

POND SITING REPORT

Florida Department of Transportation

District One

North Sarasota Multimodal Connector PD&E Study

Sarasota, Florida

Financial Management Number: 442034-1

ETDM Number: 14348

Date: July 2022

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

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
EXECUTIVE SUMMARY		5
1.0 INTRODUCTION		5
1.1 PROJECT DESCRIPTION		5
1.2 PURPOSE AND NEED		7
1.3 EXISTING FACILITY		9
1.4 PROPOSED ACTION		9
1.4.1 FOUR-LANE ELEVATED TYPICAL SECTION		9
1.4.2 FOUR-LANE BRIDGE TYPICAL SECTION		11
1.5 PROPOSED IMPROVEMENTS		12
1.5.1 NO-BUILD ALTERNATIVE		12
1.5.2 BUILD ALTERNATIVE		12
1.6 PROPOSED POND SITES		13
1.7 PURPOSE OF REPORT		13
2.0 DESIGN CRITERIA		13
2.1 WATER QUALITY CRITERIA		14
2.2 WATER QUANTITY CRITERIA		14
2.3 IMPAIRED WATERBODY CRITERIA		15
3.0 EXISTING CONDITION		15
3.1 SOIL CHARACTERISTICS		15
3.2 CROSSDRAIN		16
3.3 FEMA FLOODPLAIN		16
3.4 WETLAND JURISDICTION		16
4.0 PROPOSED CONDITION		17

4.1	SMF POND ALTERNATIVES	17
4.1.1	SMF 1A	17
4.1.2	SMF 1B (PREFERRED)	17
4.1.3	SMF 2A	18
4.1.4	SMF 2B (PREFERRED)	18
4.1.5	SMF 3A	19
4.1.6	SMF 3B	19
4.1.7	Existing Lake A (PREFERRED)	19
4.2	PROPOSED CONVEYANCE SYSTEMS	20
5.0	RESULTS	20
6.0	RESOURCES FOR ANALYSIS	21

APPENDICIES

<u>APPENDIX</u>	<u>TITLE</u>
APPENDIX A	FIGURES
APPENDIX B	CORRESPONDENCE
APPENDIX C	POND CALCULATIONS AND ALTERNATIVE MATRIX
APPENDIX D	DRAINAGE MAPS
APPENDIX E	CROSSDRAIN CALCULATIONS
APPENDIX F	SOIL SURVEY
APPENDIX G	CONTAMINATION SCREENING EVALUATION
APPENDIX H	WETLAND AND SURFACE WATER SUMMARY
APPENDIX I	ARCHAEOLOGICAL SUMMARY

EXECUTIVE SUMMARY

Sarasota County, in coordination with FDOT, is conducting a Project Development and Environment (PD&E) study to evaluate the proposed North Sarasota Multimodal Connector, a new east-west four-lane roadway and overpass crossing SR 93 (I-75) between the Fruitville Road interchange and the University Parkway interchange in Sarasota County. The new east-west overpass will require improvements along N. Cattlemen Road to accommodate a new intersection. Improvements along N. Cattlemen Road will maintain the existing four-lane divided typical section.

This Pond Siting Report (PSR) is preliminary and is used as an engineering tool to identify potential pond sites utilizing an “alternatives” methodology. The pond site locations are screened using preliminary information based upon many assumptions and judgments. The calculations presented in this report are preliminary and help in estimating the preliminary size of the stormwater and floodplain ponds for each basin. The pond sizes, the limits of the basins associated with each pond alternative shown on the figures, tables, and included in the documentation are subject to change throughout the preliminary engineering and project design phases.

This report documents three basins and two stormwater treatment alternatives for each basin. The potential pond sites were analyzed and evaluated based on hydraulic, environmental, and economic factors for the PD&E phase of the project. All referenced elevations refer to the NAVD 1988 datum. The preferred stormwater management facilities are SMF 1B, SMF 2B and Lake A.

1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

Sarasota County, in coordination with FDOT, is conducting a Project Development and Environment (PD&E) study to evaluate the proposed North Sarasota Multimodal Connector, a new east-west four-lane roadway and overpass crossing SR 93 (I-75) between the Fruitville Road interchange and the University Parkway interchange in Sarasota County. The new east-west overpass will require improvements along N. Cattlemen Road

to accommodate a new intersection. Improvements along N. Cattlemen Road will maintain the existing four-lane divided typical section.

The project is in the Lakewood Ranch area of north Sarasota County. Lakewood Ranch is a 30,000-acre mixed-used master planned development in Sarasota County. The project is within Sections 12 and 13 of Township 36 South Range 18 East and Section 7 of Township 36 South Range 19 East. The project limits cover approximately 0.6 miles. The proposed overpass crosses Interstate-75 (I-75). The project study area and project limits are shown in **Figure 1-1**.

This Pond Siting Report (PSR) is preliminary and is used as an engineering tool to identify potential pond sites utilizing an “alternative” methodology. The pond site locations are screened using preliminary information based upon many assumptions and judgements. The calculations presented in this report are preliminary and help in estimating the preliminary size of the stormwater and floodplain ponds for each basin. The pond sizes, the limits of the basins associated with each pond alternative shown on the figures, tables and included in the documentation are subject to change throughout the preliminary engineering and project design phase.

The project was evaluated through FDOT’s Efficient Transportation Decision Making (ETDM) process as project #14348. An ETDM *Programming Screen Summary Report* containing comments from the Environmental Technical Advisory Team (ETAT) was published on November 9, 2018. The ETAT evaluated the project’s effects on various natural, physical, and social resources. Other components of the PD&E study include a Preliminary Engineering Report (PER), concept plans, environmental studies, a public involvement program and other information for use in the development of this project.

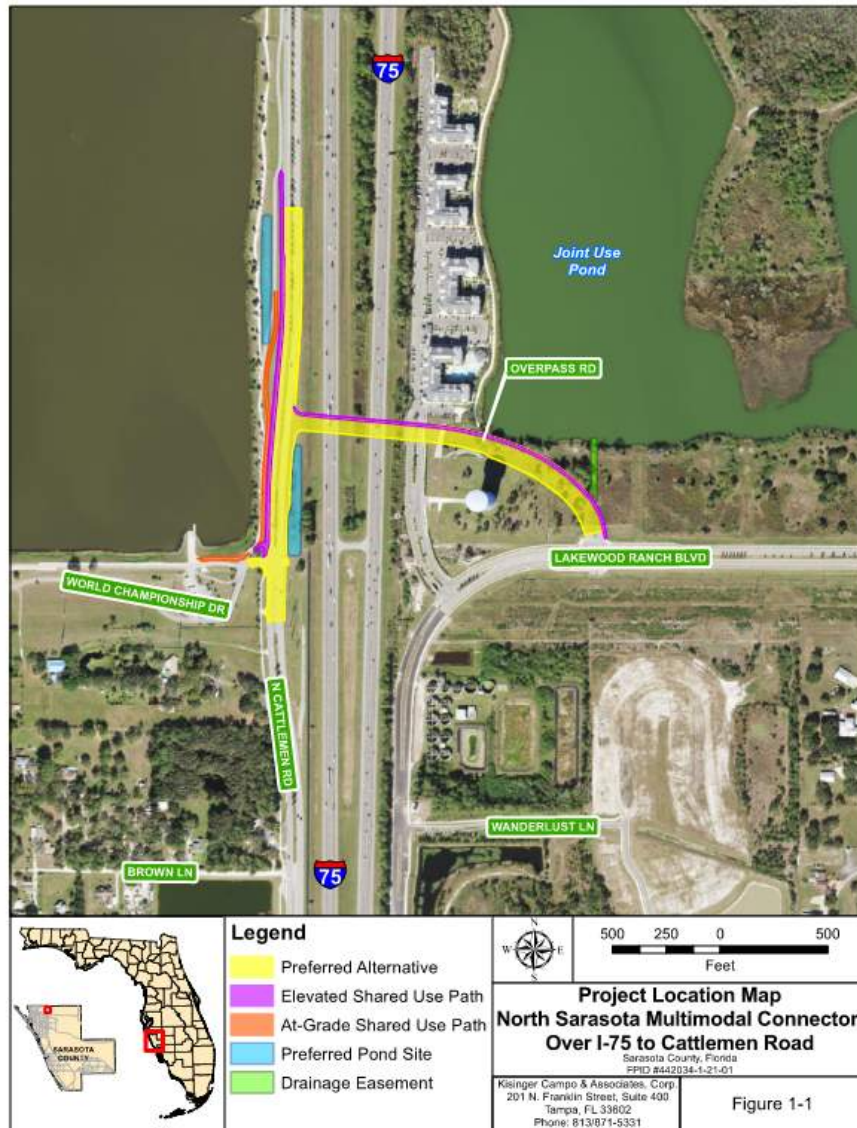
Upon completion, the study will meet all requirements of the National Environmental Policy Act of 1969 (NEPA) as administered by the Federal Highway Administration

(FHWA) and the requirements of other federal and state laws so as to qualify the proposed project for federal-aid funding.

1.2 PURPOSE AND NEED

The purpose of the project is to enhance access to destinations east and west of I-75 and to provide relief of traffic congestion on both Fruitville Road and University Parkway partly attributed to increased traffic demand from existing and planned development in the Lakewood Ranch area. The need for the project is supported by the following criteria.

Figure 1-1: Preferred Alternative Proposed Alignment



1.2.1 IMPROVE TRANSPORTATION NETWORK CONNECTIVITY

Currently there is no efficient access to employment centers and commercial activity in the Lakewood Ranch area and other destinations east and west of I-75 within the vicinity of the project area. Under existing conditions, travelers have access to Lakewood Ranch area and other destinations east and west of I-75 via Fruitville Road and University parkway which are congested, and travelers experience long delays. Traffic analysis documented in the Traffic Technical Memorandum: *I-75 Overpass Transportation Impact Assessment (prepared in Feb. 2016; revised in Sept. 2016)* suggests that creating a link that connects destinations east and west of I-75 and Lakewood Ranch area would relieve existing and future congestions on Fruitville Road and University Parkway and hence improve accessibility for travelers.

1.2.2 IMPROVE OPERATIONAL CONDITIONS

Existing and planned developments in the Lakewood Ranch area has increased the travel demand to use Fruitville Road and University Parkway and their interchanges with I-75. According to the traffic analysis summarized in the *Traffic Technical Memorandum: I-75 Overpass Transportation Impact Assessment (prepared in Feb. 2016; revised in Sept. 2016)*, the roadway segments west of the Fruitville Road and University Parkway interchanges with I-75 are currently operating at an unacceptable level of service (LOS) E and are projected to continue to deteriorate in the future.

1.2.3 IMPROVE SAFETY CONDITIONS

According to crash data obtained from Sarasota County, 278 total crashes, including one fatality, occurred along Fruitville Road from Cattlemen Road to North Sarasota Multimodal Connector between 2016 and 2020. Rear-end and sideswipe crashes were the most frequent crash types along Fruitville Road at 62.59% and 16.55%, respectively. The Actual Crash Rate “ACR” was calculated based on the AADT values of the years 2016 to 2020 and was found to be 3.602

crashes per million vehicles miles driven higher than the 3.144 statewide average for an urban six lane two-way divided roadway. Almost all the crashes (81.7%) occurred at the intersection of Cattlemen Road with traffic congestion being the leading factor. With a large majority of rear-end crashes, it is concluded traffic congestion and the signal timing at Cattlemen Road are the main issue along Fruitville Road.

1.3 EXISTING FACILITY

The North Sarasota Multimodal Connector is a new roadway. Within the study area, I-75 consists of eight lanes with a posted speed of 70 miles per hour (mph). The nearest existing east-west roadways crossing I-75 are Fruitville Road (to the south) and University Parkway (to the north). These existing parallel roadways are separated by approximately 3.5 miles and are the only existing roadways accommodating east-west travel across the I-75 limited access right-of-way within the project area.

1.4 PROPOSED ACTION

The proposed action is to construct a new four-lane roadway and overpass with two eastbound and two westbound lanes over I-75 (Overpass Road) connecting North Sarasota Multimodal Connector to Cattlemen Road.

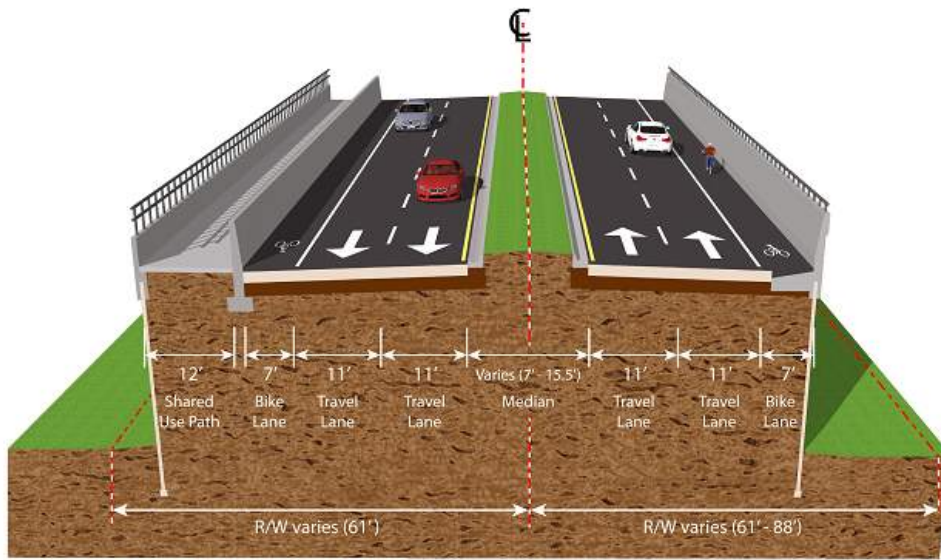
1.4.1 FOUR-LANE ELEVATED TYPICAL SECTION

The North Sarasota Multimodal Connector includes two separate typical sections for the segments of the roadway near the proposed overpass where the vertical alignment separates from natural ground.

The first elevated typical section is for the section along the Overpass Road and includes four 11-foot travel lanes, two in each direction, two seven-foot bicycle lanes, one in each direction, and a 12-foot shared use path on the north side of the roadway. The proposed roadway will be divided by a grassed median varying from seven feet to 15.5 feet in width to transition the roadway to match the proposed

bridge typical section (**Figure 1-3**). The design speed is 40 mph. The total right-of-way width required to accommodate the proposed overpass along this segment varies from 122 feet to 149 feet.

Figure 1-3: Four-lane Elevated Typical Section along Overpass Road



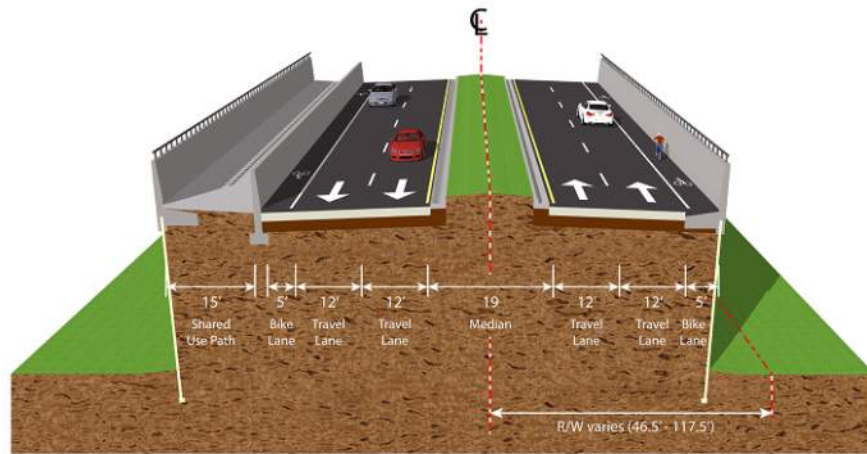
The second elevated typical section is along N. Cattlemen Road and includes four 12-foot travel lanes, two in each direction, two five-foot bicycle lanes, one on each direction, and a 15-foot shared use path is provided on the west side of the roadway and is separated from the adjacent bicycle lane by a concrete barrier. The proposed roadway is divided by a 19-foot grassed median (**Figure 1-4**). The design speed is 40 mph.

MSE (Mechanically Stabilized Earth) walls and concrete barrier are proposed where roadway side slopes cannot tie to natural ground within the proposed right-of-way (**Figure 1-4**).

The proposed 15-foot shared-use path on Cattlemen Road and the 12-foot shared-use path on the Overpass Road will be located along the proposed elevated overpass roadway and will provide a connection between the Nathan Benderson Park and

the Lakewood Ranch Development. The existing alignment of the unpaved path and paved Bill Robinson Trail traversing the perimeter of the lake will be modified, as needed, to maintain the 15-foot paved trail.

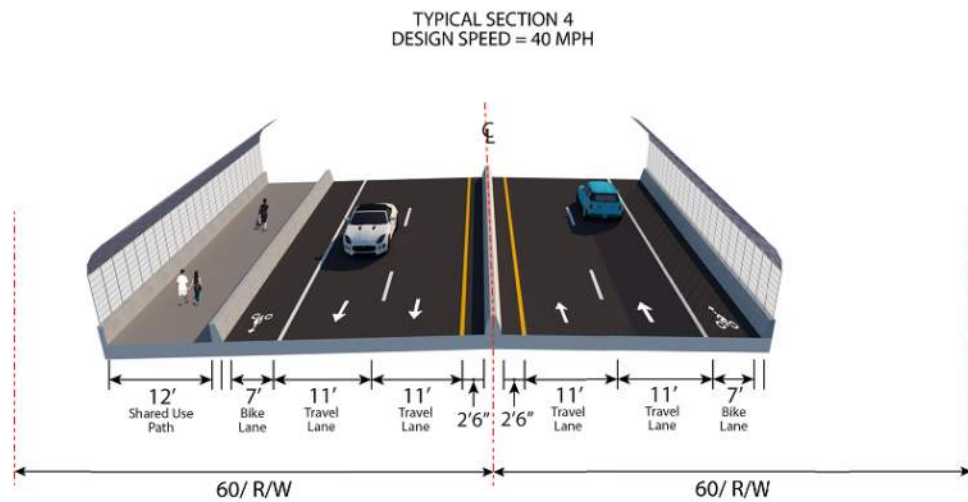
Figure 1-4: Four-lane Elevated Typical Section along N. Cattlemen Road



1.4.2 FOUR-LANE BRIDGE TYPICAL SECTION

The proposed bridge over I-75 includes four 11-foot travel lanes, two in each direction, and two seven-foot bicycle lanes, one in each direction. A concrete bridge rail and 2.5-foot inside shoulders separate the opposing travel lanes. A 12-foot shared use path is provided on the north side of the bridge and is separated from the adjacent bicycle lane by a concrete bridge rail. The total bridge width is approximately 83'-1.5" (Figure 1-5).

Figure 1-5: Four-lane Bridge Typical Section



1.5 PROPOSED IMPROVEMENTS

1.5.1 NO-BUILD ALTERNATIVE

Throughout this study, a “No-Build” (no-action) alternative is also considered. The “No-Build” alternative assumes that the North Sarasota Multimodal Connector over I-75 is not built, but accounts for routine maintenance on existing adjacent roads.

The No-Build Alternative minimizes right-of-way and construction costs along with environmental impacts. However, it does not accomplish the purpose and need for this project.

1.5.2 BUILD ALTERNATIVE

Three build alternatives, Build Alternative 1 (South), Build Alternative 2 (Center), and Build Alternative 3 (North) were evaluated. These alternatives applied the typical sections described in **Section 1.4** along three independent alignments connecting N. Cattlemen Road west of I-75 to Professional Parkway or North Sarasota Multimodal Connector east of I-75. With considerations for residential relocations and environmental impacts, Build Alternative 2 was selected as the

Preferred Alternative. A detailed alternatives analysis and concept plans are included in the PER prepared under separate cover.

1.6 PROPOSED POND SITES

There are three preferred stormwater management facilities (SMF) associated with the Preferred Alternative described above. Two SMF's are located on the west side of the overpass along N. Cattlemen Road. Stormwater will also be treated in the existing joint-use facility directly northeast of the overpass. There will be an easement from the roadway to this joint-use facility. All drainage improvements are within the project study area.

1.7 PURPOSE OF REPORT

This Pond Siting Report (PSR) is preliminary and is used as an engineering tool to identify potential pond sites utilizing an "alternatives" methodology. The pond site locations are screened using preliminary information based upon many assumptions and judgments. The calculations presented in this report are preliminary and help in estimating the preliminary size of the stormwater and floodplain ponds for each basin. The pond sizes, the limits of the basins associated with each pond alternative shown on the figures, tables, and included in the documentation are subject to change throughout the preliminary engineering and project design phases.

2.0 DESIGN CRITERIA

The project is located within the Southwest Florida Water Management District (SWFWMD). Stormwater management for water quality (treatment) and water quantity (attenuation) will be provided using dry retention with underdrain and wet detention stormwater management facilities. The design of the drainage and stormwater facilities will comply with the standards set forth by the FDOT Drainage Manual and the Statewide Environmental Resource Permitting (SWERP) Manual. The stormwater design will also comply with the Sarasota County Unified Development Code (UDC) stormwater management and Level of Service requirements.

Stormwater runoff will be collected with proposed curb and gutter inlets and piped to ditches and stormwater management facilities. Stormwater management for water quality (treatment) and water quantity (attenuation) will be provided in offsite or existing ponds. In accordance with SWFWMD requirements, the SWFWMD 25 year/24 hour storm (8.5 inches) and the 100 year/24 hour storm (10 inches) will be utilized for Sarasota County.

2.1 WATER QUALITY CRITERIA

The method of stormwater treatment for this project will include both dry retention with underdrain and wet detention. The method of dry retention with effluent filtration systems involve treating the runoff from the first one inch of rainfall. The filtration systems in a dry retention system shall have an minimum of 0.5 feet of vertical head between the center line of the pipe and normal water elevation or pond bottom. The total retention volume shall be available within 36 hours.

The wet detention method involves storing the stormwater in a wet pond above the SHWT. Treatment will be provided for the first one inch of stormwater runoff from the new impervious roadway area added to the project. For wet detention, the treatment volume shall be no greater than 18 inches above the control elevation [orifice elevation/Seasonal High Water Level (SHWL)]. An orifice shall be designed allowing no more than one-half of this treatment volume to bleed down in the first 60 hours and the remainder of the treatment volume in not less than 120 hours. Due to the detention time required for wet detention systems, only that volume which drains below the overflow elevation within 36 hours may be counted as part of the volume required for water quantity storage.

2.2 WATER QUANTITY CRITERIA

For an open basin, the SWFWMD requires that the 25-year/24-hour post-development maximum discharge rate must be attenuated to no greater than the 25-year/24-hour pre-development discharge rate. The stormwater design will also comply with the Sarasota County Unified Development Code (UDC) stormwater management and Level of Service

requirements. The ponds were designed to attenuate the 100 year/24 hour storm (10 inches).

2.3 IMPAIRED WATERBODY CRITERIA

The project is located within three drainage basins. The project west of I-75 is located within Cooper Creek (WBID 1930A) east of I-75 is Macasphalt Inc Lake (WBID 1930) and south of the project discharges to Philippi Creek (WBID 1937). Cooper Creek, Macasphalt Inc Lake and Philippi Creek are not impaired for nutrients and a pollutant loading analysis will not be required.

3.0 EXISTING CONDITION

The existing drainage on Cattlemen Road consists of curb and gutter inlets that are piped to existing stormwater management facilities. These stormwater management facilities then drain into existing South Lake west of I-75. The existing corridor for the North Sarasota Multimodal Connector is undeveloped. The existing drainage patterns primarily consist of overland flow with some small depressional storage. The basin east of I-75 flows into existing Lake A under existing conditions. Existing drainage basins were delineated from LIDAR contours and existing permitted plans

3.1 SOIL CHARACTERISTICS

The *Soil Survey of Sarasota County* classifies the soils within the project area as EauGallie and Myakka sands (#10), Holopaw fine sand (#22), and Pits and Dumps (#32). EauGallie and Myakka soils are described as nearly level to gently sloping, poorly drained with a seasonal high water table (SHWT) depth of 0.5 to 1.5 foot below the existing ground and Hydrologic Soil Group (HSG) Type A/D. Holopaw soils are described as nearly level and very poorly drained, with a SHWT depth at the existing ground and HSG Type A/D. Pits and Dumps include areas of previous excavation of limestone and phosphate due to mining activities. The refuse from these activities have been left on the adjacent land. Pits are described as dips having linear down and cross-slope shapes. Dumps are classified as a

rise with a linear down-slope shape and a convex cross-slope shape. Refer to **Appendix F** for the soil survey report.

3.2 CROSSDRAIN

There is one existing 24” crossdrain, that is 66 feet long, along the proposed North Sarasota Multimodal Connector corridor at Station 209+50. This crossdrain runs under an access road and drains into existing Lake A. In the proposed condition the 24” crossdrain will be replaced with a 30” crossdrain, that is 90 feet long (CD-1). The crossdrain will run under the MSE wall and discharge into Pond 3, as it did in the pre-condition. The upstream side of the crossdrain is located within Sarasota County right of way. HY-8 was used to calculate the 25 Yr, 50 Yr and 100 Yr stages for the pre and post condition. The pipe size of the crossdrain was increased so there is no increase in upstream stage. Please refer to **Appendix E** for crossdrain calculations.

Post flow and stage:

Storm	Q (cfs)	Pre Stage (ft)	Post Stage (ft)
25 YR	17	30.80	29.59
50 YR	22	31.05	30.11
100 YR	25	31.08	30.34

3.3 FEMA FLOODPLAIN

The project site is located on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Community-Panel Number 12115C0152F dated 12/4/16 and preliminary map panel 12115C0152G (12/31/2019) in Sarasota County. The project is classified as Zone X (**Appendix A, Figure 4**). Zone X is an area that has minimal flood hazard, with elevations higher than the 0.2 percent annual chance flood.

3.4 WETLAND JURISDICTION

The project does not impact any wetlands. There are surface water impacts due to proposed improvements within the project limits.

4.0 PROPOSED CONDITION

The urban roadway will be drained by curb and gutter inlets and stormwater will be piped to the existing ponds. Refer to **Appendix C** for the pond calculations.

4.1 SMF POND ALTERNATIVES

The project has three basins along the corridor. This report analyzes two alternative pond sites per basin.

4.1.1 SMF 1A

SMF 1A alternative is the existing dry retention with underdrain treatment area 1 (TA-1) under SWFWMD Permit 4302151.000 and a proposed dry retention pond south of the existing pond (**Appendix C, C-13**). It is located on the east side of Cattlemen Road between Station 82+50 and 83+50. The proposed basin area is 4.1 acres. The required treatment volume is 0.34 ac-ft, and by raising the weir, the provided treatment volume is 0.42 ac-ft. SMF 1A has no wetland or surface water impacts. The overall threatened and endangered species and archaeological potential is low. The site has no contamination potential. This alternative will utilize the existing SMF 1 with an additional 0.12 acre pond located south of the existing one connected by an equalizer pipe. Due to the additional construction and maintenance cost associated with two separate ponds, this is not the preferred alternative.

4.1.2 SMF 1B (PREFERRED)

SMF 1B is the existing dry retention with underdrain treatment area 1, permitted under ERP 4302151.000 (**Appendix C, C-13**). It is located on the east side of Cattlemen Road between Station 83+20 and 88+44. The existing required treatment is 0.263 ac-ft, with the weir set at elevation 26.5 the existing provided treatment is 0.284 ac-ft (**Appendix C, C-33**). The proposed basin area is 4.1 acres. The required treatment volume is 0.34 ac-ft. By expanding the pond and raising the weir, the proposed treatment volume is 0.42 ac-ft. SMF 1B has 0.32 acres of

surface water impacts. The overall threatened and endangered species and archaeological potential is low. The site has no contamination potential. SMF 1 will be modified by extending the length of the pond to south and is the preferred alternative.

4.1.3 SMF 2A

SMF 2A alternative is the existing dry retention with underdrain treatment area 2 (SWFWMD Permit 4302151.000) in addition to a proposed dry retention pond south of the existing pond (**Appendix C, C-13**). The existing pond is located on the west side of Cattlemen Road between Station 90+50 and 94+00. The proposed basin area is 3.3 acres. The required treatment volume is 0.28 ac-ft, and the provided treatment volume is 0.34 ac-ft. SMF 2A has no wetland or surface water impacts. The overall threatened and endangered species and archaeological potential is low. The site has no contamination potential. This alternative will utilize the existing SMF 2 with an additional 0.18 acre pond located south of the existing one connected by an equalizer pipe. Due to the additional construction and maintenance cost associated with two separate ponds, this is not the preferred alternative.

4.1.4 SMF 2B (PREFERRED)

SMF 2B is the existing dry retention with underdrain treatment area 2, permitted under ERP 4302151.000 (**Appendix C, C-13**). The existing SMF is located from Station 93+00 to 99+00 on the west side of Cattlemen Road and includes a 1.32 acre basin. The existing required treatment is 0.11 ac-ft. A weir at elevation 26.0 (NGVD 29) provides 0.151 ac-ft of existing treatment (**Appendix C, C-33**). The proposed basin area is 3.3 acres. The required treatment volume is 0.28 ac-ft, and the provided treatment volume is 0.34 ac-ft. SMF 2B will be modified by extending the pond to north and south. SMF 2B has 0.83 acres of surface water impacts. The overall threatened and endangered species and archaeological potential is low. The site has no contamination potential. SMF 2B is the preferred alternative.

4.1.5 SMF 3A

SMF 3A is located from Station 208+50 to 213+00 along west side of the overpass. Based on discussion with the Sarasota County Utility Coordinator SMF 3A was eliminated to avoid impacts to the water tower and surrounding watermains. Refer to **Appendix B, B-1** for correspondence.

4.1.6 SMF 3B

SMF 3B is located from Station 211+00 to 214+00 along east side of the overpass. The overall threatened and endangered species is low, archaeological potential is low, and the site has no contamination potential. After further analysis this site was reduced to a 30' wide, 0.2 acre easement to outfall to existing Lake A where treatment and attenuation will be provided.

4.1.7 Existing Lake A (PREFERRED)

The preferred alternative for basin 3 is existing Lake A, permitted under ERP 43042323.001 (**Appendix C, C-51**) located North of proposed North Sarasota Multimodal Connector and East of I-75. The existing permit includes the area of the North Sarasota Multimodal Connector that will be draining to the existing lake. Therefore, no new pond will be required (**Appendix C, C-62**). Existing Lake A is a wet detention pond treating a 981.44 acre basin. This alternative will require a 30' wide, 0.2 acre easement to outfall into the lake. The area for outfall easement was assessed under the footprint of SMF 3B and showed that the overall threatened and endangered species is low, archaeological potential is low, and the site has no contamination potential. The updated CSER in Appendix G, indicates no contamination potential for the existing lake and the outfall easement. We will coordinate with the SWFWMD to modify permit 43042323, if necessary. Calculations show that Lake A has more than enough design pool volume to accommodate the permitted basin area. The required design pool volume is 385.74 ac-ft and the provided design pool volume is 996.06 ac-ft (**Appendix C, C-60**). No changes to the pond are proposed and the minor encroachment into the pond

DHW will be compensated for by excavation and/or providing storage within the North Sarasota Multimodal Connector right-of-way or within the proposed outfall easement.

4.2 PROPOSED CONVEYANCE SYSTEMS

Stormwater will be collected with inlets and piped to the stormwater management facilities. There will be three stormsewer systems, two on Cattlemen Road and one on North Sarasota Multimodal Connector. The first system will collect water from Station 82+90 to 89+45 on Cattlemen Road, as well as west of station 203+30 on North Sarasota Multimodal Connector, and discharge into Pond 1. The second system on Cattlemen Road will collect water from Station 89+45 to 98+40 and discharge into Pond 2. The stormsewer system on North Sarasota Multimodal Connector will collect water from Station 203+30 to 216+25 and discharge into existing Lake A. The stormsewer system was designed for the 10 year storm.

5.0 RESULTS

The SMF pond alternatives were identified using recent aeriels and lidar contours along with the additional survey information. Factors considered in evaluating alternative pond sites included hydraulics, costs for any required inflow or outflow easements, costs of inflow and outflow structures, wetland impacts, potential for presence of protected species, hazardous material contamination ranking, the potential for presence of cultural and/or historical resources and aesthetics. Below is a matrix for the preferred SMF pond sites.

Summary of Preferred Pond Sites

Preferred Sites	Location (Station/ Side)	Archeological	Contamination Ranking	T&E Species	Wetland and Surface Waters (acres)	R/W Area (acres)
SMF 1B	83+20 and 88+44 RT	Low	No	Low	0.32*	Within R/W
SMF 2B	93+00 to 99+00 LT	Low	No	Low	0.83*	Within R/W
Lake A	125+50 to 129+00 RT	Low	No	Low	0	0.2**

* Surface Water Impact

**Easement

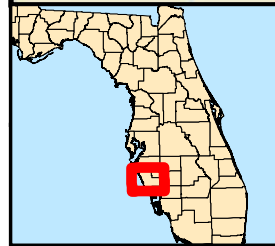
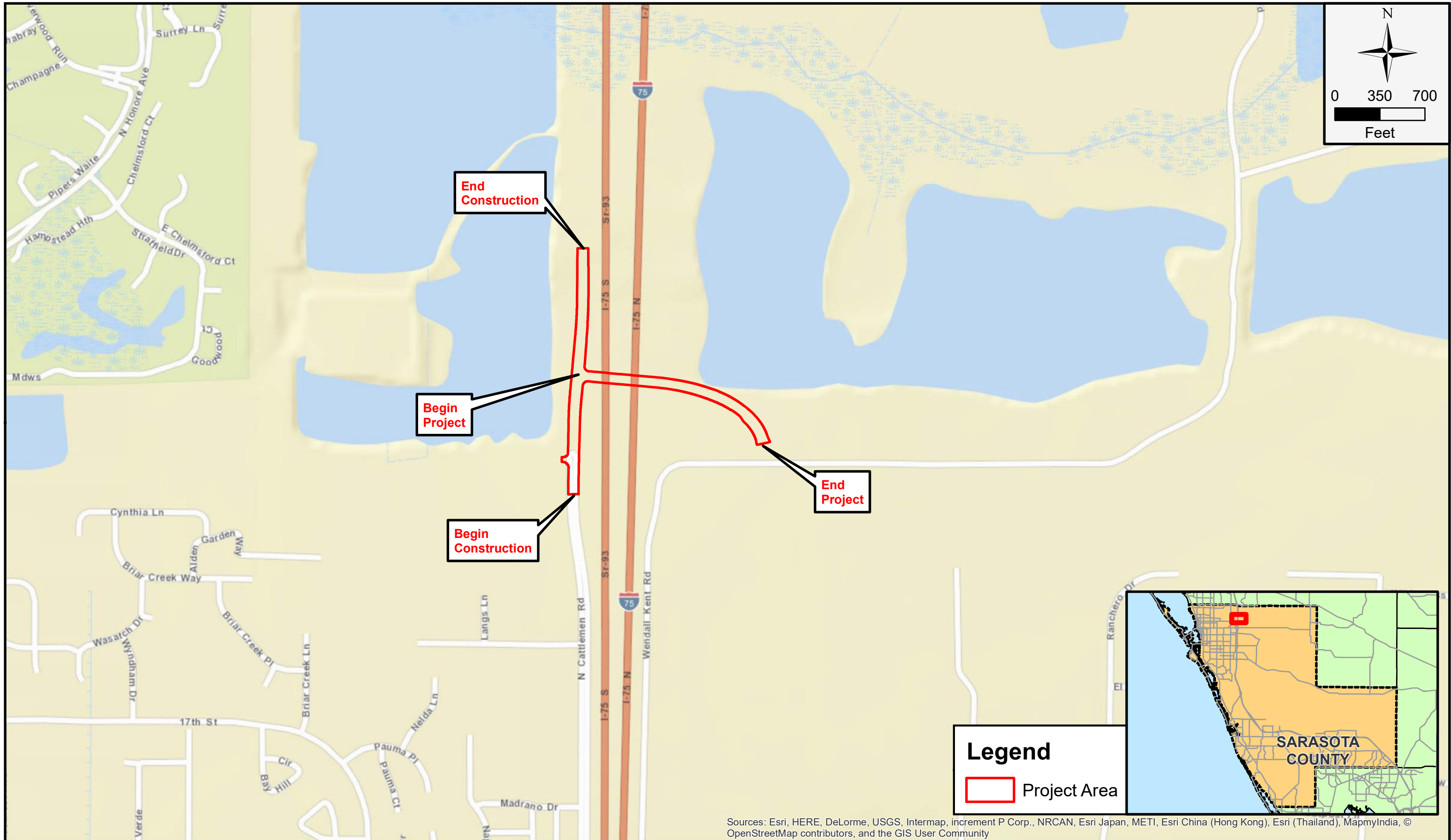
6.0 RESOURCES FOR ANALYSIS

The following sources were used to locate and size the alternative pond sites:

- FDOT Drainage Manual
- FDOT Drainage Design Guide
- Florida Design Manual
- Environmental Resource Permit (ERP) Applicant’s Handbook Volumes I and II
- Lidar (SWFWMD, 2005)
- USDA SCS Soil Map
- USGS Quadrangle Maps
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM),
December 31, 2019, 12115C0152G

APPENDIX A

FIGURES

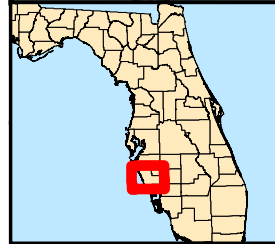
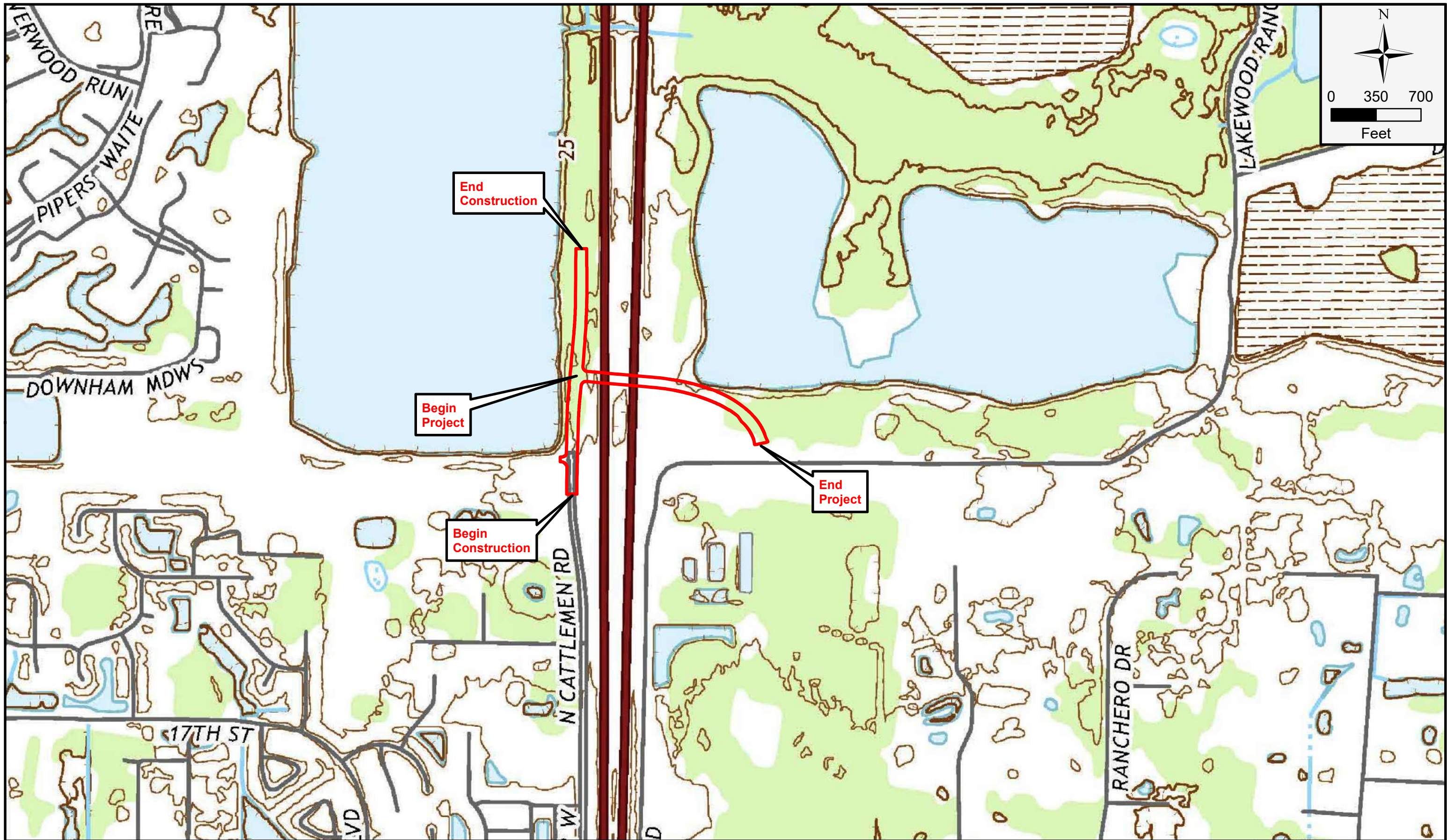


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I-75 (SR 93) Overpass
Sarasota County, Florida
 Project Number: 442034-1-21-01

Project Location Map

Figure
1

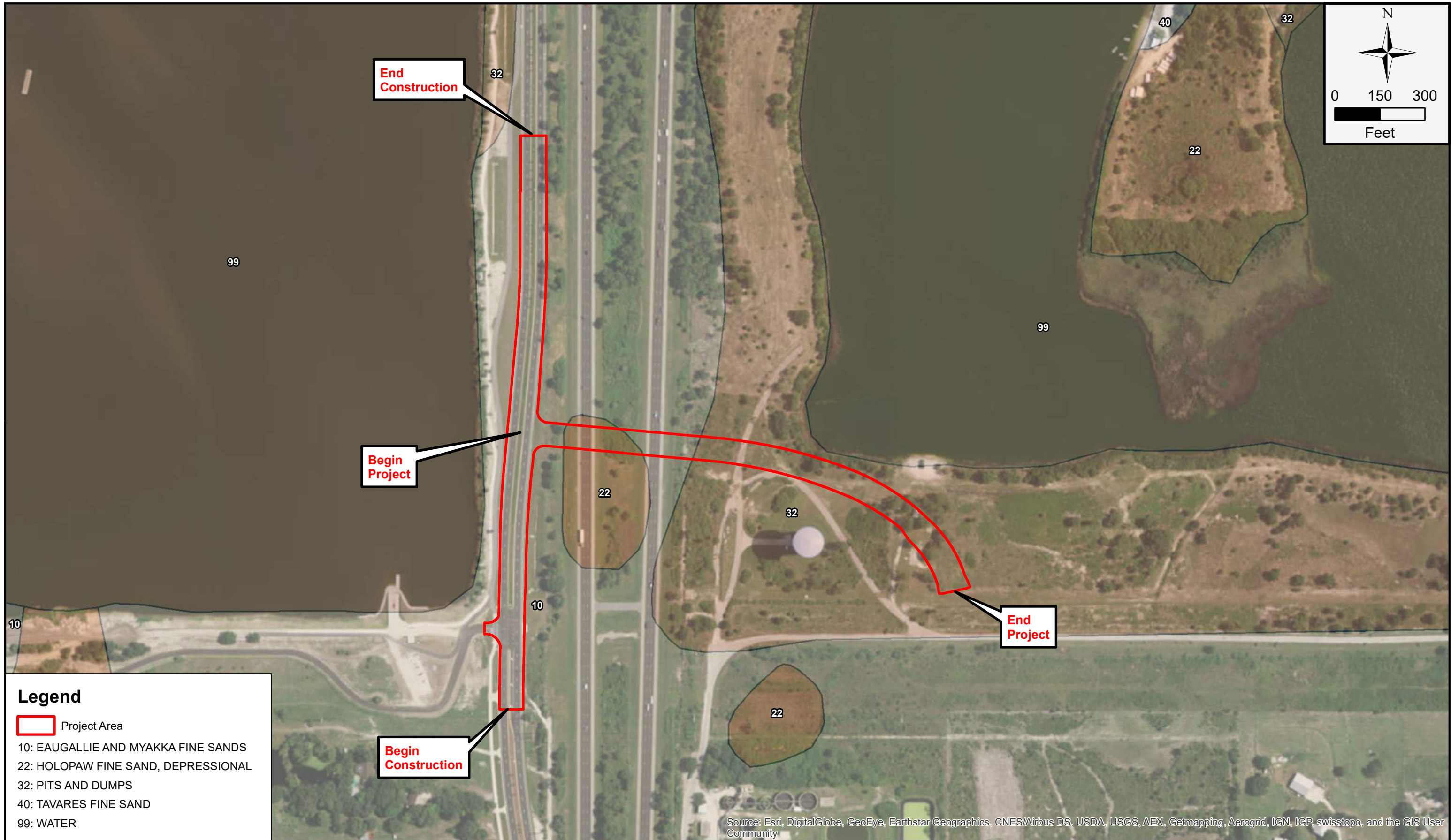


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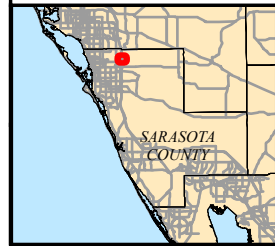
USGS Quadrangle Map

Figure
2



Legend

- Project Area
- 10: EAUGALLIE AND MYAKKA FINE SANDS
- 22: HOLOPAW FINE SAND, DEPRESSIONAL
- 32: PITS AND DUMPS
- 40: TAVARES FINE SAND
- 99: WATER





Kisinger Campo & Associates
 201 N. Franklin St, Suite 400
 Tampa, FL 33602

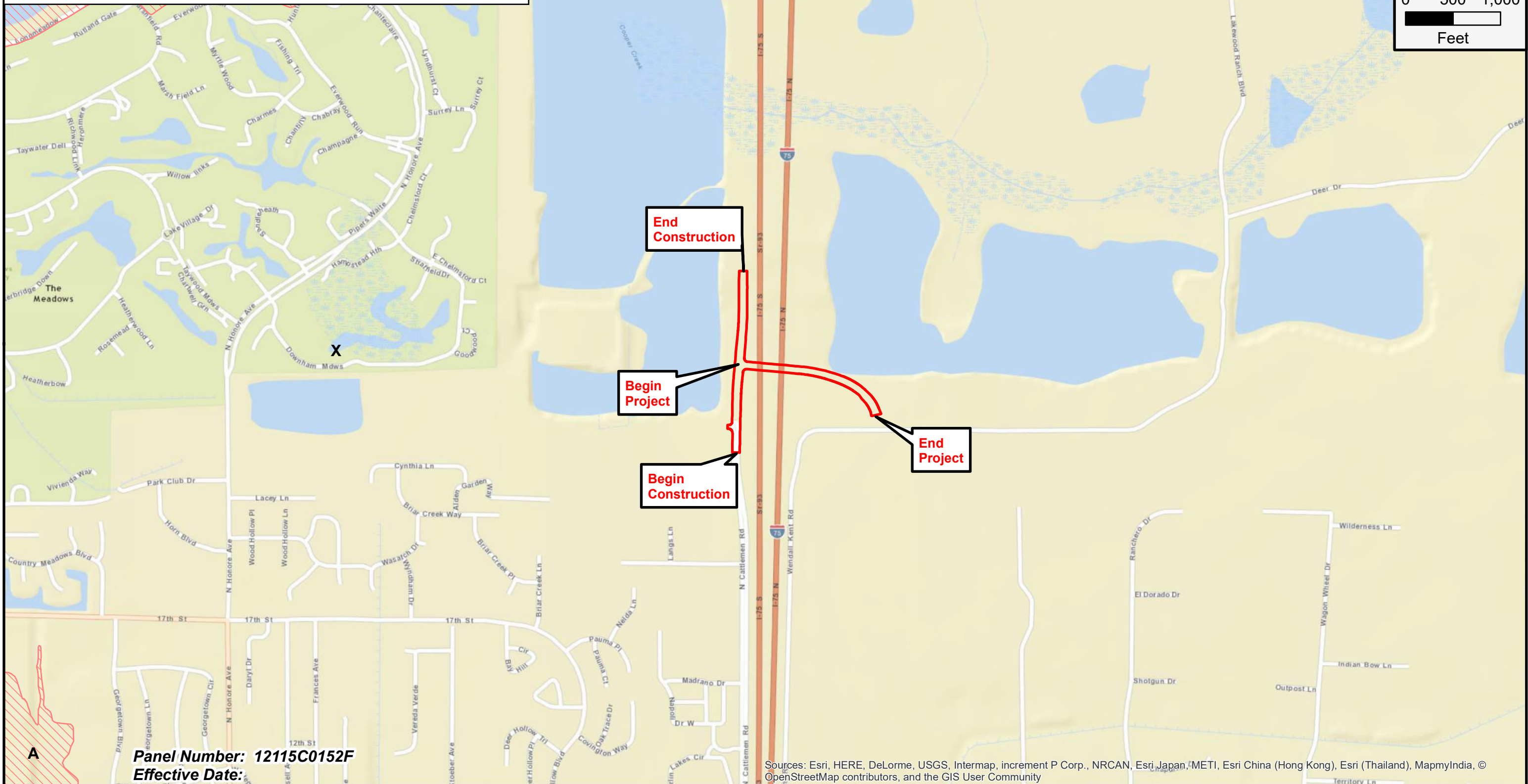
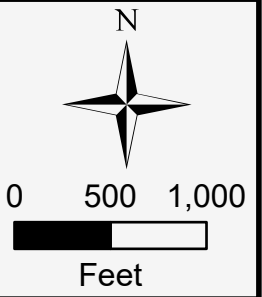
I-75 (SR 93) Overpass
Sarasota County, Florida
 Project Number: 442034-1-21-01

NRCS Soils Map

Figure 3

Legend

-  A - Subject to 100-year flood. Base flood elevation undetermined.
-  X - Outside the 500-year flood plain with less than 0.2% annual probability of flooding.



