Truck and Freight Alternative Site Analysis Project Development and Environment (PD&E) Study

I-4 Corridor in Osceola, Orange, Seminole, and Volusia Counties, Florida

Conceptual Drainage Report

FINAL

FDOT Office
District Five

Authors
Inwood Consulting Engineers, Inc.

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

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PROFESSIONAL ENGINEER CERTIFICATION
CONCEPTUAL DRAINAGE REPORT

Project: Truck and Freight Alternative Site Analysis PD&E Study

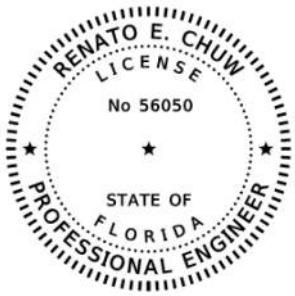
ETDM Number: N/A

Financial Project ID: 447724-1-22-01

Federal Aid Project Number: N/A

This Conceptual Drainage Report contains engineering information that fulfills the purpose and need for the Truck and Freight Alternative Site Analysis PD&E Study in Osceola, Orange, Seminole, and Volusia Counties, Florida. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering as applied through professional judgment and experience.

I hereby certify that I am a registered professional engineer in the State of Florida practicing with Inwood Consulting Engineers, and that I have prepared or approved the evaluation, findings, opinions, conclusions or technical advice for this project.



This item has been digitally signed and sealed by Renato Chuw, PE on the date adjacent to the seal.

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EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) is conducting the *Truck and Freight Site Analysis Project Development and Environment (PD&E) study* to identify, evaluate, and recommend viable candidate truck and freight parking sites along or near the I-4 corridor within Osceola, Orange, Seminole, and Volusia Counties that are viable for private and public operator use. The study limits extend from Osceola County north to Volusia County encompassing a 75-mile-long project study area and spanning approximately one mile from I-4 within the four counties. In heavily industrialized areas, the initial study area was expanded to approximately three to five miles from the I-4 corridor. An initial screening of the study area was conducted to identify alternatives that met the purpose and need for the project. The initial alternatives were further screened to identify viable alternatives that minimize environmental and community impacts while addressing the purpose and need for the project.

As a result of the initial alternatives analysis conducted during the PD&E Study, seven viable truck parking sites within the four-county area were identified. The goal of the study was to identify at least one truck parking facility within each county to serve regional freight demand in Central Florida and balance the parking available throughout the I-4 corridor. The seven viable sites provide a total of approximately 1114 truck parking spaces to accommodate existing and future needs. One viable site was identified in Osceola County (234 spaces) and Seminole County (156 spaces), two viable sites within Volusia County (total of 528 spaces), and three viable sites within Orange County (total of 196 spaces). All the sites are located within unincorporated areas except for the Volusia County sites with one located within the City of Port Orange and one located within the City of Daytona Beach.

As a result of the engineering and environmental analyses completed during this study and the comprehensive public engagement plan, five of the seven sites are being advanced for project development and are programmed for the final Design phase. The Seminole County site is being developed as part of a separate project as a PD&E Study Reevaluation for the I-4 Beyond the Ultimate (BTU) Segment 3 project (FPID: 242592-4). The Recommended Alternative for the *Truck and Freight Site Analysis PD&E Study* includes four sites: Osceola County Site 1, Orange County Site 1, Volusia County Site 1A (Eastbound), and Volusia County 1B (Westbound). A map of the study limits and recommended sites is provided in **Figure 1-1**.

The purpose of this Conceptual Drainage Report is to discuss, analyze, and identify the stormwater management plan for the proposed improvements based on environmental, hydrology and hydraulics, and economic factors. Stormwater management for water quality treatment and runoff attenuation will be provided using wet detention and dry retention ponds. The design of the drainage and stormwater facilities will comply with the standards set forth by the FDOT Drainage Manual and St Johns River Water Management District (SJRWMD) and South Florida Water Management District (SFWMD) Environmental Resource Permit (ERP) manuals.

Pond sites have been identified within the project site limits. The analysis estimates pond area needs using a volumetric analysis, accounting for water quality treatment and water quantity for runoff attenuation. Please note that the volumetric analysis of the pond sites is performed with preliminary data, reasonable engineering judgment, and assumptions. Pond sites and configurations may change during final design as more detailed information on Seasonal High Water Table (SHWT), wetland hydrologic information, and finished floor elevations become available. Please refer to **Table 1-1** for a **Summary of Recommended Stormwater Pond Requirements**.

Table 1-1: Summary of Recommended Stormwater Pond Requirements

Freight Parking Site	Required Treatment + Attenuation (ac-ft)	Provided Treatment + Attenuation (ac-ft)	Pond Area (ac)
Osceola County – Site 1	14.39	14.39	11.38
Orange County – Site 1	8.52	8.67	5.01
Orange County – Site 2	1.35	1.48	1.44
Orange County – Site 4	0.52	0.57	0.91
Seminole County – Site 1B	6.16	6.32	4.17
Volusia County – Site 1A	8.68	8.77	7.15
Volusia County – Site 1B	11.71	13.64	10.17
Total:	51.33	53.84	40.23

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SECTION 1 INTRODUCTION

1.1 PROJECT DESCRIPTION

The Florida Department of Transportation (FDOT) is conducting the *Truck and Freight Site Analysis Project Development and Environment (PD&E) Study* to identify, evaluate, and recommend viable candidate truck and freight parking sites along or near the I-4 corridor within Osceola, Orange, Seminole, and Volusia Counties that are viable for private and public operator use. In 2018, FDOT conducted a state-wide truck parking study to assess existing truck parking and future demand. The study found the I-4 corridor is the most critical corridor for truck parking needs in the state, specifically between the Osceola/Polk County Line and I-95. Based on the 2018 study, the I-4 corridor with FDOT District 5 was found to need 481 truck parking spaces; however, there are currently only 36 truck parking spaces available throughout the I-4 corridor located at the Longwood Truck Parking facility.

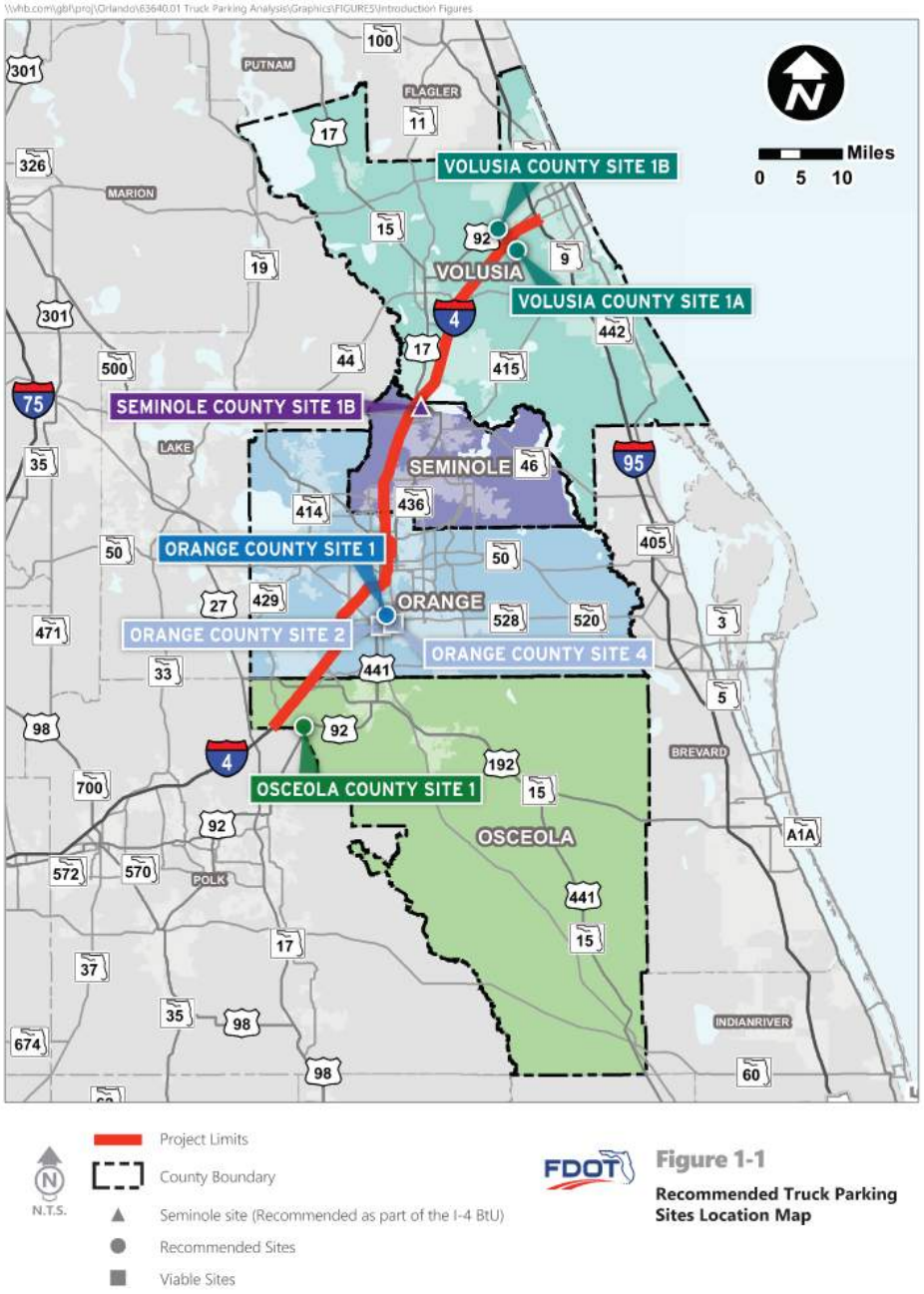
The goal of the PD&E Study is to identify at least one truck parking facility within each county to serve regional freight demand in Central Florida and balance the parking available throughout the I-4 corridor. An initial screening of the study area was conducted to identify alternatives that met the purpose and need for the project. The initial alternatives were further screened to identify viable alternatives that minimize environmental and community impacts while addressing the purpose and need for the project. As a result of the initial alternatives analysis conducted during the PD&E Study, seven viable truck parking sites within the four-county area were identified. The goal of the study was to identify at least one truck parking facility within each county to serve regional freight demand in Central Florida and balance the parking available throughout the I-4 corridor. The seven viable sites provide a total of approximately 1114 truck parking spaces to accommodate existing and future needs. One viable site was identified in Osceola County (234 spaces) and Seminole County (156 spaces), two viable sites within Volusia County (total of 528 spaces), and three viable sites within Orange County (total of 196 spaces). All the sites are located within unincorporated areas except for the Volusia County sites with one located within the City of Port Orange and one located within the City of Daytona Beach.

As a result of the engineering and environmental analyses completed during this study and the comprehensive public engagement plan, five of the seven sites are being advanced for project development and are programmed for the final Design phase. The Seminole County site is being developed as part of a separate project as a PD&E Study Reevaluation for the I-4 Beyond the Ultimate (BTU) Segment 3 project (FPID: 242592-4). The Recommended Alternative for the *Truck and Freight Site Analysis PD&E Study* includes four sites: Osceola County Site 1, Orange County Site 1, Volusia County Site 1A (Eastbound), and Volusia County Site 1B (Westbound). A map of the study limits and the recommended sites is provided in **Figure 1-1**.

Preliminary concepts for each of the seven viable truck parking sites, including the five recommended sites were developed to establish site boundaries and are provided in the *Truck and*

Freight Site Analysis PD&E Study Preliminary Engineering Report (PER), under separate cover. The study area for each site included the proposed Right-of-Way (ROW), adjacent land uses and the access roadways surrounding the site. All four recommended sites are located adjacent to existing roadways in developed areas. The preliminary site concepts include parking layouts, site access, proposed sidewalks, stormwater management, restroom facilities, and landscaping/greenspace areas.

Figure 1-1: Project Location Map



1.2 PROJECT PURPOSE AND NEED

The purpose of this PD&E Study is to identify, evaluate, and recommend viable candidate truck parking sites along or near the I-4 corridor in Osceola, Orange, Seminole, and Volusia Counties for public and/or private development. **The purpose of this project is to provide needed truck parking facilities to serve regional freight parking demand within or near the I-4 corridor to address safety and mobility.**

The need for this project is based on existing and future truck parking demand along the I-4 corridor. The parking demand is a function of both freight mobility and federal hours of service regulations for commercial vehicle operators. These regulations involve mandated maximum hours of service, maximum consecutive hours and days, and required regular minimum 30-minute breaks after eight cumulative hours. Without the appropriate freight parking facilities, drivers may be forced to spend unnecessary time searching for available parking, or they may be required to park in unsafe and/or improper locations due to unforeseen circumstances such as weather, congestion, and other traffic incidents.

The trucking industry is indispensable to the American economy and the quality of life for our communities and consumers that depend on delivered goods. Apart from many other roles and responsibilities, truck drivers are responsible for delivering raw materials to manufacturing facilities and finished products to retail and commercial sites. Businesses both big and small depend on truck drivers to safely transport their items across the nation, while maintaining efficient delivery times. According to Trucker Path survey (2018), 48% of truck drivers spend over an hour searching for a place to park. This equates to a $5.1B loss in revenue annually, including wasted fuel, wages lost, maintenance, and associated crashes.

The nationwide shortage of truck parking capacity continues to be a critical transportation industry focus. According to data published by the American Trucking Association (ATA) in 2022, there are about 3.5 million truck drivers nationwide and approximately 313,000 truck parking spaces; for every 11 drivers, there is one truck parking space. Truck parking needs have been ranked as a top critical issue in the trucking industry and are a national safety concern. In December 2020, the Federal Highway Administration (FHWA) hosted the 5th meeting of the National Coalition on Truck Parking to provide an update on studies and initiatives to advance safe truck parking. In the update, FHWA noted that truck parking concerns are nationwide but most critical along key freight corridors and in metropolitan areas. Additionally, nationwide survey results showed that shortages exist at all times of day, week, and year, but mostly overnight and weekdays.

Florida has experienced tremendous growth in people and goods over the last few decades and continued growth is expected. In 2018, FDOT conducted a statewide truck parking study to assess existing truck parking and future demand. The study found the I-4 corridor is the most critical corridor for truck parking needs in the state, specifically between the Osceola/Polk County Line and I-95, which is the focus of this PD&E Study.

Concurrently, the FDOT District Five Truck Parking Study (2019) determined the average freight parking demand along I-4 was 481 spaces per day (2016 existing condition). In 2020, FDOT modified the I-4 Eastbound Rest Area in Seminole County to a designated truck parking facility to better serve demand. As of 2022, the only designated truck parking facility within the study limits is located at this Longwood Truck Parking facility. The facility provides 36 existing truck parking spaces, leading to a shortage of 445 truck parking spots today.

As the number of people and the amount of goods continue to increase in Florida, freight traffic continues to be an essential part of our state's growth and economy. Based on the 2019 study, the demand for truck parking spaces is anticipated to grow to 750 spaces by 2025 and 883 parking spaces by 2040. The projected demand is anticipated to intensify as the development of more distribution facilities like the Amazon Fulfillment Center in Volusia County, the Northport Industrial Park in Seminole County, the Infinity Park in Orange County, and JELD-WEN in Osceola County continue to be developed to better serve the region's population.

The need for the project is to address existing truck parking deficiencies and accommodate future truck parking demand to better serve freight mobility and improve safety. The primary goal of the PD&E Study is to develop and evaluate viable truck parking sites to meet the future 2040 parking demand of 883 designed parking spaces. Additional truck parking capacity is being proposed to allow design flexibility for site design and to accommodate rapid freight growth in Central Florida.

1.3 ALTERNATIVES ANALYSIS SUMMARY

No-Action Alternative

The No-Action Alternative, carried as a viable option throughout the PD&E Study process, assumes no construction of a new truck parking site and no additional truck parking capacity along I-4 within the study area. No public truck parking facilities are programmed; therefore, none are included in the No-Action Alternative. The No-Action Alternative includes any programmed intersection improvements or roadway widening within the vicinity of the four proposed truck parking sites included in the Recommended Alternative. The results of the No-Action Alternative analysis are documented in the PER, under separate cover. The advantages of the No-Action Alternative include no additional ROW acquisition, no impacts to the environment from construction, no disruption of traffic during construction, and no project cost. The disadvantages of the No-Action Alternative involve not satisfying the purpose and need for the project: existing and future truck parking demand is not accommodated, safety for truck drivers is not improved, and freight mobility is not increased to support better movement of goods for the local communities.

Alternatives Considered

As part of the PD&E Study, more than 77,000 parcels were examined for their potential viability as a freight parking site for trucks traveling along I-4 within Osceola, Orange, Seminole, and Volusia Counties. The methodology for identifying, analyzing, and refining potential sites is described in the PER, under separate cover.

Based on the methodology described in the PER, 12 sites were identified for further review, analysis, and refinement. Out of those potential sites, seven were determined to be viable freight parking sites to meet the truck parking demand. Five of the seven viable sites are programmed for further project development providing at least one site within each county, including: Osceola County Site 1, Orange County Site 1, Seminole County 1B, Volusia County 1A (Eastbound), and Volusia County 1B (Westbound). Two of the seven sites, both located in Orange County (Orange County Site 2 and Orange County Site 4), are unfunded at this time and are on hold for future project development. More detail on the viable Orange County Sites is documented in this report. Further analysis and environmental documentation is anticipated for Orange County Sites 2 and Site 4 when funding is programmed and planning consistency is coordinated. The Seminole County Site 1B is being developed as part of a separate project as a PD&E Study Reevaluation for the I-4 BTU Segment 3 project. This report documents all seven viable sites and provides detailed analysis of the Recommended Alternative (four sites).

Seminole County Site 1B – I-4 at US 17/92

Seminole County Site 1B (**Figure 1-2**) is located adjacent to eastbound I-4 and southeast of the I-4 / US 17/92 interchange in unincorporated Seminole County, immediately outside the Sanford city limits. In the existing condition, the site can access I-4 via US 17/92 (0.45 miles) and via SR 46 (1.85 miles). Additionally, there are planned I-4 BTU improvements at the I-4 / US 17/92 interchange, which will modify access to I-4 through a reconfigured ramp adjacent to the site. Following the I-4 BTU construction, the distance to I-4 via US 17/92 will be shortened to 0.25 miles. The proposed site will supply 156 truck parking spaces and a restroom facility. Eight-foot sidewalks around the truck parking site are proposed to allow pedestrians to safely walk from their individual truck parking spot to the restroom facility. Additionally, an eight-foot sidewalk is proposed along School Street to provide a connection from the entrance to Seminole County Site 1B to the existing sidewalk that runs along the west side of US 17/92.

The proposed site is anticipated to require 18.5 acres of ROW, impacting a total of eight parcels and requiring up to three relocations. A large, raised berm at the northeast corner of the site is proposed to decrease the visibility of the site to nearby properties. Access to the site will be provided with a signalized entrance on School Street. A median island on School Street just west of the site entrance is proposed to prevent trucks leaving the site from heading westbound on School Street and ultimately, traveling on the narrower Elder Road. The median modification will still allow passenger vehicles to travel on School Street from US 17/92 to Elder Road.

The proposed Seminole County Site 1B will include two wet detention stormwater ponds and one dry detention pond, with a combined area of 4.17 acres. As of March 2023, Seminole County Site 1B is under Design as part of the Central Corridor Truck Parking – Seminole County Site (FPID 446445-1).

Orange County Site 2 – West Landstreet Road, Adjacent to State Road 528

Orange County Site 2 is located in a heavy industrial area along West Landstreet Road, adjacent to the State Road 528 interchange. The site is near several major freight corridors, including Florida's Turnpike, US 441, and State Road 528. Interstate 4 can be accessed via nearby limited-access facility Florida's Turnpike. Alternatively, Interstate 4 can be accessed via Landstreet Road, US 441, and Sand Lake Road (approximately 5.50 miles). A full-access entrance to Landstreet Road is anticipated. The proposed site is approximately 6.8 acres, accommodating 59 truck parking spaces.

Orange County Site 4 – West Landstreet Road, East of State Road 528

Orange County Site 4 is in a heavy industrial area along the north side of West Landstreet Road, near the Trussway Boulevard intersection. Interstate 4 can be accessed via Florida's Turnpike. Alternatively, access to Interstate 4 is provided via Landstreet Road, US 441, and Sand Lake Road (approximately 6.84 miles). A full-access entrance to Landstreet Road is anticipated. The proposed site is approximately 4.9 acres, supplying 48 truck parking spaces.

1.4 DESCRIPTION OF RECOMMENDED ALTERNATIVE

Description of Recommended Alternative

The Recommended Alternative for this *Truck and Freight Site Analysis PD&E Study* includes four recommended site locations for truck parking within Osceola, Orange, and Volusia Counties including: Osceola County Site 1, Orange County Site 1, and Volusia County 1A (Eastbound) and Volusia County 1B (Westbound). While recognized as independent sites, the recommended Volusia County truck parking sites are located adjacent to each other, one serving I-4 Eastbound and one serving I-4 Westbound. Additionally, Seminole County Site 1B is programmed as part of the separate I-4 BtU Segment 3 project. The following is a description of the four recommended sites.

