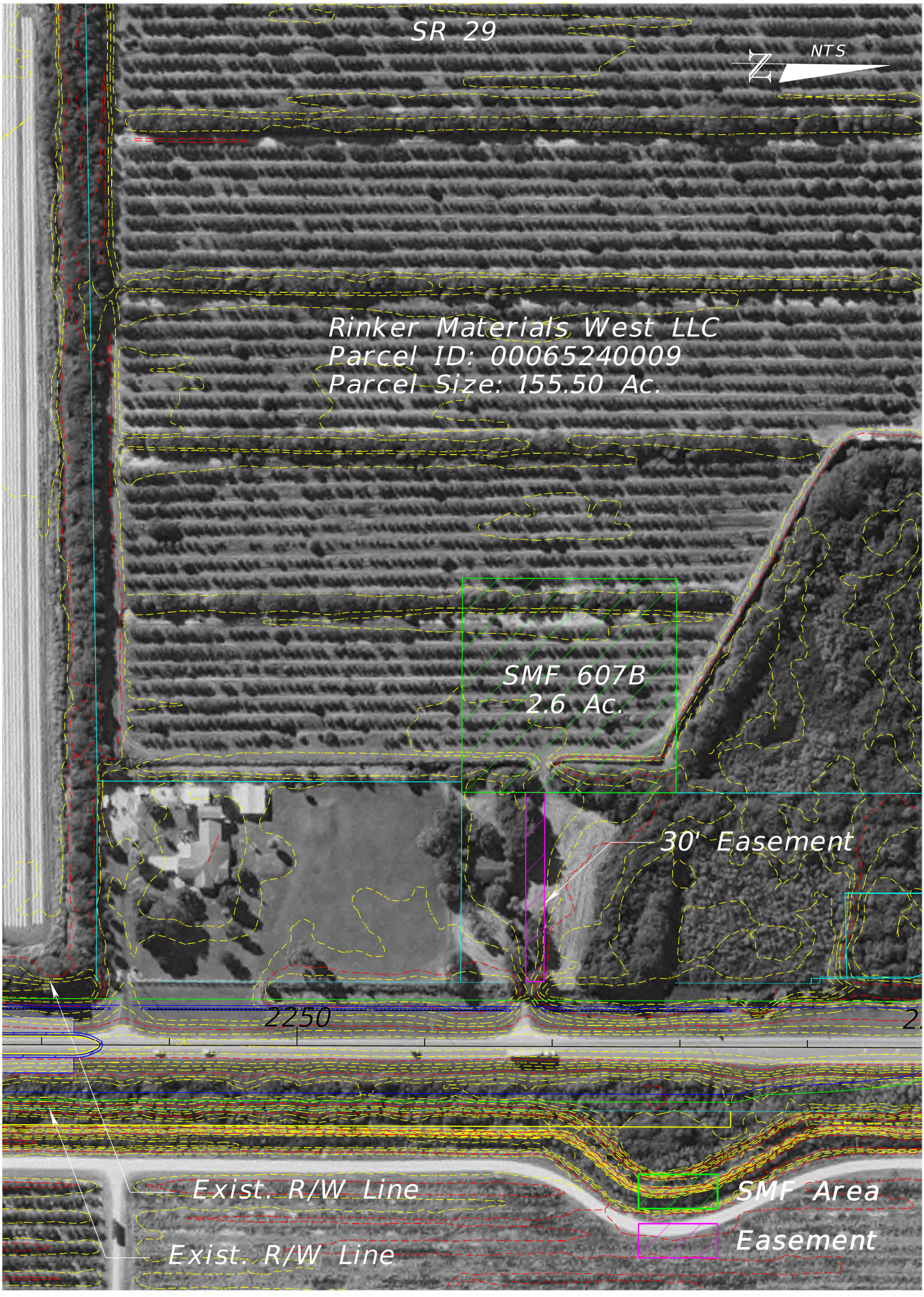


Figure 16	SR 29	SMF 607B

aeldridge 7/14/2023 1:10:17 AM X:\FDOT\41754065201\Drainage\CADD\Pond Figures\PONDS.dgn

Figure 18	SR 29	North Regional SMF

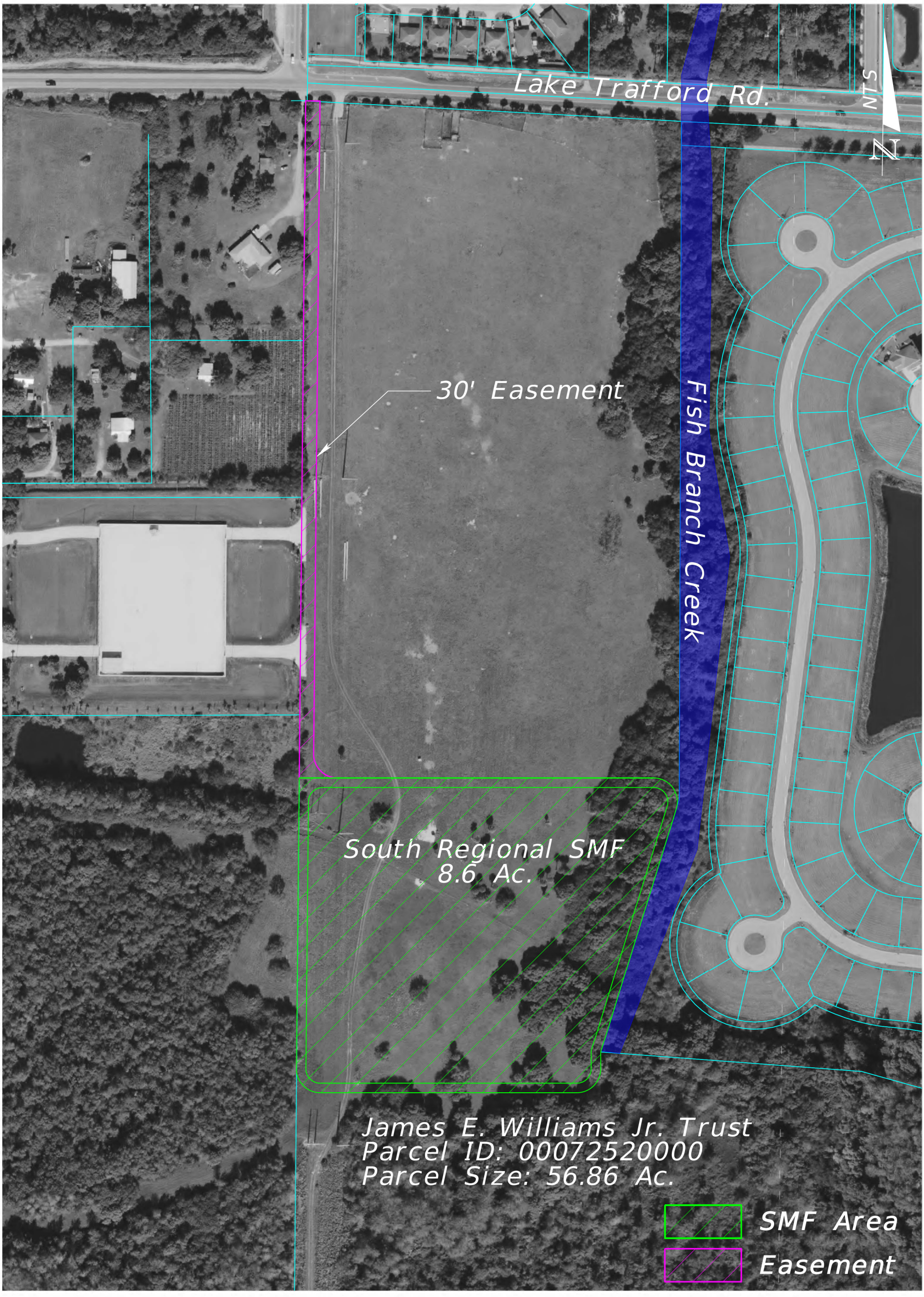


Figure 17	SR 29	South Regional SMF

Appendix 3.0

Calculations

3.1 SMF Sizing and Earthwork Calculations

3.1.1 Basin 601

SMF SIZING AND FEASIBILITY CALCULATIONS

Project:	**SR 29**	**Designed By:**	K. Myers	**Date:**	11-Aug-20
FPID No.	**417540-6-52-01**	**Checked By:**	A. Eldridge	**Date:**	6-Jul-23
FDA No.:	**57400**				

Project Data	
Basin #	601
Pond #	A
Basin Limits:	
From Station	2100+78
To Station	2119+92
Pond Station	2116+50
Distance from Roadway (ft)	69
Site SHGWT	32.30
Source	Geotech (High)
Lowest Critical Elevation	37.39
Description	Ditch TOB (RT.)
Station	2119+92
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing: 2-12' lanes, 2-5' shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume		
Note: Assume a Square Pond		
Calculate Treat. Volume Required:		
Wet Pond Vol/LF	Dry Pond Vol./LF	
16.67	12.50	
Side Slope,	4	
Maint. Berm (ft)	20	
Wet/Dry?	Wet	
Basin Length (ft)	019+14	
Treat. Vol. (CF)	31900	
Treat. Vol. (Ac-ft)	0.732	
Atten. Depth (ft)	0.67	
Treat. Depth (ft)	1	
L at Control (ft)	179	
L at TOB (ft)	192	
L Berm (ft)	232	
Est. Site Acre	1.235	

*Increased 20% for treatment of SMF

SMF SITE SIZE REQUIRED*
1.5 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group D (CN=80)	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	83.1
CN post	88.5
S pre	2.04
S post	1.30
Rpre 100-yr	8.78
Rpost 100-yr	9.48
Increase in runoff 100-yr, 24-hr	0.70
Estimated Attenuation Volume (ac-ft)	0.511
Estimated Attenuation Depth (ft)	0.67

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	1572
Farthest Point (AH/BK?)	BK
EOP EL @ Furthest Point	37.98
DHW @ Pond (SHW + trt. & attn. depths)	33.97
HGL at Furthest Point (DHW+distancex0.0008)	35.28
Feasible?	YES
HGL at Lowest Critical Elevation	34.30
Feasible?	YES

SMF SIZING AND FEASIBILITY CALCULATIONS

Project:	**SR 29**	**Designed By:**	K. Myers	**Date:**	11-Aug-20
FPID No.	**417540-6-52-01**	**Checked By:**	A. Eldridge	**Date:**	6-Jul-23
FDA No.:	**57400**				

Project Data	
Basin #	601
Pond #	B
Basin Limits:	
From Station	2100+78
To Station	2119+92
Pond Station	2116+00
Distance from Roadway (ft)	43
Site SHGWT	32.40
Source	Geotech (High)
Lowest Critical Elevation	37.39
Description	Ditch TOB (RT.)
Station	2119+92
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing: 2-12' lanes, 2-5' shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume		
Note: Assume a Square Pond		
Calculate Treat. Volume Required:		
Wet Pond Vol/LF	Dry Pond Vol./LF	
16.67	12.50	
Side Slope,	4	
Maint. Berm (ft)	20	
Wet/Dry?	Wet	
Basin Length (ft)	019+14	
Treat. Vol. (CF)	31900	
Treat. Vol. (Ac-ft)	0.732	
Atten. Depth (ft)	0.41	
Treat. Depth (ft)	0.6	
L at Control (ft)	231	
L at TOB (ft)	239	
L Berm (ft)	279	
Est. Site Acre	1.783	

*Increased 30% for treatment of SMF

SMF SITE SIZE REQUIRED*
2.3 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group D (CN=80)	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	83.1
CN post	88.5
S pre	2.04
S post	1.30
Rpre 100-yr	8.78
Rpost 100-yr	9.48
Increase in runoff 100-yr, 24-hr	0.70
Estimated Attenuation Volume (ac-ft)	0.511
Estimated Attenuation Depth (ft)	0.41

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	1522
Farthest Point (AH/BK?)	BK
EOP EL @ Furthest Point	37.98
DHW @ Pond (SHW + trt. & attn. depths)	33.41
HGL at Furthest Point (DHW+distancex0.0008)	34.66
Feasible?	YES
HGL at Lowest Critical Elevation	33.76
Feasible?	YES

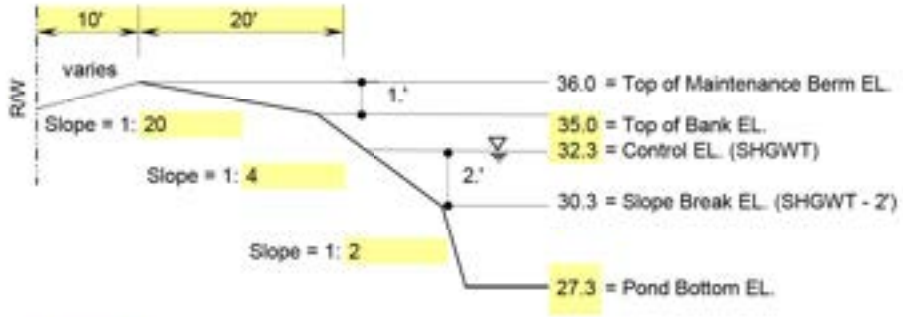
EARTHWORK ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No.: 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 07/13/23
Checked By: A. Eldridge **Date:** 07/13/23

SMF 601A

Typical Cross Section:



A_S (SF) =	65191	= Total Area of Pond Site
A_T (SF) =	54613	= Area at Top of Maintenance Berm
A_{TOB} (SF) =	35856	= Area at Top of Bank
A_C (SF) =	27058	= Area at Control Elevation
A_{SB} (SF) =	21143	= Area at 1:2 Slope Break
A_B (SF) =	17042	= Area at Bottom of Pond
A_{AVG} (SF) =	29887	= Area at Average Site Elevation

Average Site EL. = 33.2

Areas are generated from CAD shapes

EXCAVATION =	132231	CF
=	4897	CY
EMBANKMENT =	48720	CF
=	1804	CY
SOD =	4237	SY

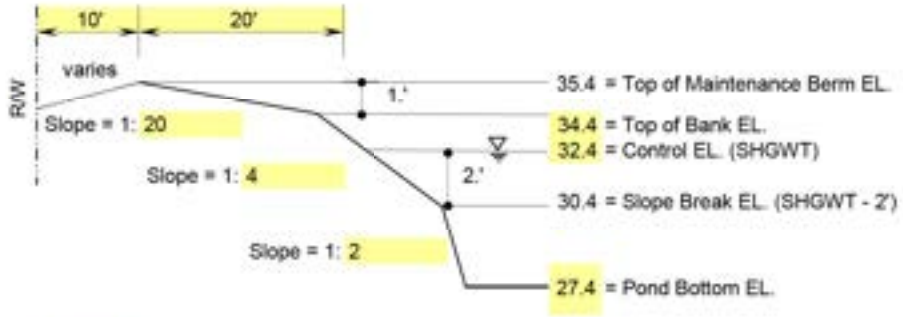
EARTHWORK ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No.: 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 07/13/23
Checked By: A. Eldridge **Date:** 07/13/23

SMF 601B

Typical Cross Section:



A_S (SF) =	98968	= Total Area of Pond Site
A_T (SF) =	86855	= Area at Top of Maintenance Berm
A_{TOB} (SF) =	64916	= Area at Top of Bank
A_C (SF) =	57019	= Area at Control Elevation
A_{SB} (SF) =	49634	= Area at 1:2 Slope Break
A_B (SF) =	44431	= Area at Bottom of Pond
A_{AVG} (SF) =	69057	= Area at Average Site Elevation

Average Site EL. = 34.6

Areas are generated from CAD shapes

EXCAVATION =	383498	CF
=	14204	CY
EMBANKMENT =	12114	CF
=	449	CY
SOD =	4661	SY

3.1.2 Basin 602

SMF SIZING AND FEASIBILITY CALCULATIONS

Project:	**SR 29**	**Designed By:**	K. Myers	**Date:**	11-Aug-20
FPID No.	**417540-6-52-01**	**Checked By:**	A. Eldridge	**Date:**	6-Jul-23
FDA No.:	**57400**				

Project Data	
Basin #	602
Pond #	A
Basin Limits:	
From Station	2119+92
To Station	2133+21
Pond Station	2127+25
Distance from Roadway (ft)	69
Site SHGWT	30.70
Source	Geotech (High) (ABG)
Lowest Critical Elevation	35.82
Description	Ditch TOB (RT.)
Station	2123+48
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing: 2-12' lanes, 2-5' shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume		
Note: Assume a Square Pond		
Calculate Treat. Volume Required:		
Wet Pond Vol/LF	Dry Pond Vol./LF	
16.67	12.50	
Side Slope,	4	
Maint. Berm (ft)	20	
Wet/Dry?	Wet	
Basin Length (ft)	013+29	
Treat. Vol. (CF)	22150	
Treat. Vol. (Ac-ft)	0.508	
Atten. Depth (ft)	2.20	
Treat. Depth (ft)	0.9	
L at Control (ft)	157	
L at TOB (ft)	182	
L Berm (ft)	222	
Est. Site Acre	1.128	

*Increased 20% for treatment of SMF

SMF SITE SIZE REQUIRED*
1.3 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group A (CN=39)	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	49.0
CN post	66.9
S pre	10.40
S post	4.95
Rpre 100-yr	4.05
Rpost 100-yr	6.61
Increase in runoff 100-yr, 24-hr	2.56
Estimated Attenuation Volume (ac-ft)	1.301
Estimated Attenuation Depth (ft)	2.20

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	733
Farthest Point (AH/BK?)	BK
EOP EL @ Furthest Point	37.85
DHW @ Pond (SHW + trt. & attn. depths)	33.80
HGL at Furthest Point (DHW+distancex0.0008)	34.44
Feasible?	YES
HGL at Lowest Critical Elevation	34.16
Feasible?	YES

SMF SIZING AND FEASIBILITY CALCULATIONS

Project: SR 29
FPID No. 417540-6-52-01
FDA No.: 57400

Designed By: K. Myers
Checked By: A. Eldridge

Date: 11-Aug-20
Date: 6-Jul-23

Project Data	
Basin #	602
Pond #	B
Basin Limits:	
From Station	2119+92
To Station	2133+21
Pond Station	2122+50
Distance from Roadway (ft)	43
Site SHGWT	32.40
Source	Geotech (High)
Lowest Critical Elevation	35.82
Description	Ditch TOB (RT.)
Station	2123+48
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing: 2-12' lanes, 2-5' shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume		
Note: Assume a Square Pond		
Calculate Treat. Volume Required:		
Wet Pond Vol/LF	Dry Pond Vol./LF	
16.67	12.50	
Side Slope,	4	
Maint. Berm (ft)	20	
Wet/Dry?	Wet	
Basin Length (ft)	013+29	
Treat. Vol. (CF)	22150	
Treat. Vol. (Ac-ft)	0.508	
Atten. Depth (ft)	0.34	
Treat. Depth (ft)	0.5	
L at Control (ft)	210	
L at TOB (ft)	217	
L Berm (ft)	257	
Est. Site Acre	1.519	

*Increased 35% for treatment of SMF

SMF SITE SIZE REQUIRED*
2.1 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group D (CN=80)	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	83.1
CN post	88.5
S pre	2.04
S post	1.30
Rpre 100-yr	8.78
Rpost 100-yr	9.48
Increase in runoff 100-yr, 24-hr	0.70
Estimated Attenuation Volume (ac-ft)	0.355
Estimated Attenuation Depth (ft)	0.34

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	1071
Farthest Point (AH/BK?)	AH
EOP EL @ Furthest Point	38.46
DHW @ Pond (SHW + trt. & attn. depths)	33.24
HGL at Furthest Point (DHW+distancex0.0008)	34.13
Feasible?	YES
HGL at Lowest Critical Elevation	33.36
Feasible?	YES

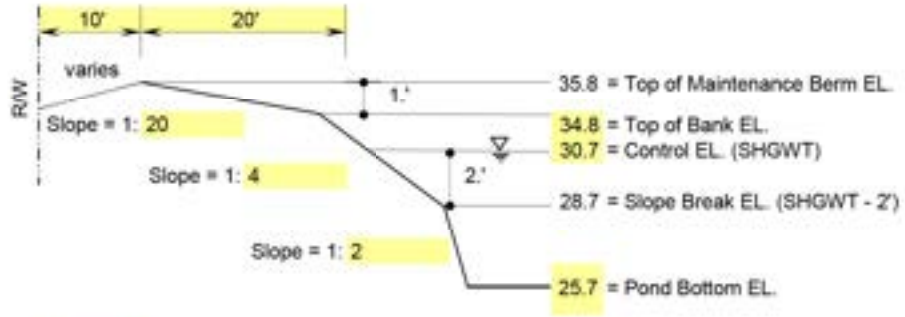
EARTHWORK ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No.: 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 07/13/23
Checked By: A. Eldridge **Date:** 07/13/23

SMF 602A

Typical Cross Section:



A_S (SF) =	56787	= Total Area of Pond Site
A_T (SF) =	47651	= Area at Top of Maintenance Berm
A_{TOB} (SF) =	31777	= Area at Top of Bank
A_C (SF) =	21148	= Area at Control Elevation
A_{SB} (SF) =	16743	= Area at 1:2 Slope Break
A_B (SF) =	13776	= Area at Bottom of Pond
A_{AVG} (SF) =	21148	= Area at Average Site Elevation

Average Site EL. = 30.7

Areas are generated from CAD shapes

EXCAVATION =	85378	CF
=	3162	CY
EMBANKMENT =	89988	CF
=	3333	CY
SOD =	3960	SY

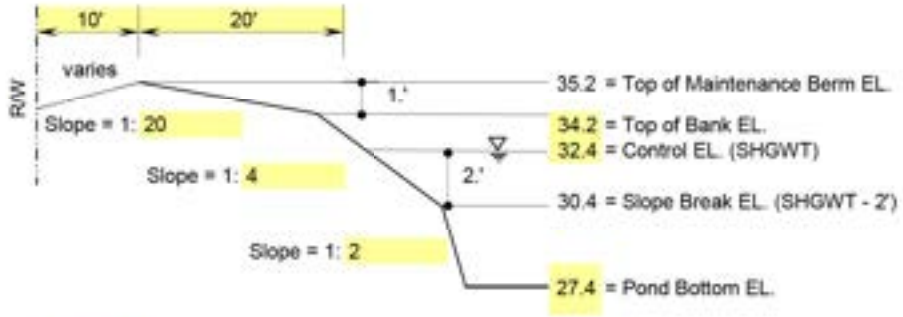
EARTHWORK ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No.: 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 07/13/23
Checked By: A. Eldridge **Date:** 07/13/23

SMF 602B

Typical Cross Section:



A_S (SF) =	92101	= Total Area of Pond Site
A_T (SF) =	80335	= Area at Top of Maintenance Berm
A_{TOB} (SF) =	59203	= Area at Top of Bank
A_C (SF) =	52379	= Area at Control Elevation
A_{SB} (SF) =	45283	= Area at 1:2 Slope Break
A_B (SF) =	40297	= Area at Bottom of Pond
A_{AVG} (SF) =	57267	= Area at Average Site Elevation

Average Site EL. = 33.7

Areas are generated from CAD shapes

EXCAVATION =	297536	CF
=	11020	CY
EMBANKMENT =	26822	CF
=	993	CY
SOD =	4414	SY

3.1.3 Basin 603

SMF SIZING AND FEASIBILITY CALCULATIONS

Project:	**SR 29**	**Designed By:**	K. Myers	**Date:**	11-Aug-20
FPID No.	**417540-6-52-01**	**Checked By:**	A. Eldridge	**Date:**	6-Jul-23
FDA No.:	**57400**				

Project Data	
Basin #	603
Pond #	A
Basin Limits:	
From Station	2133+21
To Station	2162+37
Pond Station	2139+00
Distance from Roadway (ft)	69
Site SHGWT	32.70
Source	Geotech (High) (ABG)
Lowest Critical Elevation	37.06
Description	Ditch TOB (RT.)
Station	2133+21
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing: 2-12' lanes, 2-5' shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume		
Note: Assume a Square Pond		
Calculate Treat. Volume Required:		
Wet Pond Vol/LF	Dry Pond Vol./LF	
16.67	12.50	
Side Slope,	4	
Maint. Berm (ft)	20	
Wet/Dry?	Wet	
Basin Length (ft)	029+16	
Treat. Vol. (CF)	48600	
Treat. Vol. (Ac-ft)	1.116	
Atten. Depth (ft)	0.34	
Treat. Depth (ft)	0.5	
L at Control (ft)	312	
L at TOB (ft)	319	
L Berm (ft)	359	
Est. Site Acre	2.951	

*Increased 20% for treatment of SMF

SMF SITE SIZE REQUIRED*
3.6 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group D (CN=80)	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	83.1
CN post	88.5
S pre	2.04
S post	1.30
Rpre 100-yr	8.78
Rpost 100-yr	9.48
Increase in runoff 100-yr, 24-hr	0.70
Estimated Attenuation Volume (ac-ft)	0.779
Estimated Attenuation Depth (ft)	0.34

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	2337
Farthest Point (AH/BK?)	AH
EOP EL @ Furthest Point	38.86
DHW @ Pond (SHW + trt. & attn. depths)	33.54
HGL at Furthest Point (DHW+distancex0.0008)	35.47
Feasible?	YES
HGL at Lowest Critical Elevation	34.06
Feasible?	YES

SMF SIZING AND FEASIBILITY CALCULATIONS

Project: SR 29
FPID No. 417540-6-52-01
FDA No.: 57400

Designed By: K. Myers
Checked By: A. Eldridge

Date: 11-Aug-20
Date: 6-Jul-23

Project Data	
Basin #	603
Pond #	B
Basin Limits:	
From Station	2133+21
To Station	2162+37
Pond Station	2154+00
Distance from Roadway (ft)	69
Site SHGWT	33.45
Source	Geotech (Avg.)
Lowest Critical Elevation	37.06
Description	Ditch TOB (RT.)
Station	2133+21
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing: 2-12' lanes, 2-5' shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume		
Note: Assume a Square Pond		
Calculate Treat. Volume Required:		
Wet Pond Vol/LF	Dry Pond Vol./LF	
16.67	12.50	
Side Slope,	4	
Maint. Berm (ft)	20	
Wet/Dry?	Wet	
Basin Length (ft)	029+16	
Treat. Vol. (CF)	48600	
Treat. Vol. (Ac-ft)	1.116	
Atten. Depth (ft)	0.34	
Treat. Depth (ft)	0.5	
L at Control (ft)	312	
L at TOB (ft)	319	
L Berm (ft)	359	
Est. Site Acre	2.951	

*Increased 35% for treatment of SMF

SMF SITE SIZE REQUIRED*

4.1 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group D (CN=80)	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	83.1
CN post	88.5
S pre	2.04
S post	1.30
Rpre 100-yr	8.78
Rpost 100-yr	9.48
Increase in runoff 100-yr, 24-hr	0.70
Estimated Attenuation Volume (ac-ft)	0.779
Estimated Attenuation Depth (ft)	0.34

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	2079
Farthest Point (AH/BK?)	BK
EOP EL @ Furthest Point	38.46
DHW @ Pond (SHW + trt. & attn. depths)	34.29
HGL at Furthest Point (DHW+distancex0.0008)	36.01
Feasible?	YES
HGL at Lowest Critical Elevation	36.01
Feasible?	YES

SMF SIZING AND FEASIBILITY CALCULATIONS

Project: **SR 29**
FPID No. **417540-6-52-01**
FDA No.: **57400**

Designed By: K. Myers
Checked By: A. Eldridge

Date: 11-Aug-20
Date: 6-Jul-23

Project Data	
Basin #	603/604
Pond #	B
Basin Limits:	
From Station	2133+21
To Station	2175+07
Pond Station	2148+00
Distance from Roadway (ft)	43
Site SHGWT	33.70
Source	Geotech (High)
Lowest Critical Elevation	37.06
Description	Ditch TOB (RT.)
Station	2133+21
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing: 2-12' lanes, 2-5' shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume		
Note: Assume a Square Pond		
Calculate Treat. Volume Required:		
Wet Pond Vol/LF	Dry Pond Vol./LF	
16.67	12.50	
Side Slope,	4	
Maint. Berm (ft)	20	
Wet/Dry?	Wet	
Basin Length (ft)	041+86	
Treat. Vol. (CF)	69767	
Treat. Vol. (Ac-ft)	1.602	
Atten. Depth (ft)	0.35	
Treat. Depth (ft)	0.5	
L at Control (ft)	374	
L at TOB (ft)	380	
L Berm (ft)	420	
Est. Site Acre	4.055	

*Increased 40% for treatment of SMF

SMF SITE SIZE REQUIRED*
5.7 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group D (CN=80)	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	83.1
CN post	88.5
S pre	2.04
S post	1.30
Rpre 100-yr	8.78
Rpost 100-yr	9.48
Increase in runoff 100-yr, 24-hr	0.70
Estimated Attenuation Volume (ac-ft)	1.118
Estimated Attenuation Depth (ft)	0.35

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	2707
Farthest Point (AH/BK?)	AH
EOP EL @ Furthest Point	38.80
DHW @ Pond (SHW + trt. & attn. depths)	34.55
HGL at Furthest Point (DHW+distancex0.0008)	36.75
Feasible?	YES
HGL at Lowest Critical Elevation	35.76
Feasible?	YES

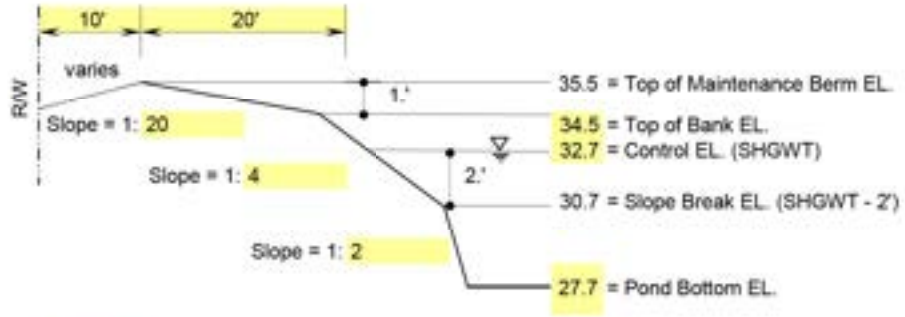
EARTHWORK ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No.: 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 07/13/23
Checked By: A. Eldridge **Date:** 07/13/23

SMF 603A

Typical Cross Section:



A_S (SF) =	154766	= Total Area of Pond Site
A_T (SF) =	139364	= Area at Top of Maintenance Berm
A_{TOB} (SF) =	110958	= Area at Top of Bank
A_C (SF) =	101516	= Area at Control Elevation
A_{SB} (SF) =	91511	= Area at 1:2 Slope Break
A_B (SF) =	84343	= Area at Bottom of Pond
A_{AVG} (SF) =	101516	= Area at Average Site Elevation

Average Site EL. = 32.7

Areas are generated from CAD shapes

EXCAVATION =	457045	CF
=	16928	CY
EMBANKMENT =	75615	CF
=	2801	CY
SOD =	5917	SY

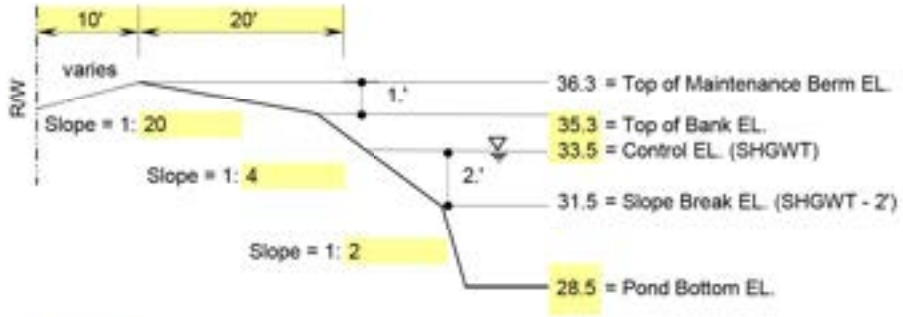
EARTHWORK ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No.: 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 07/13/23
Checked By: A. Eldridge **Date:** 07/13/23

SMF 603B

Typical Cross Section:



A_S (SF) =	178543	= Total Area of Pond Site
A_T (SF) =	161988	= Area at Top of Maintenance Berm
A_{TOB} (SF) =	131279	= Area at Top of Bank
A_C (SF) =	121008	= Area at Control Elevation
A_{SB} (SF) =	110081	= Area at 1:2 Slope Break
A_B (SF) =	102222	= Area at Bottom of Pond
A_{AVG} (SF) =	122128	= Area at Average Site Elevation

Average Site EL. = 33.7

Areas are generated from CAD shapes

EXCAVATION =	574373	CF
=	21273	CY
EMBANKMENT =	73057	CF
=	2706	CY
SOD =	6393	SY

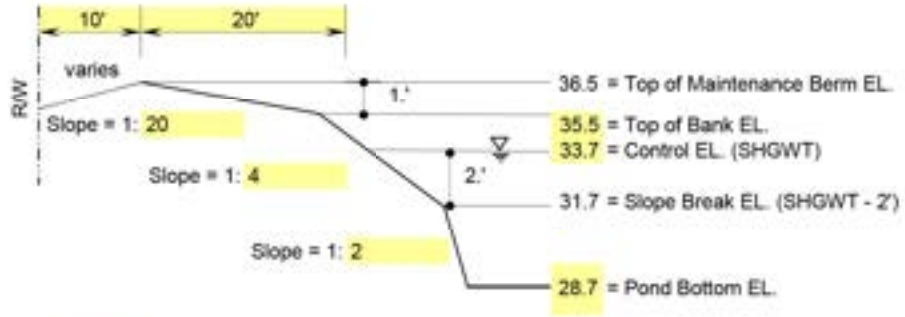
EARTHWORK ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No.: 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 07/13/23
Checked By: A. Eldridge **Date:** 07/13/23

SMF 603/604 B

Typical Cross Section:



A_S (SF) =	247300	= Total Area of Pond Site
A_T (SF) =	226854	= Area at Top of Maintenance Berm
A_{TOB} (SF) =	188362	= Area at Top of Bank
A_C (SF) =	175289	= Area at Control Elevation
A_{SB} (SF) =	161249	= Area at 1:2 Slope Break
A_B (SF) =	151055	= Area at Bottom of Pond
A_{AVG} (SF) =	184689	= Area at Average Site Elevation

Average Site EL. = 35.0

Areas are generated from CAD shapes

EXCAVATION = 1038985 CF
= 38481 CY

EMBANKMENT = 48210 CF
= 1786 CY

SOD = 8001 SY

3.1.4 Basin 604

SMF SIZING AND FEASIBILITY CALCULATIONS

Project:	**SR 29**	**Designed By:**	K. Myers	**Date:**	11-Aug-20
FPID No.	**417540-6-52-01**	**Checked By:**	A. Eldridge	**Date:**	6-Jul-23
FDA No.:	**57400**				

Project Data	
Basin #	604
Pond #	A
Basin Limits:	
From Station	2162+37
To Station	2175+07
Pond Station	2163+00
Distance from Roadway (ft)	45
Site SHGWT	33.80
Source	Geotech (High)
Lowest Critical Elevation	37.4
Description	Ditch TOB (RT.)
Station	2175+07
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing: 2-12' lanes, 2-5' shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume		
Note: Assume a Square Pond		
Calculate Treat. Volume Required:		
Wet Pond Vol/LF	Dry Pond Vol./LF	
16.67	12.50	
Side Slope,	4	
Maint. Berm (ft)	20	
Wet/Dry?	Wet	
Basin Length (ft)	012+70	
Treat. Vol. (CF)	21167	
Treat. Vol. (Ac-ft)	0.486	
Atten. Depth (ft)	0.41	
Treat. Depth (ft)	0.6	
L at Control (ft)	188	
L at TOB (ft)	196	
L Berm (ft)	236	
Est. Site Acre	1.277	

*Increased 25% for treatment of SMF

SMF SITE SIZE REQUIRED*
1.6 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group D (CN=80)	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	83.1
CN post	88.5
S pre	2.04
S post	1.30
Rpre 100-yr	8.78
Rpost 100-yr	9.48
Increase in runoff 100-yr, 24-hr	0.70
Estimated Attenuation Volume (ac-ft)	0.339
Estimated Attenuation Depth (ft)	0.41

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	1207
Farthest Point (AH/BK?)	AH
EOP EL @ Furthest Point	38.80
DHW @ Pond (SHW + trt. & attn. depths)	34.81
HGL at Furthest Point (DHW+distancex0.0008)	35.81
Feasible?	YES
HGL at Lowest Critical Elevation	35.81
Feasible?	YES

SMF SIZING AND FEASIBILITY CALCULATIONS

Project:	**SR 29**	**Designed By:**	K. Myers	**Date:**	11-Aug-20
FPID No.	**417540-6-52-01**	**Checked By:**	A. Eldridge	**Date:**	6-Jul-23
FDA No.:	**57400**				

Project Data	
Basin #	604
Pond #	B
Basin Limits:	
From Station	2162+37
To Station	2175+07
Pond Station	2166+00
Distance from Roadway (ft)	69
Site SHGWT	33.40
Source	Geotech (High)
Lowest Critical Elevation	37.4
Description	Ditch TOB (RT.)
Station	2175+07
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing: 2-12' lanes, 2-5' shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume		
Note: Assume a Square Pond		
Calculate Treat. Volume Required:		
Wet Pond Vol/LF	Dry Pond Vol./LF	
16.67	12.50	
Side Slope,	4	
Maint. Berm (ft)	20	
Wet/Dry?	Wet	
Basin Length (ft)	012+70	
Treat. Vol. (CF)	21167	
Treat. Vol. (Ac-ft)	0.486	
Atten. Depth (ft)	0.47	
Treat. Depth (ft)	0.7	
L at Control (ft)	174	
L at TOB (ft)	183	
L Berm (ft)	223	
Est. Site Acre	1.144	

*Increased 20% for treatment of SMF

SMF SITE SIZE REQUIRED*
1.4 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group D (CN=80)	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	83.1
CN post	88.5
S pre	2.04
S post	1.30
Rpre 100-yr	8.78
Rpost 100-yr	9.48
Increase in runoff 100-yr, 24-hr	0.70
Estimated Attenuation Volume (ac-ft)	0.339
Estimated Attenuation Depth (ft)	0.47

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	907
Farthest Point (AH/BK?)	AH
EOP EL @ Furthest Point	38.80
DHW @ Pond (SHW + trt. & attn. depths)	34.57
HGL at Furthest Point (DHW+distancex0.0008)	35.35
Feasible?	YES
HGL at Lowest Critical Elevation	35.35
Feasible?	YES