Panel Number: 12115C0152F
Effective Date:

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

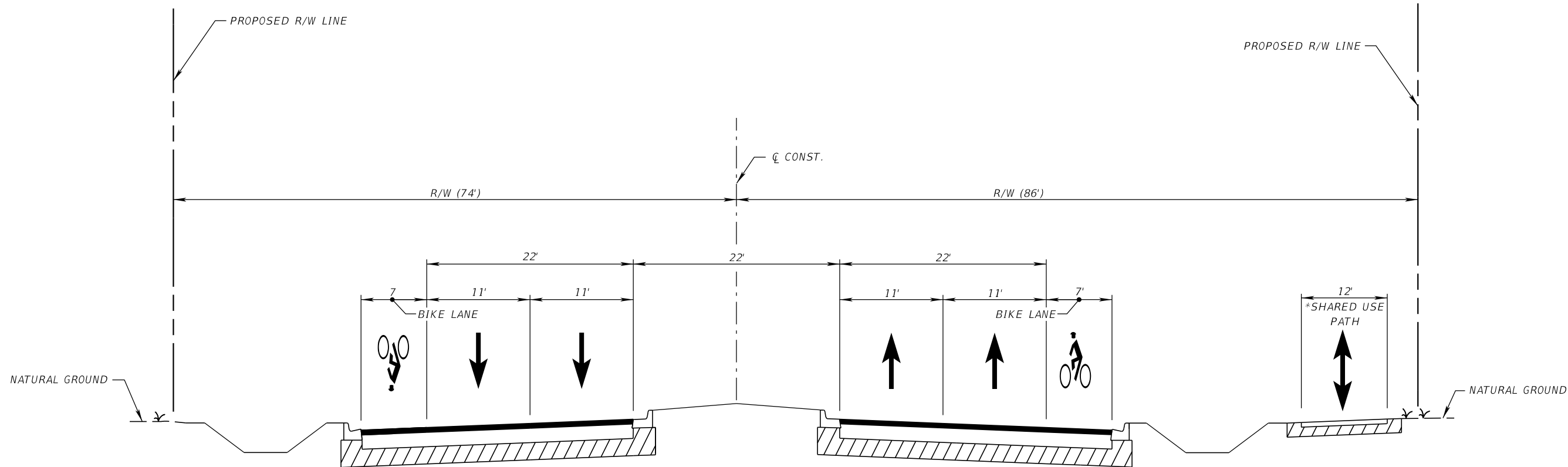


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201 N. Franklin St, Suite 400
Tampa, FL 33602

I-75 (SR 93) Overpass
Sarasota County, Florida
Project Number: 442034-1-21-01

FEMA Firm Map

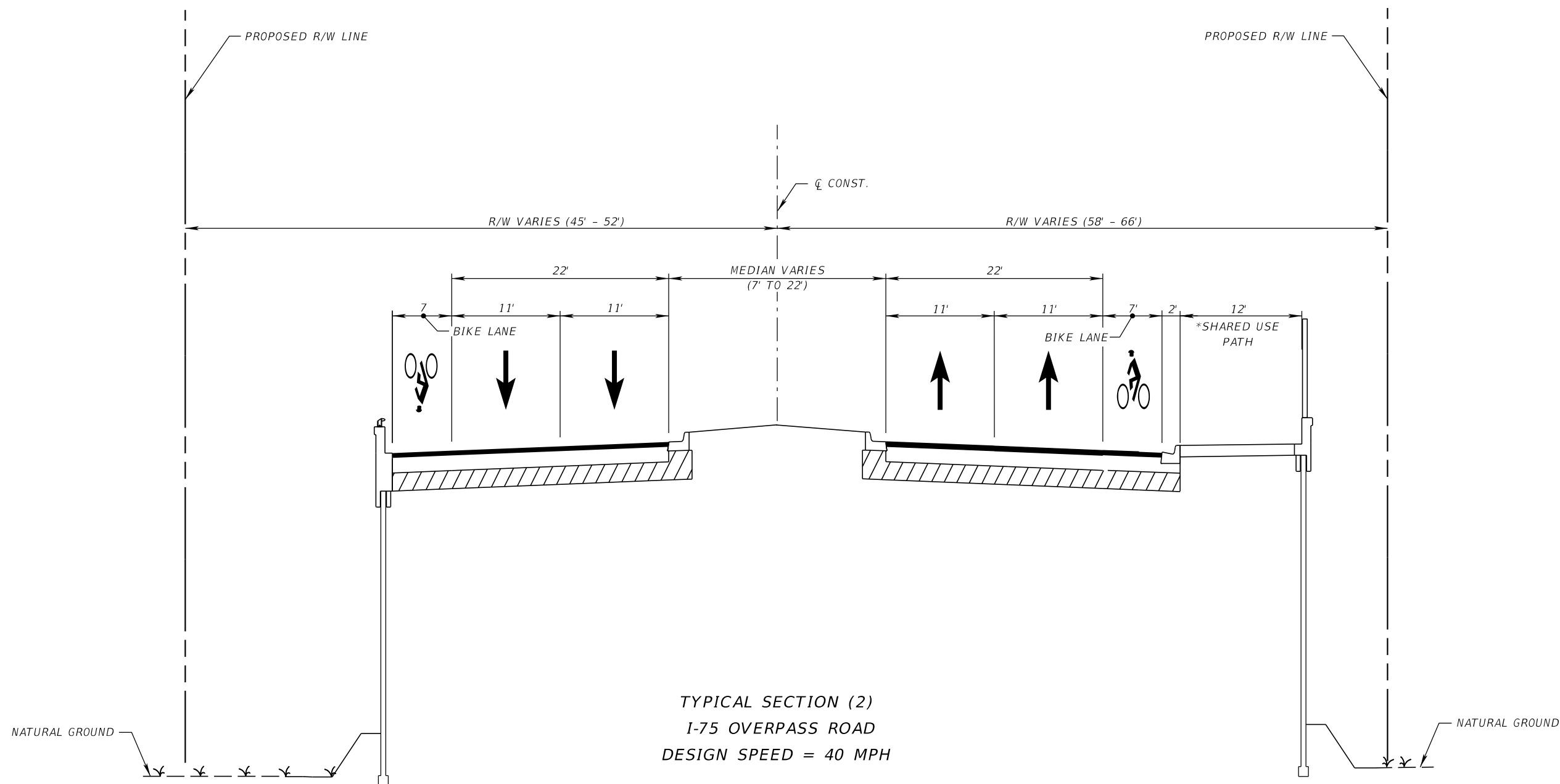
Figure 4



TYPICAL SECTION (1)
 I-75 OVERPASS ROAD
 DESIGN SPEED = 40 MPH

* - ALTERNATIVE 2 - SHARED USE PATH ON NORTH SIDE

REVISIONS				Kisinger Campo & Associates Corp. 201 N. Franklin Street, Suite 400 Tampa, Florida 33602 Florida Certificate of Authorization No. 02317	SARASOTA COUNTY PUBLIC WORKS		TYPICAL SECTIONS (1)	SHEET NO. Figure 5
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT	PROJECT NO.		
					NORTH SARASOTA MULTIMODAL CONNECTOR	442034-1-21-01		



* - ALTERNATIVE 2 - SHARED USE PATH ON NORTH SIDE

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kisinger Campo & Associates Corp.
 201 N. Franklin Street, Suite 400
 Tampa, Florida 33602
 Florida Certificate of Authorization No. 02317

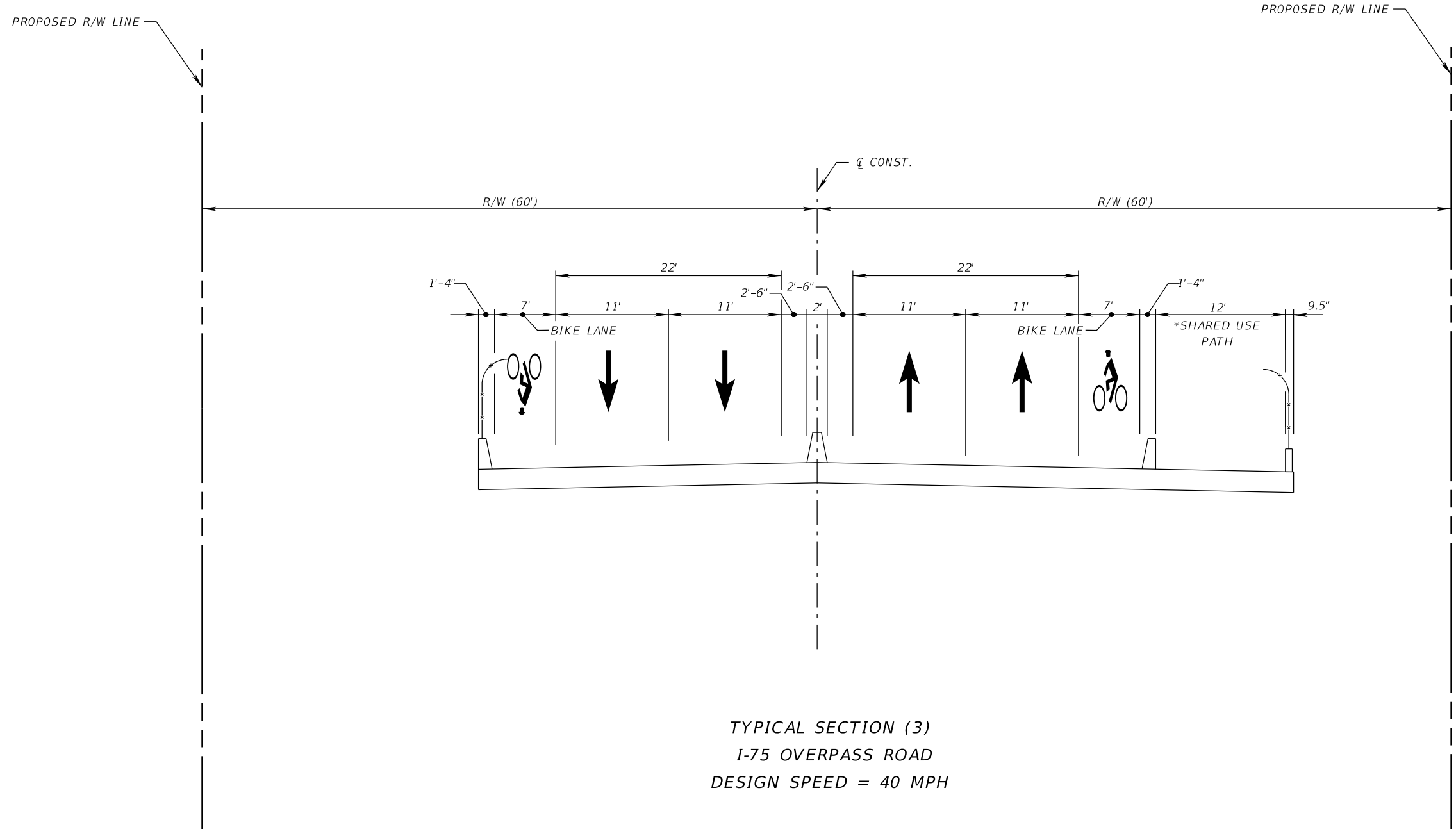
SARASOTA COUNTY PUBLIC WORKS

PROJECT	PROJECT NO.
NORTH SARASOTA MULTIMODAL CONNECTOR	442034-1-21-01

TYPICAL SECTIONS (2)

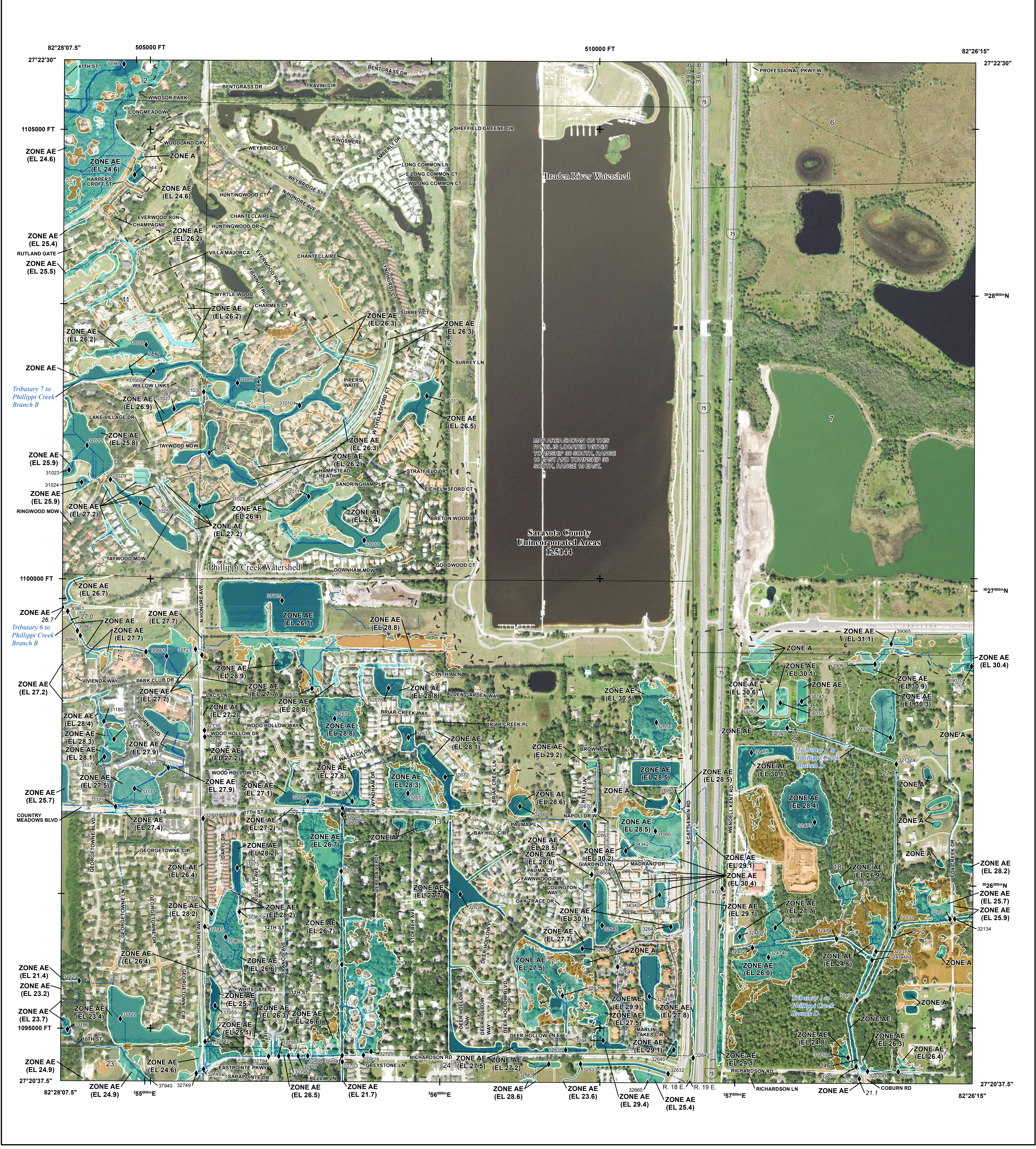
SHEET NO.

Figure 6



* - ALTERNATIVE 2 - SHARED USE PATH ON NORTH SIDE

REVISIONS				Kisinger Campo & Associates Corp. 201 N. Franklin Street, Suite 400 Tampa, Florida 33602 Florida Certificate of Authorization No. 02317	SARASOTA COUNTY PUBLIC WORKS		TYPICAL SECTIONS (3) Figure 7	SHEET NO. Figure 7
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT	PROJECT NO.		



FLOOD HAZARD INFORMATION

- SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT
THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTPS://MSC.FEMA.GOV](https://msc.fema.gov)
- Without Base Flood Elevation (BFE) Zone A, V, A99
 - With BFE or Depth Zone AE, AO, AH, VE, AR
 - Regulatory Floodway
 - 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
 - NO SCREEN Area of Minimal Flood Hazard Zone X
 - Area of Undetermined Flood Hazard Zone D
 - Channel, Culvert, or Storm Sewer
 - Levee, Dike, or Floodwall
 - Cross Sections with 1% Annual Chance Water Surface Elevation
 - Coastal Transect
 - Coastal Transect Baseline
 - Profile Baseline
 - Hydrographic Feature
 - Base Flood Elevation Line (BFE)
 - Limit of Study
 - Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information Exchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at <https://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

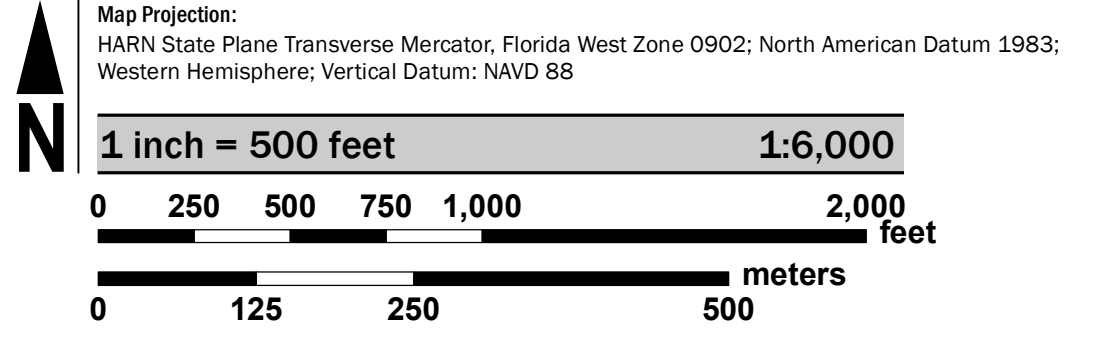
For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

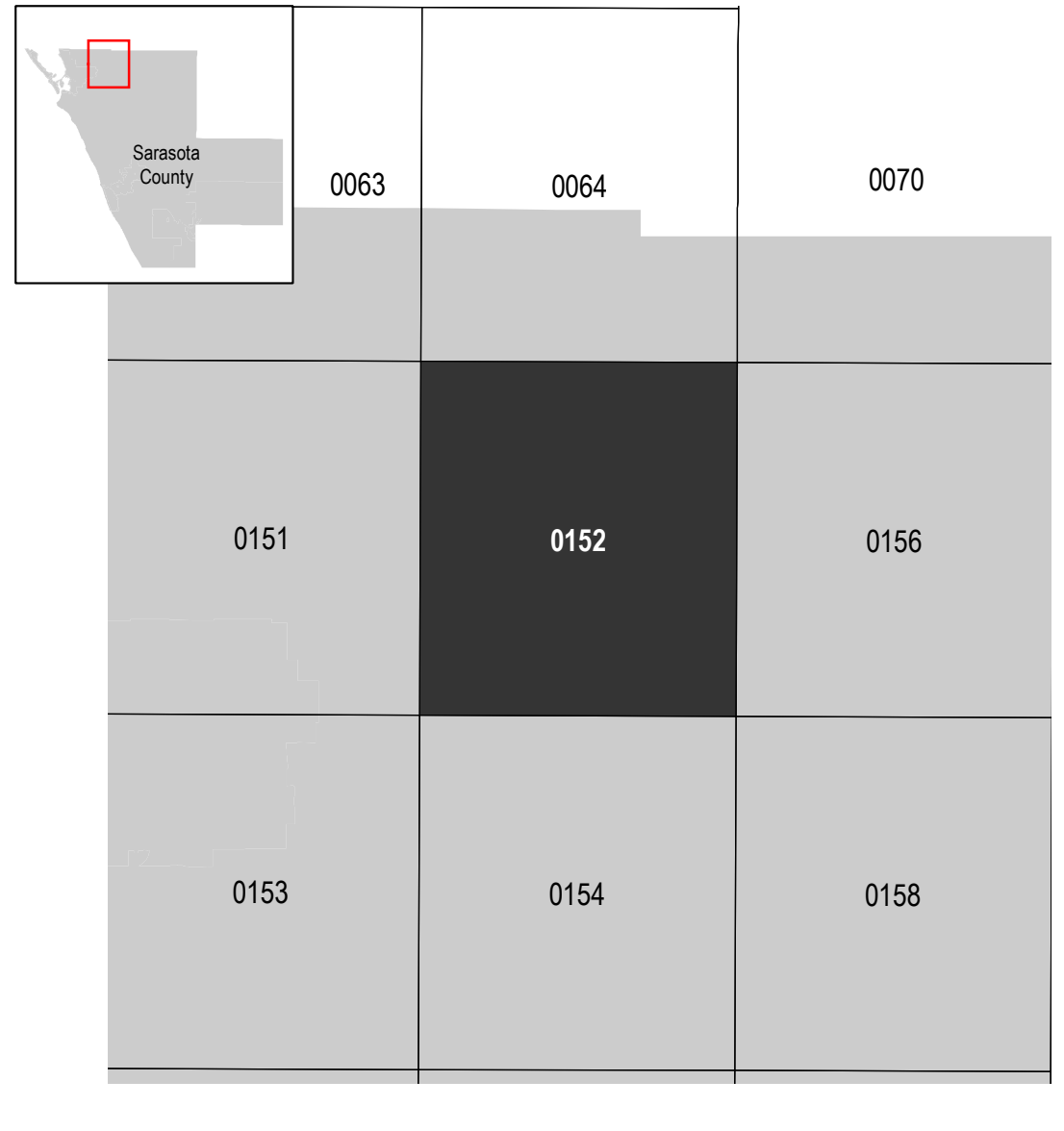
Base map information shown on this FIRM was provided in digital format by the Southwest Florida Water Management District, National Geographic Survey, Sarasota County GIS, United States Geologic Survey, and the United States Fish and Wildlife Service. Ortho imagery was originally produced by National Agriculture Imagery Program (NAIP) in 2017 and has a 1-meter ground sample distance.

----- Watershed Boundary

SCALE



PANEL LOCATOR



FEMA
 National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM
 FLOOD INSURANCE RATE MAP
 SARASOTA COUNTY, FLORIDA and Incorporated Areas
 PANEL 152 of 475

Panel Contains:
 COMMUNITY NUMBER PANEL SUFFIX
 SARASOTA COUNTY 125144 0152 G

PRELIMINARY
 12/31/2019

VERSION NUMBER 2.4.3.0
 MAP NUMBER 12115C0152G
 MAP REVISED

APPENDIX B
CORRESPONDENCE

Tiffany Buchanan

To: Ali Tayebnejad
Subject: RE: 442034-1_NSMC I-75 Overpass -SC Utilities design coordination MS Teams mtng w/ KCA

From: Michael Campo <MCampo@kcaeng.com>
Sent: Wednesday, March 24, 2021 10:47 AM
To: Ken Stokes <kstokes@scgov.net>
Cc: Ali Tayebnejad <ATayebnejad@kcaeng.com>; Nicole Selly <NSelly@kcaeng.com>
Subject: RE: 442034-1_NSMC I-75 Overpass -SC Utilities design coordination MS Teams mtng w/ KCA

Ken, to avoid confusion we can remove the pond site alternative shown on the water tower parcel. As you noted in your response to Greg, it is not the preferred site for that basin. -Mike



Michael Campo, PE
PD&E Department Manager
Email: MCampo@kcaeng.com
Work: 813.871.5331
Cell: 813.215.4298
201 N. Franklin St., Suite 400, Tampa, FL 33602

From: Ken Stokes <kstokes@scgov.net>
Sent: Friday, March 19, 2021 5:03 PM
To: Gregory Rouse <grouse@scgov.net>; Michael Mehan <mmehan@scgov.net>; Stoney Pope <0811073@scgov.net>
Cc: Ken Stokes <kstokes@scgov.net>; Michael Campo <MCampo@kcaeng.com>
Subject: RE: 442034-1_NSMC I-75 Overpass -SC Utilities design coordination MS Teams mtng w/ KCA
Importance: High

Hi Greg. The architectural review is just standard PD&E protocol and I'm highly doubtful that will result in any findings since the tower property has previously been disturbed. Please note, however, that even without the green pond there's still a small potential clip of the fenced in Water Tower site at the N.E corner -- shown in the KCA aerial below.

Based on record drawings provided by Karla there doesn't appear to be any underground pipes or infrastructure in that small sliver (if its even necessary) but as you've noted below there may be other restrictions on the property. I know the study team is interested in things like required horizontal clearances between the NSMC walled embankment and the water tower.

Please advise several **dates/times** you, Michael and Stoney are available for a brief MS Teams call with the KCA Study team and Public Works to discuss in more detail. This overpass project is picking up steam. Much appreciated.

Best Regards,

Ken Stokes, P.E., MBA
Infrastructure Coordination Program Manager

Sarasota County Public Works, Transportation

1001 Sarasota Center Blvd, Sarasota, FL 34240

MS Teams: sip:kstokes@scgov.net

Office: 941-861-0884

Cell: 941-500-2259

Email: kstokes@scgov.net

Web: www.scgov.net



All email sent to and from Sarasota County Government is subject to the public record laws of the State of Florida. To learn more about Florida's Sunshine Law [click here](#).



From: Gregory Rouse <grouse@scgov.net>

Sent: Wednesday, March 17, 2021 3:51 PM

To: Ken Stokes <kstokes@scgov.net>; Michael Mehan <mmehan@scgov.net>; Stoney Pope <0811073@scgov.net>

Subject: RE: 442034-1_NSMC I-75 Overpass -SC Utilities design coordination MS Teams mtng w/ KCA

Ken,

Just an FYI ... you were clear that the preliminary pond shown below in green is only a placeholder. Archaeologists performing fieldwork on site sounds more like it's planned versus it being a potential use. I proffer that we will need to discuss the property use and any restrictions that may be on it. Utility property use can be restricted for a number of reasons ranging from maintenance purposes to requirements for equitable reimbursement to cover its financial bond covenants. I am not copying in everyone as I don't know if this issue was previously addressed or settled. I just wanted to reach out to County staff as a reminder that this will need to be resolved if the identified area is to be used.

I hope this information meets your immediate needs. Please do not hesitate to contact me should you have any questions or require additional information.

Sincerely,

Gregory Rouse, P.E.

Utility Engineering Division Manager

Sarasota County Public Utilities

1001 Sarasota Center Blvd., Sarasota, FL 34240

Cell: 941-809-3043

Email: grouse@scgov.net



All email sent to and from Sarasota County Government is subject to the public record laws of the State of Florida.

From: Ken Stokes <kstokes@scgov.net>
Sent: Tuesday, March 16, 2021 4:38 PM
To: Michael Mehan <mmehan@scgov.net>; Gregory Rouse <grouse@scgov.net>; Michael Campo <MCampo@kcaeng.com>
Cc: Ken Stokes <kstokes@scgov.net>; Nicole Selly <NSelly@kcaeng.com>; David Sell <dsell@scgov.net>; Rachel Moyers <rMoyers@kcaeng.com>; Larry Mau <lmou@scgov.net>; Demar Machuca <dmachuca@scgov.net>; Robert Disbrow <rdisbrow@scgov.net>; Roger Aman - LWR Development, LLC (roger.aman@lakewoodranch.com) <roger.aman@lakewoodranch.com>
Subject: RE: 442034-1_NSMC I-75 Overpass -SC Utilities design coordination MS Teams mtng w/ KCA
Importance: High

Mike/Greg,

For the third item below, **SC Utilities/Overpass Project design coordination meeting** requested by Michael Campo, please advise several/dates times that work for you next week or the following week. We believe an MS Teams meeting will work fine and the focus will be on avoiding utility conflicts with the North Sarasota Multimodal Connector (NSMC) overpass. I'll also be in attendance and thank you for participating.

P.S. The preliminary pond shown below in green is only a placeholder and KCA should now have Karla's utility drawings.

Best Regards,

Ken Stokes, P.E., MBA
Infrastructure Coordination Program Manager
Sarasota County Public Works, Transportation

1001 Sarasota Center Blvd, Sarasota, FL 34240

MS Teams: sip:kstokes@scgov.net

Office: 941-861-0884

Cell: 941-500-2259

Email: kstokes@scgov.net

Web: www.scgov.net



All email sent to and from Sarasota County Government is subject to the public record laws of the State of Florida.
To learn more about Florida's Sunshine Law [click here](#).



From: Michael Campo <MCampo@kcaeng.com>
Sent: Tuesday, March 16, 2021 10:57 AM
To: David Sell <dsell@scgov.net>

Cc: Jessica Fish <Jessica.Fish@searchinc.com>; Jason Newton <jason.newton@searchinc.com>; Nicole Selly <NSelly@kcaeng.com>; Roger Aman - LWR Development, LLC (roger.aman@lakewoodranch.com) <roger.aman@lakewoodranch.com>; Michael Mehan <mmehan@scgov.net>; Rachel Moyers <rMoyers@kcaeng.com>; Ken Stokes <kstokes@scgov.net>
Subject: RE: 442034-1_I-75 Overpass_Archeological Desktop Review_SEARCH

Caution: This email originated from an external source. Be Suspicious of Attachments, Links and Requests for Login Information

David,

North Sarasota Multimodal Connector (I-75 overpass) Project

We are working on a study and design of a new I-75 overpass between Fruitville and University near the water tower and would like to access the parcel and coordinate with you about potential impacts. The preferred alignment covers the perimeter of the water tower parcel on the north and east sides as shown in the graphic below.

Water Tower Parcel Access 3/21 – 3/23

The archaeologists on our team would like to conduct fieldwork this Sunday through Tuesday. Can you or someone in your group grant them access? Please let me know if there are additional steps we need to take or if these dates won't work.

County Utilities/Overpass Project Meeting

Additionally, we are beginning the design phase of the project and would like to meet with County utility staff. We have had some preliminary coordination in the study phase of the project. Now that we are in design, we would like to have a more detailed discussion to ensure we avoid impacts to the water tower and minimize impacts to surrounding water mains. Please let me know if there is a convenient time to meet in the next week or two.



Thanks in advance for your help.

Mike



Michael Campo, PE
PD&E Department Manager
Email: MCampo@kcaeng.com
Work: 813.871.5331
Cell: 813.215.4298
201 N. Franklin St., Suite 400, Tampa, FL 33602

From: Ken Stokes <kstokes@scgov.net>
Sent: Tuesday, March 16, 2021 10:26 AM
To: Michael Campo <MCampo@kcaeng.com>; David Sell <dsell@scgov.net>
Cc: Jessica Fish <Jessica.Fish@searchinc.com>; Jason Newton <jason.newton@searchinc.com>; Nicole Selly <NSelly@kcaeng.com>; Roger Aman - LWR Development, LLC (<roger.aman@lakewoodranch.com> <roger.aman@lakewoodranch.com>); Ken Stokes <kstokes@scgov.net>; Michael Mehan <mmehan@scgov.net>
Subject: Re: 442034-1_I-75 Overpass_Archeological Desktop Review_SEARCH

Yes Michael. I'm sure our water tower site would have been surveyed for historical resources prior to the tank being erected but I'd start with David Sell with Sarasota County Utilities - Operations for access into the fenced in area.

Have also copied Mike Mehan but David should be able to arrange accompanied access. Dave, please advise if I can be of further assistance. Many thanks.

Ken

Get [Outlook for iOS](#)

From: Michael Campo <MCampo@kcaeng.com>
Sent: Tuesday, March 16, 2021 9:47 AM
To: Ken Stokes; Roger Aman - LWR Development, LLC (roger.aman@lakewoodranch.com)
Cc: Jessica Fish; Jason Newton; Nicole Selly
Subject: FW: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Caution: This email originated from an external source. Be Suspicious of Attachments, Links and Requests for Login Information

Good morning Ken,

The archaeologists on our team for the NSMC would like to conduct fieldwork along the preferred alternative and were wondering about access to the water tower parcel. They were hoping to conduct their field work this Sunday through Tuesday in the area highlighted in the graphic forwarded below which includes a fenced section of the water tower parcel. Can you direct me to whom they should contact to coordinate access?



Michael Campo, PE
PD&E Department Manager
Email: MCampo@kcaeng.com
Work: 813.871.5331
Cell: 813.215.4298
201 N. Franklin St., Suite 400, Tampa, FL 33602

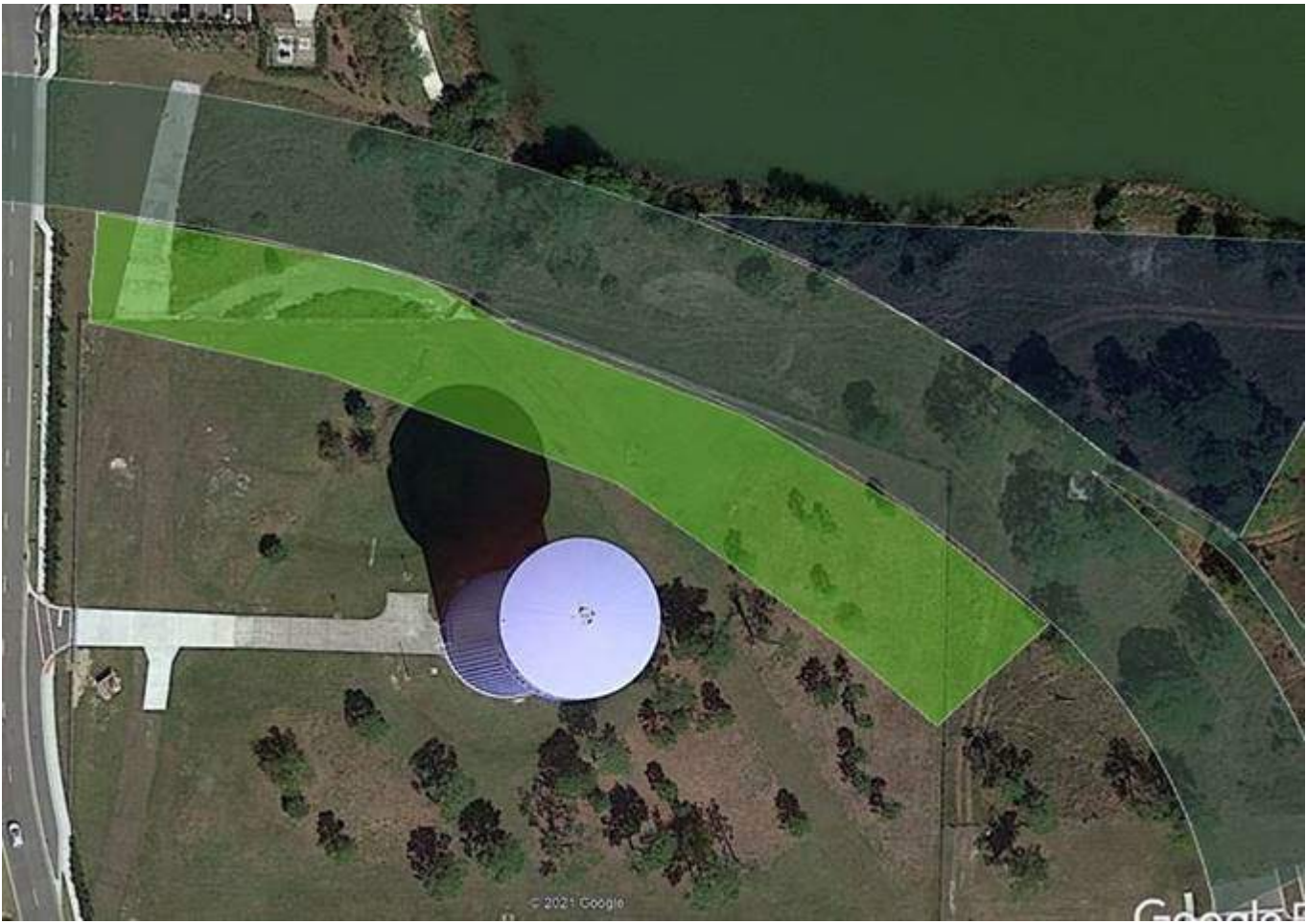
From: Jessica Fish <Jessica.Fish@searchinc.com>
Sent: Monday, March 15, 2021 2:51 PM
To: Nicole Selly <NSelly@kcaeng.com>
Cc: Michael Campo <MCampo@kcaeng.com>; Jason Newton <jason.newton@searchinc.com>
Subject: RE: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Hi Nicole,

We are planning to conduct our archaeological fieldwork this weekend (Sunday-Tuesday) for the I-75 overpass project. In reviewing some aerials, it appears that one proposed pond (the one situated along the south side of the overpass on the east side of the project) may fall within a fenced area (screen shot below). Do you know how we should plan to access this parcel so we can complete testing for this pond? Do we need to contact anyone or get a key?

Thanks,

Jess



Jessica Fish, M.St., RPA
Principal Investigator

SEARCH - SEARCH₂O
700 North 9th Avenue, Pensacola, Florida 32501
850-583-5890 direct 207-313-0097 cell
Jessica.Fish@searchinc.com www.searchinc.com

Archaeology—Maritime Archaeology—Architectural History—History & Archives—Museum Services

From: Jessica Fish
Sent: Friday, March 5, 2021 8:55 AM
To: Nicole Selly <NSelly@kcaeng.com>
Cc: Michael Campo <MCampo@kcaeng.com>
Subject: RE: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Hi Kelly,

That's a good question. In case with an elevated roadway, that's always a consideration. But I checked the property appraisers and all of those buildings were constructed in 2019, so we should be all set. I'm guessing the architectural historians reviewed for that when we were in the proposal phase, which is why we just stuck with the 100-meter buffer, instead of going larger. Thanks for checking!

We'll get our field maps underway and will be ready to hit the field in a few weeks.

Thanks,

Jess

Jessica Fish, M.St., RPA
Principal Investigator

SEARCH - SEARCH₂O
700 North 9th Avenue, Pensacola, Florida 32501
850-583-5890 direct 207-313-0097 cell
Jessica.Fish@searchinc.com www.searchinc.com

Archaeology—Maritime Archaeology—Architectural History—History & Archives—Museum Services

From: Nicole Selly <NSelly@kcaeng.com>
Sent: Thursday, March 4, 2021 7:53 PM
To: Jessica Fish <Jessica.Fish@searchinc.com>
Cc: Michael Campo <MCampo@kcaeng.com>
Subject: RE: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Hi Jessica,

This looks great!

A question out of curiosity ... With the pond directly to the west and the proposed elevated roadway, could there be a visual impact to buildings on the other side? If there were old enough buildings that could be eligible?

Thanks,
Nicole



Nicole Selly
Sr. Environmental Scientist/Project Manager
Email: NSelly@kcaeng.com
Work: 813.871.5331
Cell: 512.587.8194
201 N. Franklin St., Suite 400, Tampa, FL 33602

From: Jessica Fish <Jessica.Fish@searchinc.com>
Sent: Tuesday, February 23, 2021 1:48 PM
To: Nicole Selly <NSelly@kcaeng.com>
Cc: Michael Campo <MCampo@kcaeng.com>
Subject: RE: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Hi Nicole and Mike,

We've put together our area of potential effect for this project and I was hoping you could review it to make sure it encompasses everything that you were anticipating. In the attached compressed folder, you'll find shapefiles with the ponds footprint and the ROW (where the archaeological survey will be conducted) as well as a 100-meter buffer (the APE shapefile) which is used by the architectural historians to review the potential for indirect/viewshed effects on historic structures.

We are planning to conduct fieldwork in late March, but I wanted to run this by you now that it's ready so we can make sure we're prepared for fieldwork in plenty of time. If you have any questions or suggested changes, please don't hesitate to reach out.

Thanks,

Jess

Jessica Fish, M.St., RPA
Principal Investigator

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850-583-5890 direct 207-313-0097 cell
Jessica.Fish@searchinc.com www.searchinc.com

Archaeology—Maritime Archaeology—Architectural History—History & Archives—Museum Services

From: Nicole Selly <NSelly@kcaeng.com>
Sent: Friday, February 12, 2021 6:32 AM
To: Jessica Fish <Jessica.Fish@searchinc.com>
Cc: Michael Campo <MCampo@kcaeng.com>
Subject: RE: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Hi Jessica,

The Sarasota County BOCC approved Alternative 2 as the Preferred Alternative!

Please see the attached concept plans, project kmz, pond alternatives kmz, and additional ROW kmz. These include all pond site alternatives. You will see 2 pond site alternatives on the east side of I-75 with ROW takes, but we will likely only use one. The pond alternatives on the west side are within the current Cattleman Road ROW. After reviewing, let me know if you would just send your crew out to get archeological on all of it or if you want to clear the mainline ROW and then the ponds ROW.

Our workshop is at the website below. It shows a flyover of Alternative 2/the Preferred Alternative that will be helpful in seeing what is going to be built (elevation and such).

[PUBLIC WORKSHOP \(northsarosotamultimodalconnector.com\)](http://PUBLICWORKSHOP(northsarosotamultimodalconnector.com))

After you review this, please give me (or Mike) a call to discuss the timeline for the CRAS, PSR memo, and preferred pond site time needs.

Thanks,
Nicole



Nicole Selly
Sr. Environmental Scientist/Project Manager
Email: NSelly@kcaeng.com
Work: 813.871.5331
Cell: 512.587.8194
201 N. Franklin St., Suite 400, Tampa, FL 33602

From: Jessica Fish <Jessica.Fish@searchinc.com>
Sent: Monday, January 18, 2021 3:26 PM
To: Michael Campo <MCampo@kcaeng.com>
Cc: Nicole Selly <NSelly@kcaeng.com>
Subject: RE: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Hi Mike,

Sounds good. I'll plan to slide our fieldwork back to late February/early March, on the off-chance that BCC has something to say about the alternative. That will still give us plenty of time to complete the CRAS on schedule.

One final question: do you need concurrence from SHPO by May 11th, or just the report needs to be ready for submittal to the County?

Thanks,

jess

Jessica Fish, M.St., RPA
Principal Investigator

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850-583-5890 direct 207-313-0097 cell
Jessica.Fish@searchinc.com www.searchinc.com

Archaeology—Maritime Archaeology—Architectural History—History & Archives—Museum Services

From: Michael Campo <MCampo@kcaeng.com>
Sent: Monday, January 18, 2021 2:24 PM
To: Jessica Fish <Jessica.Fish@searchinc.com>
Cc: Nicole Selly <NSelly@kcaeng.com>
Subject: RE: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Thanks Jessica. Yes, the CRAS is scheduled for submittal on 5/11. The County staff is recommending Alternative 2 to the BCC for approval as the preferred alternative on 2/9/21. The APE should be based on this alternative (though it wont be official until February).



Michael Campo, PE
PD&E Department Manager
Email: MCampo@kcaeng.com
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201 N. Franklin St., Suite 400, Tampa, FL 33602

From: Jessica Fish <Jessica.Fish@searchinc.com>
Sent: Monday, January 18, 2021 3:19 PM
To: Michael Campo <MCampo@kcaeng.com>
Subject: RE: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Hi Mike,

That's no problem, the beginning of the year is always a crazy time. Thanks for sending along the schedule; from what I see, it looks like you'll need our CRAS by May 11, is that right?

I have some space on the schedule to take care of this fieldwork in February. Has a preferred alternative been selected yet that we could use to develop our Area of Potential Effects?

Thanks,

Jess

Jessica Fish, M.St., RPA
Principal Investigator

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Jessica.Fish@searchinc.com www.searchinc.com

Archaeology—Maritime Archaeology—Architectural History—History & Archives—Museum Services

From: Michael Campo <MCampo@kcaeng.com>
Sent: Monday, January 18, 2021 2:10 PM
To: Jessica Fish <Jessica.Fish@searchinc.com>
Subject: RE: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Hi Jessica,

I apologize for the delay in my reply, please see the attached updated schedule for the I-75 overpass project. Please let me know if you would like to discuss.

Mike



Michael Campo, PE
PD&E Department Manager
Email: MCampo@kcaeng.com
Work: 813.871.5331
Cell: 813.215.4298
201 N. Franklin St., Suite 400, Tampa, FL 33602

From: Jessica Fish <Jessica.Fish@searchinc.com>
Sent: Tuesday, January 5, 2021 1:30 PM
To: Michael Campo <MCampo@kcaeng.com>
Cc: Nicole Selly <NSelly@kcaeng.com>
Subject: RE: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Hi Mike,

I hope you had a good holiday and that your year is starting off well. I wanted to check in about the I-75 Overpass project. I know the schedule has been shifted but wasn't sure how that will impact our cultural resources survey and when would be a good time to get our fieldwork underway.

Thanks,

Jess

Jessica Fish, M.St., RPA
Principal Investigator

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850-583-5890 direct 207-313-0097 cell
Jessica.Fish@searchinc.com www.searchinc.com

Archaeology—Maritime Archaeology—Architectural History—History & Archives—Museum Services

From: Jessica Fish
Sent: Tuesday, December 8, 2020 1:39 PM
To: Michael Campo <MCampo@kcaeng.com>
Cc: Nicole Selly <NSelly@kcaeng.com>
Subject: RE: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Hi Mike,

I wanted to check in on this project and see if an updated schedule had been put together yet? Just trying to get a handle on the best time for us to knock out our fieldwork.

Thanks,

Jess

Jessica Fish, M.St., RPA
Principal Investigator

SEARCH - SEARCH₂O

700 North 9th Avenue, Pensacola, Florida 32501

850-583-5890 direct 207-313-0097 cell

Jessica.Fish@searchinc.com www.searchinc.com

Archaeology—Maritime Archaeology—Architectural History—History & Archives—Museum Services

From: Michael Campo <MCampo@kcaeng.com>

Sent: Wednesday, November 4, 2020 10:20 AM

To: Jessica Fish <Jessica.Fish@searchinc.com>

Cc: Nicole Selly <NSelly@kcaeng.com>

Subject: RE: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Hi Jessica,

The public meeting was delayed until 11/12 and will now be in a virtual format that will last until 12/3. As a result, our schedule has shifted out some. I am working on an updated schedule now and hope to send it out by the end of the week.

Mike



Michael Campo, PE

PD&E Department Manager

Email: MCampo@kcaeng.com

Work: 813.871.5331

Cell: 813.215.4298

201 N. Franklin St., Suite 400, Tampa, FL 33602

From: Jessica Fish <Jessica.Fish@searchinc.com>

Sent: Monday, November 2, 2020 4:12 PM

To: Michael Campo <MCampo@kcaeng.com>

Cc: Nicole Selly <NSelly@kcaeng.com>

Subject: RE: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Hi Mike,

I wanted to check in on this project now that October is over to see if the public meeting had been held and an alternative selected. Our field schedule is filling up quickly and I want to be sure to get a crew reserved in plenty of time. Hope you have been well!

Thanks,

Jess

Jessica Fish, M.St., RPA
Principal Investigator

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Jessica.Fish@searchinc.com www.searchinc.com

Archaeology—Maritime Archaeology—Architectural History—History & Archives—Museum Services

From: Michael Campo <MCampo@kcaeng.com>
Sent: Friday, July 24, 2020 8:40 AM
To: Jessica Fish <Jessica.Fish@searchinc.com>
Cc: Nicole Selly <NSelly@kcaeng.com>
Subject: RE: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Hi Jessica,

I anticipate we will recommend a preferred alternative following the public information meeting currently scheduled for October. The public meeting date is tentative while FDOT refines its guidance for conducting public meetings online but it should be around that time.

Mike



Michael Campo, PE
PD&E Department Manager
Email: MCampo@kcaeng.com
Work: 813.871.5331
Cell: 813.215.4298
201 N. Franklin St., Suite 400, Tampa, FL 33602

From: Jessica Fish <Jessica.Fish@searchinc.com>
Sent: Thursday, July 23, 2020 5:19 PM
To: Michael Campo <MCampo@kcaeng.com>
Subject: RE: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Hi Michael,

I am checking to see if you have a timeline for when the preferred overpass and associated ponds will be selected for the I-75 Overpass project (FPID# 442034-1)? I want to be sure to get this on our internal schedule to make sure that we meet the deadline you need for the CRAS. If you have a project schedule available that you could send to me, that would be greatly appreciated.

Thank you,

Jess

Jessica Fish, M.St., RPA
Principal Investigator

SEARCH - SEARCH₂O

700 North 9th Avenue, Pensacola, Florida 32501
850-583-5890 direct 207-313-0097 cell
Jessica.Fish@searchinc.com www.searchinc.com

Archaeology—Maritime Archaeology—Architectural History—History & Archives—Museum Services

From: Michael Campo <MCampo@kcaeng.com>
Sent: Friday, June 12, 2020 9:55 AM
To: Jessica Fish <Jessica.Fish@searchinc.com>; Nicole Selly <NSelly@kcaeng.com>; Veronica Green <VGreen@kcaeng.com>
Cc: Steven RabbySmith <Steve.RabbySmith@searchinc.com>; Beth Chambless <Beth@searchinc.com>
Subject: RE: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Thanks Jessica



Michael Campo, PE
PD&E Department Manager
Email: MCampo@kcaeng.com
Work: 813.871.5331
Cell: 813.215.4298
201 N. Franklin St., Suite 400, Tampa, FL 33602

From: Jessica Fish <Jessica.Fish@searchinc.com>
Sent: Friday, June 12, 2020 9:48 AM
To: Michael Campo <MCampo@kcaeng.com>; Nicole Selly <NSelly@kcaeng.com>; Veronica Green <VGreen@kcaeng.com>
Cc: Steven RabbySmith <Steve.RabbySmith@searchinc.com>; Beth Chambless <beth@searchinc.com>
Subject: 442034-1_I-75 Overpass_Desktop Review_SEARCH

Good morning,

Please find SEARCH's desktop review for the Lakewood Ranch I-75 Overpass attached to this email. Please let me know if you have any questions or need this memo send to anyone else at KCA.

Thank you,

Jess

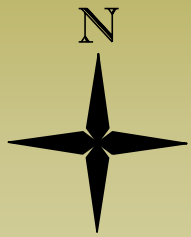
Jessica Fish, M.St., RPA
Principal Investigator

SEARCH - SEARCH₂O
700 North 9th Avenue, Pensacola, Florida 32501
207-313-0097 cell
Jessica.Fish@searchinc.com www.searchinc.com

Archaeology—Maritime Archaeology—Architectural History—History & Archives—Museum Services

APPENDIX C

POND CALCULATIONS AND ALTERNATIVE MATRIX



SMF 2B
0.7 AC

SMF 2A
0.18 AC

0036010001

N CATTLEMEN ROAD

I-75

EXIST. LA R/W

EXIST. LA R/W

0191010001

LAKE A

INFLOW PIPE
EASEMENT
0.2 AC

SMF 1B
0.6 AC

SMF 1A
0.12 AC



I-75

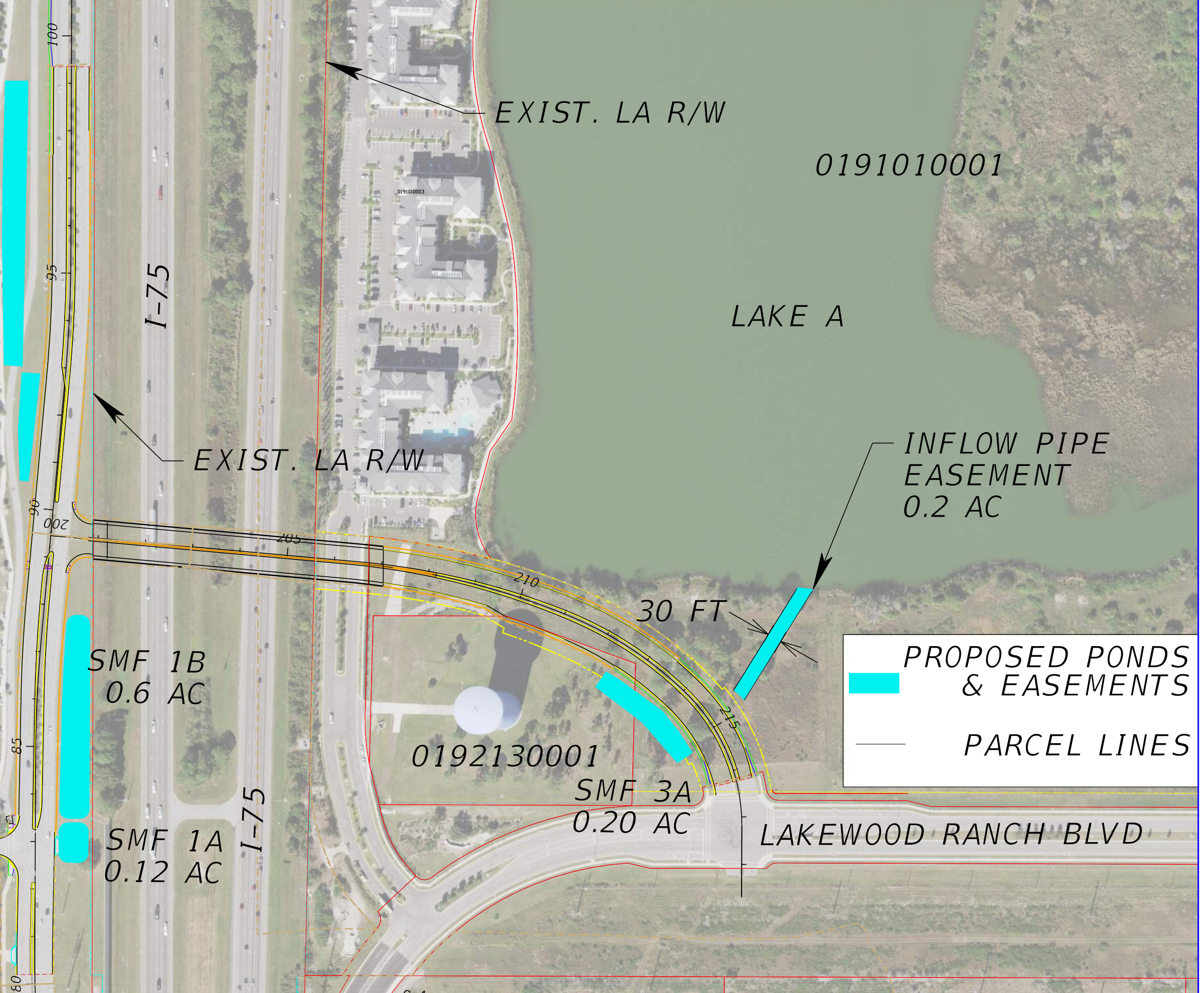
0192130001

SMF 3A
0.20 AC

30 FT

LAKWOOD RANCH BLVD

	PROPOSED PONDS & EASEMENTS
	PARCEL LINES



Pond Site Alternatives Matrix

Factors	SMF 1A	SMF 1B	SMF 2A	SMF 2B
Pond Location (Station)	82+50 TO 83+50 RT	83+20 TO 88+44 RT	90+50 TO 94+00 LT	93+00 TO 99+00 LT
Size (ac)	0.12	0.57	0.18	0.50
Avg. Ground Elev. (ft)(NAVD '88)	25	25	29	29
Est. SHWT Elev. (NGVD '29)	20	20	20	20
Treatment System	Dry Retention w/ underdrain	Dry Retention w/ underdrain	Dry Retention w/ underdrain	Dry Retention w/ underdrain
Soils Name & Symbol	EauGallie and Myakka Fine Sand (10)	EauGallie and Myakka Fine Sand (10)	EauGallie and Myakka Fine Sand (10)	EauGallie and Myakka Fine Sand (10)
Hydrologic Soil Group	A/D	A/D	A/D	A/D
Land Use	County R/W	County R/W	County R/W	County R/W
# Residences impacted	None	None	None	None
Wetland Impact (acres)	0	0.32 **	0.00	0.83**
Wetland Mitigation Cost	\$0	\$0	\$0	\$0
T&E Species Impacted	Low	Low	Low	Low
Contamination Ranking	No	No	No	No
Historical and Archeological Resources	Low	Low	Low	Low
Easement Required	No	No	No	No
Number of Parcels	County R/W	County R/W	County R/W	County R/W
Partial (P) or Whole (W) Take	N/A	N/A	N/A	N/A
Floodplain Impact (acres)	None	None	None	None
ROW Cost Estimate*	\$0	\$0	\$0	\$0
Total Estimated Costs	\$0	\$0	\$0	\$0
Site Ranking	2	1	2	1

* All proposed pond expansion within county right of way

** Surface water impacts, no mitigation required

Factors	SMF 3A	SMF 3B	LAKE A
Pond Location (Station)	208+50 to 213+00 LT	211+00 to 214+00 RT	125+50 to 129+00 RT
Size (ac)	1.14	0.92	140.89
Avg. Ground Elev. (ft)	25	25	26
Est. SHWT Elev. (NAVD '88)	24	24	25.0
Treatment System	Dry Retention w/ underdrain	Dry Retention w/ underdrain	Wet Detention
Soils Name & Symbol	Pits and Dumps (32)	Pits and Dumps (32)	Water (99)
Hydrologic Soil Group	N/A	N/A	N/A
Land Use	County R/W	County R/W	County R/W
# Residences impacted	None	None	None
Wetland Impact (acres)	0	0	0
Wetland Mitigation Cost**	\$0	\$0	\$0
T&E Species Impacted	Low	Low	Low
Contamination Ranking	No	No	No
Historical and Archeological Resources	Low	Low	Low
Easement Required	No	Yes (0.2 AC)	Yes (0.2 AC)
Number of Parcels	1	1	1
Partial (P) or Whole (W) Take	P	P	P
Floodplain Impact (acres)	None	None	None
ROW Cost Estimate*	\$0	\$0	\$0
Total Estimated Costs	\$0	\$0	\$0
Site Ranking	3	2	1

PROJECT NAME:	North Sarasota Multimodal Connector	Kisinger Campo & Associates
BASIN DESIGNATION:	Basin 1	

R/W Basin Area = 4.10 ac
 FROM STA.= 76+70
 TO STA.= 89+45

BASIN RUNOFF CURVE NUMBER WORKSHEET

PRE DEVELOPED CONDITION

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA (ac)	PRODUCT
Open space (good condition)	B/D	80	3.57	285.60
Dry Retention Pond		80	0.53	42.40
TOTALS			4.10	328.00

COMPOSITE CN =	80.0
-----------------------	------

R/W Basin Area = 4.10 ac
 FROM STA.= 76+70
 TO STA.= 89+45

POST DEVELOPED CONDITION

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA (ac)	PRODUCT
Open space (good condition)	B/D	80	0.40	32.00
Impervious (Asphalt)		98	3.12	305.76
Dry Retention Pond		80	0.58	46.40
TOTALS			4.10	384.16

COMPOSITE CN =	93.7
-----------------------	------

Note: Soil group (10) EauGallie and Myakka fine sands.