1.4.1 Recommended Sites

Osceola County Site 1 – CR 532 and Poinciana Parkway Extension

Osceola County Site 1 (**Figure 1-3**) is located approximately 3.87 miles east of the I-4 interchange along the south side of CR 532. The recommended site is immediately east of the planned Poinciana Parkway Extension, which is in the Design phase as of September 2023, and located south of the planned CR 532 widening project, which the Design phase was completed in June 2023 and construction is programmed for Fiscal Year 2025 to 2026. The site is planned to be developed around a proposed pond for the Poinciana Parkway Extension. This site would be bordered by the Poinciana Parkway Extension, CR 532, and US 17/92, providing access to I-4 as well as other high freight corridors. The Osceola County Site 1 will supply 234 truck parking spaces and restroom facilities. Eight-foot sidewalks around the truck parking site are proposed to allow pedestrians to safely walk from their individual truck parking spot to the restroom facilities and to provide connection from the site to the sidewalks along CR 532, to be installed during the widening project.

The recommended site is anticipated to require approximately 40.1 acres of ROW, impacting a total of 19 parcels. No relocations are anticipated for the recommended site. Access to the site will be located along CR 532 approximately 0.66 miles west of the intersection with US 17/92. A new signalized entrance on CR 532 is proposed for the site access, which will require a new median opening once the CR 532 widening is constructed. There is a gas easement located on the western side of the site. This easement will be maintained.

The recommended Osceola County Site 1 will include two wet detention stormwater ponds, with a combined pond area of 11.29 acres. The CR 532 widening project adjacent to the site includes construction of a new wet detention stormwater pond on the recommended site. Since this pond will need to be removed to accommodate the recommended site, compensation has been provided for the lost pond volume.

Orange County Site 1 – Sand Lake Road at John Young Parkway

Orange County Site 1 (**Figure 1-4**) is located along Sand Lake Road approximately 2.90 miles east of I-4. The site is proposed on the northeast corner of Sand Lake Road and John Young Parkway immediately west, and adjacent to, the limited access Florida's Turnpike facility. As part of a separate project, Florida's Turnpike is adding a new interchange with Sand Lake Road, which will increase access to this truck parking site. The Orange County Site 1 will supply 93 truck parking spaces and a restroom facility. An eight-foot sidewalk surrounding the truck parking site will be included to allow pedestrians to safely walk from their individual truck parking spot to the restroom facility and to provide connection from the site to the sidewalk along Sand Lake Road, to be installed during the Florida's Turnpike interchange project.

The recommended site is anticipated to require approximately 14.6 acres of ROW, impacting a total of two parcels. No relocations are anticipated for the recommended site. Access to the site will be provided with two unsignalized driveways (right-in/right-out) on John Young Parkway and on Sand Lake Road. The new driveway on Sand Lake Road is located approximately 480 feet west of the proposed Turnpike off-ramp to Sand Lake Road. The second driveway connects to the John Young Parkway northbound off-ramp (frontage road) and is located approximately 440 feet north of the John Young Parkway and Sand Lake Road intersection. No access or median modifications are proposed on either Sand Lake Road or John Young Parkway to accommodate the recommended truck parking site.

The recommended Orange County Site 1 will include two wet detention stormwater ponds, with a combined pond area of 5.01 acres. An existing wet detention pond in the southwest corner of the site currently serves as the stormwater management system for portions of John Young Parkway and Sand Lake Road. The existing pond will be removed with the construction of the recommended site; therefore, treatment and attenuation volumes must be replaced in kind, and the proposed stormwater ponds will serve as a joint-use stormwater management facility between the recommended site and John Young Parkway and Sand Lake Road.

The site is adjacent to the new proposed off-ramp from Florida's Turnpike to Sand Lake Road (FPID: 433633-1), in the Design phase as of September 2023, which includes construction of stormwater treatment ponds which overlap the recommended Orange County Site 1. It is anticipated that the Turnpike project will be constructed during the design phase of this project, as the Turnpike project is nearing the end of the design phase and is currently in the process of obtaining a permit from the South Florida Water Management District (SFWMD) (ERP #48-108222-P). The 5.62 acre pond proposed as a part of the Turnpike project was re-configured as part of the recommended alternative for Orange County Site 1 to optimize the number of truck parking spaces. The future pond modification will be verified during the design phase of Orange County Site 1.

Volusia County Site 1A – I-4 Eastbound Direct Access, 4.5 miles west of I-95

Volusia County Site 1A (**Figure 1-5**) is located along I-4 approximately 4.5 miles west of the I-95 interchange. The recommended site, located at a former Volusia County rest area, will supply 275 truck parking spaces and restroom facilities. Eight-foot sidewalks will be provided around the recommended site to allow pedestrians to safely walk from their individual truck parking spot to the restroom facilities.

The recommended site is anticipated to require 73.3 acres of ROW, impacting two parcels both publicly owned by the City of Port Orange. Wildlife fencing and wildlife sensitive lighting will be provided around the recommended site due to the proximity of the existing wildlife crossing. Ramps will be provided on I-4 Eastbound for direct access to and from Volusia County Site 1A. No local road access will be provided to the sites.

The recommended Volusia County Site 1A will include one wet detention stormwater pond located along the southeast parcel line and is 7.15 acres. The proposed ROW for the site includes a proposed conservation area outside the limits of construction and surrounding the fenced truck parking area to provide an enhanced natural buffer. The conservation area (31 acres) is east of the truck parking area and will remain as existing (undeveloped) with no site clearing.

Volusia County Site 1B – I-4 Westbound Direct Access, 4.5 miles west of I-95

Volusia County Site 1B (**Figure 1-6**) is located along I-4 approximately 4.5 miles west of the I-95 interchange. The recommended site will supply 253 truck parking spaces and a centralized restroom facility. Eight-foot sidewalks will be provided around the recommended site to allow pedestrians to safely walk from their individual truck parking spot to the restroom facility.

The recommended site is anticipated to require 116.8 acres of ROW, impacting one parcel publicly owned by the City of Daytona Beach. Wildlife fencing and wildlife sensitive lighting will be provided around the recommended site due to the proximity of the existing wildlife crossing. Ramps will be provided on I-4 Westbound for direct access to and from Volusia County Site 1B. No local road access will be provided to the sites.

The recommended Volusia County Site 1B will include two wet detention stormwater ponds for a combined area of 10.17 acres. Pond 1 is located adjacent to, and east of, the truck parking site and is 3.45 acres. The second pond will involve modification of Pond I, which was originally constructed with the I-4 widening project (FPID: 408464-2). Pond I will be expanded from approximately 1.93 acres to 6.72 acres (4.79 acre increase). Volusia County Site 1B also will include a floodplain compensation area of 2.20 acres.

The proposed ROW for the site includes a proposed conservation area and contiguous wildlife corridor outside the limits of construction and surrounding the fenced truck parking area to provide an enhanced natural buffer. The proposed wildlife corridor (36.5 acres) is east of Pond 1 and extends from the existing I-4 wildlife crossing to the western boundary of the site. The proposed conservation area adjacent to the wildlife corridor and surrounding truck parking site is approximately 43.2 acres. The proposed conservation and wildlife corridor total approximately 79.7 acres of the 116.8 acre site and will remain as existing (undeveloped) with no site clearing.

Figure 1-2: Location Map – Seminole County (Site 1B)

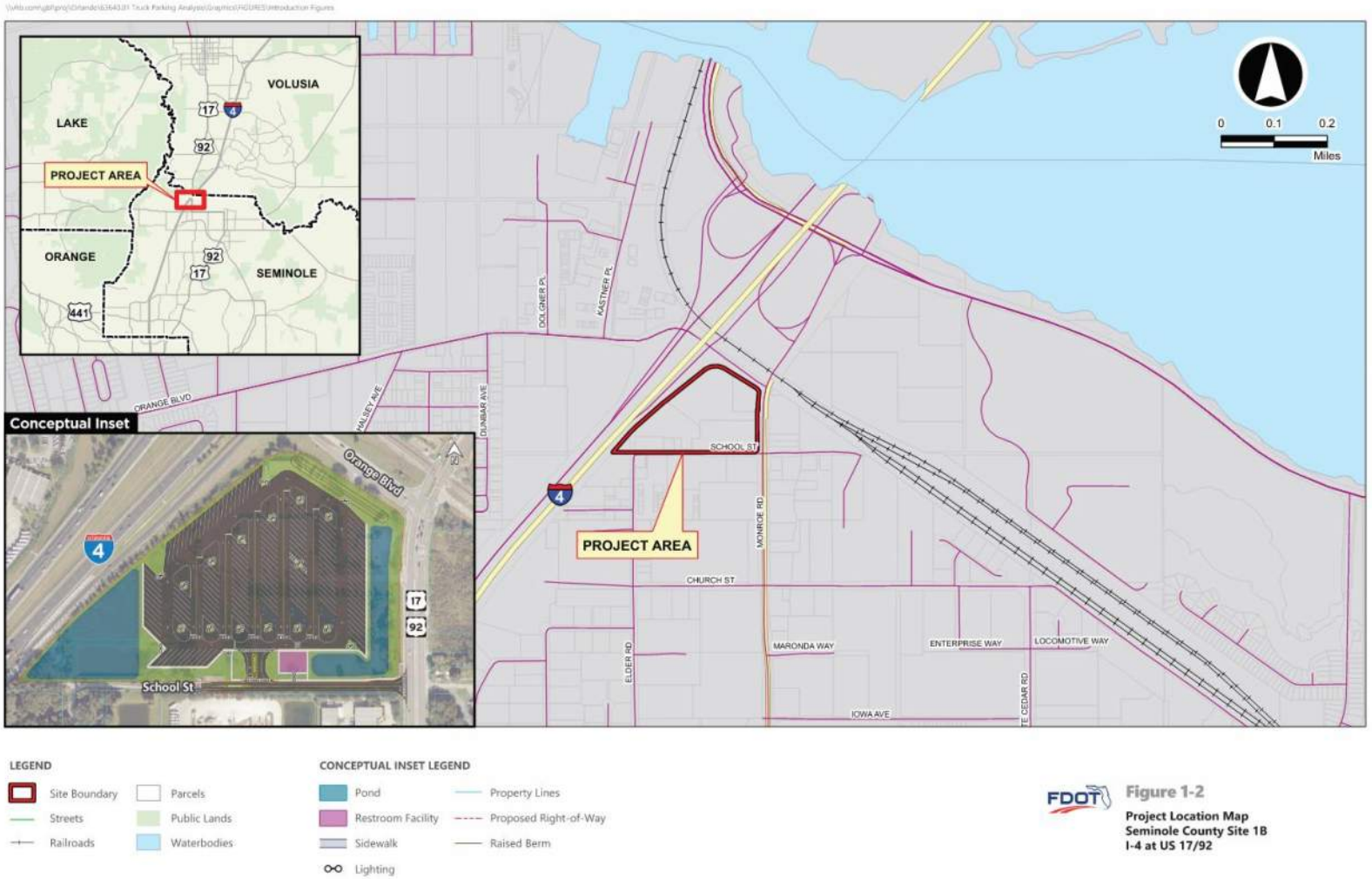
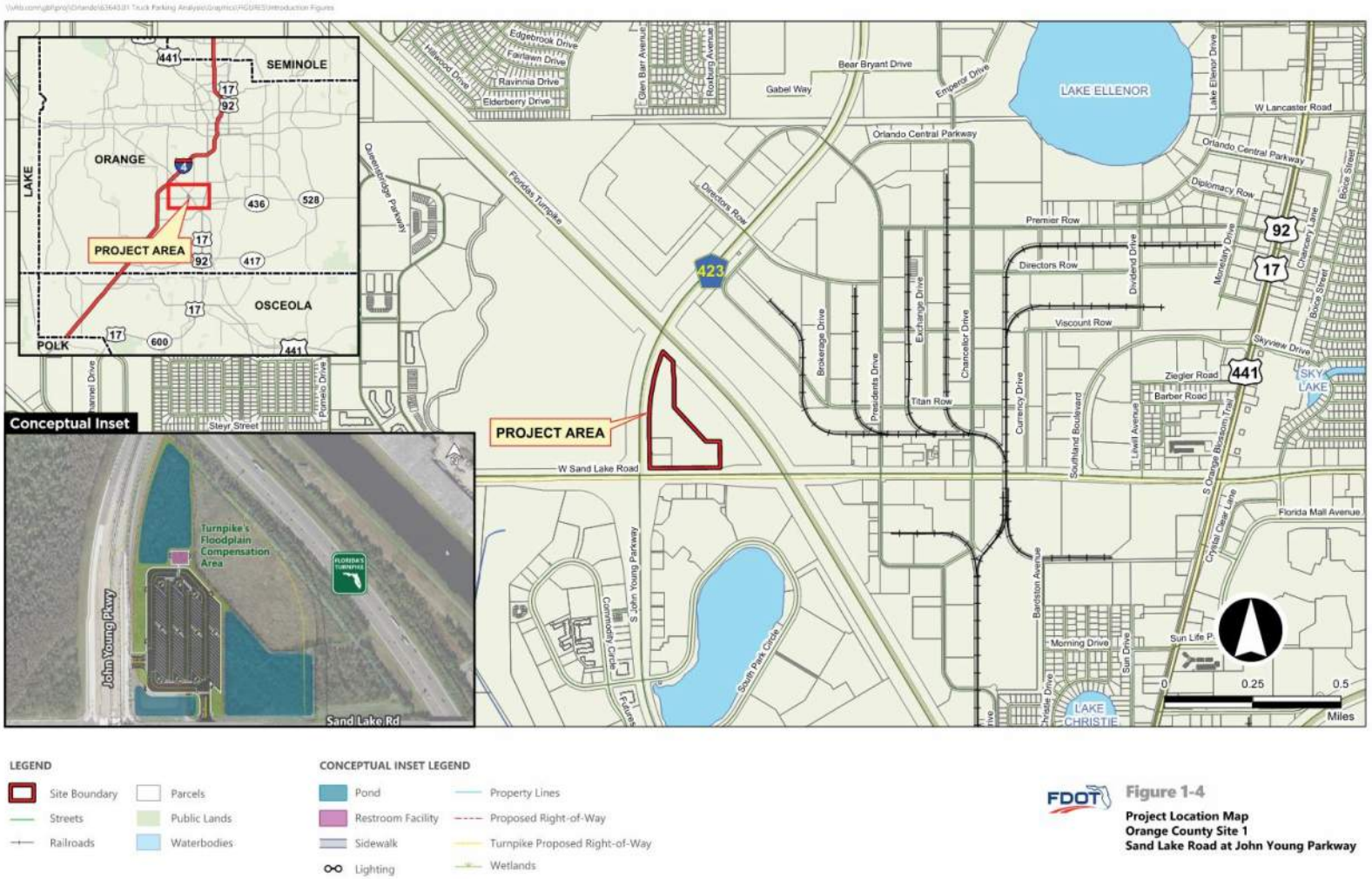


Figure 1-3: Location Map – Osceola County (Site 1)

Figure 1-4: Location Map – Orange County (Site 1)



LEGEND

- Site Boundary
- Streets
- Railroads
- Parcels
- Public Lands
- Waterbodies

CONCEPTUAL INSET LEGEND

- Pond
- Restroom Facility
- Sidewalk
- Lighting
- Property Lines
- Proposed Right-of-Way
- Turnpike Proposed Right-of-Way
- Wetlands

FDOT

Figure 1-4
Project Location Map
Orange County Site 1
Sand Lake Road at John Young Parkway

Figure 1-5: Location Map – Volusia County (Site 1A)

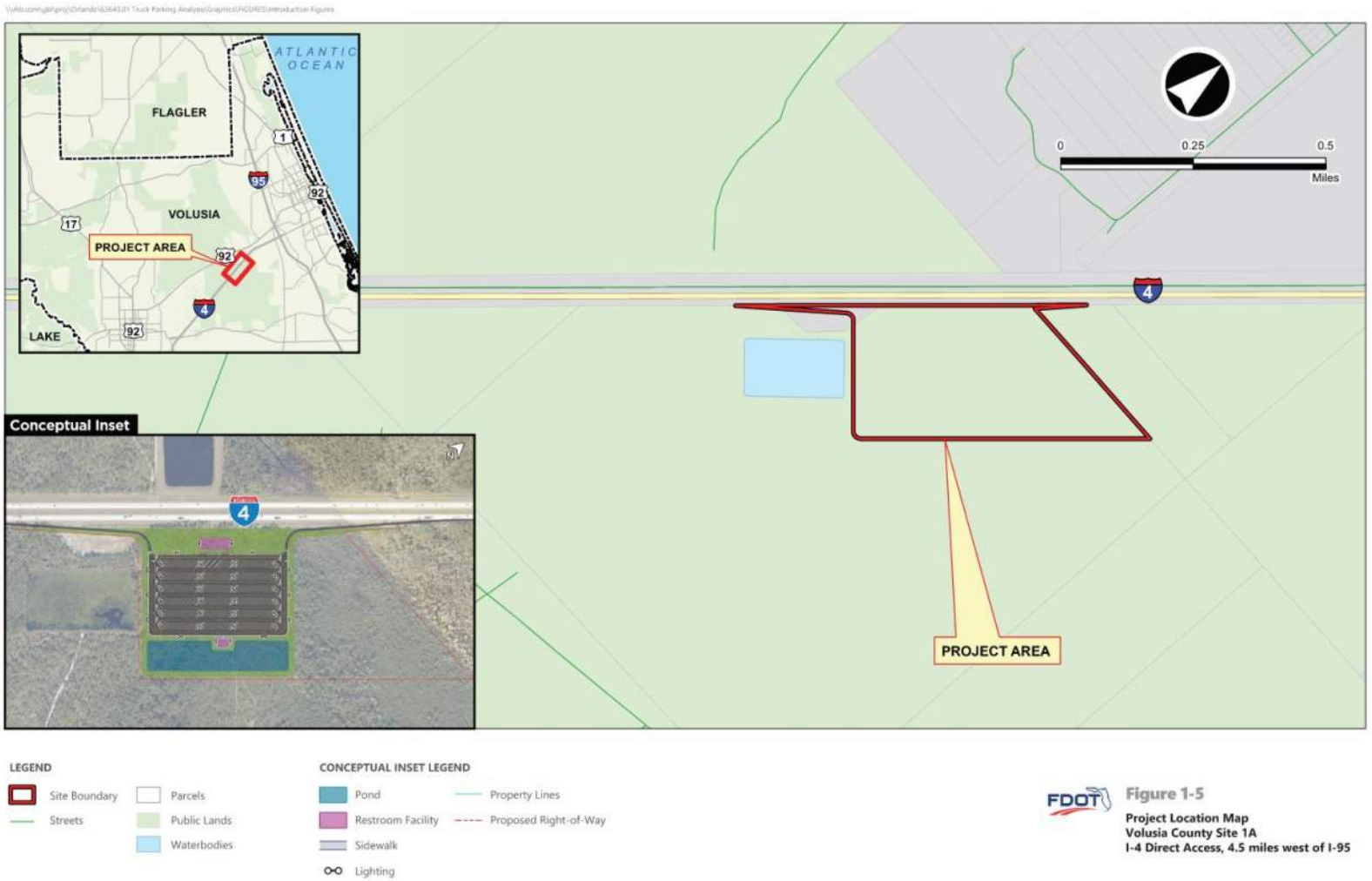


Figure 1-6: Location Map – Volusia County (Site 1B)

SECTION 2 DESIGN CRITERIA

The design of the stormwater management facilities for the project is governed by the rules set forth by FDOT and relevant water management districts. The Orange and Osceola County sites are located within the South Florida Water Management District (SFWMD), and the Seminole and Volusia County sites are located within the St. Johns River Water Management District (SJRWMD). Water treatment and attenuation requirements will comply with the guidelines defined in Chapter 62-330 of the Florida Administrative Code (F.A.C), the SFWMD Environmental Resource Permit Applicant's Handbook (Volume II), SJRWMD Permit Information Manual, and relevant County criteria.

Each parking site has a unique set of requirements regarding water quality improvements, water quantity attenuation, nutrient loading, and floodplain compensation. Requirements for FDOT, SFWMD, SJRWMD, and the Counties are detailed in Sections 2.1 through 2.4, followed by requirements for nutrient loading analysis.

Water quality improvements and water quantity attenuation are provided in wet detention or dry retention ponds, depending on the parking site. On some sites, additional areas have been provided for further nutrient reduction or floodplain compensation and will be identified as such.

2.1 SFWMD CRITERIA

- **Water Quality:**
    - ○ Wet Detention Ponds: Treatment will be provided for the greater of one inch (1") of runoff over the drainage area or two and a half inches (2.5") of runoff from the impervious area (excluding water bodies). The drainage area for this project is considered to be the total area of the site plus any additional required access roads or modifications to them.
        - An outfall control structure shall be designed to drawdown a maximum of one-half inch (0.5") of the detention volume in 24 hours.
    - ○ Dry Retention Ponds: Treatment will be provided fifty percent (50%) of the volume provided for wet detention, equal to the greater of one-half inch (0.5") over the drainage area or one and one-quarter inch (1.25") of runoff from the impervious area (excluding water bodies).
        - Dry retention areas shall have mechanisms for returning the groundwater level in the area to the control elevation. The bleed-down rate for these systems is the same as stated above.
    - ○ Outstanding Florida Waters (OFW): When a project or portion of a project is located within a basin that discharges to an OFW, the required treatment volume shall be

increased by 50%. SFWMD requires all projects discharging to the Lake Okeechobee Basin Management Action Plan (BMAP) to meet OFW criteria.