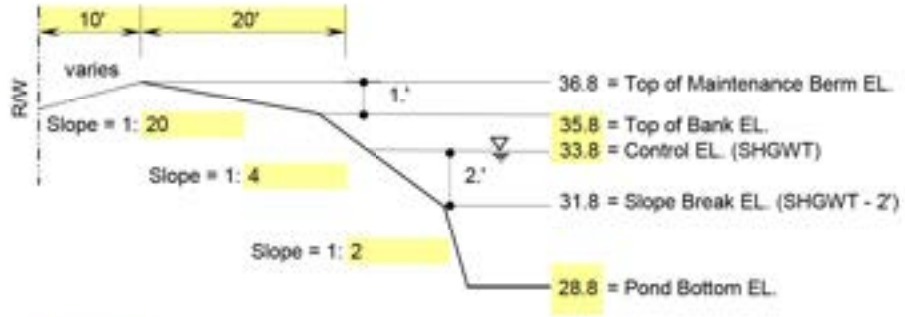
EARTHWORK ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No.: 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 07/13/23
Checked By: A. Eldridge **Date:** 07/13/23

SMF 604 A

Typical Cross Section:



A_S (SF) =	69760	= Total Area of Pond Site
A_T (SF) =	58240	= Area at Top of Maintenance Berm
A_{TOB} (SF) =	37600	= Area at Top of Bank
A_C (SF) =	30240	= Area at Control Elevation
A_{SB} (SF) =	23392	= Area at 1:2 Slope Break
A_B (SF) =	18592	= Area at Bottom of Pond
A_{AVG} (SF) =	34966	= Area at Average Site Elevation

Average Site EL. = 35.1

Areas are generated from CAD shapes

EXCAVATION =	159504	CF
=	5908	CY
EMBANKMENT =	29749	CF
=	1102	CY
SOD =	4391	SY

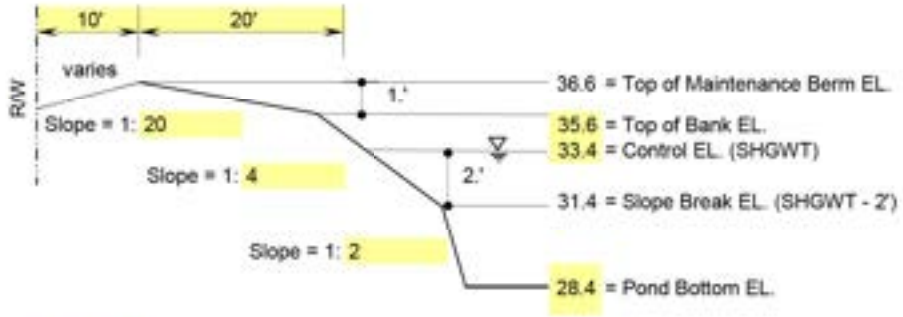
EARTHWORK ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No.: 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 07/13/23
Checked By: A. Eldridge **Date:** 07/13/23

SMF 604 B

Typical Cross Section:



A_S (SF) =	60802	= Total Area of Pond Site
A_T (SF) =	51339	= Area at Top of Maintenance Berm
A_{TOB} (SF) =	34812	= Area at Top of Bank
A_C (SF) =	28554	= Area at Control Elevation
A_{SB} (SF) =	23403	= Area at 1:2 Slope Break
A_B (SF) =	19875	= Area at Bottom of Pond
A_{AVG} (SF) =	28285	= Area at Average Site Elevation

Average Site EL. = 33.3

Areas are generated from CAD shapes

EXCAVATION =	113103	CF
=	4189	CY
EMBANKMENT =	53978	CF
=	1999	CY
SOD =	3583	SY

3.1.5 Basin 605

SMF SIZING AND FEASIBILITY CALCULATIONS

Project:	**SR 29**	**Designed By:**	K. Myers	**Date:**	11-Aug-20
FPID No.	**417540-6-52-01**	**Checked By:**	A. Eldridge	**Date:**	7-Jul-23
FDA No.:	**57400**				

Project Data	
Basin #	605
Pond #	A
Basin Limits:	
From Station	2175+07
To Station	2208+62
Pond Station	2178+00
Distance from Roadway (ft)	45
Site SHGWT	35.70
Source	Geotech (High)
Lowest Critical Elevation	37.86
Description	Ditch TOB (RT.)
Station	2175+07
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing: 2-12' lanes, 2-5' shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume		
Note: Assume a Square Pond		
Calculate Treat. Volume Required:		
Wet Pond Vol/LF	Dry Pond Vol./LF	
16.67	12.50	
Side Slope,	4	
Maint. Berm (ft)	20	
Wet/Dry?	Wet	
Basin Length (ft)	033+55	
Treat. Vol. (CF)	55917	
Treat. Vol. (Ac-ft)	1.284	
Atten. Depth (ft)	0.34	
Treat. Depth (ft)	0.5	
L at Control (ft)	334	
L at TOB (ft)	341	
L Berm (ft)	381	
Est. Site Acre	3.335	

*Increased 20% for treatment of SMF

SMF SITE SIZE REQUIRED*
4.0 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group D (CN=80)	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	83.1
CN post	88.5
S pre	2.04
S post	1.30
Rpre 100-yr	8.78
Rpost 100-yr	9.48
Increase in runoff 100-yr, 24-hr	0.70
Estimated Attenuation Volume (ac-ft)	0.896
Estimated Attenuation Depth (ft)	0.34

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	3062
Farthest Point (AH/BK?)	AH
EOP EL @ Furthest Point	43.48
DHW @ Pond (SHW + trt. & attn. depths)	36.54
HGL at Furthest Point (DHW+distancex0.0008)	39.03
Feasible?	YES
HGL at Lowest Critical Elevation	36.82
Feasible?	YES

SMF SIZING AND FEASIBILITY CALCULATIONS

Project: SR 29
FPID No. 417540-6-52-01
FDA No.: 57400

Designed By: K. Myers
Checked By: A. Eldridge

Date: 11-Aug-20
Date: 6-Jul-23

Project Data	
Basin #	605
Pond #	B
Basin Limits:	
From Station	2175+07
To Station	2208+62
Pond Station	2194+00
Distance from Roadway (ft)	69
Site SHGWT	38.70
Source	Geotech (High)
Lowest Critical Elevation	37.86
Description	Ditch TOB (RT.)
Station	2175+07
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing: 2-12' lanes, 2-5' shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume		
Note: Assume a Square Pond		
Calculate Treat. Volume Required:		
Wet Pond Vol/LF	Dry Pond Vol./LF	
16.67	12.50	
Side Slope,	4	
Maint. Berm (ft)	20	
Wet/Dry?	Wet	
Basin Length (ft)	033+55	
Treat. Vol. (CF)	55917	
Treat. Vol. (Ac-ft)	1.284	
Atten. Depth (ft)	0.34	
Treat. Depth (ft)	0.5	
L at Control (ft)	334	
L at TOB (ft)	341	
L Berm (ft)	381	
Est. Site Acre	3.335	

*Increased 40% for treatment of SMF

SMF SITE SIZE REQUIRED*
4.7 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group D (CN=80)	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	83.1
CN post	88.5
S pre	2.04
S post	1.30
Rpre 100-yr	8.78
Rpost 100-yr	9.48
Increase in runoff 100-yr, 24-hr	0.70
Estimated Attenuation Volume (ac-ft)	0.896
Estimated Attenuation Depth (ft)	0.34

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	1893
Farthest Point (AH/BK?)	BK
EOP EL @ Furthest Point	38.32
DHW @ Pond (SHW + trt. & attn. depths)	39.54
HGL at Furthest Point (DHW+distancex0.0008)	41.11
Feasible?	NO
HGL at Lowest Critical Elevation	41.11
Feasible?	NO

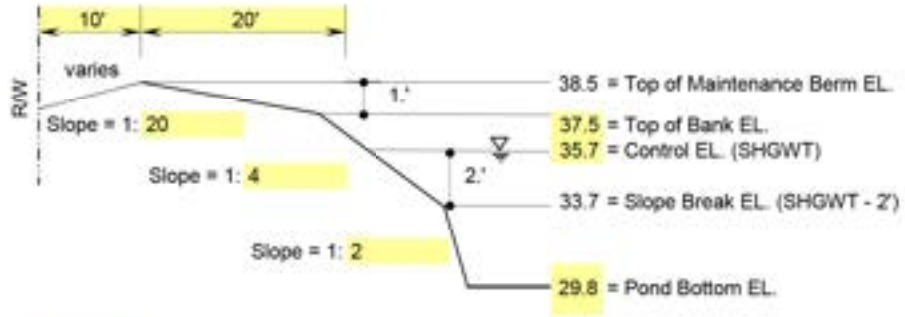
EARTHWORK ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No.: 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 07/13/23
Checked By: A. Eldridge **Date:** 07/13/23

SMF 605 A

Typical Cross Section:



A_S (SF) =	174460	= Total Area of Pond Site
A_T (SF) =	157873	= Area at Top of Maintenance Berm
A_{TOB} (SF) =	127101	= Area at Top of Bank
A_C (SF) =	116806	= Area at Control Elevation
A_{SB} (SF) =	105853	= Area at 1:2 Slope Break
A_B (SF) =	97975	= Area at Bottom of Pond
A_{AVG} (SF) =	118493	= Area at Average Site Elevation

Average Site EL. = 36.0

Areas are generated from CAD shapes

EXCAVATION =	655629	CF
=	24283	CY
EMBANKMENT =	71078	CF
=	2633	CY
SOD =	6406	SY

3.1.6 Basin 606

SMF SIZING AND FEASIBILITY CALCULATIONS

Project: SR 29
FPID No. 417540-6-52-01
FDA No.: 57400

Designed By: K. Myers
Checked By: A. Eldridge

Date: 11-Aug-20
Date: 6-Jul-23

Project Data	
Basin #	606
Pond #	A
Basin Limits:	
From Station	2208+62
To Station	2240+02
Pond Station	2230+00
Distance from Roadway (ft)	50
Site SHGWT	37.60
Source	Geotech (High)
Lowest Critical Elevation	39.78
Description	Ditch TOB (RT.)
Station	2240+00
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing: 2-12' lanes, 2-5' shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume		
Note: Assume a Square Pond		
Calculate Treat. Volume Required:		
Wet Pond Vol/LF	Dry Pond Vol./LF	
16.67	12.50	
Side Slope,	4	
Maint. Berm (ft)	20	
Wet/Dry?	Wet	
Basin Length (ft)	031+40	
Treat. Vol. (CF)	52333	
Treat. Vol. (Ac-ft)	1.201	
Atten. Depth (ft)	0.34	
Treat. Depth (ft)	0.5	
L at Control (ft)	324	
L at TOB (ft)	330	
L Berm (ft)	370	
Est. Site Acre	3.148	

*Increased 35% for treatment of SMF

SMF SITE SIZE REQUIRED*

4.4 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group D (CN=80)	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	83.1
CN post	88.5
S pre	2.04
S post	1.30
Rpre 100-yr	8.78
Rpost 100-yr	9.48
Increase in runoff 100-yr, 24-hr	0.70
Estimated Attenuation Volume (ac-ft)	0.839
Estimated Attenuation Depth (ft)	0.34

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	2138
Farthest Point (AH/BK?)	BK
EOP EL @ Furthest Point	43.48
DHW @ Pond (SHW + trt. & attn. depths)	38.44
HGL at Furthest Point (DHW+distancex0.0008)	40.20
Feasible?	YES
HGL at Lowest Critical Elevation	39.28
Feasible?	NO

SMF SIZING AND FEASIBILITY CALCULATIONS

Project: SR 29
FPID No. 417540-6-52-01
FDA No.: 57400

Designed By: K. Myers
Checked By: A. Eldridge

Date: 11-Aug-20
Date: 6-Jul-23

Project Data	
Basin #	606
Pond #	B
Basin Limits:	
From Station	2208+62
To Station	2240+02
Pond Station	2238+50
Distance from Roadway (ft)	38
Site SHGWT	35.60
Source	Geotech (High)
Lowest Critical Elevation	39.78
Description	Ditch TOB (RT.)
Station	2240+00
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing: 2-12' lanes, 2-5' shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume		
Note: Assume a Square Pond		
Calculate Treat. Volume Required:		
Wet Pond Vol/LF	Dry Pond Vol./LF	
16.67	12.50	
Side Slope,	4	
Maint. Berm (ft)	20	
Wet/Dry?	Wet	
Basin Length (ft)	031+40	
Treat. Vol. (CF)	52333	
Treat. Vol. (Ac-ft)	1.201	
Atten. Depth (ft)	0.41	
Treat. Depth (ft)	0.6	
L at Control (ft)	295	
L at TOB (ft)	303	
L Berm (ft)	343	
Est. Site Acre	2.708	

*Increased 20% for treatment of SMF

SMF SITE SIZE REQUIRED*
3.1 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group D (CN=80)	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	83.1
CN post	88.5
S pre	2.04
S post	1.30
Rpre 100-yr	8.78
Rpost 100-yr	9.48
Increase in runoff 100-yr, 24-hr	0.70
Estimated Attenuation Volume (ac-ft)	0.839
Estimated Attenuation Depth (ft)	0.41

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	2988
Farthest Point (AH/BK?)	BK
EOP EL @ Furthest Point	43.48
DHW @ Pond (SHW + trt. & attn. depths)	36.61
HGL at Furthest Point (DHW+distancex0.0008)	39.03
Feasible?	YES
HGL at Lowest Critical Elevation	36.76
Feasible?	YES

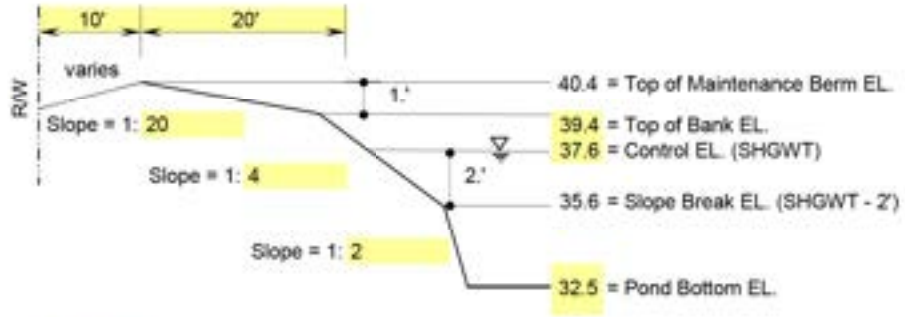
EARTHWORK ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No.: 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 07/13/23
Checked By: A. Eldridge **Date:** 07/13/23

SMF 606 A

Typical Cross Section:



A_S (SF) =	191669	= Total Area of Pond Site
A_T (SF) =	174557	= Area at Top of Maintenance Berm
A_{TOB} (SF) =	142733	= Area at Top of Bank
A_C (SF) =	132060	= Area at Control Elevation
A_{SB} (SF) =	120687	= Area at 1:2 Slope Break
A_B (SF) =	112493	= Area at Bottom of Pond
A_{AVG} (SF) =	132642	= Area at Average Site Elevation

Average Site EL. = 37.7

Areas are generated from CAD shapes

EXCAVATION =	627619	CF
=	23245	CY
EMBANKMENT =	80867	CF
=	2995	CY
SOD =	6623	SY

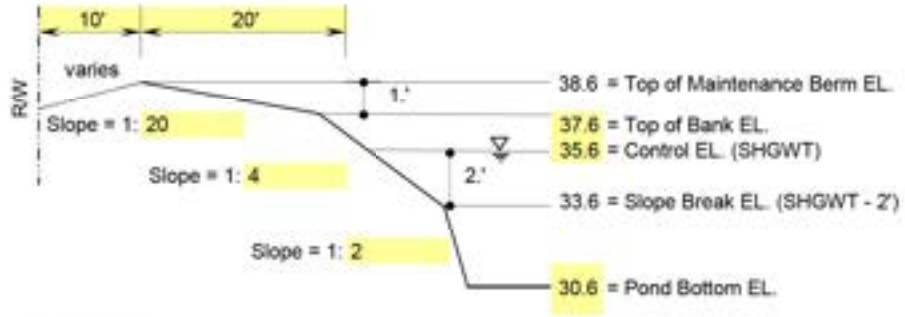
EARTHWORK ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No.: 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 07/13/23
Checked By: A. Eldridge **Date:** 07/13/23

SMF 606 B

Typical Cross Section:



A_S (SF) =	135143	= Total Area of Pond Site
A_T (SF) =	114423	= Area at Top of Maintenance Berm
A_{TOB} (SF) =	75383	= Area at Top of Bank
A_C (SF) =	60663	= Area at Control Elevation
A_{SB} (SF) =	46455	= Area at 1:2 Slope Break
A_B (SF) =	36135	= Area at Bottom of Pond
A_{AVG} (SF) =	62838	= Area at Average Site Elevation

Average Site EL. = 35.9

Areas are generated from CAD shapes

EXCAVATION =	249991	CF
=	9259	CY
EMBANKMENT =	97973	CF
=	3629	CY
SOD =	8276	SY

3.1.7 Basin 607

SMF SIZING AND FEASIBILITY CALCULATIONS

Project: SR 29
FPID No. 417540-6-52-01
FDA No.: 57400

Designed By: K. Myers
Checked By: A. Eldridge

Date: 11-Aug-20
Date: 6-Jul-23

Project Data	
Basin #	607
Pond #	A
Basin Limits:	
From Station	2240+02
To Station	2257+19
Pond Station	2244+50
Distance from Roadway (ft)	69
Site SHGWT	36.30
Source	Geotech (High)
Lowest Critical Elevation	40.86
Description	Ditch TOB (RT.)
Station	2240+02
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing: 2-12' lanes, 2-5' shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume		
Note: Assume a Square Pond		
Calculate Treat. Volume Required:		
Wet Pond Vol/LF	Dry Pond Vol./LF	
16.67	12.50	
Side Slope,	4	
Maint. Berm (ft)	20	
Wet/Dry?	Wet	
Basin Length (ft)	017+17	
Treat. Vol. (CF)	28617	
Treat. Vol. (Ac-ft)	0.657	
Atten. Depth (ft)	0.34	
Treat. Depth (ft)	0.5	
L at Control (ft)	239	
L at TOB (ft)	246	
L Berm (ft)	286	
Est. Site Acre	1.878	

*Increased 35% for treatment of SMF

SMF SITE SIZE REQUIRED*
2.6 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group D (CN=80)	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	83.1
CN post	88.5
S pre	2.04
S post	1.30
Rpre 100-yr	8.78
Rpost 100-yr	9.48
Increase in runoff 100-yr, 24-hr	0.70
Estimated Attenuation Volume (ac-ft)	0.459
Estimated Attenuation Depth (ft)	0.34

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	1269
Farthest Point (AH/BK?)	AH
EOP EL @ Furthest Point	42.33
DHW @ Pond (SHW + trt. & attn. depths)	37.14
HGL at Furthest Point (DHW+distancex0.0008)	38.21
Feasible?	YES
HGL at Lowest Critical Elevation	37.56
Feasible?	YES

SMF SIZING AND FEASIBILITY CALCULATIONS

Project:	**SR 29**	**Designed By:**	K. Myers	**Date:**	11-Aug-20
FPID No.	**417540-6-52-01**	**Checked By:**	A. Eldridge	**Date:**	6-Jul-23
FDA No.:	**57400**				

Project Data	
Basin #	607
Pond #	B
Basin Limits:	
From Station	2240+02
To Station	2257+19
Pond Station	2253+00
Distance from Roadway (ft)	382
Site SHGWT	36.90
Source	Geotech (High)
Lowest Critical Elevation	40.86
Description	Ditch TOB (RT.)
Station	2240+02
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing: 2-12' lanes, 2-5' shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume		
Note: Assume a Square Pond		
Calculate Treat. Volume Required:		
Wet Pond Vol/LF	Dry Pond Vol./LF	
16.67	12.50	
Side Slope,	4	
Maint. Berm (ft)	20	
Wet/Dry?	Wet	
Basin Length (ft)	017+17	
Treat. Vol. (CF)	28617	
Treat. Vol. (Ac-ft)	0.657	
Atten. Depth (ft)	0.34	
Treat. Depth (ft)	0.5	
L at Control (ft)	239	
L at TOB (ft)	246	
L Berm (ft)	286	
Est. Site Acre	1.878	

*Increased 35% for treatment of SMF

SMF SITE SIZE REQUIRED*
2.6 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group D (CN=80)	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	83.1
CN post	88.5
S pre	2.04
S post	1.30
Rpre 100-yr	8.78
Rpost 100-yr	9.48
Increase in runoff 100-yr, 24-hr	0.70
Estimated Attenuation Volume (ac-ft)	0.459
Estimated Attenuation Depth (ft)	0.34

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	1298
Farthest Point (AH/BK?)	BK
EOP EL @ Furthest Point	40.70
DHW @ Pond (SHW + trt. & attn. depths)	37.74
HGL at Furthest Point (DHW+distancex0.0008)	39.09
Feasible?	YES
HGL at Lowest Critical Elevation	39.09
Feasible?	YES

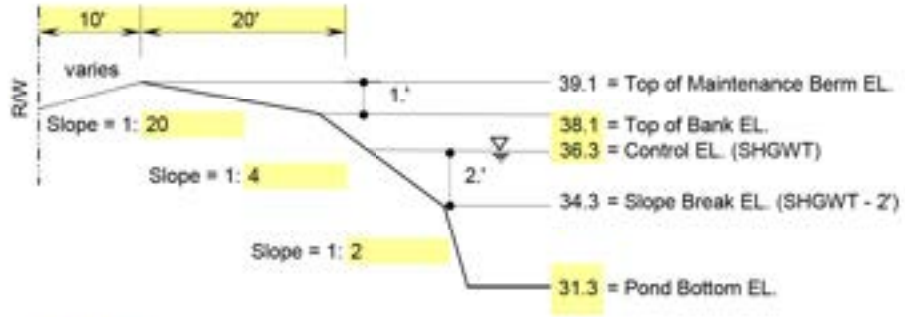
EARTHWORK ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No.: 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 07/13/23
Checked By: A. Eldridge **Date:** 07/13/23

SMF 607 A

Typical Cross Section:



A_S (SF) =	113789	= Total Area of Pond Site
A_T (SF) =	99762	= Area at Top of Maintenance Berm
A_{TOB} (SF) =	74107	= Area at Top of Bank
A_C (SF) =	65655	= Area at Control Elevation
A_{SB} (SF) =	56750	= Area at 1:2 Slope Break
A_B (SF) =	50407	= Area at Bottom of Pond
A_{AVG} (SF) =	65655	= Area at Average Site Elevation

Average Site EL. = 36.3

Areas are generated from CAD shapes

EXCAVATION =	283400	CF
=	10496	CY
EMBANKMENT =	68350	CF
=	2531	CY
SOD =	5348	SY

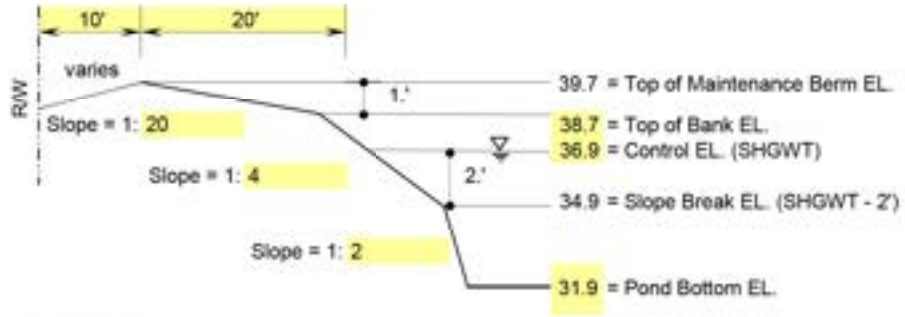
EARTHWORK ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No.: 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 07/13/23
Checked By: A. Eldridge **Date:** 07/13/23

SMF 607 B

Typical Cross Section:



A_S (SF) =	113232	= Total Area of Pond Site
A_T (SF) =	100172	= Area at Top of Maintenance Berm
A_{TOB} (SF) =	76452	= Area at Top of Bank
A_C (SF) =	68696	= Area at Control Elevation
A_{SB} (SF) =	60565	= Area at 1:2 Slope Break
A_B (SF) =	54803	= Area at Bottom of Pond
A_{AVG} (SF) =	68278	= Area at Average Site Elevation

Average Site EL. = 36.8

Areas are generated from CAD shapes

EXCAVATION =	295737	CF
=	10953	CY
EMBANKMENT =	66082	CF
=	2447	CY
SOD =	4948	SY

3.1.8 North Regional

SMF SIZING AND FEASIBILITY CALCULATIONS

Project:	**SR 29**	**Designed By:**	K. Myers	**Date:**	14-Apr-20
FPID No.	**417540-6-52-01**	**Checked By:**	A. Eldridge	**Date:**	6-Jul-23
FDA No.:	**57400**				

Project Data	
Basin #	All
Pond #	North Regional
Basin Limits:	
From Station	2100+78
To Station	2257+19
Pond Station	2105+00
Distance from Roadway (ft)	5120
Site SHGWT	30.40
Source	Geotech (High) (ABG)
Lowest Critical Elevation	37.39
Description	Ditch TOB (RT.)
Station	2119+92
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing is 2-12' Lanes, 2-5' Shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume		
Note: Assume a Square Pond		
Calculate Treat. Volume Required:		
Wet Pond Vol/LF	Dry Pond Vol./LF	
16.67	12.50	
Side Slope,	4	
Maint. Berm (ft)	20	
Wet/Dry?	Wet	
Basin Length (ft)	15641	
Treat. Vol. (CF)	260683	
Treat. Vol. (Ac-ft)	5.984	
Atten. Depth (ft)	0.00	
Treat. Depth (ft)	0.9	
L at Control (ft)	538	
L at TOB (ft)	545	
L Berm (ft)	585	
Est. Site Acre	7.867	

*Increased 25% for treatment of SMF

SMF SITE SIZE REQUIRED

9.9 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group D (CN=80)	
Use NRCS Equation for Runoff:	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	83.1
CN post	88.5
S pre	2.04
S post	1.30
Rpre 100-yr	8.78
Rpost 100-yr	9.48
Increase in runoff 100-yr, 24-hr	0.70
Estimated Attenuation Volume (ac-ft)	0.000
Estimated Attenuation Depth (ft)	0.00

**Attenuation to be provided prior to discharge from the SR 29 R/W

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	15219
Farthest Point (AH/BK?)	AH
EOP EL @ Furthest Point	42.33
DHW @ Pond (SHW + trt. & attn. depths)	31.30
HGL at Furthest Point (DHW+distancex0.0008)	47.57
Feasible?	NO
HGL at Lowest Critical Elevation	36.59
Feasible?	NO

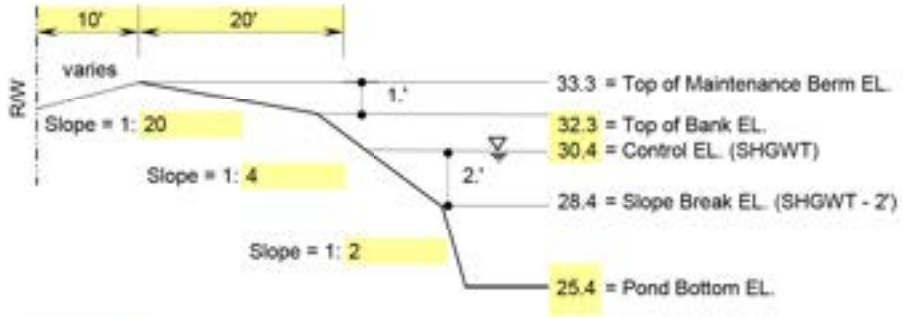
EARTHWORK ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No.: 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 07/13/23
Checked By: A. Eldridge **Date:** 07/13/23

North Regional Pond

Typical Cross Section:



A_S (SF) =	432222	= Total Area of Pond Site
A_T (SF) =	399877	= Area at Top of Maintenance Berm
A_{TOB} (SF) =	337511	= Area at Top of Bank
A_C (SF) =	307490	= Area at Control Elevation
A_{SB} (SF) =	284032	= Area at 1:2 Slope Break
A_B (SF) =	266763	= Area at Bottom of Pond
A_{AVG} (SF) =	306306	= Area at Average Site Elevation

Average Site EL. = 30.3

Areas are generated from CAD shapes

EXCAVATION =	1394384	CF
=	51644	CY
EMBANKMENT =	188874	CF
=	6995	CY
SOD =	13859	SY

3.1.9 South Regional

SMF SIZING AND FEASIBILITY CALCULATIONS

Project:	**SR 29**	**Designed By:**	K. Myers	**Date:**	14-Apr-20
FPID No.	**417540-6-52-01**	**Checked By:**	A. Eldridge	**Date:**	6-Jul-23
FDA No.:	**57400**				

Project Data	
Basin #	All
Pond #	South Regional
Basin Limits:	
From Station	2100+78
To Station	2257+19
Pond Station	2065+00
Distance from Roadway (ft)	5280
Site SHGWT	21.40
Source	Geotech (High) (ABG)
Lowest Critical Elevation	37.39
Description	Ditch TOB (RT.)
Station	2119+92
Typical Section (Imperivous width in R/W):	
Existing (ft)	34
Proposed (ft)	94.5
R/W width (ft)	200

Typical Sections
Existing is 2-12' Lanes, 2-5' Shoulders
Proposed: 4-12' lanes, 2-5' outside shldrs 2-4' inside shldrs, 2-2.25', and 2-12' SUP

Note: Input Data Fields	

Sizing Per Treatment Volume	
Note: Assume a Square Pond	
Calculate Treat. Volume Required:	
Wet Pond Vol/LF	Dry Pond Vol./LF
16.67	12.50
Side Slope,	4
Maint. Berm (ft)	20
Wet/Dry?	Wet
Basin Length (ft)	15641
Treat. Vol. (CF)	260683
Treat. Vol. (Ac-ft)	5.984
Atten. Depth (ft)	0.00
Treat. Depth (ft)	1
L at Control (ft)	511
L at TOB (ft)	519
L Berm (ft)	559
Est. Site Acre	7.163

*Increased 20% for treatment of SMF

SMF SITE SIZE REQUIRED

8.6 ACRES

Attenuation Volume Calculations	
Note: Comparison is within R/W area only	
Assume Offsite area same pre vs. post	
Assume Grass is Hydrological Group D (CN=80)	
Use NRCS Equation for Runoff:	
P= (100-yr, 24-hr) (inches)	10.9
CN pre	83.1
CN post	88.5
S pre	2.04
S post	1.30
Rpre 100-yr	8.78
Rpost 100-yr	9.48
Increase in runoff 100-yr, 24-hr	0.70
Estimated Attenuation Volume (ac-ft)	0.000
Estimated Attenuation Depth (ft)	0.00

**Attenuation to be provided prior to discharge from the SR 29 R/W

Feasibility	
Note: Assume 0.08/100 ft HGL Slope Average	
Farthest Distance to Easement (ft)	19219
Farthest Point (AH/BK?)	AH
EOP EL @ Furthest Point	42.33
DHW @ Pond (SHW + trt. & attn. depths)	22.40
HGL at Furthest Point (DHW+distancex0.0008)	42.00
Feasible?	NO
HGL at Lowest Critical Elevation	31.02
Feasible?	YES

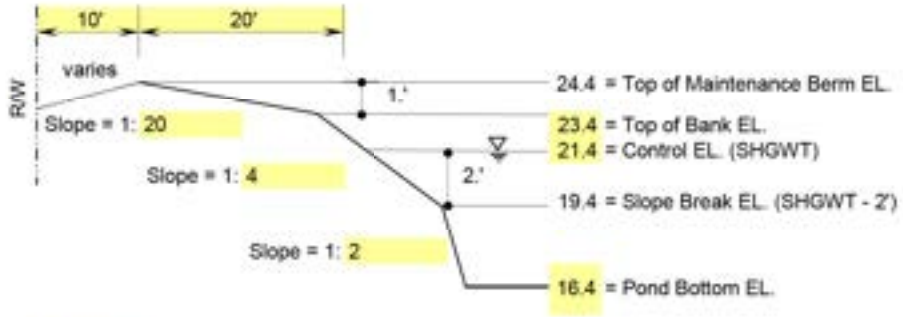
EARTHWORK ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No.: 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 07/13/23
Checked By: A. Eldridge **Date:** 07/13/23

South Regional Pond

Typical Cross Section:



A_S (SF) =	374686	= Total Area of Pond Site
A_T (SF) =	350260	= Area at Top of Maintenance Berm
A_{TOB} (SF) =	303864	= Area at Top of Bank
A_C (SF) =	269949	= Area at Control Elevation
A_{SB} (SF) =	335806	= Area at 1:2 Slope Break
A_B (SF) =	241209	= Area at Bottom of Pond
A_{AVG} (SF) =	265745	= Area at Average Site Elevation

Average Site EL. = 21.4

Areas are generated from CAD shapes

EXCAVATION = 1575254 CF
= 58343 CY

EMBANKMENT = 163412 CF
= 6052 CY

SOD = 11637 SY

3.2 Floodplain Calculations

FLOODPLAIN ENCROACHMENT CALCULATION

Project: **SR 29 New Market Rd**
Project #: **574.00**
FPID: **417540-6-52-01**
Subject: Floodplain Encroachment
Floodplain Limits from Station 2107+00 to 2243+62.50

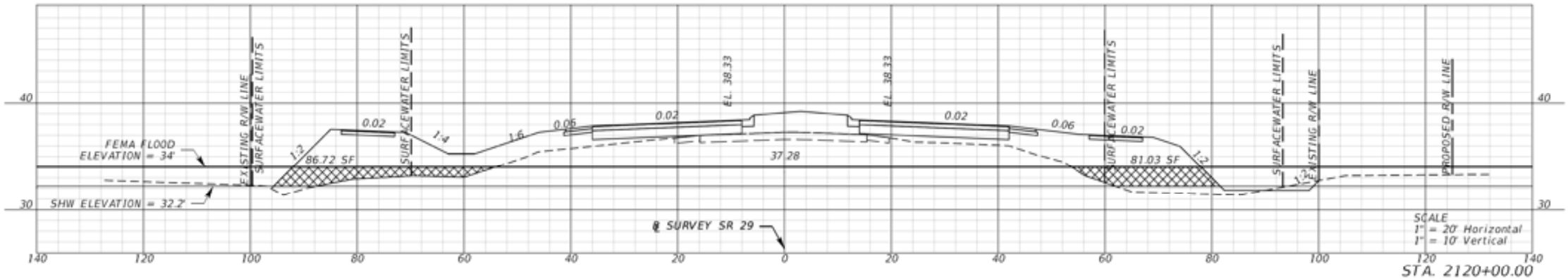
Station	Approx. FP Elevation	Encroachment (SY)		Total Encroachment (CY)
2107+00	35	15.58		
				1759.92
2110+00	34.5	19.61		
				4822.31
2120+00	34	9.32		
				6098.15
2145+00	34.5	5.32		
				7477.41
2165+00	35	17.12		
				2939.72
2170+00	35.5	18.16		
				3113.70
2175+00	36	19.20		
				3049.77
2180+00	36.5	17.39		
				2898.89
2190+00	0	0.00		
				7480.19
2210+00	39	22.44		
				1974.54
2215+00	36.5	1.25		
				104.49
2220+00	0	0.00		
				458.19
2225+00	36.5	5.50		
				2738.22
2243+63	36.5	3.32		

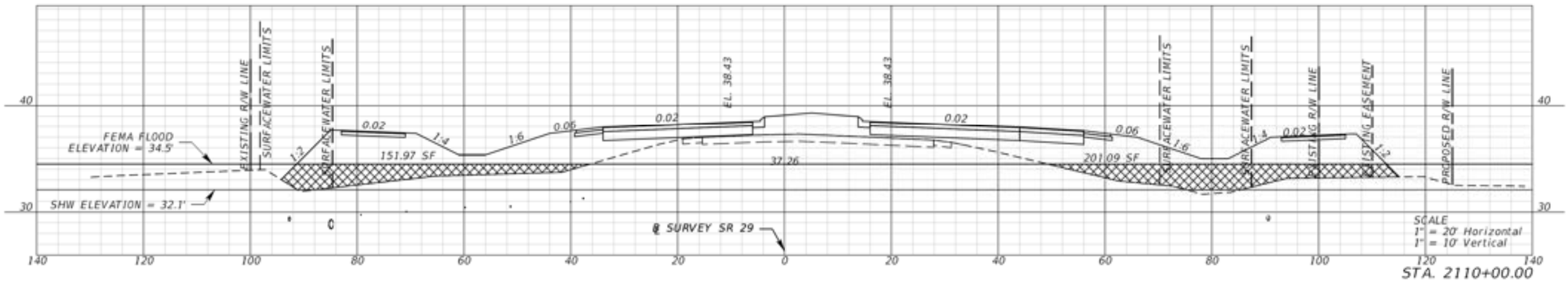
Incremental Total of Floodplain Encroachment Volume (acre-ft) | 27.84

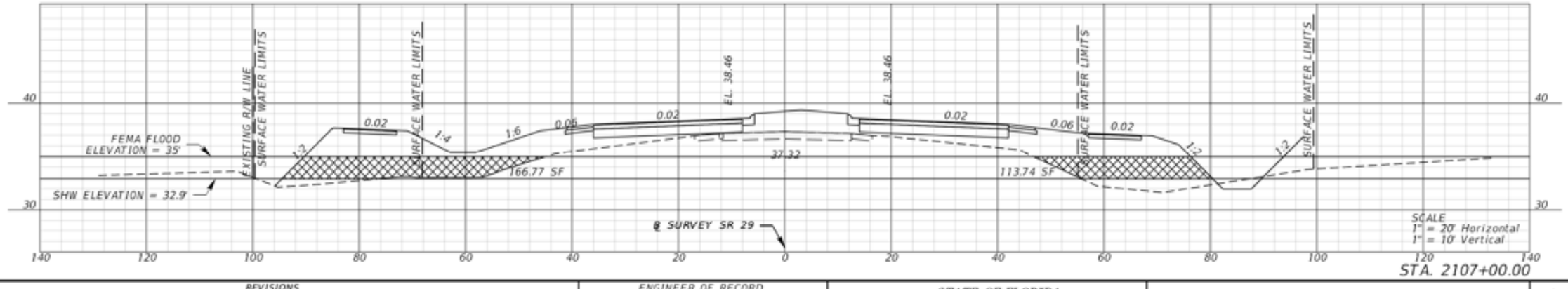
Notes: Geotech SHW elevations are utilized