PROJECT NAME:	North Sarasota Multimodal Connector	Kisinger Campo & Associates
BASIN DESIGNATION:	Basin 1	

Water Quantity Calculations

Pre Developed Condition

Area (ac)	4.10
CN	80.0

ESTIMATE OF RUNOFF VOLUME - 100YR/24HR

1)	DETERMINE SOIL STORAGE - S $S = (1000/CN) - 10$	SOIL STORAGE (inches)	S	2.50
2)	DETERMINE RUNOFF - R $R = (10 - 0.2 * S)^2 / (10 + 0.8 * S)$	RUNOFF (inches)	R	7.52
3)	DETERMINE RUNOFF VOLUME - V(R) $V(R) = R/12 * AREA$	RUNOFF (Ac-ft.)	V(R)	2.57

Post Developed Condition

Area (ac)	4.10
CN	93.7

ESTIMATE OF RUNOFF VOLUME - 100YR/24HR

1)	DETERMINE SOIL STORAGE - S $S = (1000/CN) - 10$	SOIL STORAGE (inches)	S	0.67
2)	DETERMINE RUNOFF - R $R = (10 - 0.2 * S)^2 / (10 + 0.8 * S)$	RUNOFF (inches)	R	9.24
3)	DETERMINE RUNOFF VOLUME - V(R) $V(R) = R/12 * AREA$	RUNOFF (Ac-ft.)	V(R)	3.16

PRE - POST VOLUME DIFFERENCE

POST-VOLUME =	3.16	AC-FT
PRE-VOLUME =	2.57	AC-FT
REQUIRED ATTENUATION VOLUME =	0.59	AC-FT

Stage-Area Table

Existing Permitted Basin Area = 3.16 Ac

Permitted Required Treatment(1" over basin) = 0.263 ac-ft

Permitted Provided Treatment (at elevation 26.0') = 0.284 ac-ft

	Stage (ft)	Area (ac)	Avg. Area (ac)	Delta (ft)	Delta Storage (ac-ft)	Sum Storage (ac-ft)
Berm	31.20	0.50				2.09
			0.42	2.70	1.13	
DHW	28.50	0.34				0.95
			0.30	1.80	0.53	
Weir	26.70	0.25				0.42
			0.23	1.70	0.38	
	25.00	0.20				0.04
			0.19	0.20	0.04	
Bottom	24.80	0.18				

Total Basin Area = 4.10

Required Treatment Volume = .34 ac-ft

Provided Treatment Volume = .42 ac-ft

Notes: Modify Existing

Elevations in NGVD '29

Effluent Filtration Criteria => 1" over R/W

PROJECT NAME:	North Sarasota Multimodal Connector	Kisinger Campo & Associates
BASIN DESIGNATION:	Basin 2	

R/W Basin Area = 3.30 ac
 FROM STA.= 89+45
 TO STA.= 98+45

BASIN RUNOFF CURVE NUMBER WORKSHEET

PRE DEVELOPED CONDITION

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA (ac)	PRODUCT
Open space (good condition)	B/D	80	2.73	218.40
Dry Retention Pond		80	0.57	45.60
TOTALS			3.30	264.00

COMPOSITE CN = 80.0

R/W Basin Area = 3.30 ac
 FROM STA.= 89+45
 TO STA.= 98+45

POST DEVELOPED CONDITION

LAND-USE DESCRIPTION	SOIL GROUP	CN	AREA (ac)	PRODUCT
Open space (good condition)	B/D	80	0.67	53.60
Impervious (Asphalt)		98	2.06	201.88
Dry Retention Pond		80	0.57	45.60
TOTALS			3.30	301.08

COMPOSITE CN = 91.2

Note: Soil group (10) EauGallie and Myakka fine sands.

PROJECT NAME:	North Sarasota Multimodal Connector	Kisinger Campo & Associates
BASIN DESIGNATION:	Basin 2	

Water Quantity Calculations

Pre Developed Condition

Area (ac)	3.30
CN	80.0

ESTIMATE OF RUNOFF VOLUME - 100YR/24HR

1)	DETERMINE SOIL STORAGE - S $S = (1000/CN) - 10$	SOIL STORAGE (inches)	S	2.50
2)	DETERMINE RUNOFF - R $R = (10 - 0.2 * S)^2 / (10 + 0.8 * S)$	RUNOFF (inches)	R	7.52
3)	DETERMINE RUNOFF VOLUME - V(R) $V(R) = R/12 * AREA$	RUNOFF (Ac-ft.)	V(R)	2.07

Post Developed Condition

Area (ac)	3.30
CN	91.2

ESTIMATE OF RUNOFF VOLUME - 100YR/24HR

1)	DETERMINE SOIL STORAGE - S $S = (1000/CN) - 10$	SOIL STORAGE (inches)	S	0.96
	0.34			
2)	DETERMINE RUNOFF - R 26.7 0.25	RUNOFF (inches)	R	8.93
3)	DETERMINE RUNOFF 0.2 $V(R) = R/12 * AREA$	RUNOFF (Ac-ft.)	V(R)	2.46
	0.18			

PRE - POST VOLUME DIFFERENCE

POST-VOLUME =	2.46	AC-FT
PRE-VOLUME =	2.07	AC-FT
REQUIRED ATTENUATION VOLUME =	0.39	AC-FT

Stage-Area Table

Existing Permitted Basin Area = 1.32 Ac

Permitted Required Treatment(1" over basin) = 0.11 ac-ft

Permitted Provided Treatment (at elevation 26.0') = 0.151 ac-ft

	Stage (ft)	Area (ac)	Avg. Area (ac)	Delta (ft)	Delta Storage (ac-ft)	Sum Storage (ac-ft)
Berm	28.20	0.57				1.16
			0.46	1.00	0.46	
DHW	27.20	0.35				0.70
			0.31	1.20	0.37	
Weir	26.00	0.26				0.34
			0.24	1.00	0.24	
	25.00	0.21				0.10
			0.20	0.50	0.10	
Bottom	24.50	0.19				

Total Basin Area = 3.30

Required Treatment Volume = .28 ac-ft

Provided Treatment Volume = .34 ac-ft

Notes: Modify Existing

Elevations in NGVD '29

Effluent Filtration Criteria => 1" over R/W

Calculate Required Water Quality Volume

Lake A

Stage-Area Table

Pond 3

	Stage (ft)	Area (ac)	Avg. Area (ac)	Delta (ft)	Delta Storage (ac-ft)	Sum Storage (ac-ft)
Berm	27.40	140.89				1076.95
			137.95	0.56	77.25	
DHW	26.84	135.00				999.70
			131.78	1.84	242.47	
Weir	25.00	128.55				757.23
			127.85	2.00	255.69	
2' DOWN	4' OFFSET	23.00	127.14			501.54
				125.39	4.00	501.54
6' DOWN	14' OFFSET	19.00	123.63			

Existing Basin Area = **981.44 ac** Total R/W Area Proposed Basin Area = **981.44 ac**
 Required Treatment Volume = 81.79 ac/ft Wet Detention Criteria ==> 1" over basin
 Existing Treatment Volume = 122.68 ac/ft Total = 204.47 ac/ft

Permanent Wet Pool Volume = Greater of Case I or Case II

Case I: 14-day residence volume $V = A * C * P * R$
 C = 0.90 **262.16 ac/ft**
 P*R = 0.297

Case II: Using .667" Runoff.
 $V_{min} = A * .667" / 12'$ **54.55 ac/ft**

Wet Pool Volume = Greater of Case I or Case II
 V = **262.16 ac/ft**

Total Volume Required = Permanent Wet Pool Volume + Required Treatment Volume

Total Volume Required = **384.84 ac/ft** Check Available Storage **GOOD**

Notes

A= Acres

P*R = .2968' for project location. 122 day rainy season of 31.04" of rain and 14 day residence time

Calculate average minimum pond area (As)

1) $V_w = A * 0.5" / 12"$ **40.89 ac/ft** Head (H) = V_w / Actual **12.00** inches
 $A_s = V_w / 0.833'$ **49.09 ac** As (actual)
 Actual = **40.89 ac**

Max head must be less than 10" Check **NOT GOOD**

Design Pool Volume =

The Wet Detention Design Pool Volume (Vt) is the sum of the Treatment Volume (Q) and the Permanent Wet Pool Volume (Vb)

Vt=Q+Vb= 384.84 ac/ft

Design Pool Volume Provided (Vp) (From existing permit 42323)

Lake-A pond NWL Area= 128.55 AC
4' offset, A4= 127.14 AC
14' offset, A14= 123.63 AC
Vp=2'(A4)+6'(A14)= 996.06 AC-FT Vp > Vt = GOOD

Minimum Pond Area=

a) Calculate storage volume for 0.5in of runoff(Vw)

Drainage area= 981.44 ac
Runoff 0.5 in
Vw= 40.89 ac/ft

b) Calculate min. pond area based on 10in. Max head fluctuation for a 0.5in runoff

As=Vw/(10in*1Ft/12in)
As= 49.07 ac

c) Calculate min. pond area based on design pool volume at a max depths
Calculate for maximum depth of 8 feet

As=(Vt)/8
As= 48.11 ac

Correct minimum pond area is the larger of the two As values

As= 49.07 ac

Compare to pond actual pond area at NWL

Actual NWL= 128.55 ac

Actual pond size equal to or larger than minimum GOOD

ERP 32151

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE
INDIVIDUAL CONSTRUCTION
PERMIT NO. 43032151.000

Expiration Date: May 29, 2012

PERMIT ISSUE DATE: May 29, 2007

This permit is issued under the provisions of Chapter 373, Florida Statutes, (F.S.), and the Rules contained in Chapters 40D-4 and 40, Florida Administrative Code, (F.A.C.). The permit authorizes the Permittee to proceed with the construction of a surface water management system in accordance with the information outlined herein and shown by the application, approved drawings, plans, specifications, and other documents, attached hereto and kept on file at the Southwest Florida Water Management District (District). Unless otherwise stated by permit specific condition, permit issuance constitutes certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341. All construction, operation and maintenance of the surface water management system authorized by this permit shall occur in compliance with Florida Statutes and Administrative Code and the conditions of this permit.

PROJECT NAME: Sarasota County - North Cattlemen Road (Richardson Road to DeSoto Road)

GRANTED TO: David H. Baldauf, Manager
Sarasota Associates, A-I, LLC, Sarasota Associates, B-II, LLC,
Sarasota Associates, C-III, LLC, Sarasota Associates, D-IV, LLC,
Sarasota Associates E-V, LLC, Honore Associates I, LLC,
DeSoto Road Associates I, LLC
8441 Cooper Creek Boulevard
University Park, FL 34201

Board of County Commissioners, Sarasota County
c/o Carolyn Eastwood, P.E.
Sarasota County Public Works
1001 Sarasota Center Boulevard
Sarasota, FL 34240

ABSTRACT: This permit authorizes the construction of a surface water management system to serve a 2.78-mile public roadway known as North Cattlemen Road. The project is located west of Interstate 75, from Richardson Road to DeSoto Road in Sarasota County. Information regarding the surface water management system, 100-year floodplain, wetlands and/or surface waters is stated below and on the permitted construction drawings for the project.

OP. & MAINT. ENTITY: Sarasota County Public Works

COUNTY: Sarasota

SEC/TWP/RGE: 1,12,13/36S/18E

**TOTAL ACRES OWNED
OR UNDER CONTROL:** 65.00

PROJECT SIZE: 65.00 Acres

LAND USE: Road Project

DATE APPLICATION FILED: December 4, 2006

AMENDED DATE: N/A

I. Water Quantity/Quality

POND NO.	AREA ACRES @ TOP OF BANK	TREATMENT TYPE
1	3.70	Wet Detention
Littoral Zone	0.40	Wet Detention
WL-SP 1	existing	N/A
TA-1	0.32	Effluent Filtration
TA-2	0.21	Effluent Filtration
TA-3	0.23	Effluent Filtration
TA-4	0.31	Effluent Filtration
TA-5	0.15	Effluent Filtration
TA-6	0.20	Effluent Filtration
TA-7	0.61	Effluent Filtration
TA-8	0.23	Effluent Filtration
TA-9	0.31	Effluent Filtration
2	21.00	Wet Detention
TOTAL	27.67	

Comments: Attenuation storage and water quality treatment will be provided by man-made wet detention and effluent filtration systems.

A mixing zone is not required.
 A variance is not required.

II. 100-Year Floodplain

Encroachment (Acre-Feet of fill)	Compensation (Acre-Feet of excavation)	Compensation Type*	Encroachment Result**(feet)
4.72	7.93	EE	N/A

*Codes [X] for the type or method of compensation provided are as follows:

NE = No Encroachment

EE = Equivalent Excavation to offset project filling per Section 4.4 of the District's Basis of Review;

SM = Storage Modeling hydrographs of pond and receiving stages indicate timing separation;

MI = Minimal Impact based on modeling of existing stages vs. post-project encroachment.

N/A = Not Applicable

Depth of change in flood stage (level) over existing receiving water stage resulting from floodplain encroachment caused by a project that claims **MI type of compensation.

Comments: The method of floodplain compensation is equivalent excavation.

DATE APPLICATION FILED: December 4, 2006

AMENDED DATE: N/A

I. Water Quantity/Quality

POND NO.	AREA ACRES @ TOP OF BANK	TREATMENT TYPE
1	3.70	Wet Detention
Littoral Zone	0.40	Wet Detention
WL-SP 1	existing	N/A
TA-1	0.32	Effluent Filtration
TA-2	0.21	Effluent Filtration
TA-3	0.23	Effluent Filtration
TA-4	0.31	Effluent Filtration
TA-5	0.15	Effluent Filtration
TA-6	0.20	Effluent Filtration
TA-7	0.61	Effluent Filtration
TA-8	0.23	Effluent Filtration
TA-9	0.31	Effluent Filtration
2	21.00	Wet Detention
TOTAL	27.67	

Comments: Attenuation storage and water quality treatment will be provided by man-made wet detention and effluent filtration systems.

A mixing zone is not required.
 A variance is not required.

II. 100-Year Floodplain

Encroachment (Acre-Feet of fill)	Compensation (Acre-Feet of excavation)	Compensation Type*	Encroachment Result**(feet)
4.72	7.93	EE	N/A

*Codes [X] for the type or method of compensation provided are as follows:

- NE = No Encroachment
- EE = Equivalent Excavation to offset project filling per Section 4.4 of the District's Basis of Review;
- SM = Storage Modeling hydrographs of pond and receiving stages indicate timing separation;
- MI = Minimal Impact based on modeling of existing stages vs. post-project encroachment.
- N/A = Not Applicable

Depth of change in flood stage (level) over existing receiving water stage resulting from floodplain encroachment caused by a project that claims **MI type of compensation.

Comments: The method of floodplain compensation is equivalent excavation.

III. Environmental Considerations

Wetland/Surface Water Information			Count of Wetlands: 19			
Wetland Name	Total Acres	Not Impacted Acres	Permanent Impacts		Temporary Impacts	
			Acres	Functional Loss*	Acres	Functional Loss*
SP-1	0.02	0.00	0.02	0.00	0.00	0.00
B	0.49	0.00	0.49	0.41	0.00	0.00
CC	0.03	0.00	0.03	0.01	0.00	0.00
DD	0.06	0.00	0.06	0.02	0.00	0.00
GG	0.11	0.00	0.11	0.06	0.00	0.00
II	0.18	0.00	0.18	0.09	0.00	0.00
JJ	0.10	0.00	0.10	0.00	0.00	0.00
OSW 1A	0.02	0.00	0.02	0.00	0.00	0.00
OSW 1B	0.93	0.00	0.93	0.00	0.00	0.00
OSW 1C	0.40	0.00	0.40	0.00	0.00	0.00
OSW 1D	0.37	0.00	0.37	0.00	0.00	0.00
OSW 1E	0.02	0.00	0.02	0.00	0.00	0.00
OSW 1F	0.04	0.00	0.04	0.00	0.00	0.00
OSW 1G	0.05	0.00	0.05	0.00	0.00	0.00
OSW 1H	0.00	0.00	0.00	0.00	0.00	0.00
OSW 1I	0.01	0.00	0.01	0.00	0.00	0.00
OSW 1J	0.10	0.00	0.10	0.00	0.00	0.00
OSW 2 (Cooper Creek)	0.85	0.00	0.85	0.00	0.00	0.00
OSW HH	1.98	0.00	1.98	0.00	0.00	0.00
TOTAL:	5.76	0.00	5.76	0.59	0.00	0.00

* For impacts that do not require mitigation, their functional loss is not included.

Wetland Comments: The project consists of small portions of seven different wetlands within the project corridor comprising 0.99 acre combined with a 0.85 acre section of Cooper Creek and 11 upland-cut roadside swales and ditches making up another 3.93 acres that will all be permanently or temporarily impacted for road improvements.

Mitigation Information		Count of Mitigation: 3						
Mitigation Name	Creation/Restoration		Enhancement		Preservation		Other	
	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain
JJ (Forested)	1.75	0.51	0.00	0.00	0.00	0.00	0.00	0.00
JJ (Enhancement)	0.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00
JJ (Herbaceous)	0.25	0.17	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	2.10	0.70	0.00	0.00	0.00	0.00	0.00	0.00

Mitigation Comments: Mitigation consists of the creation of 1.75 acres of hardwood forest and 0.25 acre of freshwater marsh along with the enhancement of 0.10 acre of freshwater marsh. Wetland mitigation is not required for the de minimis impacts to Cooper Creek (OSW No. 2) pursuant to Section 3.2.2 of the Basis of Review (B.O.R.) or to the upland-cut swales and ditches (OSW 1A - 1J and HH) pursuant to Section 3.2.2.2 of the B.O.R. Under these sections, mitigation is not required for impacts to nonfunctional wetland habitat.

A regulatory conservation easement is not required.

A proprietary conservation easement is not required.

SPECIFIC CONDITIONS

1. If the ownership of the project area covered by the subject permit is divided, with someone other than the Permittee becoming the owner of part of the project area, this permit shall terminate, pursuant to Section 40D-1.6105, F.A.C. In such situations, each land owner shall obtain a permit (which may be a modification of this permit) for the land owned by that person. This condition shall not apply to the division and sale of lots or units in residential subdivisions or condominiums.
2. Unless specified otherwise herein, two copies of all information and reports required by this permit shall be submitted to:

Sarasota Regulation Department
Southwest Florida Water Management District
6750 Fruitville Road
Sarasota, FL 34240-9711

The permit number, title of report or information and event (for recurring report or information submittal) shall be identified on all information and reports submitted.

3. The Permittee shall retain the design engineer, or other professional engineer registered in Florida, to conduct on-site observations of construction and assist with the as-built certification requirements of this project. The Permittee shall inform the District in writing of the name, address and phone number of the professional engineer so employed. This information shall be submitted prior to construction.
4. Within 30 days after completion of construction of the permitted activity, the Permittee shall submit to the Sarasota Service Office a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1.659, F.A.C., and signed, dated and sealed as-built drawings. The as-built drawings shall identify any deviations from the approved construction drawings.
5. The District reserves the right, upon prior notice to the Permittee, to conduct on-site research to assess the pollutant removal efficiency of the surface water management system. The Permittee may be required to cooperate in this regard by allowing on-site access by District representatives, by allowing the installation and operation of testing and monitoring equipment, and by allowing other assistance measures as needed on site.

6. **WETLAND MITIGATION SUCCESS CRITERIA**
WETLAND J CREATION AND ENHANCEMENT AREA (Wetland J)

Mitigation is expected to offset adverse impacts to wetlands and other surface waters caused by regulated activities and to achieve viable, sustainable ecological and hydrological wetland functions. Wetlands constructed for mitigation purposes will be considered successful and will be released from monitoring and reporting requirements when the following criteria are met continuously for a period of at least one year without intervention in the form of irrigation or the addition or removal of vegetation.

- A. The mitigation area can be reasonably expected to develop into a *Palustrine Emergent and Forested* wetland as determined by the USFWS Classification of Wetlands and Deepwater Habitats of the United States.

A regulatory conservation easement is not required.

A proprietary conservation easement is not required.

SPECIFIC CONDITIONS

1. If the ownership of the project area covered by the subject permit is divided, with someone other than the Permittee becoming the owner of part of the project area, this permit shall terminate, pursuant to Section 40D-1.6105, F.A.C. In such situations, each land owner shall obtain a permit (which may be a modification of this permit) for the land owned by that person. This condition shall not apply to the division and sale of lots or units in residential subdivisions or condominiums.
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- A. The mitigation area can be reasonably expected to develop into a *Palustrine Emergent and Forested* wetland as determined by the USFWS Classification of Wetlands and Deepwater Habitats of the United States.

- B. Topography, water depth and water level fluctuation in the mitigation area are characteristic of the wetland/surface water type specified in criterion "A."
- C. The dominant and subdominant species of desirable wetland plants comprising each vegetation zone and stratum of the mitigation area shall be as follows:

ZONE	STRATUM	PERCENT COVER	DOMINANT SPECIES ^{1, 2, 3}	SUBDOMINANT SPECIES ^{1, 2, 3}
Forested	Canopy	30	<i>Taxodium distichum</i> <i>Fraxinus caroliniana</i>	<i>Ulmus americana</i> <i>Acer rubrum</i>
Marsh	Ground	70	<i>Pontederia cordata</i> <i>Eleocharis interstincta</i>	<i>Panicum hemitomon</i> <i>Scirpus validus</i> <i>Sagittaria lancifolia</i>
Enhance	Ground	70	<i>Pontederia cordata</i> <i>Eleocharis interstincta</i>	<i>Scirpus validus</i> <i>Sagittaria lancifolia</i>
Buffer	Canopy	30	<i>Myrica cerifera</i>	<i>Pinus elliottii</i> <i>Quercus laurifolia</i>

- ¹ Tree species must be greater than 12 feet in height.
- ² Shrub species must be greater than 6 feet in height.
- ³ Plant species providing the same function as those listed may also be considered in determining success.

This criterion must be achieved within 5 years of the initial removal of undesirable vegetation from the enhancement area and completion of planting. The Permittee shall complete any activities necessary to ensure the successful achievement of the mitigation requirements by the deadline specified. Any request for an extension of the deadline specified shall be accompanied with an explanation and submitted as a formal permit modification to the District for evaluation.

- D. Species composition of recruiting wetland vegetation are indicative of the wetland types specified in criterion "A."
- E. Coverage by nuisance or exotic species does not exceed 5 percent.
- F. The wetland mitigation area can be determined to be a wetland or other surface water according to Chapter 62-340, F.A.C.

The mitigation area may be released from monitoring and reporting requirements and be deemed successful at any time during the monitoring period if the Permittee demonstrates that the conditions in the mitigation area have adequately replaced the wetland and surface water functions affected by the regulated activity and that the site conditions are sustainable.

- 7. The Permittee shall monitor and maintain the wetland mitigation areas until the criteria set forth in the Wetland Mitigation Success Criteria Conditions above are met. The Permittee shall perform corrective actions identified by the District if the District identifies a wetland mitigation deficiency.
- 8. The Permittee shall undertake required maintenance activities within the wetland mitigation areas as needed at any time between mitigation area construction and termination of monitoring, with the exception of the final year. Maintenance shall include the manual removal of all nuisance and exotic species, with sufficient frequency that their combined coverage at no time exceeds the Wetland Mitigation Success Criteria Conditions above. Herbicides shall not be used without the prior written approval of the District.

9. A Wetland Mitigation Completion Report shall be submitted to the District within 30 days of completing construction and planting of the wetland mitigation areas. Upon District inspection and approval of the mitigation areas, the monitoring program shall be initiated with the date of the District field inspection being the construction completion date of the mitigation areas. Monitoring events shall occur between March 1 and November 30 of each year. An Annual Wetland Monitoring Report shall be submitted upon the anniversary date of District approval to initiate monitoring.

Annual reports shall provide documentation that a sufficient number of maintenance inspection/activities were conducted to maintain the mitigation areas in compliance with the Wetland Mitigation Success Criteria Conditions above. Note that the performance of maintenance inspections and maintenance activities will normally need to be conducted more frequently than the collection of other monitoring data to maintain the mitigation areas in compliance with the Wetland Mitigation Success Criteria Conditions above.

Monitoring Data shall be collected semi-annually.

10. Termination of monitoring for the wetland mitigation areas shall be coordinated with the District by:
- A. notifying the District in writing when the criteria set forth in the Wetland Mitigation Success Criteria Conditions have been achieved;
 - B. suspending all maintenance activities in the wetland mitigation areas including, but not limited to, irrigation and addition or removal of vegetation; and
 - C. submitting a monitoring report to the District one year following the written notification and suspension of maintenance activities.

Upon receipt of the monitoring report, the District will evaluate the wetland mitigation sites to determine if the Mitigation Success Criteria Conditions have been met and maintained. The District will notify the Permittee in writing of the evaluation results. The Permittee shall perform corrective actions for any portions of the wetland mitigation areas that fail to maintain the criteria set forth in the Wetland Mitigation Success Criteria Conditions.

11. In the event wetland impacts for which the preservation parcel is providing mitigation are not conducted, the permittee will notify the District in writing. Upon District verification that these wetland impacts have not occurred, the District will release any executed and recorded conservation easement.
12. Following the District's determination that the wetland mitigation has been successfully completed, the Permittee shall operate and maintain the wetland mitigation areas such that they remain in their current or intended condition for the life of the surface water management facility. The Permittee must perform corrective actions for any portions of the wetland mitigation areas where conditions no longer meet the criteria set forth in the Wetland Mitigation Success Criteria Conditions.
13. The Permittee shall commence construction of the mitigation areas within 30 days of wetland impacts, if wetland impacts occur between February 1 and August 31. If wetland impacts occur between September 1 and January 31, construction of the mitigation areas shall commence by March 1. In either case, construction of the mitigation areas shall be completed within 120 days of the commencement date unless a time extension is approved in writing by the District.
14. The construction of all wetland impacts and wetland mitigation shall be supervised by a qualified environmental scientist/specialist/consultant. The Permittee shall identify, in writing, the environmental professional retained for construction oversight prior to initial clearing and grading activities.

9. A Wetland Mitigation Completion Report shall be submitted to the District within 30 days of completing construction and planting of the wetland mitigation areas. Upon District inspection and approval of the mitigation areas, the monitoring program shall be initiated with the date of the District field inspection being the construction completion date of the mitigation areas. Monitoring events shall occur between March 1 and November 30 of each year. An Annual Wetland Monitoring Report shall be submitted upon the anniversary date of District approval to initiate monitoring.

Annual reports shall provide documentation that a sufficient number of maintenance inspection/activities were conducted to maintain the mitigation areas in compliance with the Wetland Mitigation Success Criteria Conditions above. Note that the performance of maintenance inspections and maintenance activities will normally need to be conducted more frequently than the collection of other monitoring data to maintain the mitigation areas in compliance with the Wetland Mitigation Success Criteria Conditions above.

Monitoring Data shall be collected semi-annually.

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- A. notifying the District in writing when the criteria set forth in the Wetland Mitigation Success Criteria Conditions have been achieved;
 - B. suspending all maintenance activities in the wetland mitigation areas including, but not limited to, irrigation and addition or removal of vegetation; and
 - C. submitting a monitoring report to the District one year following the written notification and suspension of maintenance activities.

Upon receipt of the monitoring report, the District will evaluate the wetland mitigation sites to determine if the Mitigation Success Criteria Conditions have been met and maintained. The District will notify the Permittee in writing of the evaluation results. The Permittee shall perform corrective actions for any portions of the wetland mitigation areas that fail to maintain the criteria set forth in the Wetland Mitigation Success Criteria Conditions.

11. In the event wetland impacts for which the preservation parcel is providing mitigation are not conducted, the permittee will notify the District in writing. Upon District verification that these wetland impacts have not occurred, the District will release any executed and recorded conservation easement.
12. Following the District's determination that the wetland mitigation has been successfully completed, the Permittee shall operate and maintain the wetland mitigation areas such that they remain in their current or intended condition for the life of the surface water management facility. The Permittee must perform corrective actions for any portions of the wetland mitigation areas where conditions no longer meet the criteria set forth in the Wetland Mitigation Success Criteria Conditions.
13. The Permittee shall commence construction of the mitigation areas within 30 days of wetland impacts, if wetland impacts occur between February 1 and August 31. If wetland impacts occur between September 1 and January 31, construction of the mitigation areas shall commence by March 1. In either case, construction of the mitigation areas shall be completed within 120 days of the commencement date unless a time extension is approved in writing by the District.
14. The construction of all wetland impacts and wetland mitigation shall be supervised by a qualified environmental scientist/specialist/consultant. The Permittee shall identify, in writing, the environmental professional retained for construction oversight prior to initial clearing and grading activities.

15. Wetland buffers shall remain in an undisturbed condition except for approved drainage facility construction/maintenance.
16. The following boundaries, as shown on the approved construction drawings, shall be clearly delineated on the site prior to initial clearing or grading activities:
 - A. wetland buffers
 - B. limits of approved wetland impacts

The delineation shall endure throughout the construction period and be readily discernible to construction and District personnel.

17. Wetland SP-1, B, CC, DD, GG, II and JJ boundaries shown on the approved construction drawings shall be binding upon the Permittee and the District.
18. All construction is prohibited within the permitted project area until the Permittee acquires legal ownership or legal control of the project area as delineated in the permitted construction drawings.
19. The operation and maintenance entity shall submit inspection reports in the form required by the District, in accordance with the following schedule.

For systems utilizing retention or wet detention, the inspections shall be performed two (2) years after operation is authorized and every two (2) years thereafter.
20. The removal of littoral shelf vegetation (including cattails) from wet detention ponds is prohibited unless otherwise approved by the District. Removal includes dredging, the application of herbicide, cutting, and the introduction of grass carp. Any questions regarding authorized activities within the wet detention ponds shall be addressed to the District's Surface Water Regulation Manager, Sarasota Service Office.
21. The operation and maintenance entity shall submit inspection reports in the form required by the District, in accordance with the following schedule.

For systems utilizing effluent filtration or exfiltration **or** systems utilizing effluent filtration or exfiltration **and** retention or wet detention, the inspections shall be performed 18 months after operation is authorized and every 18 months thereafter.

22. Prior to installation of the filter media, the Permittee's contractor shall submit a certified test of the media to the Permittee's Professional Engineer and the District. The test shall address the following parameters: uniformity coefficient, effective grain size, sieve analysis, percent silts, clays and organic matter, and permeability testing (constant head). If testing indicates the actual permeability rate is less than the value specified in the permitted design, a permit modification will be required to lengthen the effluent filtration system. The Permittee shall also notify the Surface Water Regulation Manager, Sarasota Regulation Department, at least 48 hours prior to commencement of construction of the effluent filtration system, so that District staff may observe this construction activity.
23. If prehistoric or historic artifacts, such as pottery or ceramics, stone tools or metal implements, dugout canoes, or any other physical remains that could be associated with Native American cultures, or early colonial or American settlement are encountered at any time within the project site area, the Permittee shall cease all activities involving subsurface disturbance in the immediate vicinity of such discoveries. The Permittee shall contact the Florida Department of State, Division of Historical Resources (DHR), Review and Compliance Section at (850) 245-6333 or (800) 847-7278 and the District. Project activities shall not resume without verbal and/or written authorization from the DHR. In the event that unmarked human remains are encountered during permitted activities, all work shall cease immediately and the proper authorities shall be notified in accordance with Section 872.05, F.S.

Permit No.: 43032151.000
Project Name: Sarasota County – North Cattlemen Road
Page: 8

24. The project's Operation and Maintenance Entity shall maintain the wildlife crossing areas and related warning signage in good, repairable condition for the life of the project as part of the overall surface water management system.
25. This permit is issued based upon the design prepared by the Permittee's consultant. If at any time it is determined by the District that the Conditions for Issuance of Permits in Rules 40D-4.301 and 40D-4.302, F.A.C., have not been met, upon written notice by the District, the Permittee shall obtain a permit modification and perform any construction necessary thereunder to correct any deficiencies in the system design or construction to meet District rule criteria. The Permittee is advised that the correction of deficiencies may require re-construction of the surface water management system and/or mitigation areas.

GENERAL CONDITIONS

1. The general conditions attached hereto as Exhibit "A" are hereby incorporated into this permit by reference and the Permittee shall comply with them.



Authorized Signature

EXHIBIT "A"

1. All activities shall be implemented as set forth in the plans, specifications and performance criteria as approved by this permit. Any deviation from the permitted activity and the conditions for undertaking that activity shall constitute a violation of this permit.
2. This permit or a copy thereof, complete with all conditions, attachments, exhibits, and modifications, shall be kept at the work site of the permitted activity. The complete permit shall be available for review at the work site upon request by District staff. The permittee shall require the contractor to review the complete permit prior to commencement of the activity authorized by this permit.
3. For general permits authorizing incidental site activities, the following limiting general conditions shall also apply:
 - a. If the decision to issue the associated individual permit is not final within 90 days of issuance of the incidental site activities permit, the site must be restored by the permittee within 90 days after notification by the District. Restoration must be completed by re-contouring the disturbed site to previous grades and slopes re-establishing and maintaining suitable vegetation and erosion control to provide stabilized hydraulic conditions. The period for completing restoration may be extended if requested by the permittee and determined by the District to be warranted due to adverse weather conditions or other good cause. In addition, the permittee shall institute stabilization measures for erosion and sediment control as soon as practicable, but in no case more than 7 days after notification by the District.
 - b. The incidental site activities are commenced at the permittee's own risk. The Governing Board will not consider the monetary costs associated with the incidental site activities or any potential restoration costs in making its decision to approve or deny the individual environmental resource permit application. Issuance of this permit shall not in any way be construed as commitment to issue the associated individual environmental resource permit.
4. Activities approved by this permit shall be conducted in a manner which does not cause violations of state water quality standards. The permittee shall implement best management practices for erosion and a pollution control to prevent violation of state water quality standards. Temporary erosion control shall be implemented prior to and during construction, and permanent control measures shall be completed within 7 days of any construction activity. Turbidity barriers shall be installed and maintained at all locations where the possibility of transferring suspended solids into the receiving waterbody exists due to the permitted work. Turbidity barriers shall remain in place at all locations until construction is completed and soils are stabilized and vegetation has been established. Thereafter the permittee shall be responsible for the removal of the barriers. The permittee shall correct any erosion or shoaling that causes adverse impacts to the water resources.
5. Water quality data for the water discharged from the permittee's property or into the surface waters of the state shall be submitted to the District as required by the permit. Analyses shall be performed according to procedures outlined in the current edition of Standard Methods for the Examination of Water and Wastewater by the American Public Health Association or Methods for Chemical Analyses of Water and Wastes by the U.S. Environmental Protection Agency. If water quality data are required, the permittee shall provide data as required on volumes of water discharged, including total volume discharged during the days of sampling and total monthly volume discharged from the property or into surface waters of the state.

**ERP General Conditions
Individual (Construction, Conceptual, Mitigation Banks), General,
Incidental Site Activities, Minor Systems**

Page 1 of 3

41.00-023(03/04)

6. District staff must be notified in advance of any proposed construction dewatering. If the dewatering activity is likely to result in offsite discharge or sediment transport into wetlands or surface waters, a written dewatering plan must either have been submitted and approved with the permit application or submitted to the District as a permit prior to the dewatering event as a permit modification. A water use permit may be required prior to any use exceeding the thresholds in Chapter 40D-2, F.A.C.
7. Stabilization measures shall be initiated for erosion and sediment control on disturbed areas as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased.
8. Off-site discharges during construction and development shall be made only through the facilities authorized by this permit. Water discharged from the project shall be through structures having a mechanism suitable for regulating upstream stages. Stages may be subject to operating schedules satisfactory to the District.
9. The permittee shall complete construction of all aspects of the surface water management system, including wetland compensation (grading, mulching, planting), water quality treatment features, and discharge control facilities prior to beneficial occupancy or use of the development being served by this system.
10. The following shall be properly abandoned and/or removed in accordance with the applicable regulations:
 - a. Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed well contractor.
 - b. Any existing septic tanks on site shall be abandoned at the beginning of construction.
 - c. Any existing fuel storage tanks and fuel pumps shall be removed at the beginning of construction.
11. All surface water management systems shall be operated to conserve water in order to maintain environmental quality and resource protection; to increase the efficiency of transport, application and use; to decrease waste; to minimize unnatural runoff from the property and to minimize dewatering of offsite property.
12. At least 48 hours prior to commencement of activity authorized by this permit, the permittee shall submit to the District a written notification of commencement indicating the actual start date and the expected completion date.
13. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the occupation of the site or operation of site infrastructure located within the area served by that portion or phase of the system. Each phase or independent portion of the system must be completed in accordance with the permitted plans and permit conditions prior to transfer of responsibility for operation and maintenance of that phase or portion of the system to a local government or other responsible entity.
14. Within 30 days after completion of construction of the permitted activity, the permittee shall submit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1, F.A.C. Additionally, if deviation from the approved drawings are discovered during the certification process the certification must be accompanied by a copy of the approved permit drawings with deviations noted.

6. District staff must be notified in advance of any proposed construction dewatering. If the dewatering activity is likely to result in offsite discharge or sediment transport into wetlands or surface waters, a written dewatering plan must either have been submitted and approved with the permit application or submitted to the District as a permit prior to the dewatering event as a permit modification. A water use permit may be required prior to any use exceeding the thresholds in Chapter 40D-2, F.A.C.
7. Stabilization measures shall be initiated for erosion and sediment control on disturbed areas as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased.
8. Off-site discharges during construction and development shall be made only through the facilities authorized by this permit. Water discharged from the project shall be through structures having a mechanism suitable for regulating upstream stages. Stages may be subject to operating schedules satisfactory to the District.
9. The permittee shall complete construction of all aspects of the surface water management system, including wetland compensation (grading, mulching, planting), water quality treatment features, and discharge control facilities prior to beneficial occupancy or use of the development being served by this system.
10. The following shall be properly abandoned and/or removed in accordance with the applicable regulations:
 - a. Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed well contractor.
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12. At least 48 hours prior to commencement of activity authorized by this permit, the permittee shall submit to the District a written notification of commencement indicating the actual start date and the expected completion date.
13. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the occupation of the site or operation of site infrastructure located within the area served by that portion or phase of the system. Each phase or independent portion of the system must be completed in accordance with the permitted plans and permit conditions prior to transfer of responsibility for operation and maintenance of that phase or portion of the system to a local government or other responsible entity.
14. Within 30 days after completion of construction of the permitted activity, the permittee shall submit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1, F.A.C. Additionally, if deviation from the approved drawings are discovered during the certification process the certification must be accompanied by a copy of the approved permit drawings with deviations noted.

15. This permit is valid only for the specific processes, operations and designs indicated on the approved drawings or exhibits submitted in support of the permit application. Any substantial deviation from the approved drawings, exhibits, specifications or permit conditions, including construction within the total land area but outside the approved project area(s), may constitute grounds for revocation or enforcement action by the District, unless a modification has been applied for and approved. Examples of substantial deviations include excavation of ponds, ditches or sump areas deeper than shown on the approved plans.
16. The operation phase of this permit shall not become effective until the permittee has complied with the requirements of the conditions herein, the District determines the system to be in compliance with the permitted plans, and the entity approved by the District accepts responsibility for operation and maintenance of the system. The permit may not be transferred to the operation and maintenance entity approved by the District until the operation phase of the permit becomes effective. Following inspection and approval of the permitted system by the District, the permittee shall request transfer of the permit to the responsible operation and maintenance entity approved by the District, if different from the permittee. Until a transfer is approved by the District, the permittee shall be liable for compliance with the terms of the permit.
17. Should any other regulatory agency require changes to the permitted system, the District shall be notified of the changes prior to implementation so that a determination can be made whether a permit modification is required.
18. This permit does not eliminate the necessity to obtain any required federal, state, local and special District authorizations including a determination of the proposed activities' compliance with the applicable comprehensive plan prior to the start of any activity approved by this permit.
19. This permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee, or convey any rights or privileges other than those specified in the permit and Chapter 40D-4 or Chapter 40D-40, F.A.C.
20. The permittee shall hold and save the District harmless from any and all damages, claims, or liabilities which may arise by reason of the activities authorized by the permit or any use of the permitted system.
21. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under section 373.421(2), F.S., provides otherwise.
22. The permittee shall notify the District in writing within 30 days of any sale, conveyance, or other transfer of ownership or control of the permitted system or the real property at which the permitted system is located. All transfers of ownership or transfers of a permit are subject to the requirements of Rule 40D-4.351, F.A.C. The permittee transferring the permit shall remain liable for any corrective actions that may be required as a result of any permit violations prior to such sale, conveyance or other transfer.
23. Upon reasonable notice to the permittee, District authorized staff with proper identification shall have permission to enter, inspect, sample and test the system to insure conformity with District rules, regulations and conditions of the permits.
24. If historical or archaeological artifacts are discovered at any time on the project site, the permittee shall immediately notify the District and the Florida Department of State, Division of Historical Resources.
25. The permittee shall immediately notify the District in writing of any previously submitted information that is later discovered to be inaccurate.

**ERP General Conditions
Individual (Construction, Conceptual, Mitigation Banks), General,
Incidental Site Activities, Minor Systems**

Page 3 of 3

41.00-023{03/04}

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE
GENERAL CONSTRUCTION MODIFICATION
PERMIT NO. 44032151.001

Expiration Date: October 30, 2013

PERMIT ISSUE DATE: October 30, 2008

This permit is issued under the provisions of Chapter 373, Florida Statutes, (F.S.), and the Rules contained in Chapters 40D-4 and 40, Florida Administrative Code, (F.A.C.). The permit authorizes the Permittee to proceed with the construction of a surface water management system in accordance with the information outlined herein and shown by the application, approved drawings, plans, specifications, and other documents, attached hereto and kept on file at the Southwest Florida Water Management District (District). Unless otherwise stated by permit specific condition, permit issuance constitutes certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341. All construction, operation and maintenance of the surface water management system authorized by this permit shall occur in compliance with Florida Statutes and Administrative Code and the conditions of this permit.

PROJECT NAME: Sarasota County - North Cattlemen Road.

GRANTED TO: Sarasota Associates, A-I, LLC, Sarasota Associates, B-II, LLC, Sarasota Associates, C-III, LLC, Sarasota Associates, D-IV, LLC, Sarasota Associates E-V, LLC, Honore Associates I, LLC, DeSoto Road Associates I, LLC
8441 Cooper Creek Boulevard
University Park, FL 34201
Board of County Commissioners, Sarasota County
c/o Carolyn Eastwood, P.E., Sarasota County Public Works, Mobility,
1001 Sarasota Center Boulevard
Sarasota, FL 34240

ABSTRACT: This permit authorizes modifications to Environmental Resource Permit (ERP) No. 43032151.000 entitled Sarasota County – North Cattlemen Road (Richardson Road to DeSoto Road) issued on May 29, 2007. The modifications approved in this permit are as follows:

1. From Station 35+20 to Station 62+00, drainage pipes carrying offsite runoff are relocated to avoid utility conflicts. The pipe sizes are not changed.
2. From Station 79+80 to Station 83+60, stormwater pipes are relocated from the east side of the road to the west side to avoid utility conflicts. The pipe relocation does not change the contributing area to Treatment Area 1.
3. At Station 116+40 the weir (I-75 Weir) is widened from 30 feet to 32 feet.
4. From Station 128+40 to Station 156+22.62, stormwater runoff will be redirected to Treatment Area TA-7. Treatment Area TA-7 was permitted under ERP No. 43032151.000, and no modifications to Treatment Area TA-7 are proposed, except for the contributory area. Treatment areas TA-8 and TA -9, and Pond 2 have all been eliminated.
5. From Station 156+22.62 to Station 178+14.71, stormwater runoff will be collected by an onsite drainage system that outfalls into Pond C of ERP No. 49025469.008, entitled Sarasota Interstate Park of Commerce, Phase II, which will provide water quality treatment and peak discharge attenuation for this portion of the roadway.
6. From Station 149+40 to Station 178+69.42, the roadway will be realigned and changed in orientation. The changes place the roadway on the land bridge separating South Lake and North Lake, in which the earthmoving has been approved under ERP No. 49025469.008, referenced above.

Information regarding the surface water management system, 100-year floodplain, wetlands and/or surface waters is stated below and on the permitted construction drawings for the project.

OP. & MAINT. ENTITY: Sarasota County Public Works, Mobility
COUNTY: Sarasota
SEC/TWP/RGE: 12/36S/18E
TOTAL ACRES OWNED OR UNDER CONTROL: 65.00
PROJECT SIZE: 18.00 Acres
LAND USE: Road Project
DATE APPLICATION FILED: May 2, 2008
AMENDED DATE: N/A

I. Water Quantity/Quality

Water quality treatment and peak discharge attenuation will be provided in the surface water management system approved under ERP No. 43032151.000 entitled, Sarasota County – North Cattlemen Road (Richardson Road to DeSoto Road), and under ERP No. 49025469.008, entitled Sarasota Interstate Park of Commerce, Phase II.

Under Permit No. 43032151.000, the following ponds are permitted as follows. The previously permitted Ponds TA-8 and TA-9 will not be built.

Pond No.	Area at Top of Bank	Treatment Type
TA-1	0.25	Wet Detention
TA-2	0.17	Wet Detention
TA-3	0.18	Wet Detention
TA-4	0.30	Wet Detention
TA-5	0.14	Wet Detention
TA-6	0.18	Wet Detention
TA-7	0.59	Wet Detention
TOTAL	1.81	

Under Permit No. 49025469.008, Pond-C is permitted and will provide water quality treatment and peak discharge attenuation for the portion of the roadway from Station 149+40 to Station 178+69.42.

Pond No.	Area at Top of Bank	Treatment Type
Pond-C	39.66	Wet Detention
TOTAL	39.66	

A mixing zone is not required.
A variance is not required.

II. 100-Year Floodplain

Encroachment (Acre-Feet of fill)	Compensation (Acre-Feet of excavation)	Compensation Type	Encroachment Result (feet)
0.00	0.00	N/A	0.00

III. Environmental Considerations

Wetland/Other Surface Water Information

Count: 2

Wetland/Other Surface Water Name	Total Acres	Not Impacted Acres	Permanent Impacts		Temporary Impacts	
			Acres	Functional Loss*	Acres	Functional Loss*
Wetland B	0.49	0.00	0.49	0.41	0.00	0.00
Wetland JJ	0.10	0.00	0.00	0.00	0.10	0.00
Total:	0.59	0.00	0.49	0.41	0.10	0.00

* For impacts that do not require mitigation, their functional loss is not included.

Wetland/Other Surface Water Comments:

There are two wetlands totalling 0.59 acre located within the project area for this ERP modification. Temporary impacts are proposed to 0.10 acre of Wetland JJ and permanent filling impacts are proposed to 0.49 acre of Wetland B, both of which were accounted for in previously issued ERP No. 43032151.000, entitled Sarasota County - North Cattlemen Road, issued on May 29, 2007. There are also numerous other wetlands and surface waters located adjacent to the project area that are accounted for in ERP No. 43032151.000 and ERP No. 43025469.008, entitled Sarasota Interstate Park of Commerce - Phase 2, issued on October 28, 2008.

Mitigation Comments:

Mitigation for impacts to Wetland B is accounted for in previously issued ERP No. 43032151.000.

A regulatory conservation easement is not required.

A proprietary conservation easement is not required.

SPECIFIC CONDITIONS

1. If the ownership of the project area covered by the subject permit is divided, with someone other than the Permittee becoming the owner of part of the project area, this permit shall terminate, pursuant to Section 40D-1.6105, F.A.C. In such situations, each land owner shall obtain a permit (which may be a modification of this permit) for the land owned by that person. This condition shall not apply to the division and sale of lots or units in residential subdivisions or condominiums.

2. Unless specified otherwise herein, two copies of all information and reports required by this permit shall be submitted to:

Sarasota Regulation Department
 Southwest Florida Water Management District
 6750 Fruitville Road
 Sarasota, FL 34240-9711


The permit number, title of report or information and event (for recurring report or information submittal) shall be identified on all information and reports submitted.