The project traverses three (3) Waterbody IDs (WBID) within SFWMD: 3170C – Reedy Creek Above Lake Russell, 3169A – Shingle Creek, and 3168B – Boggy Creek; of which none are impaired for nutrients (Chlorophyll-a) according to the current FDEP 303(d) list of impaired water bodies. However, a pre versus post nutrient loading analysis is required for this study due to these WBIDs discharging to the Lake Okeechobee BMAP. Please refer to the **WBID Maps**, **Figures 1-6, 2-6, 3-6,** and **4-6** in **Appendix A** for more information.

- **Water Quantity:**
  - For a project or portion of a project located within an open drainage basin, the allowable discharge is:
    - Historic discharge, which is the peak rate at which runoff leaves the parcel of land by gravity under existing site conditions, or the legally allowable discharge at the time of permit application; or
    - Amounts determined in previous District permit actions relevant to the project.

  Offsite discharges and peak stages for the existing and proposed conditions shall be computed using the SFWMD's 25-year/72-hour rainfall maps and the Natural Resources Conservation Service (NRCS) Type II Florida Modified 24-hour rainfall distribution with an Antecedent Moisture Condition (AMC) II. SFWMD Orlando Office allows the County rainfall criteria to be substituted in place of the SFWMD 25-year/72-hour storm event. Osceola County requires discharges computed using the 10-year/72-hour rainfall event, and Orange County requires discharges computed using the 25-year/24-hour rainfall event.

- **Wet Detention Pond Configuration**:
  - Area – Wet detention water quality treatment systems shall have a minimum area of 0.5 acres.
  - Width – Wet detention water quality treatment systems shall be designed with a 100 feet minimum width for linear areas in excess of 200 feet long. Irregular shaped areas may have narrower reaches but shall average at least 100 feet.
  - Depth/ Littoral Zone – The littoral area shall be shallower than 6 feet as measured from below the control elevation. The minimum shallow, littoral area shall be the lesser of 20 percent of the wet detention area or 2.5 percent of the total of the detention area (including side slopes) plus the basin contributing area.
  - Side Slopes – All retention and detention facilities should have stabilized side slopes no steeper than 1V:4H out to a depth of two feet below the control elevation.

- Maintenance Access – Perimeter maintenance and operation easements, with a minimum width of 20 feet and slopes no steeper than 1V:4H, should be provided landward of the control elevation water line. Widths less than 20 feet are allowed when it can be demonstrated that equipment can enter and perform the necessary maintenance for the system.

- **Dry Retention Pond Configuration**: The proposed pond shall consist of a minimum surface area equal to the greater of 6 square feet or 5% of the total retention area. The pond shall have a minimum depth of 2 feet, a maximum depth of 4 feet, and a minimum width of 1 foot.

2.2 SJRWMD CRITERIA

- **Water Quality:**
  - Wet Detention Ponds: Treatment will be provided for the greater of one inch (1") of runoff over the drainage area or two and a half inches (2.5") of runoff from the impervious area (excluding water bodies). The drainage area for this project is considered to be the total area of the site plus any additional required access roads or modifications to them.
    - An orifice should be set at the Average Wet Seasonal Water Elevation (AWSWE) and sized to drawdown one-half of the required treatment volume within 24 to 30 hours, but no more than one-half of this volume will be discharged within the first 24 hours.
  - Outstanding Florida Waters (OFW): When a project or portion of a project is located within a basin that discharges to an OFW, the required treatment volume shall be increased by 50%.

  The project traverses four (4) Waterbody IDs (WBID) within SJRWMD: 2893C – St. Johns River Above Wekiva River, 2654 – Drainage Canals, 2675 – Sand Creek and 2634 – Tomoka River; of which none are impaired for nutrients (Chlorophyll-a) according to the current FDEP 303(d) list of impaired water bodies. However, a pre versus post nutrient loading analysis is required for WBID 2893C due to this WBID discharging to the BMAP and TMDL area for the Middle St. Johns River. Please refer to the **WBID Maps**, **Figures 5-6** and **6-6** in **Appendix A** for more information.

- **Water Quantity**: For open basins, SJRWMD requires that the post-development peak discharge shall be at or below pre-development peak discharge for the 25-year/24-hour and mean annual storms.
- Offsite discharges and peak stages for the existing and proposed conditions shall be computed using the SJRWMD 25-year/24-hour rainfall depth and the Natural Resources Conservation Service (NRCS) Type II Florida Modified 24-hour rainfall distribution with an AMC II.

- **Pond Configuration**:
    - Wet Detention Ponds: The average length to width ratio of the wet detention pond must be at least 2:1. If short flow paths are unavoidable, the effective flow path can be increased by adding diversion barriers within the pond. Another alternative is to demonstrate that the effective permanent pool volume is provided between each inflow point in the pond to the outflow of the pond.
        - Permanent Pool – The permanent pool shall be sized to provide at least a 14-day residence time during the wet season (June – October).
        - Littoral Zone – The littoral zone shall be gently sloped (1V:6H or flatter). At least 30 percent of the wet detention pond surface area shall consist of a littoral zone.
            - Littoral Zone Alternatives:
                - An additional 50% of the appropriate permanent pool volume.
                - Pre-treatment of stormwater prior to the stormwater entering the wet detention pond. The level of pretreatment must be at least that required for retention, underdrain, exfiltration or swale systems.
        - Pond Depth – Maximum pond depth of 12 feet and a mean depth (pond volume divided by the pond area at the control elevation) between 2 and 8 feet.
        - Side Slopes – The pond must be designed so that the average pond side slope measured between the control elevation and two feet below the control elevation is no steeper than 1V:3H.

2.3 FDOT CRITERIA

- **Water Quality**: That which is specified by the appropriate Water Management District or County criteria.
- **Water Quantity**: Critical Duration as defined by Chapter 14-86 F.A.C.
    - Open Basins: Ponds shall be sized such that the post development discharge rate (or volume) does not exceed the pre-development discharge rate (or volume) for the critical duration (1-hour through 3-day) storm and up to the 100-year storm. This applies only to basins subject to historical flooding.
    - Closed Basins: Ponds shall be sized such that the post development discharge rate (or volume) does not exceed the pre-development discharge rate (or volume) for the critical duration (1-hour through 10-day) storm and up to the 100-year storm.
- **Detention/Retention Pond Configuration**:
    - Maintenance Berm: Provide a minimum of 20 feet of horizontal clearance between the top edge of the control elevation and the right-of-way line. Provide at least 15

feet adjacent to the pond at a slope of 1:8 or flatter. Create the inside edge of the maintenance berm to have a minimum radius of 30 feet and be a minimum of one foot above the maximum design stage elevation.

- Freeboard: Provide at least one foot of clearance between the maximum design stage of the pond and the inside edge of the berm. For linear treatment swales, the minimum freeboard is 0.5 foot.
- Side Slopes: Provide a slope of 1V:4H or flatter. Install fences around ponds only when a documented maintenance need for restricted access has been demonstrated (Section 5.4.4.2 from the FDOT Drainage Manual) or when pond side slopes above the normal water level are steeper than 1V:4H and are unavoidable. A design variation is required to install fences around stormwater management facilities.
- Dry Retention Swales: Provide a top width-to-depth ratio of the cross section equal to or greater than 1V:6H, or side slopes equal to or greater than 1V:3H (Section 3.2.1 from the FDOT Drainage Design Guide).
- Permanent (Normal) Pool Depth: For facilities designed to be wet, provide a minimum permanent pool depth of six feet to minimize aquatic growth.

SECTION 3 DATA COLLECTION

The design team collected and reviewed data from the following sources:

- FDOT Drainage Manual, January 2023
- FDOT Drainage Design Guide, January 2023
- Environmental Resource Permit Applicant's Handbook Volume I, December 2020
- Environmental Resource Permit Applicant's Handbook Volume II, May 2016
- Federal Emergency Management Agency (FEMA):
    - Flood Insurance Rate Map (FIRM) Panel No. 12097C0045G Effective Date 6/18/2013, in Osceola County, Florida
    - FIRM Panel Nos. 12095C0410F and 12095C0420F Effective Date 9/25/2009 in Orange County, Florida
    - FIRM Panel No. 12117C0055F Effective Date 9/28/2007 in Seminole County Florida
    - FIRM Panel No. 12127C0500H Effective Date 2/19/2014 in Volusia County, Florida
- United States Geological Survey (USGS) Quadrangle Maps
- United States Department of Agriculture (USDA):
    - Natural Resource Conservation Service (NRCS) Soils Survey of Osceola County, Florida, 2021
    - NRCS Soils Survey of Orange County, Florida, 2021
    - NRCS Soils Survey of Seminole County, Florida, 2021
    - NRCS Soils Survey of Volusia County, Florida, 2021
- Existing Permit Databases (SFWMD, SJRWMD)
- 1-ft LIDAR Data Source:
    - USGS, Osceola County, 2016
    - USGS, Orange County, 2018
    - SJRWMD, Seminole County, 2005
    - National Oceanic and Atmospheric Administration (NOAA) Office for Coastal Management, Volusia County, 2006.

SECTION 4 EXISTING DRAINAGE CONDITIONS

4.1 OSCEOLA COUNTY – SITE 1

4.1.1 Topography & Hydraulic Features

The topography throughout the site is sloped downhill from the northwest corner toward the southeast corner. Please refer to the **USGS Quadrangle Map**, **Figure 1-2** in **Appendix A** and **Basin Maps** in **Appendix B** for elevation data. The site is not within an OFW. It is within WBID 3170C – Reedy Creek Above Lake Russell, which is not impaired for nutrients but is within the BMAP area for Lake Okeechobee. Please refer to the **WBID Map**, **Figure 1-6** in **Appendix A**.

The existing site consists mainly of undeveloped mixed forest and wetland, with a small residential area. Osceola Polk Line Road (CR 532) borders the site to the north and is currently under design for widening and includes a proposed wet detention pond within the freight parking site. To the west, the site is bordered by a gravel road, but a permit application was recently filed for the proposed Poinciana Parkway (SR 538) extension that will go through this area. The Poinciana Parkway extension will also include the construction of a new wet detention pond adjacent to the freight parking site. To the southeast, the site is bordered by a CSX Railroad. The site is considered a single open drainage basin that outfalls south to an existing wetland system that drains east to Reedy Creek. Please refer to the **Location Map**, **Figure 1-1** in **Appendix A**.

Soils Data and Geotechnical Investigations

The soil survey of Osceola County, Florida (dated 2022) published by the USDA NRCS has been reviewed within the project vicinity. USDA Soil Survey Geographic database (SSURGO) data was also obtained from NRCS to create a soils map for the project limits using GIS ArcMap. The soil survey map for the project vicinity is illustrated in **Figure 1-3 in Appendix A**.

Table 4-1: USDA NRCS Soil Survey Information for Osceola County (Site 1)

Soil No.	USDA Soil Name	Seasonal High Ground Water		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
12	Floridana fine sand, frequently ponded, 0 to 1 percent slopes	0	4	C/D	0-19	SP-SM, SM	A-2-4, A-3
					19-25	SP-SM, SM	A-2-4, A-3
					25-80	SC-SM, CL, SC	A-2-4, A-4, A-7-6
16	Immokalee fine sand, 0 to 2 percent slopes	0.5-1.5	6	B/D	0-6	SP-SM, SM	A-2-4, A-3
					6-35	SP-SM, SM	A-2-4, A-3
					35-54	SP-SM, SM	A-2-4, A-3
					54-80	SP-SM, SM	A-2-4, A-3
22	Myakka fine sand, 0 to 2 percent slopes	0.5-1.5	6	A/D	0-6	SP-SM, SM	A-2-4, A-3
					6-20	SP-SM, SM	A-2-4, A-3
					20-36	SP-SM, SM	A-2-4, A-3
					36-80	SP-SM, SM	A-2-4, A-3

Soil No.	USDA Soil Name	Seasonal High Ground Water		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
32	Placid fine sand, frequently ponded, 0 to 1 percent slopes	0	4	A/D	0-24	SP-SM, SM	A-2-4, A-3
					24-80	SP-SM, SM	A-2-4, A-3
39	Riviera fine sand, frequently ponded, 0 to 1 percent slopes	0	4	A/D	0-4	SP-SM, SM	A-2-4, A-3
					4-36	SP-SM, SM	A-2-4, A-3
					36-42	SC-SM, CL, SM	A-2-4, A-4, A-6
					42-56	SP-SM, SM	A-2-4, A-3
					56-80	SP-SM, SM	A-2-4, A-3

**Seasonal High Ground Water Table: Depth is referenced below existing grade, except where indicated as "+".*

The soils encountered within the project site are Hydrologic Soil Groups (HSG) A/D, B/D, and C/D. Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sand or gravel and have a high rate of water transmission. Group B Soils have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture and have a moderate rate of water transmission. Group C soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine to fine texture. Group D soils have high runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission. If a soil is assigned to a dual HSG, the first letter is for drained areas, and the second is for un-drained areas. Soils are only assigned a dual class if they are group D in their natural condition. **Table 4-1: USDA NRCS Soil Survey Information for Osceola County** summarizes and lists the soil types and relevant information. The ground water depth varies from 0' to 1.5' within the project site per the NRCS Soil Survey information.

A geotechnical investigation was not performed for this study. Reasonable assumptions are made to set the control elevations of the pond sites based on adjacent permitted stormwater systems and NRCS information. A detailed geotechnical investigation should be performed during the design phase.

Contamination Screening

A desktop contamination screening assessment has been conducted by VHB as part of the PD&E Study. As a result of the contamination screening evaluation, 3 sites have been assigned Contamination Risk Potential Ratings (CRPR). The CRPR rating system was developed by FDOT and incorporates four levels of risk: No, Low, Medium, and High. Of the 3 sites, 2 were identified as Low Risk, and 1 was Medium Risk. The overall Risk for the site has been rated Low.

The sites, business operations, and/or facilities identified to date and the risk rankings given to them are preliminary. It should be understood that these risk rankings may change pending receipt of information which indicates a discharge occurred on-site or in nearby surrounding areas. Variables that may change the risk ranking include a facility's non-compliance with environmental regulations, new discharges to the soil or groundwater, and modifications to current permits. Should any of these variables change, additional assessments of the facilities should be conducted. For any sites with a risk ranking of "Medium", Level II field screening should be conducted if it is determined during the project's design that construction activities could be within their vicinity. Please refer to **Appendix H - Contamination Screening Evaluation Report** for further information.

4.1.2 Environmental Characteristics

Land Use Data

The project site mainly consists of undeveloped mixed forests and wetlands. The northeast corner of the site consists of low density residential land. Please see **Figure 1-4** for the **Land Use Map** in **Appendix A**.

Cultural Features

A desktop cultural resource survey has been conducted by VHB as part of the PD&E Study. Based on the desktop analysis conducted, it was determined that the site has a High probability of archaeological resources and a Low probability of historic resources.

During the design phase of the project, systematic archaeological field survey is recommended in accordance with the guidelines and standards promulgated by FDOT and Florida Division of Historical Resources (FDHR). The sites considered to have a low potential also should be surveyed and judgmentally tested. Historical/architectural field survey is also recommended. Please refer to the Preliminary Cultural Resource Assessment (CRAS) Technical Memorandum included in **Appendix F**.

Natural and Biological Features

The Osceola County truck parking site consists of residential areas, shrub and brushland, pine flatwoods, and both forested and non-forested wetlands. The shrub and brushland consists of a sparse canopy of slash pine (*Pinus elliottii*) with understory and groundcover species including wax myrtle (*Morella cerifera*), saw palmetto (*Serenoa repens*), American beautyberry (*Callicarpa americana*), blackberry (*Rubus pensilvanicus*), gopher apple (*Geobalanus oblongifolius*), dogfennel (*Eupatorium capillifolium*), winged sumac (*Rhus copallinum*), ragweed (*Ambrosia artemisiifolia*), and prickly pear (*Opuntia mesacantha*). The pine flatwoods have a canopy dominated by slash pine with live oak (*Quercus virginiana*) and cabbage palm (*Sabal palmetto*), and an understory consisting of saw palmetto, wax myrtle, blackberry, and American beautyberry. Vegetation observed in the forested wetlands within the project area includes slash pine, sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), cabbage palm, sweet bay (*Magnolia virginiana*), bald cypress (*Taxodium distichum*), water oak (*Quercus nigra*), laurel oak (*Quercus laurifolia*), wax myrtle, gallberry (*Ilex*

glabra), St. Johns wort (*Hypericum* spp.), cinnamon fern (*Osmunda cinnamomea*), and chalky bluestem (*Andropogon virginicus*). Vegetation observed in the non-forested wetlands includes redroot (*Lachnanthes caroliana*), St. John's wort, meadow beauty (*Rhexia* sp.), sapling red maple, pipewort (*Eriocaulon aquaticum*), Mexican primrose-willow (*Ludwidia octovalvis*), rushes (*Juncus* spp.), Peruvian primrose-willow (*Ludwidia peruviana*), Virginia chain fern (*Woodwardia virginica*), yellow-eyed grass (*Xyris* sp.) hyssoplef thoroughwort (*Eupatorium hyssopifolium*), dogfennel (*Eupatorium capillifolium*), and sedges (*Cyperus* spp.). Approximately 17.88 acres of direct impacts to wetlands are anticipated for the Osceola County truck parking site.

Suitable habitat for the sand skink, gopher tortoise, eastern indigo snake, Florida burrowing owl, Florida pine snake, southeastern American kestrel, wading birds, and southern fox squirrel was observed within the project area. Gopher tortoise burrows were observed within the project area during field reviews. Species specific surveys will likely be required to confirm absence and minimize impacts to these species should construction activities occur within this truck parking site. Please refer to the *Natural Resources Technical Memorandum* under separate cover.

4.1.3 Floodplains/Floodways

According to the Federal Emergency Management Agency (FEMA), the relevant Flood Insurance Rate Map (FIRM) panel number is 12097C0045G, dated 6/18/2013.

According to the FEMA FIRMs, the site lies entirely within Zone X of the 100-year floodplain. These are areas of minimal flood hazard, which are the areas outside the 100-year floodplain and higher than the elevation of the 0.2-percent-annual-chance flood. There are no federally regulated floodways within the site limits. Please refer to **Figure 1-5** in **Appendix A** for the **FEMA Floodplains Map.**

4.1.4 Existing Drainage Permits

There is currently one (1) SFWMD permit application adjacent to the freight parking site. The sections below briefly describe the relevant information obtained from each permit or application. Documents from select permits used for the collection of drainage data can be found in **Appendix I – Existing Permits**.

Application No. 220627-34970

Application No. 220627-34970 was filed on June 27th, 2022. This application is for construction of the CR 538 (Poinciana Parkway) Extension from CR 532 to South of US 17/92. It is anticipated that the construction of the freight parking site will not impact this permit. This permit was used to collect drainage information for this PD&E Study, mainly estimating the seasonal high groundwater elevation, and relevant documents can be found in **Appendix I**.

4.2 ORANGE COUNTY – SITE 1

4.2.1 Topography & Hydraulic Features

The topography throughout the site varies with a gradual downhill slope from the southern end of the site to the north. Please refer to the **USGS Quadrangle Map**, **Figure 2-2** in **Appendix A** and **Basin Maps** in **Appendix B** for elevation data. The site is not within an OFW. It is within WBID 3169A – Shingle Creek, which is not impaired for nutrients but is within the BMAP area for Lake Okeechobee. Please refer to the **WBID Map**, **Figure 2-6** in **Appendix A**.

The site is located within lands bordered on all sides by right-of-way for Florida's Turnpike to the east, John Young Parkway to the west, and Sand Lake Road to the south. The site is largely comprised of forested wetland areas. An existing ditch runs through the center of the site, carrying runoff west toward cross drains beneath John Young Parkway, where it flows along its historic path to wetlands associated with Shingle Creek. A floodplain compensation site constructed as part of a project to widen Florida's Turnpike lies east of the freight parking site, directly between the site and Turnpike R/W. Additionally, there is a permitted stormwater treatment pond servicing portions of John Young Parkway and Sand Lake Road located within the limits of the freight parking site. Please refer to the **Location Map**, **Figure 2-1** in **Appendix A**.

Soils Data and Geotechnical Investigations

The soil survey of Orange County, Florida (dated 2021) published by the USDA NRCS has been reviewed within the project vicinity. USDA Soil Survey Geographic database (SSURGO) data was also obtained from NRCS to create a soils map for the project limits using GIS ArcMap. The soil survey map for the project vicinity is illustrated in **Figure 2-3** of **Appendix A**.

Table 4-2: USDA NRCS Soil Survey Information for Orange County (Site 1)

Soil No.	USDA Soil Name	Seasonal High Ground Water		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
37	St. Johns Fine Sand	0.0 – 1.0	3-4	B/D	0-12	SP-SM, SP	A-3
					12-24	SP-SM, SP	A-3
					24-44	SP-SM, SM	A-2-4, A-3
					44-80	SP-SM, SP	A-3
44	Smyrna-Smyrna, Wet, Fine Sand	0.0 – 0.5	4-6	A/D	0-4	SP-SM, SM, SP	A-2-4
					4-17	SP-SM, SP	A-2-4, A-3
					17-27	SP-SM, SM	A-2-4
					27-80	SP-SM, SP	A-2-4, A-3

**Seasonal High Ground Water Table: Depth is referenced below existing grade, except where indicated as "+".*

The soils encountered along the project limits are Hydrologic Soil Group (HSG) A/D and B/D. Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sand or gravel and have a high rate of water transmission. Group B Soils have a moderate infiltration rate when thoroughly wet. These consist

chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture and have a moderate rate of water transmission. Group B soils have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission. Group D soils have high runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission. If a soil is assigned to a dual HSG, the first letter is for drained areas, and the second is for un-drained areas. Soils are only assigned a dual class if they are group D in their natural condition. **Table 4-2: USDA NRCS Soil Survey Information for Orange County (Site 1)** summarizes and lists the soil types and relevant information. The ground water depth varies from 0' to 1' within the project site per the NRCS Soil Survey information.