LEGEND

ENCROACHMENT







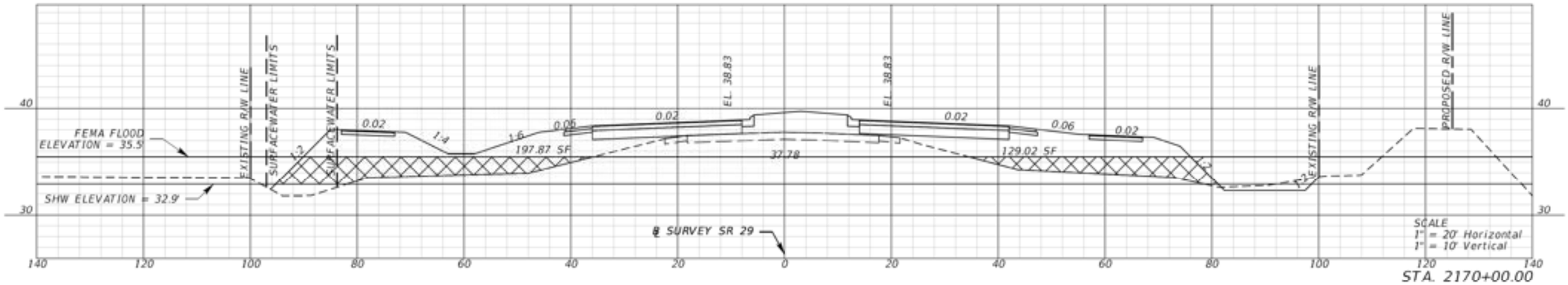
REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			FLOODPLAIN IMPACTS CROSS SECTIONS	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ALAN S. ELDRIDGE, P.E. LICENSE NUMBER: 77067 FALLER, DAVIS & ASSOCIATES, INC 4200 W. CYPRESS ST., SUITE 500 TAMPA, FL 33607	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 29	COLLIER	417541-6-52-01		

7/14/2023 4:40:35 PM aeldridge
R:\FDOT\417540653201\Drainage\Drainage-Floodplain5.dgn

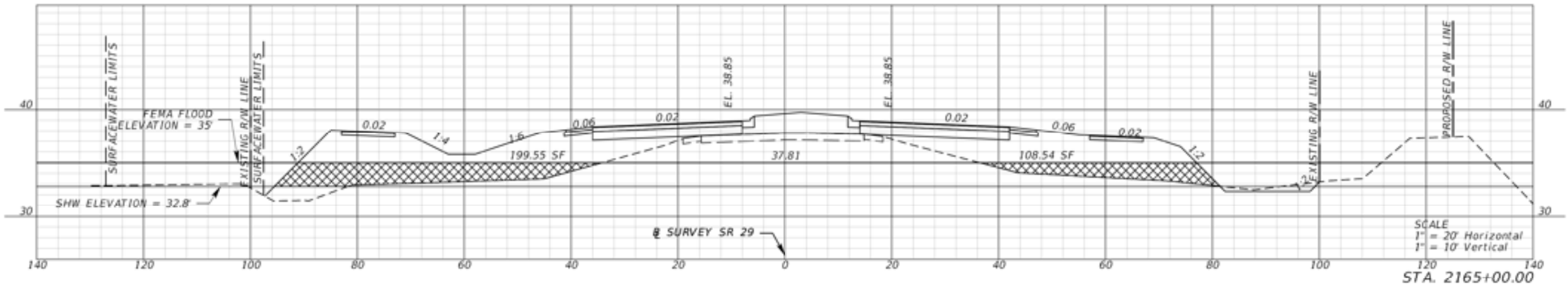
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

LEGEND

ENCROACHMENT



STA. 2170+00.00



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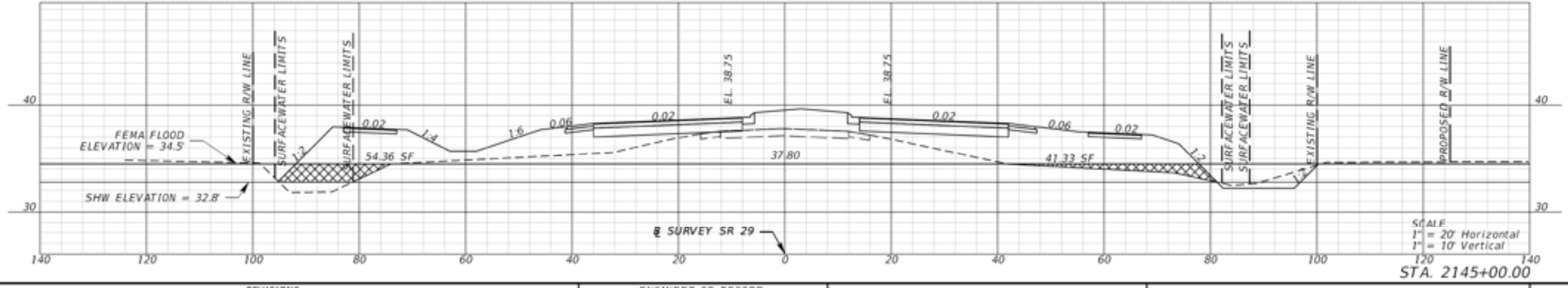

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					SR 29	COLLIER	417541-6-52-01		

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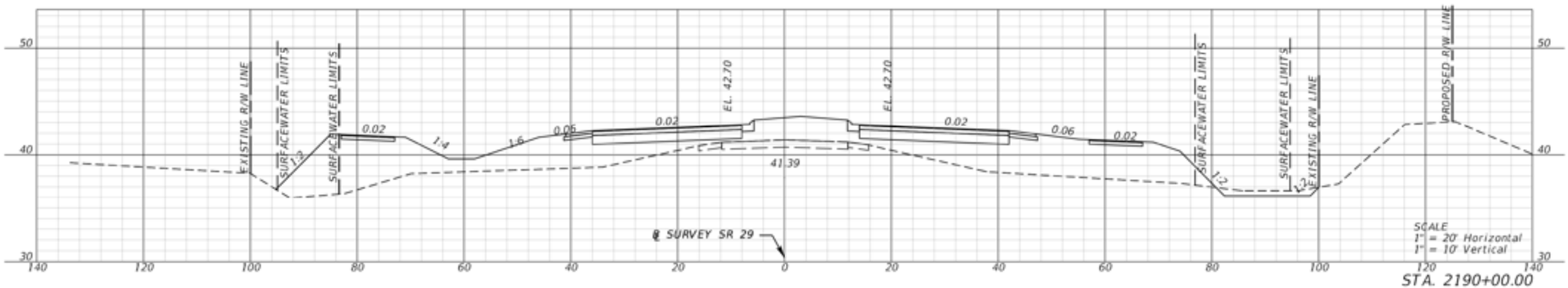

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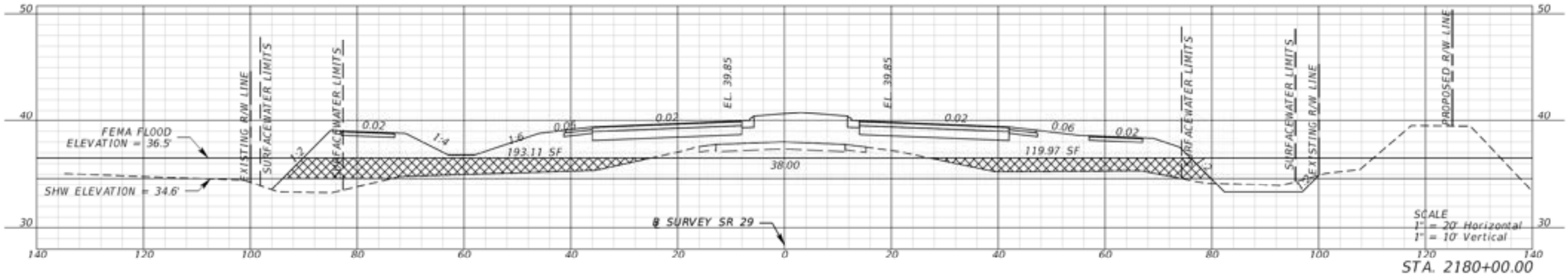

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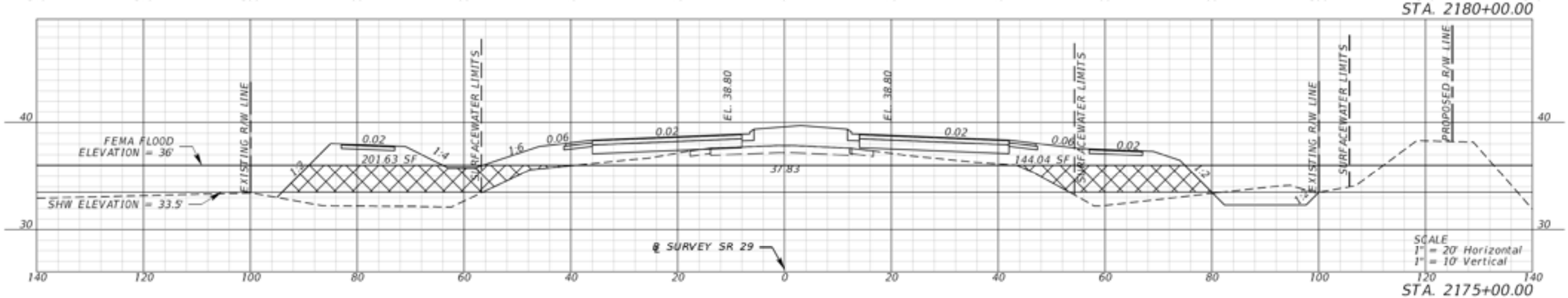

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DATE	DESCRIPTION	DATE	DESCRIPTION	ALAN S. ELDRIDGE, P.E. LICENSE NUMBER: 77067 FALLER, DAVIS & ASSOCIATES, INC 4200 W. CYPRESS ST., SUITE 500 TAMPA, FL 33607	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
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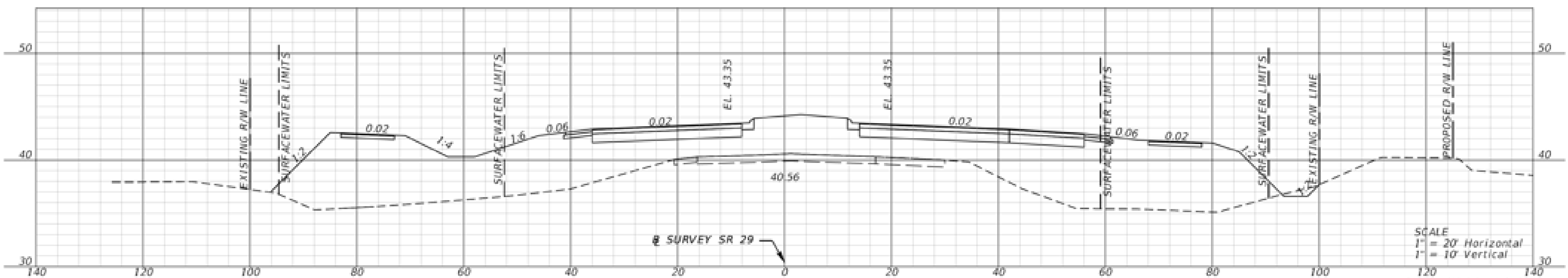

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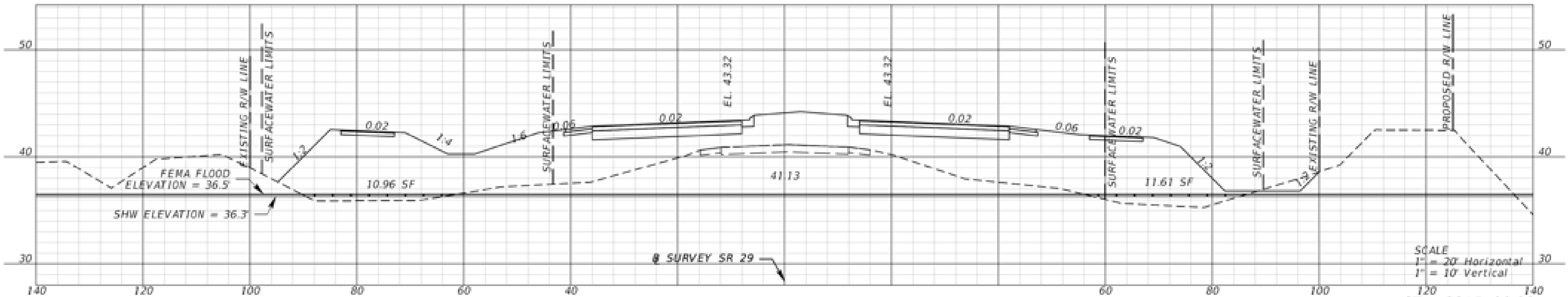

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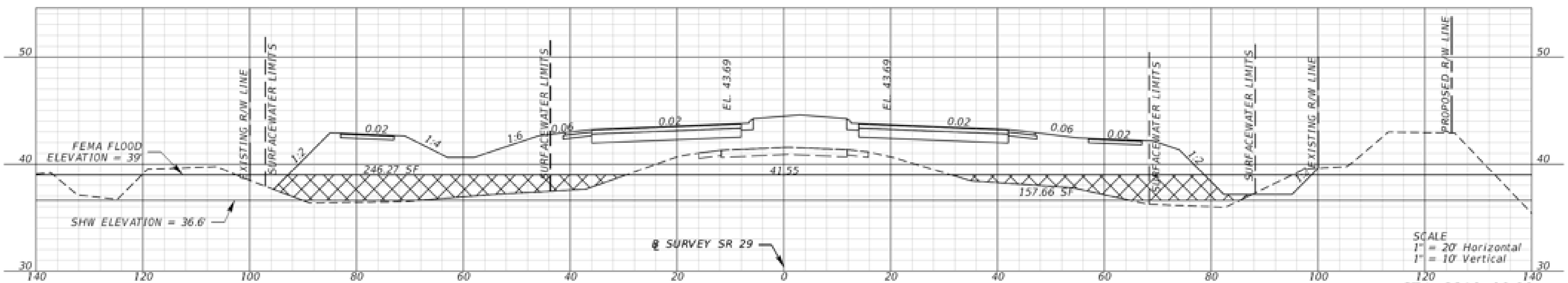

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD
ALAN S. ELDRIDGE, P.E.
LICENSE NUMBER: 77067
FALLER, DAVIS & ASSOCIATES, INC
4200 W. CYPRESS ST., SUITE 500
TAMPA, FL 33607

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 29	COLLIER	417541-6-52-01

FLOODPLAIN IMPACTS CROSS SECTIONS

SHEET NO.

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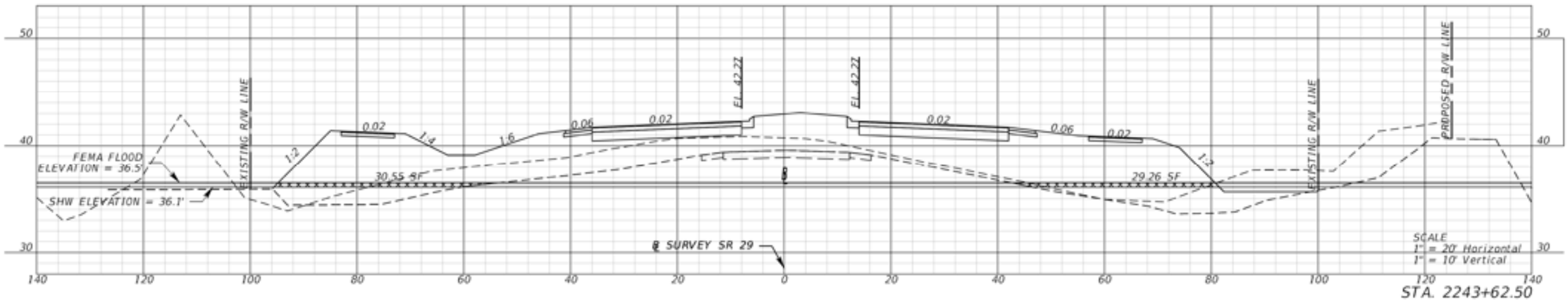

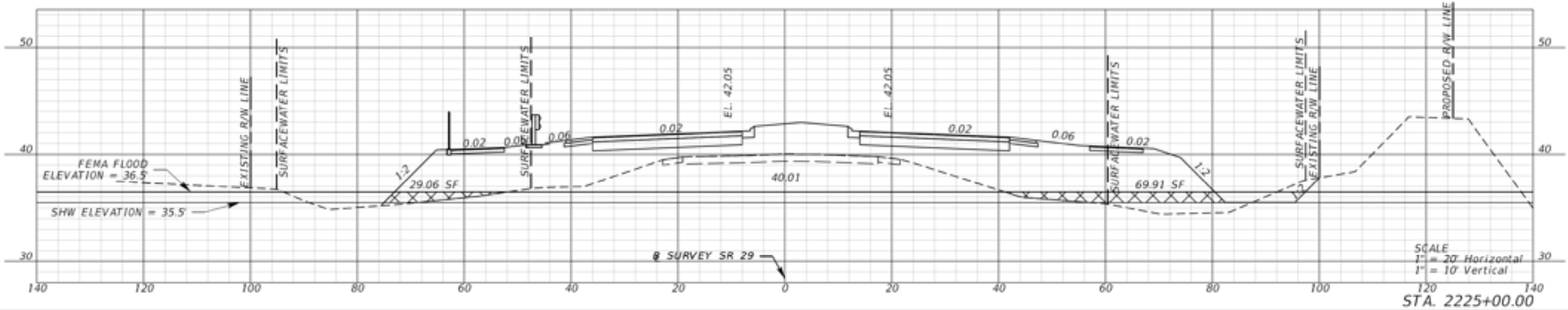

REVISIONS				ENGINEER OF RECORD	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			FLOODPLAIN IMPACTS CROSS SECTIONS	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ALAN S. ELDRIDGE, P.E. LICENSE NUMBER: 77067 FALLER, DAVIS & ASSOCIATES, INC 4200 W. CYPRESS ST., SUITE 500 TAMPA, FL 33607	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
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Appendix 4.0

Wetland Information

Pond Siting Evaluation - Memorandum

TO:	Alan Eldridge, P.E.
FROM:	Allie Cockerham, Environmental Scientist
CC:	Tammy Kreisle, P.E., Project Manager
DATE:	March 19, 2024
SUBJECT:	Wetland Information for SR 29 (FPID # 417540-6-52-01) Pond Siting, Collier County, Florida

Project Description

The Florida Department of Transportation (FDOT) District One is proposing to widen the existing two-lane roadway to a four-lane roadway with a grass median on State Road (SR) 29 from New Market Road to SR 82, depicted by the following **Figure A1**. The proposed project is located north of Immokalee in Collier County, Florida.

The purpose of this memorandum is to provide an environmental evaluation of the wetlands and other surface waters (OSWs) associated with the stormwater pond and floodplain compensation site alternatives investigated for the drainage design. Alternatives for the pond site design include the analysis of 17 off-site areas where SMFs or FPCs may be situated and two regional alternatives (i.e., pond site alternatives). A Pond Clearance Area (PCA) was established which is larger than the proposed SMF and FPC areas. The larger clearance area allows for the ability to shift proposed contours to avoid and minimize impacts to environmental resources or other existing features. Analyses were conducted for the proposed pond site alternatives and the PCAs associated with each.

Existing Conditions

Resources used to investigate the pond site alternatives included desktop research of literature, geographic information system (GIS) data, agency databases, current and historic aerials. The following available site-specific data were collected and reviewed:

- True color aerial imagery (Environmental Systems Research Institute [Esri], 2020);
- Digital Soil Survey (Natural Resources Conservation Service [NRCS], 2021);
- Topographic Maps (U.S. Geological Survey, 2021);
- Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT, 1999);
- South Florida Water Management District's (SFWMD) FLUCFCS GIS Database (SFWMD, 2019);
- U.S. Fish and Wildlife Service (USFWS) Wetland Habitats (Cowardin, Carter, Golet, & LaRoe, 1979);

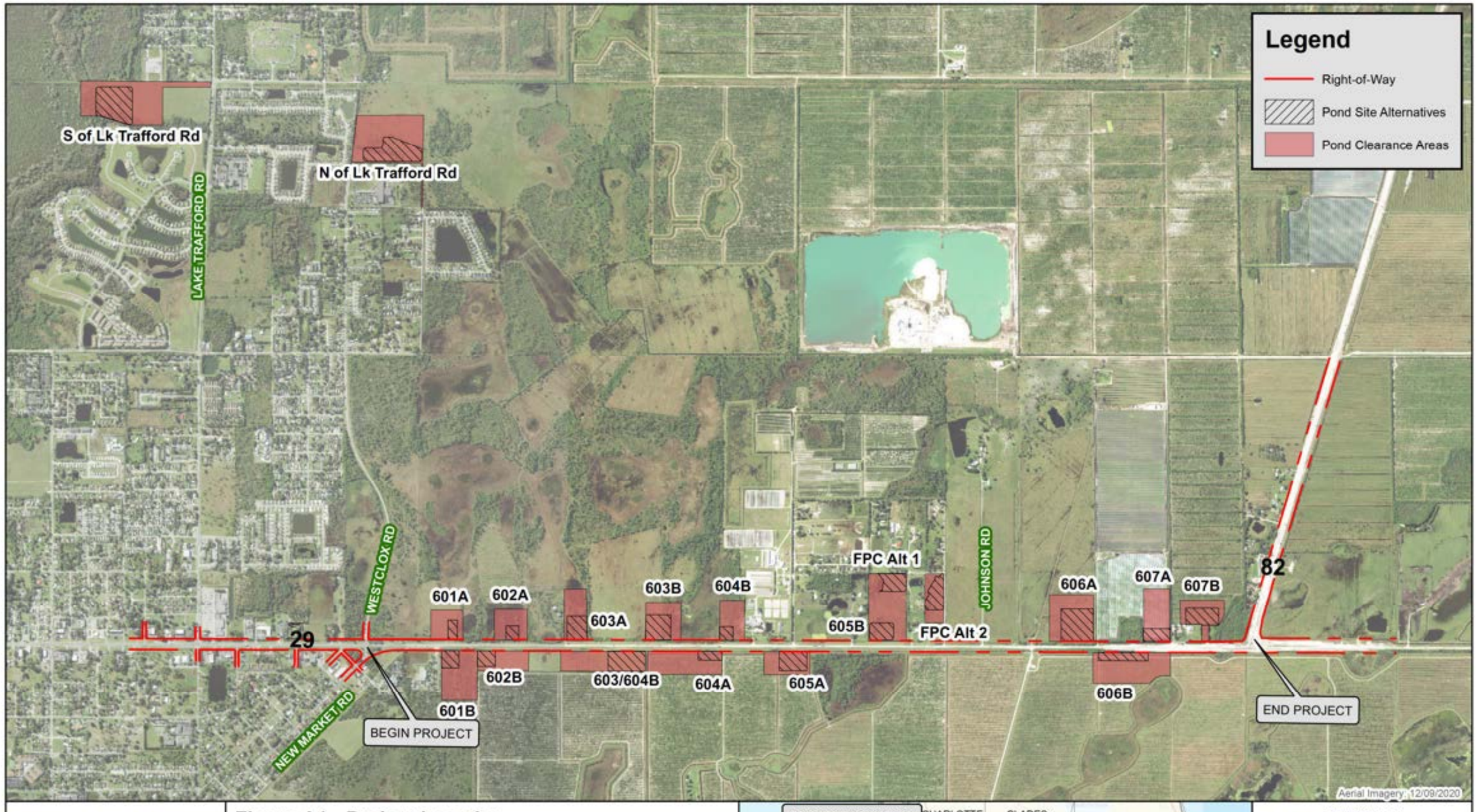

Figure A1 - Project Location
FPID # 417540-6-52-01
SR 29 from N of New Market Rd to SR 82
Environmental Pond Siting Analysis
Collier County, FL

Data Source:
- FDA
- ESRI

1 inch = 1,667 feet

Coordinate System: NAD 1983
Florida State Plane East

Document Path: \\pafile02\cadd\Projects\Worksets_ORD\FDOT\417540652019\Permits\Data-GIS\mxd\PSR Figures\2023 Updates\Figure A1 - Project Location.mxd

- USFWS, National Wetlands Inventory (NWI), Wetlands Online Mapper (USFWS, 2023a)

Environmental scientists familiar with Florida natural communities conducted a field review of the pond site alternatives in December 2023. Field reviews consisted of pedestrian transects throughout all habitat types found within the project study area. The purpose of this review was to verify and/or refine preliminary habitat boundaries and classification codes established through desktop analysis.

Existing Land Use and Vegetative Cover

The SFWMD FLUCFCS GIS data (SFWMD, 2019) was utilized in the land use and vegetative cover analysis within the pond site alternatives. Based on in-house desktop GIS reviews and field review, seven upland community types, four wetland community types, and two OSW community types are present within the pond site alternatives. All vegetative habitats and land uses within the pond site alternatives were classified using FLUCFCS (FDOT, 1999). Wetland and OSW habitats were also classified using the USFWS Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, Carter, Golet, & LaRoe, 1979). Within the pond site alternatives, land use consists of mostly Improved Pastures (FLUCFCS 2110) and Freshwater Marsh (FLUCFCS 6410). The table below summarizes the land use/vegetative cover types within the pond site alternatives. **Figures A2a** and **A2b** on the pages following depict the land use/vegetative cover types within the pond site alternatives.

Existing Land Use/Vegetative Cover Types within Pond Site Alternatives

FLUCFCS Classification/Description	USFWS Classification
Uplands	
1180 – Rural Residential	N/A
1710 – Educational Facilities	N/A
2110 – Improved Pastures	N/A
2130 – Woodland Pastures	N/A
2140 – Row Crops	N/A
2210 – Citrus Groves	N/A
8310 – Electrical Power Facilities	N/A
Wetlands and OSWs	
5100 – Streams and Waterways	PEM1Cx
5300 – Reservoirs	POWx
6170 – Mixed Wetland Hardwood	PFO
6300 – Wetland Forested Mixed	PFO
6410 – Freshwater Marshes	PEM
6430 – Wet Prairie	PEM

Notes: N/A = Not Applicable, PEM = Palustrine, Emergent; PFO = Palustrine, Forested; POWx = Palustrine, Open Water, Excavated; PEM1Cx = Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated.
Source: FDOT, 1999; SFWMD, 2019; Cowardin, Carter, Golet, & LaRoe, 1979.

Legend

- Right-of-Way
- Pond Site Alternatives
- Pond Clearance Areas

Land Use and Land Cover (FLUCFCS)

- 1180: Rural Residential
- 1230: Mixed Units, Fixed and Mobile Home Units
- 1710: Educational Facilities
- 2110: Improved Pastures
- 2130: Woodland Pastures
- 2140: Row Crops
- 2210: Citrus Groves
- 3100: Herbaceous (Dry Prairie)
- 5300: Reservoirs
- 6170: Mixed Wetland Hardwoods
- 6190: Exotic Wetland Hardwoods
- 6410: Freshwater Marshes

WESTCLOX RD
JOHNSON RD
NEW MARKET RD
29
82
601A
602A
603A
603B
604B
FPC Alt 1
605B
FPC Alt 2
606A
607A
607B
601B
602B
603/604B
604A
605A
606B
BEGIN PROJECT
END PROJECT
Recently converted to solar plant (FLUCFCS 8310)
Aerial Imagery: 12/09/2020

Figure A2a - Land Cover and Land Use (Off-site Pond and FPC Alternatives)

FPID # 417540-6-52-01 SR 29 from N of New Market Rd to SR 82
Environmental Pond Siting Analysis
Collier County, FL

Data Source:
- FDA - SFWMD
- ESRI

1 inch = 1,350 feet

Coordinate System: NAD 1983
Florida State Plane East

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Legend

Pond Site Alternatives

Pond Clearance Areas

Land Use and Land Cover (FLUCFCS)

- 1130: Mixed Units, Fixed and Mobile Home Units
- 1180: Rural Residential
- 1710: Educational Facilities
- 1900: Open Land
- 2110: Improved Pastures
- 2130: Woodland Pastures
- 6170: Mixed Wetland Hardwoods
- 6210: Cypress
- 6300: Wetland Forested Mixed
- 6410: Freshwater Marshes
- 8310: Electrical Power Facilities

S of Lk Trafford Rd

N of Lk Trafford Rd

LAKE TRAFFORD RD

Aerial Imagery: 12/09/2020

FDOT

Figure A2b - Land Cover and Land Use (Regional Pond Alternatives)

FPID # 417540-6-52-01 SR 29 from N of New Market Rd to SR 82
Environmental Pond Siting Analysis
Collier County, FL

Data Source:
- FDA - SFWMD
- ESRI

1 inch = 1,350 feet

Coordinate System: NAD 1983
Florida State Plane East

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Soils

The proposed project is situated in the northwestern portion of Collier County beginning just north of Immokalee and extending north to SR 82. Referencing the Soil Survey of Collier County (NRCS, 2021), the proposed project is within the geomorphic feature known as the Immokalee Rise. This feature is theorized to have formed as a submarine shoal during the Late Pleistocene epoch. In current times, elevations are 25 to 42 feet above mean sea level.

The NRCS's GIS digital soil survey (NRCS, 2021) was reviewed to determine the soils mapped within the pond site alternatives. Based on the data from NRCS, seven of the 14 soil types within the pond site alternatives are classified as hydric based on the *Hydric Soils of Florida Handbook* (Hurt, 2007). The following table provides a list of the soils mapped within the pond site alternatives, the hydric classification for each, and a description of the soil type. **Figures A3a and A3b** below depict the soils mapped within the pond site alternatives.

Soil Types within Pond Site Alternatives

Soil Name	Hydric (Yes/No)	Seasonal High Water Table	Description
BASINGER FINE SAND, 0 TO 2% SLOPES	YES	12 inches for 3-6 months. During other months, below 18 inches, receding to more than 40 inches extended dry periods. During periods of high rainfall, the soil is covered by shallow, slowly moving water for about 7 days.	Nearly level, poorly drained soil in sloughs and poorly defined drainageways. The natural vegetation consists of scattered areas of slash pine, cypress, cabbage palm, saw palmetto, and wax myrtle.
BASINGER FINE SAND-URBAN LAND COMPLEX, 0 TO 2% SLOPES			
CHOBEE, WINDER, GATOR SOILS, FREQUENTLY PONDED, 0 TO 1% SLOPES	YES	Ponded for 6 months or more. During other months, within 12 inches receding to 12-40 inches during extended dry periods.	Level, very poorly drained soils in depressions and marshes. The natural vegetation consists of pickerelweed, maidencane, rushes, fire flag, sawgrass, and cypress trees.
HOLOPAW FINE SAND, 0 TO 2% SLOPES	YES	Below 12 inches receding to more than 40 inches during extended dry periods. During periods of high rainfall, the soil is covered by shallow, slowly moving water for about 7 days.	Nearly level, poorly drained soil in sloughs and poorly defined drainageways. The natural vegetation consists of scattered areas of slash pine, cypress, cabbage palm, saw palmetto, and wax myrtle.
HOLOPAW FINE SAND-URBAN LAND COMPLEX, 0 TO 2% SLOPES			
IMMOKALEE FINE SAND, 0 TO 2% SLOPES	NO	6-18 inches for 1-6 months	Nearly level, poorly drained soil on flatwoods. The natural vegetation

Soil Name	Hydric (Yes/No)	Seasonal High Water Table	Description
IMMOKALEE FINE SAND-URBAN LAND COMPLEX, 0 TO 2% SLOPES		During other months, below 18 inches, receding to more than 40 inches extended dry periods.	consists of slash pine, saw palmetto, wax myrtle, and grasses.
MYAKKA FINE SAND, 0 TO 2% SLOPES	NO	18 inches, receding to more than 40 inches during extended dry periods.	Nearly level, poorly drained soil on flatwoods. The natural vegetation consists of mostly slash pine, saw palmetto, wax myrtle, and grasses.
OLDSMAR FINE SAND, 0 TO 2% SLOPES	NO	6-18 inches for 1-6 months. During other months, below 18 inches receding to more than 40 inches during extended dry periods.	Nearly level, poorly drained soil on flatwoods. The natural vegetation consists mostly of slash pine, cabbage palm, saw palmetto, wax myrtle, and grasses.
OLDSMAR FINE SAND-URBAN LAND COMPLEX, 0 TO 2 % SLOPES			
PINEDA-RIVIERA FINE SANDS ASSOCIATION, 0 TO 2% SLOPES	YES	12 inches for 3-6 months. During other months, below 12 inches receding to more than 40 inches during extended dry periods. During periods of high rainfall, soils are covered by shallow, slowly moving water for about 7 days.	Nearly level, poorly drained soils in sloughs and poorly defined drainageways. The natural vegetation consists of scattered areas of slash pine, cypress, cabbage palm, saw palmetto, wax myrtle
POMELLO FINE SAND, 0 TO 2% SLOPES	NO	During most years for 1-5 months, 24-42 inches. During other months, below 40 inches receding to more than 80 inches during extended dry periods.	Nearly level, moderately well drained soil on low ridges on flatwoods. The natural vegetation consists of mostly of oak, slash pine, saw palmetto, cactus, and grasses.
POMELLO FINE SAND-URBAN LAND COMPLEX, 0 TO 2% SLOPES			
WINDER, RIVIERA, LIMESTONE SUBSTRATUM, AND CHOBEE SOILS, FREQUENTLY PONDED, 0 TO 1% SLOPES	YES	Ponded for 6 months.	Level and very poorly drained soils in marshes. The natural vegetation consists of sawgrass, maidencane, pickerelweed, fireflag, willow and other wetland plants.

Source: NRCS, 2021; Hurt, 2007.

Legend

- Right-of-Way
- Pond Site Alternatives
- Pond Clearance Areas
- Hydric Soils

NRCS Soil Type

- BASINGER FINE SAND, 0 TO 2 PERCENT SLOPES
- CHOBEE, WINDER, GATOR SOILS, FREQUENTLY PONDED, 0 TO 1 PERCENT SLOPES
- HOLOPAW FINE SAND, 0 TO 2 PERCENT SLOPES
- IMMOKALEE FINE SAND, 0 TO 2 PERCENT SLOPES
- IMMOKALEE FINE SAND-URBAN LAND COMPLEX, 0 TO 2 PERCENT SLOPES
- MYAKKA FINE SAND, 0 TO 2 PERCENT SLOPES
- OLDSMAR FINE SAND, 0 TO 2 PERCENT SLOPES
- OLDSMAR FINE SAND-URBAN LAND COMPLEX, 0 TO 2 PERCENT SLOPES
- POMELLO FINE SAND, 0 TO 2 PERCENT SLOPES
- POMELLO FINE SAND-URBAN LAND COMPLEX, 0 TO 2 PERCENT SLOPES

WESTCLOX RD
JOHNSON RD
NEW MARKET RD
29
82
601A
602A
603A
603B
604B
FPC Alt 1
FPC Alt 2
605B
606A
607A
607B
601B
602B
603/604B
604A
605A
606B
BEGIN PROJECT
END PROJECT

Aerial Imagery: 12/09/2020

FDOT

Figure A3a - NRCS Soil Types
(Off-site Pond and FPC Alternatives)

FPID # 417540-6-52-01 SR 29 from N of New Market Rd to SR 82
Environmental Pond Siting Analysis
Collier County, FL

Data Source:
- FDA - NRCS
- ESRI

1 inch = 1,350 feet

Coordinate System: NAD 1983
Florida State Plane East

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FDOT

Figure A3b - NRCS Soil Types (Regional Pond Alternatives)

FPID # 417540-6-52-01 SR 29 from N of New Market Rd to SR 82
Environmental Pond Siting Analysis
Collier County, FL

Data Source:
- FDA - SFWMD
- ESRI

1 inch = 1,350 feet

Coordinate System: NAD 1983
Florida State Plane East

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Wetlands and Other Surface Waters

Wetlands and OSWs within the pond site alternatives were aerially delineated via desktop GIS analysis, followed by a field review. The USFWS NWI online mapper, in combination with FLUCFCS, NRCS soil type GIS layers, and aerial imagery (Esri, 2020) were used to estimate the limits of wetlands and OSWs within the pond site alternatives.

The wetlands and OSWs are jurisdictional to SFWMD and the Florida Department of Environmental Protection (FDEP) (pursuant to the State 404 Program) because they flow directly and indirectly into traditionally navigable waterways (i.e., Fish Branch Creek, Caloosahatchee River). **Figures A4a and A4b** depict the locations of jurisdictional wetlands and OSWs. **Figures A5a and A5b** depict the 8-digit Hydrologic Unit Code (HUC 8) basin boundaries determined by FDEP and the SFWMD Environmental Resource Permit (ERP) basin boundaries, respectively.

Pond Site Alternative Descriptions

The environmental analysis for the proposed pond site alternatives reviewed 15 off-site ponds (i.e., SMFs), two FPC sites, two regional alternatives, and all associated PCAs. The table below outlines the pond site alternative names, types, and acreages. Descriptions for each of these are also provided below including land use, soils, involvement with wetlands or OSWs.