3. The Permittee shall retain the design engineer, or other professional engineer registered in Florida, to conduct on-site observations of construction and assist with the as-built certification requirements of this project. The Permittee shall inform the District in writing of the name, address

- and phone number of the professional engineer so employed. This information shall be submitted prior to construction.
4. Within 30 days after completion of construction of the permitted activity, the Permittee shall submit to the Sarasota Service Office a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1.659, F.A.C., and signed, dated and sealed as-built drawings. The as-built drawings shall identify any deviations from the approved construction drawings.
 5. The District reserves the right, upon prior notice to the Permittee, to conduct on-site research to assess the pollutant removal efficiency of the surface water management system. The Permittee may be required to cooperate in this regard by allowing on-site access by District representatives, by allowing the installation and operation of testing and monitoring equipment, and by allowing other assistance measures as needed on site.
 6. This modification, Permit No. 44032151.001, amends the previously issued Permit No. 43032151.000, and changes conditions or adds conditions. All other original permit conditions remain in effect.
 7. The District, upon prior notice to the Permittee, may conduct on-site inspections to assess the effectiveness of the erosion control barriers and other measures employed to prevent violations of state water quality standards and avoid downstream impacts. Such barriers or other measures should control discharges, erosion, and sediment transport during construction and thereafter. The District will also determine any potential environmental problems that may develop as a result of leaving or removing the barriers and other measures during construction or after construction of the project has been completed. The Permittee must provide any remedial measures that are needed.
 8. This permit is issued based upon the design prepared by the Permittee's consultant. If at any time it is determined by the District that the Conditions for Issuance of Permits in Rules 40D-4.301 and 40D-4.302, F.A.C., have not been met, upon written notice by the District, the Permittee shall obtain a permit modification and perform any construction necessary thereunder to correct any deficiencies in the system design or construction to meet District rule criteria. The Permittee is advised that the correction of deficiencies may require re-construction of the surface water management system and/or mitigation areas.
 9. The construction approved in this permit modification shall be included in the as-built drawings required under ERP No. 43032151.000, entitled North Cattlemen Road (Richardson Road to DeSoto Road), issued on May 29, 2007.
 10. Refer to ERP No. 43032151.000, entitled North Cattlemen Road (Richardson Road to DeSoto Road), issued on May 29, 2007, for the recertification requirements of the surface water management system with regard to Ponds TA-1, TA-2, TA-3, TA-4, TA-5, TA-6, and TA-7.
 11. Refer to ERP No. 49025469.008, entitled Sarasota Interstate Park of Commerce, Phase II, issued on October 28, 2008, for the recertification requirements of the surface water management system with regard to Pond-C.

GENERAL CONDITIONS

1. The general conditions attached hereto as Exhibit "A" are hereby incorporated into this permit by reference and the Permittee shall comply with them.



Authorized Signature

North Cattlemen Road - Cooper Creek Watershed Model
Proposed Conditions
Mode Maximum Conditions Report

Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs
FPI-N	NCAT	POST_025Y_24H	62.26	21.962	22.690	0.0004	137130	12.50	8.00	76.88	0.47
N-10	BASE	POST_025Y_24H	56.22	22.055	23.000	0.0027	42060	51.26	218.44	51.39	218.32
N-10A	BASE	POST_025Y_24H	56.51	21.987	22.500	0.0046	56595	52.91	200.98	53.21	200.88
N-11	BASE	POST_025Y_24H	19.45	21.163	22.200	0.0019	85884	14.06	271.69	14.16	268.08
N-15	BASE	POST_025Y_24H	20.37	20.842	26.000	0.0040	74705	114.81	360.99	20.37	252.07
N-LAKE	BASE	POST_025Y_24H	66.97	23.778	25.000	0.0003	2512487	12.00	281.97	112.09	2.24
TA1	NCAT	POST_025Y_24H	12.14	26.920	30.000	-0.0022	10905	12.00	17.28	12.14	15.78
TA2	NCAT	POST_025Y_24H	12.21	26.419	28.740	0.0025	7387	12.00	9.08	12.21	7.28
NCAT-T250	NCAT	POST_025Y_24H	12.28	24.663	27.530	-0.0026	8316	12.00	7.84	12.28	5.59
NCAT-T300	NCAT	POST_025Y_24H	12.34	24.369	27.000	-0.0036	11681	12.00	12.77	12.34	8.36
NCAT-T350	NCAT	POST_025Y_24H	12.13	24.830	27.580	0.0024	5954	12.00	7.96	12.13	7.21
NCAT-T400	NCAT	POST_025Y_24H	12.32	24.216	26.730	-0.0025	6672	12.00	7.35	12.32	4.92
NCAT-T450	NCAT	POST_025Y_24H	12.41	24.573	29.370	0.0027	24432	12.00	26.19	12.41	14.30
NCAT-T550	NCAT	POST_025Y_24H	12.33	24.033	27.000	-0.0026	7498	12.00	8.30	12.33	5.44
NCAT-T600	NCAT	POST_025Y_24H	12.34	24.393	26.430	0.0030	11788	12.00	15.41	12.34	9.91
NCAT-T700	NCAT	POST_025Y_24H	56.24	22.055	22.690	0.0006	70171	12.08	23.95	12.03	7.06
FORD C	BASE	POST_025Y_24H	12.99	21.962	26.500	0.0007	788869	12.08	291.29	12.60	101.84
S-LAKE	BASE	POST_025Y_24H	52.43	23.965	30.000	0.0003	12934856	12.08	1690.53	44.87	274.54

WilsonMiller, Inc.

NORTH CATTLEMEN ROAD
TREATMENT VOLUME

North Cattlemen Road (Cooper Creek Watershed Model)						
WATER QUALITY TREATMENT VOLUME FOR FIRST 1" OF ROW RUNOFF						
TREATMENT AREA 1				Incremental, ac-ft	Cumulative, ac-ft	
ROAD:	North Cattlemen Road	ELEV, ft	AREA, ft ²	VOLUME, ft ³		
STA:	STA 76+70 to 92+00	24.8	5009	0	0.00	
AREA (ac):	3.16	25.0	5545	1055	0.024	0.024
Length (ft):	1530	26.3	9031	9474	0.218	0.242
Runoff volume:	AREA x 1/12 ft = <u>0.263 ac-ft</u>	26.5	9584	1861	0.043	0.284
						OK
TREATMENT AREA 2				Incremental, ac-ft	Cumulative, ac-ft	
ROAD:	North Cattlemen Road	ELEV, ft	AREA, ft ²	VOLUME, ft ³		
STA:	STA 92+00 to 98+40	24.5	2450	0	0.00	
AREA (ac):	1.32	25	3738	1547	0.036	0.036
Length (ft):	640	26	6314	5026	0.115	0.151
Runoff volume:	AREA x 1/12 ft = <u>0.110 ac-ft</u>					
						OK
TREATMENT AREA 3				Incremental, ac-ft	Cumulative, ac-ft	
ROAD:	North Cattlemen Road	ELEV, ft	AREA, ft ²	VOLUME, ft ³		
STA:	STA 98+40 to 104+40	22.9	3079	0	0.00	
AREA (ac):	1.24	23	3339	321	0.007	0.007
Length (ft):	600	24.4	6980	7223	0.166	0.173
Runoff volume:	AREA x 1/12 ft = <u>0.103 ac-ft</u>					
						OK
TREATMENT AREA 4				Incremental, ac-ft	Cumulative, ac-ft	
ROAD:	North Cattlemen Road	ELEV, ft	AREA, ft ²	VOLUME, ft ³		
STA:	STA 104+40 to 116+40	22	5101	0	0.00	
AREA (ac):	2.48	23	6354	5727	0.131	0.131
Length (ft):	1200	23.5	6980	3333	0.077	0.208
Runoff volume:	AREA x 1/12 ft = <u>0.207 ac-ft</u>					
						OK
TREATMENT AREA 5				Incremental, ac-ft	Cumulative, ac-ft	
ROAD:	North Cattlemen Road	ELEV, ft	AREA, ft ²	VOLUME, ft ³		
STA:	STA 116+40 to 122+40	23	1213	0	0.00	
AREA (ac):	1.24	24	3739	2476	0.057	0.057
Length (ft):	600	24.5	5002	2185	0.050	0.107
Runoff volume:	AREA x 1/12 ft = <u>0.103 ac-ft</u>					
						OK
TREATMENT AREA 6				Incremental, ac-ft	Cumulative, ac-ft	
ROAD:	North Cattlemen Road	ELEV, ft	AREA, ft ²	VOLUME, ft ³		
STA:	STA 122+40 to 128+40	22	1588	0	0.00	
AREA (ac):	1.24	23	3819	2704	0.062	0.062
Length (ft):	600	23.5	4934	2188	0.050	0.112
Runoff volume:	AREA x 1/12 ft = <u>0.103 ac-ft</u>					
						OK
TREATMENT AREA 7				Incremental, ac-ft	Cumulative, ac-ft	
ROAD:	North Cattlemen Road	ELEV, ft	AREA, ft ²	VOLUME, ft ³		
STA:	STA 128+40 to 149+40	21	6556	0	0.00	
AREA (ac):	4.34	22	11469	9012	0.207	0.207
Length (ft):	2100	22.5	13925	6348	0.146	0.353
Runoff volume:	AREA x 1/12 ft = <u>0.362 ac-ft</u>	22.7	14924	2885	0.066	0.419
						OK
TREATMENT AREA 8				Incremental, ac-ft	Cumulative, ac-ft	
ROAD:	North Cattlemen Road	ELEV, ft	AREA, ft ²	VOLUME, ft ³		
STA:	STA 149+40 to 155+40	21.4	1136	0	0.00	
AREA (ac):	1.24	22	2558	1108	0.025	0.025
Length (ft):	600	23	4693	3626	0.083	0.109
Runoff volume:	AREA x 1/12 ft = <u>0.103 ac-ft</u>					
						OK
TREATMENT AREA 9				Incremental, ac-ft	Cumulative, ac-ft	
ROAD:	North Cattlemen Road	ELEV, ft	AREA, ft ²	VOLUME, ft ³		
STA:	STA 155+40 to 167+16	21.5	3803	0	0.00	
AREA (ac):	2.43	22	5146	2237	0.051	0.051
Length (ft):	1176	23	7832	6489	0.149	0.200
Runoff volume:	AREA x 1/12 ft = <u>0.202 ac-ft</u>	23.2	8365	1620	0.037	0.237
						OK

DIRECT UNDERDRAIN DRAWDOWN ANALYSIS FOR NORTH CATTLEMEN ROAD

Underdrain Drawdown Time

Based on past experience, there are four (4) factors restricting the removal of detained runoff through an underdrain system. These are:

1. Permeability of filter media
2. Permeability of fabric
3. Pipe perforations
4. Maximum pipe flow

The DER regulations require a 72 hour maximum drawdown time with a safety factor of two (2) to remove the first one-half inch of runoff for a drainage basin of 100 acres or less. It is reasonable to believe that the above four factors control this drawdown time. It is also reasonable to believe that the most restrictive of the above four factors would control the drawdown time.

The following is an analysis of the concerned detention areas:

Analysis of Permeability of Filter Media and Permeability of Fabric

The aggregate type "A" specified as filter media will provide a minimum permeability of 3 feet per hour.

Filter permeability = 3 ft/hr

According to Amoco Fabrics and Fibers Company, their No. 1198 woven geotextile fabric has a flow rate equal to 35 gallons per minute per square foot, tested in accordance with ASTM-D 4491.

Fabric permeability = 281 ft/hr

From the above analysis, it is reasonable to assume that filter media permeability is more restrictive to drawdown time. This eliminates permeability of fabric from the analysis.

**DIRECT UNDERDRAIN DRAWDOWN ANALYSIS FOR
NORTH CATTLEMEN ROAD**

Filter Media Permeability:

To compute the drawdown time based on filter media permeability, the following eqns. can be used:

Darcy's Law: $Q = K \cdot I \cdot A = K \cdot (\Delta h/L) \cdot A$

Q = flow, cfs
K = coefficient of permeability, fps
I = $\Delta h/L$ = hydraulic gradient, ft/ft
A = cross-sectional area, ft²

Falling Head Eqn.: $Q \cdot dt = -A_R \cdot dy$

Q = rate of discharge, cfs
dt = change in time, sec.
 A_R = surface area of reservoir, ft²
dy = change in height of head, ft

Substituting Darcy's Law into the Falling Head Eqn. and integrating yields:

$$t = (2.3 \cdot D \cdot A_R) / (K \cdot A_t) \cdot \text{LOG}(Y_1/Y_2)$$

t = time, hr.
D = depth of filter medium from top of trench to center of U.D. pipe, ft.
 A_R = average retention pond surface area between depth Y_1 and Y_2 , ft²
K = filter medium permeability factor (from Darcy's Law), ft/hr
 A_t = surface area of filter medium in trench, ft² (width of trench times length of pipe)
 Y_1 = depth from initial water surface elevation to center of U.D. pipe, ft
 Y_2 = depth from final water surface elevation to center of U.D. pipe, ft

This analysis assumes the following:

1. Filter media permeability is the critical factor in drawdown and other factors do not add to the drawdown time.
2. All discharge from the pond is through the filter media within the trench and no permeability through soil adjacent to the trench.
3. Ground water is not a contributing factor.

Applying Equation: $t = (2.3 \cdot D \cdot A_R) / (K \cdot A_t) \cdot \text{LOG}(Y_1/Y_2)$

NORTH CATTLEMEN ROAD
Treatment Calculations

**DIRECT UNDERDRAIN DRAWDOWN ANALYSIS FOR
NORTH CATTLEMEN ROAD**

Filter Media Permeability:

Applying Equation: $t = \left(\frac{2.3 \cdot D \cdot A_R}{K \cdot A_t} \right) \cdot \text{LOG}(Y_1/Y_2) \cdot \text{FS}$

t = time, hr.

D = depth of filter medium from top of trench to center of U.D. pipe, ft.

A_R = average retention pond surface area between depth Y₁ and Y₂, ft²

K = filter medium permeability factor (from Darcy's Law), ft/hr

A_t = surface area of filter medium in trench, ft² (width of trench times length of pipe)

Y₁ = depth from initial water surface elevation to center of U.D. pipe, ft

Y₂ = depth from final water surface elevation to center of U.D. pipe, ft

L = length of U.D., ft

w = width of U.D. trench, ft

FS = factor of safety

Treatment Area: 1 Node: NCAT-T150

Given:	D =	0.83	ft
	A _R =	7,891	ft ²
	K =	3.00	ft/hr
	L =	298	ft
	w =	4.00	ft
	A _t =	1,192	ft ²
	Y ₁ =	2.95	ft
	Y ₂ =	0.83	ft
	FS =	2.00	

Solve: t = 4.64 hr < 72 hr O.K.

Treatment Area: 2 Node: NCAT-T200

Given:	D =	0.83	ft
	A _R =	4,950	ft ²
	K =	3.00	ft/hr
	L =	298	ft
	w =	4.00	ft
	A _t =	1,192	ft ²
	Y ₁ =	2.76	ft
	Y ₂ =	0.83	ft
	FS =	2.00	

Solve: t = 2.76 hr < 72 hr O.K.

M. J. ...

NORTH CATTLEMEN ROAD
Treatment Calculations

**DIRECT UNDERDRAIN DRAWDOWN ANALYSIS FOR
NORTH CATTLEMEN ROAD**

Pipe Capacity:

To compute the drawdown time based maximum pipe flow the following equations can be used:

Falling Head Eqn.: $Q \cdot dt = -A_R \cdot dy$

Q = rate of discharge, cfs

dt = change in time, sec.

A_R = surface area of reservoir, ft²

dy = change in height of head, ft

Manning's Eqn.: $Q = V \cdot A = (1.486/n) \cdot R^{2/3} \cdot S^{1/2} \cdot A_p$

n = Manning's roughness coefficient

R = hydraulic radius, ft

S = bed slope = Y/(L/2), ft/ft

A_p = pipe area, ft²

Substituting Falling Head Eqn. into Manning's Eqn. and integrating yields:

$$t = (2 \cdot A_R \cdot n \cdot (L/2)^{1/2}) / (1.486 \cdot A_p \cdot R^{2/3}) \cdot (Y_1^{1/2} - Y_2^{1/2})$$

t = time, sec.

A_R = average retention pond surface area between depths Y_1 and Y_2 , ft²

n = Manning's roughness coefficient

L = average length of travel through pipe, ft

A_p = cross-sectional area of U.D., ft

R = hydraulic radius, ft

Y_1 = depth from initial water surface elevation to crown of U.D. at the discharge point, ft

Y_2 = depth from final water surface elevation to crown of U.D. at the discharge point, ft

This analysis assumes the following:

1. Half the underdrain length was used since flow is occurring through entry point along the length of the underdrain.

Applying Equation:

$$t = (2 \cdot A_R \cdot n \cdot (L/2)^{1/2}) / (1.486 \cdot A_p \cdot R^{2/3}) \cdot (Y_1^{1/2} - Y_2^{1/2})$$

$$t = \text{seconds} / 3600 = \text{hr.}$$



**DIRECT UNDERDRAIN DRAWDOWN ANALYSIS FOR
NORTH CATTLEMEN ROAD**

Pipe Capacity:

Applying Equation: $t = (2 * A_R * n * (L/2)^{1/2}) / (1.486 * A_p * R^{2/3}) * (Y_1^{1/2} - Y_2^{1/2}) * FS$

t = time, sec.

A_R = average retention pond surface area between depths Y₁ and Y₂, ft²

n = Manning's roughness coefficient

L = average length of travel through pipe, ft

A_p = cross-sectional area of U.D., ft²

R = hydraulic radius, ft

Y₁ = depth from initial water surface elevation to crown of U.D. at the discharge point, ft

Y₂ = depth from final water surface elevation to crown of U.D. at the discharge point, ft

d = pipe diameter, in

Treatment Area:	1	Node:	NCAT-T150
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Run (1):

Given:	A _R =	3,654	ft ²
	n =	0.015	(PVC)
	L =	69	ft
	d =	6.00	in
	A _p =	0.20	ft ²
	R =	0.13	ft
	Y ₁ =	2.95	ft
	Y ₂ =	0.83	ft
	FS =	2.00	

Run (2):

Given:	A _R =	4,237	ft ²
	n =	0.015	(PVC)
	L =	80	ft
	d =	6.00	in
	A _p =	0.20	ft ²
	R =	0.13	ft
	Y ₁ =	2.95	ft
	Y ₂ =	0.83	ft
	FS =	2.00	

Solve:

Run (1) t = 3.95 hr < 72 hr O.K.

Run (2) t = 4.93 hr < 72 hr O.K.

NORTH CATTLEMEN ROAD
Treatment Calculations

**DIRECT UNDERDRAIN DRAWDOWN ANALYSIS FOR
NORTH CATTLEMEN ROAD**

Pipe Capacity:

Applying Equation: $t = (2 \cdot A_R \cdot n \cdot (L/2)^{1/2}) / (1.486 \cdot A_P \cdot R^{2/3}) \cdot (Y_1^{1/2} - Y_2^{1/2}) \cdot FS$

Treatment Area: 2 Node: NCAT-T200

Run (1):

Given:	$A_R =$	2.641	ft ²
	$n =$	0.015	(PVC)
	$L =$	80	ft
	$d =$	6.00	in
	$A_p =$	0.20	ft ²
	$R =$	0.13	ft
	$Y_1 =$	2.76	ft
	$Y_2 =$	0.83	ft
	$FS =$	2.00	

Run (2):

Given:	$A_R =$	2,309	ft ²
	$n =$	0.015	(PVC)
	$L =$	70	ft
	$d =$	6.00	in
	$A_p =$	0.20	ft ²
	$R =$	0.13	ft
	$Y_1 =$	2.76	ft
	$Y_2 =$	0.83	ft
	$FS =$	2.00	

Solve:

Run (1)	t =	<input type="text" value="2.85"/>	hr <	72 hr	O.K.
Run (2)	t =	<input type="text" value="2.33"/>	hr <	72 hr	O.K.

Treatment Area: 3 Node: NCAT-T250

Run (1):

Given:	$A_R =$	2,881	ft ²
	$n =$	0.015	(PVC)
	$L =$	80	ft
	$d =$	6.00	in
	$A_p =$	0.20	ft ²
	$R =$	0.13	ft
	$Y_1 =$	2.60	ft
	$Y_2 =$	0.83	ft
	$FS =$	2.00	

Run (2):

Given:	$A_R =$	2,518	ft ²
	$n =$	0.015	(PVC)
	$L =$	70	ft
	$d =$	6.00	in
	$A_p =$	0.20	ft ²
	$R =$	0.13	ft
	$Y_1 =$	2.60	ft
	$Y_2 =$	0.83	ft
	$FS =$	2.00	

Solve:

Run (1)	t =	<input type="text" value="2.91"/>	hr <	72 hr	O.K.
Run (2)	t =	<input type="text" value="2.38"/>	hr <	72 hr	O.K.

**DIRECT UNDERDRAIN DRAWDOWN ANALYSIS FOR
NORTH CATTLEMEN ROAD**

Pipe Perforations:

To compute the drawdown time based on pipe perforations, the following equations can be used:

Falling Head Eqn.: $Q \cdot dt = -A_R \cdot dy$

Q = rate of discharge, cfs
dt = change in time, sec.
 A_R = surface area of reservoir, ft²
dy = change in height of head, ft

Orifice Eqn.: $Q = C \cdot A_o \cdot (2 \cdot g \cdot y)^{1/2}$

Q = rate of discharge, cfs
 A_o = orifice area/linear foot of pipe
C = coefficient of discharge, (0.60)
g = gravitational constant, (32.2 ft/s²)
y = head on orifice, ft

Substituting Falling Head Eqn. into Orifice Eqn. and integrating yields:

$$t = (2 \cdot A_R) / (C \cdot A_o \cdot (2 \cdot g)^{1/2}) \cdot (Y_1^{1/2} - Y_2^{1/2})$$

t = time, s
 A_R = average retention pond surface area between depths Y_1 and Y_2 , ft²
C = orifice formula coefficient of discharge, (0.60)
 A_o = total area of pipe openings (use 0.012 ft/LF of U.D.)
g = gravitational constant, (32.2 ft/s²)

This analysis assumes A_R as a constant value (average between Y_1 and Y_2).

Applying Equation:

$$t = (2 \cdot A_R) / (C \cdot A_o \cdot (2 \cdot g)^{1/2}) \cdot (Y_1^{1/2} - Y_2^{1/2})$$

t = seconds/3600 = hr.

NORTH CATTLEMEN ROAD
Treatment Calculations

**DIRECT UNDERDRAIN DRAWDOWN ANALYSIS FOR
NORTH CATTLEMEN ROAD**

Pipe Perforations:

Applying Equation: $t = (2 \cdot A_R) / (C \cdot A_o \cdot (2 \cdot g)^{1/2}) \cdot (Y_1^{1/2} - Y_2^{1/2}) \cdot FS$

t = time, s

A_R = average retention pond surface area between depths Y₁ and Y₂, ft²

C = orifice formula coefficient of discharge, (0.60)

A_o = total area of pipe openings (use 0.012 ft²/LF of U.D.)

g = gravitational constant, (32.2 ft/s²)

Treatment Area: 1 Node: NCAT-T150

Given: A_R = 7,891 ft²
A_o = 3.576 ft²
Y₁ = 2.95 ft
Y₂ = 0.83 ft
C = 0.6
g = 32.2 ft/s²
FS = 2.00

Solve: t = 0.41 hr < 72 hr O.K.

Treatment Area: 2 Node: NCAT-T200

Given: A_R = 4,950 ft²
A_o = 3.576 ft²
Y₁ = 2.76 ft
Y₂ = 0.83 ft
C = 0.6
g = 32.2 ft/s²
FS = 2.00

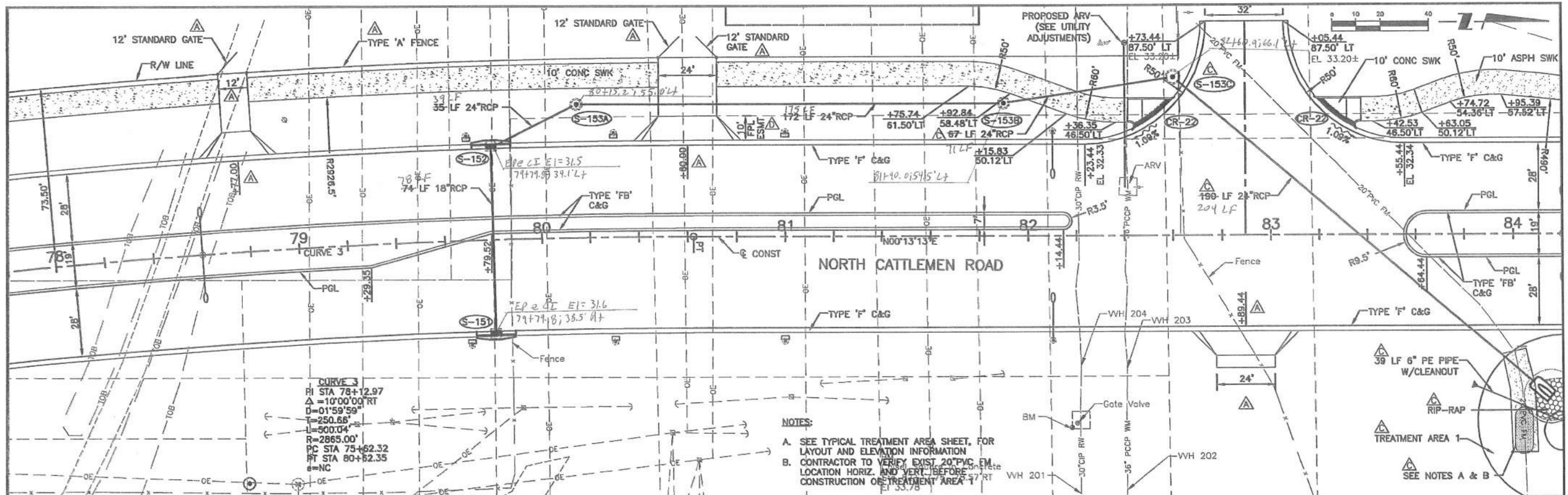
Solve: t = 0.24 hr < 72 hr O.K.

Treatment Area: 3 Node: NCAT-T250

Given: A_R = 5,399 ft²
A_o = 3.576 ft²
Y₁ = 2.60 ft
Y₂ = 0.83 ft
C = 0.6
g = 32.2 ft/s²
FS = 2.00

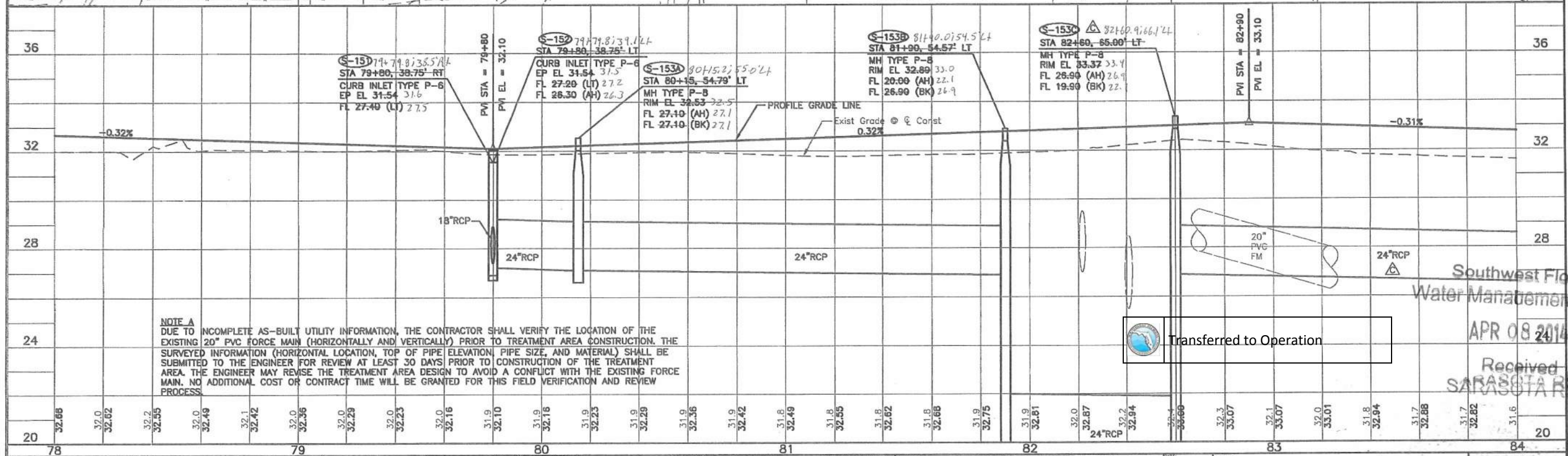
Solve: t = 0.24 hr < 72 hr O.K.





CURVE 3
 PI STA 78+12.97
 $\Delta = 10^{\circ}00'00''$ RT
 $D = 01^{\circ}59'59''$
 $T = 250.66'$
 $L = 500.04'$
 $R = 2865.00'$
 PC STA 75+62.32
 PT STA 80+62.35
 $\theta = NC$

NOTES:
 A. SEE TYPICAL TREATMENT AREA SHEET, FOR LAYOUT AND ELEVATION INFORMATION
 B. CONTRACTOR TO VERIFY EXIST 20" PVC FM LOCATION HORIZ. AND VERT. BEFORE CONSTRUCTION OF TREATMENT AREA 1



NOTE A
 DUE TO INCOMPLETE AS-BUILT UTILITY INFORMATION, THE CONTRACTOR SHALL VERIFY THE LOCATION OF THE EXISTING 20" PVC FORCE MAIN (HORIZONTALLY AND VERTICALLY) PRIOR TO TREATMENT AREA CONSTRUCTION. THE SURVEYED INFORMATION (HORIZONTAL LOCATION, TOP OF PIPE ELEVATION, PIPE SIZE, AND MATERIAL) SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AT LEAST 30 DAYS PRIOR TO CONSTRUCTION OF THE TREATMENT AREA. THE ENGINEER MAY REVISE THE TREATMENT AREA DESIGN TO AVOID A CONFLICT WITH THE EXISTING FORCE MAIN. NO ADDITIONAL COST OR CONTRACT TIME WILL BE GRANTED FOR THIS FIELD VERIFICATION AND REVIEW PROCESS.

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Southwest Florida
 Water Management District
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 SARASOTA RSB

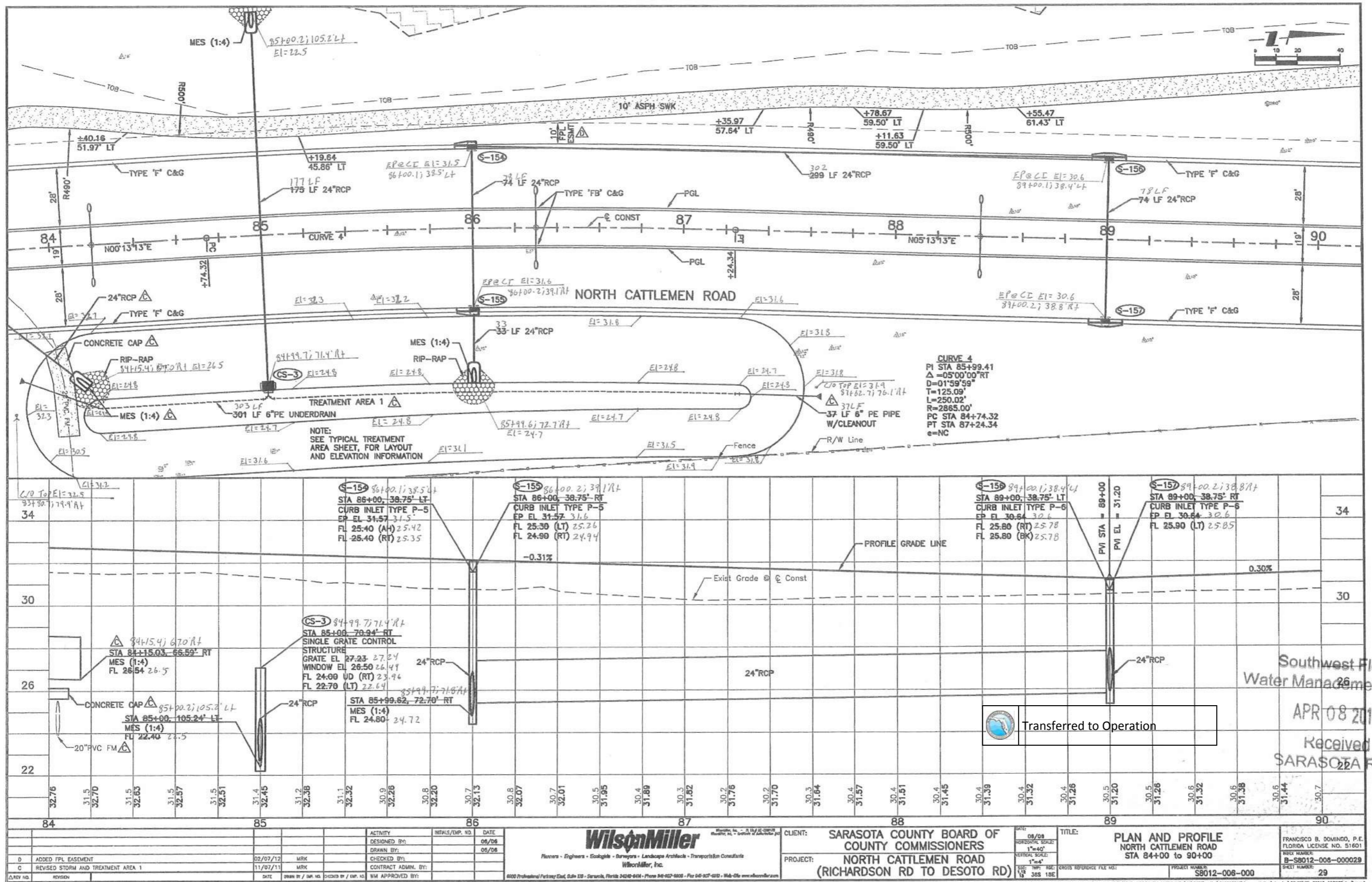
DESIGNED BY: MRK	DATE: 02/07/12	ACTIVITY: DESIGN	INITIALS/IMP. NO.:	DATE:
CHECKED BY: MRK	DATE: 11/07/11	ACTIVITY: CHECK	INITIALS/IMP. NO.:	DATE:
CONTRACT ADMIN. BY: MRK	DATE: 08/05/11	ACTIVITY: ADMIN	INITIALS/IMP. NO.:	DATE:
APPROVED BY:	DATE:	ACTIVITY: APPROVE	INITIALS/IMP. NO.:	DATE:

Wilson Miller
 Planners • Engineers • Ecologists • Surveyors • Landscape Architects • Transportation Consultants
 Wilson Miller, Inc.

CLIENT: SARASOTA COUNTY BOARD OF COUNTY COMMISSIONERS
 PROJECT: NORTH CATTLEMAN ROAD (RICHARDSON RD TO DESOTO RD)

TITLE: PLAN AND PROFILE NORTH CATTLEMAN ROAD STA 78+00 TO 84+00

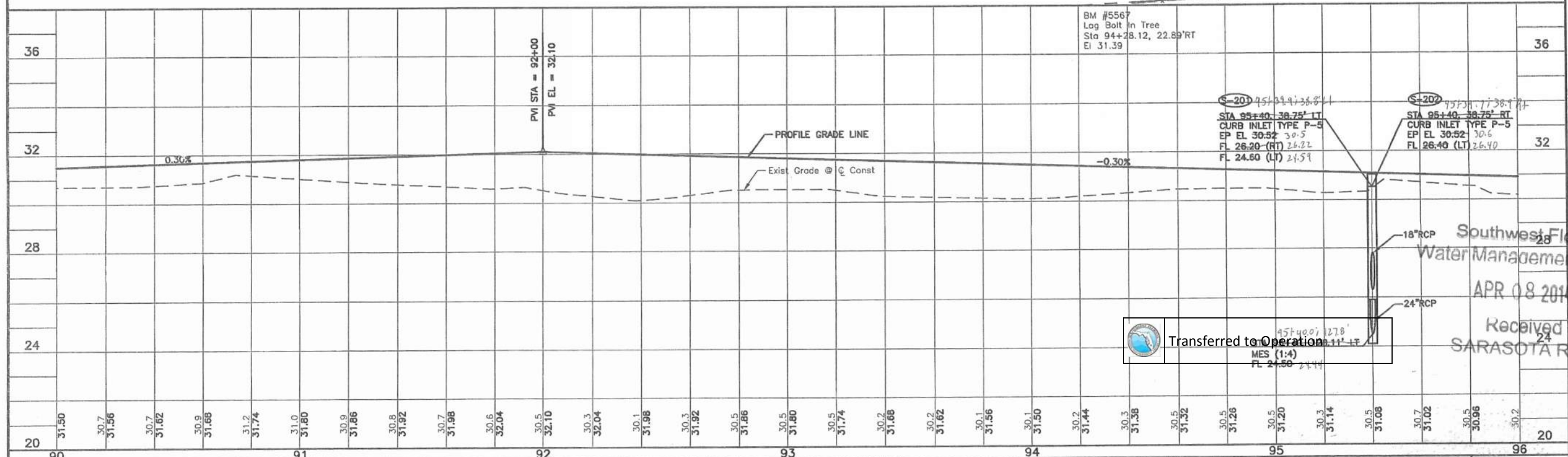
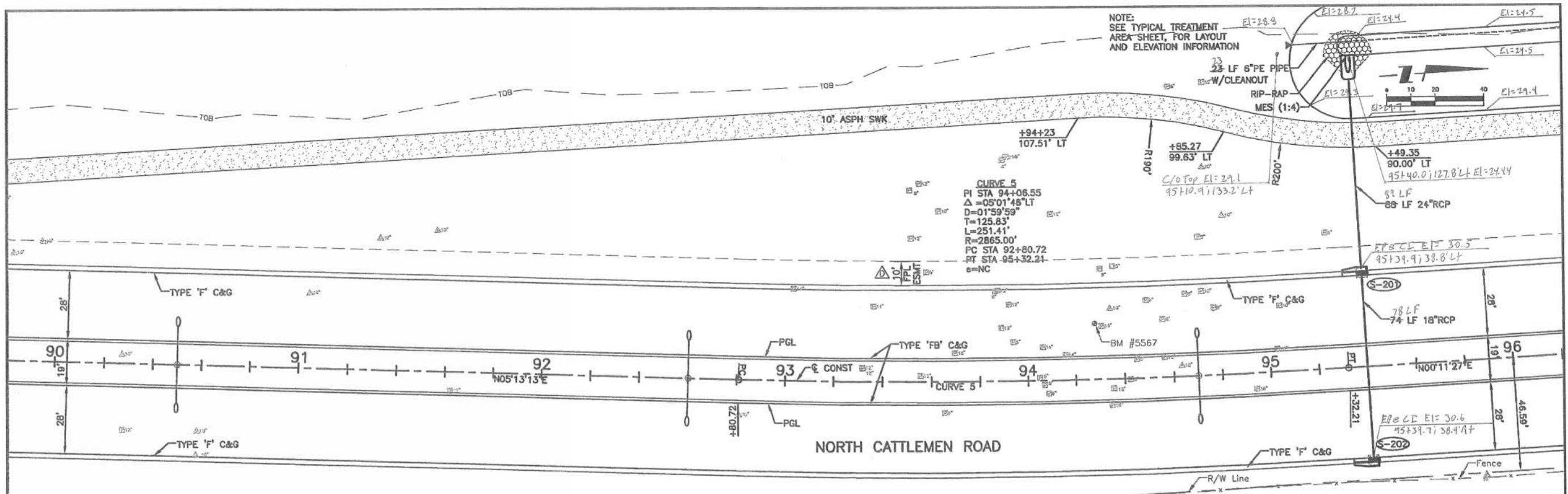
FRANCISCO B. DOMINGO, P.E.
 FLORIDA LICENSE NO. 51601
 SHEET NUMBER: B-SB012-008-000028
 SHEET NUMBER: 28



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Water Management District
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08/08 HORIZONTAL SCALE: 1"=40' VERTICAL SCALE: 1"=4' DATE: 08/08 SHEET NUMBER: 29	CLIENT: SARASOTA COUNTY BOARD OF COUNTY COMMISSIONERS PROJECT: NORTH CATTLEMEN ROAD (RICHARDSON RD TO DESOTO RD)	TITLE: PLAN AND PROFILE NORTH CATTLEMEN ROAD STA 84+00 TO 90+00	FRANCISCO B. DOMINGO, P.E. FLORIDA LICENSE NO. 51601 B-58012-008-000029
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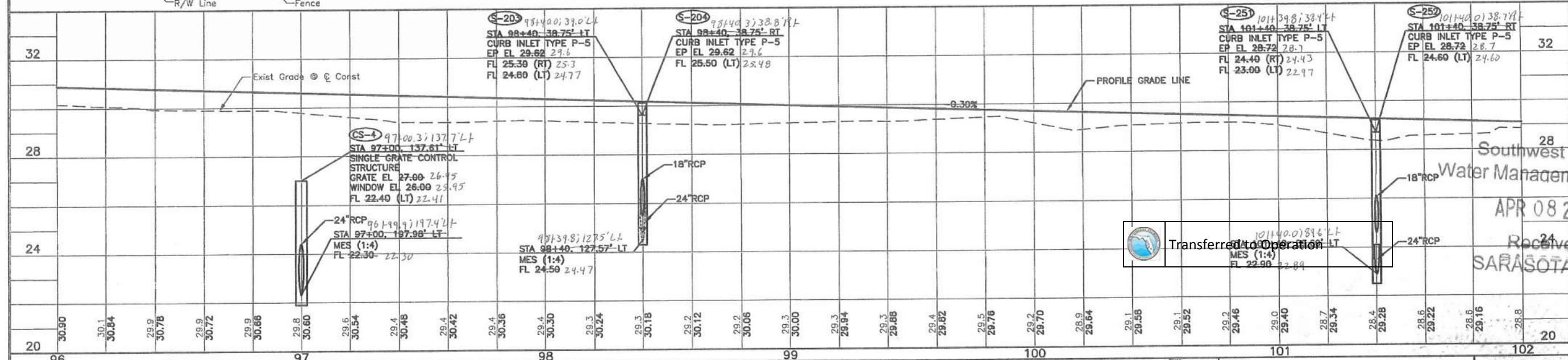
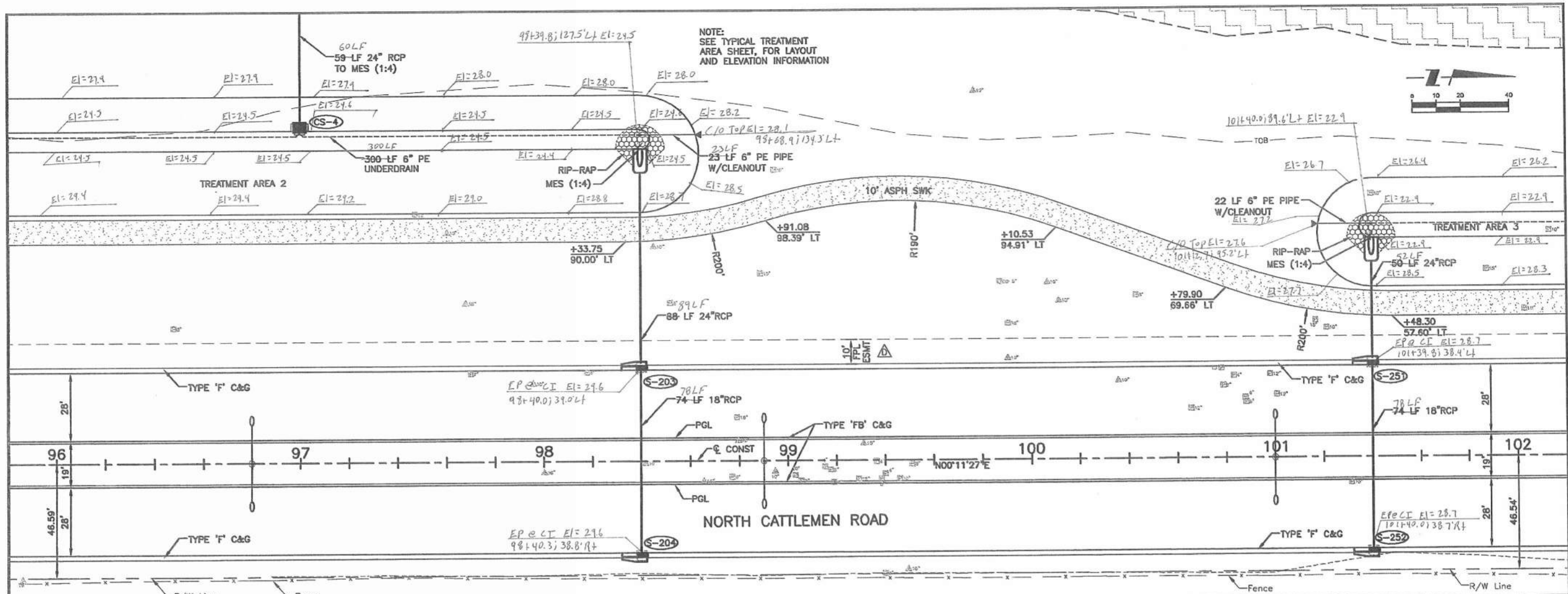
REV NO.	REVISION	DATE	DRAWN BY / CIP. NO.	CHECKED BY / CIP. NO.	WM APPROVED BY:
0	ADDED FPL EASEMENT	02/07/12	MRK		

Wilson Miller
 Planners • Engineers • Ecologists • Surveyors • Landscape Architects • Transportation Consultants
 Wilson Miller, Inc.

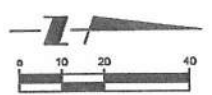
CLIENT: SARASOTA COUNTY BOARD OF COUNTY COMMISSIONERS
 PROJECT: NORTH CATTLEMEN ROAD (RICHARDSON RD TO DESOTO RD)
 DATE: 08/08
 TITLE: PLAN AND PROFILE NORTH CATTLEMEN ROAD STA 90+00 TO 96+00
 PROJECT NUMBER: SB012-006-000
 SHEET NUMBER: 30
 FRANCISCO B. DOMINGO, P.E.
 FLORIDA LICENSE NO. 51601
 B-SB012-006-000030

Southwest Florida Water Management District
 APR 08 2014
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02/07/12 MRK 09/13/11 SRJ	ACTIVITY DESIGNED BY: DRAWN BY: CHECKED BY: CONTRACT ADMIN. BY: WM APPROVED BY:	INITIALS/IMP. NO. DATE 06/08 06/08	Wilson Miller <small>Planners - Engineers - Ecologists - Surveyors - Landscape Architects - Transportation Consultants</small> Wilson Miller, Inc. <small>8000 Professional Parkway East, Suite 200 - Sarasota, Florida 34240-9401 - Phone 941-927-9800 - Fax 941-927-4892 - Web-Http://www.wilsonmiller.com</small>	CLIENT: SARASOTA COUNTY BOARD OF COUNTY COMMISSIONERS PROJECT: NORTH CATTLEMEN ROAD (RICHARDSON RD TO DESOTO RD)	DATE: 08/08 HORIZONTAL SCALE: 1"=40' VERTICAL SCALE: 1"=4' SHEET NUMBER: 31 OF 36 CROSS REFERENCE FILE NO.:	TITLE: PLAN AND PROFILE NORTH CATTLEMEN ROAD STA 96+00 TO 102+00 PROJECT NUMBER: S8012-006-000 SHEET NUMBER: 31	FRANCISCO B. DOMINGO, P.E. FLORIDA LICENSE NO. 51601 PROJECT NUMBER: B-S8012-006-000031 SHEET NUMBER: 31
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 SARASOTA RSB

Handwritten signature

ERP 42323



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Southwest Florida Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899

(352) 796-7211 or 1-800-423-1476 (FL only)

TDD only: 1-800-231-6103 (FL only)

On the Internet at WaterMatters.org

Bartow Service Office

170 Century Boulevard
Bartow, Florida 33830-7700
(863) 534-1448 or
1-800-492-7862 (FL only)

Sarasota Service Office

6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)

Tampa Service Office

7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)

March 02, 2016

Chris Becker
Department of Environmental Protection
Div. of Recreation & Parks - District 4
1843 South Tamiami Trail
Osprey, FL 34229

Terri Stoutamire, Plan Processor
Department of Economic Opportunity
Division of Community Planning
107 East Madison Street, MSC-160
Tallahassee, FL 32399-4120

Timothy Parsons
Department of State
Division of Historic Resources
Compliance Review Section
500 South Bronough
Tallahassee, FL 32399-0250

Jane Chabre
Conservation Planning Service
Florida Fish & Wildlife Conservation Commission
620 South Meridian, MB 5B5

Subject: **Notice of Complete Application -
Coastal Zone Management Review Notice**

Application No.: 718741

Project Name: Villages of Lakewood Ranch Master Drainage Plan

County: SARASOTA

Sec/Twp/Rge: S07/T36S/R19E, S02/T36S/R19E, S05/T36S/R19E, S32/T35S/R19E,
S08/T36S/R19E, S10/T36S/R19E, S09/T36S/R19E, S34/T35S/R19E,
S18/T36S/R19E, S03/T36S/R19E, S11/T36S/R19E, S04/T36S/R19E,
S33/T35S/R19E

The permit application referenced above is complete with the information received on February 17, 2016.

Under the provisions of Florida's Coastal Management Program (FCMP), this letter is being sent to notify you of the status of the application for the project identified above. This notice provides you the opportunity to make a determination of this project's consistency with the enforceable policies of the FCMP program that are within your agency's jurisdiction. Findings of inconsistency should be submitted in writing to the District within 30 days from receipt of this notice. If you are unable to make this determination within these time frames, you are requested to submit a request for additional time within the timeframes indicated above. All correspondence submitted in response to this request should reference the project name and application number and be returned to the Environmental Resource Permit Bureau.

Please be advised that any construction activities that disturb (includes clearing, grading and excavation) one (1) acre or more of land (total plan of development) and that may result in a stormwater discharge to a Water of the State or a municipal separate storm sewer system may require coverage under a Florida Department of Environmental Protection (FDEP) National Pollutant Discharge Elimination System (NPDES) Stormwater Permit, including a Stormwater Pollution Prevention Plan. Information about the NPDES Stormwater program can be accessed via the FDEP-NPDES Stormwater section's website at: www.dep.state.fl.us/water/stormwater/npdes

If you have questions concerning the District's procedures or if I may be of assistance, please contact me at the Tampa Service Office, extension 6506.

Sincerely,



Southwest Florida Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899
(352) 796-7211 or 1-800-423-1476 (FL only)
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)
On the Internet at: WaterMatters.org

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Bartow, Florida 33830-7700
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1-800-492-7862 (FL only)

Sarasota Service Office
6750 Fruitville Road
Sarasota, Florida 34240-9711
(941) 377-3722 or
1-800-320-3503 (FL only)

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)

April 04, 2016

Schroeder-Manatee Ranch, Inc.
Attn: Anthony Chiofalo
14400 Covenant Way
Lakewood Ranch, FL 34202

Subject: **Notice of Intended Agency Action - Approval
ERP Individual Construction**

Project Name: Villages of Lakewood Ranch Master Drainage Plan
App ID/Permit No: 718741 / 43042323.001
County: SARASOTA
Sec/Twp/Rge: S07/T36S/R19E, S02/T36S/R19E, S05/T36S/R19E,
S32/T35S/R19E, S08/T36S/R19E, S10/T36S/R19E,
S09/T36S/R19E, S34/T35S/R19E, S18/T36S/R19E,
S03/T36S/R19E, S11/T36S/R19E, S04/T36S/R19E,
S33/T35S/R19E

Dear Permittee(s):

The Southwest Florida Water Management District (District) has completed its review of the application for Environmental Resource Permit. Based upon a review of the information you have submitted, the District hereby gives notice of its intended approval of the application.