A geotechnical investigation was not performed for this study. Reasonable assumptions are made to set the control elevations of the pond sites based on adjacent permitted stormwater systems and NRCS information. A detailed geotechnical investigation should be performed during the design phase.

Contamination Screening

A desktop contamination screening assessment has been conducted by VHB as part of the PD&E Study. As a result of the contamination screening evaluation, 17 sites have been assigned Contamination Risk Potential Ratings (CRPR). The CRPR rating system was developed by FDOT and incorporates four levels of risk: No, Low, Medium, and High. Of the 17 sites, 16 were identified as Low Risk and 1 as Medium Risk. The overall Risk for the site has been rated Low.

The sites, business operations, and/or facilities identified to date and the risk rankings given to them are preliminary. It should be understood that these risk rankings may change pending receipt of information which indicates a discharge occurred on-site or in nearby surrounding areas. Variables that may change the risk ranking include a facility's non-compliance with environmental regulations, new discharges to the soil or groundwater, and modifications to current permits. Should any of these variables change, additional assessments of the facilities should be conducted. For any sites with a risk ranking of "Medium", Level II field screening should be conducted if it is determined during the project's design that construction activities could be within their vicinity. Please refer to **Appendix H - Contamination Screening Evaluation Report** for further information.

4.2.2 Environmental Characteristics

Land Use Data

The project site is predominantly forested wetlands and upland forests, with some transportation and open land directly adjacent to the project site. Please see **Figure 2-4** for the **Land Use Map** in **Appendix A**.

Cultural Features

A desktop cultural resource survey has been conducted by VHB as part of the PD&E Study. Based on the desktop analysis conducted, it was determined that the site has a Low probability of prehistoric archaeological resources and a Low probability of historic archaeological resources.

During the design phase of the project, systematic archaeological field survey is recommended in accordance with the guidelines and standards promulgated by FDOT and Florida Division of Historical Resources (FDHR). The sites considered to have a low potential also should be surveyed and judgmentally tested. Historical/architectural field survey is also recommended. Please refer to the Preliminary Cultural Resource Assessment (CRAS) Technical Memorandum included in **Appendix F**.

Natural and Biological Features

The Orange County – Site 1 truck parking site consists of mixed coniferous/hardwood upland forests, forested wetlands, and existing reservoirs and waterways. The forested uplands consist of a canopy including slash pine, cabbage palm, southern magnolia (*Magnolia grandiflora*), live oak, and blackjack oak (*Quercus marilandica*), and an understory including saw palmetto, American beautyberry, and highbush blueberry (*Vaccinium elliottii*). Vegetation observed in the forested wetlands includes a canopy of slash pine, red maple, cabbage palm, sweet bay (*Magnolia virginiana*), bald cypress, laurel oak, and live oak, with understory and groundcover species including Brazilian pepper (*Schinus terebinthifolia*), wax myrtle, Carolina willow (*Salix caroliniana*), dahoon holly (*Ilex cassine*), cinnamon fern, chalky bluestem, saltbush (*Atriplex pentandra*), royal fern (*Osmunda regalis*), and swamp fern (*Telmatoblechnum serrulatum*). Approximately 9.04 acres of direct impacts to wetlands and 0.41 acres of direct impacts to surface waters are anticipated for this truck parking site.

Suitable habitat for the American alligator, wood stork, gopher tortoise, Florida sandhill crane, wading birds, and southeastern American kestrel was observed within the project area. No protected species were observed within the project area during field reviews. Species specific surveys will likely be required to confirm absence and minimize impacts to these species should construction activities occur within this truck parking site. Please refer to the *Natural Resources Technical Memorandum* under separate cover.

4.2.3 Floodplains/Floodways

According to the Federal Emergency Management Agency (FEMA), the relevant Flood Insurance Rate Map (FIRM) panel number is 12095C0410F, dated 09/25/2009.

According to the FEMA FIRMs, portions of the project intersect Zone AE of the 100-year floodplain. These areas have a 1% probability of flooding every year with predicted flood water elevations that have been established. The base flood elevation (BFE) of the site has been determined to be elevation 87 feet, per the FEMA FIRMs. There are no federally regulated floodways within the site limits, although the Zone AE floodplains that intersect the site location abut the floodway associated with Shingle Creek. Please refer to **Figure 2-5** in **Appendix A** for the **FEMA Floodplains Map**.

4.2.4 Existing Drainage Permits

There is currently one (1) SFWMD permit within the project site limits that will be impacted by the proposed freight parking site, as well as one (1) permit adjacent to the site referenced for drainage information gathering purposes. The sections below briefly describe the relevant information obtained from each permit or application. Documents from select permits used for the collection of drainage data can be found in **Appendix I – Existing Permits.**

Permit No. 48-00123-S

Permit No. 48-00123-S was issued on March 30, 2016. This permit is for the construction and modification of the intersection of John Young Parkway and Sand Lake Road and the associated stormwater management system. It is anticipated that the construction of the freight parking site will impact the existing wet detention pond located on the northeast corner of the intersection (Pond 4) as it lies completely within the proposed limits of the truck parking site. The treatment and attenuation volume, as well as floodplain compensation volume provided by this pond, will need to be replaced in kind in the proposed condition. Please refer to relevant permit documents, which can be found in **Appendix I**.

Permit No. 48-01443-P

Permit No. 48-01443-P was issued on August 9, 2006. This permit is for the widening of Florida's Turnpike and the construction of an associated floodplain compensation site. It is anticipated that the construction of the freight parking site will not impact this permit, and existing conditions will be maintained during the design phase. This permit was used to collect drainage information adjacent to the site, mainly relating to the seasonal high water table elevation of the floodplain compensation area; relevant documents can be found in **Appendix I**.

4.3 ORANGE COUNTY – SITE 2

4.3.1 Topography & Hydraulic Features

The topography throughout the site is relatively flat; please refer to the **USGS Quadrangle Map** in **Figure 3-2** of **Appendix A** and **Basin Maps** in **Appendix B** for elevation data. The site is not within an

OFW. It is within WBID 3169A – Shingle Creek, which is not impaired for nutrients but is within the BMAP area for Lake Okeechobee. Please refer to the **WBID Map**, **Figure 3-6** in **Appendix A**.

The existing site sits on a recently demolished motel adjacent to SR 528. The former motel was constructed in 1973 simultaneously with the construction of SR 528, including six separate motel buildings and an additional separate reception building. Construction included a series of storm pipes and inlets directly connected to the SR 528 stormwater system near the northeast corner of the project site. This section of SR 528 is untreated and discharges to the Lake Christie Outfall Canal. No on site water quality treatment or flood attenuation was provided.

Soils Data and Geotechnical Investigations

The soil survey of Orange County, Florida (dated 2021) published by the USDA NRCS has been reviewed within the project vicinity. USDA Soil Survey Geographic database (SSURGO) data was also obtained from NRCS to create a soils map for the project limits using GIS ArcMap. The soil survey map for the project vicinity is illustrated in **Figure 3-3** of **Appendix A**.

Table 4-3: USDA NRCS Soil Survey Information for Orange County (Site 2)

Soil No.	USDA Soil Name	Seasonal High Ground Water		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
45	Smyrna Fine Sand – Urban Land Complex	0.5-1.5	6-8	A/D	0-4	SP-SM, SM	A-2-4, A-3
					4-13	SP-SM, SM	A-2-4, A-3
					13-18	SP-SM, SM	A-2-4, A-3
					18-49	SP-SM, SM	A-2-4, A-3
					49-80	SP-SM, SM	A-2-4, A-3

**Seasonal High Ground Water Table: Depth is referenced below existing grade, except where indicated as "+".*

The soils encountered within the site limits are Hydrologic Soil Group (HSG) A/D. Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sand or gravel and have a high rate of water transmission. Group D soils have high runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission. If a soil is assigned to a dual HSG, the first letter is for drained areas, and the second is for un-drained areas. Soils are only assigned a dual class if they are group D in their natural condition. **Table 4-3: USDA NRCS Soil Survey Information for Orange County (Site 2)** summarizes and lists the soil type and relevant information. The ground water depth varies from 0.5' to 1.5' within the site during the wet season per the NRCS Soil Survey information.

A geotechnical investigation was not performed for this study. Reasonable assumptions are made to set the control elevations of the pond sites based on adjacent permitted stormwater systems and

NRCS information. A detailed geotechnical investigation should be performed during the design phase.

Contamination Screening

A desktop contamination screening assessment has been conducted by VHB as part of the PD&E Study. As a result of the contamination screening evaluation, 27 sites have been assigned Contamination Risk Potential Ratings (CRPR). The CRPR rating system was developed by FDOT and incorporates four levels of risk: No, Low, Medium, and High. Of the 27 sites, 20 were identified as Low Risk, 6 as Medium Risk, and 1 as High Risk. The overall Risk for the site has been rated Medium.

The sites, business operations and/or facilities identified to date and the risk rankings given to them are preliminary. It should be understood that these risk rankings may change pending receipt of information which indicates a discharge occurred on-site or in nearby surrounding areas. Variables that may change the risk ranking include a facility's non-compliance with environmental regulations, new discharges to the soil or groundwater, and modifications to current permits. Should any of these variables change, additional assessments of the facilities should be conducted. For any sites with a risk ranking of "Medium", Level II field screening should be conducted if it is determined during the project's design that construction activities could be within their vicinity. Please refer to **Appendix H - Contamination Screening Evaluation Report** for further information.

4.3.2 Environmental Characteristics

Land Use Data

The existing site is predominantly urban and built-up, with the site occupying the location of a recently demolished motel—the site borders SR 528 R/W and other commercial and retail properties. Please see **Figure 3-4** for the **Land Use Map** in **Appendix A**.

Cultural Features

A desktop cultural resource survey has been conducted by VHB as part of the PD&E Study. Based on the desktop analysis conducted, it was determined that the site has a Low probability of prehistoric archaeological resources and a Moderate probability of historic archaeological resources in the vicinity of the site that would need to be recorded.

During the design phase of the project, systematic archaeological field survey is recommended in accordance with the guidelines and standards promulgated by FDOT and Florida Division of Historical Resources (FDHR). The sites considered to have a low potential also should be surveyed and judgmentally tested. Historical/architectural field survey is also recommended. Please refer to the Preliminary Cultural Resource Assessment (CRAS) Technical Memorandum included in **Appendix F.**

Natural and Biological Features

The Orange County – Site 2 truck parking site is located in disturbed, barren land. The area is sparsely vegetated with groundcover species including cogongrass (*Imperata cylindrica*), ragweed, and dog fennel. No wetlands were observed within the project area; therefore, no impacts to wetlands are anticipated for this truck parking site.

Suitable habitat for listed species was not observed within the project area. Construction activities within this truck parking site are not anticipated to incur impacts to listed species. Please refer to the *Natural Resources Technical Memorandum* under separate cover.

4.3.3 Floodplains/Floodways

According to the Federal Emergency Management Agency (FEMA), the relevant Flood Insurance Rate Map (FIRM) panel numbers are 12095C0410F and 12095C0420F, dated 9/25/2009.

According to the FEMA FIRMs, the site lies entirely within Zone X of the 100-year floodplain. These are areas of minimal flood hazard, which are the areas outside the 100-year floodplain and higher than the elevation of the 0.2-percent-annual-chance flood. There are no federally regulated floodways within the site limits. Please refer to **Figure 3-5** in **Appendix A** for the **FEMA Floodplains Map.**

4.3.4 Existing Drainage Permits

There is currently one (1) SFWMD permit application that is within the limits of the freight parking site that the proposed site construction will impact, as well as one (1) permit that is adjacent to the site referenced for drainage information gathering purposes. The sections below briefly describe the relevant information obtained from each permit or application. Documents from select permits used for the collection of drainage data can be found in **Appendix I – Existing Permits**.

Permit No. 48-00633-S

Permit No. 48-00633-S was issued on December 11, 2015. The project is for the widening of SR 528. It is anticipated that the construction of the freight parking site will affect this permit, as the SR 528 storm sewer system serves as the current outfall system for the existing motel site, and the proposed ponds are anticipated to outfall in the same manner.

Permit Application No. 220504-34304

Permit Application No. 220504-34304 was submitted on May 5, 2022. This permit application is for the construction of Orange Blossom Storage Center, a three-story storage facility, associated parking lot, and stormwater management system. This application included Geotech information obtained from recent borings on the motel site used to estimate the seasonal high water table. It is anticipated that the construction of the freight parking site will impact this permit application as both projects overlap each other, occupying the same parcel.

4.4 ORANGE COUNTY – SITE 4

4.4.1 Topography & Hydraulic Features

The topography throughout the project is relatively flat; please refer to the **USGS Quadrangle Map** in **Figure 4-2** of **Appendix A** and **Basin Maps** in **Appendix B** for elevation data. The site is not within an OFW. It is within WBID 3168B – Boggy Creek, which is not impaired for nutrients but is within the BMAP area for Lake Okeechobee. Please refer to the **WBID Map**, **Figure 4-6** in **Appendix A**.

The current site is covered with crushed asphalt and concrete and is currently used for truck storage. Review of aerials has confirmed that the site has historically been used for vehicle parking for the previous 20 years. Additionally, there are three small commercial buildings and one small asphalt car parking lot on the existing site. Stormwater runoff sheet flows across the site and into a small dry swale, which discharges through an 18" pipe into a ditch along Landstreet Road before being collected in the Landstreet Road storm sewer system.

Soils Data and Geotechnical Investigations

The soil survey of Orange County, Florida (dated 2021) published by the USDA NRCS has been reviewed within the project vicinity. USDA Soil Survey Geographic database (SSURGO) data was also obtained from NRCS to create a soils map for the project limits using GIS ArcMap. The soil survey map for the project vicinity is illustrated in **Figure 4-3** of **Appendix A.**

Table 4-4: USDA NRCS Soil Survey Information for Orange County (Site 4)

Soil No.	USDA Soil Name	Seasonal High Ground Water		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
44	Smyrna-Smyrna, Wet, Fine Sand	0.0 – 0.5	4-6	A/D	0-4	SP-SM, SM, SP	A-2-4
					4-17	SP-SM, SP	A-2-4, A-3
					17-27	SP-SM, SM	A-2-4
					27-80	SP-SM, SP	A-2-4, A-3

**Seasonal High Ground Water Table: Depth is referenced below existing grade, except where indicated as "+".*

The soils encountered within the site limits are Hydrologic Soil Group (HSG) A/D. Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sand or gravel and have a high rate of water transmission. Group D soils have high runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission. If a soil is assigned to a dual HSG, the first letter is for drained areas, and the second is for un-drained areas. Soils are only assigned a dual class if they are group D in their natural condition. **Table 4-4: USDA NRCS Soil Survey Information for Orange County (Site 4)** summarizes and lists the soil type and relevant information.

The ground water depth varies from 0.0' to 0.5' within the site during the wet season per the NRCS Soil Survey information.

A geotechnical investigation was not performed for this study. Reasonable assumptions are made to set the control elevations of the pond sites based on adjacent permitted stormwater systems and NRCS information. A detailed geotechnical investigation should be performed during the design phase.

Contamination Screening

A desktop contamination screening assessment has been conducted by VHB as part of the PD&E Study. As a result of the contamination screening evaluation, 35 sites have been assigned Contamination Risk Potential Ratings (CRPR). The CRPR rating system was developed by FDOT and incorporates four levels of risk: No, Low, Medium, and High. Of the 35 sites, 33 were identified as Low Risk and 2 as Medium Risk. The overall Risk for the site has been rated Medium.

The sites, business operations and/or facilities identified to date and the risk rankings given to them are preliminary. It should be understood that these risk rankings may change pending receipt of information which indicates a discharge occurred on-site or in nearby surrounding areas. Variables that may change the risk ranking include a facility's non-compliance to environmental regulations, new discharges to the soil or groundwater, and modifications to current permits. Should any of these variables change, additional assessments of the facilities should be conducted. For any sites with a risk ranking of "Medium", Level II field screening should be conducted if it is determined during the project's design that construction activities could be within their vicinity. Please refer to **Appendix H - Contamination Screening Evaluation Report** for further information.

4.4.2 Environmental Characteristics

Land Use Data

The existing site is predominantly urban and built-up, with the site currently serving as a vehicle parking site. The site borders Landstreet Road R/W as well as other industrial properties. Please see **Figure 4-4** for the **Land Use Map** in **Appendix A**.

Cultural Features

A desktop cultural resource survey has been conducted by VHB as part of the PD&E Study. Based on the desktop analysis conducted, it was determined that the site has a Low probability of prehistoric archaeological resources and a Low probability of historic archaeological resources.

During the design phase of the project, systematic archaeological field survey is recommended in accordance with the guidelines and standards promulgated by FDOT and Florida Division of Historical Resources (FDHR). The sites considered to have a low potential also should be surveyed and judgmentally tested. Historical/architectural field survey is also recommended. Please refer to the Preliminary Cultural Resource Assessment (CRAS) Technical Memorandum included in **Appendix F.**

Natural and Biological Features

The Orange County – Site 4 truck parking site consists of commercial lands. The site is developed, and most of the site is paved with asphalt and gravel. Some small vegetated areas are present, containing groundcover species such as bahiagrass (*Paspalum notatum*), dog fennel, ragweed, and beggar's ticks. No wetlands were observed within the project area; therefore, no impacts to wetlands are anticipated for this truck parking site.

Suitable habitat for listed species was not observed within the project area. Construction activities within this truck parking site are not anticipated to incur impacts to listed species. Please refer to the *Natural Resources Technical Memorandum* under separate cover.

4.4.3 Floodplains/Floodways

According to the Federal Emergency Management Agency (FEMA), the relevant Flood Insurance Rate Map (FIRM) panel numbers are 12095C0410F and 12095C0420F, dated 09/25/2009.

According to the FEMA FIRMs, portions of the project intersect Zone AE of the 100-year floodplain. These areas have a 1% probability of flooding every year with predicted flood water elevations that have been established. The BFE of the site has been determined to be elevation 96 feet, per the FEMA FIRMs. There are no federally regulated floodways within the site limits. Please refer to Figures **4-5** in **Appendix A** for the **FEMA Floodplains Map.**

4.4.4 Existing Drainage Permits

There is currently one (1) SFWMD permit within the site limits that will be impacted by the proposed freight parking site and one (1) permit adjacent to the site referenced for drainage information gathering purposes. The sections below briefly describe the relevant information obtained from each permit or application. Documents from select permits used for the collection of drainage data can be found in **Appendix I – Existing Permits.**

Permit No. 48-100034-P

Permit No. 48-100034-P was issued on September 14, 2017. This permit, titled "Soil Tech Facility – Orlando," is for the construction of one of the small commercial buildings on the existing vehicle storage site. It is anticipated that the construction of the freight parking site will impact the existing permit, as the commercial building will need to be demolished during the freight parking construction. This permit was used to collect drainage information on the site, mainly relating to the existing flood compensation swale; relevant documents can be found in **Appendix I**.

Permit No. 48-101958-P

Permit No. 48-101958-P was issued on September 16, 2019. The permit is for the construction of 2 wet detention ponds and a dry pre-treatment swale for the Landstreet Asphalt Plant owned by Hubbard Construction. It is anticipated that the construction of the freight parking site will not impact this permit, and existing conditions will be maintained during the design phase. This permit

was used to collect drainage information adjacent to the site, mainly relating to the wet pond control elevation and seasonal high water table elevation; relevant documents can be found in **Appendix I**.

4.5 SEMINOLE COUNTY – SITE 1B

4.5.1 Topography & Hydraulic Features

The topography throughout the site is relatively flat; please refer to the **USGS Quadrangle Map**, **Figure 5-2** in **Appendix A** and **Basin Maps** in **Appendix B** for elevation data. The site is not within an OFW. It is within WBID 2893C – St. Johns River Above Wekiva River, which is not impaired for nutrients but is within the BMAP and TMDL areas for the Middle St. Johns River. Please refer to the **WBID Map**, **Figure 5-6** in **Appendix A**.

The existing site consists mainly of commercial development (Donny Myers RV and Circle K) with permitted detention ponds and open space that is permitted for future commercial expansion. I-4 (SR 400) borders the site to the northwest and is currently permitted for widening under the I-4 Beyond the Ultimate (BTU) Segment 3 project and includes a proposed wet detention pond within the freight parking site. School Street borders the site to the south and Monroe Road (US 17/92) to the east. The site and existing detention ponds discharge to a swale along the I-4 off ramp which flows northeast towards Lake Monroe. Please refer to the **Location Map**, **Figure 5-1** in **Appendix A**.

Soils Data and Geotechnical Investigations

The soil survey of Seminole County, Florida (dated 2022) published by the USDA NRCS has been reviewed within the project vicinity. USDA Soil Survey Geographic database (SSURGO) data was also obtained from NRCS to create a soils map for the project limits using GIS ArcMap. The soil survey map for the project vicinity is illustrated in **Figure 5-3 in Appendix A**.