Pond Site Alternatives Summary

Pond Site Alternative Name	Pond Clearance Areas (PCA) (Ac)	Pond Site Alternative (Ac)
Off-site Pond Alternatives (SMFs)		
601A	7.24	1.40
601B	13.35	2.27
602A	7.59	1.30
602B	7.55	2.13
603A	8.67	3.55
603B	10.07	4.79
603/604B	12.83	5.68
604A	12.92	1.60
604B	7.59	1.40
605A	8.01	4.01
605B	19.15	3.06
606A	15.56	7.80
606B	16.99	3.11
607A	10.67	2.61
607B	8.95	4.14
Floodplain Compensation Alternatives (FPCs)		
FPC Alt 1	19.15*	3.26
FPC Alt 2	7.02	3.87
Regional Alternatives		
North Regional	25.62	7.88
South Regional	27.03	9.12

Source: FDA, 2023. *Within same PCA as 605B

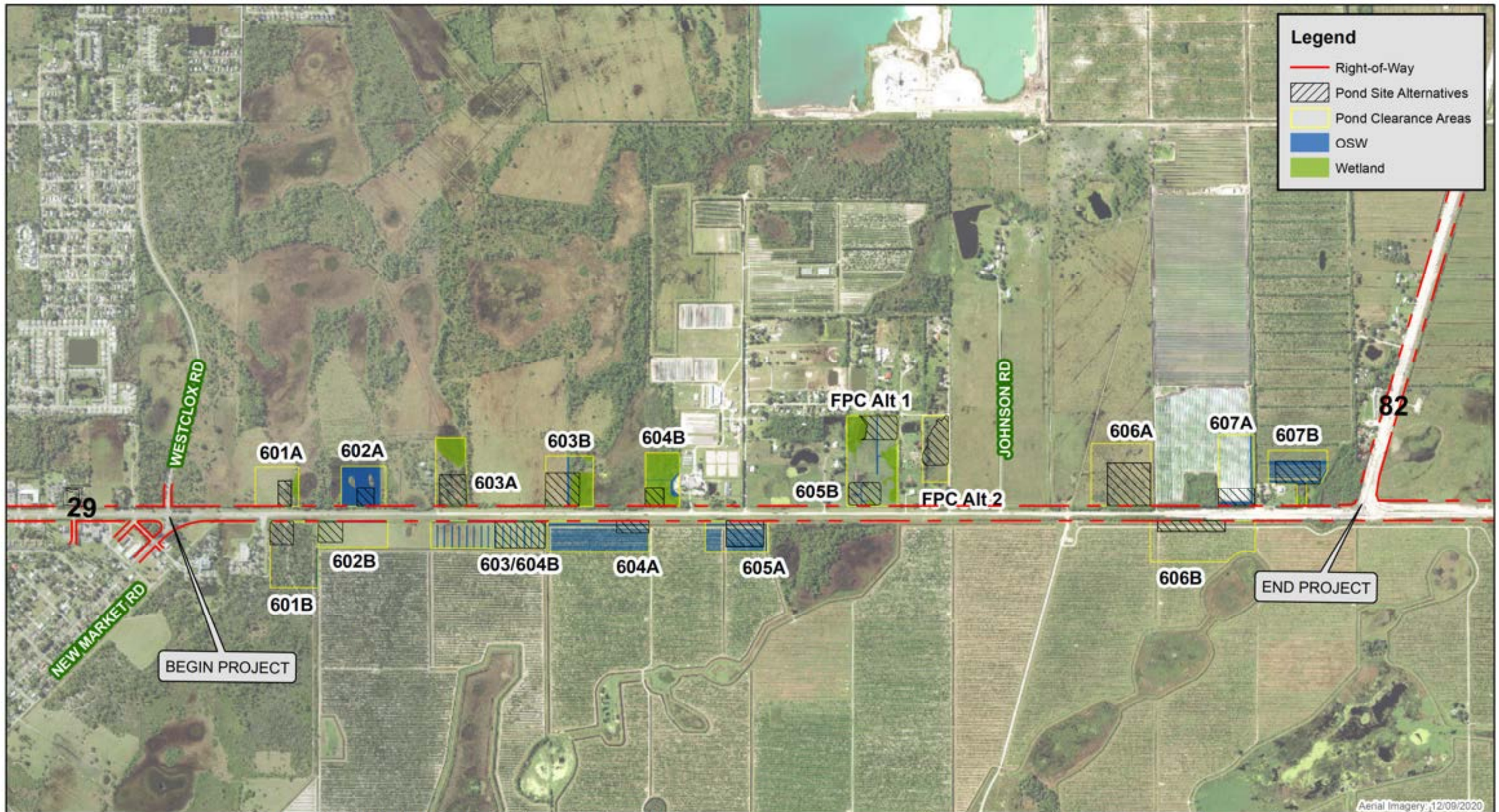

Figure A4a - Wetlands and Other Surface Waters (Off-site Pond and FPC Alternatives)
FPID # 417540-6-52-01
SR 29 from N of New Market Rd to SR 82
Environmental Pond Siting Analysis
Collier County, FL

Data Source:
- FDA
- ESRI

0 725 1,450 Feet

Coordinate System: NAD 1983 Florida State Plane West

Document Path: \\tpafile02\cadd\Projects\Worksets_ORD\FDOT\417540652\01\Permits\Data-GIS\mxd\PSR Figures\2023 Updates\Figure A4a - Wetlands and Other Su

Figure A4b - Wetlands and Other Surface Waters (Regional Pond Alternatives)
FPID # 417540-6-52-01
SR 29 from N of New Market Rd to SR 82
Environmental Pond Siting Analysis
Collier County, FL

Data Source:
- FDA
- ESRI

0 430 860 Feet

Coordinate System: NAD 1983
Florida State Plane West

Document Path: \\pafile02\cadd\Projects\Worksets_ORD\FDOT\417540652\01\Permits\Data-GIS\mxd\PSR Figures\2023 Updates\Figure A4b - Wetlands and Other Surface Waters_Regional_rev1.mxd

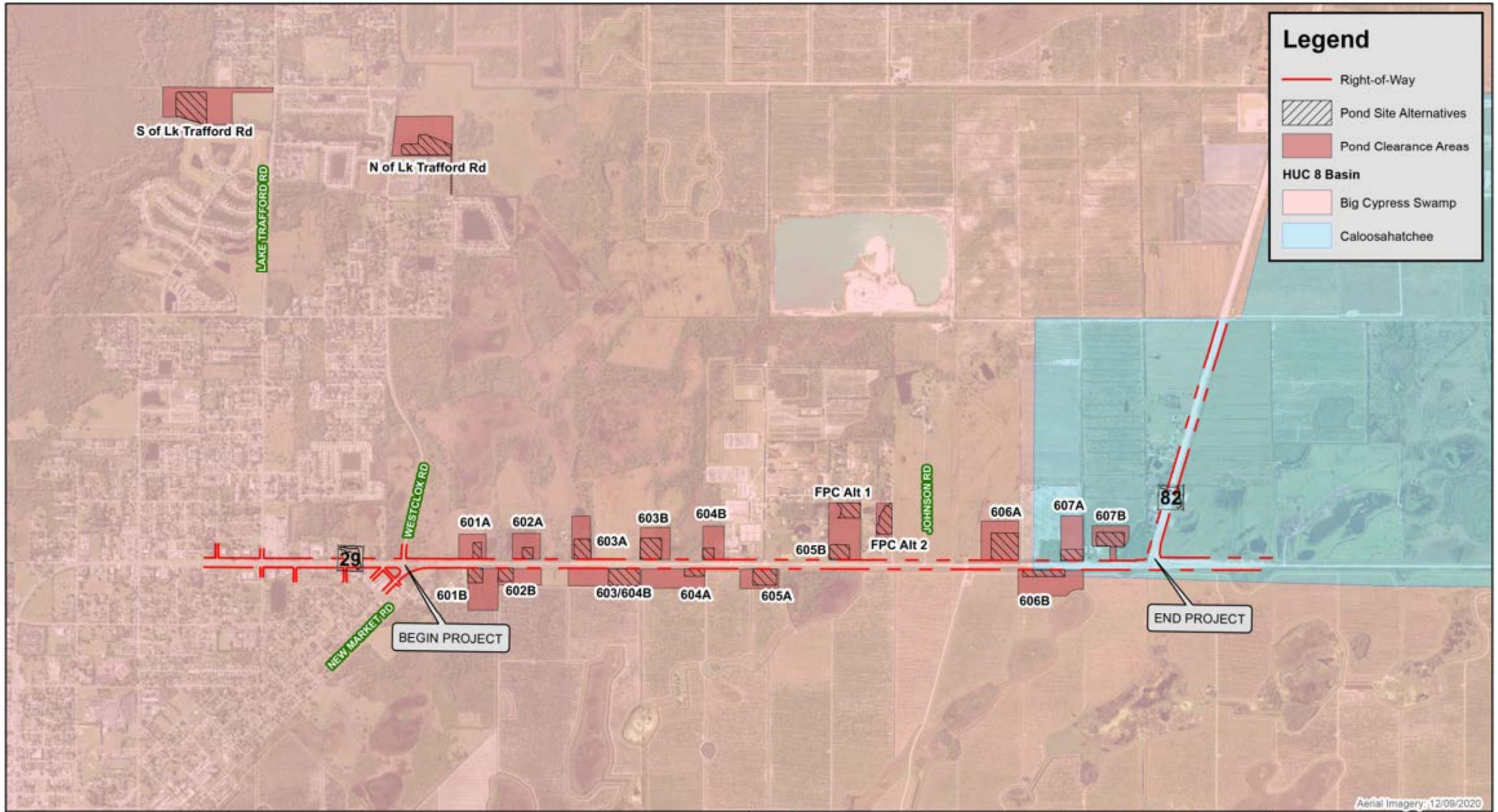

Figure A5a - HUC 8 Basin Boundaries
FPID # 417540-6-52-01
SR 29 from N of New Market Rd to SR 82
Environmental Pond Siting Analysis
Collier County, FL

Data Source:
- FDA - FDEP
- ESRI

1 inch = 2,000 feet

Coordinate System: NAD 1983
Florida State Plane East

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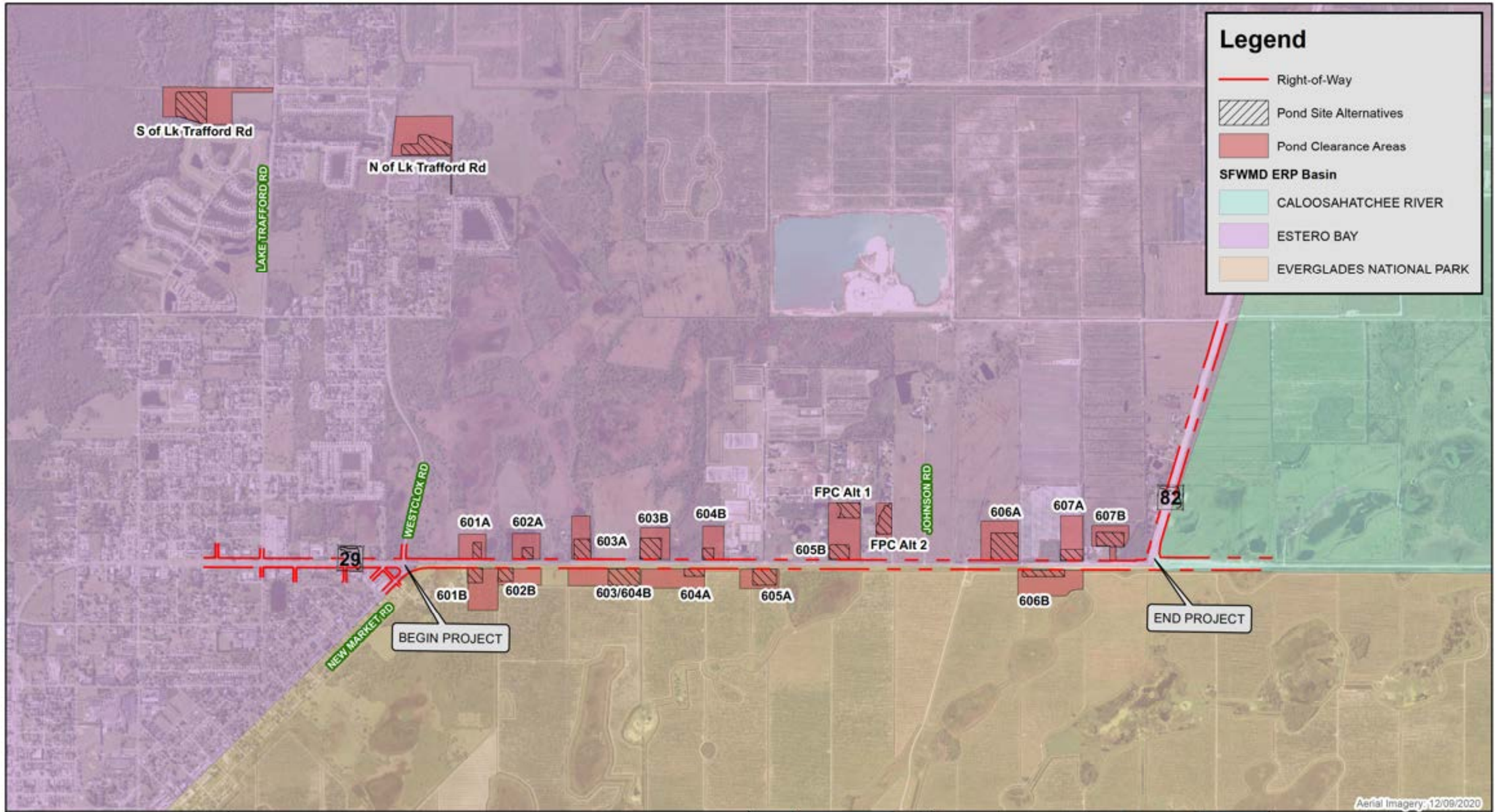

Figure A5b - SFWMD ERP Basin Boundaries
FPID # 417540-6-52-01
SR 29 from N of New Market Rd to SR 82
Environmental Pond Siting Analysis
Collier County, FL

Data Source:
- FDA - SFWMD
- ESRI

1 inch = 2,000 feet

Coordinate System: NAD 1983
Florida State Plane East

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The pond site alternatives were reviewed for the presence of wetlands and OSWs via desktop and field review. Wetlands and OSWs were ranked **high, medium, low,** and **none** based on presence within the pond site alternatives. A high ranking indicates that more than 50% of the land area of the pond site alternatives contains wetlands or OSW. A ranking of medium indicates that 25 to 50% of the pond site alternatives contain wetlands or OSWs. A ranking of low indicates that less than 25% of the pond site alternatives contain wetlands or OSWs. If no wetland or OSW is documented in the pond site alternatives, it was noted if one is present within the PCA.

Off-Site Pond Alternatives

601A (Recommended)

Pond 601A is located on the west side of SR 29 just north of New Market Road. This pond site alternative is approximately 1.40 acres. Based on desktop GIS analysis and field review, the land use is entirely comprised of Improved Pasture (FLUCFCS 2110). The soil type within the entire site is Immokalee Fine Sand, 0% to 2% slopes (non-hydric). Based on aerial imagery (Esri, 2020) and a 2023 field review, the pond site alternative is vegetated with trees and grass. A Freshwater Marsh (FLUCFCS 6410) is located adjacent to the north side of Pond 601A within the PCA. Pond 601A is located within the Estero Bay SFWMD basin and the Big Cypress Swamp HUC 8 basin. The involvement with wetlands or OSWs is anticipated to be **none**.

601B

This 2.27-acre pond site alternative is located on the east side of SR 29 north of Heritage Boulevard. Based on field review, the land use and cover within the pond site is identified as Woodland Pastures (FLUCFCS 2130). The majority of the soil mapped within the pond site is Immokalee Fine Sand, 0%-2% slopes (non-hydric). Pomello Fine Sand, 0%-02% slopes (non-hydric) is also present in the northeast portion of the pond site. No wetlands or OSWs are located within the pond site alternative. However, one OSW in the northeast portion of the PCA and appears to be a man-made canal used for agricultural drainage purposes. Pond 601B is located within the Everglades National Park SFWMD ERP basin and the Big Cypress Swamp HUC 8 basin. The involvement with wetlands or OSWs is anticipated to be **none**.

602A

This pond site alternative is located on the west side of SR 29 north of Pond 601A and is approximately 1.30 acres. The land cover and use is entirely Reservoir (FLUCFCS 5300). The PCA also contains Improved Pasture (FLUCFCS 2110) to the north and southeast. The only mapped soil within the pond site alternative and PCA is Pomello Fine Sand, 0%-2% slopes (non-hydric). The entire pond site alternative is classified as an OSW consisting of a reservoir that extends into most of the PCA. Pond 602A is located within the Estero Bay SFWMD ERP basin and the Big Cypress Swamp HUC 8 basin. Involvement with wetlands is anticipated to be **none**.

602B (Recommended)

This 2.13-acre pond site alternative is located on the east side of SR 29 north of Pond 601B. The land use within the pond site alternative is entirely comprised of Improved Pasture (FLUCFCS 2110). Mapped soil

within Pond 602B is entirely comprised of Immokalee Fine Sand, 0%-2% (non-hydric). Pomello Fine Sand, 0%-2% slopes (non-hydric) is mapped to the north of Pond 602B within the PCA. One continuous OSW is located along the entirety of the west side of Pond 602B consisting of a 0.10-acre roadside drainage ditch. Pond 602B is located within the Everglades National Park SFWMD ERP basin and the Big Cypress Swamp HUC 8 basin. Involvement with wetlands is anticipated to be **none**.

603B

This 4.79-acre pond site alternative is located on the west side of SR 29, north of Pond 603A. Land use and cover includes primarily Improved Pasture (FLUCFCS 2110) and Freshwater Marsh (FLUCFCS 6410). Additional land use and cover within the PCA includes Mixed Wetland Hardwood (FLUCFCS 6170). Mapped soils within the pond site alternative include Myakka Fine Sand, 0%-2% slopes (non-hydric); Immokalee Fine Sand, 0%-2% slopes (non-hydric), and Basinger Fine Sand, 0%-2% slopes (hydric). The Chobee, Winder, Gator soils Urban Land Complex Variety, 0%-1% slopes (hydric) soil type is mapped north of the pond site within the PCA. The northern portion of Pond 603B and the PCA consists of a Freshwater Marsh (FLUCFCS 6410), based on a field review. The wetland area comprises approximately 1.09 acres of Pond 603B. Additionally, a swale runs through the center of the Improved Pasture of Pond 603B, consisting of 0.18 acres. Pond 603B is located within the Estero Bay SFWMD ERP basin and the Big Cypress Swamp HUC 8 basin. Involvement with wetlands is anticipated to be **low**. Involvement with OSWs is anticipated to be **low**.

603/604B (Recommended)

This 5.68-acre pond site alternative is located on the east side of SR 29 and is across SR 29 from Ponds 603A and 603B. The land use within this pond site alternative is entirely comprised of Improved Pasture (FLUCFCS 2110). Mapped soils include Myakka Fine Sand, 0%-2% slopes (non-hydric). An additional soil type within the PCA includes Immokalee Fine Sand, 0%-2% slopes (non-hydric). An OSW consisting of a series of drainage ditches is located along the west and north perimeters of Pond 603/604B as well as irrigation swales throughout. This OSW also extends into the southern half of the PCA. OSWs comprise approximately 0.99 acre of the pond site alternative. Pond 603/604B is located within the Everglades National Park SFWMD ERP basin and the Big Cypress Swamp HUC 8 basin. Involvement with OSWs is anticipated to be **low**. Involvement with wetlands is anticipated to be **none**.

604A

This 1.60-acre pond area is located on the east side of SR 29, north of Pond 603/604B. The land use within the entirety of the pond site alternative and majority of the PCA is Citrus Groves (FLUCFCS 2210). Soil types within Pond 604A include Basinger Fine Sand, 0%-2% slopes (hydric). Other soil types mapped within the PCA include Myakka Fine Sand, 0%-2% slopes (non-hydric). A field review observed an OSW consisting of a drainage ditch that runs along the length of the western portion of the pond site alternative, and irrigation swales located throughout. OSWs within the pond site alternative total approximately 0.41 acre. 604A is located within the Everglades National Park SFWMD ERP basin and the Big Cypress Swamp HUC 8 basin. Involvement with OSWs is anticipated to be **medium**. Involvement with wetlands is anticipated to be **none**.

604B

Pond 604B is located on the west side of SR 29, north of Pond 603B and is approximately 1.40 acres. Land use and cover within this pond site alternative consists of Wet Prairie (FLUCFCS 6430). Additional land use and cover within the PCA includes Educational Facilities (FLUCFCS 1710). Mapped soil types within Pond 604B include Basinger Fine Sand, 0%-2% slopes (hydric). Additional mapped soil types within the PCA include Chobee, Winder, Gator soils, 0%-1% slopes (frequently ponded, hydric); Immokalee Fine Sand, 0%-2% (non-hydric); and Immokalee Fine Sand, 0%-2% slopes (urban land complex variety, non-hydric). Based on a field survey, the entirety of the pond site alternative consists of a Wet Prairie (FLUCFCS 6430). An OSW is also located within the northern portion and through the center of the PCA that consists of a drainage ditch. Pond 604B is located within the Estero Bay SFWMD ERP basin and Big Cypress Swamp HUC 8 basin. Involvement with wetlands is anticipated to be **high**. Involvement with OSWs is anticipated to be **none**.

605A (Recommended)

This pond site alternative is located on the east side of SR 29 north of Pond 604A and is approximately 4.01 acres. Land use within this pond site alternative and PCA consists entirely of Citrus Groves (FLUCFCS 2210). Mapped soil types within Pond 605A and the PCA include Oldsmar Fine Sand, 0-2% slopes (non-hydric) and Immokalee Fine Sand, 0%-2% (non-hydric). Based on a field review, OSWs consisting of a drainage ditch and irrigation swales are present throughout Pond 605A that extend into the PCA and comprise approximately 1.16 acre of the pond site alternative. Pond 605A is located within the Everglades National Park SFWMD ERP basin and the Big Cypress Swamp HUC 8 basin. Involvement with OSWs is anticipated to be **medium**. Involvement with wetlands is anticipated to be **none**.

605B

This pond site alternative is located on the west side of SR 29 north of Pond 604B approximately 0.30 mile south of Johnson Road and is approximately 3.06 acres. Land use within this pond site alternative and PCA consists of Improved Pasture (FLUCFCS 2110) and Wet Prairie (FLUCFCS 6430). Mapped soil types within Pond 605B and the PCA include Oldsmar Fine Sand, 0-2% slopes (non-hydric). Additional soil types mapped within the western portion of the PCA include Pomello Fine Sand, 0-2% slopes (non-hydric) and Immokalee Fine Sand-Urban Land Complex, 0-2% slopes (non-hydric). Based on a field review, Wet Prairie (FLUCFCS 6430) comprise approximately 0.12 acre, and a swale is located in the center on the pond site totaling 0.09 acre of OSW. Pond 605B is located within the Estero Bay SFWMD ERP basin and the Big Cypress Swamp HUC 8 basin. Involvement with OSWs is anticipated to be **low**. Involvement with wetlands is anticipated to be **low**.

606A (Recommended)

This pond site alternative is located on the west side of SR 29 approximately 0.5 mile south of SR 82 and is approximately 7.80 acres. Land use within this pond site alternative and PCA consists entirely of Improved Pasture (FLUCFCS 2110). Mapped soil types within Pond 606A and the PCA include Oldsmar Fine Sand, 0-2% slopes (non-hydric). Based on a field review, there are no wetlands or OSWs present within

the pond site alternative or the PCA. Pond 606A is located within the Estero Bay SFWMD ERP basin and the Big Cypress Swamp HUC 8 basin. Involvement with OSWs and wetlands is anticipated to be **none**.

606B

This pond site alternative is located on the east side of SR 29 approximately 0.4 mile south of SR 82 and is approximately 3.11 acres. Previous mapped land use and cover within this pond site alternative and PCA consisted mostly of Citrus Groves (FLUCFCS 2210) with a small portion mapped as Mixed Wetland Hardwoods (FLUCFCS 6170). A field review in December 2023 determined that the area has been converted into a fenced solar plant (FLUCFCS 8130) that is owned and managed by Florida Power & Light. Mapped soil types within Pond 606B and the PCA include Oldsmar Fine Sand, 0-2% slopes (non-hydric) and Holopaw Fine Sand, 0-2% slopes (hydric). Based on the December 2023 field review, no wetlands or OSWs are present within this pond site alternative. Pond 606B is located within the Everglades National Park SFWMD ERP basin and overlaps both the Big Cypress Swamp and the Caloosahatchee HUC 8 basins. Involvement with OSWs is anticipated to be **none**. Involvement with wetlands is anticipated to be **none**.

607A (Recommended)

This pond site alternative is located on the west side of SR 29 approximately 0.25 mile south of SR 82 and is approximately 2.61 acres. Land use within Pond 607A and the PCA consists mostly of Row Crops (FLUCFCS 2140) with a small portion of Citrus Groves (FLUCFCS 2210) along the north side. Mapped soil types within Pond 607A and the PCA consists mostly of Oldsmar Fine Sand, 0-2% slopes (non-hydric) with a small portion of Holopaw Fine Sand, 0-2% slopes (hydric) on the south side. Based on a field review, an OSW consisting of a drainage ditch is located along the east and north perimeter of the pond site alternative that extends into the PCA. This OSW comprises approximately 0.46 acre of Pond 607A. Pond 607A is located within the Estero Bay SFWMD ERP basin and the Caloosahatchee HUC 8 basin. Involvement with OSWs is anticipated to be **low**. Involvement with wetlands is anticipated to be **none**.

607B

Pond 607B is located on the west side of SR 29 approximately 0.12 mile south of SR 82 and is approximately 4.14 acres. Land use within Pond 607B and the PCA is entirely comprised of Improved Pasture (FLUCFCFS 2110). Mapped soil types within the pond site alternative and the PCA includes Oldsmar Fine Sand, 0-2% slopes (non-hydric). The PCA also includes mapped soil type Chobee, Winder, Gator Soils, frequently ponded, 0-1% slopes (hydric). Based on a field review, OSWs consisting of drainage ditches and irrigation swales are located throughout Pond 607B and extending into the PCA. The OSWs comprise approximately 1.62 acres of the pond site alternative. A wetland system was also aerially delineated within the eastern portion of the PCA adjacent to the pond site alternative. Pond 607B is located within the Estero Bay SFWMD ERP basin and the Caloosahatchee HUC 8 basin. Involvement with OSWs is anticipated to be **medium**. Involvement with wetlands is anticipated to be **none**.

Floodplain Compensation (FPC) Sites

FPC Alt 1

FPC Alt 1 is located on the west side of SR 29, north of Pond 605B approximately 0.30 mile south of Johnson Road and is approximately 3.26 acres. Land use within the FPC site alternative consists of Improved Pasture (FLUCFCS 2110), Wet Prairie (FLUCFCS 6430), and Rural Residential (FLUCFCS 1180). Mapped soil types include Pomello Fine Sand-Urban Land Complex, 0-2% slopes (non-hydric), Oldsmar Fine Sand, 0-2% slopes (non-hydric), and Oldsmar Fine Sand-Urban Land Complex, 0-2% slopes (non-hydric). The PCA of FPC Alt 1 is the same as that for Pond 605B. Based on a field review, Wet Prairie (FLUCFCS 6430) comprise approximately 0.18 acre of FPC Alt 1 and extends into a large area of the PCA. Additionally, an OSW consisting of a swale runs through the center of the pond site, comprising 0.11 acre. FPC Alt 1 is located within the Estero Bay SFWMD ERP basin and the Big Cypress Swamp HUC 8 basin. Involvement with OSWs is anticipated to be **low**. Involvement with wetlands is anticipated to be **low**.

FPC Alt 2

FPC Alt 2 is located approximately 0.12 mile west of SR 29, approximately 0.13 mile south of Johnson Road and is approximately 3.87 acres. Land use within the FPC site alternative and PCA consists entirely of Rural Residential (FLUCFCS 1180). Mapped soil types within FPC Alt 2 and the PCA include Oldsmar Fine Sand-Urban Land Complex, 0-2% slopes (non-hydric). Based on a field review, no wetlands or OSWs are present within FPC Alt 2 or the PCA. FPC Alt 2 is located within the Estero Bay SFWMD ERP basin and the Big Cypress Swamp HUC 8 basin. Involvement with OSWs and wetlands is anticipated to be **none.**

Regional Pond Alternatives

North of Lake Trafford Road (North Regional Alternative)

The North Regional alternative is located approximately 1.64 miles west of SR 29, approximately 0.5 mile north of Lake Trafford Road, and is approximately 7.88 acres. Land use within this pond site alternative and the PCA entirely consists of Improved Pastures (FLUCFCS 2110). Mapped soil types within pond site alternative consists mostly of Basinger Fine Sand, 0-2% slopes (hydric). The mapped soil type within the PCA consists of Immokalee Fina Sand, 0-2% slopes (non-hydric). Based on a field review, OSWs consisting of a drainage ditch and irrigations swales make up approximately 0.68 acre of the pond site. An additional OSW (drainage ditch) runs through the PCA west of the pond site alternative. The North Regional alternative is located within the Estero Bay SFWMD ERP basin and the Big Cypress Swamp HUC 8 basin. Involvement with OSWs is anticipated to be **low**. Involvement with wetlands is anticipated to be **none**.

South of Lake Trafford Road (South Regional Alternative)

The South Regional alternative is located approximately 1.80 miles west of SR 29, approximately 0.3 mile south of Lake Trafford Road and is approximately 9.12 acres. Land use and cover types within this pond site alternative and the PCA consists of Improved Pastures (FLUCFCS 2110), Wetland Forested Mixed (FLUCFCS 6300), and Freshwater Marsh (FLUCFCS 6410). Mapped soil types within pond site alternative and PCA consists of Immokalee Fine Sand-Urban Land Complex, 0-2% slopes (non-hydric) and Pineda-Riviera Fine Sands Association, 0-2% slopes (hydric). The PCA also includes Winder, Riviera, Limestone

Substratum, and Chobee Soils, frequently ponded, 0-1% slopes (hydric); and Holopaw Fine Sand, 0-2% slopes (hydric). Based on a field review, the pond site alternative includes a wetland system comprised of 0.84 acre of Wetland Forested Mixed (FLUCFCS 6300) and 4.74 acres of Freshwater Marsh (FLUCFCS 6410), both of which extend into the PCA. The existing wetland has been disturbed with the construction of the road to facilitate access along the easement. The South Regional Alternative is located within the Estero Bay SFWMD ERP basin and the Big Cypress Swamp HUC 8 basin. Involvement with wetlands is anticipated to be **high**. Involvement with OSWs is anticipated to be **none**.

Environmental Impact Summary of Alternatives

The pond site alternatives were reviewed for the presence of wetlands and OSWs. The alternatives were ranked for potential involvement with wetlands with a high, medium, low, and none-ranking system.

A high ranking indicates that more than 50% of the land area of the pond area contains wetlands or OSW. A ranking of medium indicates that 25 to 50% of the pond area is wetland or OSW. A ranking of low indicates that less than 25% of the pond area is wetland or OSW. If no wetland or OSW is documented in the pond area, it was noted if one is present within the PCA. Field reviews should be conducted prior to construction to confirm limits of wetlands and OSWs.

The Impacts Summary Matrix table below summarizes the expected environmental impacts for the pond site alternatives based on the review. The Wetland and OSW Mitigation Cost Summary table provides a wetland mitigation cost. To estimate the wetland mitigation costs, herbaceous and forested wetland credit costs were used from the PIMB based on the functional loss in wetlands and OSWs as calculated using the Uniform Mitigation Assessment Methodology (UMAM). Secondary impacts to the habitat functions of wetlands within 25 feet of the direct impacts were also assessed and quantified pursuant to state guidelines. A UMAM analysis summary table is provided following the tables below.

Impacts Summary Matrix

Pond Site Alternative ID	Wetlands	OSWs	Wetland/OSW Mitigation Cost[1]
Off-site Pond Alternatives			
601A[2]	None	None	$1,900.00
601B	None	None	$0.00
602A	None	High	$98,800.00
602B[2]	None	Low	$7,600.00
603A	None	None	$0.00
603B	Low	Low	$172,900.00
603/604B[2]	None	Low	$76,000.00
604A	None	Medium	$30,400.00
604B	High	None	$203,300.00
605A[2]	None	Medium	$87,400.00
605B	Low	Low	$24,700.00
606A[2]	None	None	$0.00
606B	None	None	$0.00
607A[2]	None	Low	$34,200.00
607B	None	Medium	$123,500.00
Floodplain Compensation Alternatives (FPCs)			
FPC Alt 1	Low	Low	$47,500.00
FPC Alt 2	None	None	$0.00
Regional Alternatives			
North Regional	None	Low	$51,300.00
South Regional	High	None	$796,100.00

[1] For estimation, the cost for credits at PIMB was used to estimate the wetland/OSW mitigation costs. Herbaceous and forested wetland credits are currently $190,000 per credit.

[2] Recommended Pond

Wetland and OSW Mitigation Cost Summary

Pond Site Alternative ID	Wetlands Impacted (Direct) (Ac)	Wetlands Impacted (Secondary) (Ac)	OSWs Impacted (Ac)	Functional Loss (UMAM)	Wetland/OSW Mitigation Cost[1]
Off-site Pond Alternatives					
601A[2]	--	0.15	--	0.01	$1,900.00
601B	--	--	--	--	$0.00
602A	--	--	1.30	0.52	$98,800.00
602B[2]	--	--	0.10	0.04	$7,600.00
603A	--	--	--	--	$0.00
603B	1.09	0.55	0.18	0.91	$172,900.00
603/604B[2]	--	--	0.99	0.40	$76,000.00
604A	--	--	0.41	0.16	$30,400.00
604B	1.40	0.61	--	1.07	$203,300.00
605A[2]	--	--	1.16	0.46	$87,400.00
605B	0.12	0.03	0.09	0.13	$24,700.00
606A[2]	--	--	--	--	$0.00
606B	--	--	--	--	$0.00
607A[2]	--	--	0.46	0.18	$34,200.00
607B	--	--	1.62	0.65	$123,500.00
Floodplain Compensation Alternatives (FPCs)					
FPC Alt 1	0.18	0.50	0.11	0.25	$47,500.00
FPC Alt 2	--	--	--	--	$0.00
Regional Alternatives					
North Regional	--	--	0.68	0.27	$51,300.00
South Regional	5.58	1.40	--	4.19	$796,100.00

Note: Secondary impacts to the habitat functions of wetlands within 25 feet of the direct impacts were assessed and quantified pursuant to state guidelines.

[1] For estimation, the cost for credits at PIMB was used to estimate the wetland/OSW mitigation costs. Herbaceous and forested wetland credits are currently $190,000 per credit.

[2] Recommended Pond

Conclusion

Nineteen pond site alternatives (15 off-site SMFs, two FPCs, and two regional ponds) were assessed for the presences of wetlands and OSWs through desktop analysis of available online and GIS resources, as well as a field review.

Wetlands and OSWs within the pond site alternatives were aerially delineated via desktop GIS analysis, followed by a field review conducted in December 2023. The USFWS NWI online mapper, in combination with SFWMD FLUCFCS GIS layers, NRCS soil type GIS layers, and aerial imagery (Esri, 2020), were used to estimate the limits of wetlands and OSWs within the pond site alternatives. Based on aerial imagery, FLUCFCS maps, and field observations, the wetlands consist of both forested and herbaceous wetland systems; the OSWs consist of drainage ditches, irrigation swales, and open water systems (i.e., reservoirs). Based on this analysis, wetlands and OSWs are present within the following pond site alternatives: Ponds 602A, 602B, 603B, 603/604B, 604A, 604B, 605A, 605B, 607A, 607B, FPC Alt 1, North Regional alternative, and South Regional alternative. Impacts will be mitigated pursuant to state and federal requirements.

References

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U.S. Geological Survey, 2021. U.S. Geological Survey 7.5-minute Topographical Quadrangle Map, Immokalee, Florida.

Appendix 5.0

Contamination Screening Evaluation Report

The Contamination Screening Evaluation Report Addendum (March 2024) can be found under separate cover.

Appendix 6.0

Cultural Resources Assessment Survey

The Cultural Resources Assessment Survey Addendum Report (February 2024) can be found under separate cover.

Appendix 7.0

Geotechnical Data

October 16, 2020

Attn: Faller, Davis and Associates, Inc.
4200 W. Cypress Street, Suite 500
Tampa, Florida 33607

Attn: Mr. Logan Barile, P.E.

RE: Pond Siting Geotechnical Report
SR 29 From N. of New Market Rd. to SR 82
Collier County, Florida
FPN: 417540-6-52-01
Tierra Project No.: 6511-18-100

Mr. Barile:

Tierra, Inc. (Tierra) has performed geotechnical services to estimate Seasonal High Groundwater Table (SHGWT) levels within the proposed pond alternatives and Flood Plain Compensation (FPC) sites for the above referenced project. The results of our field exploration program, the data obtained and subsequent SHGWT estimates are presented in this letter report. This report is provided to support the Pond Siting Report submittal.

The results of our field exploration program, the data obtained and subsequent seasonal high groundwater level estimates completed to date are presented in this letter. This report will be updated upon completion of the final pond geotechnical exploration.

Subsurface Exploration and General Conditions

Tierra completed forty (40) borings which extended to depths ranging from approximately less than 6-inches to 7 feet below grade within the footprint of each pond alternative and FPC site in order to identify the general subsurface conditions and estimate SHGWT levels. The borings generally encountered sand to sand with silt underlain by silty sand.

Seasonal High Groundwater Estimates

SHGWT estimates were completed at select boring locations. The depth to the SHGWT is estimated to range from at or above existing grades to a depth of approximately 2½ feet below grade. In general, the seasonal high groundwater table estimates were based on soil stratigraphy, measured groundwater levels from the borings as well as the Collier County, Florida USDA Soil Survey information. The SHGWT estimates provided by Tierra should be compared to the seasonal high water information provided by the project biologist/wetland expert and the most conservative seasonal high water elevations should be used for design considerations. A **Summary of Seasonal High Groundwater Table Estimates for Alternate Pond Locations** is presented as an attachment with this report.

Laboratory Testing

Laboratory testing comprised of Grain Size Analyses and Fines Content was completed on select soil samples. The results of the laboratory tests are presented on the attached **Summary of Laboratory Testing for Soil Classification** sheets.

Tierra, Inc. appreciates the opportunity to be of service to Faller, Davis and Associates, Inc. on this project. If you have any questions or comments regarding this information, please contact our office at your earliest convenience.

Sincerely,

TIERRA, INC.