The File of Record associated with this application can be viewed at <http://www18.swfwmd.state.fl.us/erp/erp/search/ERPSearch.aspx> and is also available for inspection Monday through Friday, except for District holidays, from 8:00 a.m. through 5:00 p.m. at the District's Tampa Service Office, 7601 U.S. Highway 301 North, Tampa, Florida 33637.

If you have any questions or concerns regarding the application or any other information, please contact the Environmental Resource Permit Bureau in the Tampa Service Office.

Sincerely,

Michelle K. Hopkins, P.E.
Bureau Chief
Environmental Resource Permit Bureau
Regulation Division

cc: U. S. Army Corps of Engineers
Alec Hoffner
D. Scott McKenna, P.E., Stantec Consulting Services, Inc.



Southwest Florida Water Management District

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April 04, 2016

Schroeder-Manatee Ranch, Inc.
Attn: Anthony Chiofalo
14400 Covenant Way
Lakewood Ranch, FL 34202

Subject: **Notice of Agency Action - Approval
ERP Individual Construction**

Project Name: Villages of Lakewood Ranch Master Drainage Plan
App ID/Permit No: 718741 / 43042323.001
County: SARASOTA
Sec/Twp/Rge: S07/T36S/R19E, S02/T36S/R19E, S05/T36S/R19E,
S32/T35S/R19E, S08/T36S/R19E, S10/T36S/R19E,
S09/T36S/R19E, S34/T35S/R19E, S18/T36S/R19E,
S03/T36S/R19E, S11/T36S/R19E, S04/T36S/R19E,
S33/T35S/R19E

Dear Permittee(s):

The Southwest Florida Water Management District (District) is in receipt of your application for the Environmental Resource Permit. Based upon a review of the information you submitted, the application is approved. Please refer to the attached Notice of Rights to determine any legal rights you may have concerning the District's agency action on the permit application described in this letter.

If approved construction plans are part of the permit, construction must be in accordance with these plans. These drawings are available for viewing or downloading through the District's Application and Permit Search Tools located at www.WaterMatters.org/permits.

The District's action in this matter only becomes closed to future legal challenges from members of the public if such persons have been properly notified of the District's action and no person objects to the District's action within the prescribed period of time following the notification. The District does not publish notices of agency action. If you wish to limit the time within which a person who does not receive actual written notice from the District may request an administrative hearing regarding this action, you are strongly encouraged to publish, at your own expense, a notice of agency action in the legal advertisement section of a newspaper of general circulation in the county or counties where the activity will occur. Publishing notice of agency action will close the window for filing a petition for hearing. Legal requirements and instructions for publishing notices of agency action, as well as a noticing form that can be used, are available from the District's website at www.WaterMatters.org/permits/noticing. If you publish notice of agency action, a copy of the affidavit of publication provided by the newspaper should be sent to the District's Tampa Service Office for retention in this permit's File of Record.

If you have any questions or concerns regarding your permit or any other information, please contact the Environmental Resource Permit Bureau in the Tampa Service Office.

Sincerely,

Michelle K. Hopkins, P.E.
Bureau Chief
Environmental Resource Permit Bureau
Regulation Division

Enclosures: Approved Permit w/Conditions Attached
 [As-Built Certification and Request for Conversion to Operation Phase](#)
 Notice of Authorization to Commence Construction
 Notice of Rights

cc: U. S. Army Corps of Engineers
 Alec Hoffner
 D. Scott McKenna, P.E., Stantec Consulting Services, Inc.

**SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE
INDIVIDUAL CONSTRUCTION
PERMIT NO. 43042323.001**

EXPIRATION DATE: April 04, 2021

PERMIT ISSUE DATE: April 04, 2016

This permit is issued under the provisions of Chapter 373, Florida Statutes, (F.S.), and the Rules contained in Chapter 62-330, Florida Administrative Code, (F.A.C.). The permit authorizes the Permittee to proceed with the construction of a surface water management system in accordance with the information outlined herein and shown by the application, approved drawings, plans, specifications, and other documents, attached hereto and kept on file at the Southwest Florida Water Management District (District). Unless otherwise stated by permit specific condition, permit issuance constitutes certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341. All construction, operation and maintenance of the surface water management system authorized by this permit shall occur in compliance with Florida Statutes and Administrative Code and the conditions of this permit.

PROJECT NAME: Villages of Lakewood Ranch Master Drainage Plan

GRANTED TO: Schroeder-Manatee Ranch, Inc.
Attn: Anthony Chiofalo
14400 Covenant Way
Lakewood Ranch, FL 34202

OTHER PERMITTEES: N/A

ABSTRACT: This permit authorizes the construction of a master stormwater management system serving a 1,394 acre project area located south of University Parkway and east of I-75 in Sarasota County, Florida. The property currently includes completed borrow pits, active mining operations, as well as undeveloped land used as grazing areas for cattle and agriculture. The project consists of a master stormwater management system serving transportation improvements and future mixed use development pursuant to the Villages of Lakewood Ranch South DRI. The transportation improvements include the construction of the following roadways: Lakewood Ranch Boulevard (from Communications Parkway to the project's southern boundary), Deer Drive (from University Parkway to Lakewood Ranch Boulevard), and Lorraine Road (from University Parkway to the development's southern boundary). Water quality treatment and peak discharge attenuation are provided by wet detention. Information regarding the stormwater management system, 100-year floodplain, wetlands and/or surface waters is stated below and on the permitted construction drawings for the project.

OP. & MAIN. ENTITY: Lakewood Ranch Stewardship District

OTHER OP. & MAIN. ENTITY: N/A

COUNTY: SARASOTA

SEC/TWP/RGE: S07/T36S/R19E, S02/T36S/R19E, S05/T36S/R19E, S32/T35S/R19E,
S08/T36S/R19E, S10/T36S/R19E, S09/T36S/R19E, S34/T35S/R19E,
S18/T36S/R19E, S03/T36S/R19E, S11/T36S/R19E, S04/T36S/R19E,
S33/T35S/R19E

I. Water Quantity/Quality

POND No.	Area Acres @ Top of Bank	Treatment Type
A	140.89	MAN-MADE WET DETENTION
B	68.88	NO TREATMENT SPECIFIED
C	273.90	NO TREATMENT SPECIFIED
D1	67.44	MAN-MADE WET DETENTION
D2	80.51	NO TREATMENT SPECIFIED
D3	35.82	NO TREATMENT SPECIFIED
E	87.32	MAN-MADE WET DETENTION
F	210.00	MAN-MADE WET DETENTION
G	113.77	MAN-MADE WET DETENTION
DR2	0.70	MAN-MADE WET DETENTION
LR1	1.21	MAN-MADE WET DETENTION
LR2	1.31	MAN-MADE WET DETENTION
LR4	0.57	MAN-MADE WET DETENTION
CP1	0.60	MAN-MADE WET DETENTION
CP2	1.68	MAN-MADE WET DETENTION
	Total: 1,084.60	

Water Quality/Quantity Comments:

Ponds A, D1, E, F, G, DR2, LR1, LR2, LR4, CP-1 and CP-2 provide water quality treatment and attenuation storage. Ponds B, C, D2, and D3 provide attenuation storage and conveyance only. Maximum allowable impervious coverages per drainage sub-basin for future development areas are denoted on Plan Sheet 3 per drainage sub-basin. A portion of the project discharges to a waterbody (Cow Pen Slough/WBID 1924) that is verified as impaired for nutrients and dissolved oxygen; water quality certification is therefore waived as a condition of this permit. Net improvement has been demonstrated by pollutant loading computations which indicate a net reduction in nutrient load. Elevations referenced on the construction plans are based on the 1929 National Geodetic Vertical Datum (NGVD); conversion to 1988 North American Geodetic Vertical Datum (NAVD) is less 0.984 feet.

A mixing zone is not required.

A variance is not required.

II. 100-Year Floodplain

Encroachment (Acre-Feet of fill)	Compensation (Acre-Feet of excavation)	Compensation Type	Encroachment Result* (feet)
306.45	0.00	Storage Modeling	N/A

Floodplain Comments:

Revised Existing Conditions Modeling (RECM) and Proposed Conditions Modeling (PCM) were used to demonstrate no adverse flooding impacts. The RECM and PCM were based on site specific topographic information as well as information available from the Cooper Creek Model, the Braden River Watershed Model, the Cow Pen Slough Watershed Model. Future floodplain encroachment/compensation associated with the future development areas are not addressed with this permit.

*Depth of change in flood stage (level) over existing receiving water stage resulting from floodplain encroachment caused by a project that claims Minimal Impact type of compensation.

III. Environmental Considerations

Wetland/Other Surface Water Information

Wetland/Other Surface Water Name	Total Acres	Not Impacted Acres	Permanent Impacts		Temporary Impacts	
			Acres	Functional Loss*	Acres	Functional Loss*
WL-AS	0.45	0.32	0.13	0.04	0.00	0.00
WL-AN	0.19	0.09	0.10	0.03	0.00	0.00
WL-BN	1.22	1.22	0.00	0.00	0.00	0.00
WL-M4	7.10	7.10	0.00	0.00	0.00	0.00
WL-M5	2.14	2.14	0.00	0.00	0.00	0.00
WL-D	0.19	0.19	0.00	0.00	0.00	0.00
WL-AAAA	0.06	0.00	0.06	0.04	0.00	0.00
WL-ZZZ	0.24	0.05	0.19	0.12	0.00	0.00
Long Swamp	0.06	0.01	0.05	0.04	0.00	0.00
WP-21	4.25	4.25	0.00	0.00	0.00	0.00
WP-20	1.28	1.28	0.00	0.00	0.00	0.00
WP-23/WL-EEEE	2.02	1.57	0.45	0.34	0.00	0.00
WP-24/WL-DDDDD	0.38	0.00	0.38	0.21	0.00	0.00
WL-PPP	0.45	0.44	0.01	0.01	0.00	0.00
WL-BBBB	0.02	0.00	0.02	0.01	0.00	0.00
WL-S	0.63	0.44	0.19	0.07	0.00	0.00
WL-CCCC	0.23	0.00	0.23	0.12	0.00	0.00
WL-DDDD	0.01	0.00	0.01	0.01	0.00	0.00
WL-EEEE	0.02	0.00	0.02	0.01	0.00	0.00
WL-CCCCC	0.02	0.00	0.02	0.01	0.00	0.00
MS-54/MS-52	14.34	14.33	0.01	0.00	0.00	0.00
WP-55	7.02	7.01	0.01	0.00	0.00	0.00
WL-BBBBB	0.01	0.00	0.01	0.00	0.00	0.00
WL-AAAAA	0.01	0.00	0.01	0.00	0.00	0.00
WL-ODA	0.06	0.06	0.00	0.00	0.00	0.00
Lake A	125.71	125.71	0.00	0.00	0.00	0.00
Lake B	70.33	67.90	2.43	0.00	0.00	0.00
Lake C	268.99	268.99	0.00	0.00	0.00	0.00
Lake D-1	65.97	65.97	0.00	0.00	0.00	0.00
Lake D-2	78.30	78.30	0.00	0.00	0.00	0.00
Lake D-3	33.70	33.70	0.00	0.00	0.00	0.00
Lake E	87.04	87.04	0.00	0.00	0.00	0.00
Agricultural Ditches	6.98	2.44	4.54	0.00	0.00	0.00
Total:	779.42	770.55	8.87	1.06	0.00	0.00

* For impacts that do not require mitigation, their functional loss is not included.

Wetland/Other Surface Water Comments:

There are 42.39 acres of wetlands (FLUCCS 641) located within the project area for this ERP. Permanent filling impacts to 1.5 acres of Wetland UL-14 (FLUCCS 631) will occur for construction of an access roadway. There are 737.02 acres of other surface waters feature, consisting of a 6.98 acres upland cut ditches (FLUCCS 510) and 730.04 acres of borrow lakes (FLUCCS 532/533) located within the project area. Permanent impacts to 4.54 acres of the upland cut ditches and 2.43 acres of borrow lakes will occur for the construction of a residential development and associated surface water management system. Permanent filling impacts to 1.9 acres of qualifying wetlands were evaluated using the Wetland Rapid Assessment Methodology (WRAP) as required by the Long Swamp Mitigation Area Environmental Resource Permit (No.4301864.001). The results of the WRAP analysis indicate a functional loss of 1.06 units due to the permanent impacts proposed.

Mitigation Information

Name	Creation		Enhancement		Preservation		Restoration		Enhancement +Preservation		Other	
	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain
Long Swamp Mitigation Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06
Total:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06

Mitigation Comments:

Wetland mitigation is not required for permanent filling impacts to the upland cut ditches pursuant to Subsection 10.2.2.2 of the Environmental Resource Permit Applicant’s Handbook Volume I. Under this Subsection, wetland mitigation is not required for impacts to drainage ditches that were constructed in uplands and do not provide significant habitat for threatened or endangered species and were not constructed to divert natural stream flow.

Wetland mitigation will not be required for permanent filling/dredging impacts to 2.43 acres of borrow ponds pursuant to Section 10.2.2. of the Environmental Resource Permit Applicant’s Handbook Volume I. Under this Section, wetland mitigation is not required for impacts that have been determined to be de minimis to fish, wildlife and listed species.

Wetland mitigation for permanent filling impacts will be provided by the withdrawal of 1.06 marsh credits from the Long Swamp Mitigation Area, ERP. As the Wetland Rapid Assessment Procedure (WRAP) was the method used to determine mitigation credits within the Long Swamp Mitigation, WRAP analysis was used to determine that the functional loss due to the authorized wetland impact is 1.06. Therefore, 1.06 marsh credit from the mitigation area will be used to offset the impacts.

Specific Conditions

1. If the ownership of the project area covered by the subject permit is divided, with someone other than the Permittee becoming the owner of part of the project area, this permit may be terminated, unless the terms of the permit are modified by the District or the permit is transferred pursuant to Rule 40D-1.6105, F.A.C. In such situations, each land owner shall obtain a permit (which may be a modification of this permit) for the land owned by that person. This condition shall not apply to the division and sale of lots or units in residential subdivisions or condominiums.
2. The Permittee shall retain the design professional registered or licensed in Florida, to conduct on-site observations of construction and assist with the as-built certification requirements of this project. The Permittee shall inform the District in writing of the name, address and phone number of the design professional so employed. This information shall be submitted prior to construction.
3. Wetland buffers shall remain in an undisturbed condition except for approved drainage facility construction/maintenance. No owner of property within the subdivision may perform any work, construction, maintenance, clearing, filling or any other type of activities within the wetlands, wetland mitigation areas, wetland buffers, upland conservation areas, and drainage easements described in the approved permit and recorded plat of the subdivision, unless prior approval is received from the Southwest Florida Water Management District.
4. The following boundaries, as shown on the approved construction drawings, shall be clearly delineated on the site prior to initial clearing or grading activities:

wetland and surface water areas

wetland buffers

limits of approved wetland impacts

The delineation shall endure throughout the construction period and be readily discernible to construction and District personnel.
5. All wetland and surface water boundaries shown on the approved construction drawings shall be binding upon the Permittee and the District for the term of this permit. If this permit is extended, the wetland and surface water boundaries shall only remain binding for the term of such extension provided that physical conditions on the property, as solely determined by District staff, do not change so as to alter the boundaries of the delineated wetlands or other surface waters during the permit term, unless such change has been authorized by a permit issued under Part IV, Chapter 373, F.S.
6. Rights-of-way and easement locations necessary to construct, operate and maintain all facilities, which constitute the permitted stormwater management system, and the locations and limits of all wetlands, wetland buffers, upland buffers for water quality treatment, 100-year floodplain areas and floodplain compensation areas, shall be shown on the final plat recorded in the County Public Records. Documentation of this plat recording shall be submitted to the District with the As-Built Certification and Request for Conversion to Operational Phase Form, and prior to beneficial occupancy or use of the site.
7. The removal of littoral shelf vegetation (including cattails) from wet detention ponds is prohibited unless otherwise approved by the District. Removal includes dredging, the application of herbicide, cutting, and the introduction of grass carp. Any questions regarding authorized

activities within the wet detention ponds shall be addressed to the District's Engineering Manager at the Tampa Service Office.

8. Certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341 is waived.
9. If limestone bedrock is encountered during construction of the stormwater management system, the District must be notified and construction in the affected area shall cease.
10. The Permittee shall notify the District of any sinkhole development in the stormwater management system within 48 hours of discovery and must submit a detailed sinkhole evaluation and repair plan for approval by the District within 30 days of discovery.
11. The Permitted Plan Set for this project includes the set received by the District on December 17, 2015 and sheets 1, 6, 13 and 19 received on February 22, 2016.
12. The operation and maintenance entity shall provide for the inspection of the permitted project after conversion of the permit to the operation and maintenance phase. The inspections shall be performed five (5) years after operation is authorized and every five (5) years thereafter.

The operation and maintenance entity must maintain a record of each inspection, including the date of inspection, the name and contact information of the inspector, whether the system was functioning as designed and permitted, and make such record available upon request of the District.

Within 30 days of any failure of a stormwater management system or deviation from the permit, an inspection report shall be submitted using Form 62-330.311(1), "Operation and Maintenance Inspection Certification" describing the remedial actions taken to resolve the failure or deviation.

13. District staff must be notified in advance of any proposed construction dewatering. If the dewatering activity is likely to result in offsite discharge or sediment transport into wetlands or surface waters, a written dewatering plan must either have been submitted and approved with the permit application or submitted to the District as a permit prior to the dewatering event as a permit modification. A water use permit may be required prior to any use exceeding the thresholds in Chapter 40D-2, F.A.C.
14. Off-site discharges during construction and development shall be made only through the facilities authorized by this permit. Water discharged from the project shall be through structures having a mechanism suitable for regulating upstream stages. Stages may be subject to operating schedules satisfactory to the District.
15. The permittee shall complete construction of all aspects of the stormwater management system, including wetland compensation (grading, mulching, planting), water quality treatment features, and discharge control facilities prior to beneficial occupancy or use of the development being served by this system.
16. The following shall be properly abandoned and/or removed in accordance with the applicable regulations:
 - a. Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed well contractor.
 - b. Any existing septic tanks on site shall be abandoned at the beginning of construction.
 - c. Any existing fuel storage tanks and fuel pumps shall be removed at the beginning of construction.

17. All stormwater management systems shall be operated to conserve water in order to maintain environmental quality and resource protection; to increase the efficiency of transport, application and use; to decrease waste; to minimize unnatural runoff from the property and to minimize dewatering of offsite property.
18. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the occupation of the site or operation of site infrastructure located within the area served by that portion or phase of the system. Each phase or independent portion of the system must be completed in accordance with the permitted plans and permit conditions prior to transfer of responsibility for operation and maintenance of that phase or portion of the system to a local government or other responsible entity.
19. This permit is valid only for the specific processes, operations and designs indicated on the approved drawings or exhibits submitted in support of the permit application. Any substantial deviation from the approved drawings, exhibits, specifications or permit conditions, including construction within the total land area but outside the approved project area(s), may constitute grounds for revocation or enforcement action by the District, unless a modification has been applied for and approved. Examples of substantial deviations include excavation of ponds, ditches or sump areas deeper than shown on the approved plans.
20. ERP No. 43021034.007 (SMR Aggregates - Phase VIII-3) is an Individual Permit for mining (mining is currently active). Upon successful transfer to operation phase of this ERP No. 43042323.001, mining shall cease and ERP No. 43021034.007 shall be replaced by this ERP No. 43042323.001.
21. ERP No. 43021034.008 (SMR Aggregates - Phase X) is an Individual Permit for mining (mining is currently active). Upon successful transfer to operation phase of this ERP No. 43042323.001, mining activities shall cease and ERP No. 43021034.008 shall be replaced by this ERP No. 43042323.001.
22. ERP No. 44012015.014 (PHS VIID Alternative Mitigation) is a Standard General permit for mining (mining has ceased). ERP No. 44012015.014 shall be replaced by this ERP No. 43042323.001 upon successful transfer to operation phase of this ERP No. 43042323.001.
23. MSSW General Permit No. 45012015.000 (Richardson Road, Phase VIID) is a mining permit (mining activities have ceased). ERP No. 45012015.000 shall be replaced upon successful transfer to operation phase of this ERP No. 43042323.001.
24. MSSW General Permit No. 45012015.003 (Richardson Road, Phase VII-A East) is a mining permit (mining activities have ceased). ERP No. 45012015.003 shall be replaced upon successful transfer to operation phase of this ERP No. 43042323.001.
25. MSSW General Permit No. 45012015.009 (Phase VIIA-W-2) is a mining permit (mining activities have ceased). ERP No. 45012015.009 shall be replaced upon successful transfer to operation phase of this ERP No. 43042323.001.
26. MSSW General Permit No. 45012015.015 (SMR Aggregates, Phase VIIA) is a mining permit (mining activities have ceased). ERP No. 45012015.015 shall be replaced upon successful transfer to operation phase of this ERP No. 43042323.001.
27. ERP No. 44003052.176 (Lorraine Road South Extension) shall be replaced by this ERP No. 43042323.001 upon successful transfer to operation phase of this ERP No. 43042323.001.

28. The Permittee shall not begin construction within the project area until the Long Swamp Mitigation area has received a permit modification authorizing the withdrawal of 1.05 marsh credit from mitigation bank permit number 4301864.001, and a copy of this modification is provided to the District, or this permit has been modified to provide an equivalent level of mitigation to be completed by the Permittee. Initiation of construction prior to issuance of the required permit modification shall be a violation of this permit.

GENERAL CONDITIONS

1. The general conditions attached hereto as Exhibit "A" are hereby incorporated into this permit by reference and the Permittee shall comply with them.

Michelle K. Hopkins, P.E.

Authorized Signature

Pond	POND NO.		A	B	C	DI	D2	D3	E	F	G	DR2	LRI	LR2	LR4	CP-1	CP-2
	ICPR NODE	CC Lake-A	CC Lake-B	CC Lake-C	CC Lake-D1	CC Lake-D2	CC Lake-D3	CC Lake-E	99405	Lake LR1	Lake LR2	Lake CP1	Lake CP2				
	NWL	25.00	25.11	34.20	30.50	37.50	41.39	41.25	45.50	46.20	46.20	26.80	46.20	46.20	39.5	26.3	25.62
	DESIGN HIGH WATER ELEVATION	26.84	27.45	35.66	31.98	39.12	43.08	43.12	47.35	47.65	47.68	27.98	47.65	47.68	40.75	27.28	27.19
	TOP OF BANK ELEVATION	27.40	28.00	36.20	32.50	39.70	43.60	43.70	47.90	48.20	48.20	28.50	48.20	48.20	41.3	27.8	27.8
	AREA AT TOP OF BANK	140.89	68.88	273.90	67.44	80.51	35.82	87.32	210.00	113.77	0.70	0.70	1.21	1.31	0.57	0.60	1.68
	CONTROL STRUCTURE #	WR-A	CS-B	CS-C	CS-D1A	CS-D2	CS-D3	CS-E	CS-F	CS-G	WR-DR2	WR-LR1	WR-LR2	WR-LR4	WR-CP1	WR-CP2	WR-CP2
	WEIR ELEVATION	~	27.67	35.83	32.15	32.15	43.23	43.30	45.75	46.44	46.57	27.33	46.44	40.14	26.55	25.89	25.89
	WEIR WIDTH	~	grate	grate	grate	grate	grate	grate	36"	66"	240"	240"	30"	96"	216"	15.0'	20.0'
	PRE-DEVELOPED (GS)																
	POST-DEVELOPED (GS)																
	25-yr/24-hr Discharge Rates																
	TREATMENT AREA (Ac)	981.44	~	~	470.19	~	~	294.31	497.11	5.42	295.08	6.80	5.42	9.06	6.90	6.29	18.25
	VOLUME REQUIRED	384.50	~	~	184.78	~	~	114.70	164.55	1.63	96.61	2.20	1.63	3.17	1.82	0.13	0.38
	VOLUME PROVIDED	996.00	~	~	514.90	~	~	657.74	1604.00	5.80	836.00	2.26	5.80	5.80	2.37	0.13	0.38
	METHOD OF TREATMENT	wet det	~	~	wet det	~	~	wet det	wet det	wet det	wet det	wet det	wet det	wet det	wet det	wet det	wet det
	CONTROL DEVICE TYPE	weir	weir	weir	notch	notch	notch	notch	notch	notch	notch	notch	notch	notch	notch	notch	notch
	CONTROL DEVICE ELEVATION	25.00	25.11	34.20	30.50	30.50	41.39	41.25	45.50	46.20	46.20	26.80	46.20	46.20	39.5	26.3	25.62
	CONTROL DEVICE DIMENSIONS	60"	156"	78"	194"	302"	302"	120"	96"x3"	25"	3.22"x6.42"	3"x7.67"	8.66" x 2.85"	7.56" x 4.40"	3"x7.67"	3.12"	8.04"
	ENCROACHMENT (Ac-Ft)																
	COMPENSATION (Ac-Ft)																
	COMPENSATION TYPE																
	ENCROACHMENT RESULT (Ft)																

COMMENTS:

WR-LR1 is modification of existing CS

Lakes LRI and LR2 are existing

Ponds CP-1 and CP-2 provide pre-treatment

CS-WMM1 (Wetland MM): 194" notch @ El 41.27' and grate @ El 44.09'

CS-WMM2 (Wetland MM): 194" notch @ El 41.27' and grate @ El 44.09'

CS-WL5 (Wetland S): 3" notch @ El 26.05' and 72" weir @ El 26.55' and grate @ El 27.28'

Existing ODA Lake CS modification: notch = 35"x2.43" @ El 25.80, weir = 54"x17.97" @ El 26.00

CS-M552 (Wetland M5-52): 102" weir @ El 26.04' and grate @ El 28.35'

WR-W23 (Wetland WP-23): 0.33' notch @ El 25.30' and 25' weir @ El 26.30'

WR-W20 (Wetland WP-20): 0.33' notch @ El 24.62' and 25' weir @ El 25.62'

WR-W21 (Wetland WP-21): Four 2" diam. Orices @ El 24.27' and 25' weir @ El 25.27'

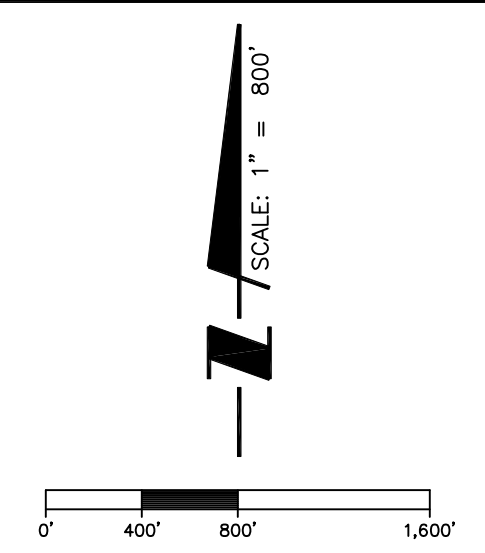
CS-WL-Q (Wetland Q): 12" notch @ El 32.16' and 102" weir @ El 32.91' and grate @ El 33.69'

Existing control structure DS-L1 (ERP 13039.022) to remain.

PERMITTED DRAWINGS SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT (SWFMD)
 For construction of the project, the permittee shall be responsible for obtaining all necessary permits from the District.
 In writing when construction begins.

COOPER CREEK WATERSHED		COW PEN SLOUGH WATERSHED		PHILIPPI CREEK WATERSHED	
BASIN NAME	MAX IMPERVIOUS AREA (AC)	BASIN NAME	MAX IMPERVIOUS AREA (AC)	BASIN NAME	MAX IMPERVIOUS AREA (AC)
152	23.89	99125A	14.76	LOR_LK4	3.29
153	9.83	99130A	22.23		
154	30.87	99340A	16.06		
LAKE-A	107.18	99345	32.45		
LAKE-B	90.98	99355	19.00		
LAKE-C	206.58	99360	15.51		
LAKE-D1	50.05	LAKE-F	201.21		
LAKE-D2	59.10	LAKE-G	128.11		
LAKE-D3	89.18				
LAKE-E	80.02				
DEER-1	2.48				
DEER-2	3.67				
LAKE_CP1	2.79				
LAKE_CP2	12.09				
LAKE_LR2	5.65				
LAKE_LR1	1.81				

*CC_ REMOVED FOR LEGIBILITY



REV. NO.	REVISION	DATE	DRAWN BY / EMP. NO.	CHECKED BY / EMP. NO.	WM APPROVED BY:
A	UPDATED LABELS AND ADDED HATCH FOR LAKE G, LAKE AREA TABLE	12/8/15	JTJ/107684		

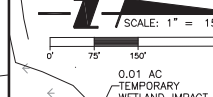
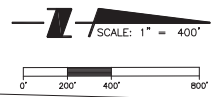
Stantec
 6900 Professional Parkway East, Sarasota, FL 34240-8414
 Phone 941-907-6900 • Fax 941-907-6910
 Certificate of Authorization #27013 • www.stantec.com

The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions that be reported to Stantec without delay. The Copyrights to all designs and drawings are the property of Stantec. Reproduction or use for any purpose other than that authorized by Stantec is forbidden.

CLIENT: LAKWOOD RANCH STEWARDSHIP DISTRICT
 PROJECT: VILLAGES OF LAKWOOD RANCH MASTER DRAINAGE PLAN

DATE: SEPT. 2015
 HORIZONTAL SCALE: 1" = 800'
 VERTICAL SCALE: N/A
 CROSS REFERENCE FILE NO.: 215612551-01C-100BP.dwg

TITLE: POST DEVELOPED BASIN PLAN
 PROJECT NUMBER: 215612551-01C
 SHEET NUMBER: 3 OF 28
 D. SCOTT McKENNA, P.E.
 FLORIDA LICENSE NO. 51435
 INDEX NUMBER: 215612551-01C-100BP



RECORD DRAWING LEGEND
 H00-00 PROPOSED/DESIGN ELEVATION OR DIMENSION LINED THROUGH.
 (00.00) RECORD ELEVATION OR DIMENSION WRITTEN IN.

XX.XXXEP=EDGE OF PAVEMENT
 XX.XXXGP=GRADE BREAK
 XX.XXXTB=TOP OF BANK
 XX.XXXLB=LAKE BOTTOM
 XX.XXXFL=SWALE FLOW LINE

*=RECORD INFORMATION PROVIDED BY FLANARY SURVEYING AND MAPPING, INC.
 **=RECORD INFORMATION PROVIDED BY CROSS SURVEYING, L.L.C.
 ***=RECORD INFORMATION PROVIDED BY POINT BREAK SURVEYING, L.L.C.

RECORD NOTES:
 ALL ELEVATIONS ON THIS PLANS REFERENCE THE NAVD 89 VERTICAL ELEVATION DATUM. THE CONVERSION FACTOR BETWEEN NAVD 89 AND NAVD 88 VERTICAL ELEVATION DATUM IS AS FOLLOWS PER CORPSCON v6.1, U.S. ARMY CORPS OF ENGINEERS: NAVD -1.02 FT = NAVD 88.

D. SCOTT McKENNA, STATE OF FLORIDA, PROFESSIONAL ENGINEER, LICENSE NO. 51435. THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY D. SCOTT McKENNA, PE ON 5/16/2019 USING A SHA AUTHENTICATION CODE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SHA AUTHENTICATION CODE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

ENGINEERS' CERTIFICATION
 RECORD DRAWING INFORMATION SHOWN HEREON IS BASED ON SIGNED AND SEALED RECORD DRAWINGS PROVIDED TO STANTEC BY A FLORIDA LICENSED SURVEYOR AND MAPPER. I CERTIFY THAT THE PROJECT'S IMPROVEMENTS HAVE BEEN CONSTRUCTED IN SUBSTANTIAL CONFORMANCE WITH THE APPROVED CONSTRUCTION PLANS.

D. SCOTT McKENNA, P.E. DATE
 FLORIDA P.E. NO. 51435

MATCH LINE SEE SHEET 6

REV NO.	REVISION	DATE	DRAWN BY / EMP. NO.	CHECKED BY / EMP. NO.	WM APPROVED BY:
M	ADDED ADDITIONAL TOPO INFORMATION	05/08/19	JDN/89505		
K	ADDED DRAINAGE RECORD INFORMATION	02/07/18	JDN/89505		
E	REV WETLAND WP-20, WP-21 AND WP-23 CONTROL STRUC LOCATIONS & SWALE, DHWL & TOB LAKE A & B	08/31/16	DFH/89368		
A	REVISE, PROJECT AREA, DHWL AND TOP OF BANK ELEVATIONS, ADD EXISTING OUTFALL STRUCTURES	12/17/15	DFH/89368		

Stantec
 4900 Professional Parkway East, Sarasota, FL 34240-8414
 Phone 941-907-4900 • Fax 941-907-4910
 Certificate of Authorization #22013 • www.stantec.com

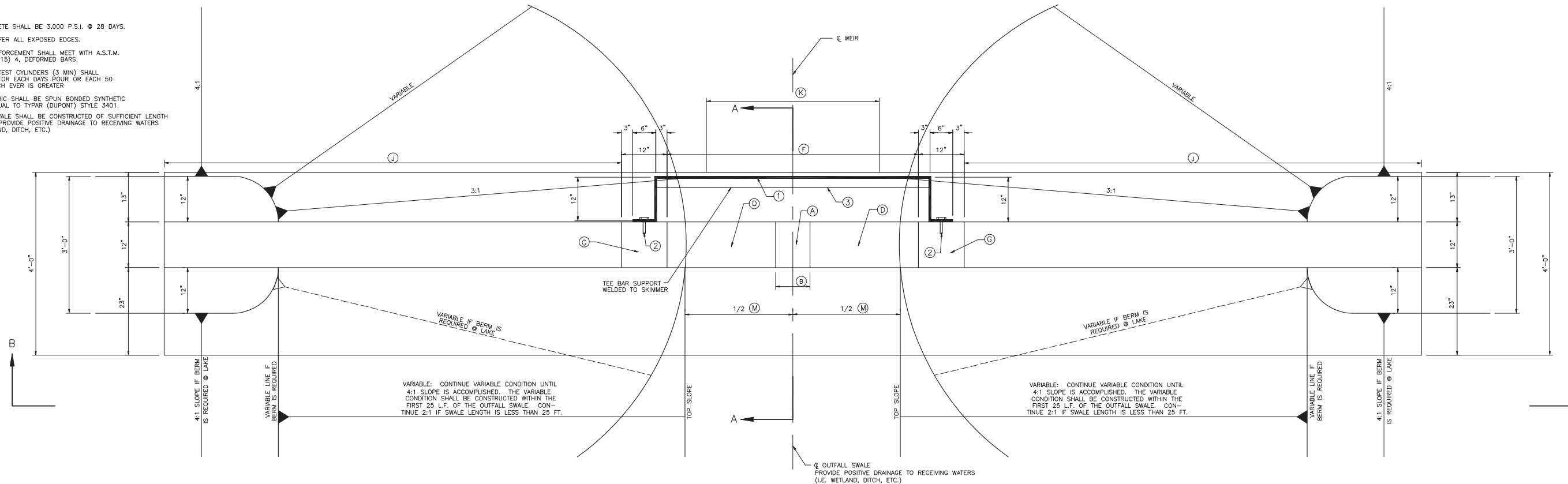
The Contractor shall verify and be responsible for all dimensions. DO NOT scale the drawing - any errors or omissions shall be reported to Stantec without delay. The Copyright to all designs and drawings are the property of Stantec. Reproduction or use for any purpose other than that authorized by Stantec is forbidden.

CLIENT: LAKEWOOD RANCH STEWARDSHIP DISTRICT
 PROJECT: VILLAGES OF LAKEWOOD RANCH MASTER DRAINAGE PLAN

DATE: OCT. 2015
 HORIZONTAL SCALE: 1"=400'
 VERTICAL SCALE: N/A
 SEC. TWP. RSE: 7-1 36S 19E

TITLE: RECORD DRAWING MASTER DRAINAGE PLAN
 CROSS REFERENCE FILE NO.:
 PROJECT NUMBER: 215612551-03C
 SHEET NUMBER: 5 of 19

- NOTES:
1. ALL CONCRETE SHALL BE 3,000 P.S.I. @ 28 DAYS.
 2. 3/4" CHAMFER ALL EXPOSED EDGES.
 3. STEEL REINFORCEMENT SHALL MEET WITH A.S.T.M. SPEC. (A-615) 4, DEFORMED BARS.
 4. CONCRETE TEST CYLINDERS (3 MIN) SHALL BE TAKEN FOR EACH DAYS POUR OR EACH 50 YARDS WHICH EVER IS GREATER
 5. FILTER FABRIC SHALL BE SPUN BONDED SYNTHETIC FABRIC, EQUAL TO TYPAR (DUPONT) STYLE 3401.
 6. OUTFALL SWALE SHALL BE CONSTRUCTED OF SUFFICIENT LENGTH SO AS TO PROVIDE POSITIVE DRAINAGE TO RECEIVING WATERS (I.E. WETLAND, DITCH, ETC.)



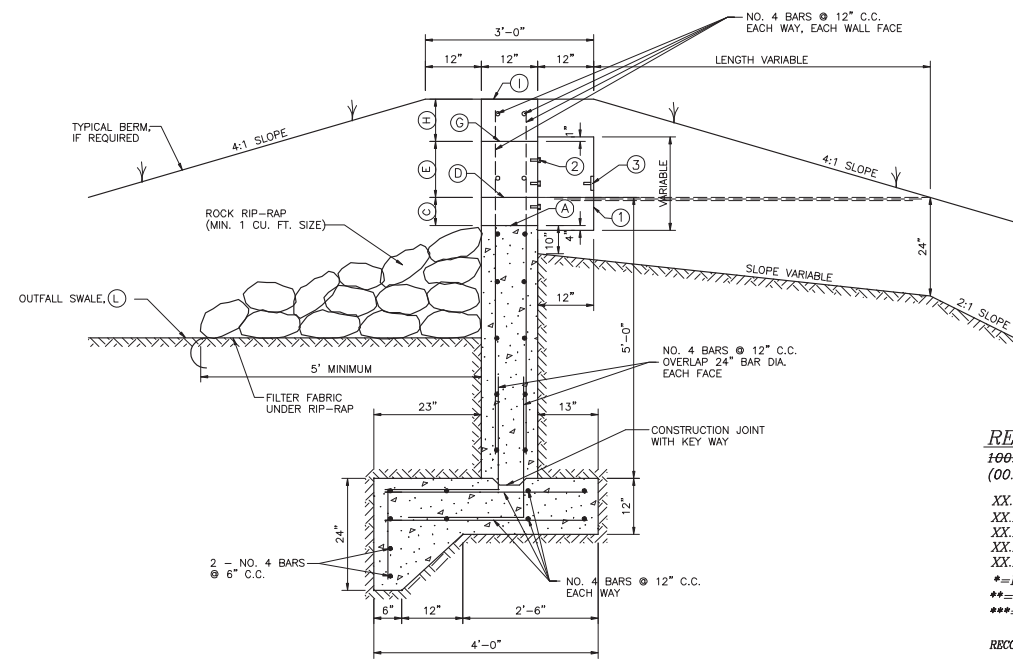
PLAN VIEW
N.T.S.

NOTE: THE COST OF THE SPREADER SWALE CONSTRUCTION SHALL BE INCLUDED IN THE COST OF THE WEIR STRUCTURE.

STRUCTURE NUMBER	LAKE N.W.L.	E ELEVATION WEIR NOTCH	WIDTH OF NOTCH	HEIGHT OF NOTCH	E ELEVATION WEIR	HEIGHT OF WEIR	WIDTH OF WEIR	E ELEVATION WEIR STEP	HEIGHT OF WEIR STEP	E ELEVATION WINGWALL	LENGTH OF WINGWALL *	WIDTH OF INCOMING SWALE (FT) ((C)-(D)-2.5)	E ELEVATION OF OUTFALL SWALE	WIDTH OF OUTFALL SWALE (FT)	SPECIAL REMARKS
WR-A	25.00	-	-	-	25.00 ***(25.00)	24.00 ***(24.00)	6.0 ***(6.0)	27.00 ***(27.00)	12" ***(12")	28.00 ***(28.00)	11.24 ***(11.20)	2.5 ***(2.0)	24.0 ***(23.8)	3' ***(3')	SKIMMER REQUIRED
WR-LR2	46.20	-46.20 *(46.19)	7.56" *(7.2)	4.40" *(4.8)	46.57 *(46.59)	43.56" *(43.8)	3.0 *(3.0)	47.79 *(47.74)	6" *(6)	48.20 *(48.24)	8.24 *(8.25)	5.5 *(5.5)	45.2 *(45.2)	6" *(6)	SKIMMER REQUIRED - *(SKIMMER INSTALLED)
WR-DR2	26.80 ****(26.78)	26.80 ****(26.78)	3.22" ****(3.75)	6.42" ****(7.5)	27.33 ****(27.32)	8" ****(8)	24.0 ****(24.0)	28.00 ****(27.98)	6" ****(6)	28.50 ****(28.48)	7.34 ****(7.34)	4.5 ****(4.5)	26.6 ****(24.9)	18" ****(18)	SKIMMER REQUIRED

DATA TABLE
N.T.S.

$$*J = ((I - A) + 0.33) \times 3 - 0.75 + 2$$



SECTION "A-A"
N.T.S.

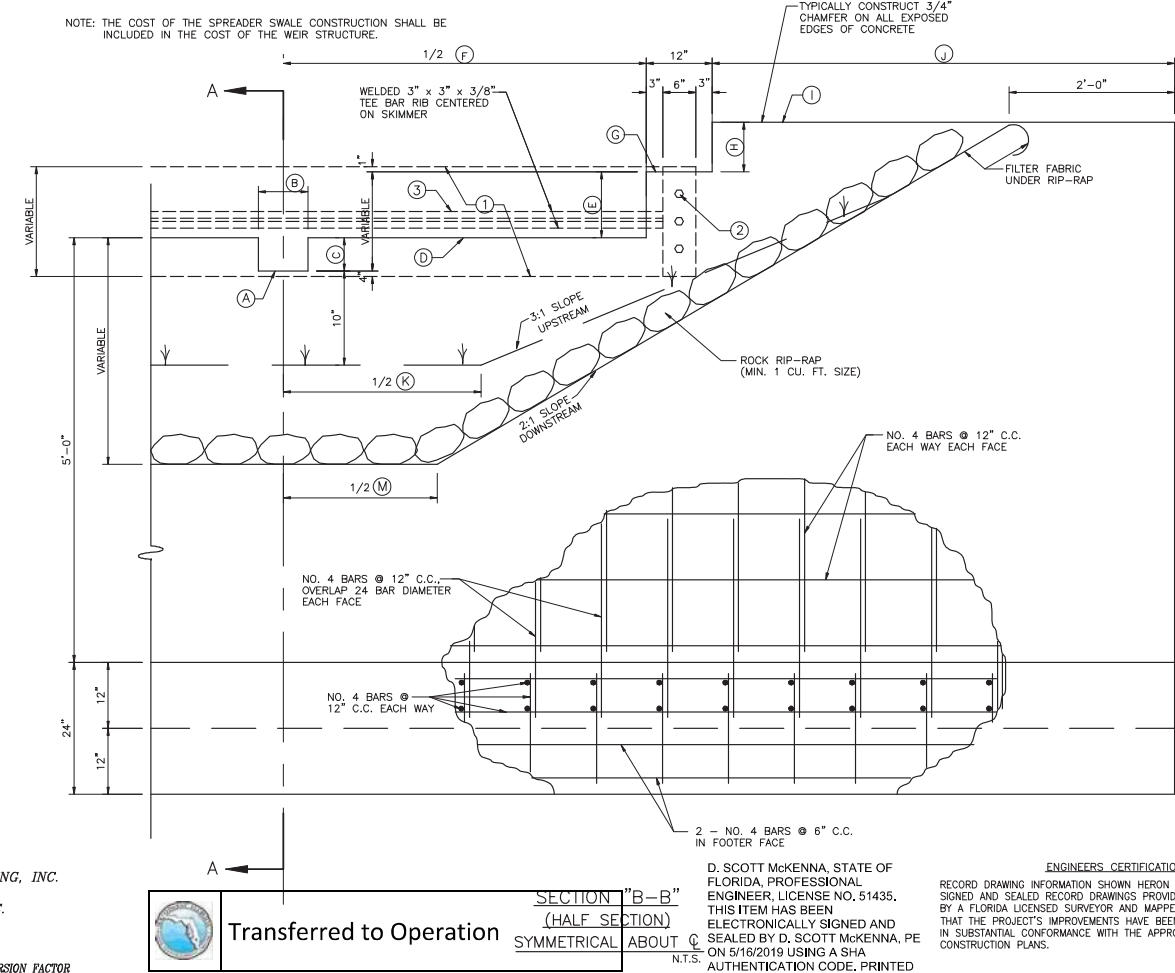
- SKIMMER NOTES:
- 1) 3/16" THICK STAINLESS STEEL, 1/4" THICK ALUMINUM OR 3/16" "GLASKIMER" HSS-HIGH STRENGTH COMPOSITE SHEET SKIMMER PLATE WITH OPEN TOP AND BOTTOM
 - 2) 3/8" DIAMETER STAINLESS STEEL EXPANSION ANCHORS, 3" LONG MINIMUM WITH STAINLESS STEEL WASHERS AND NUTS. IF HEIGHT OF SKIMMER IS 12" OR LESS, 2 EACH SIDE REQUIRED. IF SKIMMER IS OVER 12" HEIGHT, SPACE BOLTS ONE FOR EACH 6" C.C. MAXIMUM SPACING EACH SIDE OF SKIMMER.
 - 3) WELDED 3" x 3" x 3/8" TEE BAR RIB CENTERED ON SKIMMER.

RECORD DRAWING LEGEND

- 100.00 PROPOSED/DESIGN ELEVATION OR DIMENSION LINED THROUGH.
- 00.00 "RECORD" ELEVATION OR DIMENSION WRITTEN IN.
- XX.XXXEPP-EDGE OF PAVEMENT
- XX.XXXGPD-GRADE BREAK
- XX.XXXTBT-TOP OF BANK
- XX.XXXLBB-LAKE BOTTOM
- XX.XXXFL-SWALE FLOW LINE
- *-RECORD INFORMATION PROVIDED BY FLANARY SURVEYING AND MAPPING, INC.
- **=RECORD INFORMATION PROVIDED BY CROSS SURVEYING, L.L.C.
- ***=RECORD INFORMATION PROVIDED BY POINT BREAK SURVEYING, L.L.C.

RECORD NOTES:

ALL ELEVATIONS ON THE PLANS REFERENCE THE NGVD 29 VERTICAL ELEVATION DATUM. THE CONVERSION FACTOR BETWEEN NGVD 29 AND NAVD 88 VERTICAL ELEVATION DATUM IS AS FOLLOWS FOR CORPCON v6.1, U.S. ARMY CORPS OF ENGINEERS: NGVD -1.02 FT = NAVD 88.



SECTION "B-B"
(HALF SECTION)
SYMMETRICAL ABOUT C-C
N.T.S.

Transferred to Operation

D. SCOTT McKENNA, STATE OF FLORIDA, PROFESSIONAL ENGINEER, LICENSE NO. 51435. THIS ITEM HAS BEEN ELECTRONICALLY SIGNED AND SEALED BY D. SCOTT McKENNA, PE ON 5/16/2019 USING A SHA AUTHENTICATION CODE. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SHA AUTHENTICATION CODE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

ENGINEERS CERTIFICATION
RECORD DRAWING INFORMATION SHOWN HEREON IS BASED ON SIGNED AND SEALED RECORD DRAWINGS PROVIDED TO STANTEC BY A FLORIDA LICENSED SURVEYOR AND MAPPER. I CERTIFY THAT THE PROJECT'S IMPROVEMENTS HAVE BEEN CONSTRUCTED IN SUBSTANTIAL CONFORMANCE WITH THE APPROVED CONSTRUCTION PLANS.

D. SCOTT McKENNA, P.E. DATE
FLORIDA P.E. NO. 51435

CONSERVATION DESIGN POOL BELOW SHWL WITHOUT DISCHARGE - ALTERNATE 3
BASIN: CC_LAKE-A

Includes Treatment for Basins: CC_LAKE-B, CC_LAKE-C, CC_W-N

I. TREATMENT VOLUME (Q)

Basin Area Requiring Full Treatment	981.44 Ac.	(Sum of above listed Basin Areas)
On-site Runoff	1.50 in.	
Immediate Upstream Basin Area	0.00 Ac.	
Treatment for Immediate Upstream Basin	0.50 in.	
Treatment Volume (Q) =	122.68 Ac-Ft	

The Treatment Volume is the sum of a specified on-site runoff with corresponding off-site rainfall, offsite runoff is computed using rational coefficient (c).

II. PERMANENT WET POOL VOLUME (Vb)

Calculate the 14 day Residence Volume and the minimum runoff of 0.667 inches, and define the larger of the two as the Permanent Wet Pool Volume.

a) 14 DAY RESIDENCE VOLUME (Vr)

$$V_r = (A) (C) (P) (R) (1\text{FT}/12\text{IN}) \quad \text{where,}$$

A = Project site Drainage area

C = Composite Rational Runoff Coefficient

P = Historic average wet season rainfall rate for the project area

R = Residence Time = 14 days

A = 981.44 Ac

C = 0.90

P = 31.04 in/122 days

R = 14 days

$$V_r = 261.81 \text{ Ac-Ft}$$

b) 0.667 INCHES MINIMUM RUNOFF VOLUME (Vmin)

$$V_{min} = 54.55 \text{ Ac-Ft}$$

Vmin indicates 0.667 inches of runoff over the entire drainage area (project site + immediate upstream)

Compare Vr to Vmin, the Permanent Wet Pool Volume (Vb) is the larger of the two

$$V_b = 261.81 \text{ Ac-Ft}$$

III. WET DETENTION SYSTEM DESIGN POOL VOLUME (Vt)

The Wet Detention Design Pool Volume (Vt) is the sum of the Treatment Volume (Q) and the Permanent Wet Pool Volume (Vb)

Vt = Q + Vb = 384.49 Ac-Ft

IV. DESIGN POOL VOLUME PROVIDED (V_p)

CC_LAKE-A POND NWL AREA = 128.55 AC.
4' offset, A_4 = 127.14 AC.
14' offset, A_{14} = 123.63 AC.
 $V_p = 2'(A_4) + 6'(A_{14}) = 996.06$ AC-FT $V_p > V_t \Rightarrow$ Permanent Pool Volume OK!

V. MINIMUM POND AREA (A_s)

Minimum pond area for alternative 3, based on treatment volume below control elevation of "u"-notch weir, is 0.5 inch of runoff and 10 inch maximum head or based on storing the wet detention design pool volume from shwl to a maximum depth of 8 feet.

- a) Calculate Storage volume for 0.5 inch of runoff (V_w)

Drainage Area 981.44 Ac.
Runoff 0.5 in
 $V_w = 40.89$ Ac-Ft

- b) Calculate min. pond area based on 10 in. max. head fluctuation for a 0.5 in. runoff

$A_s = V_w / (10 \text{ in} * 1 \text{ Ft} / 12 \text{ in})$
 $A_s = 49.07$ Ac.

- c) Calculate min. pond area based on design pool volume at a max. depths

Calculate for maximum depth of 8 feet

$A_s = (V_t) / 8$
 $A_s = 48.06$ Ac

Therefore, the correct minimum pond area, is the larger of the two A_s values computed above.

$A_s = 49.07$ Ac.

Compare minimum pond area to actual pond area at NWL

$A_{nwl} = 128.55$ Ac. (CC_LAKE-A pond area only)

Actual pond size is larger or equal to minimum \Rightarrow Pond size is OK!

VI. NOTCH WEIR DIMENSION CALCULATIONS

a) Determine the stage elevation for 0.5 in of runoff over the drainage area.