Table 4-5: USDA NRCS Soil Survey Information for Seminole County (Site 1B)

Soil No.	USDA Soil Name	Seasonal High Ground Water		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
3	Arents, 0 to 5 percent slopes	1.5-3.0	6	A/D	0-10	SP-SM, SP	A-2-4, A-3
					10-32	SP-SM, SP	A-2-4, A-3
					32-80	SP-SM, SP	A-2-4, A-3
13	EauGallie and Immokalee fine sands	0.5-1.5	4	A/D	0-6	SP-SM, SP	A-3
					6-18	SP-SM, SP	A-3
					18-30	SP-SM, SM	A-2-4, A-3
					30-45	SP-SM, SP	A-2-4, A-3
					45-64	SM-SC, SC, SM	A-2-4, A-2-6
					64-80	SP-SM, SM	A-2-4, A-3
15	Felda and Manatee mucky fine sands, depressional	0	7	A/D	0-4	SP-SM, SP	A-3
					4-28	SP-SM, SP	A-3
					28-36	SM-SC, SC, SM	A-2-4, A-2-6
					36-46	SP-SM, SP	A-2-4, A-3
					46-80	SP-SM, SP	A-3

Soil No.	USDA Soil Name	Seasonal High Ground Water		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
25	Pineda-Pineda, wet, fine sand, 0 to 2 percent slopes	0.5-1.5	12	A/D	0-1	SP-SM, SM	A-2-4, A-3
					1-5	SP-SM, SM	A-2-4, A-3
					5-36	SP-SM, SM	A-2-4, A-3
					36-54	SC-SM, CL, SC	A-2-4, A-2-6
					54-80	SP-SM, SM	A-2-4, A-3

**Seasonal High Ground Water Table: Depth is referenced below existing grade, except where indicated as "+".*

The soils encountered within the project site are Hydrologic Soil Group (HSG) A/D. Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sand or gravel and have a high rate of water transmission. Group D soils have high runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission. If a soil is assigned to a dual HSG, the first letter is for drained areas, and the second is for un-drained areas. Soils are only assigned a dual class if they are group D in their natural condition. **Table 4-5: USDA NRCS Soil Survey Information for Seminole County** summarizes and lists the soil types and relevant information. The ground water depth varies from 0' to 3' within the site per the NRCS Soil Survey information.

A geotechnical investigation was not performed for this study. Reasonable assumptions are made to set the control elevations of the pond sites based on adjacent permitted stormwater systems and NRCS information. A detailed geotechnical investigation should be performed during the design phase.

Contamination Screening

A desktop contamination screening assessment has been conducted by VHB as part of the PD&E Study. As a result of the contamination screening evaluation, 28 sites have been assigned Contamination Risk Potential Ratings (CRPR). The CRPR rating system was developed by FDOT and incorporates four levels of risk: No, Low, Medium, and High. Of the 28 sites, 27 were identified as Low Risk and 1 as Medium Risk. The overall Risk for the site has been rated High.

The sites, business operations and/or facilities identified to date and the risk rankings given to them are preliminary. It should be understood that these risk rankings may change pending receipt of information which indicates a discharge occurred on-site or in nearby surrounding areas. Variables that may change the risk ranking include a facility's non-compliance with environmental regulations, new discharges to the soil or groundwater, and modifications to current permits. Should any of these variables change, additional assessments of the facilities should be conducted. For any sites with a risk ranking of "Medium", Level II field screening should be conducted if it is determined

during the project's design that construction activities could be within their vicinity. Please refer to **Appendix H - Contamination Screening Evaluation Report** for further information.

4.5.2 Environmental Characteristics

Land Use Data

The project site consists of commercial uses mixed with open land that has been cleared, along with some residences. Please see **Figure 5-4** for the **Land Use Map** in **Appendix A**. Please note that the available land use data does not reflect recent development on this site.

Cultural Features

A desktop cultural resource survey has been conducted by VHB as part of the PD&E Study. Based on the desktop analysis conducted, it was determined that the site has a Moderate to High probability of archaeological and historic resources.

During the design phase of the project, systematic archaeological field survey is recommended in accordance with the guidelines and standards promulgated by FDOT and Florida Division of Historical Resources (FDHR). The sites considered to have a low potential also should be surveyed and judgmentally tested. Historical/architectural field survey is also recommended. Please refer to the Preliminary Cultural Resource Assessment (CRAS) Technical Memorandum included in **Appendix F**.

Natural and Biological Features

The Seminole County truck parking site consists of commercial and residential lands, dry prairie, mixed hardwood forested uplands, wet prairie, and existing reservoirs. The dry prairie areas consist of herbaceous groundcover including pennywort (*Hydrocotyle* spp.), ragweed, sensitive briar (*Mimosa quadrivalvis*), rattle box (*Sesbania punicea*), blackberry, shrubby false button weed (*Spermacoce verticillate*) and St. Augustine grass (*Stenotaphrum secundatum*). The forested uplands include a canopy of sweetgum, cabbage palm, cedar (*Juniperus virginiana*), camphor (*Cinnamomum camphora*), laurel oak, and sugarberry (*Celtis laevigata*), and groundcover consisting of St. Augustine grass, sensitive briar, ragweed, pennywort, peppervine, frog fruit (*Limnobium spongia*), winged loosestrife (*Lythrum foliosus*), and beggar's ticks (*Bidens alba*). Observed vegetation within the wet prairie includes white top starrush (*Rhynchospora colorata*), swamp smartweed (*Persicaria hydropiperoides*), Mexican primrose-willow (*Peruvian octovalvis*), water primrose (*Ludwigia peruviana*), frog fruit, taro (*Colocasia esculenta*), dogfennel, sedges (*Cyperus* spp.), marsh bristlegrass (*Setaria parviflora*), mock bishopweed (*Ptilimnium capillaceum*), grassleaf rush (*Juncus marginatus*), St. Augustine grass, Virginia buttonweed (*Diodia virginiana*), beggar's ticks, marsh pennywort (*Hydrocotyle umbellate*), and ragweed. Approximately 1.40 acres of direct impacts to wetlands are anticipated for the Seminole County truck parking site.

Some suitable habitat for the wood stork, gopher tortoise, Florida sandhill crane, and wading birds was observed within the project area. No protected species were observed within the project area

during field reviews. Existing habitat within the project area is minimal and suboptimal for the gopher tortoise. Nesting habitat is not present for the Florida sandhill crane. There will be no net loss of foraging habitat for wood storks and wading birds. Please refer to the *Natural Resources Technical Memorandum* under separate cover.

4.5.3 Floodplains/Floodways

According to the Federal Emergency Management Agency (FEMA), the relevant Flood Insurance Rate Map (FIRM) panel number is 12117C0055F, dated 9/28/2007.

According to the FEMA FIRMs, the site lies entirely within Zone X of the 100-year floodplain. These are areas of minimal flood hazard, which are the areas outside the 100-year floodplain and higher than the elevation of the 0.2-percent-annual-chance flood. There are no federally regulated floodways within the site limits. Please refer to **Figure 5-5** in **Appendix A** for the **FEMA Floodplains Map.**

4.5.4 Existing Drainage Permits

There are currently three (3) SJRWMD permits within the limits of the freight parking site that the proposed site construction will impact. The sections below briefly describe the relevant information obtained from each permit or application. Documents from select permits used for the collection of drainage data can be found in **Appendix I – Existing Permits**.

Permit No. 48756-5

Permit No. 48756-5 was issued on July 18th, 2011. This permit is for the Phase I construction of Donnie Myers RV (also known as Southern Pride Business Center), including one wet detention pond and two dry retention ponds. Portions of this permit were later modified by the permit for Phase II (see below). It is anticipated that the construction of the freight parking site will impact this permit application as both projects overlap each other, occupying the same parcel. Relevant documents can be found in **Appendix I**.

Permit No. 48756-6

Permit No. 48756-6 was issued on July 24, 2012. This permit is for the Phase II construction of Donnie Myers RV (also known as Southern Pride Business Center), including additional buildings, relocation of the wet detention pond, and construction of a new dry detention pond. It appears that the wet pond relocation was completed, but none of the other construction was initiated. Information from this pond was used to estimate the seasonal high water table. It is anticipated that the construction of the freight parking site will impact this permit application as both projects overlap each other, occupying the same parcel. Relevant documents can be found in **Appendix I**.

Permit No. 22434-15

Permit No. 22434-15 was issued on March 22, 2018. This permit is for the widening of I-4 (SR 400) from east of SR 434 to east of 17/92, otherwise known as the I-4 Beyond the Ultimate (BTU)

Segment 3. This project includes construction of a new wet detention pond within the proposed freight parking site. This pond has not yet been constructed. It is anticipated that the construction of the freight parking site will impact Pond 317D as it lies completely within the proposed limits of the truck parking site. The treatment and attenuation volume provided by this pond will need to be replaced in kind in the proposed condition. This permit was also used to collect information regarding seasonal high water table for the site. Please refer to relevant permit documents, which can be found in **Appendix I**.

4.6 VOLUSIA COUNTY – SITE 1A

The topography throughout the site slopes downhill from the southwest side to the northeast side. Please refer to the **USGS Quadrangle Map**, **Figure 6-2** in **Appendix A** and **Basin Maps** in **Appendix B** for elevation data. The site discharges to the Tomoka River OFW. It is within WBID 2634 Tomoka River and WBID 2675 – Sand Creek, both of which are not impaired for nutrients. Please refer to the **WBID Map**, **Figure 6-6** in **Appendix A**.

The majority of the existing site area consists of undeveloped mixed forests and wetlands. It is bordered to the northwest by I-4 (SR 400) and on all other sides by the Port Orange City Forest. I-4 was recently widened throughout this area. A portion of the site area, specifically the proposed eastbound I-4 off ramp, is located on a former Volusia County rest area. Please refer to the **Location Map**, **Figure 6-1** in **Appendix A**.

Soils Data and Geotechnical Investigations

The soil survey of Volusia County, Florida (dated 2022) published by the USDA NRCS has been reviewed within the project vicinity. USDA Soil Survey Geographic database (SSURGO) data was also obtained from NRCS to create a soils map for the project limits using GIS ArcMap. The soil survey map for the project vicinity is illustrated in **Figure 6-3 in Appendix A**.

Table 4-6: USDA NRCS Soil Survey Information for Volusia County (Site 1A)

Soil No.	USDA Soil Name	Seasonal High Ground Water		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
29	Immokalee sand	0-0.5	3	B/D	0-10	SP-SM, SP	A-3
					10-34	SP-SM, SP	A-3
					34-43	SP-SM, SM	A-2-4, A-3
					43-85	SP-SM, SP	A-3
32	Myakka-Myakka, wet, fine sands, 0 to 2 percent slopes	0.5-1.5	6	A/D	0-6	SP-SM, SM	A-3, A-2-4
					6-20	SP-SM, SM	A-3, A-2-4
					20-36	SP-SM, SM	A-3, A-2-4
					36-80	SP-SM, SM	A-3, A-2-4
56	Samsula muck, frequently ponded, 0 to 1 percent slopes	0	8	A/D	0-24	PT	A-8
					24-32	PT	A-8
					32-35	SP-SM, SM	A-3, A-2-4
					35-44	SP-SM, SM	A-3, A-2-4
					44-80	SP-SM, SM	A-3, A-2-4

**Seasonal High Ground Water Table: Depth is referenced below existing grade, except where indicated as "+".*

The soils encountered within the project site are Hydrologic Soil Groups (HSG) A/D and B/D. Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sand or gravel and have a high rate of water transmission. Group B Soils have a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture and have a moderate rate of water transmission. Group D soils have high runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission. If a soil is assigned to a dual HSG, the first letter is for drained areas, and the second is for un-drained areas. Soils are only assigned a dual class if they are group D in their natural condition. **Table 4-7: USDA NRCS Soil Survey Information for Volusia County (Site 1A)** summarizes and lists the soil types and relevant information. The groundwater depth varies from 0' to 1.5' within the site per the NRCS Soil Survey information.

A geotechnical investigation was not performed for this study. Reasonable assumptions are made to set the control elevations of the pond sites based on adjacent permitted stormwater systems and NRCS information. A detailed geotechnical investigation should be performed during the design phase.

Contamination Screening

A desktop contamination screening assessment has been conducted by VHB as part of the PD&E Study. As a result of the contamination screening evaluation, 5 sites have been assigned Contamination Risk Potential Ratings (CRPR). The CRPR rating system was developed by FDOT and incorporates four levels of risk: No, Low, Medium, and High. Of the 5 sites, 4 were identified as Low Risk and 1 as Medium Risk. The overall Risk for the site has been rated Low.

The sites, business operations and/or facilities identified to date and the risk rankings given to them are preliminary. It should be understood that these risk rankings may change pending receipt of information which indicates a discharge occurred on-site or in nearby surrounding areas. Variables that may change the risk ranking include a facility's non-compliance with environmental regulations, new discharges to the soil or groundwater, and modifications to current permits. Should any of these variables change, additional assessments of the facilities should be conducted. For any sites with a risk ranking of "Medium", Level II field screening should be conducted if it is determined during the project's design that construction activities could be within their vicinity. Please refer to **Appendix H - Contamination Screening Evaluation Report** for further information.

4.6.1 Environmental Characteristics

Land Use Data

The project site mainly consists of undeveloped mixed forests and wetlands. A portion of the site area, specifically the proposed eastbound I-4 off ramp, is located on a former Volusia County rest area. Please see **Figure 6-4** for the **Land Use Map** in **Appendix A**.

Cultural Features

A desktop cultural resource survey has been conducted by VHB as part of the PD&E Study. Based on the desktop analysis conducted, it was determined that the site has a Low probability of archaeological resources and a Low probability of historic resources.

During the design phase of the project, systematic archaeological field survey is recommended in accordance with the guidelines and standards promulgated by FDOT and Florida Division of Historical Resources (FDHR). The sites considered to have a low potential also should be surveyed and judgmentally tested. Historical/architectural field survey is also recommended. Please refer to the Preliminary Cultural Resource Assessment (CRAS) Technical Memorandum included in **Appendix F**.

Natural and Biological Features

The Volusia County Site 1A truck parking site consists of pine flatwoods and forested wetlands. The pine flatwoods within the project area consist of a canopy of longleaf pine, slash pine, cabbage palm, and loblolly bay, with understory and groundcover species including bracken fern (*Pteridium aquilinum*), saw palmetto, gopher apple, dog fennel, and ragweed. Vegetation observed within the canopy of the forested wetlands includes loblolly bay, longleaf pine, red maple, blackgum (*Nyssa sylvatica*), and bald cypress. Understory and groundcover species include Brazilian pepper, wax myrtle, salt bush, Mexican primrose-willow, Virginia chain fern, and elderberry (*Sambucus nigra*). Approximately 32.42 acres of direct impacts to wetlands are anticipated for the Volusia County Site 1A truck parking site.

Suitable habitat for the wood stork, southeastern American kestrel, and Florida black bear was observed within the project area. No protected species were observed within the project area during field reviews. Species specific surveys will likely be required to confirm absence and minimize impacts to these species should construction activities occur within this truck parking site. Please refer to the *Natural Resources Technical Memorandum* under separate cover.

4.6.2 Floodplains/Floodways

According to the Federal Emergency Management Agency (FEMA), the relevant Flood Insurance Rate Map (FIRM) panel number is 12127C0500H, effective 2/19/2014.

According to the FEMA FIRMs, portions of the site intersect Zone A of the 100-year floodplain. These areas have a 1% probability of flooding every year with predicted flood water elevations that have

not been established. There are no federally regulated floodways within the site limits. Please refer to **Figure 6-5** in **Appendix A** for the **FEMA Floodplains Map.**

4.6.3 Existing Drainage Permits

There is currently one (1) SJRWMD permit adjacent to the freight parking site that the proposed site construction will impact. The sections below briefly describe the relevant information obtained from each permit or application. Documents from select permits used for the collection of drainage data can be found in **Appendix I – Existing Permits**.

Permit No. 64105-12

Permit No. 64105-12 was issued on November 7, 2013. This application is for the widening of I-4 from SR 44 to I-95. It is anticipated that the construction of the freight parking site will not impact this permit. This permit was also used to collect drainage information for this PD&E Study, mainly estimating the seasonal high groundwater elevation, and relevant documents can be found in **Appendix I**.

4.7 VOLUSIA COUNTY – SITE 1B

The topography throughout the site is relatively flat; please refer to the **USGS Quadrangle Map**, **Figure 6-2** in **Appendix A** and **Basin Maps** in **Appendix B** for elevation data. The site discharges to the Tiger Bay OFW. It is within WBID 2654 – Drainage Canals, which is not impaired for nutrients. Please refer to the **WBID Map**, **Figure 6-6** in **Appendix A**.

The existing site consists of undeveloped mixed forests and wetlands. It is bordered to the southeast by I-4 (SR 400) and by the Tiger Bay State Forest on all other sides. I-4 was recently widened throughout this area, and a new wet detention stormwater pond (Pond I) was constructed partially within the proposed freight parking site. Please refer to the **Location Map**, **Figure 6-1** in **Appendix A**.

Soils Data and Geotechnical Investigations

The soil survey of Volusia County, Florida (dated 2022) published by the USDA NRCS has been reviewed within the project vicinity. USDA Soil Survey Geographic database (SSURGO) data was also obtained from NRCS to create a soils map for the project limits using GIS ArcMap. The soil survey map for the project vicinity is illustrated in **Figure 6-3 in Appendix A**.

Table 4-7: USDA NRCS Soil Survey Information for Volusia County (Site 1B)

Soil No.	USDA Soil Name	Seasonal High Ground Water		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
32	Myakka-Myakka, wet, fine sands, 0 to 2 percent slopes	0.5-1.5	6	A/D	0-6	SP-SM, SM	A-3, A-2-4
					6-20	SP-SM, SM	A-3, A-2-4
					20-36	SP-SM, SM	A-3, A-2-4
					36-80	SP-SM, SM	A-3, A-2-4

Soil No.	USDA Soil Name	Seasonal High Ground Water		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
34	Myakka-St. Johns complex	0	12	A/D	0-5	SP-SM, SP	A-3
					5-27	SP-SM, SP	A-3
					27-43	SP-SM, SM	A-2-4, A-3
					43-78	SP-SM, SP	A-3
56	Samsula muck, frequently ponded, 0 to 1 percent slopes	0	8	A/D	0-24	PT	A-8
					24-32	PT	A-8
					32-35	SP-SM, SM	A-3, A-2-4
					35-44	SP-SM, SM	A-3, A-2-4
					44-80	SP-SM, SM	A-3, A-2-4

**Seasonal High Ground Water Table: Depth is referenced below existing grade, except where indicated as "+".*

The soils encountered within the project site are Hydrologic Soil Group (HSG) A/D. Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sand or gravel and have a high rate of water transmission. Group D soils have high runoff potential. They have very low infiltration rates when thoroughly wetted and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission. If a soil is assigned to a dual HSG, the first letter is for drained areas, and the second is for un-drained areas. Soils are only assigned a dual class if they are group D in their natural condition. **Table 4-6: USDA NRCS Soil Survey Information for Volusia County (Site 1B)** summarizes and lists the soil types and relevant information. The groundwater depth varies from 0' to 1.5' within the site per the NRCS Soil Survey information.

A geotechnical investigation was not performed for this study. Reasonable assumptions are made to set the control elevations of the pond sites based on adjacent permitted stormwater systems and NRCS information. A detailed geotechnical investigation should be performed during the design phase.

Contamination Screening

A desktop contamination screening assessment has been conducted by VHB as part of the PD&E Study. As a result of the contamination screening evaluation, 5 sites have been assigned Contamination Risk Potential Ratings (CRPR). The CRPR rating system was developed by FDOT and incorporates four levels of risk: No, Low, Medium, and High. Of the 5 sites, 4 were identified as Low Risk and 1 as Medium Risk. The overall Risk for the site has been rated Low.

The sites, business operations and/or facilities identified to date and the risk rankings given to them are preliminary. It should be understood that these risk rankings may change pending receipt of information which indicates a discharge occurred on-site or in nearby surrounding areas. Variables that may change the risk ranking include a facility's non-compliance with environmental regulations, new discharges to the soil or groundwater, and modifications to current permits. Should any of

these variables change, additional assessments of the facilities should be conducted. For any sites with a risk ranking of "Medium", Level II field screening should be conducted if it is determined during the project's design that construction activities could be within their vicinity. Please refer to **Appendix H - Contamination Screening Evaluation Report** for further information.

4.7.1 Environmental Characteristics

Land Use Data

The project site mainly consists of undeveloped mixed forests and wetlands. Please see **Figure 6-4** for the **Land Use Map** in **Appendix A**.

Cultural Features

A desktop cultural resource survey has been conducted by VHB as part of the PD&E Study. Based on the desktop analysis conducted, it was determined that the site has a Low probability of archaeological resources and a Low probability of historic resources.

During the design phase of the project, systematic archaeological field survey is recommended in accordance with the guidelines and standards promulgated by FDOT and Florida Division of Historical Resources (FDHR). The sites considered to have a low potential also should be surveyed and judgmentally tested. Historical/architectural field survey is also recommended. Please refer to the Preliminary Cultural Resource Assessment (CRAS) Technical Memorandum included in **Appendix F**.