Joseph R. Antinori, P.E.
Geotechnical Engineer
Florida License No. 73176

William P. Rovira, P.E.
Geotechnical Engineer
Florida License No. 74586

Attachments:

Summary of USDA Soil Survey
Summary of Seasonal High Groundwater Table Estimates for Alternate Pond Locations
Summary of Laboratory Testing for Soil Classification

SUMMARY OF USDA SOIL SURVEY
SR 29 FROM N. OF NEW MARKET ROAD N. TO SR 82 (PONDS)
COLLIER COUNTY, FLORIDA
FPN: 417540-6-52-01
TIERRA PROJECT NO.: 6511-18-100

USDA Map Symbol and Soil Name	Soil Classification				pH	Seasonal High Water Table	
	Depth (in)	USCS	AASHTO	Permeability (in/hr)		Depth (feet)	Months
(7) Immokalee	0-6	SP-SM, SM	A-3, A-2-4	6.0 - 20.0	3.5-6.0	0.5-1.5	Jan-Dec
	6-35	SP-SM, SM	A-3, A-2-4	6.0 - 20.0	3.5-6.0		
	35-54	SP-SM, SM	A-3, A-2-4	0.6 - 2.0	3.5-6.0		
	54-80	SM, SP-SM	A-2-4, A-3	6.0 - 20.0	3.5-6.0		
(8) Myakka	0-6	SP-SM, SM	A-3, A-2-4	6.0 - 20.0	3.5-6.5	0.5-1.5	Jun-Sep
	6-20	SP-SM, SM	A-3, A-2-4	6.0 - 20.0	3.5-6.5		
	20-36	SP-SM, SM	A-2-4, A-3	0.6 - 6.0	3.5-6.5		
	36-80	SP-SM, SM	A-3, A-2-4	6.0 - 20.0	3.5-6.5		
(15) Pomello	0-4	SM, SP-SM	A-2-4, A-3	20.0 - 20.0	4.5-6.0	2.0-3.5	Jun-Nov
	4-42	SP-SM, SM	A-3, A-2-4	20.0 - 20.0	4.5-6.0		
	42-54	SP-SM, SM	A-3, A-2-4	2.0 - 6.0	4.5-6.0		
	54-80	SP-SM, SM	A-3, A-2-4	6.0 - 20.0	4.5-6.0		
(16) Oldsmar	0-4	SM, SP-SM	A-2-4, A-3	6.0 - 20.0	3.5-6.5	0.5-1.5	Jun-Sep
	4-35	SP-SM, SM	A-3, A-2-4	6.0 - 20.0	3.5-7.3		
	35-50	SM	A-2-4	0.2 - 6.0	3.5-6.0		
	50-80	CL, SC-SM	A-4, A-6	0.1 - 0.2	4.5-7.8		
(17) Basinger	0-2	SP-SM, SM	A-2-4, A-3	6.0 - 20.0	4.5-6.0	0.0-1.0	Jun-Nov
	2-18	SP-SM, SM	A-3, A-2-4	6.0 - 20.0	4.5-6.0		
	18-36	SP-SM, SM	A-2-4, A-3	6.0 - 20.0	4.5-6.0		
	36-80	SP-SM, SM	A-3, A-2-4	6.0 - 20.0	5.1-6.5		
(22) Chobee	0-13	SM, SP-SM	A-2-4	2.0 - 6.0	5.1-7.3	+2.0-0.0	Jun-Oct
	13-47	SC, SP-SM, SM, SC-SM	A-2-4, A-2-6, A-6, A-7	0.1 - 0.2	5.6-8.4		
	47-80	SM, SP-SM	A-2-4	2.0 - 6.0	5.6-7.8		
Gator	0-25	PT	A-8	6.0 - 20.0	3.5-6.0		
	25-80	SC, SC-SM, SM	A-2-4, A-2-6	0.0 - 0.2	5.1-8.4		
Winder	0-5	SP, SP-SM	A-2-4, A-3	6.0 - 20.0	5.6-7.8		
	5-15	SP, SP-SM	A-2-4, A-3	6.0 - 20.0	5.6-7.8		
	15-18	SM	A-2-4	0.2 - 0.6	6.1-7.8		
	18-50	SC	A-2-4, A-2-6	0.1 - 0.2	6.6-8.4		
	50-80	SC, SC-SM, SM, GC-GM	A-1-b, A-2-4, A-2-6	0.1 - 0.2	7.4-8.4		
(27) Holopaw	0-6	SM, SP-SM	A-2-4, A-3	6.0 - 20.0	5.5-7.3	0.0-1.0	Jun-Nov
	6-42	SP-SM, SM	A-3, A-2-4	6.0 - 20.0	5.5-7.3		
	42-60	SC, SC-SM	A-2-4, A-6	0.2 - 6.0	5.5-8.4		
	60-80	SM	A-2-4	6.0 - 20.0	5.5-8.4		
(28) Pineda	0-1	SM, SP-SM	A-2-4, A-3	6.0 - 20.0	4.5-7.3	+2.0-0.0	Jul-Oct
	1-5	SP-SM, SM	A-2-4, A-3	6.0 - 20.0	4.5-7.3		
	5-36	SM, SP-SM	A-2-4, A-3	6.0 - 20.0	4.5-7.3		
	36-54	CL, SC, SC-SM	A-4, A-2-4, A-6	2.0 - 6.0	4.5-7.8		
	54-80	SP-SM, SM	A-2-4, A-3	2.0 - 6.0	5.1-7.8		
	0-6	SM, SP-SM	A-2-4, A-3	6.0 - 20.0	5.1-7.3	0.3-1.5	Jul-Oct
	6-28	SM, SP-SM	A-2-4, A-3	6.0 - 20.0	5.1-7.3		
	28-36	SC, SC-SM, SM	A-4, A-2-4, A-6	2.0 - 6.0	4.5-7.8		
	36-42	CL, SC-SM	A-4, A-7-6, A-6	2.0 - 6.0	4.5-7.8		
	42-80	SM, SP-SM	A-3, A-2-4	0.6 - 6.0	6.1-8.4		
(117) Immokalee	0-6	SP-SM, SM	A-3, A-2-4	6.0 - 20.0	3.5-6.0	0.5-1.5	Jun-Nov
	6-35	SP-SM, SM	A-3, A-2-4	6.0 - 20.0	3.5-6.0		
	35-54	SP-SM, SM	A-3, A-2-4	0.6 - 2.0	3.5-6.0		
	54-80	SM, SP-SM	A-2-4, A-3	6.0 - 20.0	3.5-6.0		
Urban Land	---	---	---	---	---	---	---
(125) Oldsmar	0-4	SM, SP-SM	A-2-4, A-3	6.0 - 20.0	3.5-6.5	0.5-1.5	Jun-Nov
	4-35	SP-SM, SM	A-3, A-2-4	6.0 - 20.0	3.5-7.3		
	35-50	SM	A-2-4	0.2 - 6.0	3.5-6.0		
	50-80	CL, SC-SM	A-4, A-6	0.1 - 0.2	4.5-7.8		
Urban Land	---	---	---	---	---	---	---

SUMMARY OF SEASONAL HIGH GROUNDWATER TABLE ESTIMATES FOR ALTERNATE POND LOCATIONS
SR 29 FROM N. OF NEW MARKET ROAD N. TO SR 82
COLLIER COUNTY, FLORIDA
FPN: 417540-6-52-01
TIERRA PROJECT NO. 6511-18-100

Pond	Boring Name	Boring Location[1] (B/L Survey SR 29)		Boring Location[1] State Plane Coordinates, Florida East NAD 1983		Approximate Ground Elevation[1] (feet, NAVD 88)	Boring Depth (feet)	Measured Groundwater Table[2]			USDA Soil Survey		Estimated SHGWT[4]	
		Station (feet)	Offset (feet)	Northing	Easting			Date Recorded	Depth[2] (feet)	Elevation (feet, NAVD 88)	Map Symbol	Estimated SHGWT[3] Depth (feet)	Depth (feet)	Elevation (ft, NAVD 88)
Regional Ponds	PBA - LT-1	2053 + 18	9881 LT	504345	761526	20.4	<0.5	10/07/20	ABG[6]	>20.4	28	+2.0 - 0.0	ABG[5]	>20.4
	PBA - LT-2	2056 + 20	9845 LT	504377	761829	21.4	<0.5	10/07/20	ABG[6]	>21.4	117	0.5 - 1.5	ABG[5]	>21.4
	PBA - LT-3	2103 + 91	9205 LT	504964	766607	30.3	4.0	10/07/20	1.0	29.3	7	0.5 - 1.5	ABG[5]	>30.4
	PBA - LT-4	2106 + 89	9131 LT	505035	766905	30.2	4.5	10/07/20	1.5	28.7	17	0.0 - 1.0	0.0	30.2
601A	PBA - 601A-2	2115 + 94	180 LT	513975	767909	33.3	5.0	10/07/20	3.0	30.3	7	0.5 - 1.5	1.0	32.3
	PBA - 601A-1	2116 + 14	389 LT	513766	767927	33.1	5.0	10/07/20	2.5	30.6	7	0.5 - 1.5	1.0	32.1
601B	PBA - 601B-2	2114 + 92	318 RT	514475	767813	34.9	7.0	09/23/20	4.5	30.4	7	0.5 - 1.5	2.5	32.4
	PBA - 601B-1	2116 + 37	256 RT	514411	767958	34.3	6.0	09/23/20	4.5	29.8	7	0.5 - 1.5	2.0	32.3
602B	PBA - 602B-2	2121 + 51	259 RT	514408	768472	33.4	5.0	09/23/20	4.0	29.4	7	0.5 - 1.5	1.0	32.4
	PBA - 602B-1	2123 + 41	227 RT	514374	768662	34.0	6.0	09/23/20	4.5	29.5	7	0.5 - 1.5	2.0	32.0
602A	PBA - 602A-2	2126 + 59	118 LT	514025	768976	27.8	<0.5	09/24/20	ABG[6]	>27.8	15	2.0 - 3.5	ABG[5]	>27.8
	PBA - 602A-1	2128 + 22	338 LT	513804	769136	30.6	4.5	09/24/20	1.5	29.1	15	2.0 - 3.5	ABG[5]	>30.6
603A	PBA - 603A-2	2138 + 04	204 LT	513926	770119	32.6	3.5	10/07/20	1.0	31.6	8	0.5 - 1.5	ABG[5]	>32.6
	PBA - 603A-1	2139 + 72	424 LT	513704	770285	32.2	3.5	10/07/20	0.5	31.7	17	0.0 - 1.0	ABG[5]	>32.2
603/604B	PBA - 603/604B-3	2145 + 35	284 RT	514406	770856	34.7	5.0	09/24/20	3.0	31.7	8	0.5 - 1.5	1.0	33.7
	PBA - 603/604B-2	2147 + 97	363 RT	514483	771119	34.9	5.0	09/24/20	3.5	31.4	8	0.5 - 1.5	1.5	33.4
	PBA - 603/604B-1	2150 + 67	240 RT	514356	771387	34.5	5.0	09/24/20	2.5	32.0	8	0.5 - 1.5	1.0	33.5

[1] Boring locations and elevations were provided by the project surveyor.

[2] Depth below existing grades at time of field activities.

[3] Seasonal high groundwater table depth based on the Collier County, Florida USDA Soil Survey information.

[4] Seasonal high groundwater table estimated based on a review of the soil samples, measured groundwater levels, the Collier County, Florida USDA Soil Survey and the surrounding topography.

[5] ABG: Seasonal high groundwater table estimated to be above the ground surface at the boring location (SHGWT can be determined by the project biologist utililizing biological indicators).

[6] ABG: Groundwater levels were measured above the ground surface at the time of field activities.

SUMMARY OF SEASONAL HIGH GROUNDWATER TABLE ESTIMATES FOR ALTERNATE POND LOCATIONS
SR 29 FROM N. OF NEW MARKET ROAD N. TO SR 82
COLLIER COUNTY, FLORIDA
FPN: 417540-6-52-01
TIERRA PROJECT NO. 6511-18-100

Pond	Boring Name	Boring Location[1] (B/L Survey SR 29)		Boring Location[1] State Plane Coordinates, Florida East NAD 1983		Approximate Ground Elevation[1] (feet, NAVD 88)	Boring Depth (feet)	Measured Groundwater Table[2]			USDA Soil Survey		Estimated SHGWT[4]	
		Station (feet)	Offset (feet)	Northing	Easting			Date Recorded	Depth[2] (feet)	Elevation (feet, NAVD 88)	Map Symbol	Estimated SHGWT[3] Depth (feet)	Depth (feet)	Elevation (ft, NAVD 88)
603B	PBA - 603B-2	2152 + 59	357 LT	513757	771572	33.6	4.0	09/24/20	2.0	31.6	8	0.5 - 1.5	0.5	33.1
	PBA - 603B-1	2154 + 92	361 LT	513751	771806	33.8	3.5	09/24/20	1.0	32.8	7	0.5 - 1.5	0.0	33.8
604A	PBA - 604A-1	2161 + 42	190 RT	514294	772462	34.9	5.0	09/22/20	3.0	31.9	17	0.0 - 1.0	1.5	33.4
	PBA - 604A-2	2164 + 25	190 RT	514291	772744	35.3	5.0	09/22/20	3.0	32.3	17	0.0 - 1.0	1.5	33.8
604B	PBA - 604B-2	2165 + 45	196 LT	513904	772860	33.1	3.5	09/22/20	1.5	31.6	17	0.0 - 1.0	0.0	33.1
	PBA - 604B-1	2166 + 74	289 LT	513810	772988	33.4	3.5	09/22/20	1.0	32.4	17	0.0 - 1.0	0.0	33.4
605A	PBA - 605A-1	2176 + 38	284 RT	514372	773959	35.4	5.0	09/22/20	3.5	31.9	7	0.5 - 1.5	1.5	33.9
	PBA - 605A-2	2179 + 31	335 RT	514419	774252	36.7	5.0	09/22/20	2.0	34.7	7	0.5 - 1.5	1.0	35.7
605B	PBA - 605B-2	2193 + 51	289 LT	513780	775665	38.2	3.5	09/21/20	0.8	37.4	16	0.5 - 1.5	ABG[5]	>38.2
	PBA - 605B-1	2195 + 70	272 LT	513794	775884	39.2	3.5	09/21/20	1.0	38.2	16	0.5 - 1.5	0.5	38.7
FPC 1	PBA - FPC1-2	2195 + 22	1148 LT	512919	775827	36.0	<0.5	09/21/20	ABG[6]	>36.0	16	0.5 - 1.5	ABG[5]	>36.0
	PBA - FPC1-1	2198 + 10	1186 LT	512878	776114	38.6	<0.5	09/21/20	ABG[6]	>38.6	130	1.5 - 3.5	ABG[5]	>38.6
FPC 2	PBA - FPC2-2	2203 + 42	800 LT	513258	776650	39.6	3.5	09/23/20	1.5	38.1	125	0.5 - 1.5	0.5	39.1
	PBA - FPC2-1	2204 + 73	1154 LT	512902	776777	38.8	3.5	09/23/20	1.5	37.3	125	0.5 - 1.5	0.0	38.8
606A	PBA - 606A-2	2228 + 43	233 LT	513797	779157	37.5	2.5	09/23/20	0.3	37.2	16	0.5 - 1.5	0.0	37.5
	PBA - 606A-1	2231 + 41	506 LT	513520	779453	37.9	3.0	09/23/20	0.3	37.6	16	0.5 - 1.5	0.3	37.6
606B	PBA - 606B-3	2234 + 48	217 RT	514240	779767	35.6	5.0	08/13/20	3.0	32.6	16	0.5 - 1.5	0.5	35.1
	PBA - 606B-2	2238 + 29	220 RT	514238	780149	36.0	3.5	08/13/20	3.5	32.5	16	0.5 - 1.5	0.5	35.5
	PBA - 606B-1	2242 + 20	220 RT	514234	780539	36.1	5.0	08/13/20	3.0	33.1	27	0.0 - 1.0	0.5	35.6

[1] Boring locations and elevations were provided by the project surveyor.

[2] Depth below existing grades at time of field activities.

[3] Seasonal high groundwater table depth based on the Collier County, Florida USDA Soil Survey information.

[4] Seasonal high groundwater table estimated based on a review of the soil samples, measured groundwater levels, the Collier County, Florida USDA Soil Survey and the surrounding topography.

[5] ABG: Seasonal high groundwater table estimated to be above the ground surface at the boring location (SHGWT can be determined by the project biologist utililizing biological indicators).

[6] ABG: Groundwater levels were measured above the ground surface at the time of field activities.

SUMMARY OF SEASONAL HIGH GROUNDWATER TABLE ESTIMATES FOR ALTERNATE POND LOCATIONS
SR 29 FROM N. OF NEW MARKET ROAD N. TO SR 82
COLLIER COUNTY, FLORIDA
FPN: 417540-6-52-01
TIERRA PROJECT NO. 6511-18-100

Pond	Boring Name	Boring Location[1] (B/L Survey SR 29)		Boring Location[1] State Plane Coordinates, Florida East NAD 1983		Approximate Ground Elevation[1] (feet, NAVD 88)	Boring Depth (feet)	Measured Groundwater Table[2]			USDA Soil Survey		Estimated SHGWT[4]	
		Station (feet)	Offset (feet)	Northing	Easting			Date Recorded	Depth[2] (feet)	Elevation (feet, NAVD 88)	Map Symbol	Estimated SHGWT[3] Depth (feet)	Depth (feet)	Elevation (ft, NAVD 88)
607A	PBA - 607A-2	2242 + 46	212 LT	513802	780560	36.2	4.0	08/13/20	2.0	34.2	16	0.5 - 1.5	0.0	36.2
	PBA - 607A-1	2245 + 96	265 LT	513745	780910	36.3	4.0	08/13/20	2.0	34.3	16	0.5 - 1.5	0.0	36.3
607B	PBA - 607B-2	2250 + 67	539 LT	513466	781378	36.6	4.0	08/13/20	1.5	35.1	16	0.5 - 1.5	0.0	36.6
	PBA - 607B-1	2254 + 28	622 LT	513379	781738	36.9	4.0	08/13/20	1.0	35.9	16	0.5 - 1.5	0.0	36.9

(1) Boring locations and elevations were provided by the project surveyor.

(2) Depth below existing grades at time of field activities.

(3) Seasonal high groundwater table depth based on the Collier County, Florida USDA Soil Survey information.

(4) Seasonal high groundwater table estimated based on a review of the soil samples, measured groundwater levels, the Collier County, Florida USDA Soil Survey and the surrounding topography.

(5) ABG: Seasonal high groundwater table estimated to be above the ground surface at the boring location (SHGWT can be determined by the project biologist utililizing biological indicators).

(6) ABG: Groundwater levels were measured above the ground surface at the time of field activities.

SUMMARY OF LABORATORY TEST RESULTS FOR SOIL CLASSIFICATION
SR 29 FROM N. OF NEW MARKET ROAD N. TO SR 82 (PONDS)
COLLIER COUNTY, FLORIDA
FPN: 417540-6-52-01
TIERRA PROJECT NO.: 6511-18-100

Boring Number	Sample Depth (ft)	Stratum Number	AASHTO Symbol	Sieve Analysis (% Passing)								Atterberg Limits			Organic Content (%)	Natural Moisture Content (%)
				No. 3/4"	No. 3/8"	No. 4	No. 10	No. 40	No. 60	No. 100	No. 200	Liquid Limit	Plastic Limit	Plasticity Index		
PBA-FPC2-2	2.5 - 3.5	1	A-3	--	--	--	--	--	--	--	1	--	--	--	--	--
PBA-604B-1	2.5 - 3.5	1	A-3	--	--	--	--	--	--	--	2	--	--	--	--	--
PBA-605B-2	1.5 - 2.0	1	A-3	--	--	--	--	--	--	--	2	--	--	--	--	--
PBA-605A-1	1.5 - 2.0	1	A-3	--	--	--	100	92	67	31	3	--	--	--	--	--
PBA-607A-2	1.5 - 2.0	1	A-3	--	--	--	--	--	--	--	1	--	--	--	--	--
PBA-606B-3	2.5 - 3.0	1	A-3	--	--	--	--	--	--	--	4	--	--	--	--	--
PBA-607B-2	1.0 - 1.5	1	A-3	--	--	--	100	94	78	39	3	--	--	--	--	--
PBA-606B-2	3.0 - 4.0	2	A-2-4	--	--	--	100	92	79	46	16	--	--	--	--	--
PBA-606B-1	4.0 - 5.0	2	A-2-4	--	--	--	100	96	83	52	26	--	--	--	--	--

Appendix 8.0

Preliminary Construction Cost Estimates

CONSTRUCTION COST ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No. 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 12-Jul-23
Checked By: A. Eldridge **Date:** 12-Jul-23

SMF 601A

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	1.5	AC	$16,864.56	$25,297
2	120-1	Excavation, Regular	4897	CY	$12.17	$59,596
3	120-6	Embankment	1804	CY	$14.50	$26,158
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	2	EA	$4,764.01	$9,528
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	345	LF	$140.88	$48,604
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	60	LF	$357.17	$21,430
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	4237	SY	$3.30	$13,982
		TOTAL: POND CONSTRUCTION				**$228,006**

SMF 601B

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	2.30	AC	$16,864.56	$38,788
2	120-1	Excavation, Regular	14204	CY	$12.17	$172,863
3	120-6	Embankment	449	CY	$14.50	$6,511
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	1	EA	$4,764.01	$4,764
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	290	LF	$140.88	$40,855
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	60	LF	$357.17	$21,430
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	4661	SY	$3.30	$15,381
		TOTAL: POND CONSTRUCTION				**$324,003**

Note: Unit Prices per FDOT Statewide Item Average Unit Cost from 2022/12/01 to 2023/05/31
or FDOT Area 10 Item Average Unit Cost from 2022/06/01 to 2023/05/31

CONSTRUCTION COST ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No. 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 12-Jul-23
Checked By: A. Eldridge **Date:** 12-Jul-23

SMF 602A

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	1.3	AC	$16,864.56	$21,924
2	120-1	Excavation, Regular	3162	CY	$12.17	$38,482
3	120-6	Embankment	3333	CY	$14.50	$48,329
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	1	EA	$4,764.01	$4,764
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	220	LF	$140.88	$30,994
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	60	LF	$357.17	$21,430
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	3960	SY	$3.30	$13,068
		TOTAL: POND CONSTRUCTION				**$202,409**

SMF 602B

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	2.10	AC	$16,864.56	$35,416
2	120-1	Excavation, Regular	11020	CY	$12.17	$134,113
3	120-6	Embankment	993	CY	$14.50	$14,399
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	1	EA	$4,764.01	$4,764
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	255	LF	$140.88	$35,924
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	60	LF	$357.17	$21,430
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	4414	SY	$3.30	$14,566
		TOTAL: POND CONSTRUCTION				**$284,023**

Note: Unit Prices per FDOT Statewide Item Average Unit Cost from 2022/12/01 to 2023/05/31
or FDOT Area 10 Item Average Unit Cost from 2022/06/01 to 2023/05/31

CONSTRUCTION COST ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No. 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 12-Jul-23
Checked By: A. Eldridge **Date:** 12-Jul-23

SMF 603A

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	3.6	AC	$16,864.56	$60,712
2	120-1	Excavation, Regular	16928	CY	$12.17	$206,014
3	120-6	Embankment	2801	CY	$14.50	$40,615
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	2	EA	$4,764.01	$9,528
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	400	LF	$140.88	$56,352
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	60	LF	$357.17	$21,430
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	5917	SY	$3.30	$19,526
		TOTAL: POND CONSTRUCTION				**$437,587**

SMF 603B

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	4.10	AC	$16,864.56	$69,145
2	120-1	Excavation, Regular	21273	CY	$12.17	$258,892
3	120-6	Embankment	2706	CY	$14.50	$39,237
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	2	EA	$4,764.01	$9,528
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	360	LF	$140.88	$50,717
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	60	LF	$357.17	$21,430
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	6393	SY	$3.30	$21,097
		TOTAL: POND CONSTRUCTION				**$493,456**

SMF 603/604B

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	5.70	AC	$16,864.56	$96,128
2	120-1	Excavation, Regular	38481	CY	$12.17	$468,314
3	120-6	Embankment	1786	CY	$14.50	$25,897
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	2	EA	$4,764.01	$9,528
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	335	LF	$140.88	$47,195
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	60	LF	$357.17	$21,430
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	8001	SY	$3.30	$26,403
		TOTAL: POND CONSTRUCTION				**$718,305**

Note: Unit Prices per FDOT Statewide Item Average Unit Cost from 2022/12/01 to 2023/05/31
or FDOT Area 10 Item Average Unit Cost from 2022/06/01 to 2023/05/31

CONSTRUCTION COST ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No. 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 12-Jul-23
Checked By: A. Eldridge **Date:** 12-Jul-23

SMF 604A

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	1.6	AC	$16,864.56	$26,983
2	120-1	Excavation, Regular	5908	CY	$12.17	$71,900
3	120-6	Embankment	1102	CY	$14.50	$15,979
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	1	EA	$4,764.01	$4,764
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	130	LF	$140.88	$18,314
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	60	LF	$357.17	$21,430
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	4391	SY	$3.30	$14,490
		TOTAL: POND CONSTRUCTION				**$197,272**

SMF 604B

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	1.40	AC	$16,864.56	$23,610
2	120-1	Excavation, Regular	4189	CY	$12.17	$50,980
3	120-6	Embankment	1999	CY	$14.50	$28,986
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	1	EA	$4,764.01	$4,764
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	190	LF	$140.88	$26,767
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	60	LF	$357.17	$21,430
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	3583	SY	$3.30	$11,824
		TOTAL: POND CONSTRUCTION				**$191,772**

SMF 603/604B

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	5.70	AC	$16,864.56	$96,128
2	120-1	Excavation, Regular	38481	CY	$12.17	$468,314
3	120-6	Embankment	1786	CY	$14.50	$25,897
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	2	EA	$4,764.01	$9,528
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	335	LF	$140.88	$47,195
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	60	LF	$357.17	$21,430
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	8001	SY	$3.30	$26,403
		TOTAL: POND CONSTRUCTION				**$718,305**

Note: Unit Prices per FDOT Statewide Item Average Unit Cost from 2022/12/01 to 2023/05/31
or FDOT Area 10 Item Average Unit Cost from 2022/06/01 to 2023/05/31

CONSTRUCTION COST ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No. 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 12-Jul-23
Checked By: A. Eldridge **Date:** 12-Jul-23

SMF 605A

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	4.00	AC	$16,864.56	$67,458
2	120-1	Excavation, Regular	24283	CY	$12.17	$295,524
3	120-6	Embankment	2633	CY	$14.50	$38,179
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	2	EA	$4,764.01	$9,528
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	320	LF	$140.88	$45,082
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	60	LF	$357.17	$21,430
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	6406	SY	$3.30	$21,140
		TOTAL: POND CONSTRUCTION				**$521,751**

Note: Unit Prices per FDOT Statewide Item Average Unit Cost from 2022/12/01 to 2023/05/31
or FDOT Area 10 Item Average Unit Cost from 2022/06/01 to 2023/05/31

CONSTRUCTION COST ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No. 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 12-Jul-23
Checked By: A. Eldridge **Date:** 12-Jul-23

SMF 606A

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	4.4	AC	$16,864.56	$74,204
2	120-1	Excavation, Regular	23245	CY	$12.17	$282,892
3	120-6	Embankment	2995	CY	$14.50	$43,428
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	2	EA	$4,764.01	$9,528
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	410	LF	$140.88	$57,761
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	60	LF	$357.17	$21,430
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	6623	SY	$3.30	$21,856
		TOTAL: POND CONSTRUCTION				**$534,508**

SMF 606B

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	3.10	AC	$16,864.56	$52,280
2	120-1	Excavation, Regular	9259	CY	$12.17	$112,682
3	120-6	Embankment	3629	CY	$14.50	$52,621
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	1	EA	$4,764.01	$4,764
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	120	LF	$140.88	$16,906
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	60	LF	$357.17	$21,430
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	8276	SY	$3.30	$27,311
		TOTAL: POND CONSTRUCTION				**$311,404**

Note: Unit Prices per FDOT Statewide Item Average Unit Cost from 2022/12/01 to 2023/05/31
or FDOT Area 10 Item Average Unit Cost from 2022/06/01 to 2023/05/31

CONSTRUCTION COST ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No. 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 12-Jul-23
Checked By: A. Eldridge **Date:** 12-Jul-23

SMF 607A

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	2.60	AC	$16,864.56	$43,848
2	120-1	Excavation, Regular	10496	CY	$12.17	$127,736
3	120-6	Embankment	2531	CY	$14.50	$36,700
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	1	EA	$4,764.01	$4,764
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	205	LF	$140.88	$28,880
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	60	LF	$357.17	$21,430
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	5348	SY	$3.30	$17,648
		TOTAL: POND CONSTRUCTION				**$304,417**

SMF 607B

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	2.60	AC	$16,864.56	$43,848
2	120-1	Excavation, Regular	10953	CY	$12.17	$133,298
3	120-6	Embankment	2447	CY	$14.50	$35,482
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	3	EA	$4,764.01	$14,292
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	550	LF	$140.88	$77,484
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	400	LF	$357.17	$142,868
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	4948	SY	$3.30	$16,328
		TOTAL: POND CONSTRUCTION				**$487,010**

Note: Unit Prices per FDOT Statewide Item Average Unit Cost from 2022/12/01 to 2023/05/31
or FDOT Area 10 Item Average Unit Cost from 2022/06/01 to 2023/05/31

CONSTRUCTION COST ESTIMATES

Project: SR 29 FROM NEW MARKET ROAD TO SR 82
FPID No. 417540-6-52-01
FDA No.: 574.00

Designed By: G. Brown **Date:** 12-Jul-23
Checked By: A. Eldridge **Date:** 12-Jul-23

North Regional SMF

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	9.9	AC	$16,864.56	$166,959
2	120-1	Excavation, Regular	51644	CY	$12.17	$628,507
3	120-6	Embankment	6995	CY	$14.50	$101,428
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	1	EA	$4,764.01	$4,764
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	100	LF	$140.88	$14,088
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	100	LF	$357.17	$35,717
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	13859	SY	$3.30	$45,735
		TOTAL: POND CONSTRUCTION				**$1,020,608**

South Regional SMF

LINE NO.	ITEM NO.	DESCRIPTION	QTY	U/M	UNIT PRICE	EXTENDED PRICE
1	110-1-1	Clearing & Grubbing	8.60	AC	$16,864.56	$145,035
2	120-1	Excavation, Regular	58343	CY	$12.17	$710,034
3	120-6	Embankment	6052	CY	$14.50	$87,754
4	425-1-549	Inlet (Dt Bot) (Type D) (<10') (Modify)	1	EA	$10,224.48	$10,224
5	425-2-61	Manholes (P-8) (<10')	1	EA	$4,764.01	$4,764
6	430-175-118	Pipe Culv (Opt Matl) (Round) (18" S/CD)	100	LF	$140.88	$14,088
7	430-175-142	Pipe Culv (Opt Matl) (Round) (42" S/CD)	100	LF	$357.17	$35,717
8	430-982-125	Mitered End Section (Optional Round) (18" CD)	1	EA	$3,140.31	$3,140
9	430-982-140	Mitered End Section (Optional Round) (42" CD)	1	EA	$10,045.54	$10,046
10	570-1-2	Performance Turf (Sod)	11637	SY	$3.30	$38,402
		TOTAL: POND CONSTRUCTION				**$1,059,205**

Note: Unit Prices per FDOT Statewide Item Average Unit Cost from 2022/12/01 to 2023/05/31
or FDOT Area 10 Item Average Unit Cost from 2022/06/01 to 2023/05/31

Appendix 9.0

Correspondence

9.1 Regional Treatment Stakeholder Meeting Minutes No. 1

MEETING MINUTES

Project Number: 417540-1 thru 417540-5 and 434490-1
Project Description: SR 29 Corridor Improvements
Meeting Name: SR 29 Regional Treatment Partnering Meeting No. 1
Date/Time: 5.13.2019 – 10:00 AM
Location: FDOT – D1 SWAO
Minutes Prepared By: PGA

Attendees:
See Attached Sign-in Sheets

Exhibits: See attached.

The following notes reflect our understanding of the discussions and decisions made at this meeting. If you have any questions, additions, or comments, please contact us. We will consider the minutes to be accurate unless written notice is received within 5 working days of the date issued.

Meeting Minutes:

1. **Introductions**
    a. The meeting began with brief introductions
2. **FDOT's planned improvement projects**
    a. PD&E Study: 417540-1 - SR 29 North of Oil Well Road (Study on-going)
        i. Design Segments:
        ii. 417540-2 – SR 29 from Oil Well Road to Sunniland Nursery Road
        iii. 417540-3 – SR 29 from Sunniland Nursery Road to Agricultural Way
        iv. 417540-4 – SR 29 from Agricultural Way to CR 846 E
        v. 417540-5 – SR 29 from CR 846 E to New Market Road
    b. PD&E Study: 434490-1 - SR 29 from I-75 (Alligator Alley) to Oil Well Road (underway)
3. **Basin overview of proposed projects**
    a. The noted design segments are all within the Silver Strand Basin.
    b. The flow is carried from north to south via the Barron River Canal that is adjacent to SR 29 on the east side of the roadway.
4. **Regional stormwater treatment opportunities**
    Several opportunities were discussed amongst the stakeholders to provide regional stormwater treatment for the corridor. Below is a list of specific opportunities discussed and key highlights for each
    a. Repurpose existing borrow pits south of Oil Well Road
        i. This would locate the regional facility furthest downstream to capture and treat the maximum amount of the stormwater runoff
        ii. Per Russell Priddy, the borrow pits east of SR 29 are currently being used as a high-end fishing camp and would not be ideal
        iii. The borrow pits west of SR 29 are potentially available, but culverts or a bridge would be needed to cross SR 29 and considerations for crossing the powerline easement along the west side of SR 29
        iv. The Eastern Collier Habitat Conservation Plan (HCP) is within this area west of SR 29

v. The HCP was recently updated and is expected to be finished in September
vi. The quadrants at the intersection of SR 29 and Oil Well Road are currently slated for development

b. Pregnant Snake
i. This would involve widening of the Barron canal along SR 29 to provide treatment of the stormwater.
ii. Ditch blocks and/or gates would be required to provide the required treatment and attenuation
iii. The land owners expressed concerns with this option since the burden would likely be on a single landowner
iv. There is the potential that the canal widening could be implemented at several locations along the canal
v. The widened canal option may be more difficult to maintain since equipment would have difficulty reaching the middle.

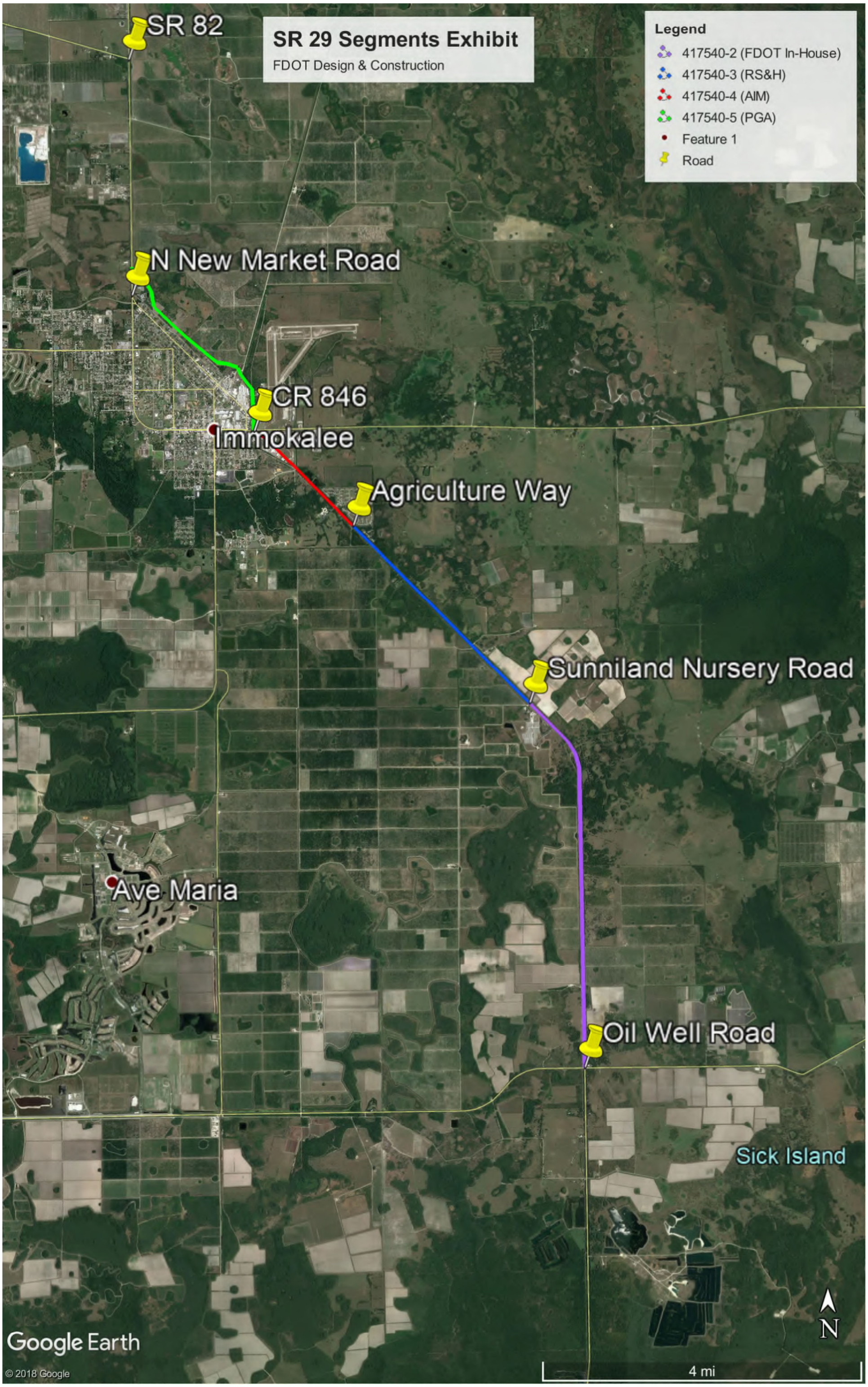
5. **Permitting and water quality**
a. SWFWMD district staff agreed that the regional approach would be acceptable for providing stormwater treatment
b. The hydraulics of any regional system would need to be explored to ensure no adverse impact
c. The department will develop a model to help demonstrate no adverse impact
d. The downstream end of the basin is considered an Outstanding Florida Water (OFW) and direct discharges require an additional 50% of the required treatment volume to be provided.
e. It was discussed that a single permit may be obtained for the regional facility in which water quality credits would be created. Each design segment would then modify the permit to deduct the water quality credits needed for each segment.

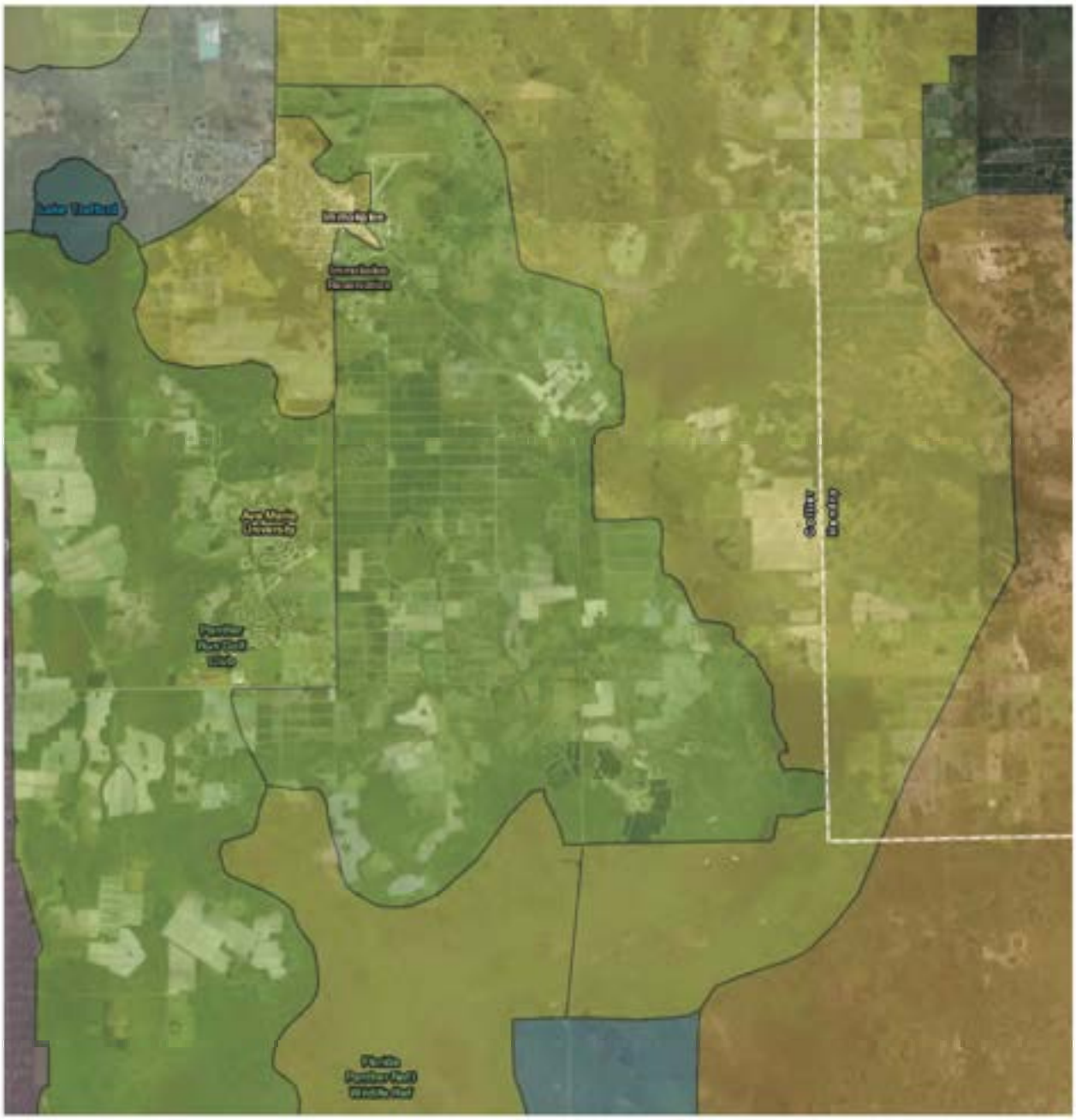
6. **Cost sharing opportunities**
a. The goal of the regional treatment is to create Win-Win-Win opportunities for all of the stakeholders.
b. FDOT is capable of providing initial capital cost to develop and construct a regional facility, but prefers the local government or other stakeholders participate in the maintenance of the facilities (regional treatment pond and Barron River Canal)
c. FDOT suggested a special taxing district or water control district could be created to provide funding for the maintenance of the regional facility and canals
i. The land owners expressed concern that the burden would be unfairly placed upon them.
ii. It was noted that the Immokalee area would be expected to participate since this area is part of the basin. Additionally, as the land owners hope to develop their land, the burden would be transferred to the new owners.
iii. The landowners are potentially open to this framework depending on the structure of the water control district/special taxing district and level of participation of all stakeholders
iv. It was noted that maintenance of the Barron Canal had been in flux for several years, until Collier County recently received easements and accepted responsibility for the maintenance of the canal.