The detention Volume for 0.5 in of runoff as calculated (Vw)

$$V_w = 40.89 \text{ Ac-Ft}$$

$$\text{Area of Pond at NWL} = A_{nwl} = 128.55 \text{ Ac}$$

"H" is the stage elevation above the NWL, for the storage of the corresponding Vw detention Vol.

$$H = V_w / A_{nwl}$$

$$H = 0.32 \text{ Ft} \quad 3.82$$

Calculate the flow rate at full head for Notch weir (Q1)

$$Q_1 = CLH^{1.5}$$

Where,

C - weir coefficient, 3.2

L - weir length, assumed to be 1 ft, to specify discharge per unit length

Calculate the flow rate at full head for Notch weir (Q1)	Q1 =	0.57 CFS/Ft
Calculate the flow rate at 75% head for Notch weir (Q2)	Q2 =	0.37 CFS/Ft
Calculate the flow rate at 50% head for Notch weir (Q3)	Q3 =	0.20 CFS/Ft
Calculate the flow rate at 25% head for Notch weir (Q4)	Q4 =	0.07 CFS/Ft
Calculate the flow rate at 0% head for Notch weir (Q5)	Q5 =	0.00 CFS/Ft

Average Flow Rate $Q_{av} = (Q_1 + Q_2 + Q_3 + Q_4 + Q_5) / 5$

$$Q_{av} = 0.24 \text{ CFS/Ft}$$

Detention Volume Vw =	40.89 Ac-ft	1781314 Cu-FT
Detention Time T =	24 Hrs	86400 Seconds

Required Average Rate of Discharge: $Q_r = V_w / T$

$$Q_r = 20.62 \text{ CFS}$$

Calculate the length of the required 'U' notch weir: $L = Q_r / Q_{av}$

$$L = 84.37 \text{ Ft} \quad 1012.44$$

Notes:	Set First stage "U" notch weir at	25.00 Ft - NGVD
	Set Second Stage Rectangular Weir at	25.32 Ft - NGVD

APPENDIX D
DRAINAGE MAPS

1

CURB INLET
GRATE EL. 31.51
18" RCP FL 27.35

2

CURB INLET
GRATE EL. 31.51
18" RCP FL RT. 27.13
24" RCP FL AH. 26.24

3

MANHOLE
TOP EL. 32.46
24" RCP FL AH. 27.03
24" RCP FL BK. 27.14

4

MANHOLE
TOP EL. 32.93
24" RCP FL AH. 22.00
24" RCP FL BK. 26.86

5

MANHOLE
TOP EL. 33.40
24" RCP FL AH. 26.90
24" RCP FL BK. 22.00

6

MES
24" RCP FL 26.45

7

MES
15" RCP FL 31.05

8

MES
15" RCP FL 31.21

9

MES
24" RCP FL 22.64

10

INLET (CONTROL STRUCTURE)
GRATE EL. 27.24
WEIR EL. 26.49
24" RCP FL 23.96

11

CURB INLET
GRATE EL. 31.50
24" RCP FL AH. 25.42
24" RCP FL RT. 25.35

12

CURB INLET
GRATE EL. 31.60
24" RCP FL LT. 25.26
24" RCP FL RT. 24.94

13

MES
24" RCP FL 24.72

14

CURB INLET
GRATE EL. 30.60
24" RCP FL RT. 25.78
24" RCP FL BK. 25.78

15

CURB INLET
GRATE EL. 30.66
24" RCP FL LT. 25.77

16

MES
24" RCP FL 24.44

17

CURB INLET
GRATE EL. 30.50
24" RCP FL LT. 24.59
18" RCP FL RT. 26.22

18

CURB INLET
GRATE EL. 30.52
18" RCP FL 26.40

19

MES
24" RCP FL 22.30

20

INLET (CONTROL STRUCTURE)
GRATE EL. 26.95
WEIR EL. 25.95
24" RCP FL 22.41

21

MES
24" RCP FL 24.45

22

INLET
GRATE EL. 29.63
24" RCP FL LT. 25.27
18" RCP FL RT. 25.29

23

CURB INLET
GRATE EL. 29.58
18" RCP FL 25.49

24

MES
24" RCP FL 22.86

25

CURB INLET
GRATE EL. 28.71
24" RCP FL LT. 22.84
18" RCP FL RT. 24.40

26

CURB INLET
GRATE EL. 28.70
18" RCP FL 24.62

27

MES
24" RCP FL 20.68

28

INLET
GRATE EL. 25.47
24" RCP FL 24.34

29

MES
24" RCP FL 22.84

30

CURB INLET
GRATE EL. 27.75
24" RCP FL LT. 22.79
18" RCP FL RT. 23.42

31

CURB INLET
GRATE EL. 27.79
18" RCP FL 23.57

32 TO 99

NOT USED

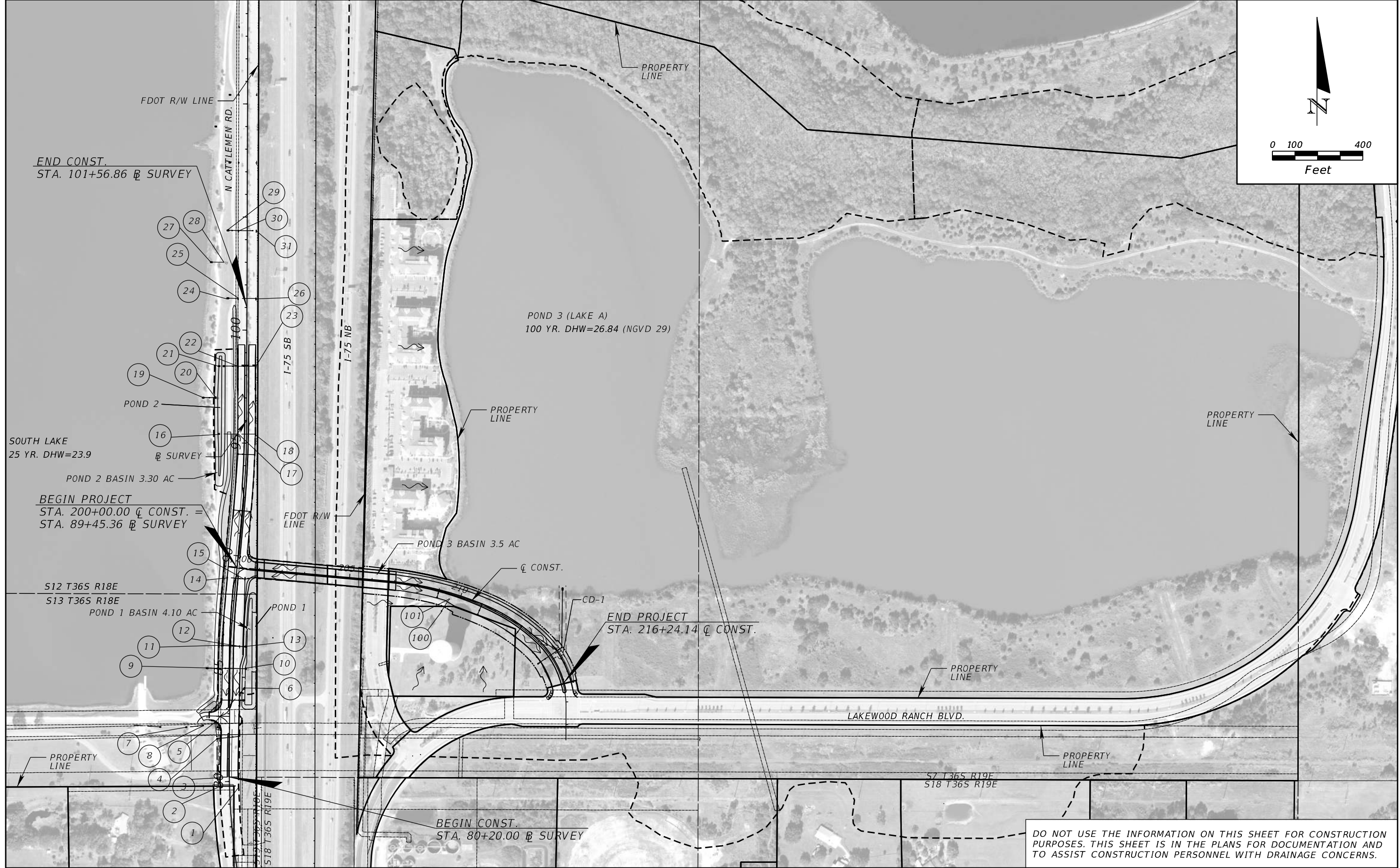
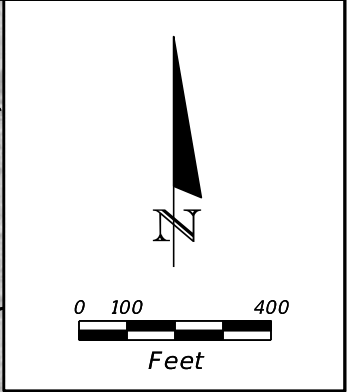
100

MES
24" RCP FL UNKNOWN

101

MES
24" RCP FL UNKNOWN

REVISIONS				Kisinger Campo & Associates Corp. 201 N. Franklin Street, Suite 400 Tampa, Florida 33602 Florida Certificate of Authorization No. 02317 Engineer of Record: Ali Tayebnejad, P.E. P.E. No.: 42775	SARASOTA COUNTY PUBLIC WORKS		EXISTING DRAINAGE STRUCTURES	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		PROJECT	PROJECT NO.		
					SR 93 (I-75) OVERPASS	PENDING		



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

DO NOT USE THE INFORMATION ON THIS SHEET FOR CONSTRUCTION PURPOSES. THIS SHEET IS IN THE PLANS FOR DOCUMENTATION AND TO ASSIST CONSTRUCTION PERSONNEL WITH DRAINAGE CONCERNS.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kisinger Campo & Associates Corp.
 201 N. Franklin Street, Suite 400
 Tampa, Florida 33602
 Engineer of Record: Ali Tayebnejad, P.E.
 P.E. No.: 42775

SARASOTA COUNTY PUBLIC WORKS	
PROJECT	PROJECT NO.
NORTH SARASOTA MULTIMODAL CONNECTOR	PENDING

DRAINAGE MAP		SHEET NO.

APPENDIX E
CROSSDRAIN CALCULATIONS

TIME OF CONCENTRATION

Time of ConcentrationLakewood Ranch Blvd.
ID#: 201504-0-00-00Erik Aadland
4/20/2016**CD-1**

TR-55 Overland Flow (TC1)

$$T_{C1} = \frac{0.007 (nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$$

$$T_{C1} = 7.0 \text{ min}$$

T_{C1} = Travel time

n = Manning's roughness coefficient

$$n = 0.13$$

L = Flow length (ft)

$$L = 100 \text{ ft}$$

P₂ = 2-year, 24-hour rainfall (in)

$$P_2 = 4.2 \text{ in}$$

s = Slope of hydraulic grade line (ft/ft)

$$s = 0.025 \text{ ft/ft}$$

$$\Delta \text{ EL} = 35.50 - 33.00 = 2.50 \text{ ft}$$

Unpaved - Shallow Concentrated Flow (T_{C2})

$$T_{C2} = \frac{L}{V}$$

$$V = 16.1345 (S)^{0.5}$$

$$\Delta \text{ EL} = 33.00 - 32.00 = 1.0 \text{ ft}$$

$$T_1 = 2 \text{ min}$$

$$L = 170 \text{ ft}$$

$$s = 0.006 \text{ ft/ft}$$

$$V = 1.24 \text{ ft/sec}$$

$$\Delta \text{ EL} = 32.0 - 31.5 = .5 \text{ ft}$$

$$T_2 = 15 \text{ min}$$

$$L = 480 \text{ ft}$$

$$s = 0.001 \text{ ft/ft}$$

$$V = .52 \text{ ft/sec}$$

$$T_{C2} = T_1 + T_2 = 18 \text{ min}$$

Total Time of Concentration

$$T_C = T_{C1} + T_{C2} = 25 \text{ min}$$

COMPOSITE "C" CALCULATION

Crossdrain Location 209+50

Composite "C" Calculation:

	Total Acres=	7.95
	"C ₁₀ " Value	Acres
Pervious	0.2	6.30
Impervious	0.95	1.65
	Composite "C ₁₀ " Value=	0.36

DISCHARGE

Crossdrain Location 209+50

Rational Method Calculation:

Determine Runoff Coefficient "C"

$C_{10} =$	0.36
$C_{25} = 1.1 * C_{10} =$	0.40
$C_{50} = 1.2 * C_{10} =$	0.43
$C_{100} = 1.25 * C_{10} =$	0.45

Determine Intensity "I"

Time of Concentration =	25 min
$I_{25} =$	5.8 in/hr (zone 6, 25 year storm)
$I_{50} =$	6.4 in/hr (zone 6, 50 year storm)
$I_{100} =$	7.0 in/hr (zone 6, 100 year storm)

Determine Area "A"

Area =	8 ac
--------	------

Calculate Flow "Q"

$Q_{25} =$	17 cfs
$Q_{50} =$	22 cfs
$Q_{100} =$	25 cfs

$$Q_{25} = C_{25} * I_{25} * Area$$
$$Q_{50} = C_{50} * I_{50} * Area$$
$$Q_{100} = C_{100} * I_{100} * Area$$

HY-8 RESULTS

PRE- HY-8 Culvert Analysis Report

Crossing Discharge Data

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

Minimum Flow: 17 cfs

Design Flow: 22 cfs

Maximum Flow: 25 cfs

Table 4 - Summary of Culvert Flows at Crossing: CD-1 PRE

Headwater Elevation (ft)	Total Discharge (cfs)	CD-1 PRE Discharge (cfs)	Roadway Discharge (cfs)	Iterations
30.80	17.00	17.00	0.00	1
30.94	17.80	17.80	0.00	1
31.01	18.60	18.16	0.32	16
31.02	19.40	18.23	1.08	5
31.03	20.20	18.29	1.82	4
31.04	21.00	18.33	2.60	4
31.05	21.80	18.37	3.30	3
31.05	22.00	18.39	3.55	3
31.06	23.40	18.45	4.81	3
31.07	24.20	18.49	5.62	3
31.08	25.00	18.52	6.41	3
31.00	18.11	18.11	0.00	Overtopping

Table 5 - Culvert Summary Table: CD-1 PRE

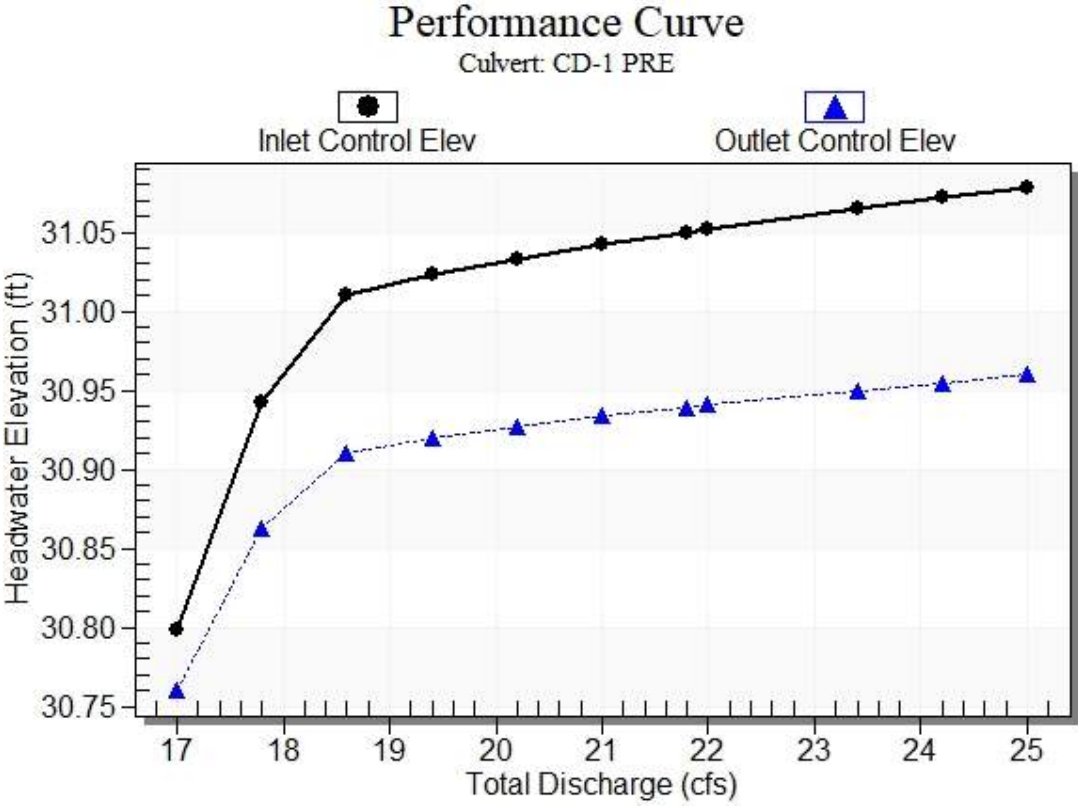
Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
17.00	17.00	30.80	2.698	2.660	7-M2c	2.000	1.484	1.484	0.122	6.799	4.033
17.80	17.80	30.94	2.842	2.762	7-M2c	2.000	1.518	1.518	0.125	6.957	4.106
18.60	18.16	31.01	2.910	2.810	7-M2c	2.000	1.533	1.533	0.129	7.029	4.178
19.40	18.23	31.02	2.923	2.820	7-M2c	2.000	1.536	1.536	0.132	7.043	4.247
20.20	18.29	31.03	2.933	2.827	7-M2c	2.000	1.538	1.538	0.135	7.054	4.315
21.00	18.33	31.04	2.942	2.834	7-M2c	2.000	1.540	1.540	0.138	7.063	4.381
21.80	18.37	31.05	2.950	2.839	7-M2c	2.000	1.542	1.542	0.141	7.071	4.445
22.00	18.39	31.05	2.952	2.841	7-M2c	2.000	1.542	1.542	0.142	7.074	4.461
23.40	18.45	31.06	2.964	2.850	7-M2c	2.000	1.545	1.545	0.147	7.086	4.569
24.20	18.49	31.07	2.972	2.855	7-M2c	2.000	1.546	1.546	0.150	7.094	4.630
25.00	18.52	31.08	2.978	2.860	7-M2c	2.000	1.547	1.547	0.153	7.101	4.689

Straight Culvert

Inlet Elevation (invert): 28.10 ft, Outlet Elevation (invert): 27.90 ft

Culvert Length: 66.00 ft, Culvert Slope: 0.0030

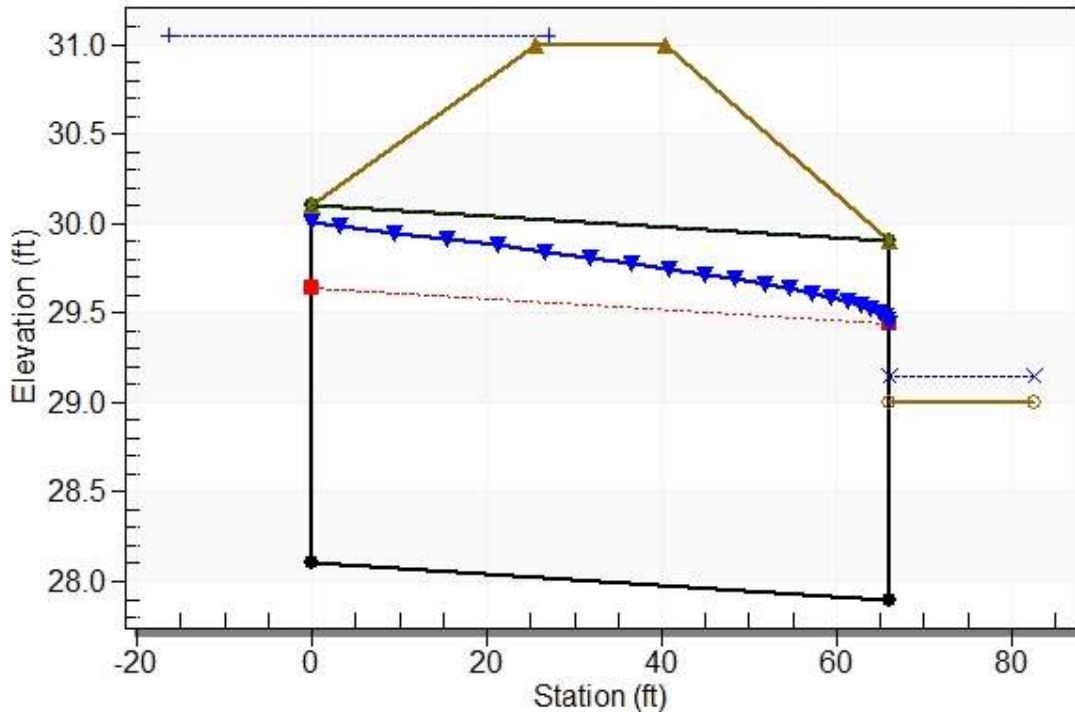
Culvert Performance Curve Plot: CD-1 PRE



Water Surface Profile Plot for Culvert: CD-1 PRE

Crossing - CD-1 PRE, Design Discharge - 22.0 cfs

Culvert - CD-1 PRE, Culvert Discharge - 18.4 cfs



Site Data - CD-1 PRE

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 28.10 ft

Outlet Station: 66.00 ft

Outlet Elevation: 27.90 ft

Number of Barrels: 1

Culvert Data Summary - CD-1 PRE

Barrel Shape: Circular

Barrel Diameter: 2.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Mitered to Conform to Slope

Inlet Depression: NONE

Table 6 - Downstream Channel Rating Curve (Crossing: CD-1 PRE)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
17.00	29.12	0.12	4.03	0.38	2.05
17.80	29.13	0.13	4.11	0.39	2.06
18.60	29.13	0.13	4.18	0.40	2.07
19.40	29.13	0.13	4.25	0.41	2.08
20.20	29.14	0.14	4.31	0.42	2.09
21.00	29.14	0.14	4.38	0.43	2.10
21.80	29.14	0.14	4.44	0.44	2.10
22.00	29.14	0.14	4.46	0.44	2.11
23.40	29.15	0.15	4.57	0.46	2.12
24.20	29.15	0.15	4.63	0.47	2.13
25.00	29.15	0.15	4.69	0.48	2.13

Tailwater Channel Data - CD-1 PRE

Tailwater Channel Option: Irregular Channel

Channel Slope: 0.0500

User Defined Channel Cross-Section:

Coord No.	Station (ft)	Elevation (ft)	Manning's n
1	0.00	31.00	0.0200
2	5.00	30.00	0.0200
3	10.00	29.00	0.0200
4	44.00	29.00	0.0200
5	49.00	30.00	0.0200
6	54.00	31.00	0.0000

Roadway Data for Crossing: CD-1 PRE

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

Crest Elevation: 31.00 ft

Roadway Surface: Paved

Roadway Top Width: 15.00 ft

POST - HY-8 Culvert Analysis Report

Crossing Discharge Data

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

Minimum Flow: 17 cfs

Design Flow: 22 cfs

Maximum Flow: 25 cfs

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

Headwater Elevation (ft)	Total Discharge (cfs)	CD-1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
29.59	17.00	17.00	0.00	1
29.77	17.80	17.80	0.00	1
29.83	18.60	18.60	0.00	1
29.90	19.40	19.40	0.00	1
29.96	20.20	20.20	0.00	1
30.03	21.00	21.00	0.00	1
30.09	21.80	21.80	0.00	1
30.11	22.00	22.00	0.00	1
30.22	23.40	23.40	0.00	1
30.28	24.20	24.20	0.00	1
30.34	25.00	25.00	0.00	1
44.50	94.39	94.39	0.00	Overtopping

Table 2 - Culvert Summary Table: CD-1

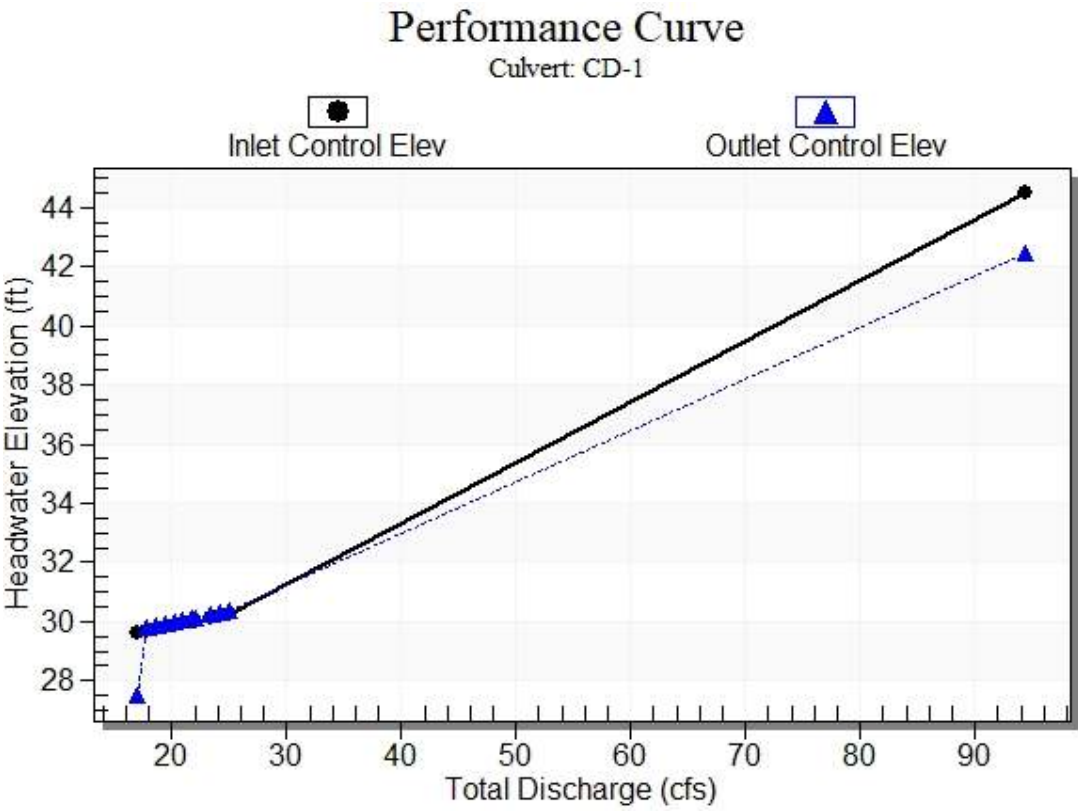
Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
17.00	17.00	29.59	2.094	0.000	3-M1t	1.553	1.389	1.700	0.000	4.783	0.000
17.80	17.80	29.77	2.155	2.271	3-M1t	1.608	1.426	1.700	0.000	5.008	0.000
18.60	18.60	29.83	2.216	2.334	3-M1t	1.670	1.458	1.700	0.000	5.233	0.000
19.40	19.40	29.90	2.277	2.398	3-M2t	1.732	1.489	1.700	0.000	5.458	0.000
20.20	20.20	29.96	2.339	2.463	3-M2t	1.794	1.520	1.700	0.000	5.683	0.000
21.00	21.00	30.03	2.400	2.532	3-M2t	2.500	1.554	1.700	0.000	5.908	0.000
21.80	21.80	30.09	2.462	2.592	3-M2t	2.500	1.585	1.700	0.000	6.133	0.000
22.00	22.00	30.11	2.478	2.608	3-M2t	2.500	1.592	1.700	0.000	6.189	0.000
23.40	23.40	30.22	2.589	2.715	3-M2t	2.500	1.643	1.700	0.000	6.583	0.000
24.20	24.20	30.28	2.653	2.777	3-M2t	2.500	1.671	1.700	0.000	6.808	0.000
25.00	25.00	30.34	2.719	2.841	3-M2t	2.500	1.699	1.700	0.000	7.033	0.000

Straight Culvert

Inlet Elevation (invert): 27.50 ft, Outlet Elevation (invert): 27.30 ft

Culvert Length: 90.00 ft, Culvert Slope: 0.0022

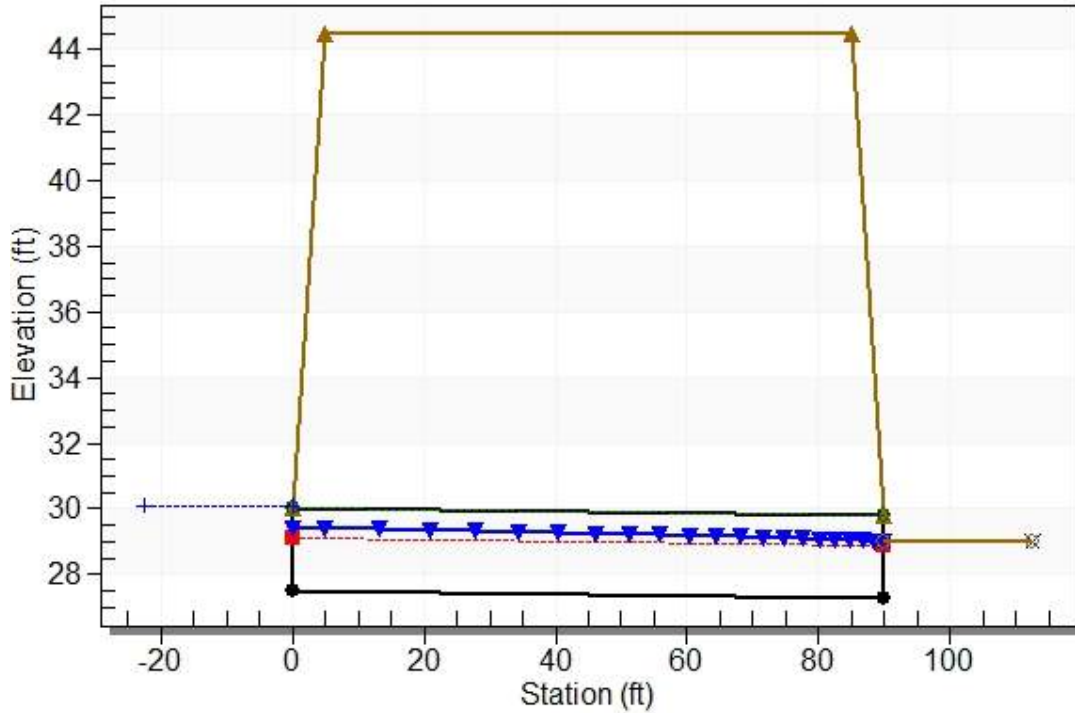
Culvert Performance Curve Plot: CD-1



Water Surface Profile Plot for Culvert: CD-1

Crossing - CD-1, Design Discharge - 22.0 cfs

Culvert - CD-1, Culvert Discharge - 22.0 cfs



Site Data - CD-1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 27.50 ft

Outlet Station: 90.00 ft

Outlet Elevation: 27.30 ft

Number of Barrels: 1

Culvert Data Summary - CD-1

Barrel Shape: Circular

Barrel Diameter: 2.50 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall

Inlet Depression: NONE

Table 3 - Downstream Channel Rating Curve (Crossing: CD-1)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
17.00	29.00	0.00	0.00	0.00	0.00
17.80	29.00	0.00	0.00	0.00	0.00
18.60	29.00	0.00	0.00	0.00	0.00
19.40	29.00	0.00	0.00	0.00	0.00
20.20	29.00	0.00	0.00	0.00	0.00
21.00	29.00	0.00	0.00	0.00	0.00
21.80	29.00	0.00	0.00	0.00	0.00
22.00	29.00	0.00	0.00	0.00	0.00
23.40	29.00	0.00	0.00	0.00	0.00
24.20	29.00	0.00	0.00	0.00	0.00
25.00	29.00	0.00	0.00	0.00	0.00

Tailwater Channel Data - CD-1

Tailwater Channel Option: Irregular Channel

Channel Slope: 0.0000

User Defined Channel Cross-Section:

Coord No.	Station (ft)	Elevation (ft)	Manning's n
1	0.00	31.00	0.0200
2	5.00	30.00	0.0200
3	10.00	29.00	0.0200
4	44.00	29.00	0.0200
5	49.00	30.00	0.0200
6	54.00	31.00	0.0000

Roadway Data for Crossing: CD-1

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 100.00 ft

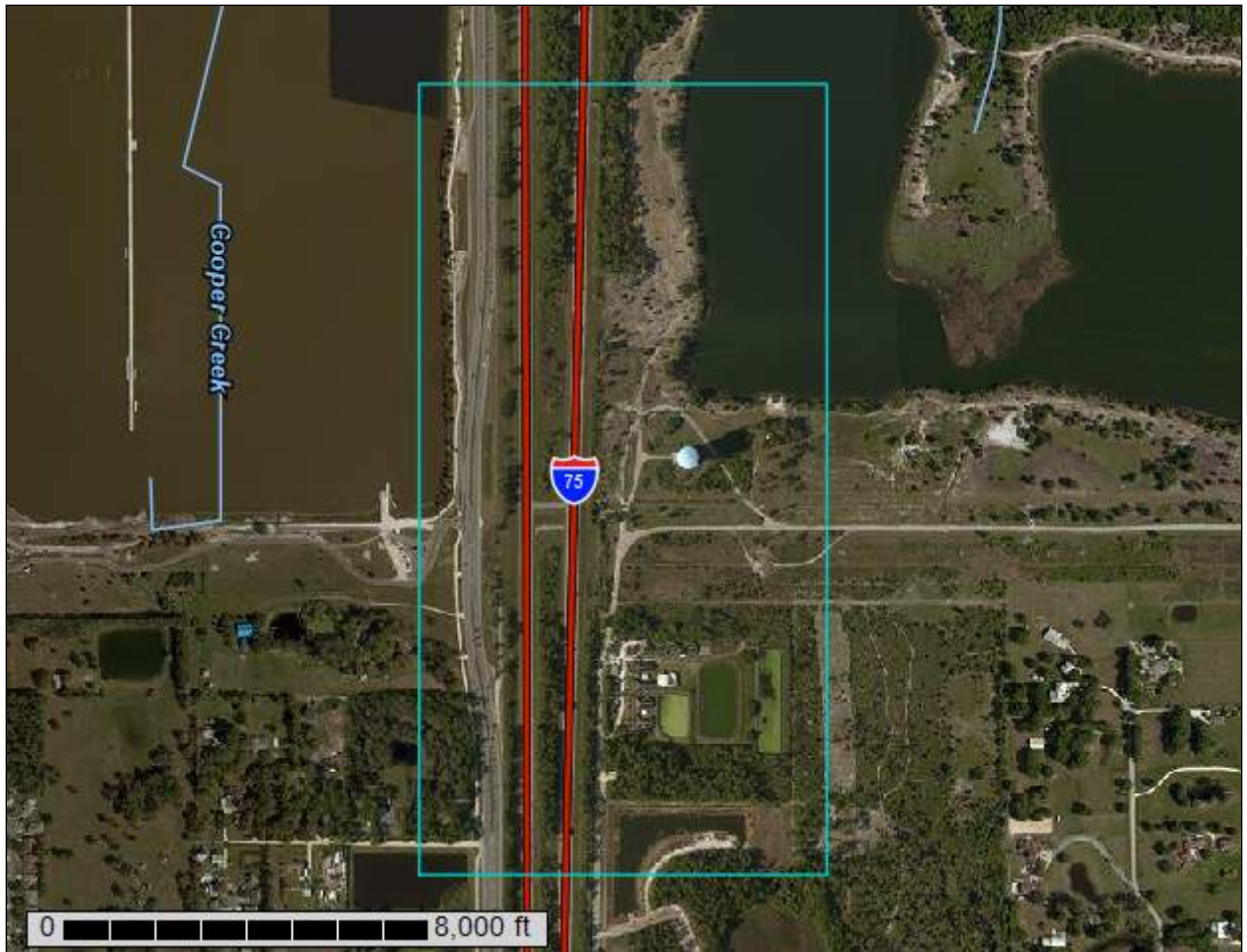
Crest Elevation: 44.50 ft

Roadway Surface: Paved

Roadway Top Width: 80.00 ft

APPENDIX F
SOIL SURVEY

Custom Soil Resource Report for **Sarasota County, Florida**



Preface

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

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

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

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

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

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

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Contents

Preface	2
How Soil Surveys Are Made	5
Soil Map	7
Soil Map.....	8
Legend.....	9
Map Unit Legend.....	10
Map Unit Descriptions.....	10
Sarasota County, Florida.....	12
10—EauGallie and Myakka fine sands.....	12
22—Holopaw fine sand, depressional.....	14
32—Pits and Dumps.....	16
99—Water.....	16
References	18

How Soil Surveys Are Made

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

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

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

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

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

Custom Soil Resource Report

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

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

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

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

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

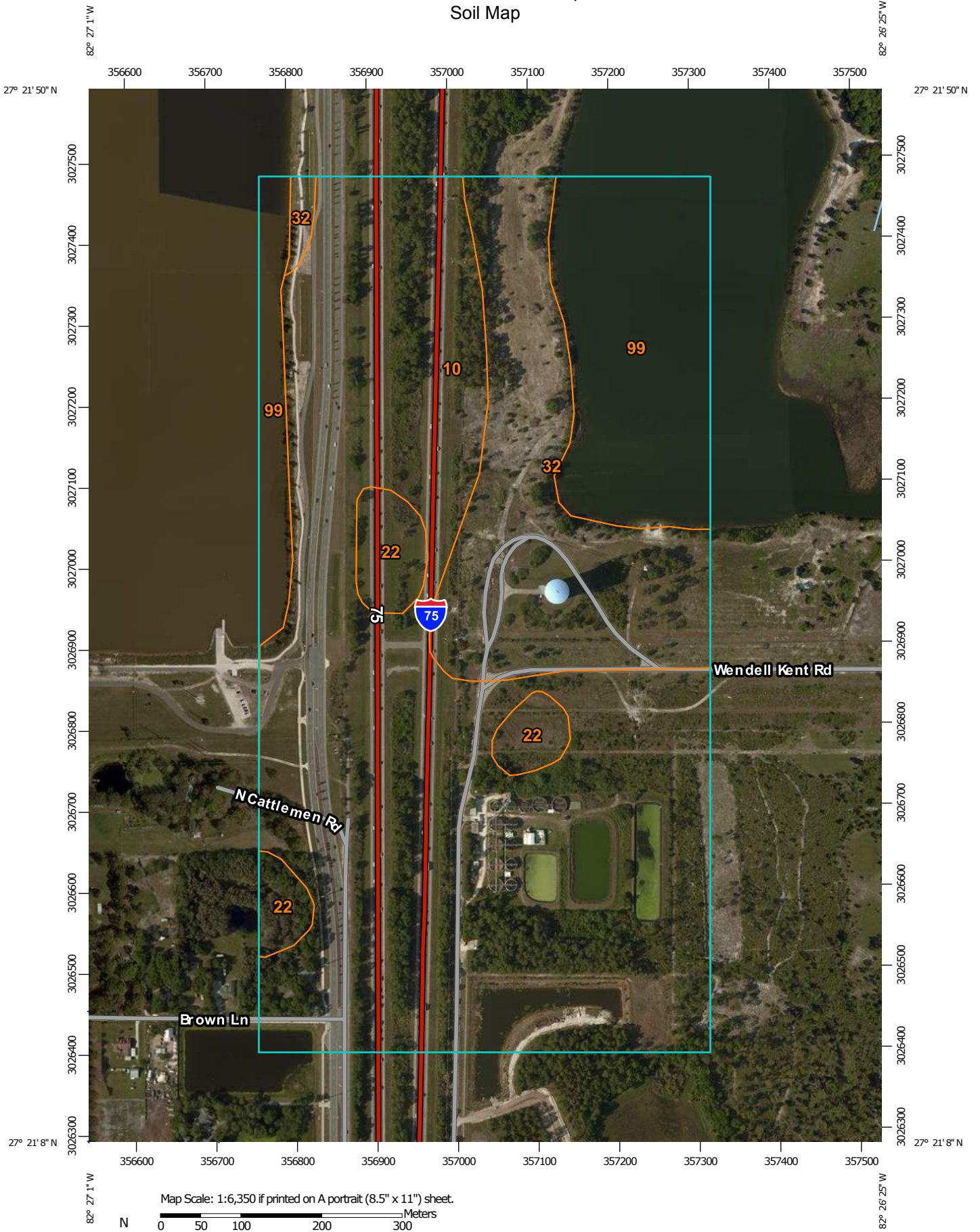
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree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

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

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

Custom Soil Resource Report Soil Map



Map Scale: 1:6,350 if printed on A portrait (8.5" x 11") sheet.

0 50 100 200 300 Meters

0 300 600 1200 1800 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84





MAP LEGEND




















Area of Interest (AOI)






Area of Interest (AOI)

Soils


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

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

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

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Sarasota County, Florida
 Survey Area Data: Version 12, Nov 19, 2015

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

Date(s) aerial images were photographed: Mar 14, 2011—Mar 29, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Sarasota County, Florida (FL115)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10	EauGallie and Myakka fine sands	92.4	61.5%
22	Holopaw fine sand, depressional	6.3	4.2%
32	Pits and Dumps	26.9	17.9%
99	Water	24.8	16.5%
Totals for Area of Interest		150.3	100.0%

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments

Custom Soil Resource Report

on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

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

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

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

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

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

Sarasota County, Florida

10—EauGallie and Myakka fine sands

Map Unit Setting

National map unit symbol: 110bm
Mean annual precipitation: 55 to 63 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 335 to 365 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Eaugallie and similar soils: 45 percent
Myakka and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of EauGallie

Setting

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

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 22 inches: fine sand
Bh - 22 to 44 inches: fine sand
E' - 44 to 48 inches: fine sand
Btg - 48 to 66 inches: sandy loam
Cg - 66 to 80 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.1 inches)

Interpretive groups

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

Description of Myakka

Setting

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

Typical profile

A - 0 to 6 inches: fine sand
E - 6 to 24 inches: fine sand
Bh - 24 to 42 inches: fine sand
Cg - 42 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Low (about 5.6 inches)

Interpretive groups

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

Minor Components

Ona

Percent of map unit: 5 percent
Landform: Flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)

Wabasso

Percent of map unit: 5 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)

Smyrna

Percent of map unit: 5 percent

Landform: Flats on marine terraces

Landform position (three-dimensional): Talf

Down-slope shape: Convex

Across-slope shape: Linear

Other vegetative classification: South Florida Flatwoods (R155XY003FL), Sandy soils on flats of mesic or hydric lowlands (G155XB141FL)

22—Holopaw fine sand, depressional

Map Unit Setting

National map unit symbol: 110bx

Elevation: 20 to 100 feet

Mean annual precipitation: 55 to 63 inches

Mean annual air temperature: 70 to 77 degrees F

Frost-free period: 335 to 365 days

Farmland classification: Not prime farmland

Map Unit Composition

Holopaw and similar soils: 85 percent

Minor components: 15 percent

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

Description of Holopaw

Setting

Landform: Depressions on marine terraces

Landform position (three-dimensional): Dip

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 4 inches: fine sand

E - 4 to 50 inches: fine sand

Btg - 50 to 66 inches: sandy loam

Cg - 66 to 80 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Very poorly drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 1.98 in/hr)

Depth to water table: About 0 inches

Frequency of flooding: None

Frequency of ponding: Frequent

Custom Soil Resource Report

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

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A/D
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL),
Sandy soils on stream terraces, flood plains, or in depressions (G155XB145FL)

Minor Components

Floridana, depressional

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL),
Sandy over loamy soils on stream terraces, flood plains, or in depressions
(G155XB245FL)

Manatee

Percent of map unit: 4 percent
Landform: Depressions on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Freshwater Marshes and Ponds (R155XY010FL),
Loamy and clayey soils on stream terraces, flood plains, or in depressions
(G155XB345FL)

Malabar

Percent of map unit: 4 percent
Landform: Drainageways on marine terraces, flats on marine terraces
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Concave, linear
Other vegetative classification: Cabbage Palm Flatwoods (R155XY005FL), Sandy
soils on flats of mesic or hydric lowlands (G155XB141FL)

Pineda

Percent of map unit: 3 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Other vegetative classification: Slough (R155XY011FL), Sandy over loamy soils on
flats of hydric or mesic lowlands (G155XB241FL)

32—Pits and Dumps

Map Unit Composition

Dumps: 50 percent

Pits: 50 percent

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

Description of Pits

Setting

Landform: Marine terraces

Landform position (three-dimensional): Interfluve, dip

Down-slope shape: Linear

Across-slope shape: Linear

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Other vegetative classification: Forage suitability group not assigned
(G155XB999FL)

Description of Dumps

Setting

Landform: Marine terraces

Landform position (three-dimensional): Rise

Down-slope shape: Linear

Across-slope shape: Convex

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Other vegetative classification: Forage suitability group not assigned
(G155XB999FL)

99—Water

Map Unit Composition

Water: 100 percent

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

Description of Water

Interpretive groups

Land capability classification (irrigated): None specified

Custom Soil Resource Report

Other vegetative classification: Forage suitability group not assigned
(G155XB999FL)

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APPENDIX G
CONTAMINATION SCREENING EVALUATION

Contamination Screening Evaluation Report

Florida Department of Transportation
District One
North Sarasota Multimodal Connector PD&E Study
Sarasota, Florida
Financial Management Number: 442034-1
ETDM Number: 14348
Date: July 2022

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

TABLE OF CONTENTS

SECTION	Page
Executive Summary	i
1.0 Introduction.....	1-1
1.1 Project Description.....	1-1
1.2 Purpose and Need.....	1-1
1.2.1 Improve Transportation Network Connectivity.....	1-3
1.2.2 Improve Operational Conditions.....	1-3
1.2.3 Improve Safety Conditions	1-3
1.3 Existing Facility	1-3
1.4 Proposed Action	1-4
1.4.1 Four-lane Typical Section.....	1-4
1.4.2 Four-lane Elevated Typical Section.....	1-4
1.4.3 Four-lane Bridge Typical Section.....	1-5
1.5 Proposed Improvements	1-7
1.5.1 No-Build Alternative	1-7
1.5.2 Build Alternative.....	1-7
1.6 Proposed Pond Sites.....	1-7
1.7 Purpose of Report.....	1-7
2.0 Project Alternatives	2-8
3.0 Methodology	3-1
4.0 Land Uses	4-1
4.1 Site Reconnaissance	4-1
4.2 Historical Aerial Photograph Review	4-2
4.3 USGS Topographic Map Review.....	4-3
5.0 Hydrologic Features	5-1
5.1 Aquifers of Florida.....	5-1
5.2 Hydrology – Site Reconnaissance.....	5-1
6.0 Interviews	6-1
7.0 Project Impacts	7-1
8.0 Conclusions and Recommendations	8-1
8.1 Conclusions.....	8-1
8.2 Recommendations	8-1

TABLE OF FIGURES

Figures	Page
Figure 1-1: Preferred Alternative Proposed Alignment.....	1-2
Figure 1-2: Four-lane At-Grade Typical Section.....	1-4
Figure 1-3: Four-lane Elevated Typical Section along Overpass Road.....	1-5
Figure 1-4: Four-lane Elevated Typical Section along N. Cattlemen Road	1-6
Figure 1-5: Four-lane Bridge Typical Section.....	1-6

APPENDICES

Appendix	Title
CSER Appendix A	Maps
CSER Appendix B	Historical Aerial Photographs
CSER Appendix C	USGS Topographic Map
CSER Appendix D	Regulatory Database Report
CSER Appendix E	Site Photographs

Executive Summary

On behalf of the Florida Department of Transportation, this Contamination Screening Evaluation was performed to support the North Sarasota Multimodal Connector Project Development and Environment Study in Sarasota County, Florida. The evaluation includes the mainline and three preferred pond site alternatives. The contamination evaluation was performed in accordance with Part 2, Chapter 20 of the Florida Department of Transportation’s Project Development and Environment Manual (July 1, 2020). This report was *revised* based on comments received on July 8, 2022.

Based on this contamination screening evaluation, two contamination sites were identified within the project limits. The following table presents a summary of the risk ratings assigned for each contamination site:

Table 1: Summary of Risk Ratings - Mainline			
High	Medium	Low	No
0	0	1	1

The following table presents a summary of risk ratings assigned for the two preferred pond site alternatives evaluated:

Table 2: Summary of Risk Ratings - Ponds			
High	Medium	Low	No
0	0	0	3

For the No or Low risk ratings, no further action is required. These sites or ponds have been evaluated and determined not to have any contamination risk to the project at this time. No sites or ponds were rated Medium or High. Therefore, Level II testing is not recommended. Level III support is not anticipated. Additional fees associated with contamination support does not appear warranted.

1.0 Introduction

1.1 Project Description

Sarasota County, in coordination with the Florida Department of Transportation (FDOT), is conducting a Project Development and Environment (PD&E) study to evaluate the proposed North Sarasota Multimodal Connector, a new east-west four-lane roadway and overpass crossing SR 93 (I-75) between the Fruitville Road interchange and the University Parkway interchange in Sarasota County. The new east-west overpass will require improvements along N. Cattlemen Road to accommodate a new intersection. Improvements along N. Cattlemen Road will maintain the existing four-lane divided typical section.

The project is in the Lakewood Ranch area of north Sarasota County. Lakewood Ranch is a 30,000-acre mixed-used master planned development in Sarasota County. The project is within Sections 12 and 13 of Township 36 South Range 18 East and Section 7 of Township 36 South Range 19 East. The project limits cover approximately 0.6 miles. The proposed overpass crosses Interstate-75 (I-75). The project study area and project limits are shown in **Figure 1-1**.

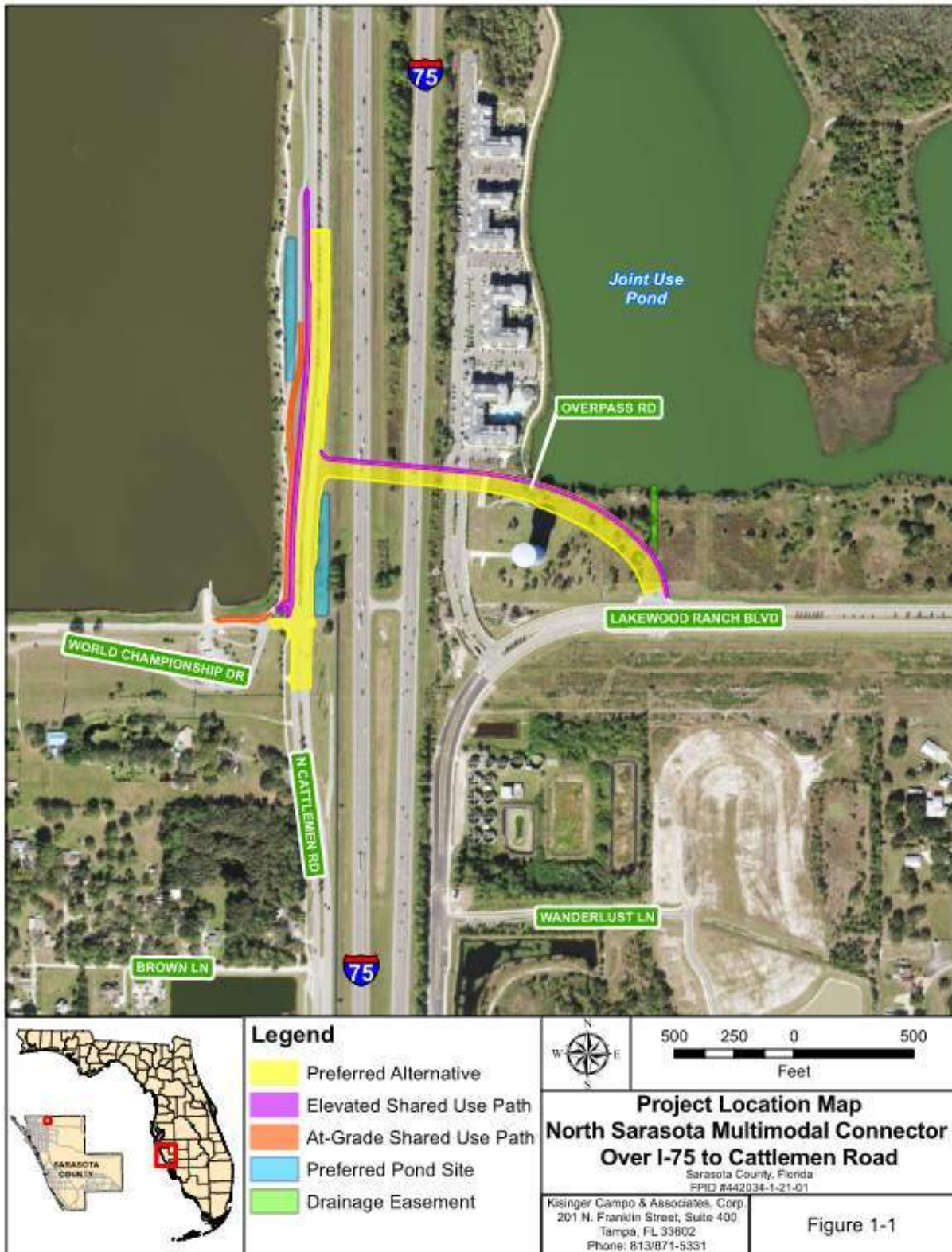
The project was evaluated through FDOT's Efficient Transportation Decision Making (ETDM) process as project #14348. An ETDM *Programming Screen Summary Report* containing comments from the Environmental Technical Advisory Team (ETAT) was published on November 9, 2018. The ETAT evaluated the project's effects on various natural, physical, and social resources. Other components of the PD&E study include a Preliminary Engineering Report (PER), concept plans, environmental studies, a public involvement program and other information for use in the development of this project.