Natural and Biological Features

The Volusia County Site 1B truck parking site consists of pine flatwoods, forested wetlands, and an existing reservoir. The pine flatwoods within the project area consist of a canopy dominated by longleaf pine with some loblolly bay (*Gordonia lasianthus*) and an understory of saw palmetto. Vegetation observed within the canopy of the forested wetlands includes slash pine, loblolly bay, pond cypress (*Taxodium ascendens*), and cabbage palm. Understory and groundcover species include wax myrtle, Virginia chain fern, maidencane (*Panicum hemitomon*), chalky bluestem, St. Johns wort, frog's bit, sawgrass (*Cladium jamaicense*), marsh mermaidweed (*Proserpinaca palustris*), giant whitetop starrush (*Rhynchospora latifolia*), yellow-eyed grass (*Xyris* spp.), redroot, meadow beauty, hooded pitcherplant (*Sarracenia minor*), and pink sundew (*Drosera capillaris*). Approximately 31.48 acres of direct impacts to wetlands are anticipated for the Volusia County Site 1B truck parking site.

Suitable habitat for the wood stork, Florida sandhill crane, wading birds, southeastern American kestrel, and Florida black bear was observed within the project area. No protected species were observed within the project area during field reviews. Species specific surveys will likely be required to confirm absence and minimize impacts to these species should construction activities occur within this truck parking site. Please refer to the *Natural Resources Technical Memorandum* under separate cover.

4.7.2 Floodplains/Floodways

According to the Federal Emergency Management Agency (FEMA), the relevant Flood Insurance Rate Map (FIRM) panel number is 12127C0500H, dated 2/19/2014.

According to the FEMA FIRMs, the site lies entirely within Zone A of the 100-year floodplain. These areas have a 1% probability of flooding every year with predicted flood water elevations that have not been established. There are no federally regulated floodways within the site limits. Please refer to **Figure 6-5** in **Appendix A** for the **FEMA Floodplains Map.**

4.7.3 Existing Drainage Permits

There is currently one (1) SJRWMD permit adjacent to the freight parking site that the proposed site construction will impact. The sections below briefly describe the relevant information obtained from each permit or application. Documents from select permits used for the collection of drainage data can be found in **Appendix I – Existing Permits**.

Permit No. 64105-12

Permit No. 64105-12 was issued on November 7, 2013. This application is for the widening of I-4 from SR 44 to I-95 and includes a wet detention stormwater pond (Pond I) within the proposed freight parking site. It is anticipated that the construction of the freight parking site will impact this permit as a portion of the site overlaps the existing pond which is proposed to be expanded to the southwest. This permit was also used to collect drainage information for this PD&E Study, mainly estimating the seasonal high groundwater elevation, and relevant documents can be found in **Appendix I.**

SECTION 5 PROPOSED DRAINAGE CONDITIONS

The stormwater runoff from the project site limits will be collected and conveyed to the recommended ponds for each site via storm sewer infrastructure. The various ponds among the seven freight parking sites consist of wet detention and dry retention ponds. The ponds will discharge at or near the same location that the runoff in the existing condition discharges from each site. The proposed ponds have been sized to achieve the required water quality treatment and water quantity attenuation and assist the Department in the right-of-way estimation for the project.

5.1 METHODOLOGY OF POND DETERMINATION

5.1.1 General Process

The pond sizing analysis assumes that all ponds will be designed using the appropriate criteria for wet detention or dry retention based on the best available water table data and other conditions at each proposed site. VHB identified preliminary pond shapes and sizes during their initial analysis and conceptual design of each site. These ponds were then evaluated to determine whether they were sufficient for the site's drainage needs based on the estimated required pond volumes. Pond volumes were calculated using appropriate criteria for each Water Management District and County. Impervious areas were measured in Microstation SS10 to compute existing and proposed curve numbers. Existing curve numbers were estimated using aerial imagery and land use data, and proposed curve numbers were estimated using the proposed parking design files provided by VHB. A 10% upsize in the required pond right-of-way area has been applied for all the stormwater treatment ponds to account for preliminary parameters such as the estimated average wet seasonal water elevations, ground elevations, and potential natural contouring of the ponds. Please note that since each parcel/site size is limited by real conditions (i.e., the ponds cannot be expanded outside of the selected parcel), the pond size totals used in the calculations include the 10% upsize in them to show that the total pond size requirement fits adequately within the parameters of the site.

During the final design, additional consideration should be given to aesthetic features to comply with the Highway Beautification Act, including softening the pond contours, landscaping, and other aesthetic features.

The following sections detail each proposed site and relevant information for the proposed ponds. The full Pond Alternatives Evaluation Matrix is available in **Appendix C** and summarizes many of the existing and proposed parameters for each site.

5.1.2 Nutrient Loading Analysis

None of the proposed freight parking sites are located within WBIDs that are impaired for nutrients according to the current FDEP 303(d) list of impaired water bodies. However, some sites are located within Basin Management Action Plan (BMAP) areas and are subject to nutrient loading limits.

Nutrient loading analysis was performed for sites located within BMAP areas to show no adverse effects from the proposed project. All analysis was performed using BMPTRAINS 2020 software (Version 4.3.5), developed by the University of Central Florida Stormwater Management Academy. Results of the analysis, along with backup calculations (permanent pool volume, composite curve numbers, and composite loadings), are included in **Appendix E – Nutrient Loading Analysis**. More information for each individual site can be found in the following sections.

The relevant BMAPs and TMDLs for this project are the Lake Okeechobee BMAP (Orange County and Osceola County), the Middle St. Johns River Basin BMAP (Seminole County), and the Six Middle St. Johns River Segments TMDL.

The original BMAP and TMDL documents can be found at the links below.

Lake Okeechobee BMAP: https://floridadep.gov/sites/default/files/LakeO-BMAP-APR-2015.pdf

Middle St. Johns River Basin (Lake Harney, Lake Monroe, Middle St. Johns River, and Smith Canal) BMAP: https://floridadep.gov/sites/default/files/harney-monroe-bmap-final.pdf

TMDL for the Six Middle St. Johns River Segments between the Inlet of Lake Harney (WBID 2964A) and St. Johns River above Wekiva River (WBID 2893C):
https://floridadep.gov/sites/default/files/donuttmdl_msjr_final.pdf

5.2 OSCEOLA COUNTY – SITE 1

5.2.1 Stormwater Pond Evaluation

The proposed site for the Osceola County freight parking site is 40.11 acres and will include two (2) wet detention stormwater ponds. The site is located within an open basin and discharges to an adjacent wetland to the south. The site is located within WBID 3107C – Reedy Creek Above Lake Russell, which is not impaired for nutrients but is within the BMAP area for Lake Okeechobee; therefore, nutrient loading analysis has been performed. More information about nutrient loading analysis is available in **Section 5.2.3**. Additionally, SFWMD requires stormwater management facilities discharging to the Lake Okeechobee BMAP to meet OFW criteria; therefore, an additional 50% of the required treatment volume has been provided.

This site is mostly undeveloped, with one residential property included within the project area.

The CR 532 (Osceola Polk Line Road) widening project is currently in design (not yet permitted) adjacent to this site and includes construction of a new wet detention stormwater pond (Pond 5) on the site. Since this pond will need to be removed to accommodate the proposed freight parking, compensation has been provided for the lost pond volume. The Phase II Drainage Report calculations indicate that the pond provides a treatment volume of 1.25 ac-ft. Volumetric calculations are not available for attenuation in the pond, but the required attenuation volume has been estimated from the pond storage calculations and design high water elevation provided in the model to be 3.60 ac-ft. Supplemental calculations to show these estimates can be found in **Appendix D,** along with the **Pond Sizing Calculations**.

Pond 1 is located along the west parcel line and is a 7.95 acre wet detention pond. Pond 2 is located at the southwest corner of the site and is a 3.43 acre wet detention pond. According to LIDAR data for the site, the existing ground elevation for both ponds is approximately 82.00 feet NAVD. The combined pond area for both ponds is 11.38 acres. According to the Osceola County Soil Survey, soils on Pond 1 will consist of Immokalee fine sand (#16, HSG B/D), Riviera fine sand (#38, HSG A/D) and Riviera fine sand, frequently ponded (#39 HSG A/D). Pond 2 will consist of Floridana fine sand, frequently ponded (#12, HSG C/D), Immokalee fine sand (#16, HSG B/D), and Myakka fine sand (#22, HSG A/D).

The normal water/control elevation was estimated from the proposed CR 532 pond, which has a control elevation of 81.50 feet. However, since the existing ground toward the back of the parcel is slightly lower, the control elevation for both ponds has been set at 81.00 feet. The site will require 14.39 ac-ft of treatment and attenuation volume. Ponds 1 and 2 provide 10.33 ac-ft and 4.06 ac-ft, respectively, totaling 14.39 ac-ft of provided treatment and attenuation volume. Please refer to the **Pond Sizing Calculations** located in **Appendix D.**

5.2.2 Floodplain Compensation

This site does not intersect any floodplains. Floodplain compensation is not required.

5.2.3 Nutrient Loading Analysis

The Osceola County site is located within the Lake Okeechobee BMAP, which sets limitations for Total Phosphorus loading. Nutrient loading analysis has been performed to demonstrate that the post-development condition will not exceed pre-development nutrient loads. It was determined that the wet detention ponds provide sufficient Phosphorus reduction. **Table 5-1** summarizes the results of the nutrient loading analysis for the Osceola County site. BMPTRAINS results can be found in **Appendix E – Nutrient Loading Analysis**.

Table 5-1: Osceola County – Site 1 Nutrient Loading Summary

Nutrient	Pre-Development Loading (kg/yr)	Post-Development Loading (kg/yr)	Post-Development Loading after BMP (kg/yr)	Required Removal Efficiency	Provided Removal Efficiency
Phosphorus	7.98	15.71	3.11	49%	80%

5.3 ORANGE COUNTY – SITE 1

5.3.1 Stormwater Pond Evaluation

The proposed site for the Orange County – Site 1 freight parking site is 16.30 acres and will include two (2) wet detention stormwater ponds. The site is located within an open basin and discharges to wetlands associated with Shingle Creek via three cross drains beneath John Young Parkway. The site is located within WBID 3169A – Shingle Creek, which is not impaired for nutrients but is within the BMAP for Lake Okeechobee; therefore, a nutrient loading analysis has been performed. More

information about nutrient loading analysis is available in **Section 5.3.3**. Additionally, SFWMD requires stormwater management facilities discharging to the Lake Okeechobee BMAP to meet OFW criteria; therefore, an additional 50% of the required treatment volume has been provided.

Pond 1 is located in the northern portion of the site along John Young Parkway and is a 3.91 acre wet detention pond. Pond 2 is located on the southern edge of the site along Sand Lake Road and is a 1.10 acre linear wet detention pond. According to LIDAR data for the site, the existing ground elevation for the ponds varies between 83.00 and 87.00 feet NAVD. The combined pond area for all ponds is 5.01 acres. According to the Orange County Soil Survey, soils in the location of Pond 2 will consist entirely of Smyrna-Smyrna, Wet, Fine Sand (#44, HSG A/D), and soils in the location of Pond 1 will be a combination of Smyrna-Smyrna, Wet, Fine Sand (#44, HSG A/D) and St. Johns Fine Sand (#37, HSG B/D).

On the southwest corner of the site, an existing wet detention pond is currently serving as the stormwater management system for portions of John Young Parkway and Sand Lake Road, hereafter referred to as "John Young Pond 4". Per the calculations from the John Young Parkway Sand Lake Road Intersection permit (Permit No. 48-00123-S), this pond currently provides 1.95 ac-ft of treatment volume. Volumetric calculations are not provided in the permit for the attenuation in John Young Pond 4, but the provided attenuation volume has been estimated from the pond storage calculations to be 2.12 ac-ft. Since this pond will be removed in the proposed condition of the freight parking site, the treatment and attenuation volumes must be replaced in kind, and the proposed stormwater ponds will serve as a joint-use stormwater management facility between the freight parking site and John Young Parkway / Sand Lake Road.

The normal water/control elevation of the proposed ponds was estimated from cross drain tailwater information obtained from the John Young Parkway Sand Lake Road Intersection permit. In the existing condition, three cross drains ("CD-7", "CD-8," and "CD-9" per the permit) carry water from the wetlands on the east side of John Young Parkway (corresponding to the proposed location of the freight parking site) to the west side, discharging into wetlands associated with Shingle Creek. John Young Pond 4 currently discharges into these eastern wetlands, but these will be removed with the construction of the freight parking site. Therefore, the proposed ponds will now be forced to discharge more directly to the cross drains, and the downstream tailwater elevation of 83.50 feet NAVD was used as the control elevation / normal water elevation.

The site will require a total of 8.52 ac-ft of treatment and attenuation volume (including the replaced volume from John Young Pond 4). Ponds 1 and 2 provide 7.32 ac-ft and 1.35 ac-ft of storage, respectively, totaling 8.67 ac-ft of provided treatment and attenuation volume. Please refer to the **Pond Sizing Calculations** located in **Appendix D**.

Additionally, this site is adjacent to a new proposed off-ramp from Florida's Turnpike to Sand Lake Road (FPID #433663-1: Sand Lake Road / SR 91 Interchange), currently in the Design phase, which includes construction of stormwater treatment ponds ("Pond 1A" and "Pond 1B") on both sides of the off-ramp. Based on coordination with FDOT and Florida's Turnpike Enterprise (FTE), further

evaluation of this area is needed once the final design plans for FPID #433663-1 are complete and the subsequent design phase for the truck parking site is initiated allowing more detailed design of the site plan which will facilitate further drainage analysis. As both projects move forward, more coordination will need to occur between both design teams, FDOT District 5 and FTE, to ensure that enough treatment and attenuation volume is provided to meet the requirements for both projects.

During the study phase for this project, the direction given by FDOT suggested that the FTE ponds will be constructed first, as the FTE project is nearing the end of the Design phase and is currently in the process of obtaining a permit from SFWMD (ERP #48-108222-P), and that the freight parking site and all associated ponds will be adjusted to ensure all treatment and attenuation volume requirements are met for both projects. The Phase IV plans for FPID #433663-1 show a conflict between the current freight parking site layout and the western portion of Pond 1B, which will be re-configured as a part of the Design phase of this project to avoid a conflict with the freight parking site and provide in-kind the treatment volume lost by the construction of the freight parking site. Please refer to the **Basin Maps** in **Appendix B** for the current freight parking site layout.

5.3.2 Floodplain Compensation

According to the FEMA FIRMs, the entirety of the project site lies within Zone AE of the 100-year floodplain, and the BFE of the site has been determined to be at the elevation of 87 feet. Volumetric floodplain impacts for the truck parking site were computed by estimating the volume to be filled between the higher of either the seasonal high water table or existing ground elevation and the 100-year flood elevation, as the finished floor elevation of the truck site will be above the 100-year flood elevation. This was done by measuring the existing ground area that lies at a contour elevation (using data obtained from LiDAR) and multiplying by the height differential to the 100-year flood elevation. The seasonal high water table elevation for the site was estimated at elevation 84.50 feet NAVD using SHW information taken from the Turnpike widening permit (Permit No. 48-01443-P). Orange County – Site 1 was determined to have 19.22 ac-ft of floodplain impacts. Additionally, construction of the freight parking site will remove 5.40 ac-ft of floodplain compensation volume provided by John Young Pond 4, resulting in a total of 24.62 ac-ft of floodplain impacts.

Floodplain compensation volume will be provided within the stormwater ponds as they will be hydraulically connected to the 100-year floodplain. Compensation is provided between the normal water elevation and the 100-year floodplain elevation. Ponds 1 and 2 provide 7.56 ac-ft and 1.40 ac-ft of compensation volume, respectively, totaling 8.96 ac-ft of provided floodplain compensation volume. Additionally, there is excess compensation volume provided in both the existing Turnpike FPC (0.88 ac-ft) and in the existing John Young Parkway ponds (3.76 ac-ft). Please refer to the **Floodplain Impact & Compensation Calculations** located in **Appendix F** and the **Existing Permit Information** located in **Appendix I**. Additional floodplain discussion is provided in the Location Hydraulics Report, prepared under a separate cover.

A preliminary estimate of the potential rise of the BFE was performed by dividing the remaining floodplain impact volume to be compensated (11.02 ac-ft) by the total area of the impacted

floodplain (288.43 acres) uninhibited by any constrictions. The resulting potential rise in the flood stage was found to be 0.038 ft. Please refer to **Figure 2-7** in **Appendix A**.

In the design phase of this project, a hydraulic floodplain model can be developed to show that any uncompensated volume will not result in a significant rise in the base flood elevation, as the floodplain boundary associated with Shingle Creek is extensive in this location. Alternatively, flood volume could be compensated for within Ponds 1A and 1B of the Turnpike/Sand Lake Road Intersection project. Finally, the freight parking site layout could be adjusted to reduce the parking site and expand the pond sites to reduce impact volume and increase pond storage capacity/compensation volume.

5.3.3 Nutrient Loading Analysis

Orange County – Site 1 is located within the Lake Okeechobee BMAP, which sets limitations for Total Phosphorus loading. Nutrient loading analysis has been performed to demonstrate that the post-development condition will not exceed pre-development nutrient loads. It was determined that the wet detention ponds provide sufficient Phosphorus reduction. **Table 5-2** summarizes the results of the nutrient loading analysis for this site. BMPTRAINS results can be found in **Appendix E – Nutrient Loading Analysis**.

Table 5-2: Orange County – Site 1 Nutrient Loading Summary

Nutrient	Pre-Development Loading (kg/yr)	Post-Development Loading (kg/yr)	Post-Development Loading after BMP (kg/yr)	Required Removal Efficiency	Provided Removal Efficiency
Phosphorus	2.83	7.20	1.69	61%	77%

5.4 ORANGE COUNTY – SITE 2

5.4.1 Stormwater Pond Evaluation

The proposed site for the Orange County – Site 2 freight parking site is 6.82 acres and will include two (2) wet detention stormwater ponds. The site is located within an open basin and discharges to the SR 528 storm sewer system to the east, which ultimately discharges into the Lake Christie Outlet Canal to the north as runoff from this SR 528 basin is untreated. The site is located within WBID 3169A – Shingle Creek, which is not impaired for nutrients but is within the BMAP for Lake Okeechobee; therefore, a nutrient loading analysis has been performed. More information about nutrient loading analysis is available in **Section 5.4.3**. Additionally, SFWMD requires stormwater management facilities discharging to the Lake Okeechobee BMAP to meet OFW criteria; therefore, an additional 50% of the required treatment volume has been provided.

Pond 1 is located in the northeast corner of the site and is a 0.80 acre wet detention pond. Pond 2 is located along the western parcel lines and is a 0.64 acre rectangular wet detention pond. According to LIDAR data for the site, the existing ground elevation for both ponds is approximately 98.00 feet NAVD. The combined pond area for both ponds is 1.44 acres. According to the Orange County Soil Survey, soils on both ponds locations will consist of Smyrna Fine Sand (#45, HSG A/D).

The normal water/control elevation was estimated from Geotech information obtained from a recent SFWMD permit application (Permit Application No. 220504-34304 for Orange Blossom Storage Center) that is located on the proposed pond site, which was determined to be 94.50 feet NAVD. The control elevation for Ponds 1 and 2 has been set at 94.50 feet to match. The site will require 1.35 ac-ft of treatment and attenuation volume. Ponds 1 and 2 provide 0.72 ac-ft and 0.76 ac-ft of storage, respectively, totaling 1.48 ac-ft of provided treatment and attenuation volume. Please refer to the **Pond Sizing Calculations** located in **Appendix D**.

5.4.2 Floodplain Compensation

There are no anticipated floodplain impacts associated with this site; therefore, no floodplain compensation is necessary.

5.4.3 Nutrient Loading Analysis

Orange County – Site 2 is located within the Lake Okeechobee BMAP, which sets limitations for Total Phosphorus loading. Nutrient loading analysis has been performed to demonstrate that the post-development condition will not exceed pre-development nutrient loads. It was determined that the wet detention ponds provide sufficient Phosphorus reduction. **Table 5-3** summarizes the results of the nutrient loading analysis for this site. BMPTRAINS results can be found in **Appendix E – Nutrient Loading Analysis**.

Table 5-3: Orange County – Site 2 Nutrient Loading Summary

Nutrient	Pre-Development Loading (kg/yr)	Post-Development Loading (kg/yr)	Post-Development Loading after BMP (kg/yr)	Required Removal Efficiency	Provided Removal Efficiency
Phosphorus	4.64	3.80	1.54	0%	59%

5.5 ORANGE COUNTY – SITE 4

5.5.1 Stormwater Pond Evaluation

The proposed site for the Orange County – Site 4 freight parking site is 4.86 acres and will include three (3) dry retention stormwater ponds. The site is located within an open basin and discharges to the Landstreet Road storm sewer system. The site is located within WBID 3168B – Boggy Creek, which is not impaired for nutrients but is within the BMAP area for Lake Okeechobee; therefore, a nutrient loading analysis has been performed. More information about nutrient loading analysis is available in **Section 5.5.3**. Additionally, SFWMD requires stormwater management facilities discharging to the Lake Okeechobee BMAP to meet OFW criteria; therefore, an additional 50% of the required treatment volume has been provided.