7. **Miscellaneous discussions**
a. FEMA Floodplain
i. Collier County stated that current FEMA maps will be revised based on updated LIDAR
ii. The current model used to develop flood stages is based on a proprietary 2D surface water model
iii. Brent expressed concerns current trends in regional watershed modeling and inquired if the County had plans to ensure long term efficiency and vitality to the regional modeling.
b. County regional option within Immokalee
i. The County was exploring a potential regional pond for flood relief within the Immokalee area and to provide water quality
ii. This site was located at the confluence of the Madison Avenue Ditch and Eutopia Canal
iii. FDOT identified this site as a potential option for partnering

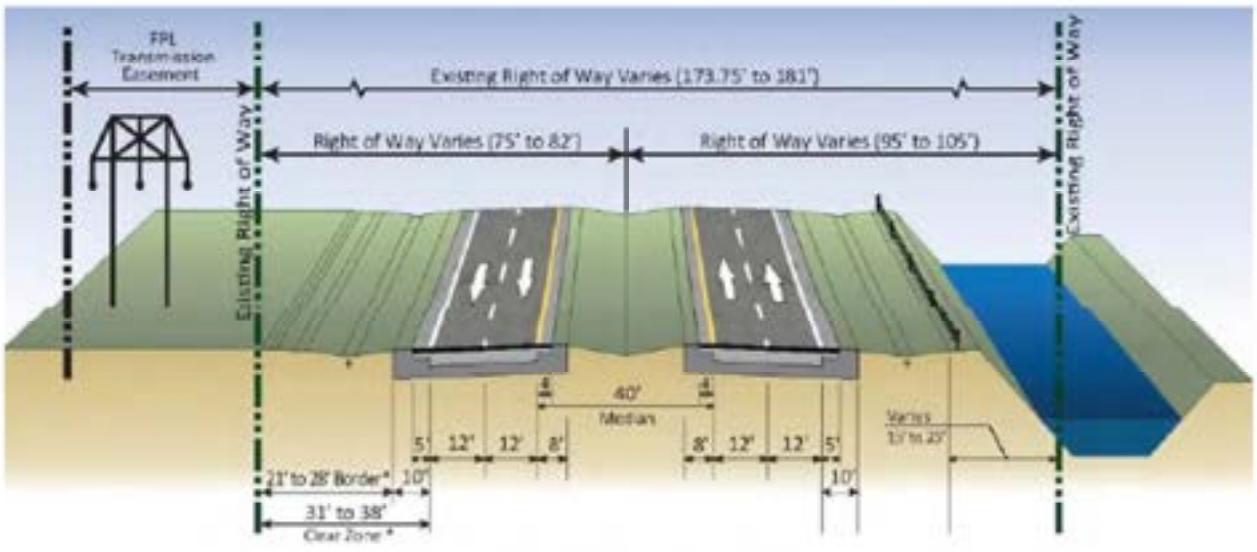
iv. This site is currently proposed for development and the County/FDOT will need to explore other locations

c. Other County improvements
    i. The County is currently exploring other options to alleviate the flooding within Immokalee
        1. The County is exploring rerouting flow from Eutopia Canal to the north and east of the airport
        2. The county is currently designing the bridges along CR 846 to accommodate the additional flow
d. Canal maintenance
    i. The county recently received drainage easements to maintain the SR 29 Canal
    ii. Access to the canal needs to be considered
    iii. The canal accumulates a lot a floating debris (trash) and any improvements should include considerations for trash removal.


SR 29 Segments Exhibit
FDOT Design & Construction
Legend
417540-2 (FDOT In-House)
417540-3 (RS&H)
417540-4 (AIM)
417540-5 (PGA)
Feature 1
Road
SR 82
N New Market Road
CR 846
Immokalee
Agriculture Way
Sunniland Nursery Road
Ave Maria
Oil Well Road
Sick Island
N
Google Earth
© 2018 Google
4 mi

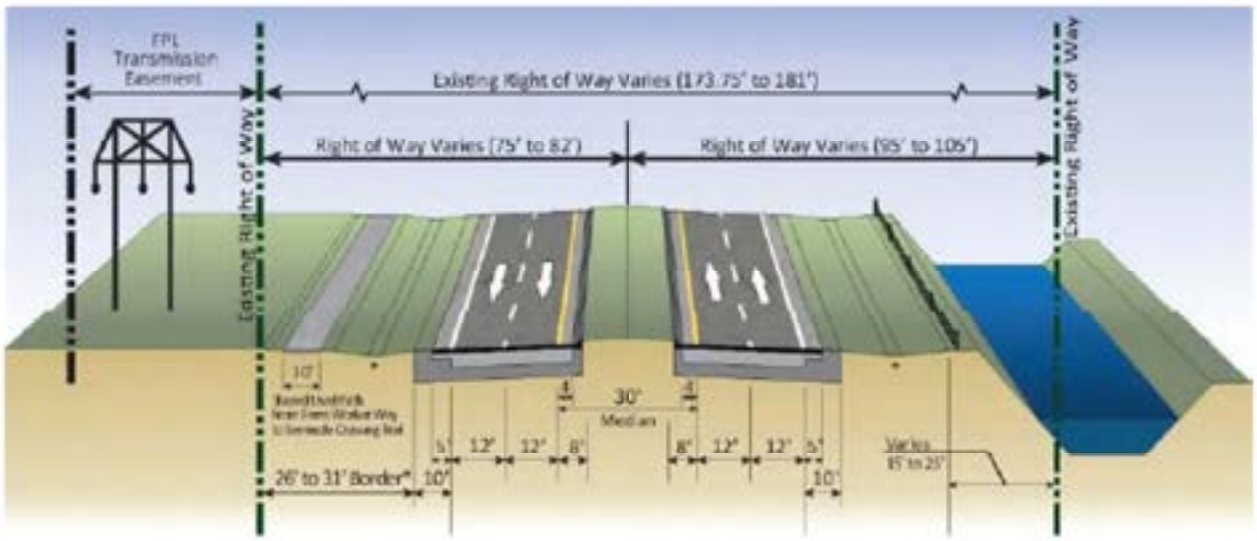


SR 29 ROADWAY TYPICAL SECTIONS



* Clear Zone and Border Width Require Design Variations
+ DBI if warranted

SEGMENTS: 417540-2 (FDOT IN-HOUSE), 417540-4 (RS&H), 417540-4 (AIM)



* Border Width Requires Design Variation
+ DBI as warranted

SEGMENTS: 417540-4 (AIM)

* 10' Border Width Requires Design Variation Where Constrained by 100' Existing ROW

SEGMENTS: **417540-4 (AIM)**, **417540-5 (PGA)**

SEGMENTS: **417540-5 (PGA)**

SR 29 Regional Treatment Partnering Meeting

5/13/2019

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List of Call-in Attendees:
Alan Eldridge
Amy Perez
Gabriela Garcia
Bradley Jackson
Jerry Kurtz
Kaylene Johnson
Laura Layman
Lisa Koehler
Rob Myers
Robert Garrigues
Melissa Roberts
Scott Ellis

9.2 Regional Treatment Stakeholder Meeting Minutes No. 2

MEETING MINUTES

Project Number: 417540-1 thru 417540-5 and 434490-1
Project Description: SR 29 Corridor Improvements
Meeting Name: SR 29 Regional Treatment Partnering Meeting No. 2
Date/Time: 2.11.2020 – 10:00 AM
Location: FDOT – D1 SWAO
Minutes Prepared By: PGA

Attendees:
See Attached Sign-in Sheets

The following notes reflect our understanding of the discussions and decisions made at this meeting. If you have any questions, additions, or comments, please contact us. We will consider the minutes to be accurate unless written notice is received within 5 working days of the date issued.

Meeting Minutes:

1. **Introductions**
    a. The meeting began with brief introductions
2. **FDOT's planned improvement projects – FDOT provided a status update on the current planned projects. A detailed account of the items discussed are listed below.**
    a. PD&E Study: 417540-1 - SR 29 North of Oil Well Road (LDCA expected in March)
    b. PD&E Study: 434490-1 - SR 29 from I-75 (Alligator Alley) to Oil Well Road (PD&E phase)
    c. Design Segments (-2 to -5) Updates:
        i. Survey Status
            1. Survey Complete
            2. Canal Survey still outstanding (March)
        ii. Typical Sections Approved
            1. There were brief discussions for the approved typical sections and the components of the typical sections
            2. Several local landowners present noted the significant use of bicycles south of Immokalee along SR 29 and Oil Well Road
        iii. Upcoming Major Milestones
            1. Line & Grade Meetings (Summer 2020)
            2. Pond Siting Report (Fall 2020)
            3. Floodplain Model
                a. The development of the floodplain model will utilize ICPR V4
                b. It was discussed that the floodplain would focus on the Immokalee Area and Barron River Canal, but could be expanded to incorporate offsite areas if needed
                c. It was requested that local landowners / agriculture operators provide input in development of the exact drainage basin for the Barron River Canal
                d. The private landowners stated they would be willing to share existing data and provide input
                e. The county is currently not managing any gage data for this area

f. The County stated that there is wide range of flow depths experienced in the Barron River Canal
g. There was discussion about the installation of a data logger to aid in the calibration of the model
    i. The FDOT does not have a system in place for installing and collecting this information
h. Russell Priddy noted that the Barron River Canal will breach the east side of the canal bank at times of high flow

3. **Regional stormwater treatment opportunities – The FDOT prepared some potential options for regional treatment for review at the meeting. See Attachment 1 for potential options reviewed during the meeting. A discussion for each option is detailed below.**
    a. Option 1 – Borrow Pits
        i. This option involves using the existing borrow pits west of SR 29 and south of Oil Well Road
        ii. Tom Jones stated that there is currently a Collier family house located west of this proposed option
        iii. Tom Jones also stated that the area west of SR 29 is proposed for personal use
        iv. Brent explained that a bridge or culvert would be proposed on SR 29 to allow for the diversion of the Barron River Canal water into the borrow pits
        v. Brent explained some options about the discharging the regional pond to the south
            1. One option was to allow natural sheet flow to the wetlands in the southwest, which was not favorably received by the property owner representatives
            2. Another option was discussed that would require a ditch outfall that would connect south to the Panther Refuge
        vi. There was concern about accepting "dirty" water into the borrow pits and concerns about sheet flow discharges
        vii. Russell Priddy briefly discussed the potential of using some of the borrow pits to the east of SR 29 located at the southern end of his property
            1. The borrow pit evaluated was about 20 acres
            2. Russell mentioned that the OK slough comes in from the east and that the borrow pit could discharge south to OK slough and to Big Cypress National Preserve
    b. Option 2 - Pregnant Snake
        i. This option involves providing a series of smaller sites along the eastside of the Barron River Canal
        ii. Brent explained that this option has the benefit of "treating as we" go thus helping with permitting requirements
        iii. There was concern about the impacts these options may have on the developable property
        iv. These ponds could be adjusted to accommodate future development and perhaps used to accept adjacent stormwater runoff from future developments
        v. The landowner representatives asked for specific locations and they may request areas to avoid
    c. Option 3 – North Site
        i. This option is located just south of Immokalee and would likely not provide the required treatment for the entire corridor and would have to be used in combination with other alternatives
        ii. This option would be located downstream of the confluence of two canals that exit the Immokalee area
    d. Option 4 – Southwest Florida Comprehensive Plan
        i. This option was identified as part of larger study by SFWMD and USACE
        ii. This is currently not an active project per recent correspondence with SFWMD and USACE
        iii. There is a potential of involving additional partners to achieve the goal of regional treatment

4. **Cost sharing opportunities**
    a. FDOT is interested in providing initial capital cost to develop and construct a regional treatment facility, but prefers other stakeholders participate in the maintenance of the facilities
    b. The County is concerned that funds are limited for maintenance of the canal
    c. A special taxing district or water control district could be created to provide funding for the maintenance of the regional facility and canals
        i. This option was not well received amongst the landowners
5. **Miscellaneous discussions**
    a. Canal Maintenance
        i. The County has now received the easements to perform maintenance of the Barron River Canal
            1. The County is currently developing boat ramps to allow for equipment to maintain the Barron River Canal
            2. Russell requested that the County coordinate with him about the exact location of proposed boat ramps
    b. -5 PGA (PGA Segment)
        i. There was concern on exact alignment on the SR 29 corridor
        ii. PGA mentioned that there is a preferred corridor alignment identified in the PD&E study
        iii. A separate meeting will be scheduled to discuss the particulars of the -5 alignment
    c. Landowner coordination
        i. It was discussed that moving forward that landowners would be open to meet or coordinate with individual segments for proposed improvements within their property

6. **Action Items**
    a. PGA to schedule a meeting with the landowners to discuss the alignment within the -5 segment
    b. PGA to coordinate with landowners to help define the drainage basin for the Barron River Canal
    c. PGA to coordinate with landowners / agricultural operations within the area to define offsite drainage
    d. The County to coordinate the placement of the boat ramps within the Barron River Canal
    e. FDOT will coordinate with the County and SFWMD about the placement of data logger within the Barron River Canal

SIGN-IN SHEET

Project Number: 417540-1 thru 417540-5
Project Description: SR 29 Corridor Improvements
Meeting Name: SR 29 Regional Treatment Partnering Meeting No. 2
Date/Time: 2.11.2020 – 10:00 AM
Location: FDOT – D1 SWAO

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FDOT

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Attachment 1

FDOT

SR 29 Regional Option Overview

REGIONAL OPTION 1 - BORROW PITS

CANAL

29

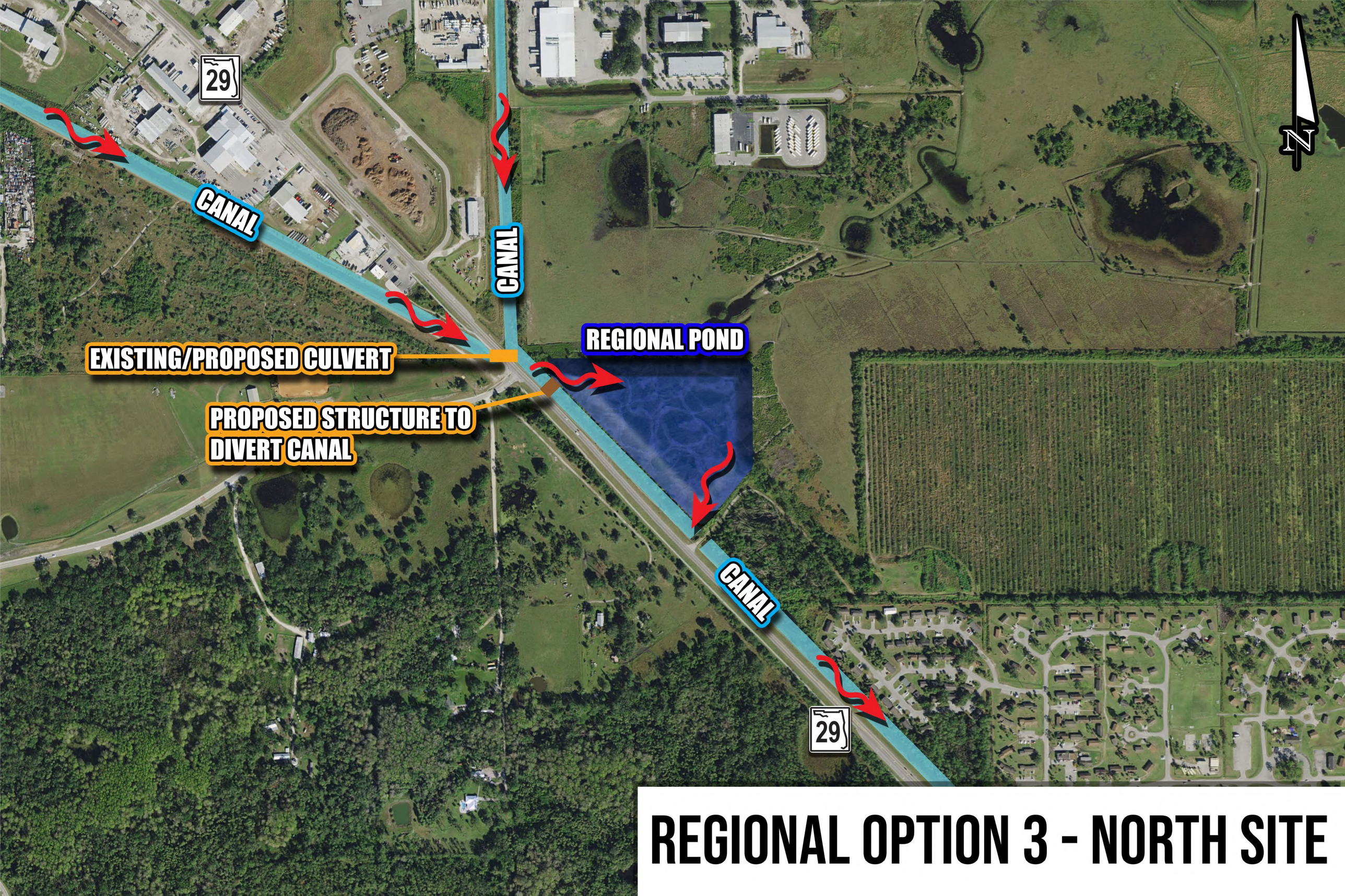
PROPOSED STRUCTURE TO DIVERT CANAL

REGIONAL POND

N

CANAL

REGIONAL OPTION 2 - PREGNANT SNAKE



REGIONAL OPTION 3 - NORTH SITE

SOUTHWEST FLORIDA COMPREHENSIVE WATERSHED PLAN

a habitat quilt tied by THREADS OF WATER reconnecting a sustainable landscape

SWFCWP

Table ES-1. The 13 Functional Groups in the Southwest Florida Comprehensive Watershed Plan

FG #	Functional Group Name	Total # of Individual Projects within FG	Tier 1 Projects	Tier 2 Projects	Tier 3 Projects	Full Footprint (Acres)	Rough Order of Magnitude Cost Estimate (Detailed Field Work and Design Needed for Construction Cost Estimates)	Location	Restoration Intent / Qualitative Benefits Description	Potential NFS*
6	SR 29 / Barron River Flow-way Restoration	7	3	4	0	15,595	$279,270,000	Extends from Immokalee in northern Collier County south to the Gulf of Mexico as a narrow band through the center of the County along SR 29.	Reduce SR 29 Canal drainage impacts with a mix of weirs and canal plugs that will restore hydrologic and fire regimes in adjacent portions of Big Cypress National Preserve, Florida Panther National Wildlife Refuge, Fakahatchee Strand Preserve State Park, and Everglades National Park, as well as the biological connectivity between and productivity within these lands and their downstream estuaries.	Tier 1: SWFWMD, FDEP Tier 2: FWCC, FDACS, (State Forest Service) DOI, NPS, FDOT
56	Yucca Pens	8	6	2	0	14,548	$149,470,000	Covers 14,500 acres, located in northwestern Lee County, bordered by Gator Slough Canal to the south, Lee County / Charlotte County line to the north, US 41 to the east and Burnt Store Road (CR 765) to the west.	Restore sheetflow in the largest remaining hydric pine flatwoods west of US 41, reduce damaging flows to Matlacha Pass and contribute to a wildlife corridor between Charlotte Harbor and Lake Okeechobee.	Tier 1: SWFWMD, FDEP Tier 2: FWCC, FDACS, (State Forest Service)
70	Coastal Fakahatchee	8	5	1	2	50,524	$57,920,000	South central Collier County extending from just north of I-75, south to the Gulf of Mexico.	Improve sheet flow from within Fakahatchee Strand to Everglades National Park and through Picayune Strand to Ten Thousand Islands National Wildlife Refuge.	Tier 1: SWFWMD, FDEP Tier 2: FWCC, FDACS, (State Forest Service) DOI, NPS, ENP Tier 3: Naples Pathways Coalition, River of Grass Greenway, Lee County, Arthur R. Marshall Foundation & Florida Environmental Institute
34	Estero Creeks and Headwater Flow-ways	38	21	8	9	47,899	$2,132,760,000	Lee County, bordered to the north by the Caloosahatchee River watershed, to the west by San Carlos and Estero Bays, and to the south by the Lee County line, extending inland east of I-75 to the Corkscrew Watershed Functional Group (5).	Restore and protect headwater and tributary flows to Florida's first aquatic preserve, the Estero Bay Aquatic Preserve, while connecting the inland Corkscrew Swamp (5) and Tidal Caloosahatchee (29T) Functional Groups.	Tier 1: SWFWMD, FDEP Tier 2: FWCC Tier 3: Charlotte Harbor National Estuary Program, Fri of Estero Bay.
73	South Caloosahatchee Ecoscape	7	5	2	0	29,641	$779,380,000	Narrow corridor extending east, west and south of LaBelle, bordered on the north by the Caloosahatchee River and south by the Okaloacoochee Slough Functional Group (11).	Protect the Florida panther dispersal corridor connecting primary southwest Florida panther habitat across the southern portion of the Caloosahatchee watershed to northern dispersal areas; restore hydrology and plant communities along this corridor.	Tier 1: SWFWMD, FDEP Tier 2: FWCC, FDACS, (State Forest Service) DOI, NPS, ENP
29 T	Tidal Caloosahatchee Creeks	53	4	14	35	105,446	$149,780,000	Includes oxbows and tidal creeks entering the Caloosahatchee River and estuary from the northwest corner of Cape Coral and extending east to the S-79 navigation lock, including numerous creeks on the north side of the Caloosahatchee River and Billy Creek, Orange River and its tributaries on the south side of the Caloosahatchee River.	Restore natural hydrology, water quality and habitat continuity of major tidal tributaries and recreate a series of oxbows to slow flows and provide littoral habitat in the tidal portion of the Caloosahatchee River.	Tier 1: SWFWMD, FDEP Tier 2: FWCC, FDACS, (State Forest Service) DOI, NPS, ENP Tier 3: Naples Pathways Coalition, River of Grass Greenway, Lee County, Arthur R. Marshall Foundation & Florida Environmental Institute
29 F	Freshwater Caloosahatchee Creeks	55	6	43	6	248,448	$375,380,000	At the intersection of the Glades, Lee and Hendry counties along both the north and south sides of the Caloosahatchee River with S-79 navigation lock as the western boundary and the city of LaBelle approximating the eastern boundary.	Restore natural hydrology, water quality and habitat continuity of major tributaries and recreate a series of oxbows to slow flows and provide littoral habitat in the freshwater portion of the Caloosahatchee River.	Tier 1: SWFWMD, FDEP Tier 2: FWCC, FDACS, (State Forest Service) DOI, NPS, ENP Tier 3: Naples Pathways Coalition, River of Grass Greenway, Lee County, Charlotte Harbor NEP
15	Belle Meade Flow-way	13	11	2	0	49,932	$2,055,800,000	Southwestern Collier County, includes a large swath of land extending from I-75 south to US 41, bordered to the east by the Picayune Strand Restoration Project and to the west by CR 951.	Restore hydrologic and fire regimes; control a severe invasion of exotic vegetation in a major flow-way; protect a large area of important habitat for wading birds and wide-ranging wildlife.	Tier 1: SWFWMD, FDEP Tier 2: FWCC, FDACS, (State Forest Service)
28	Babcock Ranch	6	6	0	0	119,338	$2,806,550,000	At the intersection of the Lee, Charlotte, and Glades counties north of the Caloosahatchee River along the boundary between the Caloosahatchee River watershed and watersheds outside the SWFCWP study area to the north.	Secure a connection between Cecil Webb Wildlife Management Area and the North Caloosahatchee Ecoscape Functional Group (41) in the east-west corridor from Charlotte Harbor to Lake Okeechobee, including Telegraph Swamp.	Tier 1: SWFWMD, FDEP

SR 29 BARRON RIVER FLOWWAY RESTORATION

STATEMENT OF INTENT

Reduce SR 29 Canal drainage impacts with a mix of weirs and canal plugs that will restore hydrologic and fire regimes in adjacent portions of Big Cypress National Preserve, Florida Panther National Wildlife Refuge, Fakahatchee Strand Preserve State Park, and Everglades National Park. In addition, restore the biological connectivity between, and productivity within these lands and their downstream estuaries.

GEOGRAPHIC LOCATION

The SR 29/Barron River Flow-way Restoration functional group (FG) extends from Immokalee in northern Collier County south to the Gulf of Mexico as a narrow band through the center of the county along SR 29.

ENVIRONMENTAL CONCERNS

This landscape was originally dominated by hydric pine flatwoods and herbaceous wetlands, with cypress wetlands becoming more widespread to the south. Near the coast, the freshwater wetlands graded first into brackish herbaceous marshes and then dense mangrove forests in the Ten Thousand Islands. Shallow overland water flows occurred for much of the wet season and into the dry season in the deeper strands and sloughs, generally moving in a south-southwesterly direction. As a result of development, much of the original landscape in the northern portion of this area has been converted to intensive agriculture, drained via the SR 29 canal. Much of the southern portion of the area remains ecologically intact and has been brought into public ownership for conservation purposes. Although under conservation ownership, overdrainage and channelization of flows associated with the SR 29 Canal and the subsequent loss of natural sheet flow have negatively impacted the Florida Panther National Wildlife Refuge (FPNWR), Fakahatchee Strand Preserve State Park (FSPSP), Big Cypress National Preserve (BCNP), and Everglades National Park (ENP). Disruption of the local hydrology has led to changes in both plant and animal communities, as well as the natural fire regime. The canal has caused groundwater drawdowns in the adjacent public lands, potentially out to a mile from the canal during drier periods. Existing canal structures, in varying states of repair, are ineffectual in maintaining groundwater levels. Culverts and bridges along SR 29, although adequate to protect the road from flooding, are not sufficiently frequent to allow equalization of shallow surface water levels on most of the lands along each side of the road. Wildlife mortality is also a major concern in this area due to high speed traffic on SR 29. Due to its location in a tidally influenced area, this FG is likely to be impacted by climate change (refer to **Section 2**).

ENVIRONMENTAL SOLUTIONS

Hydrologic restoration would be achieved primarily through alterations to the SR 29 Canal. Overdrainage of lands north of the conservation lands would be addressed through the installation of step-down weirs at approximately 0.5 to 1 foot topographic contour intervals along the canal. The primary advantage of the weirs is increased dry season groundwater levels and aquifer recharge without increasing flooding. Increased groundwater levels reduce fire hazards during dry periods due to the higher moisture content of soils and vegetation, and would also buffer against freeze damage to tropical vegetation and agricultural crops during winter cold spells. To restore sheetflow through the conservation lands, the SWFCWP proposes filling at least 50% of the SR 29 canal with a series of long plugs placed in locations that would promote flows though the historic sloughs. Maintenance of existing levels of flood control north of the filled portion of the canal would be achieved by construction of a pump station and spreader system at the north end of the FPNWR and BCNP, similar to those currently being constructed as part of the Picayune Strand Restoration Project. The spreader system, coupled with improved conveyance under SR 29, would facilitate the rapid reestablishment of sheetflow below the pump station. In addition, construction of wildlife crossings at key locations along SR 29 and CR 858 would significantly reduce mortality of the larger, wide-ranging mammals in this area.

IMPLEMENTATION STRATEGY

This FG is designed to restore the area's natural hydrologic and fire regimes, which are the dominant natural ecological processes sustaining the landscape. This will involve restoration of hydrologic and landscape connectivity between the FPNWR, FSPSP, BCNP, and ENP, which in turn will facilitate overland sheetflows, the elimination of point discharges to the Ten Thousand Islands, a more natural fire regime, and help to minimize the occurrence of exotic species. The parks provide refuge to numerous unique and/or listed species, including the Everglades mink and a large number of species of orchids and bromeliads, all of which are expected to benefit from the implementation of the recommended components. Several wide-ranging large mammals will particularly benefit from the landscape connectivity provided by this FG. The primary importance of the SR 29 Barron River Flow-way Restoration is to reconnect conservation lands on the two sides of SR 29. In addition, to the benefits associated with improved hydrologic and fire regimes as a result of filling the canal in these areas and the elimination of point discharges to the coastal waters, a reduced level of development along this corridor will facilitate wildlife movements across this connector and control of invasive native and exotic vegetation within the FG as well as on adjacent public lands.

IMAGES

Clockwise from top left: Great blue heron and young (*Ardea herodias*), courtesy of Kevin T. Edwards, Charlotte County; Looking south along the SR 29 Canal, courtesy of Ali Rezaie, U.S. Army Corps of Engineers; Florida panther (*Puma concolor coryi*) in the Florida panther NWR, courtesy of Larry W. Richardson; String lily (*Crinum americanum*), courtesy of Jean McCollom, Florida Fish and Wildlife Conservation Commission. Bottom: Aerial view of flatwoods and hardwood hammock plant communities and agricultural lands in the vicinity of the SR 29 Canal, courtesy of Angie Dunn, U.S. Army Corps of Engineers.

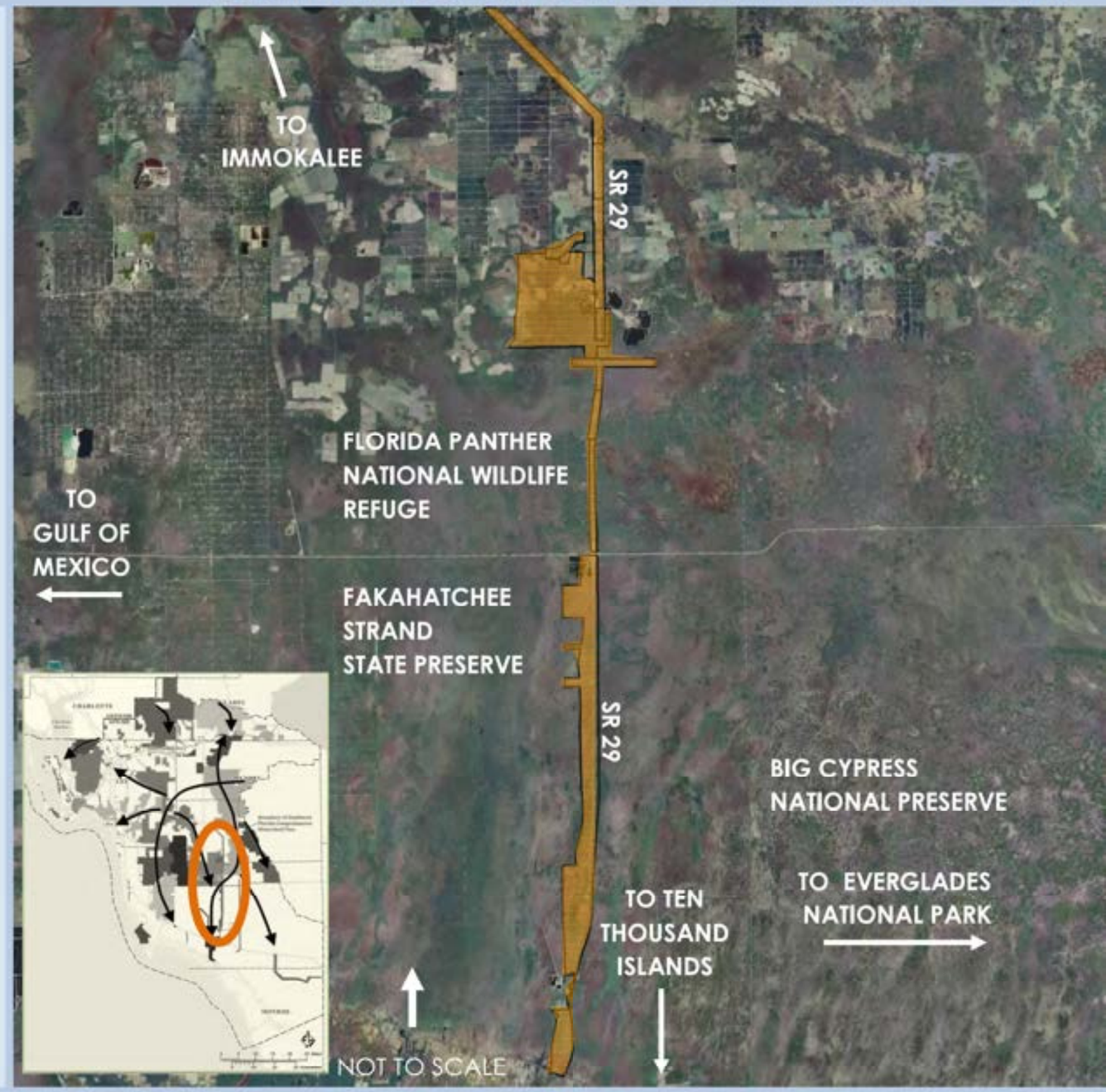


TABLE 9-1: FUNCTIONAL GROUP SUMMARY

FG #	TITLE	FULL FOOTPRINT (ACRES)	BARE FOOTPRINT, EXCLUDING AGRICULTURAL AND URBAN LANDS (ACRES)	LOCATION	RESTORATION INTENT
6	SR 29 / Barron River Flow-way Restoration	15,595	15,595	Extends from Immokalee in northern Collier County south to the Gulf of Mexico as a narrow band through the center of the county along SR 29.	Reduce SR 29 Canal drainage impacts with a mix of weirs and canal plugs that will restore hydrologic and fire regimes in adjacent portions of Big Cypress National Preserve, Florida Panther National Wildlife Refuge, Fakahatchee Strand Preserve State Park, and Everglades National Park, as well as the biological connectivity between and productivity within these lands and their downstream estuaries.
56	Yucca Pens	14,548	14,548	Covers 14,500 acres, located in northwestern Lee County, bordered by Gator Slough Canal to the south, Lee County / Charlotte County line to the north, US 41 to the east and Burnt Store Road (CR 765) to the west.	Restore sheetflow in the largest remaining hydric pine flatwoods west of US 41, reduce damaging flows to Matlacha Pass, and contribute to a wildlife corridor between Charlotte Harbor and Lake Okeechobee.
70	Coastal Fakahatchee	50,524	13,234	South central Collier County extending from just north of I-75, south to the Gulf of Mexico.	Improve sheet flow from within Fakahatchee Strand to Everglades National Park and through Picayune Strand to Ten Thousand Islands National Wildlife Refuge.
34	Estero Creeks and Headwater Flow-ways	47,899	44,973	Lee County, bordered to the north by the Caloosahatchee River watershed, to the west by San Carlos and Estero Bays, and to the south by the Lee County line, extending inland east of I-75 to the Corkscrew Watershed Functional Group (5).	Restore and protect headwater and tributary flows to Florida's first aquatic preserve, the Estero Bay Aquatic Preserve, while connecting the inland Corkscrew Swamp (5) and Tidal Caloosahatchee (29T) Functional Groups.
73	South Caloosahatchee Ecoscape	29,641	29,641	Narrow corridor extending east, west and south of LaBelle, bordered on the north by the Caloosahatchee River and south by the Okaloacoochee Slough Functional Group (11).	Protect the Florida panther dispersal corridor connecting primary southwest Florida panther habitat across the southern portion of the Caloosahatchee watershed to northern dispersal areas; restore hydrology and plant communities along this corridor.
29T	Tidal Caloosahatchee Creeks	105,446	10,731	Includes oxbows and tidal creeks entering the Caloosahatchee River and estuary from the northwest corner of Cape Coral and extending east to the S-79 navigation lock, including numerous creeks on the north side of the Caloosahatchee River and Billy Creek, and Orange River and its tributaries on the south side of the Caloosahatchee River.	Restore natural hydrology, water quality and habitat continuity of major tidal tributaries and recreate a series of oxbows to slow flows and provide littoral habitat in the tidal portion of the Caloosahatchee River.
29F	Freshwater Caloosahatchee Creeks	248,448	11,343	At the intersection of the Glades, Lee, and Hendry counties along both the north and south sides of the Caloosahatchee River with S-79 navigation lock as the western boundary and the City of LaBelle approximating the eastern boundary.	Restore natural hydrology, water quality, and habitat continuity of major tributaries and recreate a series of oxbows to slow flows and provide littoral habitat in the freshwater portion of the Caloosahatchee River.
15	Belle Meade Flow-way	49,932	49,932	Southwestern Collier County includes a large swath of land extending from I-75 south to US 41, bordered to the east by the Picayune Strand Restoration Project and to the west by CR 951.	Restore hydrologic and fire regimes; control a severe invasion of exotic vegetation in a major flow-way; protect a large area of important habitat for wading birds and wide-ranging wildlife.
28	Babcock Ranch	119,338	119,338	At the intersection of the Lee, Charlotte, and Glades counties north of the Caloosahatchee River along the boundary between the Caloosahatchee River watershed and watersheds outside the SWFCWP study area to the north.	Secure a connection between Cecil Webb Wildlife Management Area and the North Caloosahatchee Ecoscape Functional Group (41) in the east-west corridor from Charlotte Harbor to Lake Okeechobee, including Telegraph Swamp.
11	Okaloacochee Slough	184,848	137,198	Originates in western Hendry County in a low gap on a ridgeline dividing the Caloosahatchee and Big Cypress Swamp watersheds, extending south through central Collier County to Fakahatchee Strand and other smaller strands flowing to the Ten Thousand Islands and Gulf of Mexico.	Restore the largest headwaters flow-way of the Big Cypress Swamp; protect one of the largest expanses of intact pine flatwoods and herbaceous wetlands remaining in southwest Florida; create a landscape corridor between the South Caloosahatchee Ecoscape Functional Group (73) and Big Cypress Swamp.