Upon completion, the study will meet all requirements of the National Environmental Policy Act of 1969 (NEPA) as administered by the Federal Highway Administration (FHWA) and the requirements of other federal and state laws so as to qualify the proposed project for federal-aid funding.

1.2 Purpose and Need

The purpose of the project is to enhance access to destinations east and west of I-75 and to provide relief of traffic congestion on both Fruitville Road and University Parkway partly attributed to increased traffic demand from existing and planned development in the Lakewood Ranch area. The need for the project is supported by the following criteria.

Figure 1-1: Preferred Alternative Proposed Alignment



1.2.1 Improve Transportation Network Connectivity

Currently there is no efficient access to employment centers and commercial activity in the Lakewood Ranch area and other destinations east and west of I-75 within the vicinity of the project area. Under existing conditions, travelers have access to Lakewood Ranch area and other destinations east and west of I-75 via Fruitville Road and University parkway which are congested, and travelers experience long delays. Traffic analysis documented in the Traffic Technical Memorandum: I-75 Overpass Transportation Impact Assessment (prepared in Feb. 2016; revised in Sept. 2016) suggests that creating a link that connects destinations east and west of I-75 and Lakewood Ranch area would relieve existing and future congestions on Fruitville Road and University Parkway and hence improve accessibility for travelers.

1.2.2 Improve Operational Conditions

Existing and planned developments in the Lakewood Ranch area has increased the travel demand to use Fruitville Road and University Parkway and their interchanges with I-75. According to the traffic analysis summarized in the Traffic Technical Memorandum: I-75 Overpass Transportation Impact Assessment (prepared in Feb. 2016; revised in Sept. 2016), the roadway segments west of the Fruitville Road and University Parkway interchanges with I-75 are currently operating at an unacceptable level of service (LOS) E and are projected to continue to deteriorate in the future.

1.2.3 Improve Safety Conditions

According to crash data obtained from Sarasota County, 278 total crashes, including one fatality, occurred along Fruitville Road from Cattlemen Road to Lakewood Ranch Boulevard between 2016 and 2020. Rear-end and sideswipe crashes were the most frequent crash types along Fruitville Road at 62.59% and 16.55%, respectively. The Actual Crash Rate “ACR” was calculated based on the AADT values of the years 2016 to 2020 and was found to be 3.602 crashes per million vehicles miles driven higher than the 3.144 statewide average for an urban six lane two-way divided roadway. Almost all the crashes (81.7%) occurred at the intersection of Cattlemen Road with traffic congestion being the leading factor. With a large majority of rear-end crashes, it is concluded traffic congestion and the signal timing at Cattlemen Road are the main issue along Fruitville Road.

1.3 Existing Facility

The North Sarasota Multimodal Connector is a new roadway. Within the study area, I-75 consists of eight lanes with a posted speed of 70 miles per hour (mph). The nearest existing east-west roadways crossing I-75 are Fruitville Road (to the south) and University Parkway (to the north). These existing parallel roadways are separated by approximately 3.5 miles and are the only existing roadways accommodating east-west travel across the I-75 limited access right-of-way within the project area.

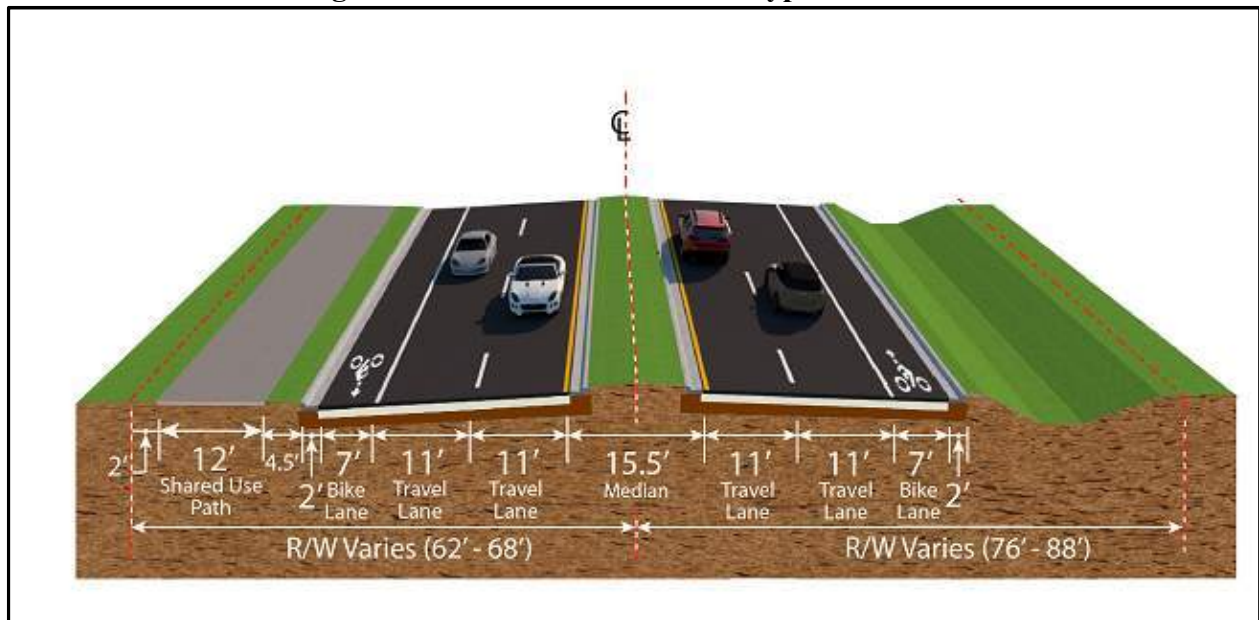
1.4 Proposed Action

The proposed action is to construct a new four-lane roadway and overpass with two eastbound and two westbound lanes over I-75 (Overpass Road) connecting Lakewood Ranch Boulevard to Cattlemen Road.

1.4.1 Four-lane Typical Section

The Overpass Road section is comprised of four 11-foot travel lanes, two in each direction, two seven-foot bicycle lanes, one in each direction, and a 12-foot shared use path on the north side of the roadway. The proposed roadway is divided by a 15.5-foot grassed median (**Figure 1-2**). The design speed is 40 mph. The total right-of-way width required to accommodate the proposed overpass along this segment varies from 138 feet to 156 feet.

Figure 1-2: Four-lane At-Grade Typical Section



1.4.2 Four-lane Elevated Typical Section

The North Sarasota Multimodal Connector includes two separate typical sections for the segments of the roadway near the proposed overpass where the vertical alignment separates from natural ground.

The first elevated typical section is for the section along the Overpass Road and includes four 11-foot travel lanes, two in each direction, two seven-foot bicycle lanes, one in each direction, and a 12-foot shared use path on the north side of the roadway. The proposed roadway will be divided by a grassed median varying from seven feet to 15.5 feet in width to transition the roadway to

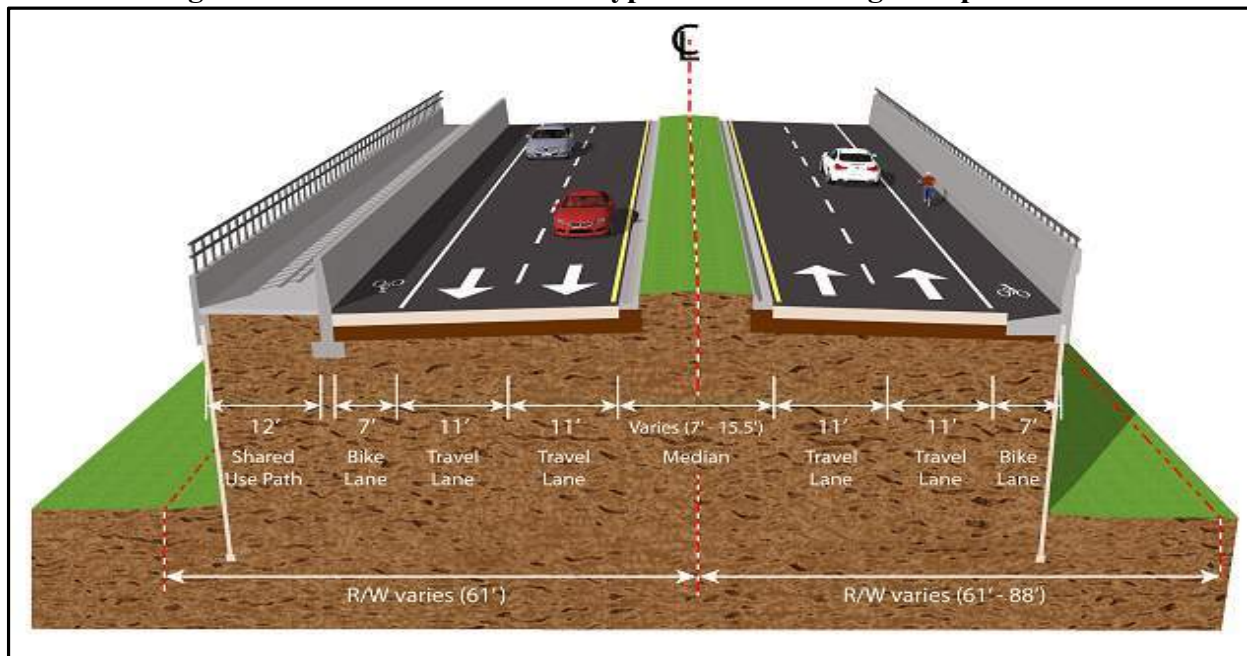
match the proposed bridge typical section (**Figure 1-3**). The design speed is 40 mph. The total right-of-way width required to accommodate the proposed overpass along this segment varies from 122 feet to 149 feet.

The second elevated typical section is along N. Cattlemen Road and includes four 12-foot travel lanes, two in each direction, two five-foot bicycle lanes, one on each direction, and a 15-foot shared use path is provided on the west side of the roadway and is separated from the adjacent bicycle lane by a concrete barrier. The proposed roadway is divided by a 19-foot grassed median (**Figure 1-4**). The design speed is 40 mph.

MSE (Mechanically Stabilized Earth) walls and concrete barrier are proposed where roadway side slopes cannot tie to natural ground within the proposed right-of-way (**Figure 1-3** and **Figure 1-4**).

The proposed 15-foot shared-use path on Cattlemen Road and the 12-foot shared-use path on the Overpass Road will be located along the proposed elevated overpass roadway and will provide a connection between the Nathan Benderson Park and the Lakewood Ranch Development. The existing alignment of the unpaved path and paved Bill Robinson Trail traversing the perimeter of the lake will be modified, as needed, to maintain the 15-foot paved trail.

Figure 1-3: Four-lane Elevated Typical Section along Overpass Road



1.4.3 Four-lane Bridge Typical Section

The proposed bridge over I-75 includes four 11-foot travel lanes, two in each direction, and two seven-foot bicycle lanes, one in each direction. A concrete bridge rail and 2.5-foot inside shoulders

separate the opposing travel lanes. A 12-foot shared use path is provided on the north side of the bridge and is separated from the adjacent bicycle lane by a concrete bridge rail. The total bridge width is approximately 83'-1.5" (Figure 1-5).

Figure 1-4: Four-lane Elevated Typical Section along N. Cattlemen Road

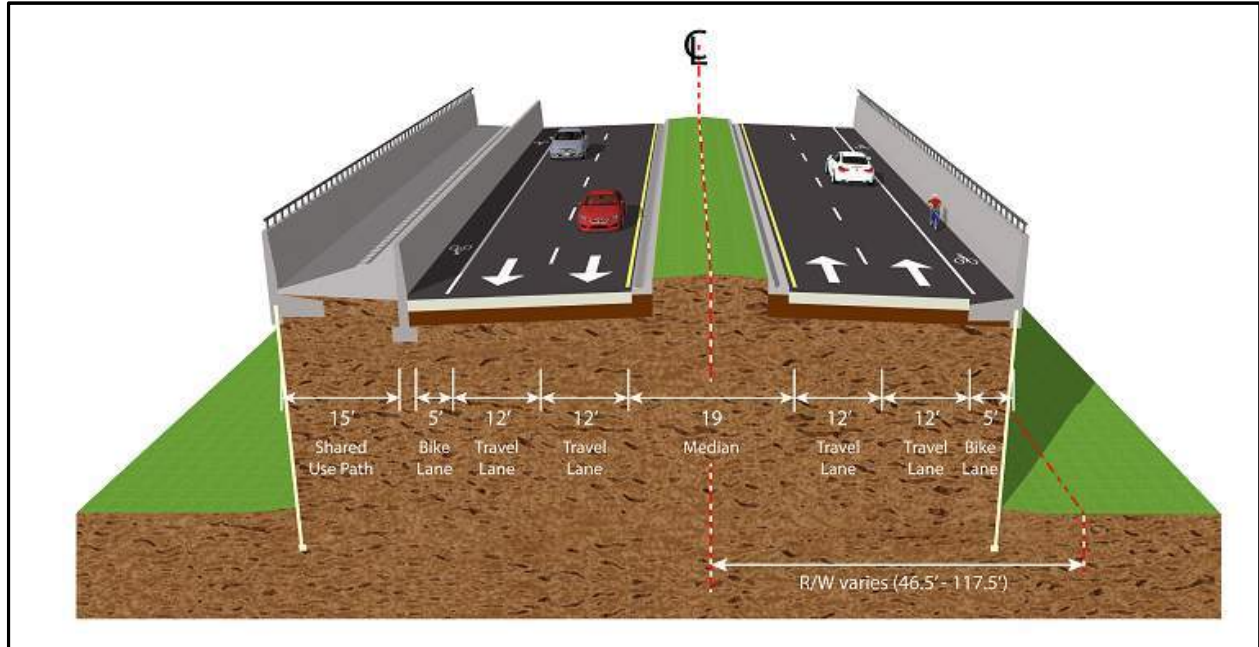
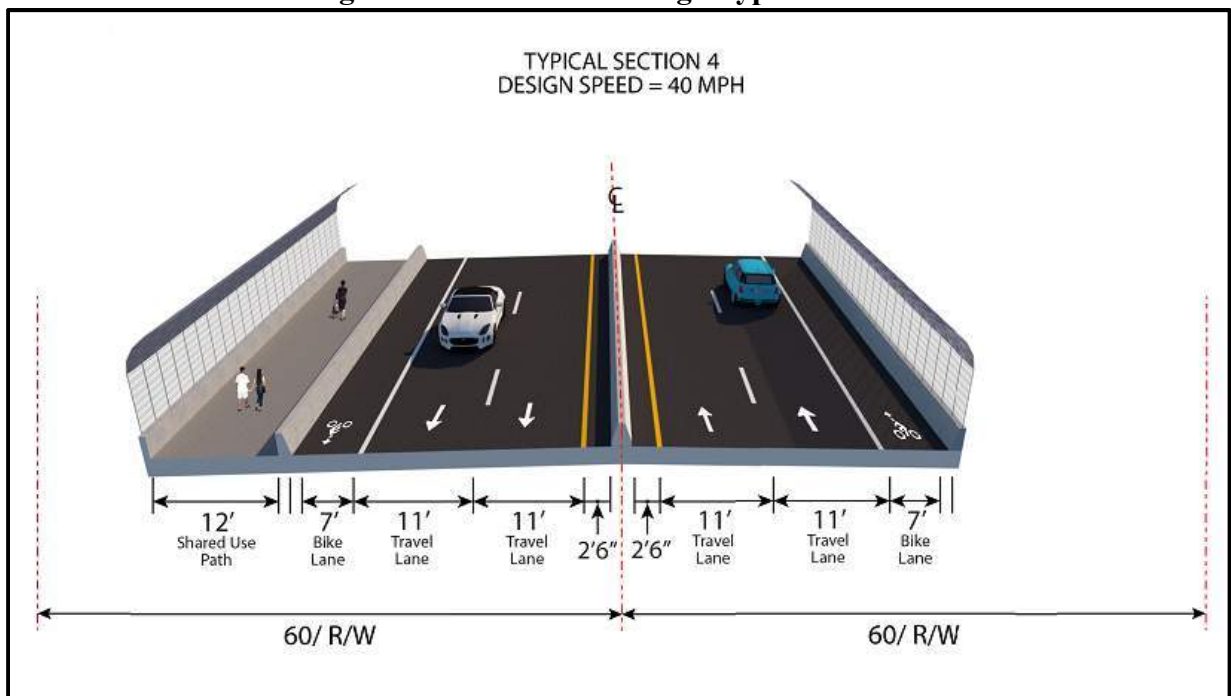


Figure 1-5: Four-lane Bridge Typical Section



1.5 Proposed Improvements

1.5.1 No-Build Alternative

Throughout this study, a “No-Build” (no-action) alternative is also considered. The “No-Build” alternative assumes that the North Sarasota Multimodal Connector over I-75 is not built, but accounts for routine maintenance on existing adjacent roads.

The No-Build Alternative minimizes right-of-way and construction costs along with environmental impacts. However, it does not accomplish the purpose and need for this project.

1.5.2 Build Alternative

Three build alternatives, Build Alternative 1 (South), Build Alternative 2 (Center), and Build Alternative 3 (North) were evaluated. These alternatives applied the typical sections described in **Section 1.4** along three independent alignments connecting N. Cattlemen Road west of I-75 to Professional Parkway or Lakewood Ranch Boulevard east of I-75. With considerations for residential relocations and environmental impacts, Build Alternative 2 was selected as the Preferred Alternative. A detailed alternatives analysis and concept plans are included in the PER prepared under separate cover.

1.6 Proposed Pond Sites

There are 3 preferred stormwater management facilities (SMF) associated with the Preferred Alternative described above. Two SMF’s are located on the west side of the overpass along N. Cattlemen Road. Stormwater will also be treated in the existing joint-use facility directly northeast of the overpass. There will be an easement from the roadway to this joint-use facility. All drainage improvements are within the project study area.

1.7 Purpose of Report

This Contamination Screening Evaluation Report was prepared to support the PD&E study and was performed in accordance with Part 2, Chapter 20 of the FDOT’s PD&E Manual (July 1, 2020). Contamination within or adjacent to the right-of-way (ROW), or at drainage sites, has the potential for liability and may require assessment, remediation, or special handling. This report considers the potential for encountering contamination within the limits of the project and to a search distance of up to 500 feet, thereby providing information to understand the type and extent of contamination issues that may impact construction. Properly addressing contamination issues can reduce costs and risks to FDOT.

2.0 Project Alternatives

A single concept for the Multimodal Connector was evaluated. No other concepts were evaluated herein.

3.0 Methodology

A contamination screening was conducted to identify contamination issues from properties or operations located within the vicinity of the project. This evaluation consisted of the following tasks:

- Aerial photographs were reviewed to develop a history of the previous land uses within the study area and to identify sites which may have historical uses that pose contamination concerns. Aerial photographs 1948, 1957, 1969, 1977, 1985, 1994, 1995, 1998, 2004-2010, 2012-2014, and 2016-2020 were reviewed from the University of Florida, Florida Department of Transportation (FDOT) Survey & Mapping, and Google Earth databases. A summary of our review is discussed in **Table 3** and **Table 4**. A copy of the 2017 aerial photograph is presented in **CSER Appendix A**. Copies of select historical aerial photographs are presented in **CSER Appendix B**.
- Topographic map review using imagery available from the United States Geological Survey (USGS) website. Topographic maps can be useful identifying contamination concerns such as railroads, mines, bulk storage tanks, and landfills/disturbed lands. Additionally, land use and water features, including elevation contours can be identified on topographic maps. The USGS 7.5-Minute “Bee Ridge, Florida” Quadrangle were reviewed as part of this study. The topographic map is provided in **CSER Appendix C**.
- Sarasota County Property Appraiser database information was reviewed for suspect contamination sites where other resources may not have provided ample information regarding the site, or to determine addresses, parcel boundaries and other pertinent information.
- An environmental database search using Environmental Data Management, Inc. (EDM) was conducted on February 23, 2021 to identify sites, facilities or listings within the study area containing documented or suspected petroleum contamination or other hazardous materials. The EDM report is used as a preliminary screening tool to identify facilities that are registered with various county, state, and federal agencies. This evaluation utilizes the search distances as specified in Part 2, Chapter 20 of the FDOT’s PD&E Manual. The search distances are as follows:
 - 500 feet from the ROW line for petroleum, drycleaners, non-petroleum sites, solid waste sites (such as landfills, recycling facilities, transfer stations, and debris placement areas), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites, and National Priorities List (NPL) Superfund sites.

- The regulatory review of federal and state environmental records utilizes an integrated geographic information system database. The database report provides geocoded and non-geocoded regulatory listings of interest that are identified within the study area. Each listing is located by address, facility identification number and field verified where possible. All are reviewed for the potential of contamination to impact the project. The reviewed records include information compiled by the United States Environmental Protection Agency (EPA), the Florida Department of Environmental Protection (FDEP), and other various reporting programs, as identified in EDM’s report. A complete list of all regulatory record databases searched is included in the environmental database search report, provided in **CSER Appendix D**. The facilities identified in the EDM report are evaluated in **Section 7.0**.
- Performed a site reconnaissance to identify new and/or undocumented contamination sites, and to verify locations of documented contamination sites. Select photographs are provided in **CSER Appendix E**.
- Assigned risk ratings for each contamination site after evaluating the findings of each of the previously mentioned methodologies. The rating system defined in PD&E Manual is divided into four categories of risk which express the degree of concern for contamination problems. The four degrees of risk ratings are “No,” “Low,” “Medium,” and “High” and are defined as follows:

No Risk Site

A review of available information on the property and a review of the conceptual or design plans indicates there is no potential contamination impact to the project. It is possible that contaminants have been handled on the property. However, findings from the Level I evaluation indicate that contamination impacts are not expected.

Low Risk Site

A review of available information indicates that past or current activities on the property have an ongoing contamination issue; the site has a hazardous waste generator identification (ID) number, or the site stores, handles, or manufactures hazardous materials. However, based on the review of conceptual or design plans and/or findings from the Level I evaluation, it is not likely that there would be any contamination impacts to the project.

Medium Risk Site

After a review of conceptual or design plans and findings from a Level I evaluation, a potential contamination impact to the project has been identified. If there is insufficient information (such as regulatory records or site historical documents) to make a determination as to the potential for contamination impact, and there is reasonable suspicion that contamination may exist, the

property should be rated at least as a “Medium.” Properties used historically as gasoline stations and which have not been evaluated or assessed by regulatory agencies, sites with abandoned in place underground petroleum storage tanks or currently operating gasoline stations should receive this rating.

High Risk Site

After a review of all available information and conceptual or design plans, there is appropriate analytical data that shows contamination will substantially impact construction activities, have implications to ROW acquisition or have other potential transfer of contamination related liability to the FDOT.

While not specifically discussed in Chapter 20 as a basis for a “Medium” or “High” risk rating, sites located within 500 feet of the project limits also receive these ratings when identified as “contaminated” by state and/or federal regulatory agencies due to the documented presence of unremediated impacts onsite and/or offsite of the site’s property boundaries. This rating is assigned in consideration of a dewatering permit that may be necessary under the National Pollutant Discharge Elimination System (NPDES) program. In addition to sites identified as contaminated, there are often sites that do not appear on state and/or federal regulatory agency databases as “contaminated” but have remaining soil and/or groundwater impacts detailed in documents such as a Site Rehabilitation Completion Order (SRCO) or a restrictive covenant. Sites of this nature also receive a risk rating of “Medium” or “High.”

4.0 Land Uses

Determination of previous land uses and occupancies is an important factor when evaluating the potential for contamination involvement. Developing a history of the project and surrounding areas can assist in determining the potential for releases or discharges of hazardous materials or petroleum products. To determine land uses for this project, a site reconnaissance was performed along with a review of historical aerial photographs and topographic maps.

4.1 Site Reconnaissance

A site visit was conducted in March 2021 to evaluate each property within and in close proximity to the project for contamination concerns. The site reconnaissance in conjunction with the desktop review allow the sites to be rated as to the degree of contamination concern as discussed in **Section 3.0**. The reconnaissance included a systematic inspection of each parcel along the project and surrounding areas looking for signs of contamination. This was achieved by driving, where possible, the project and walking the parcels within and surrounding the project (where accessible) to gain specific information regarding the usage and condition of each contamination site. Photographs of the project were taken during the site inspection. Select images are presented in **Appendix E**.

Some of the typical physical indicators for contamination concerns include: railroad tracks, fill ports and vent pipes associated with underground storage tanks (USTs); oil/petroleum staining; drums; chemical containers; refuse; illicit dumping; solid waste; stressed vegetation; dry cleaning facilities; material handling from adjacent businesses; petroleum dispensers; excavated areas; agricultural use; chemical mix/load areas; stormwater outfall areas; surface water indicators; groundwater monitor wells, restricted area/contamination/hazardous material/petroleum pipeline signage, cattle dip vats and other property uses that may present contamination concerns.

During the site reconnaissance performed in March 2021, Tierra noted existing I-75, Cattlemen Road and Lakewood Ranch Boulevard roadways. The area to the east of I-75 was comprised of partially wooded grassland and roadway (entrance to nearby apartment complex). A picnic area with a gazebo was noted within proposed ROW, located approximately 250 feet north of the Lakewood Ranch Boulevard project limit. No contamination concerns were noted. The area to the west of I-75 was noted as existing Cattlemen Road roadway/ROW and Nathan Benderson Park trails. A generator with integral aboveground storage tank (AST) (Site 1) was noted within I-75 ROW, approximately 330 feet south of proposed ROW.

A description of field observations for each contamination site is provided in **Section 7.0**.

4.2 Historical Aerial Photograph Review

Aerial photographs dated 1948, 1957, 1969, 1977, 1985, 1994, 1995, 1998, 2004-2010, 2012-2014, and 2016-2020 were reviewed from the University of Florida, FDOT Survey & Mapping, and Google Earth online databases. A summary of our review is discussed in **Table 3** below. A copy of the 2017 aerial photograph is presented in **Appendix A**. Copies of select historical aerial photographs are presented in **Appendix B**.

Additional site-specific current land use details regarding facilities/sites of concern are included in **Section 7.0**.

TABLE 3: AERIAL PHOTOGRAPH REVIEW - MAINLINE		
Year	Comment	Contamination Concerns
1948-1969	Generally, the land within and surrounding the project is comprised of undeveloped land including pasture, low-lying wet areas, and woodlands.	No concerns noted
1977	Mining activities are visible throughout the majority of the project, presumably associated with SMR Aggregates/Quality Aggregates, Inc (Site 2).	Mined land (SMR Aggregates/Quality Aggregates, Inc) (Site 2)
1985	I-75 is added in the central portion of the project. Lakewood Ranch Boulevard is added to the east of I-75. It appears that mining operations in the vicinity of the project have ceased.	No new concerns noted
1994-1995	No noteworthy changes noted.	No new concerns noted
1998	A water tower is added in the vicinity of the project to the east of I-75.	No new concerns noted
2004	A recreation/picnic area is added within proposed ROW to the north of the Lakewood Ranch Boulevard project limit.	No new concerns noted
2005-2010	No noteworthy changes noted.	No new concerns noted
2012	Construction of Cattlemen Road is apparent to the west of I-75.	No new concerns noted
2013	Cattlemen Road construction completed. Trails associated with Nathan Benderson Park now visible paralleling Cattlemen Road.	No new concerns noted
2014	No noteworthy changes noted.	No new concerns noted
2016	Earthwork is visible within the I-75 median.	No new concerns noted
2017	Construction of Lakewood Ranch Boulevard is visible to the east of I-75	No new concerns noted
2018-2019	Construction of apartments and paved entranceway visible to the east of I-75.	No new concerns noted
2020	Lakewood Ranch Boulevard is extended south. The area generally appears as it does today.	No new concerns noted

TABLE 4: AERIAL PHOTOGRAPH REVIEW - PONDS	
Pond Alternative	Land Use
SMF 1B	Undeveloped land from 1948 to 1969. Mined land/soil stockpile (Site 2) onsite in 1977. Cattlemen road ROW beginning 2013.
SMF 2B	Undeveloped land from 1948 to 1969. Mined land/soil stockpile (Site 2) onsite in 1977. Nathan Benderson Park trail drainage pond beginning 2013.
Lake A / Joint Use Pond and Outfall	Lake A: Undeveloped land, low, wet areas and trails from 1948 to 1969. Mined land/soil stockpiles (Site 2) onsite in 1977. Manmade lake since 1985. Outfall: Undeveloped land, and trails from 1948 to 1969. Clearing/earthwork at southern edge of mined land in 1977. Undeveloped land and trails since 1985.

Contamination concerns noted during the review of historical aerial photographs are further discussed in **Section 7.0**.

4.3 USGS Topographic Map Review

Topographic maps are reviewed to develop an understanding of previous land uses in the study area and to identify any areas that may show historical, natural and manmade features, which aid in determining contamination concerns. Copies of the topographic maps reviewed are provided in **Appendix C**. A summary of our review of the USGS 7.5-Minute “Bee Ridge, Florida” Quadrangle dated 1973, photorevised 1987 topographic map is discussed below.

Review of the topographic map depicts the majority of the land use within and surrounding the project (including pond sites) as mined land (**Section 7.0, Table 5, Site #2**). I-75 is shown in its current alignment. The mined land was initially identified during the review of aerial photographs, confirmed during review of topographic maps, and is further discussed in **Section 7.0**.

5.0 Hydrologic Features

5.1 Aquifers of Florida

The Floridan aquifer is found throughout Florida and extends into the southern portions of Alabama, Georgia, and South Carolina. This aquifer system is comprised of a sequence of limestone and dolomite, which thickens from about 250 feet in Georgia to about 3000 feet in south Florida. The Floridan aquifer system has been divided into an upper and lower aquifer separated by a unit of lower permeability. The upper Floridan aquifer is the principal source of water supply in most of north and central Florida. In the southern portion of the state, where it is deeper and contains brackish water, the aquifer has been used for the injection of sewage and industrial waste. Groundwater flow is generally from high elevations within the central portion of the state towards the east and west coasts.

The surficial aquifer system in Florida includes any otherwise undefined aquifers that are present at land surface. The surficial aquifer is mainly used for domestic, commercial, or small municipal supplies. The surficial aquifer system is generally under unconfined, or water table conditions and is made up of mostly unconsolidated sand, shelly sand, and shell. The aquifer thickness is typically less than 50 feet. Groundwater in the surficial aquifer generally flows from areas of higher elevation towards the coast or streams where it can discharge as base flow. Water enters the aquifer from rainfall and exits as base flow to streams, discharge to the coast, evapotranspiration, and downward recharge to deeper aquifers.

5.2 Hydrology – Site Reconnaissance

During the site reconnaissance, existing surface drainage appears to be infiltration and runoff generally towards surrounding manmade drainage features, including the existing Lake A (Joint Use Pond).

6.0 Interviews

No interviews were needed or performed for this CSER.

7.0 Project Impacts

Based on the methodologies performed, two contamination sites were identified within the study area which may impact the proposed improvements. These are discussed in **Table 5**. A discussion of the preferred ponds sites is provided in **Table 6**. The location of the contamination/pond sites are illustrated in **Appendix A**.

TABLE 5: MAINLINE CONTAMINATION SITES						
Site Number	Site Name & Address	Databases/ Facility ID	Distance to proposed ROW	Contaminants of Concern	Risk Rating	Comments
1	Generator with Integral AST I-75 ROW	Site Reconnaissance	330 feet south	Petroleum	No	During the site reconnaissance, a generator with integral AST was observed within I-75 ROW approximately 330 feet south of proposed ROW. No indications of a release or other contamination concerns were noted. No regulatory files were identified for this site. Due to the separation distance and lack of contamination concerns, this site is assigned a risk rating of No.
2	Formerly Mined Land (SMR Aggregates/Quality Aggregates, Inc)	Aerial photography, topographic map Facility ID (tanks): 8628329, 8628325	onsite	Petroleum	Low	Mining operations were identified during the review of topographic maps and aerial photography dated 1977 (CSER Appendix B, Sheet B-4). No structures associated with the mine were noted within 500 feet of the project during the review of aerial photography and topographic maps. According to information found on the FDEP Map Direct database, the mining activities were associated with a company formerly named Quality Aggregates/SMR Aggregates. Location information included in the storage tank files indicate that all petroleum tanks associated with the mining operation were located beyond 500 feet from this project. Aggregate mining does not typically utilize hazardous materials or generate hazardous waste as a byproduct. Due to the benign nature of the former aggregate mining activities, this site is assigned a risk rating of Low.

TABLE 6: PROJECT IMPACTS - PONDS		
Pond Site	Risk Rating	Comments
SMF 1B	No	<p>Current Land Use: During the site reconnaissance, this pond site was observed as Cattlemen Road ROW. Surrounding areas include I-75 to the east, Cattlemen Road roadway/ROW to the north, south, and west.</p> <p>Contamination Concern(s):</p> <p>Site #2: Formerly Mined Land (SMR Aggregates/Quality Aggregates, Inc), located within the boundaries of SMF 1B – Mining operations were identified during the review of topographic maps and aerial photography dated 1977 (CSER Appendix B, Sheet B-4). No structures associated with the mine were noted within 500 feet of the project during the review of aerial photography and topographic maps. Location information included in the storage tank files indicate that all petroleum tanks associated with the mining operation were located beyond 500 feet from this pond site. Aggregate mining does not typically utilize hazardous materials or generate hazardous waste as a byproduct. Due to the benign nature of the former aggregate mining activities, this site is considered a low risk to this pond site.</p> <p>Risk rating: No contamination concerns were identified, therefore pond SMF 1B is assigned a risk rating of No.</p>
SMF 2B	No	<p>Current Land Use: During the site reconnaissance, this pond site was observed as a dry retention pond. Surrounding areas include Cattlemen Road roadway/ROW to the east, and Nathan Benderson Park to the north, south, and west.</p> <p>Contamination Concern(s):</p> <p>Site #2: Formerly Mined Land (SMR Aggregates/Quality Aggregates, Inc), located within the boundaries of SMF 2B – Mining operations were identified during the review of topographic maps and aerial photography dated 1977 (CSER Appendix B, Sheet B-4). No structures associated with the mine were noted within 500 feet of the project during the review of aerial photography and topographic maps. Location information included in the storage tank files indicate that all petroleum tanks associated with the mining operation were located beyond 500 feet from this pond site. Aggregate mining does not typically utilize hazardous materials or generate hazardous waste as a byproduct. Due to the benign nature of the former aggregate mining activities, this site is considered a low risk to this pond site.</p> <p>Risk rating: No contamination concerns were identified, therefore Pond SMF 2B is assigned a risk rating of No.</p>
Lake A (Joint Use Pond) and Outfall	No	No excavation or modifications are anticipated for the existing Lake A (Joint Use Pond). No construction impacts are anticipated. Although excavation is anticipated for the outfall and drainage basin, no contamination concerns were noted. This site is assigned a risk rating of No.

8.0 Conclusions and Recommendations

8.1 Conclusions

Based on this contamination screening evaluation, two contamination sites were identified within the project limits. The following table presents a summary of the risk ratings assigned for each contamination site:

Table 7: Summary of Risk Ratings - Mainline			
High	Medium	Low	No
0	0	1	1

The following table presents a summary of risk ratings assigned for the three preferred pond site alternatives evaluated:

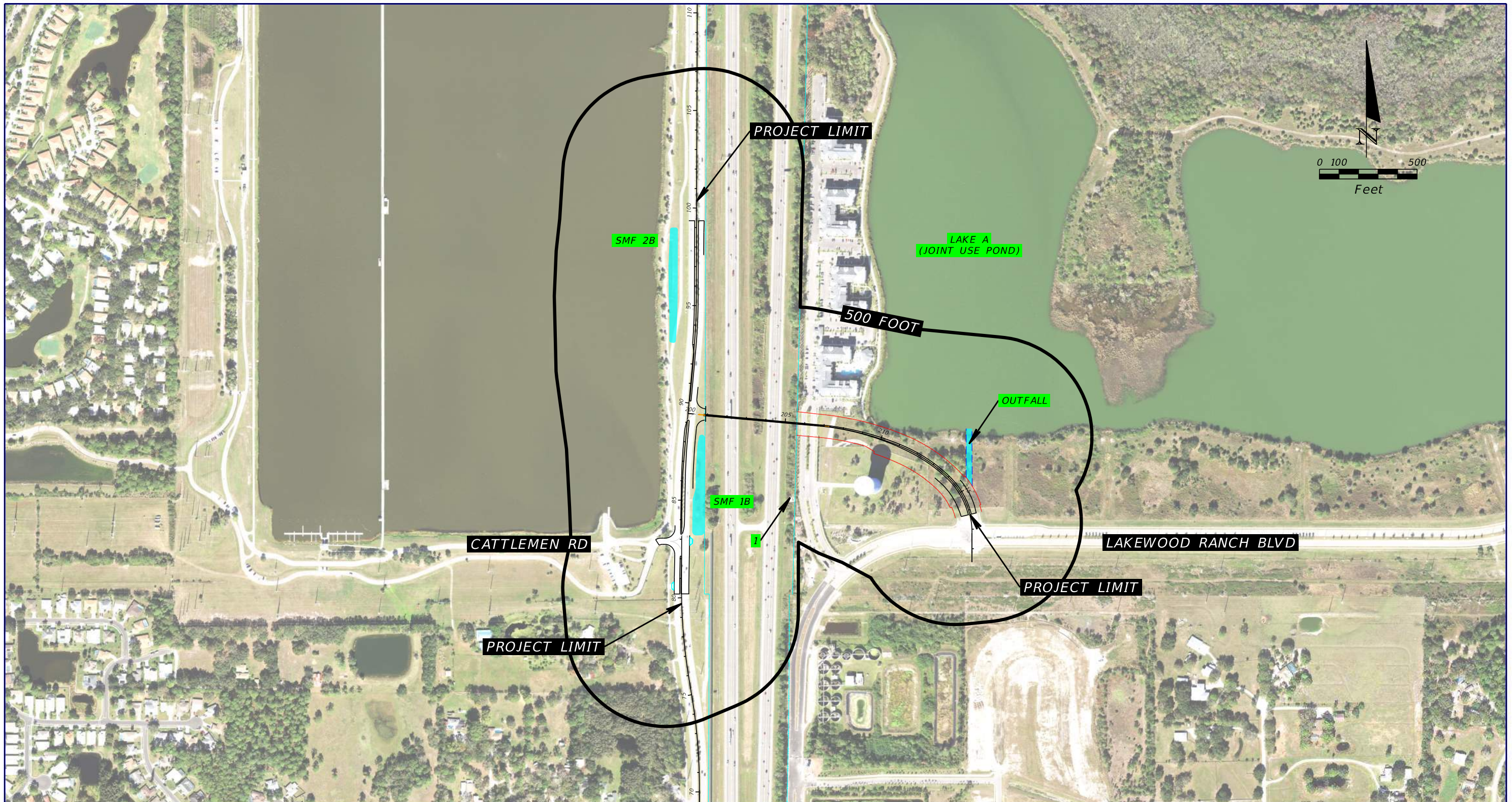
Table 8: Summary of Risk Ratings - Ponds			
High	Medium	Low	No
0	0	0	3

8.2 Recommendations

Based on the conclusions of this study and the risk ratings noted above, the following recommendations are made:

- Additional information may become available or site-specific conditions may change from the time this report was prepared and should be considered prior to acquiring right-of-way and/or proceeding with roadway construction. If the design is altered or changed in any way, this report should be reviewed and modified as necessary.
- For the locations rated No or Low for potential contamination, no further action is required. These sites have been evaluated and determined not to have any contamination risk to the project at this time.
- No sites were rated Medium or High. Therefore, Level II testing is not recommended. Level III support is not anticipated. Additional fees associated with contamination support does not appear warranted.
- Once final design plans are available, additional review is recommended in consideration of dewatering operations that may be necessary under the *National Pollutant Discharge Elimination System Generic Permit for Stormwater Discharges from Large and Small Construction Activities*. Verification testing may be warranted for contamination issues within 500 feet of the dewatering area.

CSER APPENDIX A MAPS



NOTE: SITE 2 IS NOT DEPICTED ON THIS MAP. SEE SHEETS B-4 AND C-1.

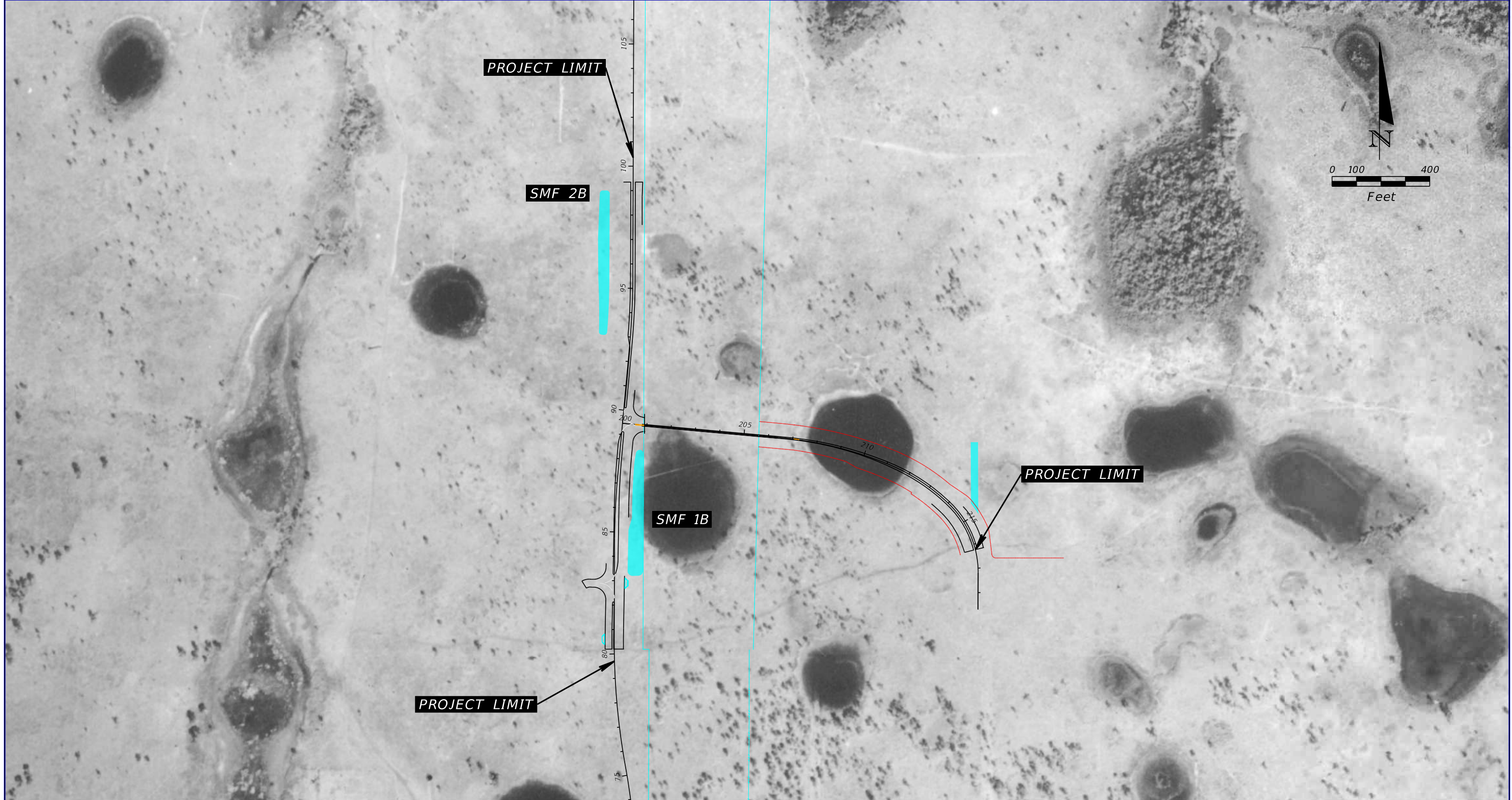
POND ALTERNATIVE AND POTENTIAL CONTAMINATION SITES

SOURCE: FDOT SURVEY AND MAPPING DATED 2020

POND NAME GREEN = NO/LOW RISK SITES
POND NAME RED = HIGH/MEDIUM RISK SITES

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			NORTH SARASOTA MULTIMODAL CONNECTOR PD&E	SHEET NO. A-1
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
			TIERRA PROJECT NO.: 6511-19-154E		SARASOTA	442034-1-21-01		

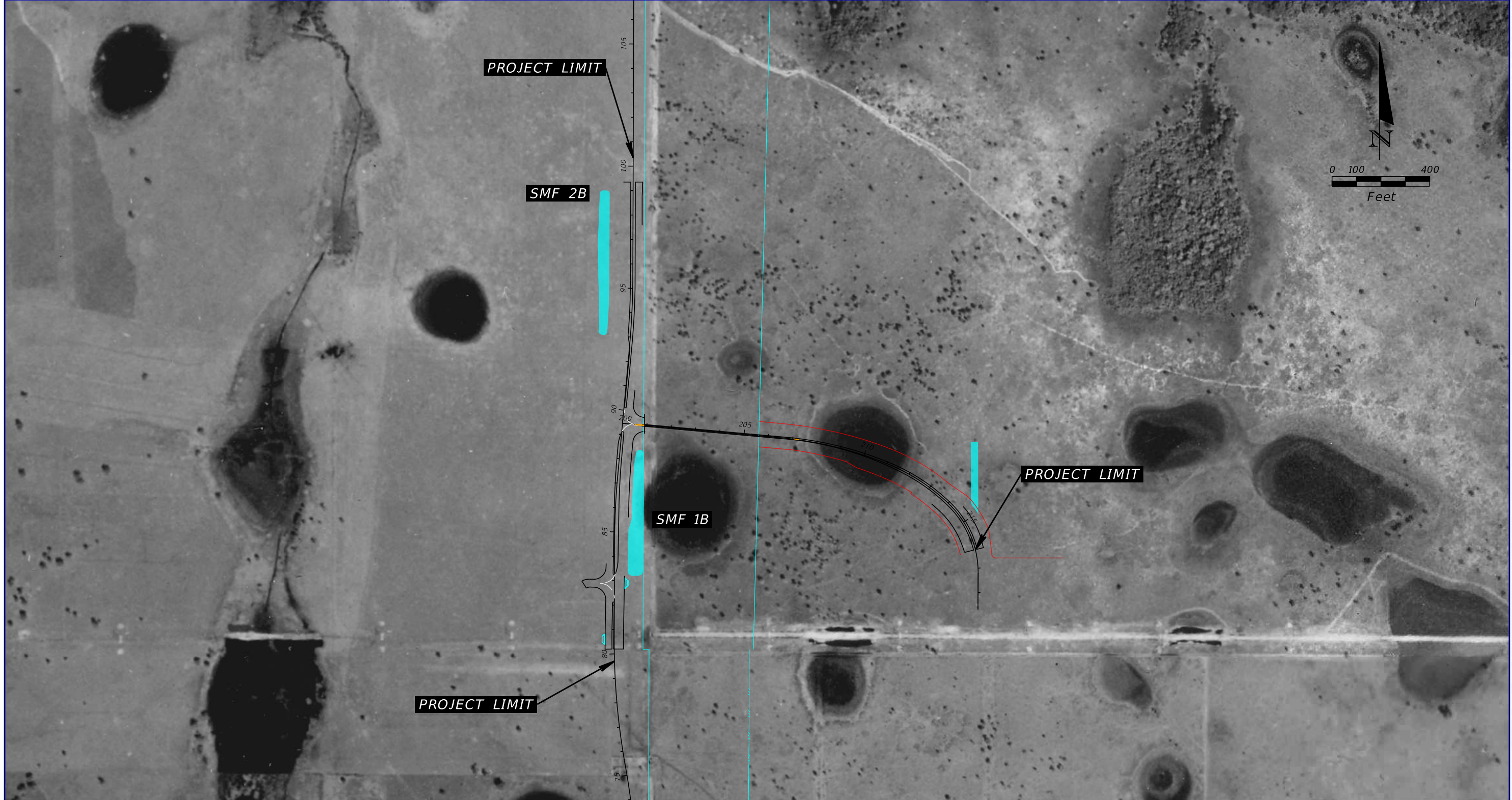
CSER APPENDIX B HISTORICAL AERIAL PHOTOGRAPHS



1948 HISTORICAL AERIAL PHOTOGRAPH

SOURCE: UNIVERSITY OF FLORIDA

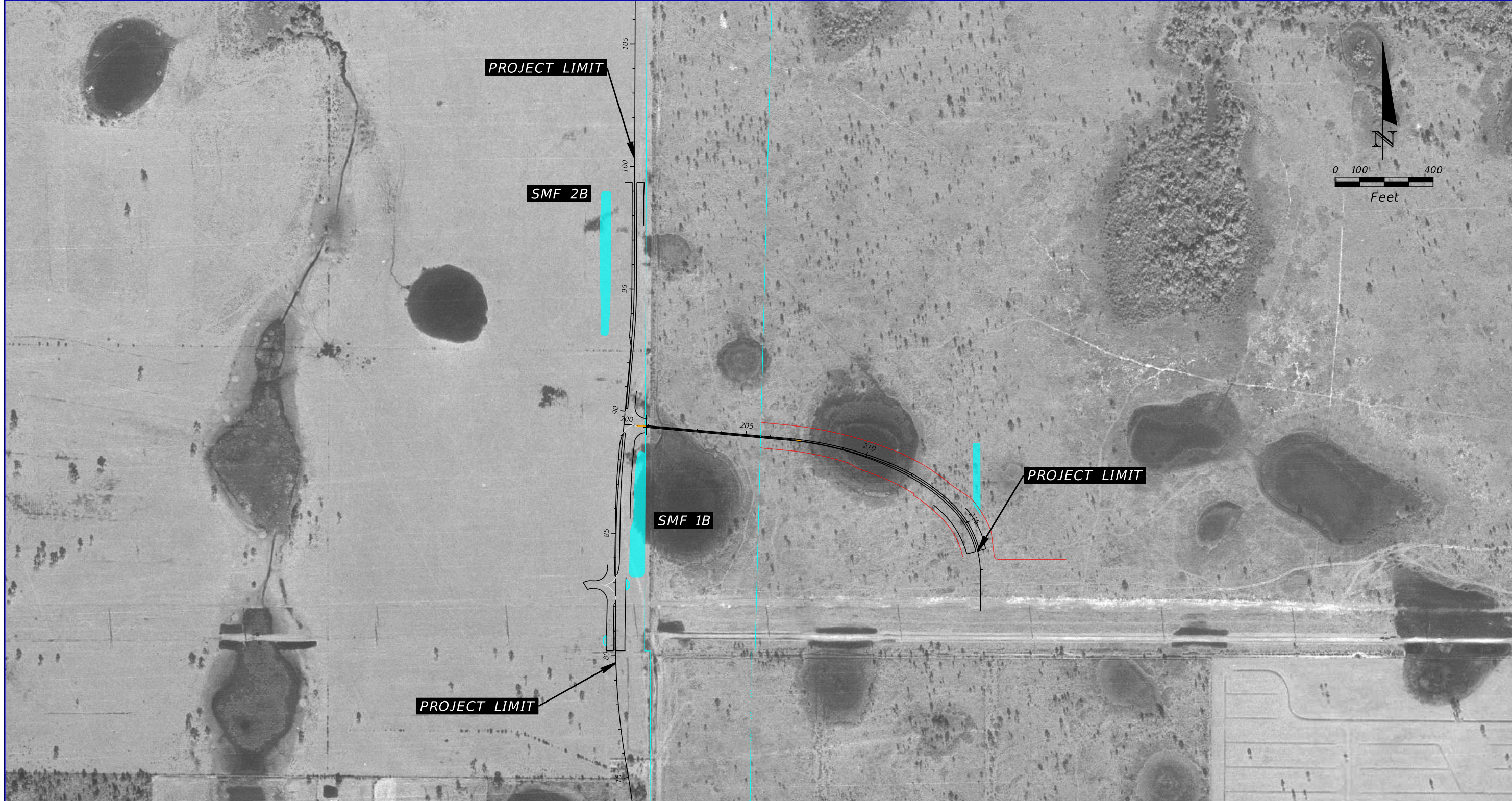
REVISIONS				TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			NORTH SARASOTA MULTIMODAL CONNECTOR PD&E	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		B-1
			TIERRA PROJECT NO.: 6511-19-154E		SARASOTA	442034-1-21-01			