Pond 1 is located in the southeast corner of the site and is a 0.07 acre dry retention pond. Pond 2 is located along the northern parcel line and is a 0.49 acre dry retention pond. Pond 3 is located in the southwest corner of the site and is a 0.35 acre dry retention pond. According to LIDAR data for the site, the existing ground elevation for all three ponds is approximately 97.00 feet NAVD. The

combined pond area for all ponds is 0.91 acres. According to the Orange County Soil Survey, soils on all ponds locations will consist of Smyrna-Smyrna, Wet, Fine Sand (#44, HSG A/D).

The seasonal high water table elevation was estimated from the normal water/control elevation obtained from a recent SFWMD permit (Permit No. 48-101958-P for Landstreet Asphalt Plant) that is located adjacent to the proposed pond site, which was constructed as 92.00 feet NAVD. The dry pond bottom elevation for Ponds 1, 2, and 3 has been set at 95.00 feet to match the bottom elevation of the dry pre-treatment swale constructed as part of the adjacent permit. The site will require 0.52 ac-ft of treatment and attenuation volume. Ponds 1, 2, and 3 provide 0.03 ac-ft, 0.29 ac-ft, and 0.25 ac-ft of storage, respectively, totaling 0.57 ac-ft of provided treatment and attenuation volume. Please refer to the **Pond Sizing Calculations** located in **Appendix D.**

5.5.2 Floodplain Compensation

According to the FEMA FIRMs, portions of the project intersect Zone AE of the 100-year floodplain, and the BFE of the site has been determined to be at the elevation of 96 feet. Volumetric floodplain impacts for the truck parking site were computed by estimating the volume to be filled between the existing ground and the 100-year flood elevation, as the finished floor elevation of the truck site will be above the 100-year flood elevation. This was done by measuring the existing ground area that lies at a contour elevation (using data obtained from LiDAR) and multiplying by the height differential to the 100-year flood elevation. Orange County – Site 4 was determined to have 0.42 ac-ft of floodplain impacts.

Floodplain compensation volume will be provided within the stormwater ponds as they will be hydraulically connected to the 100-year floodplain. Compensation is provided between the dry pond bottom elevation and the 100-year floodplain elevation. Ponds 1, 2, and 3 provide 0.03 ac-ft, 0.29 ac-ft, and 0.25 ac-ft of compensation volume, respectively, totaling 0.57 ac-ft of provided floodplain compensation volume. Please refer to the **Floodplain Impact & Compensation Calculations** located in **Appendix F**.

5.5.3 Nutrient Loading Analysis

Orange County – Site 4 is located within the Lake Okeechobee BMAP, which sets limitations for Total Phosphorus loading. Nutrient loading analysis has been performed to demonstrate that the post-development condition will not exceed pre-development nutrient loads. It was determined that the wet detention ponds provide sufficient Phosphorus reduction. **Table 5-4** summarizes the results of the nutrient loading analysis for this site. BMPTRAINS results can be found in **Appendix E – Nutrient Loading Analysis**.

Table 5-4: Orange County – Site 4 Nutrient Loading Summary

Nutrient	Pre-Development Loading (kg/yr)	Post-Development Loading (kg/yr)	Post-Development Loading after BMP (kg/yr)	Required Removal Efficiency	Provided Removal Efficiency
Phosphorus	5.00	2.80	0.40	0%	86%

5.6 SEMINOLE COUNTY – SITE 1B

5.6.1 Stormwater Pond Evaluation

The proposed site for Seminole County is 19.26 acres and will include two (2) wet detention stormwater ponds and one (1) dry detention pre-treatment pond. The site is located within an open basin and discharges to Lake Monroe via a ditch within FDOT Right of Way. The site is located within WBID 2893C – St. Johns River Above Wekiva River, which is not impaired for nutrients but is within the BMAP and TMDL areas for the Middle St. Johns River; therefore, nutrient loading analysis has been performed. More information about nutrient loading analysis is available in **Section 5.6.3**.

Parts of this site have been developed in recent years to include a new RV shop with permitted stormwater ponds. For simplification of calculations, the existing condition on this site is considered to be prior to construction of the store, and calculations from the Donnie Myers RV Permit (Permit No.'s 48756-5 and 48756-6) have been used to determine the existing conditions prior to the construction. There is also a Circle K Convenience Store located on the site, which is considered to be part of the existing condition since no permit documents are available.

Finally, the I-4 Beyond the Ultimate Project (Permit No. 22434-15) was recently permitted adjacent to this site and includes construction of a new wet detention stormwater pond (317D) on the site. Since this pond will need to be removed to accommodate the proposed freight parking, compensation has been provided for the lost pond volume. The permitted calculations indicate that the pond provides a treatment volume of 0.56 ac-ft. Volumetric calculations are not available for attenuation in the pond, but the provided attenuation volume has been estimated from the pond storage calculations and design high water elevation provided in the model to be 1.43 ac-ft. Supplemental calculations to show these estimates can be found in **Appendix D,** along with the **Pond Sizing Calculations**.

The Seminole County site has been divided into two basins to allow for different control elevations in each pond and better analyze the volumes on the site. Basin 1 is the larger basin at 13.40 acres and includes the western portion of the site and the proposed modifications to the access along School Road. Basin 2 is the smaller basin at 5.86 acres and encompasses the eastern portion of the site. Both basins will discharge to the existing FDOT ditch.

Basin 1

Pond 1 is located in the southwest corner of the site and is a 2.28 acre triangular wet detention pond. According to LIDAR data for the site, the existing ground elevation is approximately 11.00 feet

NAVD. According to the Seminole County Soil Survey, soils on Pond 1 will consist of Felda and Manatee mucky fine sands, depressional (#15, HSG A/D), and Pineda-Pineda wet, fine sand (#25, HSG A/D).

The normal water/control elevation was estimated from an existing permitted pond (Permit No. 48756-6 for Donnie Myers RV Phase 2) that intersects the proposed pond site, which has a control elevation of 6.46 feet NAVD (converted from NGVD). The control elevation for Pond 1 has been set at 6.50 feet. The basin will require 5.38 ac-ft of treatment and attenuation volume, and Pond 1 provides 5.54 ac-ft. Please refer to the **Pond Sizing Calculations** located in **Appendix D.**

To achieve sufficient nutrient reduction, an additional dry retention area has been added within Basin 1. This will consist of a 0.40 acre swale located in between the parking area and School Road. According to LIDAR data for the site, the existing ground elevation is approximately 12.00 feet NAVD, and the pond bottom will be set at 8.50 feet which is 2.00 feet above the estimated normal water elevation in the adjacent Pond 1. More information on nutrient loading analysis for this site can be found in **Section 5.6.3**.

Basin 2

Pond 2 is located along the eastern parcel line and is a 1.73 acre linear wet detention pond. According to LIDAR data for the site, the existing ground elevation is approximately 11.00 feet NAVD. According to the Seminole County Soil Survey, soils on Pond 2 will consist of Eaugallie and Immokalee fine sands (#13, HSG A/D) and Pineda-Pineda wet, fine sand (#25, HSG A/D).

The normal water/control elevation was estimated from a recently permitted pond (Permit No. 22434-15 for I-4 BTU) that intersects the proposed pond site, which has a control elevation of 8.50 feet NAVD. The control elevation for Pond 2 has been set at 8.50 feet. The basin will require 0.78 ac-ft of treatment and attenuation volume, and Pond 2 provides 0.78 ac-ft. Please refer to the **Pond Sizing Calculations** located in **Appendix D**

5.6.2 Floodplain Compensation

This site does not intersect any floodplains. Floodplain compensation is not required.

5.6.3 Nutrient Loading Analysis

The Seminole County Site is located within the Middle St. Johns River Basin BMAP, which sets limitations for Total Phosphorus and Total Nitrogen loading. Nutrient loading analysis has been performed to demonstrate that the post-development condition will not exceed pre-development nutrient loads. During the process of performing this analysis, it was determined that the two proposed wet detention ponds could not provide sufficient Nitrogen reduction, so a small dry retention pond (0.40 acres) was added to the site to provide additional Nitrogen removal. Stage/storage calculations for the dry pond are available in **Appendix D – Pond Sizing Calculations**. **Table 5-5** summarizes the results of the nutrient loading analysis for the Seminole County site. BMPTRAINS results can be found in **Appendix E – Nutrient Loading Analysis**.

Table 5-5: Seminole County – Site 1B Nutrient Loading Summary

Nutrient	Pre-Development Loading (kg/yr)	Post-Development Loading (kg/yr)	Post-Development Loading after BMP (kg/yr)	Required Removal Efficiency	Provided Removal Efficiency
Nitrogen	30.91	76.51	28.80	60%	62%
Phosphorus	2.20	10.07	2.01	78%	80%

5.7 VOLUSIA COUNTY – SITE 1A

5.7.1 Stormwater Pond Evaluation

The proposed site for the Volusia County Site 1A freight parking site is 73.3 acres, of which 46.27 acres has been determined to be the contributing basin area to the pond, and will include one (1) wet detention stormwater pond. The site is located within an open basin and discharges to surrounding wetlands toward the Tomoka River. The site is located within WBID 2634 – Tomoka River and WBID 2675 – Sand Creek, both of which are not impaired for nutrients. Nutrient loading analysis is not required. Additionally, the site discharges to the Tomoka River OFW; therefore, an additional 50% of the required treatment volume has been provided.

This site is undeveloped, and there are no anticipated impacts to existing drainage facilities.

Pond 1 is located along the southeast parcel line and is a 7.15 acre wet detention pond. According to LIDAR data for the site, the existing ground elevation is approximately 37.00 feet NAVD. According to the Volusia County Soil Survey, soils on Pond 1 will consist of Immokalee sand (#29, HSG B/D), Myakka-Myakka wet, fine sands (#32, HSG A/D), and Samsula Much (#56, HSG A/D).

The normal water/control elevation was estimated from the NRCS soils data which indicate the SHWT to be 0-1.5 feet deep within the pond area. The control elevation was set at 36.00 feet NAVD. The site will require 8.68 ac-ft of treatment and attenuation volume. Pond 1 provides 8.77 ac-ft of treatment and attenuation volume. Please refer to the **Pond Sizing Calculations** located in **Appendix D.**

5.7.2 Floodplain Compensation

According to the FEMA FIRMs, the entirety of the project site lies within Zone A of the 100-year floodplain. The BFE of the site has been determined to be at the elevation of 37 feet by comparing the Zone A 100-year floodplain boundaries to the 1-foot contours obtained from LiDAR data, which closely aligned. Volumetric floodplain impacts for the truck parking site were computed by estimating the volume to be filled between the higher of either the seasonal high water table or existing ground elevation and the 100-year flood elevation, as the finished floor elevation of the truck site will be above the 100-year flood elevation. This was done by measuring the existing ground area that lies at a contour elevation (using data obtained from LiDAR) and multiplying by the height differential to the 100-year flood elevation. The seasonal high water table elevation for the

site was estimated at elevation 36.00 feet NAVD using NRCS Soils information. The Volusia County Site1A freight parking site was determined to have 17.48 ac-ft of floodplain impacts.

Floodplain compensation volume will be provided within the stormwater pond as it will be hydraulically connected to the 100-year floodplain. Compensation is provided between the normal water elevation and the 100-year floodplain elevation. Pond 1 provides 4.26 ac-ft of compensation volume. Additionally, two (2) separate dedicated Floodplain Compensation Areas (FPCAs) were identified within the site. These are scraped down areas that are hydraulically connected to the floodplain. Compensation is provided between the SHW elevation and the 100-year floodplain elevation. FPCA 1 and FPCA 2 provide 0.91 ac-ft and 1.00 ac-ft of compensation, respectively. The total compensation available within the site is 6.17 acres. Please refer to the **Floodplain Impact & Compensation Calculations** located in **Appendix F**. Additional floodplain discussion is provided in the Location Hydraulics Report, prepared under a separate cover.

A preliminary estimate of the potential rise of the BFE was performed to show that there will be an insignificant rise in the floodplain elevation given the large extent of the floodplain boundary. This estimate was performed by dividing the remaining floodplain impact volume to be compensated (11.31 ac-ft) by the total area of the impacted floodplain (3029.00 acres) uninhibited by any constrictions. The resulting potential rise in the flood stage was found to be 0.0037 ft. Please refer to **Figure 6-7** in **Appendix A**.

In the design phase of this project, a hydraulic floodplain model can be developed to show that any uncompensated volume will not result in a significant rise in the base flood elevation, as the floodplain boundary in this location is extensive. Additionally, the freight parking site layout could be adjusted to reduce the parking site and expand the pond sites to reduce impact volume and increase pond storage capacity/compensation volume.

This site will likely compensate for the remaining floodplain impacts by utilizing a floodplain model to show a minimal rise in the 100-year floodplain, as this was the method by which the previous I-4 widening project was permitted. This will be an analysis performed during the design phase.

5.7.3 Nutrient Loading Analysis

This site does not require nutrient loading analysis.

5.8 VOLUSIA COUNTY – SITE 1B

5.8.1 Stormwater Pond Evaluation

The proposed site for the Volusia County Site 1B freight parking site is 116.8 acres, of which 47.65 acres is determined to be the contributing basin area to the proposed ponds, and will include two (2) wet detention stormwater ponds. The site is located within an open basin and discharges to surrounding wetlands toward Tiger Bay. The site is located within WBID 2654 – Drainage Canals, which is not impaired for nutrients. Nutrient loading analysis is not required. Additionally, the site

discharges to the Tiger Bay OFW; therefore, an additional 50% of the required treatment volume has been provided.

This site is undeveloped, with an existing wet detention stormwater pond (I-4 Pond I) intersecting the southwest corner of the site. This pond is part of the I-4 widening project (Permit No. 64105-12). The proposed freight parking will impact this pond, which is proposed to be expanded to the southwest to jointly service both I-4 and the freight parking site in conjunction with Pond 1. The expanded Pond I will be a 6.72 acre wet detention pond. According to LIDAR data for the site, the existing ground elevation is approximately 38.00 feet NAVD. According to the Volusia County Soil Survey, soils on Pond I will consist of Myakka-Myakka wet, fine sands (#32, HSG A/D), and Myakka-St. Johns Complex (#34, HSG A/D).

Pond 1 is located along the northeast parcel line and is a 3.45 acre wet detention pond. According to LIDAR data for the site, the existing ground elevation is approximately 38.00 feet NAVD. According to the Volusia County Soil Survey, soils on Pond 1 will consist of Myakka-Myakka wet, fine sands (#32, HSG A/D), and Samsula Muck, frequently ponded (#56, HSG A/D).

The normal water/control elevation was estimated from the existing I-4 Pond I, which has a control elevation of 37.90 feet. The site will require 11.71 ac-ft of treatment and attenuation volume. Pond I and Pond 1 provide 10.55 ac-ft and 3.08 ac-ft of treatment and attenuation volume respectively, totaling 13.64 ac-ft of provided treatment and attenuation volume. Please refer to the **Pond Sizing Calculations** located in **Appendix D.**

5.8.2 Floodplain Compensation

According to the FEMA FIRMs, the entirety of the project site lies within Zone A of the 100-year floodplain. The BFE of the site has been determined to be at the elevation of 40 feet by comparing the Zone A 100-year floodplain boundaries to the 1-foot contours obtained from LiDAR data, which closely aligned. Volumetric floodplain impacts for the truck parking site were computed by estimating the volume to be filled between the higher of either the seasonal high water table or existing ground elevation and the 100-year flood elevation, as the finished floor elevation of the truck site will be above the 100-year flood elevation. This was done by measuring the existing ground area that lies at a contour elevation (using data obtained from LiDAR) and multiplying by the height differential to the 100-year flood elevation. The seasonal high water table elevation for the site was estimated at elevation 37.90 feet NAVD using SHW information taken from the I-4 widening permit (Permit No. 64105-12). However, an elevation of 38 feet was used to compute the floodplain impacts. The Volusia County Site 1B freight parking site was determined to have 62.75 ac-ft of floodplain impacts.

Floodplain compensation volume will be provided within the stormwater pond as it will be hydraulically connected to the 100-year floodplain. Compensation is provided between the normal water elevation and the 100-year floodplain elevation. Pond I and Pond 1 provide 8.39 ac-ft and 2.39 ac-ft of compensation volume, respectively, totaling 10.78 ac-ft of provided compensation volume.

Additionally, one (1) separate dedicated Floodplain Compensation Area (FPCA) was identified within the site. This is a scraped down area that is hydraulically connected to the floodplain. Compensation is provided between the SHW elevation and the 100-year floodplain elevation. FPCA 1 provides 2.75 ac-ft of compensation. The total compensation available within the site is 13.53 acres. Please refer to the **Floodplain Impact & Compensation Calculations** located in **Appendix F**. Additional floodplain discussion is provided in the Location Hydraulics Report, prepared under a separate cover.

A preliminary estimate of the potential rise of the BFE was performed to show that there will be an insignificant rise in the floodplain elevation given the large extent of the floodplain boundary. This estimate was performed by dividing the remaining floodplain impact volume to be compensated (49.22 ac-ft) by the total area of the impacted floodplain (11834.82 acres) uninhibited by any constrictions. The resulting potential rise in the flood stage was found to be 0.0041 ft. Please refer to **Figure 6-7** in **Appendix A**.

During the design phase of this project, a hydraulic floodplain model can be developed to show that any uncompensated volume will not result in a significant rise in the base flood elevation, as the floodplain boundary in this location is extensive. Additionally, the freight parking site layout could be adjusted to reduce the parking site and expand the pond sites to reduce impact volume and increase pond storage capacity/compensation volume.

This site will likely compensate for the remaining floodplain impacts by utilizing a floodplain model to show a minimal rise in the 100-year floodplain, as this was the method by which the previous I-4 widening project was permitted. This will be an analysis performed during the design phase.

5.8.3 Nutrient Loading Analysis

This site does not require nutrient loading analysis.

SECTION 6 ENVIRONMENTAL LOOK AROUNDS (ELAs)

Environmental Look Arounds (ELAs) provide a unique opportunity to team up with regional stakeholders to explore watershed wide stormwater needs and alternative permitting approaches for the project. Areas of potential cooperation are documented in this report for future follow up as the design moves forward.

There are currently two ongoing projects adjacent to the Osceola County site that could be utilized as a joint-use opportunity with the freight parking study. One is the CR 538 (Poinciana Parkway) Extension by CFX (Project No. 538-235), which includes a new wet detention pond (Pond 100) adjacent to the proposed freight parking site. The required pond treatment and attenuation areas could be combined, leaving a single pond servicing both projects. The other is the CR 532 widening by CFX (Project No. 538-235A), which includes a new wet detention pond (Pond 5) that overlaps the proposed freight parking site. The required pond treatment and attenuation areas could be combined, leaving a single pond servicing both projects. The joint-use opportunity is discussed further in **Section 5.2.1**.

There is currently an ongoing Florida's Turnpike project (FPID #433663-1: Sand Lake Road/SR 91 Interchange) entering design that could be utilized as a joint-use opportunity with the freight parking study for Orange County – Site 1. Proposed Pond 1B overlaps with the proposed freight parking site. The required pond treatment and attenuation areas for both projects could be combined, leaving a single pond servicing both projects. This joint-use opportunity is discussed further in **Section 5.3.1**.

There is currently an ongoing FDOT project (FPID #242592-4-52-01: I-4 BTU Segment 3) that is permitted and could be utilized as a joint-use opportunity with the freight parking study for the Seminole County site. Proposed Pond 317D overlaps with Pond 2 of the proposed freight parking site. The required pond treatment and attenuation areas could be combined, leaving a single pond servicing both projects. This joint-use opportunity is discussed further in **Section 5.6.1**.

SECTION 7 CONCLUSIONS AND RECOMMENDATIONS

Potential ponds have been sized and located within the project site limits for this PD&E study. The analysis estimates right-of-way needs using a volumetric analysis, which accounts for water quality treatment and water quantity for runoff attenuation. Please note that the estimated areas for the ponds were based on pond sizes determined from preliminary data calculations, reasonable engineering judgment, and assumptions. Pond sizes and configurations may change during final design as more detailed information on SHWT, wetland normal pool elevation, finished floor elevations, etc., become available. Please refer to **Table 7-1** for **Recommended Stormwater Pond Requirements**.