Attachment 2

Support Information

STATE OF FLORIDA

DEPARTMENT OF TRANSPORTATION

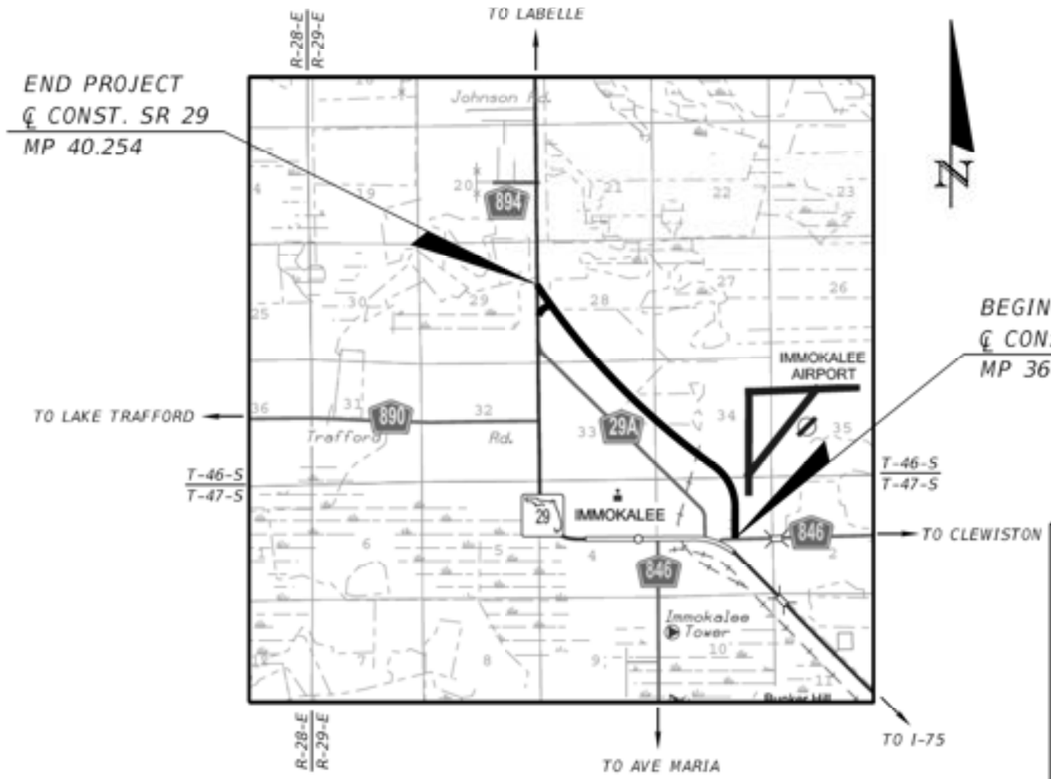
TYPICAL SECTION PACKAGE

FINANCIAL PROJECT ID 417540-5-52-01

COLLIER COUNTY (03080)

STATE ROAD NO. 29

FROM CR 846 E TO N OF NEW MARKET ROAD N



APPROVED BY:

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

TREVOR J. HAWKINS LICENSE No 73047 STATE OF FLORIDA PROFESSIONAL ENGINEER

ON THE DATE ADJACENT TO THE SEAL

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PATEL, GREENE AND ASSOCIATES, PLLC
12570 TELECOM DRIVE
TEMPLE TERRACE, FLORIDA 33637
TREVOR J. HAWKINS, P.E. NO. 73047

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TYPICAL SECTION PACKAGE

TYPICAL SECTION CONCURRENCE

FDOT DISTRICT DESIGN ENGINEER

FDOT DISTRICT STRUCTURES DESIGN ENGINEER

FHWA TRANSPORTATION ENGINEER

DESIGN SPEED AND POSTED SPEED CONCURRENCE:

FDOT DISTRICT TRAFFIC OPERATIONS ENGINEER

FDOT DISTRICT DESIGN ENGINEER

CONTEXT CLASSIFICATION CONCURRENCE:

FDOT DISTRICT INTERMODAL SYSTEMS DEVELOPMENT MANAGER

SHEET NO. 1

12/13/2019 10:23:57 AM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	(X)	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
(X)	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(X) STRATEGIC INTERMODAL SYSTEM
( ) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
(X) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

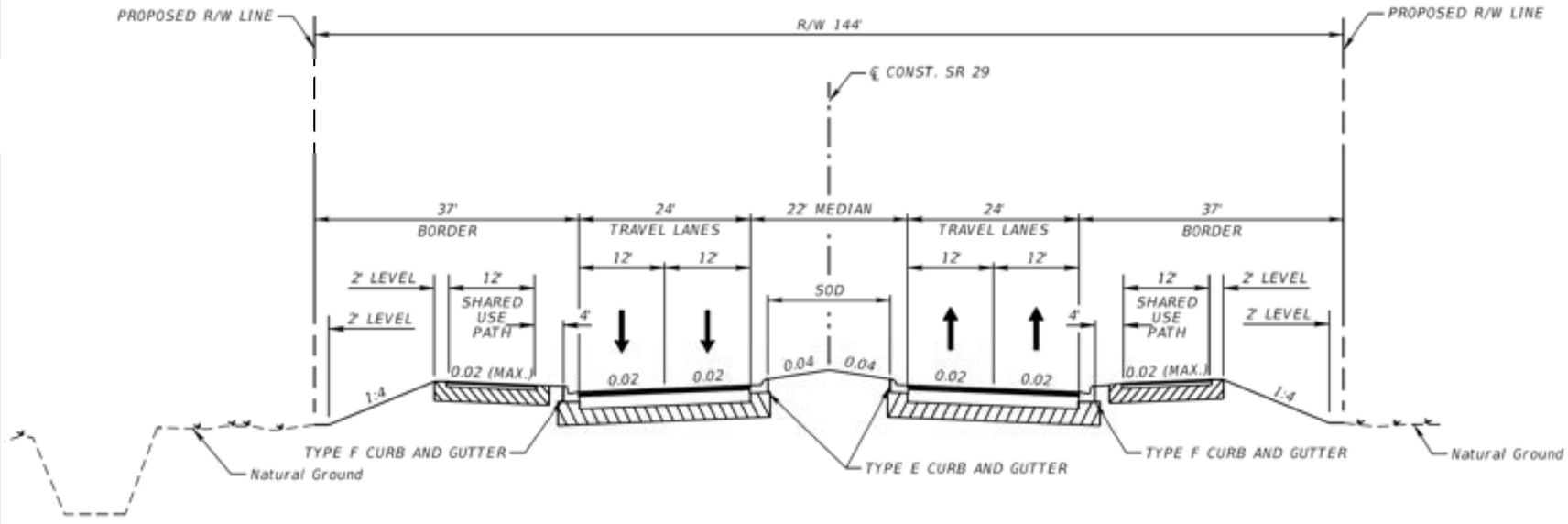
CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

BASE CLEARANCE VARIATION

TYPICAL SECTION No. 1



TYPICAL SECTION NO. 1
SR 29
MP 36.770 TO MP 37.684

TRAFFIC DATA

CURRENT YEAR= 2020 AADT = 21000
ESTIMATED OPENING YEAR = 2025 AADT = 25000
ESTIMATED DESIGN YEAR = 2045 AADT = 41000
K = 9% D = 59% T = 16% (24 HOUR)
DESIGN HOUR T = 8%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
417540-5-52-01	2

12/13/2019 10:24:30 AM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
(X) C3R : SUBURBAN RES.
( ) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
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( ) INTERSTATE
( ) FREEWAY/EXPWY.
(X) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
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HIGHWAY SYSTEM

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ACCESS CLASSIFICATION

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CRITERIA

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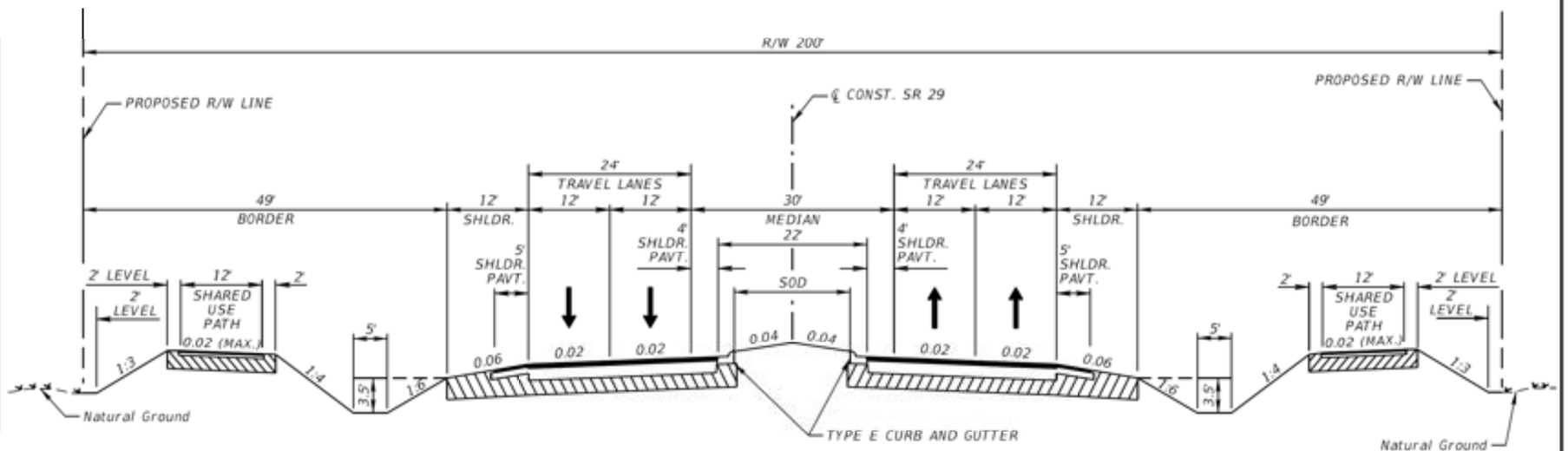
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 2



TYPICAL SECTION NO. 2
SR 29
MP 37.684 TO MP 40.254

TRAFFIC DATA

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ESTIMATED OPENING YEAR = 2025 AADT = 25000
ESTIMATED DESIGN YEAR = 2045 AADT = 41000
K = 9% D = 59% T = 16% (24 HOUR)
DESIGN HOUR T = 8%
DESIGN SPEED = 50 MPH / 55 MPH
POSTED SPEED = 50 MPH / 55 MPH

NOT TO SCALE

FINANCIAL PROJECT ID	SHEET NO.
417540-5-52-01	3

12/13/2019 10:24:48 AM

STATE OF FLORIDA

DEPARTMENT OF TRANSPORTATION

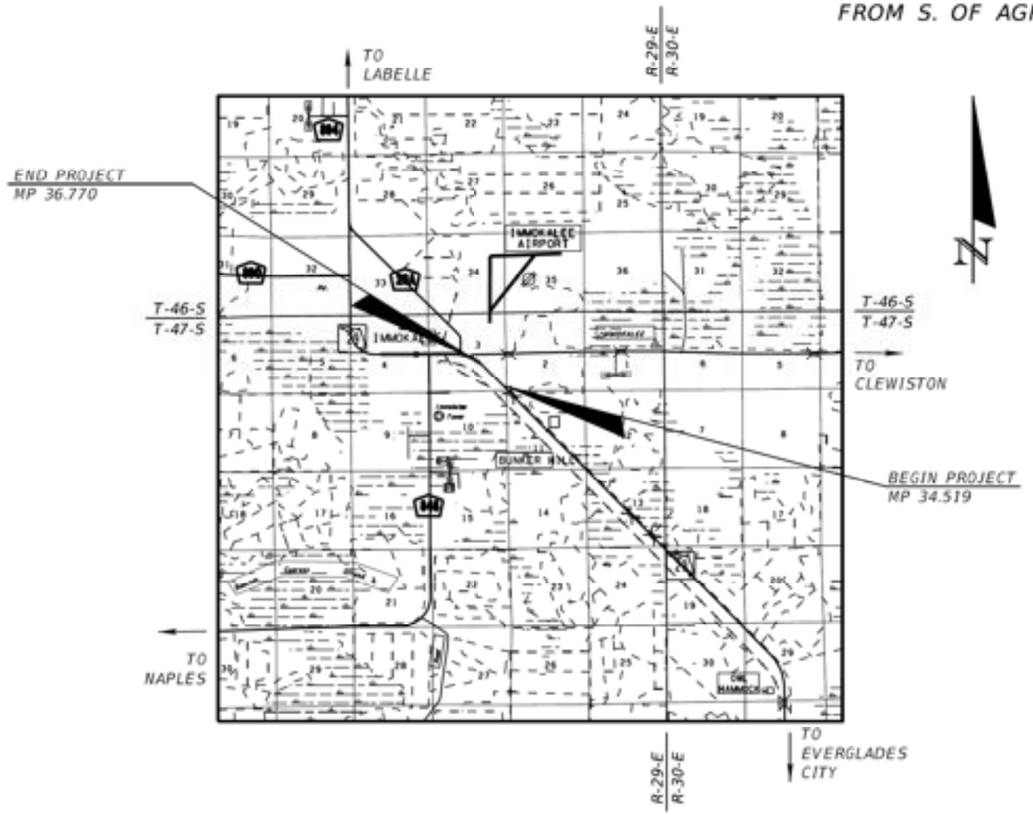
TYPICAL SECTION PACKAGE

FINANCIAL PROJECT ID 417540-4-52-01

COLLIER COUNTY (03080)

STATE ROAD NO. 29

RECONSTRUCTION OF SR 29 FROM 2-LANE TO 4-LANE
FROM S. OF AGRICULTURE WAY TO CR 846 E



APPROVED BY:

DAJANA GIBSON
LICENSE
No 76206
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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ON THE DATE ADJACENT TO THIS SEAL

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AIM ENGINEERING & SURVEYING, INC.
3802 CORPOREX PARK DRIVE, STE. 225
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CERTIFICATE OF AUTHORIZATION NO. 3114

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TYPICAL SECTION PACKAGE

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FHWA TRANSPORTATION ENGINEER

DESIGN SPEED AND POSTED SPEED CONCURRENCE:

FDOT DISTRICT TRAFFIC OPERATIONS ENGINEER

FDOT DISTRICT DESIGN ENGINEER

CONTEXT CLASSIFICATION CONCURRENCE:

FDOT DISTRICT INTERMODAL SYSTEMS DEVELOPMENT MANAGER

SHEET NO. 1

1/3/2020 3:51:15 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
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( )	MINOR ARTERIAL		

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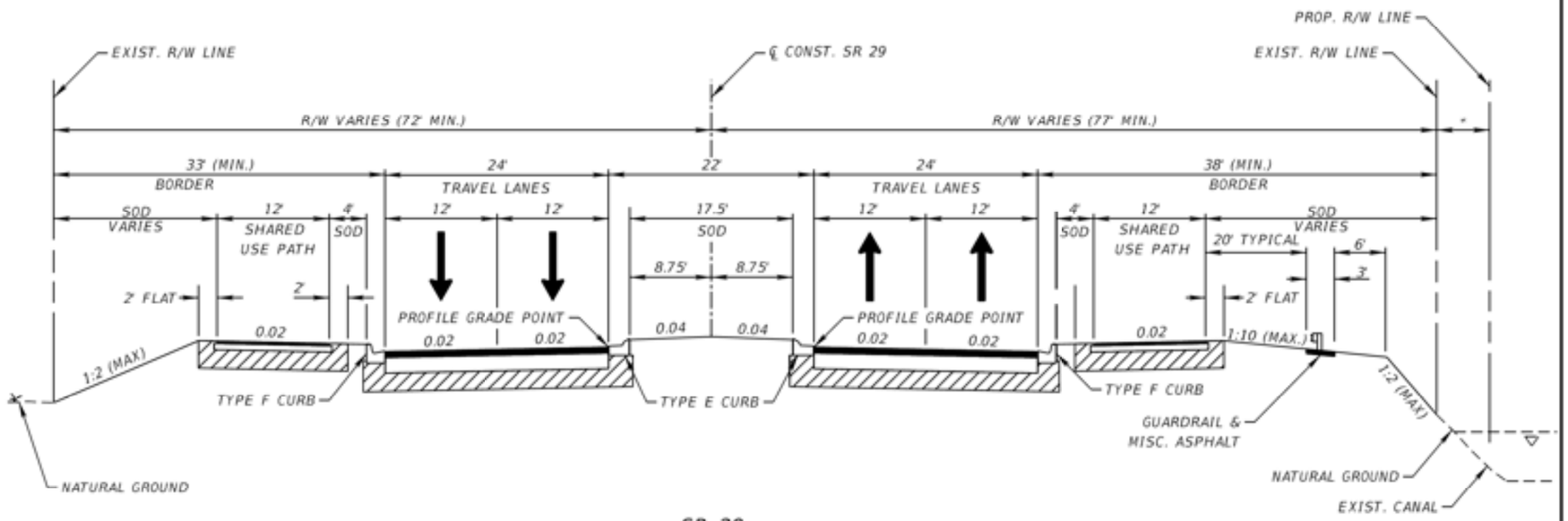
- ( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 1



SR 29
MP 34.519 TO MP 36.096

* PROP R/W VARIES FROM MP 36.000 TO MP 36.069 THROUGH TRANSITION

NOT TO SCALE

TRAFFIC DATA

CURRENT YEAR = 2019 AADT = 9,600
ESTIMATED OPENING YEAR = 2026 AADT = 15,900
ESTIMATED DESIGN YEAR = 2046 AADT = 34,000
K = 9.0% D = 58.5% T = 18.3% (24 HOUR)
DESIGN HOUR T = 9.15%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
417540-4-52-01	2

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) N/A : L.A. FACILITY
(X) C3C : SUBURBAN COMM.
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( ) C6 : URBAN CORE

FUNCTIONAL CLASSIFICATION

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( ) FREEWAY/EXPWY.
(X) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(X) STRATEGIC INTERMODAL SYSTEM
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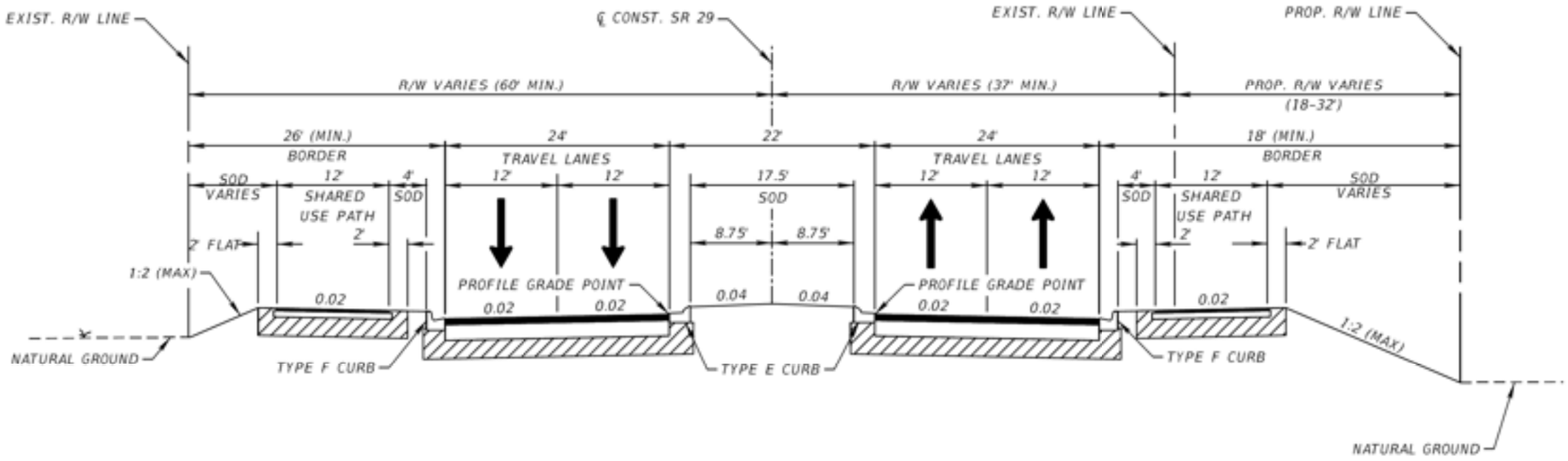
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

TYPICAL SECTION No. 2



SR 29
MP 36.096 TO MP 36.770

NOT TO SCALE

TRAFFIC DATA

CURRENT YEAR = 2019 AADT = 9,600
ESTIMATED OPENING YEAR = 2026 AADT = 15,900
ESTIMATED DESIGN YEAR = 2046 AADT = 34,000
K = 9.0% D = 58.5% T = 18.3% (24 HOUR)
DESIGN HOUR T = 9.15%
DESIGN SPEED = 45 MPH
POSTED SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
417540-4-52-01	3

9.3 Drainage Kickoff Meeting Minutes

MEETING MINUTES

Project Number: 417540-2 thru 417540-6
Project Description: SR 29 Corridor Improvements
Meeting Name: SR 29 Drainage Kickoff Meeting
Date/Time: 3.9.2020 – 1:30 PM
Location: FDOT – D1 HQ
Minutes Prepared By: RS&H, AIM, PGA, & FDA

Attendees:
See Attached Sign-in Sheets

The following notes reflect our understanding of the discussions and decisions made at this meeting. If you have any questions, additions, or comments, please contact us. We will consider the minutes to be accurate unless written notice is received within 5 working days of the date issued.

Meeting Minutes:
In general, the meeting followed the prepared agenda. Discussion points have been added in ***bold italics*** below to highlight the discussions on each topic

1. **Introductions**
    a. The meeting began with brief introductions

2. **Design Criteria**
    a. County Basin Criteria

We need confirm there is no special basin criteria with SFWMD at the Pre-App. It was discussed that we would not follow the local County Criteria unless it became necessary as part a larger agreement to develop regional solutions which would involve asking for relief from SFWMD design criteria. At this time, design segments will not need to follow the local county criteria for the Pond Siting Report.

    b. SFWMD Criteria
        a. Water Quantity
            i. Open Basin – 25yr/72hr
    c. Water Quality
        a. 1" over project / 2.5" over impervious (whichever is greater)
        b. 2.5" over additional impervious

The criteria of 2.5" over additional impervious will control for most segments where the PGL will not be adjusted and there is no proposed reconstruction of the existing lanes. However, a portion of the reconstructed -4 Segment and the -5 Segment may need to follow the criteria for new construction (whichever is greater of 1" over project area or 2.5" over impervious area). It was discussed that for the PSR phase the more conservative criteria would be used. At the Pre-App we will need to confirm with the WMD the exact criteria to be used for the design phase.

    d. Nutrient loading vs. presumptive treatment
        a. 3278W - Silver Strand (-2, -3, -4, -5) – Impaired for Iron
        b. 3278E – Cow Slough (-6) – Not impaired

The Silver Strand WBID has recently been delisted for nutrients. Although it is currently delisted, we will still evaluate the net improvement required. The approach discussed for the PSR was to size the ponds first with the presumptive criteria and then analyze the basin for net improvement. The additional net improvement that is provided in the ponds could offset other projects in the area or reduce the size of the regional pond. Therefore, FDOT wants the calculations included in the analysis.

    e. OFW – Considered for regional only

The Panther Refuge area south of Oil Well Road is considered an OFW. The regional option discharging to the south would need to consider this impairment and address the criteria. All other options, including smaller postage stamp ponds, for other segments will not need to evaluate the OFW criteria during the PSR.

3. **Floodplain Approach**
    b. PGA scoped to model the floodplain, -5 segment to the south
        i. Two Models
            1. North Model for Immokalee Area
            2. South Model for area south of Bridge Culvert on -4 Segment
    c. -2, -3, -4 Quantify Impacts
    d. FDA scoped to analyze offsite FPC alternatives and model the impacts on the -6 segment

The existing conditions model was currently planned on being available by Fall of 2020. However, based on the timeline discussions below and other segments needing this information for design it was determined that this task will need to be accelerated. The model development will need to be moved forward to the Summer of 2020.

4. **PSR Approach**
    a. -4, -5, & -6 Segments scoped to evaluate offsite ponds and regional alternative
        i. Segment based naming convention for offsite ponds
            1. Ex – 201, 202 (FDOT in-house)
            2. PSR options would follow a similar format (201A, 201B, 201C)
            3. FDOT will review and accept the pond site locations prior to clearances being conducted
    b. -6 Segment evaluating regional option for Lake Trafford
    c. -2, -3 Segments evaluating regional only
    d. FDOT evaluating regional option for corridor
        i. PGA assisting the department with regional efforts
    e. PSR Approach moving forward
        i. -4, -5, & -6 Segments proceed to evaluate offsite ponds
        ii. -6 Segment evaluate regional option with Lake Trafford (different basin)
        iii. -3, -4, & -6 Hold exploring regional until FDOT corridor options are explored

A brief update on the regional options was discussed based on the latest developments with the stakeholders. An approach moving forward was discussed for analyzing the regional options for the PSR. For the PSR efforts each segment should evaluate their segment and all segments draining to the segment.

- ***RS&H (-3 Segment) will evaluate providing a regional option that will treat the -3, -4, & -5 Segments. The regional option will consist of a "pregnant snake" approach along the canal to the east.***
- ***AIM (-4 Segment) will evaluate providing a regional option that will treat the -4 & -5 Segments. The regional option will consist of evaluating an option that is located east of SR 29 at the confluence of the canals just south of Immokalee.***
- ***PGA will evaluate providing a regional option that will treat the -2, -3, -4, & -5 Segments. The regional options will consist of evaluating an option that is located south of Oil Well Road within the borrow pits.***
- ***Each regional option will be sized based on the presumptive water quality volume. For this calculation, the contributing area is assumed to be from R/W to R/W and the presumptive volume will be based on the worst-case scenario. It is anticipated that the outfall control structure will consist of a long weir and a shallow treatment depth to minimize hydraulic impacts within the Barron River Canal. Net improvement calculations could include both the offsite and onsite contributing areas. The PSR analysis will include onsite contributing area only (R/W to R/W).***
- ***Additional coordination with the County is necessary to determine their needs and timeline of modifications to the canal systems. Also, there is a potential for partnering between the County and FDOT on this approach.***

- ***For consistency, a single spreadsheet would be developed, and each segment would provide the on-site contributing area data required for their segment. Once all information is received, PGA will calculate storage volumes and distribute spreadsheet back to each segment to ensure that all segments are using consistent on-site information for all upstream segments to develop the individual regional pond analysis.***
- ***Once regional pond sizing has been complete, segments will submit sizing information back to PGA for inclusion into a corridor wide regional summary document.***

5. **Timeline of Segments**
    a. -3 Segment
        i. L&G – July 2020
        ii. PSR – May 2020
        iii. Phase I – Aug 2020
    b. -4 Segment
        iv. L&G – April/May 2020
        v. PSR – Summer 2020
        vi. Phase I – Sept 2020
    c. -5 Segment
        vii. L&G - August 2020
        viii. PSR – Fall 2020
    d. -6 Segment
        ix. L&G – August 2020
        x. PSR – Fall 2020

The timeline for all segments was reviewed and there were no concerns. It was noted that segments vary in funding for R/W and construction and there is flexibility in the schedule currently. It was mentioned that if dates adjust that we update the advanced project schedule accordingly.

6. **Permitting Approach**
    a. Single pre-app for the corridor / Date to be determined
    b. Additional discussions regarding the approach to corridor permitting will occur as the project progresses. There is a potential if the regional approach moves forward, a single permit will be obtained for this and then each segment will modify the permit to document how much of the pond is being utilized. This would be for stormwater only.
    c. A Regional approach to the wetland/species impacts and required mitigation will also be evaluated to determine if there is an effective approach for the corridor.
    d. Since not all segments are currently funded for construction, there is the potential to delay species surveys and permit submittals past Phase IIR to reduce the likelihood of needing to repeat species surveys and having issued permits sit on the shelves for extended periods prior to the start of construction. Each consultant needs to keep FDOT apprised on when they will conduct the surveys. A "Go/No Go" for permitting date could be included in the schedule. Consideration of potential funding needs to be considered due to certain surveys are only allowed during specific times of the year.
    e. Nicole Monies indicated that some mitigation funds will be available in 2021
    f. -3 Segment
        a. Permitting
            i. New Individual SFWMD ERP
            ii. USACE SAJ-92
            iii. Multiple mitigation banks available with PHU credits
        b. Wildlife
            i. One wildlife feature proposed to be located south of Milton's Canal
            ii. Caracara surveys anticipated January 2021, depending on schedule of Phase II plans
            iii. Florida bonneted bat surveys anticipated Spring 2021 (depending on schedule of Phase II plans)

iv. Panther habitat analysis for PHU credits.

g. -4 Segment
   a. Permitting
      i. Major Modification to SFWMD Permit No. 11-00968-S
      ii. Individual Dredge and Fill Permit from USACE
      iii. Multiple mitigation banks available that also provide PHU credits
   b. Wildlife
      i. No proposed wildlife crossing features
      ii. Gopher tortoise and caracara surveys
      iii. Florida bonneted bat habitat assessment – need for SA to account for new consultation guidelines released October 2019 – Coordination with Gwen has started, and she will provide guidance.
      iv. Panther habitat analysis for PHU credits

h. -5 Segment
   a. Permitting
      i. New Individual SFWMD ERP
      ii. Individual Dredge and Fill from USACE
      iii. Mitigation banks: Big Cypress, Panther Island. PHU's included with wetland credits
   b. Wildlife
      i. No proposed wildlife crossings
      ii. GTs, caracara, Florida scrub jay, Florida bonneted bat surveys (Spring 21)
      iii. Minimize loss of scrub jay habitat, but not avoidable
      iv. Panthers: Minor impacts to secondary zone; Need habitat analysis for PHU credits.

i. -6 Segment
   a. Permitting
      i. New Individual SFWMD ERP
      ii. Individual Dredge and Fill from USACE
      iii. Mitigation banks: Corkscrew, Big Cypress, Panther Island, Jack's Branch
   b. Wildlife
      i. No proposed wildlife crossings
      ii. GTs, caracara, Florida scrub jay, Florida bonneted bat
      iii. Keep ponds out of scrub jay habitat
      iv. Panthers: in secondary zone; no documented panther usage; provide PHUs for impacts in secondary zone

7. **Action Items**
   a. Schedule Pre-App meetings
   b. Develop framework regional approach for all segments
   c. Include Sergio/Segment 2 into Corridor drainage discussions

SIGN-IN SHEET

Project Number: 417540-3 thru 417540-6
Project Description: SR 29 Corridor Improvements
Meeting Name: SR 29 Corridor Drainage Kickoff Meeting
Date/Time: 3.09.2020 – 1:00 PM
Location: FDOT – D1 HQ – Executive RM

NAME	INITIALS	REPRESENTING	EMAIL ADDRESS
Sergio Figueroa	sf	FDOT	Sergio.Figueroa2@dot.state.fl.us
Brent Setchell	BS	FDOT	Brent.Setchell@dot.state.fl.us
Nicole Monies	NMM	FDOT	Nicole.Monies@dot.state.fl.us
Kenny Yinger	KY	PGA	Kenny.Yinger@patelgreene.com
Robert Garrigues		RS&H	Robert.Garrigues@rsandh.com
Dawn Ratican	DMR	AIM	dratican@aimengr.com
Alan Eldridge	ASE	FDA	aeldridge@fallerdavis.com
Kaylene Johnson		FDOT	Kaylene.Johnson@dot.state.fl.us
Sean Pugh	Phone	FDOT	Sean.Pugh@dot.state.fl.us
Richard Howard		FDOT	Richard.Howard@dot.state.fl.us
Christopher Speese		FDOT	Christopher.Speese@dot.state.fl.us
Amber Haygood		FDOT	Amber.Haygood@dot.state.fl.us
William Whidden		FDOT	William.Whidden@dot.state.fl.us
Niki Cribbs		FDA	ncribbs@fallerdavis.com
Sean Curran	STC	PGA	Sean.Curran@patelgreene.com
Justin Christensen	JC	AIM	JChristensen@aimengr.com

FDOT

SIGN-IN SHEET

NAME	INITIALS	REPRESENTING	EMAIL ADDRESS
TREVOR HAWKINS	TH	PGA	TREVOR.HAWKINS@PATELGREENE.COM
Shannon Ladd	SL	FDA	sladd@fallerdavis.com
LOGAN BARILE	LTB	FDA	lbarile@fallerdavis.com
RICHARD (MOSE) HOWARD	RH	FDOT PROJ. MGT. / GEC	RICHARD.HOWARD@DOT.STATE.FL.US
Nicole Cribbs	NC	FDA	rcribbs@fallerdavis.com

9.4 Pond Siting Alternatives Review Meeting Minutes

Pond Siting Alternatives Review Meeting Minutes
SR 29 from New Market Road to SR 82
FPID: 417540-6-52-01
Collier County

April 7th, 2020
10:00am via GoToMeeting

Attendees:

- Brent Setchell - FDOT
- Sergio Figueroa - FDOT
- Chris Speese - FDOT
- Logan Barile - Faller, Davis and Associates
- Alan Eldridge - Faller, Davis and Associates
- Kevin Myers - Faller, Davis and Associates
- Tammy Kreisle - Faller, Davis and Associates

Background

The meeting began with an overview of the project which is to widen SR 29 from 2 to 4 lanes from New Market Road to SR 82. The typical section is approved and includes 4-12' travel lanes, 2-10' shoulders, 2-12' SUPs and an open conveyance drainage system.

Adjacent project coordination is currently ongoing with FPID 430849-1 to the north which is an in-house FDOT project for the widening of SR 82, including a roundabout at the intersection with SR 29. This project is currently under construction. Coordination is also currently ongoing with FPID 417540-5 to the east which is a new bypass alignment for SR 29 that connects into the east side of the existing SR 29. This project is currently under design.

It was discussed that this project was scoped to analyze two offsite pond locations per basin as well as two separate floodplain compensation sites. As agreed, during the corridor-wide Drainage and Permitting Kick-off Meeting, the basin numbering for this section of SR 29 would consist of Basins 601 to 607.

Design Criteria

For the calculations to be performed within the Pond Siting Report the sizing analysis will utilize the SFWMD presumptive criteria, then also analyze the basin for net improvement. For the quantity/quality calculations the 25-year 72-hour storm will be used for the pond design, but all criteria will need to be confirmed by SFWMD at a Pre-Application Meeting. Brent stated that his monthly meetings with SFWMD occur on the 4th Wednesday of each month, with the next meeting tentatively scheduled for April 22, 2020. Brent requested that we email Nicole Monies to get on the schedule if we wish to have our pre-application meeting as part of the monthly coordination.

Basin 601

The discussion of alternative pond sites began with an overview of the 440-acre parcel (ID 00068840008) owned by Barron Collier Partnership LLLC. Alan stated that this is a large site that is approximately one mile wide and outfalls to the west through overland flow to Fish Branch Creek. Brent was agreeable to the location of pond alternative 601A, shown in the attached exhibit, as it is adjacent to the R/W line, close to the wetlands for discharge, minimized hydraulic losses and would not need an access easement. For pond site 601B Brent mentioned that driveway spacing for future development of the site along the frontage should be considered and Sergio requested that alternative pond site 601B be moved to abut the south property line of the parcel (ID 00068640004) and make the pond narrower along the frontage of the parcel and deeper. This will minimize the frontage needed for the pond and provide more useful area for future access. The agreed upon locations and shapes for the alternative pond sites are shown in the attached exhibit.

Basin 602

The discussion of this basin began with further mention of the large 440-acre parcel (ID 00068840008) and the unknown water feature located near pond site 602A. Alan noted that from a previous field review this area appeared to be excavated for some unknown use but that currently cattle on the parcel is using it as a source of drinking water. Alan stated that alternative pond site 602A was located to avoid impacting this existing water feature and to be near to the R/W line and close to the outfall cross drain. Brent inquired why we wouldn't shift pond site 602A south to use the cattle pond as an FDOT pond site. Next, there was a discussion of the SR 29 bypass connection (FPID 417540-5) on the east side of this basin utilizing parcel ID number 00068800006. Alternative pond site 602B was located to use a remnant piece of this parcel that will be impacted by the new alignment. Brent was agreeable with the location shown in the attached exhibit and recommended coordinating with the adjacent design firm so that the pond site for this basin could serve both projects.

Basin 603

For pond location 603A Sergio stated that the preferred approach would be to investigate utilizing the northern remnant portion of parcel ID number 00068800006 that will remain once the SR 29 bypass connection is made to the existing SR 29. Brent concurred with this approach and the attached exhibit reflects the agreed upon location for pond site 603A. After reviewing the initial location for alternative pond site 603B, Brent had concerns about the length of the ingress/egress needed as well as the hydraulic losses. He recommended moving pond site 603B forward to abut the R/W line and shifting it to parcel ID number 00066120005 and placing it on the southern property line. Sergio questioned whether pond fencing should be included in the cost estimate for each alternative with cattle present. Brent responded that the property owner would be compensated for the fencing as part of the cost to cure and that it should not be included in the pond construction cost estimate. Alan asked if a pond location on the east side, that is currently occupied by agricultural groves, should be considered. Brent stated that since the

basin has undeveloped land available that the cost to impact the existing agricultural grove would likely make it more expensive so we should continue to investigate with the agreed upon pond locations for 603A and 603B shown in the attached exhibit.

Basin 604

Alan stated that the preliminary pond site locations were located to avoid impacting parcel ID number 00066040004. This parcel is a TIITF owned parcel with the University of Florida (Institute of Food and Agricultural Sciences) that is currently the site of their Southwest Florida Research and Education Center. Brent agreed that it would probably be best to not touch this parcel, however, he requested pond site alternative 604B be placed on it and investigated as part of the Pond Siting Report as the remainder of the basin appeared to only have one other parcel. He stated that to minimize impacts to the parcel, that pond site 604B be placed adjacent to the FDOT R/W line and the parcels southern property line. After reviewing pond site 604A on parcel ID 00067880001, Sergio stated that when we have agricultural impacts, the preference is for it to be on the widening side of the roadway as R/W acquisition will already be occurring there. This is the case for pond site 604A. Sergio recommended for this site to abut the FDOT R/W and to keep it longer rather than deeper and shape it in a way that the rim ditch and row crops can easily be relocated around it. The agreed upon alternative pond locations for 604A and 604B are shown in the attached exhibit.

Basin 605

Alan stated that since potential floodplain compensation sites exist within this basin, the proposed pond sites will be located on the same parcels to minimize the number of parcels impacted. The parcels considered for the multiple use of stormwater pond and floodplain compensation are ID numbers 00065720008 and 00066160007. Alan noted that parcel ID number 00065040005 could also potentially be utilized for a floodplain compensation site, however, it is located at a high point in the basin making the hydraulic feasibility of also designing a pond here difficult. For the floodplain compensation sites on parcels 00065720008 and 00066160007 Brent stated that they should be located toward the back of the property. The ponds located on the parcels should be located as near to the FDOT R/W line as possible to improve hydraulic feasibility and minimize the length of pipe needed. Sergio mentioned that for the floodplain compensation sites towards the back of the parcels, maintenance access easements need to be considered in the price. Parcel ID number 00065720008 would require driveway access as well as an easement while parcel ID number 00066160007 could use O'Quinn Road, an existing private road, for maintenance access, but would still require an easement. The agreed upon alternative pond locations for 605A and 605B, as well as alternative floodplain compensation sites 1 and 2, are shown in the attached exhibit.