1957 HISTORICAL AERIAL PHOTOGRAPH

SOURCE: UNIVERSITY OF FLORIDA

REVISIONS				TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			NORTH SARASOTA MULTIMODAL CONNECTOR PD&E	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		B-2
			TIERRA PROJECT NO.: 6511-19-154E			SARASOTA	442034-1-21-01		



1969 HISTORICAL AERIAL PHOTOGRAPH

SOURCE: FDOT SURVEY AND MAPPING

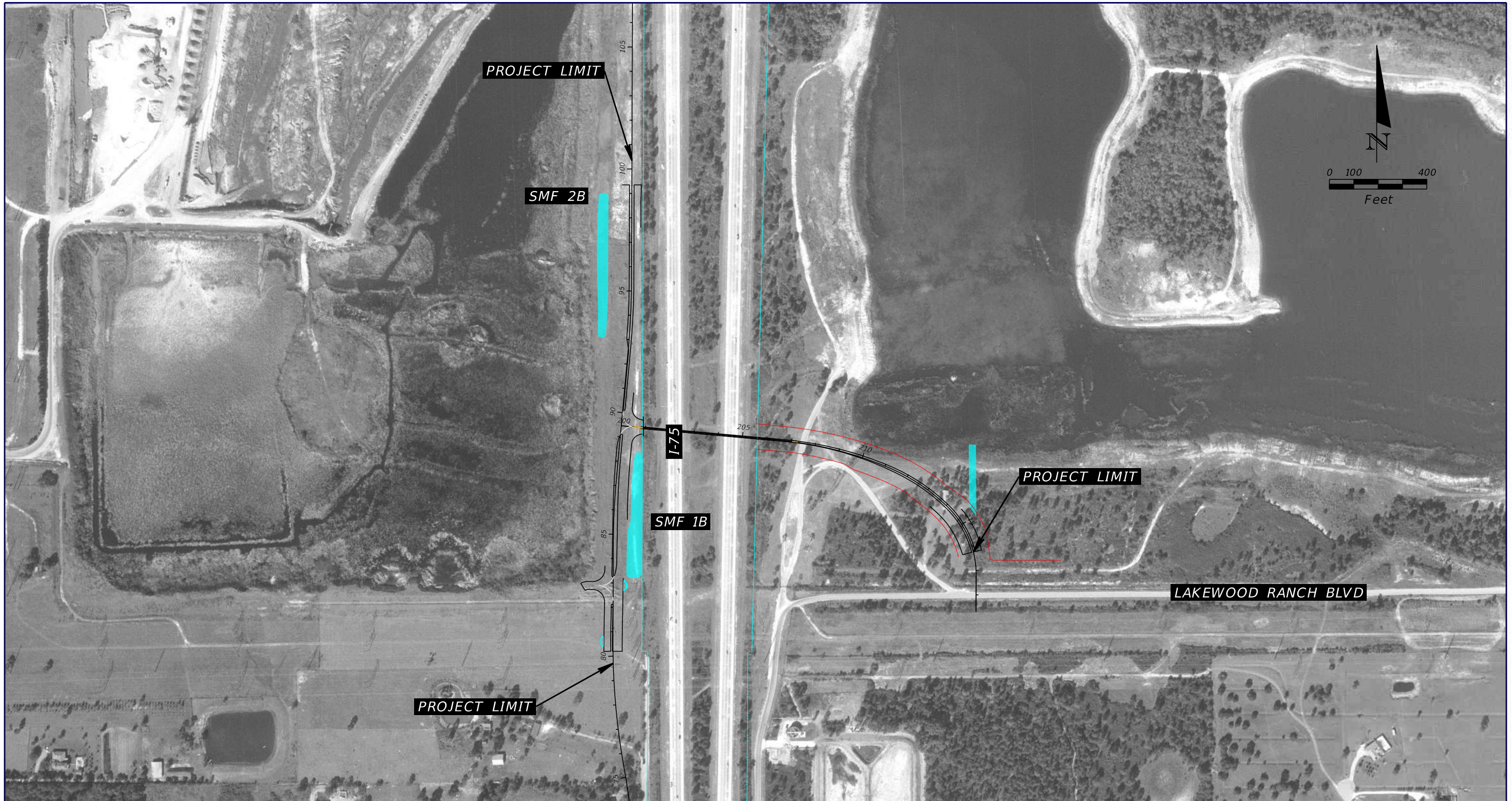
REVISIONS				TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			NORTH SARASOTA MULTIMODAL CONNECTOR PD&E	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		B-3
			TIERRA PROJECT NO.: 6511-19-154E		SARASOTA	442034-1-21-01			



1977 HISTORICAL AERIAL PHOTOGRAPH

SOURCE: FDOT SURVEY AND MAPPING

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			NORTH SARASOTA MULTIMODAL CONNECTOR PD&E	SHEET NO. B-4
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
			TIERRA PROJECT NO.: 6511-19-154E	629	SARASOTA	442034-1-21-01		
				TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637				



1985 HISTORICAL AERIAL PHOTOGRAPH

SOURCE: FDOT SURVEY AND MAPPING

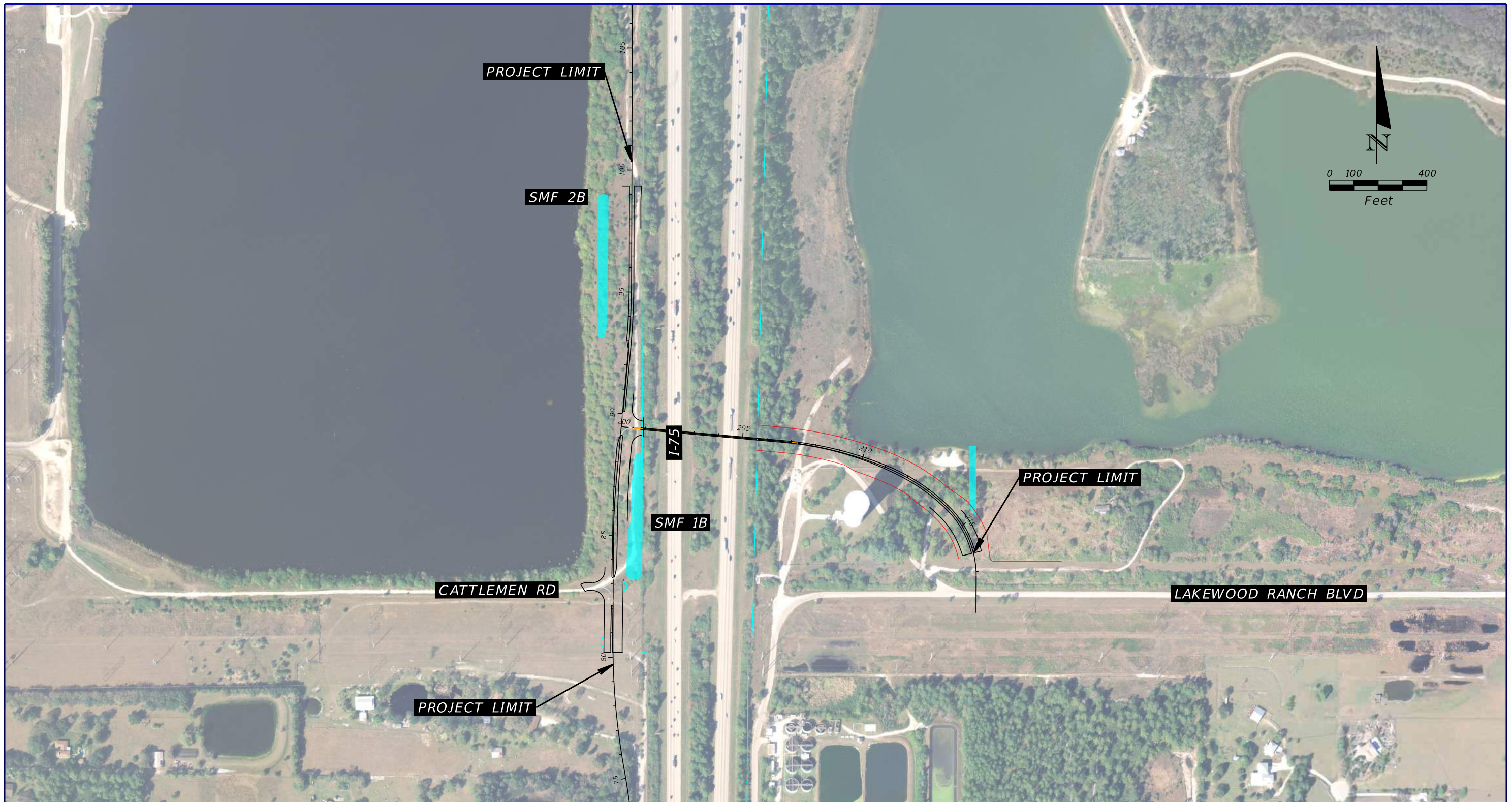
REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			NORTH SARASOTA MULTIMODAL CONNECTOR PD&E	SHEET NO. B-5
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
			TIERRA PROJECT NO.: 6511-19-154E	6511	SARASOTA	442034-1-21-01		



1994 HISTORICAL AERIAL PHOTOGRAPH

SOURCE: FDOT SURVEY AND MAPPING

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			NORTH SARASOTA MULTIMODAL CONNECTOR PD&E	SHEET NO. B-6
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
			TIERRA PROJECT NO.: 6511-19-154E		SARASOTA	442034-1-21-01		



2005 HISTORICAL AERIAL PHOTOGRAPH

SOURCE: FDOT SURVEY AND MAPPING

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			NORTH SARASOTA MULTIMODAL CONNECTOR PD&E	SHEET NO. B-7
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
			TIERRA PROJECT NO.: 6511-19-154E	6-32	SARASOTA	442034-1-21-01		

CSER APPENDIX C USGS TOPOGRAPHIC MAP



USGS TOPOGRAPHIC MAP

SOURCE: USGS 7.5-MINUTE "BEE RIDGE, FLORIDA" DATED 1973, (PHOTOREVISED 1987)

REVISIONS				TIERRA, INC. 7351 TEMPLE TERRACE HIGHWAY TAMPA, FLORIDA 33637	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			NORTH SARASOTA MULTIMODAL CONNECTOR PD&E	SHEET NO. C-1
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
			TIERRA PROJECT NO.: 6511-19-154E		SARASOTA	442034-1-21-01			

CSER APPENDIX D REGULATORY DATABASE REPORT

Environmental Data Report

Custom Radius Research

Subject Property:

Lakewood Ranch Boulevard Overpass
over I-75 to Cattleman Road
Sarasota, Florida

Prepared For:

Tierra Inc
7351 Temple Terrace Hwy
Tampa, FL 33637

Prepared By:



Environmental Data Management, Inc.
2840 West Bay Drive, Suite 208
Largo, Florida 33770

February 23, 2021



February 23, 2021

Justin Holley
Tierra Inc
7351 Temple Terrace Hwy
Tampa, FL 33637

Subject: **Custom Radius Research - EDM Project #25456**

Dear Mr. Holley

Thank you for choosing Environmental Data Management, Inc. The following report provides the results of our environmental data research that you requested for the following location:

**Lakewood Ranch Boulevard Overpass
over I-75 to Cattleman Road
Sarasota, Florida**

The following is a summary of the components contained within this report:

- **Executive Summary** –lists the databases that were searched for this report, the search distance criteria and the number of sites identified for each database.
- **Map of Study Area**– street map showing the location of the Subject Property and any regulatory listed sites identified within the search criteria.
- **Site Summary Table** –displays the Map ID number, Permit or Registration number, Name/Address and the Government Database(s) for the identified regulatory listed sites.
- **Detail Reports** – data detail for each database record identified.
- **Proximal Records Table** – a listing of potentially relevant sites identified just beyond the search criteria.
- **Non-Mapped Records Table** - lists those government records that do not contain sufficient address information to plot within our GIS system, but may still exist within your study area.
- **Addl Maps (where applicable)** – includes Recent Aerial Photo, USGS Topographic maps, FEMA Floodplain & NWI Wetland Map, map of statewide American Indian Lands and our Environmental Impact Areas map, showing the location of suspect sites such as NPL/STNPL, Brownfields, FUDS, etc.... Our Florida well data report is also include with the Standard and Comprehensive formats.
- **Agency List Descriptions** – defines the regulatory databases included in this report along with the dates that each database was last updated by the respective agency and EDM.

At EDM we take great pride in our work, and continually strive to provide you with the most accurate and thorough research service available. This report is only intended as a means to assist in identifying locations that may pose an environmental concern relative to the property under evaluation. Its use is not intended to replace the need for a complete environmental assessment or regulatory file review, but rather as a supplement to the overall evaluation.

Thank you again for selecting EDM as your data research provider. Should you have any questions regarding this report or our service, please feel free to contact us. We appreciate the opportunity to be of service to you and look forward to working with you in the future.

ENVIRONMENTAL DATA MANAGEMENT, INC.

Executive Summary

Report Date: 2/23/2021

Client Information	Project Information
Tierra Inc 7351 Temple Terrace Hwy Tampa, FL 33637 Client Job No: 6511-19-154E Client P.O. No:	Custom Radius Research Lakewood Ranch Boulevard Overpass over I-75 to Cattleman Road Sarasota, Florida EDM Job No# 25456

The following table displays the databases that were included in the research provided and the number of records identified for each database. Site distance values indicated in this report are measured from the boundary of the Subject Property. The absence of records in this table and the Site Summary Tables indicates that our research found no regulated sites within the specified search distances from the Subject Property.

	Total # Found
EPA DATABASES	
National Priorities List(NPL)	0
SEMS Active Site Inventory List(SEMSACTV)	0
Comp Env Resp, Compensation & Liability Info Sys List(CERCLIS)	0
SEMS Archived Site Inventory List(SEMSARCH)	0
Archived Cerclis Sites(NFRAP)	0
RCRIS Handlers with Corrective Action(CORRACTS)	0
Tribal Tanks List(TRIBLTANKS)	0
Tribal Lust List(TRIBLLUST)	0
Brownfields Management System(USBRWNFLDS)	0
Institutional and/or Engineering Controls(USINSTENG)	0
NPL Liens List(NPLLIENS)	0
RCRA-Treatment, Storage and/or Disposal Sites(TSD)	0

*** Disclaimer ***

Please understand that the regulatory databases we utilize were not originally intended for our use, but rather for the source agency's internal tracking of sites for which they have jurisdiction or other interest. As a result of this difference in intended use, their data is frequently found to be incomplete or inaccurate, and is less than ideal for our use. Our report is not to be relied upon for any purpose other than to "point" at approximate locations where further evaluation may be warranted. No conclusion can be based solely upon our report. Rather, our report should be used as a first step in directing your attention at potential problem areas, which should be followed up by site inspections, interviews with relevant personnel, regulatory file review and other means as specified in the ASTM Standard E 1527-13. Readers proceed at their own risk in relying upon this data, in whole or in part, for use within any evaluation. More detailed language with regard to such limitations and our Terms and Conditions may be found on our website at edm-net.com.



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	Total # Found
FDEP DATABASES	
State NPL Equivalent(STNPL)	0
State CERCLIS/SEMS Equivalent(STCERC)	0
Solid Waste Facilities List_Landfills(SLDWST_LF)	0
Solid Waste Facilities List_Non-Landfills(SLDWST_NLF)	0
Leaking Underground Storage Tanks List(LUST)	0
Underground/Aboveground Storage Tanks(TANKS)	0
State Designated Brownfields(BRWNFLDS)	0
Voluntary Cleanup List(VOLCLNUP)	0
Institutional and/or Engineering Controls(INSTENG)	0
Dry Cleaners List(DRY)	0

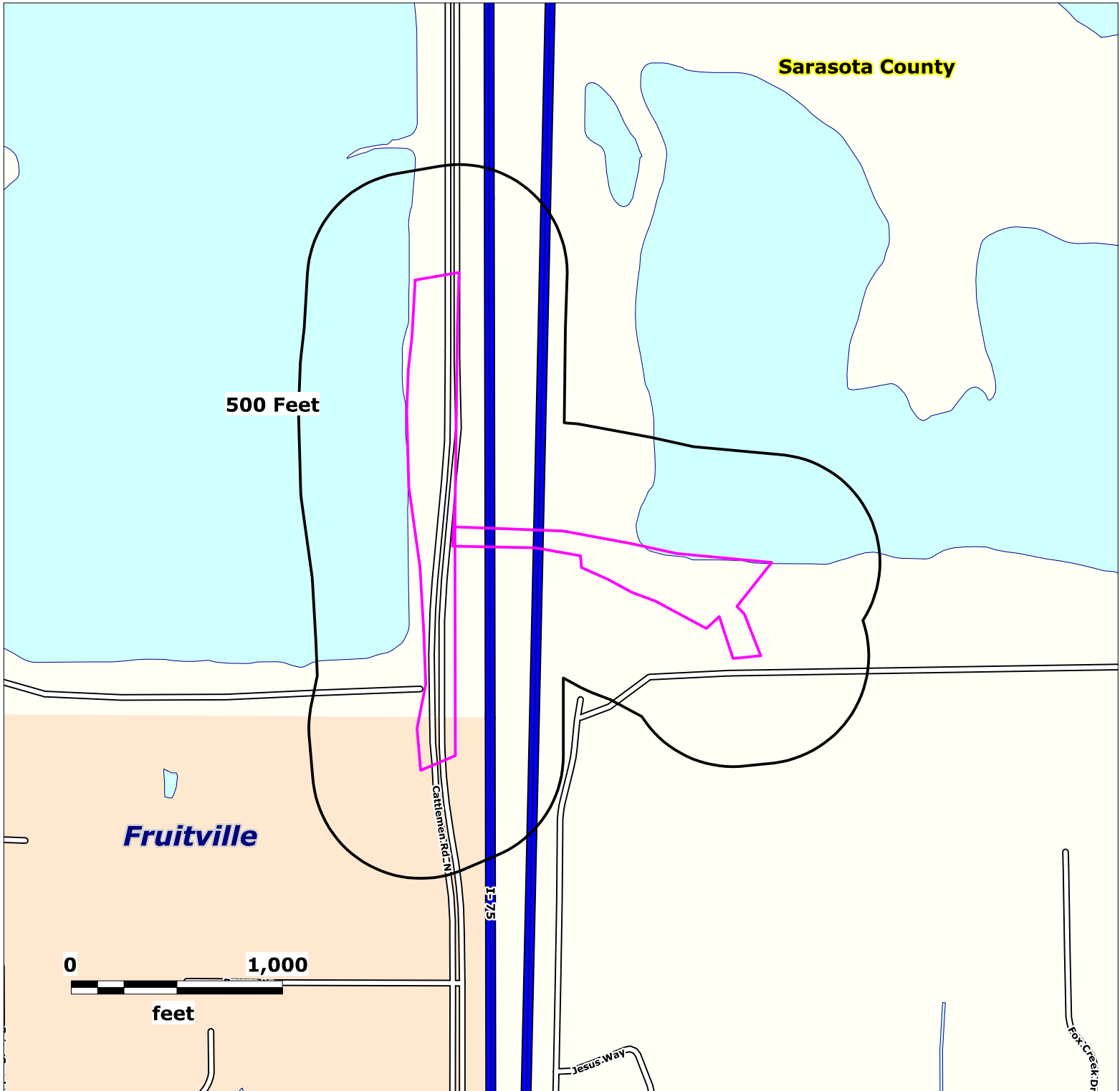
*** Disclaimer ***

Please understand that the regulatory databases we utilize were not originally intended for our use, but rather for the source agency's internal tracking of sites for which they have jurisdiction or other interest. As a result of this difference in intended use, their data is frequently found to be incomplete or inaccurate, and is less than ideal for our use. Our report is not to be relied upon for any purpose other than to "point" at approximate locations where further evaluation may be warranted. No conclusion can be based solely upon our report. Rather, our report should be used as a first step in directing your attention at potential problem areas, which should be followed up by site inspections, interviews with relevant personnel, regulatory file review and other means as specified in the ASTM Standard E 1527-13. Readers proceed at their own risk in relying upon this data, in whole or in part, for use within any evaluation. More detailed language with regard to such limitations and our Terms and Conditions may be found on our website at edm-net.com.



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Source: US Census Bureau TIGER Files

Map Scale and Property Boundaries are Approximate

Subject Property

Lakewood Ranch Boulevard Overpass
over I-75 to Cattleman Road
Sarasota, Florida

Lat (DMS): 27 21' 34.8192"
Lon (DMS): -82 26' 50.2296"

EDM Job No: 25456
February 23, 2021

Approximate Site Boundary



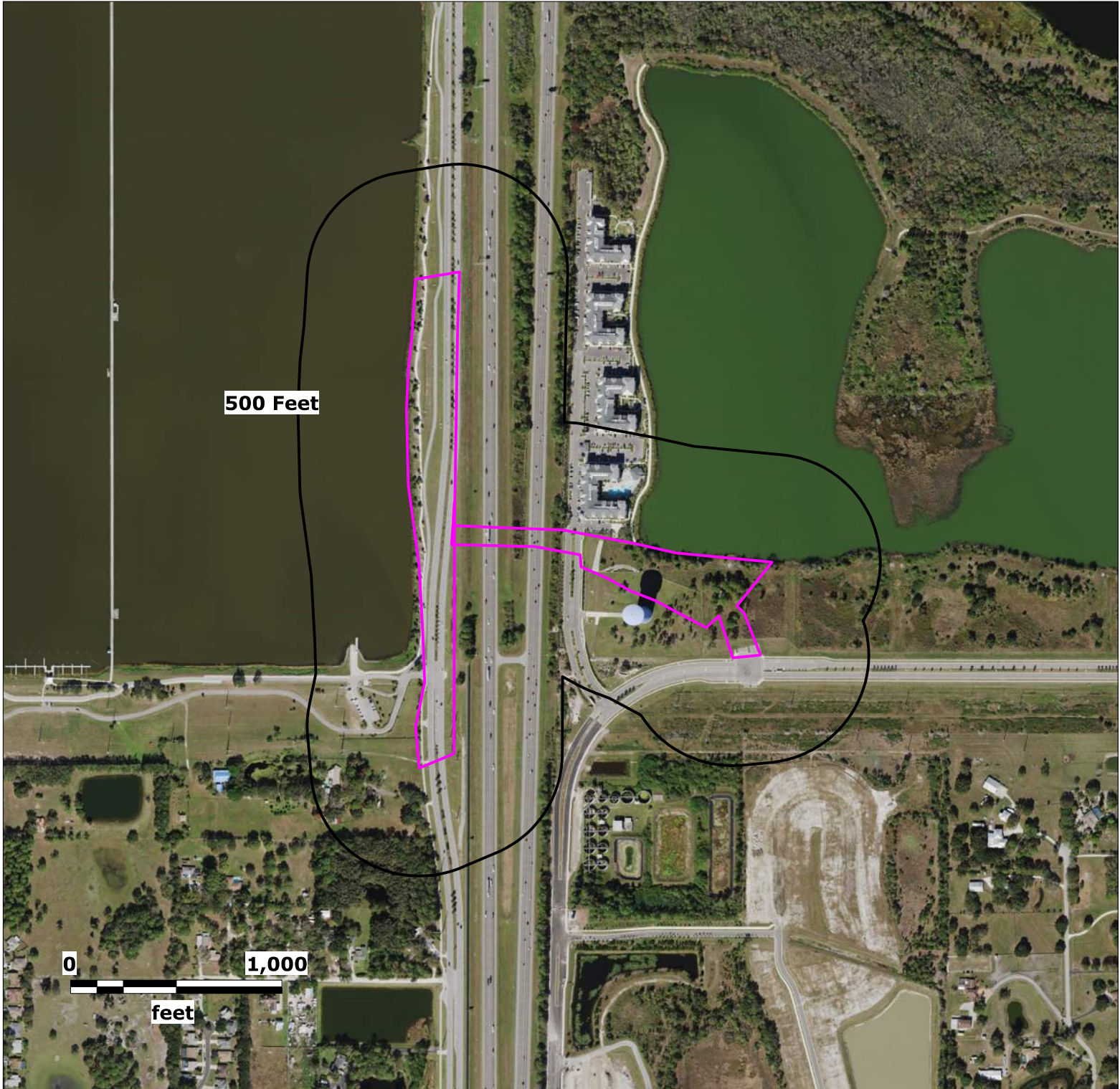
NPL, STNPL, CERCLIS, SEMSACTV,
SEMSARCH and SLDWST_LF sites - 500 Feet



SLDWST_NLF sites - 500 Feet



NPLLIENS, CORRACTS, TSD, NFRAP,
STCERC, LUST, BRWNFLDS, VOLCLNUP,
DRY, TANKS & INSTENG sites - 500 Feet



Source: Florida Department of Transportation

Map Scale and Property Boundaries are Approximate

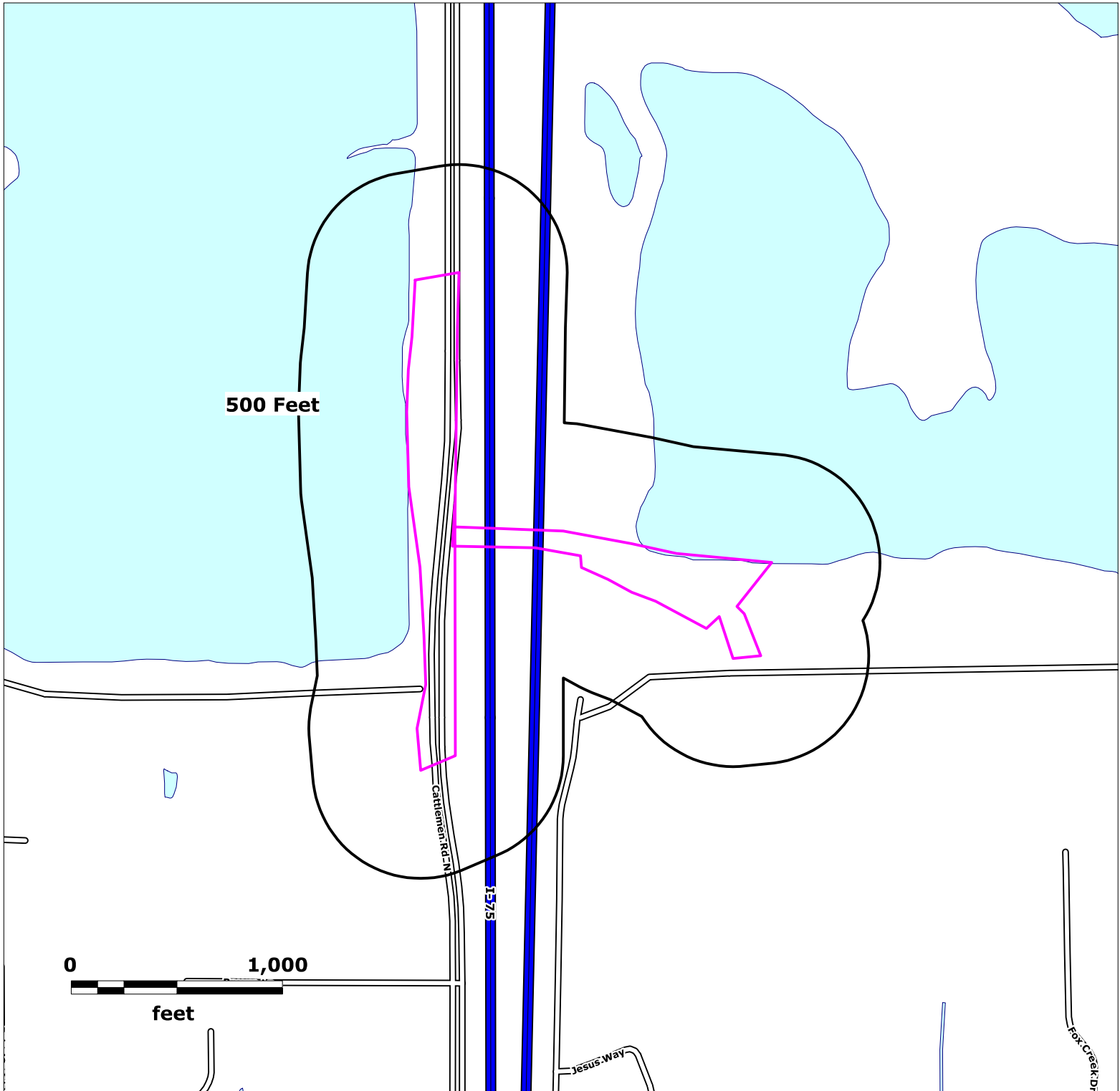
Subject Property

Lakewood Ranch Boulevard Overpass
over I-75 to Cattleman Road
Sarasota, Florida

Lat (DMS): 27 21' 34.8192"
Lon (DMS): -82 26' 50.2296"

EDM Job No: 25456
February 23, 2021

-  **Approximate Site Boundary**
-  **NPL, STNPL, CERCLIS, SEMSACTV, SEMSARCH and SLDWST_LF sites - 500 Feet**
-  **SLDWST_NLF sites - 500 Feet**
-  **NPLLIENS, CORRACTS, TSD, NFRAP, STCERC, LUST, BRWNFLDS, VOLCLNUP, DRY, TANKS & INSTENG sites - 500 Feet**



Source: FDEP and USEPA Geodata

Map Scale and Property Boundaries are Approximate

Subject Property

Lakewood Ranch Boulevard Overpass
over I-75 to Cattleman Road
Sarasota, Florida

Lat (DMS): 27 21' 34.8192"
Lon (DMS): -82 26' 50.2296"

EDM Job No: 25456
February 23, 2021



FDEP Brownfield Areas



FDEP Brownfield Sites



USEPA NPL &
FDEP STNPL Sites



FDEP Delineated
GW Contamination



Formerly Used
Defense Sites
FUDS



FUDS Munitions
Response Areas



FDEP Cattle
Dipping Vat



FDEP Solid
Waste Sites



Approximate Site Boundary



Institutional
Controls

ENVIRONMENTAL DATA MANAGEMENT

Custom Radius Research

Site Summary Table

Report Date: 2/23/2021

Page 1 of 1

MapID	Fac ID No	Site Dist (ft)	Site Elev (ft)	Elev vs Sub Prop	Site Name	Site Address
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ENVIRONMENTAL DATA MANAGEMENT

Custom Radius Research Proximal Site Summary Table

This table includes mapped sites whose plotted coordinates fall just outside of the ASTM or client defined research distance but whose property boundaries may still extend into the search area. These sites are typically large commercial or industrial tracts that may merit inclusion in the evaluation process. Detail data reports on any of these sites may be requested and will be sent as an addendum to this report at no additional cost.

Report Date: 2/23/2021

Page 1 of 1

MapID Prgm List	Fac ID No	Site Dist (ft)	Site Elev (ft)	Elev vs Sub Prop	Site Name	Site Address
1A TANKS	9807899	729	31.81	Higher	SARASOTA CNTY-FRUITVILLE WWTF	1616 WENDEL KENT RD SARASOTA, FL 34240



ENVIRONMENTAL DATA MANAGEMENT

Custom Radius Research Non-Mapped Records Summary Table

This table is a listing of database records that have not been plotted within our mapping system. Detail data reports on any of these sites may be requested and will be sent as an addendum to this report at no additional cost.

Report Date: 2/23/2021

Page 1 of 1

Prgm List Fac ID No	Site Name	Site Address



Agency List Descriptions

USEPA and State Databases are updated on a quarterly basis. Supplemental Databases are updated on an annual basis.

Florida Department of Environmental Protection (FDEP)

State Designated Brownfields(BRWNFLDS)

The FDEP Brownfields database contains a listing of State Designated Brownfield Areas and Brownfield Sites. Brownfields are typically defined as abandoned, idled or underused industrial and commercial sites where expansion or redevelopment is complicated by real or perceived environmental contamination.

Agency File Date: 1/6/2021

Received by EDM: 1/8/2021

EDM Database Updated: 1/8/2021

Dry Cleaners List(DRY)

The FDEP Dry Cleaning Facilities List is comprised of data from the FDEP Storage Tank and Contamination Monitoring (STCM) database and the Drycleaning Solvent Cleanup Program- Priority Ranking List. It contains a listing of those Dry Cleaning sites (and suspected historical Dry Cleaning sites) who have registered with the FDEP and/or have applied for the Dry Cleaning Solvent Cleanup Program.

Agency File Date: 1/8/2021

Received by EDM: 1/8/2021

EDM Database Updated: 1/8/2021

Institutional and/or Engineering Controls(INSTENG)

The FDEP Institutional Controls Registry Database (INSTENG) contains sites that have had Institutional and/or Engineering Controls implemented to regulate exposure to environmental hazards

Agency File Date: 12/31/2020

Received by EDM: 1/8/2021

EDM Database Updated: 1/8/2021

Leaking Underground Storage Tanks List(LUST)

The FDEP LUST list identifies facilities and/or locations that have notified the FDEP of a possible release of contaminants from petroleum storage systems. This Report is generated from the FDEP Storage Tank and Contamination Monitoring Database (STCM).

Agency File Date: 1/8/2021

Received by EDM: 1/8/2021

EDM Database Updated: 1/8/2021

Solid Waste Facilities List_Landfills(SLDWST_LF)

The SLDWST_LF list identifies locations that have conducted solid waste landfill activities as determined by the applicable FDEP Facility Classifications. Sites listed with "##" after the Facility ID Number are historical locations, obtained from documents on record at local agencies.

Agency File Date: 1/14/2021

Received by EDM: 1/14/2021

EDM Database Updated: 1/14/2021

Solid Waste Facilities List_Non-Landfills(SLDWST_NLF)

The SLDWST_NLF list identifies locations that have conducted solid waste handling activities other than landfilling, as determined by the applicable FDEP Facility Classifications, such as Transfer Stations, Disaster Debris Staging Areas and sites handling Bio-Hazardous wastes. Sites listed with "##" after the Facility ID Number are historical locations, obtained from documents on record at local agencies.

Agency File Date: 1/14/2021

Received by EDM: 1/14/2021

EDM Database Updated: 1/14/2021

State CERCLIS/SEMS Equivalent(STCERC)

The STCERC list is compiled from the FDEP Site Investigation Section list, the Florida SITES list(historical) and the FDEP Cleanup Sites list. These sites are being assessed and/or cleaned up as a result of identified or suspected contamination from the release of hazardous substances. The FDEP Cleanup Sites list programs include: Brownfields, Petroleum, EPA Superfund (CERCLA), Drycleaning, Responsible Party Cleanup, State Funded Cleanup, State Owned Lands Cleanup and Hazardous Waste Cleanup.

Agency File Date: 1/26/2021

Received by EDM: 1/26/2021

EDM Database Updated: 1/26/2021

State NPL Equivalent(STNPL)

The FDEP State Funded Cleanup list contains facilities and/or locations where there are no viable responsible parties; the site poses an imminent hazard; and the site does not qualify for Superfund or is a low priority for EPA. Remedial efforts at these sites are currently being addressed through State funded cleanup action.

Agency File Date: 1/13/2020

Received by EDM: 12/2/2020

EDM Database Updated: 12/2/2020

Underground/Aboveground Storage Tanks(TANKS)

The FDEP TANKS list contains sites with registered aboveground and underground storage tanks containing regulated petroleum products.

Agency File Date: 11/19/2020

Received by EDM: 11/19/2020

EDM Database Updated: 11/20/2020

Voluntary Cleanup List(VOLCLNUP)

The VOLCLNUP List is derived from the FDEP Brownfields Site Rehabilitation Agreement (BSRA) database and the FDEP Office of Waste Cleanup Responsible Party Sites database. This list identifies those sites that have signed an agreement to Voluntarily cleanup a site and/or sites where legal responsibility for site rehabilitation exists pursuant to Florida Statutes and is being conducted either voluntarily or pursuant to enforcement activity.

Agency File Date: 1/26/2021

Received by EDM: 1/26/2021

EDM Database Updated: 1/26/2021

United States Environmental Protection Agency (EPA)

Comp Env Resp, Compensation & Liability Info Sys List(CERCLIS)

The US EPA Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database tracks potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are proposed to be on the NPL, are on the NPL and sites that are in the screening and assessment phase for possible inclusion on the NPL. The CERCLIS database was retired in November of 2013 and has been replaced by the Superfund Enterprise Management System (SEMS).

Agency File Date: 11/12/2013

Received by EDM: 2/18/2016

EDM Database Updated: 2/18/2016

RCRIS Handlers with Corrective Action(CORRACTS)

The US EPA Corrective Action Sites (CORRACTS) database is a listing of hazardous waste handlers that have undergone RCRA corrective action activity.

Agency File Date: 1/25/2021

Received by EDM: 1/26/2021

EDM Database Updated: 1/26/2021

Archived Cerclis Sites(NFRAP)

The US EPA NFRAP list contains archived data of CERCLIS records where the EPA has completed assessment activities and determined that no further steps to list the site on the NPL will be taken. NFRAP sites may be reviewed in the future to determine if they should be returned to CERCLIS based upon newly identified contamination problems at the site. The NFRAP database was retired in November of 2013 and has been replaced by the Superfund Enterprise Management System (SEMS).

Agency File Date: 10/25/2013

Received by EDM: 2/18/2016

EDM Database Updated: 2/18/2016

National Priorities List(NPL)

The US EPA National Priorities List (NPL) contains facilities and/or locations where environmental contamination has been confirmed and prioritized for cleanup activities under the Superfund Program. EDM's NPL Report includes sites that are currently on the NPL as well as sites that have been Proposed, Withdrawn and/or Deleted from the list. Previously, information for the NPL was managed under the CERCLIS data management system. In 2014 this system was replaced with the Superfund Enterprise Management System (SEMS). EPA last updated CERCLIS in November of 2013. EDM's NPL Report contains available SEMS data and the archived CERCLIS data relative to NPL sites.

Agency File Date: 12/30/2020

Received by EDM: 1/27/2021

EDM Database Updated: 1/27/2021

NPL Liens List(NPLLIENS)

The US EPA NPL Liens List identifies those sites where under authority granted by CERCLA, liens have been filed against real property in order to recover expenditures from remedial action or when the property owner receives a notice of potential liability.

Agency File Date: 12/30/2020

Received by EDM: 1/27/2021

EDM Database Updated: 1/27/2021

SEMS Active Site Inventory List(SEMSACTV)

The US EPA Superfund Enterprise Management System (SEMS) tracks potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. The SEMSACTV list contains sites that are on the National Priorities List (NPL) as well as sites that are proposed for or in the screening and assessment phase for possible inclusion on the NPL. SEMS has replaced the CERCLIS database, which was retired in November of 2013.

Agency File Date: 1/28/2021

Received by EDM: 2/5/2021

EDM Database Updated: 2/5/2021

SEMS Archived Site Inventory List(SEMSARCH)

The US EPA Superfund Enterprise Management System (SEMS), contains archived data of CERCLIS or SEMS records where the EPA has completed assessment activities and determined that no further steps to list the site on the NPL will be taken. These sites may be reviewed in the future to determine if they should be returned to SEMS based upon newly identified contamination problems at the site. SEMS has replaced the CERCLIS database, which was retired in November of 2013. The SEMSARCH database contains these newly archived records under the SEMS database management system.

Agency File Date: 1/28/2021

Received by EDM: 2/5/2021

EDM Database Updated: 2/5/2021

Tribal LUST List(TRIBLLUST)

EDM's Tribal LUST list is derived from the USEPA Region IV Tribal Tanks database by extracting those sites with indicators of past and/or current releases.

Agency File Date: 2/24/2010

Received by EDM: 3/9/2010

EDM Database Updated: 3/9/2010

Tribal Tanks List(TRIBLTANKS)

The USEPA Region IV Tribal Tanks database lists Active and Closed storage tank facilities on Native American lands.

Agency File Date: 2/24/2010

Received by EDM: 3/9/2010

EDM Database Updated: 3/9/2010

RCRA-Treatment, Storage and/or Disposal Sites(TSD)

The EDM TSD list is a subset of the US EPA RCRAInfo system and identifies facilities that Treat, Store and/or Dispose of hazardous waste.

Agency File Date: 1/25/2021

Received by EDM: 1/27/2021

EDM Database Updated: 1/27/2021

Brownfields Management System(USBRWNFLDS)

The US EPA Brownfields program provides information on environmentally distressed properties that have received Grants or Targeted funding for cleanup and redevelopment. Tribal Brownfield sites are included in the USBRWNFLDS database.

Agency File Date: 2/5/2021

Received by EDM: 2/5/2021

EDM Database Updated: 2/5/2021

Institutional and/or Engineering Controls(USINSTENG)

The USINSTENG list is compiled from data elements contained in the NPL, CORRACTS, USBRWNFLDS and RCRAInfo databases.

Agency File Date: 2/5/2021

Received by EDM: 2/5/2021

EDM Database Updated: 2/5/2021

Environmental Impact Areas

Brownfield Areas and Sites

The FDEP Brownfields database contains a listing of State Designated Brownfield Areas and Brownfield Sites. Brownfields are typically defined as abandoned, idled or underused industrial and commercial sites where expansion or redevelopment is complicated by real or perceived environmental contamination.

Agency File Date: 1/6/2021

Received by EDM: 1/8/2021

EDM Database Updated: 1/8/2021

<https://floridadep.gov/waste/waste-cleanup/content/brownfields-program>

Cattle Dipping Vats

From the 1910's through the 1950's, vats were filled with an arsenic solution for the control and eradication of the cattle fever tick. Other pesticides such as DDT were also widely used. By State law, all cattle, horses, mules, goats, and other susceptible animals were required to be dipped every 14 days. Under certain circumstances, the arsenic and other pesticides remaining at the site may present an environmental or public health hazard.

Some of the sites have been located and are currently under investigation. However, most of the listings are from old records of the State Livestock Board, which listed each vat as it was put into operation. In addition, some privately operated vats may have existed which were not listed by the Livestock Board. EDM's Cattle Dipping Vat sites are retrieved from the Voluntary Cleanup and STCERC databases. For additional information on Cattle Dipping Vats visit the FDEP and FDOH websites at:

Agency File Date: 10/31/2018

Received by EDM: 1/25/2019

EDM Database Updated: 1/25/2019

<https://floridadep.gov/waste/district-business-support/content/cattle-dipping-vats-cdv>

<http://www.floridahealth.gov/environmental-health/drinking-water/cattledipathome.html>

Formerly Used Defense Sites

The DoD is responsible for the environmental restoration of properties that were formerly owned by, leased to or otherwise possessed by the United States and operated under the jurisdiction of the Secretary of Defense prior to October 1986. Such properties are known as Formerly Used Defense Sites (FUDS). The Army is the executive agent for the program and the U.S. Army Corps of Engineers manages and directs the program's administration. For more information on the FUDS Program, including maps and data on individual sites, visit the Army Corps of Engineers website at:

Agency File Date: 5/29/2018

Received by EDM: 1/25/2019

EDM Database Updated: 1/25/2019

<http://www.usace.army.mil/Missions/Environmental/Formerly-Used-Defense-Sites/>

FUDS Munitions Response Sites

The DoD developed the Military Munitions Response Program (MMRP) in 2001 to address munitions-related concerns, including explosive safety, environmental, and health hazards from releases of unexploded ordnance (UXO), discarded military munitions (DDM), and munitions constituents (MC) found at locations, other than operational ranges, on active and Base Realignment and Closure (BRAC) installations and Formerly Used Defense Sites (FUDS) properties. The MMRP addresses non-operational range lands with suspected or known hazards from munitions and explosives of concern (MEC) which occurred prior to September 2002, but are not already included with an Installation Response Program (IRP) site cleanup activity. For more information on the FUDS MMRP Program, including maps and data on individual sites, visit the Army Corps of Engineers website at:

Agency File Date: 5/14/2018

Received by EDM: 1/25/2019

EDM Database Updated: 1/25/2019

<http://www.asaie.army.mil/Public/ESOH/mmrp.html>

Groundwater Contamination Areas

The Ground Water Contamination Areas GIS layer is a statewide map showing the boundaries of delineated areas of known groundwater contamination pursuant to Chapter 62-524, F.A.C., New Potable Water Well Permitting In Delineated Areas. 38 Florida counties have been delineated primarily for the agricultural pesticide ethylene dibromide (EDB), and to a much lesser extent, volatile organic and petroleum contaminants. This GIS layer represents approximately 427,897 acres in 38 counties in Florida that have been delineated for groundwater contamination. However, it does not represent all known sources of groundwater contamination for the state of Florida.

This information is intended to be used by regulatory agencies issuing potable water well construction permits in areas of ground water contamination to protect public health and the ground water resource. Permitted water wells in these areas must meet specific well construction criteria and water testing prior to well use. This dataset only indicates the presence or absence of specific groundwater contaminants and does not represent all known sources of groundwater contamination in the state of Florida.

Agency File Date: 11/28/2018

Received by EDM: 1/24/2019

EDM Database Updated: 1/24/2019

<https://floridadep.gov/water/source-drinking-water/content/delineated-areas>

Institutional Controls

The FDEP Institutional Controls GIS layer is a statewide map showing the approximate boundaries of delineated areas where Institutional Controls are in place.

An institutional control provides for certain restrictions on a property. For example, a site may be cleaned up to satisfy commercial contamination target levels and an institutional control may be placed on that property indicating that it may only be used for commercial activities. If the owner of the property ever wanted to use that property for residential purposes, the owner would have to ensure that any contamination meets residential target levels.

The locational data for this layer is provided by the responsible party and reviewed by FDEP staff. Neither FDEP or EDM assumes responsibility for the accuracy of the boundary data.

Agency File Date: 12/30/2020

Received by EDM: 1/8/2021

EDM Database Updated: 1/8/2021

<https://ca.dep.state.fl.us/mapdirect/?webmap=cff8d21797184421ab4763d3e4a01e48>

National Priorities List

The US EPA National Priorities List (NPL) contains facilities and/or locations where environmental contamination has been confirmed and prioritized for cleanup activities under the Superfund Program. EDM's NPL site boundaries data include sites that are currently on the NPL as well as sites that have been Proposed, Withdrawn and/or Deleted from the list.

Agency File Date: 11/14/2018

Received by EDM: 12/10/2018

EDM Database Updated: 1/22/2019

<https://www.epa.gov/superfund/search-superfund-sites-where-you-live>

Solid Waste Facilities

The FDEP SLDWST list identifies locations that have been permitted to conduct solid waste handling activities.

Agency File Date: 1/23/2019

Received by EDM: 1/24/2019

EDM Database Updated: 1/25/2019

<https://floridadep.gov/waste>

State Funded Cleanup Sites

The FDEP State Funded Cleanup list contains facilities and/or locations where there are no viable responsible parties; the site poses an imminent hazard; and the site does not qualify for Superfund or is a low priority for EPA. Remedial efforts at these sites are currently being addressed through State funded cleanup action.

Agency File Date: 8/10/2019

Received by EDM: 8/12/2019

EDM Database Updated: 8/12/2019

<https://floridadep.gov/waste/waste-cleanup/documents/state-funded-cleanup-program-site-list>

CSER APPENDIX E SITE PHOTOGRAPHS

Site Photos



Lakewood Ranch Boulevard looking north along proposed ROW



Picnic area within proposed ROW located approximately 250 feet north of the Lakewood Ranch Boulevard project limit



East of I-75 looking east along proposed ROW.



Cattlemen Road south project limit looking north



Near Cattlemen Road north project limit looking south



Southern area of SMF 1B looking north



Southern area of SMF 2B looking north

APPENDIX H
WETLAND AND SURFACE WATER SUMMARY

Wetlands and Surface Waters		SMF 1a (Acreage)	SMF 1b (Acreage)	SMF 2a (Acreage)	SMF 2b (Acreage)	SMF 3a (Acreage)	SMF 3b (Acreage)
<i>FLUCFCS Code</i> ¹	<i>FLUCFCS Description</i> ¹						
510	Streams and Waterways	0.00	0.32	0.00	0.83	0.00	0.00
Total Wetlands and Surface Waters		0.00	0.32	0.00	0.83	0.00	0.00
Threatened and Endangered Species		SMF 1a	SMF 1b	SMF 2a	SMF 2b	SMF 3a	SMF 3b
Federally-Listed Plants		Low	Low	Low	Low	Low	Low
State-Listed Plants		Low	Low	Low	Low	Low	Low
American alligator (<i>Alligator mississippiensis</i>)		None	Low	None	Low	None	None
Eastern Indigo Snake (<i>Drymarchon couperi</i>)		Low	Low	Low	Low	Low	Low
Gopher Tortoise (<i>Gopherus polyphemus</i>)		Low	Low	Low	Low	Moderate	Moderate
Short-tailed Snake (<i>Lampropeltis extenuata</i>)		Low	Low	Low	Low	Low	Low
Florida Pine Snake (<i>Pituophis melanoleucus mugitus</i>)		Low	Low	Low	Low	Low	Low
Florida Sandhill Crane (<i>Antigone canadensis pratensis</i>)		Low	Moderate	Low	Moderate	Moderate	Moderate
Florida Scrub-jay (<i>Aphelocoma coerulescens</i>)		None	None	None	None	None	None
Florida Burrowing Owl (<i>Athene cunicularia floridana</i>)		None	Low	Low	Low	Low	Low
Little Blue Heron (<i>Egretta caerulea</i>)		None	Moderate	None	Moderate	None	None
Tricolored Heron (<i>Egretta tricolor</i>)		None	Moderate	None	Moderate	None	None
Southeastern American Kestrel (<i>Falco sparverius paulus</i>)		None	None	None	None	Low	Low
Bald Eagle (<i>Haliaeetus leucocephalus</i>)		None	None	None	None	Low	Low
Roseate Spoonbill (<i>Platalea ajaja</i>)		None	Moderate	None	Moderate	None	None
Wood Stork (<i>Mycteria americana</i>)		None	Moderate	None	Moderate	None	None
Florida Bonneted Bat (<i>Eumops floridanus</i>)		None	None	None	None	None	None
Overall Wildlife Potential		Low	Low	Low	Low	Low	Low

¹FDOT 1999.

APPENDIX I
ARCHAEOLOGICAL
SUMMARY

Name	Acreage	Soils	Archaeological Probability	Field Results	Results	Recommendations
SMF 1A	0.47	Poorly drained	Low	previously surveyed (FMSF Survey No. 16838)	No cultural material	No further work recommended
SMF 1B	0.95	Poorly drained	Low	1	No cultural material	No further work recommended
SMF 2A	0.47	Poorly drained	Low	disturbed; testing not possible	No cultural material	No further work recommended
SMF 2B	0.98	Poorly drained and disturbed	Low	disturbed; testing not possible	No cultural material	No further work recommended
SMF 3A	1.14	Disturbed	Low	3	No cultural material	No further work recommended
SMF 3B	0.92	Disturbed	Low	2	No cultural material	No further work recommended