Basin 606

Brent requested that pond location 606A be shifted to the next property south of its initial location to be on parcel ID number 00065160008. This would prevent both alternative pond locations in Basin 606 from being on active agricultural sites. The current site for pond location 606A appears undeveloped and the pond will be located to abut the FDOT R/W. Pond site 606B was reviewed and Sergio recommended that this pond also be shaped to keep it longer rather than deeper and shape it in a way that the rim ditch and row crops can easily be relocated around it. The agreed upon alternative pond locations for 606A and 606B are shown in the attached exhibit.

Basin 607

The discussion of pond sites began with the adjacent in-house FDOT project currently under construction (FPID 430849-1) for which Sergio is the Drainage Engineer of Record. Basin 607 in FPID 430849-1 is referred to as Basin 5 and utilizes compensatory treatment in Pond 4 to meet its water quality needs. Sergio stated that the limits of the compensatory treatment in Basin 5 begin at station 2256+80 and extend north. The current project along SR 29 would be responsible for providing water quality treatment for the remainder of the basin not obtaining compensatory treatment in Pond 4 in FPID 430849-1. Sergio discussed the location of pond site 607A, on parcel ID number 00065120006, and recommended holding the northern property line and abutting the FDOT R/W and shaping a longer and narrower pond that would allow for the row crops to more easily be relocated around it. This would take up all of the frontage along the FDOT R/W from the northern property line south to the receiving wetland on the downstream end of the double 42" RCP cross drain but would allow for better placement of crops and drainage on the remainder of the parcel. Alan inquired if parcel ID number 00065200007, which currently has a private residence on it, should be considered for the location of pond site 607B. Brent stated that the private residence doesn't rule the site out as there is some vacant space on the parcel and that the pond could be configured to minimize impacts. If the site is hydraulically feasible it should be considered as an alternative location. The agreed upon alternative pond locations for 607A and 607B are shown in the attached exhibit.

Regional Pond Sites

Alan mentioned that the most beneficial regional opportunities for the basin would be to provide all the water quality treatment for the corridor at a location furthest downstream in Fish Branch Creek and as near as possible to the outfall, Lake Trafford. Alan stated that two parcels fitting these criteria exist at the downstream end of Fish Branch Creek. They are a 54.91 Ac. site with parcel ID number 00071040604 and a 56.86 Ac. site with parcel ID number 00072520000. Both parcels are identified in Collier County's Comprehensive Watershed Improvement Study (CWIS) as being ideal locations for stormwater ponds and channel restoration to improve the water quality in Lake Trafford. It is unknown at this time if the County has pursued this project any further than the planning stages. Brent was agreeable to the idea, especially if Collier County would maintain the ponds, but stated that SFWMD may not allow additional untreated

runoff to be discharged into the canal that wouldn't be cleaned up until much further downstream. He stated that SFWMD may be open to the approach if we can demonstrate "no adverse impact" with a form of pre-treatment, such as claiming treatment volume from the dry swales. Alan stated that preliminary net improvement calculations on these sites appear to show an increase in the water quality overall which provides a regional benefit. Brent stated that this approach needs to be shared with SFWMD at the Pre-Application meeting to receive their feedback and that Faller, Davis should coordinate with Collier County to see if they have any more information to provide on the status of the CWIS project. Sergio followed up that other than water quality, he saw attenuation as a hurdle that would need to be discussed with SFWMD if a regional approach at a downstream site is utilized. Alan agreed with this and stated that with the addition of 2-12' SUPs along the corridor his feeling was that meeting the pre/post discharge requirements at the outfalls with ditch blocks would be difficult due to limited R/W width. Alan stated that other than ditch blocks, attenuation ponds or outfall ditch easements may be required to meet the attenuation criteria for this project. This will need to be discussed further at the Pre-Application Meeting. Brent asked if any regional sites closer to the project limits were identified that could treat the project and discharge to Fish Branch Creek closer to the project area. Alan stated that two additional sites were being considered: parcel ID numbers 00065160008 and 00066040004. Hydraulically collecting runoff from the necessary amount of pavement from SR 29 and conveying it to these sites is more than likely not feasible due to the distance from the FDOT R/W. The idea of these regional sites located within the vicinity of the project corridor would be to collect an equivalent amount of runoff from Fish Branch Creek, treat it in the FDOT stormwater pond, then discharge it back into the creek. Further discussion and research will be required regarding a regional site before parcel clearances for the pond siting report can begin.

Action Items

- Sergio to provide FDA with the final Drainage Report and ICPR modeling for FPID 430849-1
- Alan to coordinate with Jerry Kurtz at Collier County to inquire about the CWIS improvement to Fish Branch Creek
- Alan to coordinate with Nicole Monies to schedule some time at an upcoming monthly conference call with SFWMD to discuss this project
- Alan to modify the alternative pond sites as discussed and email an exhibit to Brent and Sergio to review and provide concurrence on before parcel clearances begin
- Alan to continue coordination with the Drainage EOR on FPID 417540-5 regarding a mutually beneficial pond location in Basin 602

9.5 SFWMD Pre-Application Meeting Minutes

SFWMD Pre-Application Meeting Minutes
SR 29 from New Market Road to SR 82
FPID: 417540-6-52-01
Collier County

May 27th, 2020
10:00am via GoToMeeting

Attendees:

- Angelica Hoffert - SFWMD
- Melissa Roberts - SFWMD
- Laura Layman - SFWMD
- Brent Setchell - FDOT
- Nicole Monies - FDOT
- Alan Eldridge - Faller, Davis, and Associates
- Niki Cribbs - Faller, Davis, and Associates

Background

The meeting began with an overview of the project which is to widen SR 29 from 2 to 4 lanes from New Market Road to SR 82. The typical section is approved and includes 4-12' travel lanes, 2-10' shoulders, 2-12' SUPs and an open conveyance drainage system. There are three drainage basins (Immokalee Urban, Corkscrew Slough, Townshend Canal) and none of them are impaired. The project is currently at the beginning of the Pond Siting Report Analysis and we are exploring regional opportunities to improve the water quality downstream in Fish Branch Creek and Lake Trafford.

Drainage Discussion

The drainage basins are considered open with the north portion of the project draining to Townshend Canal, a large middle portion eventually draining to Lake Trafford via Fish Branch Creek, and a short section draining to the SR 29 ditch south of Immokalee via the Madison Street ditch. FEMA floodplain exists through a large portion of the project corridor. Along SR 29 it is anticipated that floodplain impacts on the west side will be compensated in offsite FPCs and on the east side will be modeled to demonstrate no rise in BFE.

SFWMD is agreeable to the idea of regional treatment for the portion of the project draining to Lake Trafford as long as the drainage basin is the same pre/post and no basin shifting occurs. A regional pond proposal utilizing a site on the downstream end of Fish Branch Creek was discussed and a few items to consider were brought up. These included:

- Incorporating dry pre-treatment in the ditches along SR 29 before runoff leaves the FDOT R/W.
- Attenuation of runoff at the discharge point from the FDOT R/W utilizing spreader swales.

- Partial attenuation of runoff would be acceptable if the modeling demonstrates there is no increase to stages upstream or downstream of the project limits and no adverse effects are created on adjacent properties.
- Assessing the environmental conditions of ponds.
- Pursuing a drainage easement for the maintenance of Fish Branch Creek since it mostly conveys through private property with one landowner.

SFWMD suggested a future follow-up pre-application meeting, prior to design, to finalize permitting criteria if a Regional Pond is selected in the Pond Siting Report. They also suggested during the Pond Siting Report to coordinate with the Lake Trafford Management team who could help to identify other partners for regional treatment.

Environmental Discussion

The surface waters and ditches along the mainline have been delineated. Early estimates are impacts to 2.4 acres of herbaceous surface waters and wetlands. Mitigation at Panther Island, Corkscrew and Jack's Branch is available. SFWMD asked for a cumulative impact analysis for out of basin mitigation proposals. Coordination with SFWMD should occur to assess ratios of credits needed, depending on the mitigation bank used.

A new individual ERP permit is anticipated for this segment of SR 29. The environmental supporting documents need to address impacts and any required mitigation for wetland-dependent wildlife species including wading birds, the Florida bonneted bat and the Florida panther. It is anticipated that wetland mitigation will address wading birds, PHUs will address impacts to panther habitat, and a bat survey will be conducted. Agency consultation will be completed so as to not impact the permitting schedule.

It was noted that no environmental analysis of regional pond options has been conducted at the time of the pre-application meeting.

Action Items

- Environmental conditions of regional treatment ponds need to be assessed.
- Contact the Lake Trafford Management team regarding other regional partners.

9.6 Concurrence on Regional Pond Sites

Alan Eldridge, P.E.

From: Setchell, Brent <Brent.Setchell@dot.state.fl.us>
Sent: Thursday, July 16, 2020 3:05 PM
To: Alan Eldridge, P.E.
Cc: Figueroa, Sergio; Thuyen Tran, P.E.; Tammy Kreisle, P.E.; Logan T. Barile, P.E.; Speese, Christopher
Subject: RE: [External] FPID: 417540-6 // SR 29 from New Market Rd. to SR 82 // Collier Co. // Regional Approach - Collier County Coordination

Yes and Yes.

Yes, I'm good with the two blue areas. Yes, please continue to coordinate with stakeholders.

Thanks,

Brent Setchell, P.E.
District Drainage Design Engineer
Florida Department of Transportation
801 N. Broadway Avenue
Bartow, Florida 33830
863-519-2557

From: Alan Eldridge, P.E. <AEldridge@fallerdavis.com>
Sent: Thursday, July 16, 2020 2:59 PM
To: Setchell, Brent <Brent.Setchell@dot.state.fl.us>
Cc: Figueroa, Sergio <Sergio.Figueroa2@dot.state.fl.us>; Thuyen Tran, P.E. <ttran@fallerdavis.com>; Tammy Kreisle, P.E. <tkreisle@fallerdavis.com>; Logan T. Barile, P.E. <lbarile@fallerdavis.com>; Speese, Christopher <Christopher.Speese@dot.state.fl.us>
Subject: FW: [External] FPID: 417540-6 // SR 29 from New Market Rd. to SR 82 // Collier Co. // Regional Approach - Collier County Coordination

Good Afternoon Brent,

I just wanted to follow-up with you regarding our emails late last weekend discussing the regional approach to the SR 29 ponds in the Lake Trafford basin.

Can you review the email below and the attached exhibit and let me know if we can move forward with investigating the blue hatched areas further for the PSR and if you would like us to continue discussions with Collier County regarding these sites.

Thanks.

Sincerely,
Alan Eldridge, PE
o 813.261.5136 | m 727.483.2193 | fallerdavis.com

From: Alan Eldridge, P.E.
Sent: Thursday, July 9, 2020 7:13 PM
To: 'Setchell, Brent' <Brent.Setchell@dot.state.fl.us>
Cc: 'Figueroa, Sergio' <Sergio.Figueroa2@dot.state.fl.us>; Thuyen Tran, P.E. <ttran@fallerdavis.com>; Tammy Kreisle, P.E. <tkreisle@fallerdavis.com>; Logan T. Barile, P.E. <lbarile@fallerdavis.com>; Speese, Christopher <Christopher.Speese@dot.state.fl.us>
Subject: RE: [External] FPID: 417540-6 // SR 29 from New Market Rd. to SR 82 // Collier Co. // Regional Approach - Collier County Coordination

Brent,

Thanks for looking at this and responding during your time off.

I agree with your assessment of the conveyance and access challenges to the SFWMD parcel. I just wanted to relay to you what Collier County and some others have been investigating in the area we were also considering for regional improvements.

When we began our analysis of the area, the spot you outlined in blue was identified as a good location for a pond and I would still like to investigate it further in our PSR. This Barron Collier Partnership site does include a 30-foot wide strip on its east side that connects into the public R/W at Carson Rd. which has access to SR 29 via Westclox St.

Some of the other further upstream parcels that Fish Branch Creek conveys though are essentially landlocked and don't have a short or simple point to which a pond could be accessed for maintenance.

Please see the attached exhibit for the two regional locations I would like to move forward with analyzing for the PSR. Based on my discussion with Robert Wiley at Collier County I think both of these locations would provide a mutual benefit that they and others in the region have interest in.

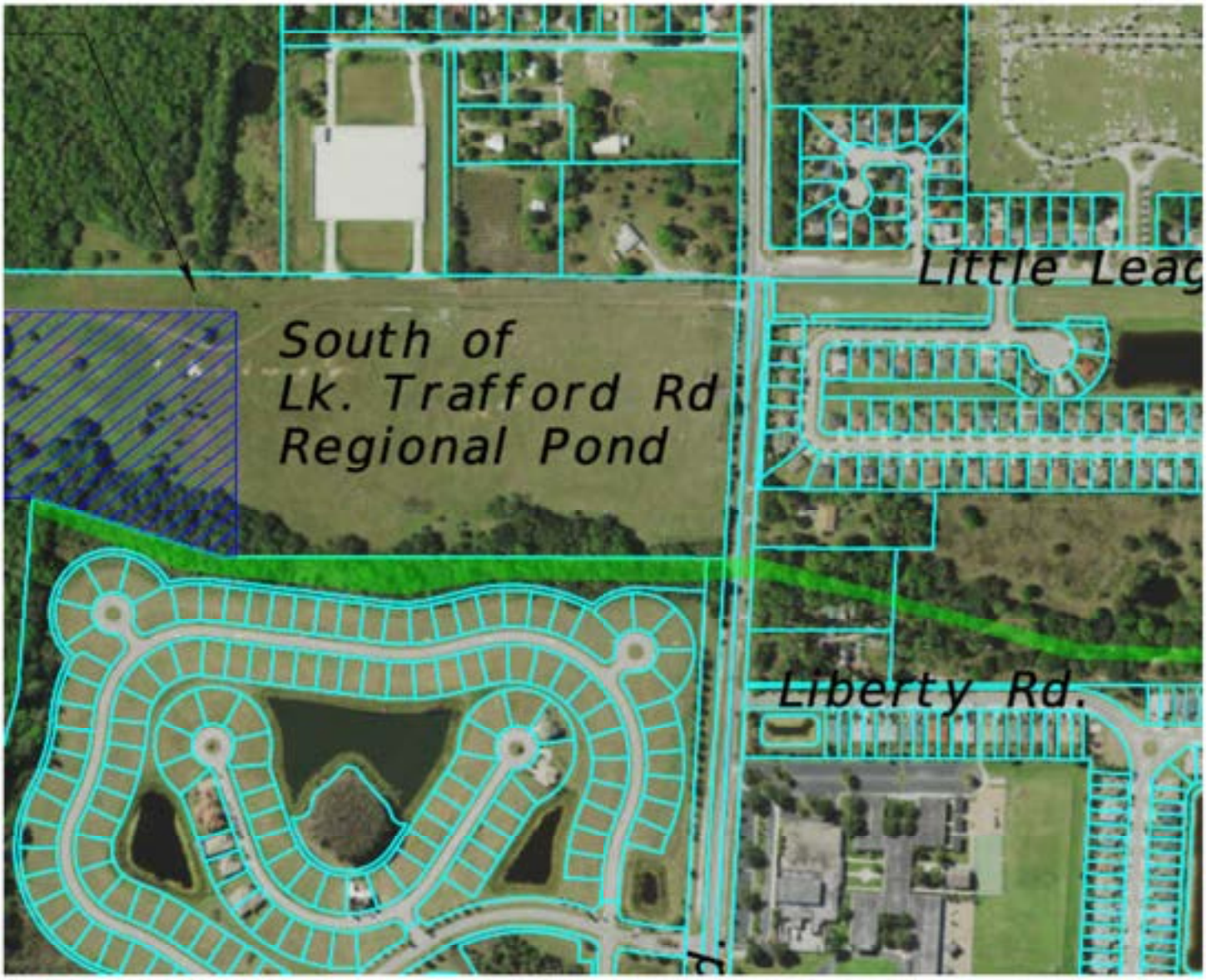
Would you like for me to coordinate further with the County regarding the locations shown in the attachment or wait until some of our environmental clearances come back on these parcels and we have more information?

Sincerely,
Alan Eldridge, PE
o 813.261.5136 | m 727.483.2193 | fallerdavis.com

From: Setchell, Brent <Brent.Setchell@dot.state.fl.us>
Sent: Thursday, July 9, 2020 3:32 PM
To: Alan Eldridge, P.E. <AEldridge@fallerdavis.com>; Figueroa, Sergio <Sergio.Figueroa2@dot.state.fl.us>
Cc: Tammy Kreisle, P.E. <tkreisle@fallerdavis.com>; Logan T. Barile, P.E. <lbarile@fallerdavis.com>; Speese, Christopher <Christopher.Speese@dot.state.fl.us>; Thuyen Tran, P.E. <ttran@fallerdavis.com>
Subject: RE: [External] FPID: 417540-6 // SR 29 from New Market Rd. to SR 82 // Collier Co. // Regional Approach - Collier County Coordination

Alan,
The western alternative requires obtaining easements/fee from a couple property owners to provide the alternate conveyance. While SFWMD owns the land for the pond, it might be challenging getting the water to it, especially with google elevations showing its uphill.

I think we should look at an option on the Barron Collier partnership parcel instead or possibly further upstream on a parcel that doesn't have good access and or utilities available.



Thanks,

Brent Setchell, P.E.
District Drainage Design Engineer
Florida Department of Transportation
801 N. Broadway Avenue
Bartow, Florida 33830
863-519-2557

From: Alan Eldridge, P.E. <AEldridge@fallerdavis.com>
Sent: Thursday, July 9, 2020 2:01 PM
To: Setchell, Brent <Brent.Setchell@dot.state.fl.us>; Figueroa, Sergio <Sergio.Figueroa2@dot.state.fl.us>
Cc: Tammy Kreisle, P.E. <tkreisle@fallerdavis.com>; Logan T. Barile, P.E. <lbarile@fallerdavis.com>; Speese, Christopher <Christopher.Speese@dot.state.fl.us>; Thuyen Tran, P.E. <ttran@fallerdavis.com>

Subject: FPID: 417540-6 // SR 29 from New Market Rd. to SR 82 // Collier Co. // Regional Approach - Collier County Coordination

EXTERNAL SENDER: Use caution with links and attachments.

Good Afternoon Brent and Sergio,

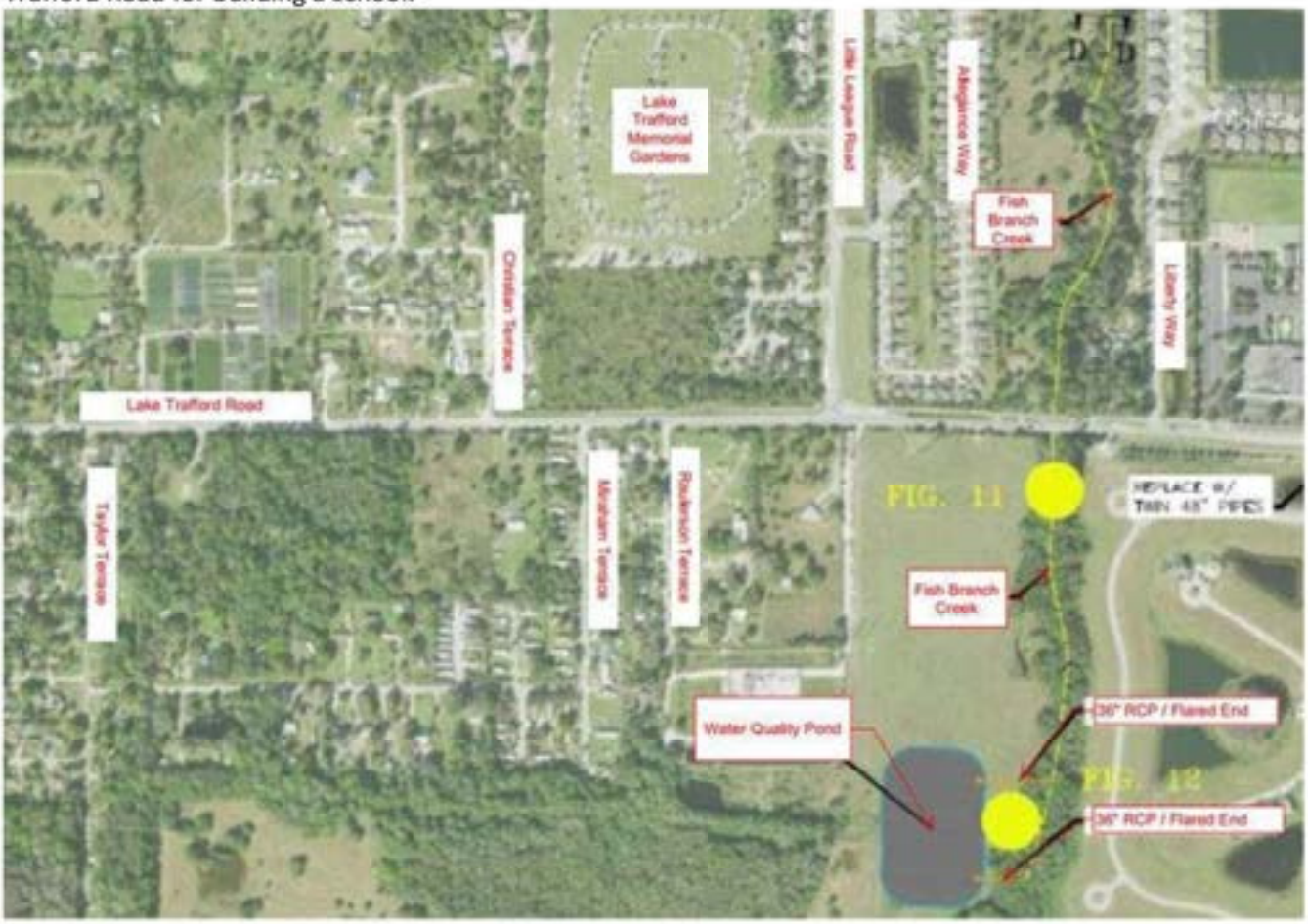
I spoke with Robert Wiley at Collier County regarding their ongoing regional projects related to Lake Trafford and he brought me up to speed on some of their current CWIP projects for Fish Branch Creek. Below is a summary of what was discussed.

At Fish Branch Creek, the County has developed subprojects that are intended to improve the water quality conveying to Lake Trafford and improve the LOS of Fish Branch Creek during significant storm events. The subprojects could be done separately or together but the County is interested in partnering with the Department on these improvements to benefit the regional water quality.

North of Lake Trafford Rd Improvements – Divert runoff from Fish Branch Creek to the existing SFWMD property to the west through a new swale and pipes and construct a water quality pond on the SFWMD parcel. This new pond would outfall to the west and then discharge through a new cross drain under Pepper Road and convey to the south to Lake Trafford through Pepper Ranch Preserve. Robert indicated that Collier County and Big Cypress Basin have had a consultant model these improvements and are in discussion with SFWMD regarding using their property. He suggested utilizing filter marshes in the pond to increase nutrient uptake from the runoff. Robert stated that the County moved away from a pond improvement directly at the creek because they were also interested in widening Fish Branch Creek through the neighborhood to the south and that the residents were not agreeable to this and that the area is comprised of good quality wetlands that they felt would be difficult to mitigate impacts for.

South of Lake Trafford Road Improvements – Divert runoff from Fish Branch Creek via a pipe system to a new water quality pond on the west side of the creek. Provide treatment for the runoff and then discharge directly back into Fish

Branch Creek via a pipe at the most downstream location before it outfalls into the wetlands adjacent to Lake Trafford. Robert stated that the proposed water quality pond is located on an approximately 55-acre parcel that has a willing seller. He stated that the property owner wishes to sell the entire parcel off and has approached the County about purchasing it. They are considering the possibility of a dual purpose, water quality pond/recreational park on the parcel, but stated to me that the asking price of the property (approximately $3 million) was too high. Apparently another entity (possibly the Redlands Christian Migrants Association) is interested in the frontage of this parcel along Lake Trafford Road for building a school.



From the call with Collier County, my impressions are that the North of Lake Trafford Road Improvements would have more stakeholder involvement and would require SFWMD's permission to use and modify their existing property but may have a lower R/W cost to the Department while still meeting our projects water quality needs without the use of postage stamp ponds throughout the corridor. The South of Lake Trafford Road Improvements would have a higher R/W acquisition cost but could line up easily with our projects water quality needs and would allow us to handle more of the design and permitting independently before handing off the finished product to the County post construction for operation and maintenance. Some of the R/W acquisition cost of the entire parcel could be offset by selling the frontage portion along Lake Trafford Rd. to a private entity for development and having Collier County reimburse the Department for a portion of the parcel for the development of a recreational park.

Based on our discussion with SFWMD during your June monthly meeting, they appeared to be agreeable to a regional approach at a downstream location such as these as long as we quantified some form of pre-treatment in the dry swales along SR 29. With these regional ideas we would still need to address attenuation at our discharge points along SR 29. Initially the idea for attenuation is within the roadside swales via a ditch block system. SFWMD did state that partial attenuation was acceptable as long the surrounding upstream and downstream areas were modeled for no adverse impacts.

Considering the alternatives above and our initial coordination with SFWMD and Collier County, do you agree that we should move forward with exploring these two options further in our PSR as the regional approaches? If so, let me know if you would like me to set-up a joint coordination meeting with FDOT and Collier County to discuss further details of these improvements and if we can begin environmental clearances on the parcels? I have attached a larger scale exhibit to help supplement the pictures above.

Thanks.

Sincerely,
Alan Eldridge, PE
Stormwater Services Technical Director | Faller, Davis & Associates, Inc.
o 813.261.5136 | m 727.483.2193
aeldridge@fallerdavis.com | fallerdavis.com
LinkedIn | Facebook | Instagram

9.7 Navigational Beacons

Alan Eldridge, P.E.

From: Logan Barile
Sent: Wednesday, June 28, 2023 5:40 PM
To: Alan Eldridge, P.E.; Patricia Christie, P.E.; Nicole Cribbs, CE; Desiree Davis, P.E.; Mike D. Adams; Hinkle, William; mholt@mckimcreed.com; Jerry Comellas; Lee Hutchinson; Chris Garth; William Rovira
Subject: FW: SR 29 Coordination (FDOT staff & Design Consultants)

FYI

We are moving forward with an anticipated Phase II Submittal date of Early December. We are allowed to perform field work for all engineering services. It appears that species and environmental field work is the only excluded items.

Thank you,
Logan Barile, PE
o 813.261.5136 | m 813.503.7215 | fallerdavis.com

From: Speese, Christopher <Christopher.Speese@dot.state.fl.us>
Sent: Wednesday, June 28, 2023 2:56 PM
To: Logan Barile <lbarile@fallerdavis.com>
Subject: FW: [External] SR 29 Coordination (FDOT staff & Design Consultants)

FYI

Chris Speese
Project Manager

Atkins Global, Inc. on behalf of
The Florida Department of Transportation
District One, Southwest Area Office
at the SWIFT SunGuide Center
10041 Daniels Parkway, Fort Myers, FL 33913

(239) 225-1973, Fax: (850) 412-8133
christopher.speese@dot.state.fl.us

From: Horne, Abra <Abra.Horne@dot.state.fl.us>
Sent: Wednesday, June 28, 2023 11:32 AM
To: Speese, Christopher <Christopher.Speese@dot.state.fl.us>; Pugh, Sean <Sean.Pugh@dot.state.fl.us>

Cc: James, Jeffrey W <Jeffrey.James@dot.state.fl.us>; Lauren Brooks <lauren.brooks@aecom.com>
Subject: RE: SR 29 Coordination (FDOT staff & Design Consultants)

For your situational awareness:

- The EA documents will be appended to reflect the design components.
- Kim Warren will assist with the organization of the documents and ensuring that all areas of the PD&E limits are covered or discussed when there are "no changes" from the original documents.
- In early December, we will need to have pens down regarding design changes so that we will have time to finalize the environmental documents.
- You may go out in the field and do shovel tests for engineering analyses of any type but cannot coordinate yet with agency staff. SO, for example, for pond siting you would need to coordinate with the WMDs later – likely in January. As such, pick pond siting options that could be narrowed further during the design work.
- Do not pass Phase IIR
- We need to know anticipated ROW impacts for proper updates to the EA
- Do not coordinate with FAA nor the Tribe

Thanks for your patience

Abra Horne
Administrator
District Environmental Management Office
Florida Department of Transportation
801 North Broadway Avenue
Post Office Box 1249
Bartow, FL 33831-1249
(863) 519-2239 (Office)

Be watchful in parking lots and call 911 if you see a child or pet unattended in a vehicle.

From: Horne, Abra
Sent: Wednesday, April 26, 2023 4:13 PM

To: Speese, Christopher <Christopher.Speese@dot.state.fl.us>; Pugh, Sean <Sean.Pugh@dot.state.fl.us>
Cc: James, Jeffrey W <Jeffrey.James@dot.state.fl.us>; Lauren Brooks <lauren.brooks@aecom.com>; Bennett, Jonathon <Jonathon.Bennett@dot.state.fl.us>
Subject: RE: SR 29 Coordination (FDOT staff & Design Consultants)

These navigational beacons were applicable when we were completing the EA/FONSI (getting it signed) followed by a re-evaluation for any design changes.

That is not the current approach.

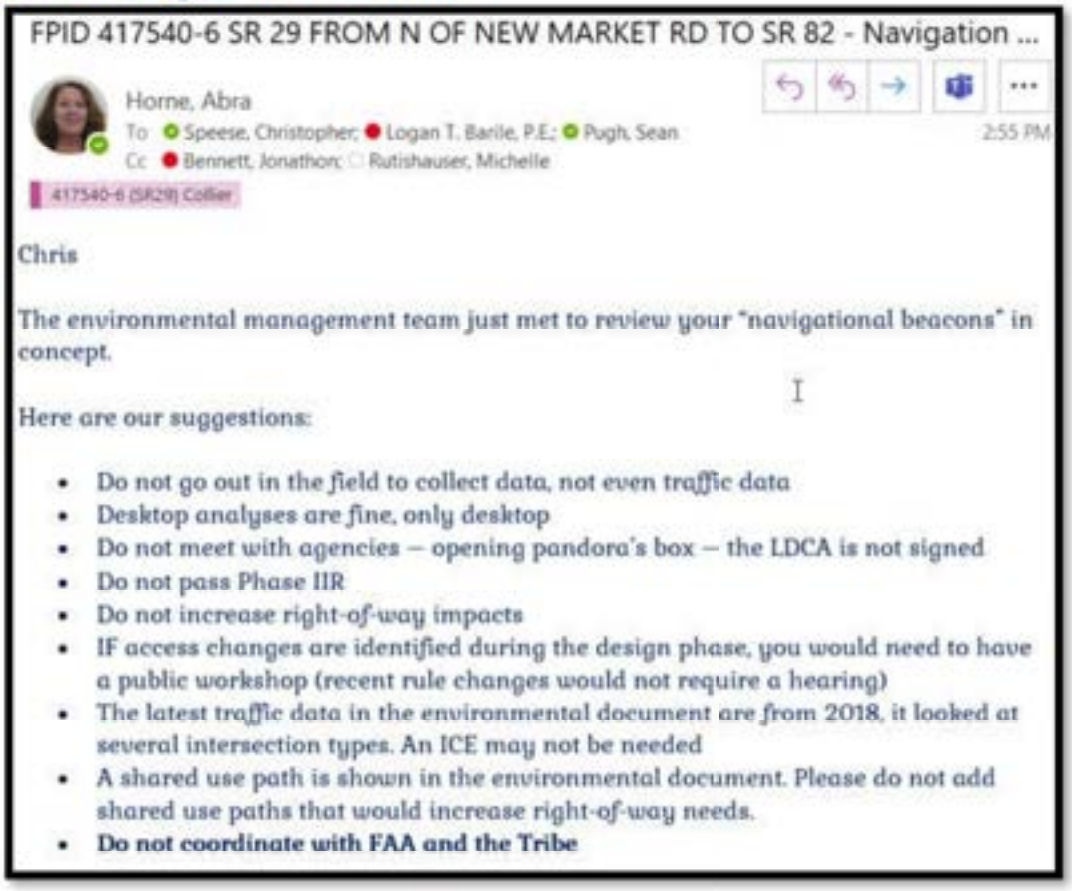
I will send new navigational beacons after we meet with OEM on Friday/Monday.

Abra

-----Original Appointment-----
From: Speese, Christopher <Christopher.Speese@dot.state.fl.us>
Sent: Wednesday, April 19, 2023 11:18 AM
To: Speese, Christopher; Pugh, Sean; Ratican, Dawn; Hawkins, Trevor; Logan T. Barile, P.E.; Jones, Jeffrey M
Cc: Desiree S. Davis, P.E.; Dajana Gibson; Kenny Yinger; Betancourt, Matthew; Alan Eldridge, P.E.; Trevor J. Hawkins; James, Jeffrey W; Horne, Abra; Lauren Brooks; Bennett, Jonathon
Subject: SR 29 Coordination (FDOT staff & Design Consultants)
When: Wednesday, April 26, 2023 3:00 PM-4:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Microsoft Teams Meeting

Internal and External PM's

PD&E Navigational Beacons:


FPID 417540-6 SR 29 FROM N OF NEW MARKET RD TO SR 82 - Navigation ...

Horne, Abra
To Speese, Christopher; Logan T. Barile, P.E.; Pugh, Sean
Cc Bennett, Jonathon; Rutishauser, Michelle
2:55 PM

417540-6 (SR29) Collier

Chris

The environmental management team just met to review your "navigational beacons" in concept.

Here are our suggestions:

- Do not go out in the field to collect data, not even traffic data
- Desktop analyses are fine, only desktop
- Do not meet with agencies – opening pandora's box – the LDCA is not signed
- Do not pass Phase IIR
- Do not increase right-of-way impacts
- IF access changes are identified during the design phase, you would need to have a public workshop (recent rule changes would not require a hearing)
- The latest traffic data in the environmental document are from 2018, it looked at several intersection types. An ICE may not be needed
- A shared use path is shown in the environmental document. Please do not add shared use paths that would increase right-of-way needs.
- **Do not coordinate with FAA and the Tribe**

Microsoft Teams meeting

Join on your computer or mobile app
Click here to join the meeting

Meeting ID: 253 155 300 642
Passcode: iPrUJR
Download Teams | Join on the web

Join with a video conferencing device

11384774@t.plcm.vc
Video Conference ID: 118 274 272 1
Alternate VTC instructions

Or call in (audio only)

+1 850-739-5589,,105578251# United States, Tallahassee

Phone Conference ID: 105 578 251#
Find a local number | Reset PIN

Information that is submitted to the Florida Department of Transportation is open for personal inspection and copying by any person in accordance with Chapter 119, Florida Statutes (F.S.).

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9.8 SFWMD Drainage Design Coordination Meeting

SR 29 Coordination at SFWMD Monthly Meeting - Minutes
Wednesday, January 24, 2024
10:00 am – 12:00 pm
Join Microsoft Teams Meeting

Attendees:
Melissa Lawrence – SFWMD
Richard Batewell – SFWMD
Angelica Hoffert – SFWMD
Nicole Monies – FDOT
Brent Setchell – FDOT
Anthony Celani – FDOT
Ed Cronyn
Ben Shepherd
Anastasiya Senyushkina (AIM)
Sean Carrigan (AIM)
Dawn Ratican (AIM)
Kenny Yinger (PGA)
Alan Eldridge (FDA)
Tammy Kreisle (FDA)

Meeting Objectives: Discuss the SR 29 projects and confirm criteria to be utilized for stormwater and floodplain.

Discussion Items

1. A project introduction was provided with an explanation of the project limits of each of the three projects with a .KMZ file shown on the screen.
    a. 417540-4 is the intersection at CR 846 where a roundabout is proposed.
    b. 417540-5 is a new alignment bypass project connecting from the proposed roundabout at CR 846 and tying into SR 29 North of New Market Road.
    c. 417540-6 is the widening of existing SR 29 from 2-lanes to 4-lanes from a new roundabout at New Market Road to south of SR 82.

2. Criteria
    a. Treatment – it was agreed that treatment for the new impervious only is required.
    b. Impairments
        i. Must demonstrate net improvement for any WBID with a nutrient impairment.
        ii. If the impairment was delisted for insufficient info, SFWMD would still like to see the net improvement but cannot require it.
        iii. Criteria requires 50% additional treatment if discharging to an impaired water body. Brent shared an email showing that 150% of detention volume is not required for FDOT projects. Melissa said she will verify with Joe Creech.

        After the meeting Brent coordinated with Melissa and confirmed:

- Providing nutrient loading calculations demonstrating net improvement for discharges to WBIDs with verified impaired waters.
- SFWMD will not require the additional 50% water quality volume for FDOT projects.

c. Compensatory Treatment and Attenuation
    i. Alan provided an example at the northern end of the -6 project (near SR 82) where two ponds in separate basins are proposed but outfall to the same canal. If one combined pond is used, and provides compensatory volumes to address both basins, would this be acceptable?
        1. Melissa and Rich confirmed that this would likely be acceptable and that SFWMD would work with us to make a permittable design.

3. Floodplain
    a. The latest maps are from 2012 and there is no available model to use. The existing model is in a proprietary format. PGA has developed an ICPR model for the existing conditions and will begin working on a proposed ICPR model with the intent to demonstrate no adverse impacts to the floodplain. A portion of the area is agricultural lands (orange groves) with a high berm surrounding the property. The stormwater within agricultural property is self-contained and has two permitted point discharges into the SR 29 Canal. The offsite discharges into the SR 29 Canal have been included in the model, but no impacts to the system will be developed in the proposed conditions model. Any modifications to the existing agricultural lands will be handled through the cost to cure process associated with FDOT R/W acquisition. The Agricultural lands have been excluded from the model.
        i. Angelica pointed out that there may need to be a permit modification for the Agricultural lands.
        ii. Brent explained that the property owner would be compensated via the cost to cure process where they would be compensated for impacts to their lands, and they would need to modify their permit accordingly.
        iii. Brent also explained that the model would include attenuation of the roadway runoff so the timing will change of when the downstream floodplain would receive the water.
        iv. Angelica pointed out that they usually see cup for cup calculations or net importer-exporter analysis. She also mentioned that Collier County/BCB will need to have input if we discharge to the SR 29 canal.
        v. Attenuation and improved conveyance may reduce floodplain compensation requirement (pending further calculations).
        vi. The floodplain storm event to analyze will be the 100-year 3-day. Check Applicant's handbook (Vol. II section 3.4 and 3.6) and SWERP manual.
        vii. The ICPR flood elevations will need to be compared to the FEMA floodplains. If different, an explanation is required. There are new Collier County FIS and FEMA maps coming out Feb. 8th. Kenny reviewed the preliminary maps, and none pertained to these projects.
        viii. Angelica mentioned that when crossing canals separate calculations are needed. Reviewers are looking for cross sections upstream and downstream and want a pre/post summary of peak stages.

4. Permit Submittals
        i. Will submit as separate permits.

ii. Will have a follow up pre-application meeting to discuss environmental approach.
iii. Will give SFWMD a heads up prior to submitting the permit applications so they can staff accordingly.
iv. Brent stated that it will likely be late summer when the permit applications are submitted.