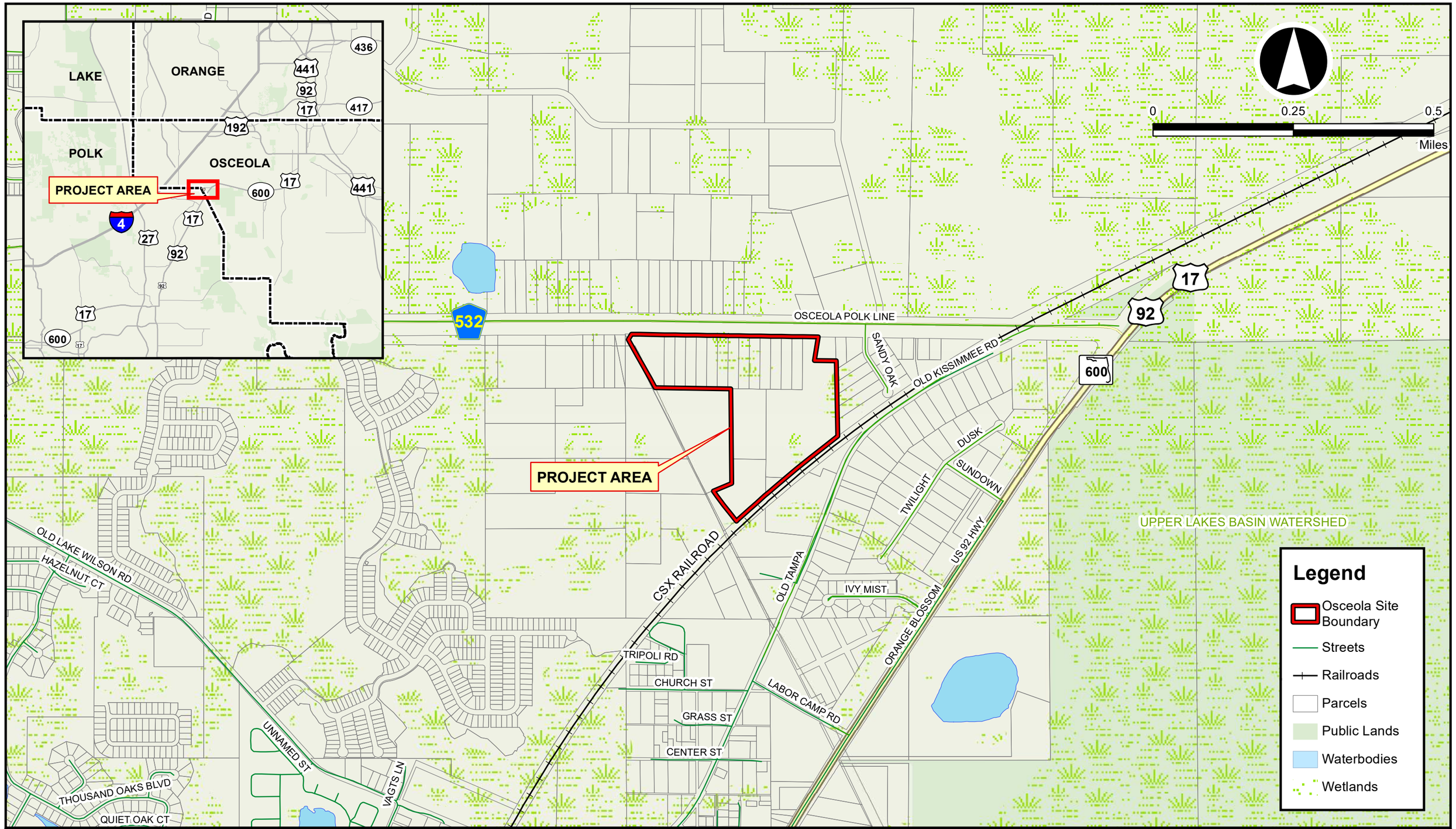
Table 7-1: Recommended Stormwater Pond Requirements

Freight Parking Site	Required Treatment + Attenuation (ac-ft)	Provided Treatment + Attenuation (ac-ft)	Pond Area (ac)
Osceola County – Site 1	14.39	14.39	11.38
Orange County – Site 1	8.52	8.67	5.01
Orange County – Site 2	1.35	1.48	1.44
Orange County – Site 4	0.52	0.57	0.91
Seminole County – Site 1B	6.16	6.32	4.17
Volusia County – Site 1A	8.68	8.77	7.15
Volusia County – Site 1B	11.71	13.64	10.17
Total:	51.33	53.84	40.23

APPENDICES

APPENDIX A

Exhibits



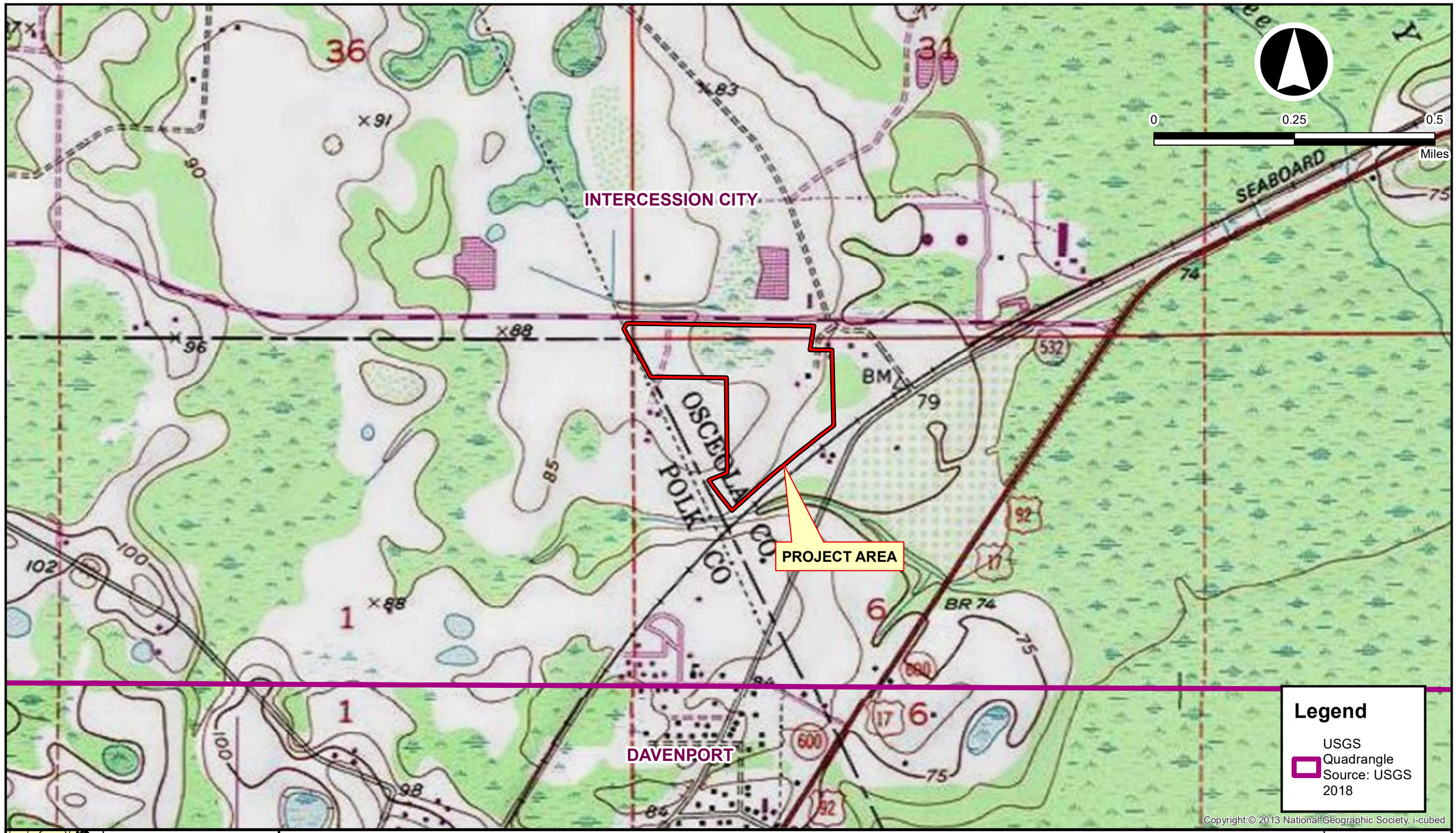
Freight Parking PD&E Study

Osceola County, Florida

Financial Project ID: 447724-1-22-01

PROJECT LOCATION MAP

Figure 1-1



Freight Parking PD&E Study

Osceola County, Florida

Financial Project ID: 447724-1-22-01

USGS QUADRANGLE MAP

Figure

1-2

Osceola County Soil Descriptions

5: Basinger fine sand

12: Floridana fine sand, frequently ponded

13: Samsula muck, frequently ponded

16: Immokalee fine sand

17: Smyrna and Myakka fine sands

19: Floridana mucky fine sand, frequently ponded

21: Immokalee sand

22: Myakka fine sand

25: Placid and Myakka fine sands, depressional

29: Parkwood loamy find sands, depressional

30: Pompano fine sand

31: Pits

32: Placid and Myakka fine sands, frequently ponded

36: Pompano fine sand

37: Pompano fine sand, frequently ponded

38: Riviera fine sand

39: Riviera fine sand, frequently ponded

40: Samsula muck, frequently ponded

41: Satellite sand

45: Wabasso sand

77: Satellite sand

99: Water

0 0.25 0.5 Miles

532 92 600 17

PROJECT AREA

Soil Group

- A
- A/D
- B/D
- C/D
- Water

Legend

- Osceola Site Boundary
- Streets

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

FDOT

Freight Parking PD&E Study

Osceola County, Florida

Financial Project ID: 447724-1-22-01

NRCS SOILS MAP

Figure 1-3

Osceola County Land Use

Urban and Built Up
- 1110: Residential, Low Density
- 1120: Residential, Low Density
- 1180: Residential, Low Density
- 1210: Residential, Medium Density
- 1220: Residential, Medium Density
- 1320: Residential, High Density
- 1490: Commercial and Services

Agriculture
- 2110: Cropland and Pastureland
- 2120: Cropland and Pastureland
- 2130: Cropland and Pastureland

Upland Nonforested
- 3200: Upland Shrub and Brushland

Upland Forests
- 4340: Upland Mixed Forests

Water
- 5300: Reservoirs

Wetlands
- 6170: Wetland Hardwood Forests
- 6172: Wetland Hardwood Forests
- 6210: Wetland Coniferous Forests
- 6216: Wetland Coniferous Forests
- 6250: Wetland Coniferous Forests
- 6300: Wetland Forested Mixed
- 6410: Vegetated Non-Forested Wetlands
- 6440: Vegetated Non-Forested Wetlands

Transportation, Communications, and Utilities
- 8310: Utilities

0 0.25 0.5 Miles

532 17 92 600

PROJECT AREA

Legend
- Osceola Site Boundary
- Streets

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Freight Parking PD&E Study

Osceola County, Florida

Financial Project ID: 447724-1-22-01

LAND USE MAP

Figure 1-4

Freight Parking PD&E Study

Osceola County, Florida

Financial Project ID: 447724-1-22-01

FEMA FLOODPLAINS MAP

Figure 1-5

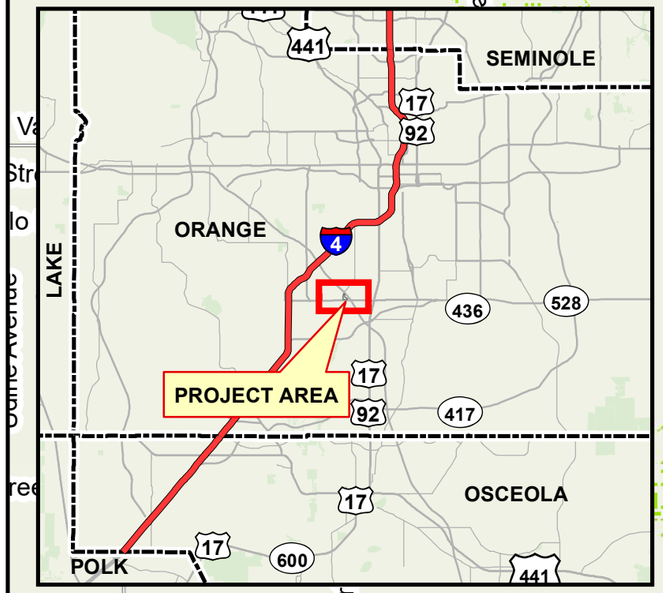
Freight Parking PD&E Study

Osceola County, Florida

Financial Project ID: 447724-1-22-01

WBID MAP

Figure 1-6



Floridas Turnpike

Directors Row

423

91

482

PROJECT AREA

W Sand Lake Road

Steyr Street

Pomelo Dr

Premier Row

Directors Row

Viscount Row

Brokerage Drive

Presidents Drive

Exchange Drive

Titan Row

Chancellor Drive

Currency Drive

Southland Boulevard

S John Young Parkway

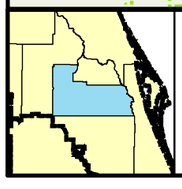
Commodity Circle

Park Circle

0 0.25 0.5 Miles

Legend

- Site 1 Boundary
- Streets
- Railroads
- Parcels
- Public Lands
- Waterbodies
- Wetlands



FDOT

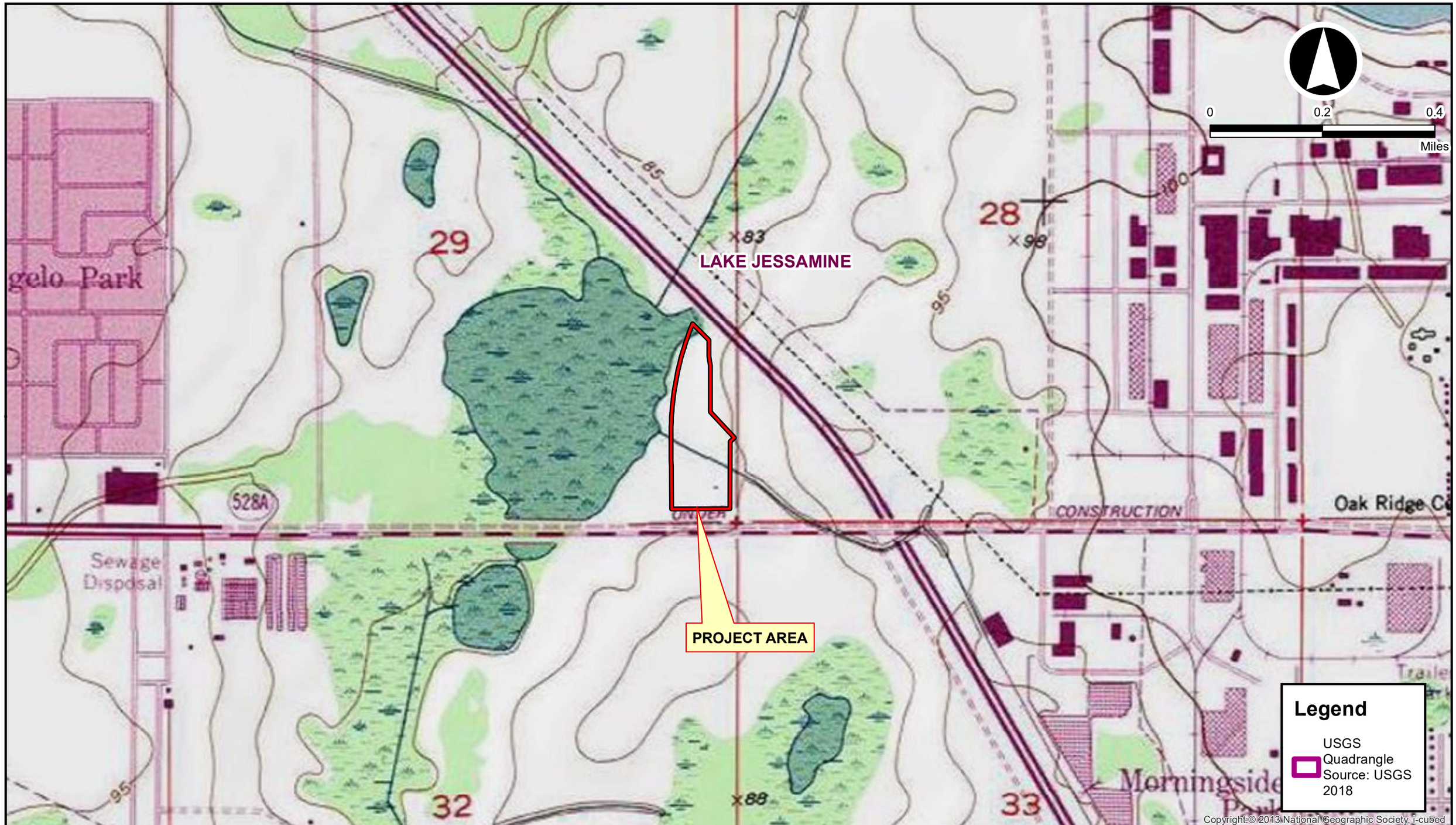
Freight Parking PD&E Study

Site 1
Orange County, FL

Financial Project ID: 447724-1-22-01

PROJECT LOCATION MAP

Figure
2-1



Freight Parking PD&E Study

Site 1
Orange County, Florida

Financial Project ID: 447724-1-22-01

USGS QUADRANGLE MAP

Figure
2-2

Orange County Soil Descriptions

3: Basinger fine sand, frequently ponded
37: St. Johns fine sand
41: Samsula-Hontoon-Basinger association, depressional
42: Sanibel muck
44: Smyrna-smyrna, wet, fine sand
45: Smyrna fine sand-urban land complex

0 0.1 0.2 Miles

423
435
482
91
92
17
500

PROJECT AREA

Soil Group

A/D
B/D

Legend

Site 1 Boundary
Streets

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Freight Parking PD&E Study

Site 1
Orange County, Florida

Financial Project ID: 447724-1-22-01

NRCS SOILS MAP

Figure
2-3

Orange County Land Use

Urban and Built Up

- 1400: Commercial and Services
- 1411: Commercial and Services
- 1900: Open Land

Upland Forests

- 4110: Upland Coniferous Forests
- 4340: Upland Mixed Forests

Water

- 5300: Reservoirs

Wetlands

- 6110: Wetland Hardwood Forests
- 6170: Wetland Hardwood Forests
- 6172: Wetland Hardwood Forests
- 6210: Wetland Coniferous Forests
- 6300: Wetland Forested Mixed
- 6410: Vegetated Non-Forested Wetlands

Barren Land

- 7400: Disturbed Land

Transportation, Communication, and Utilities

- 8140: Transportation

0 0.1 0.2 Miles

423 91 482

PROJECT AREA

Legend

- Site 1 Boundary
- Streets

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

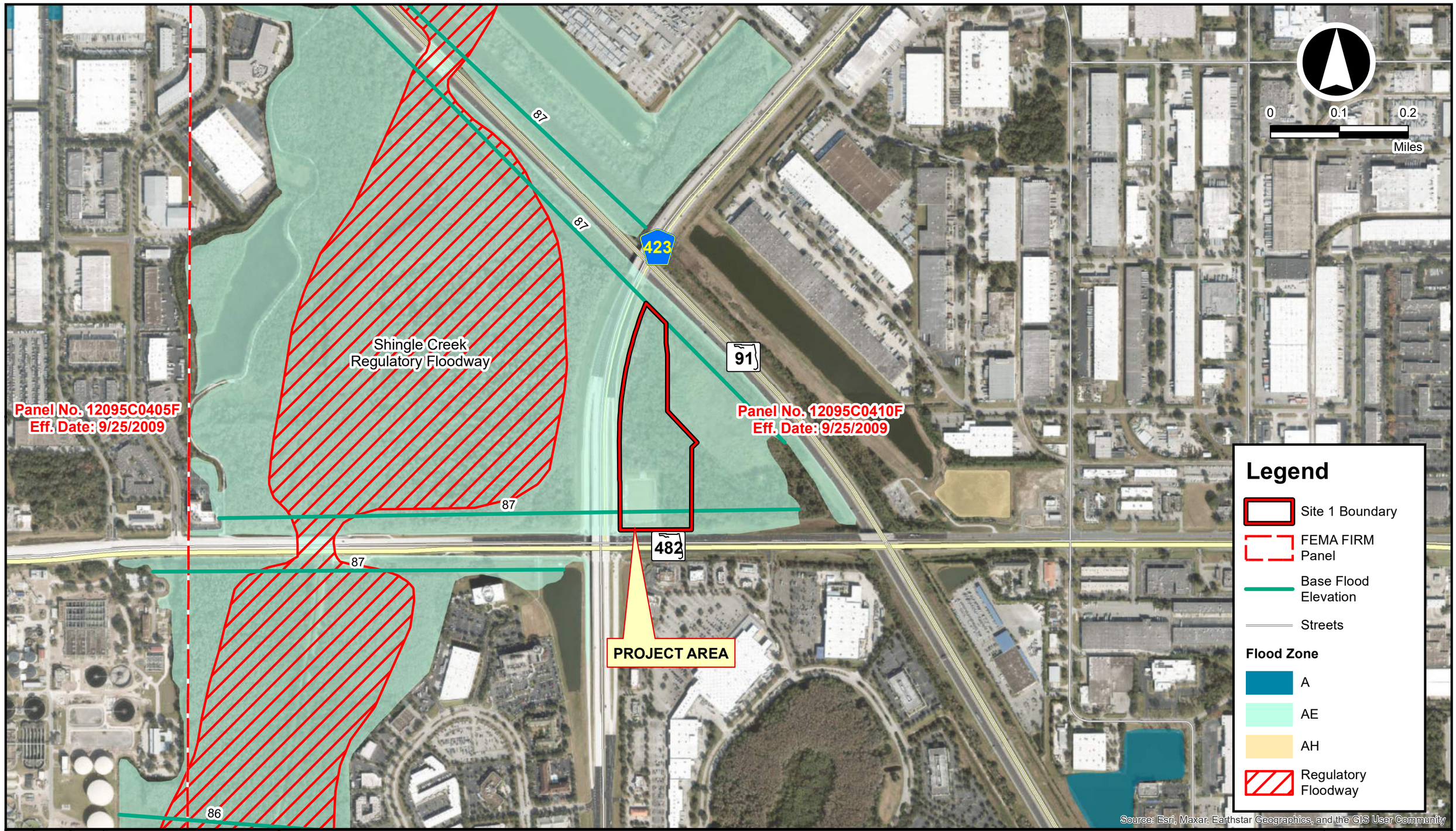
Freight Parking PD&E Study

Site 1
Orange County, Florida

Financial Project ID: 447724-1-22-01

LAND USE MAP

Figure 2-4



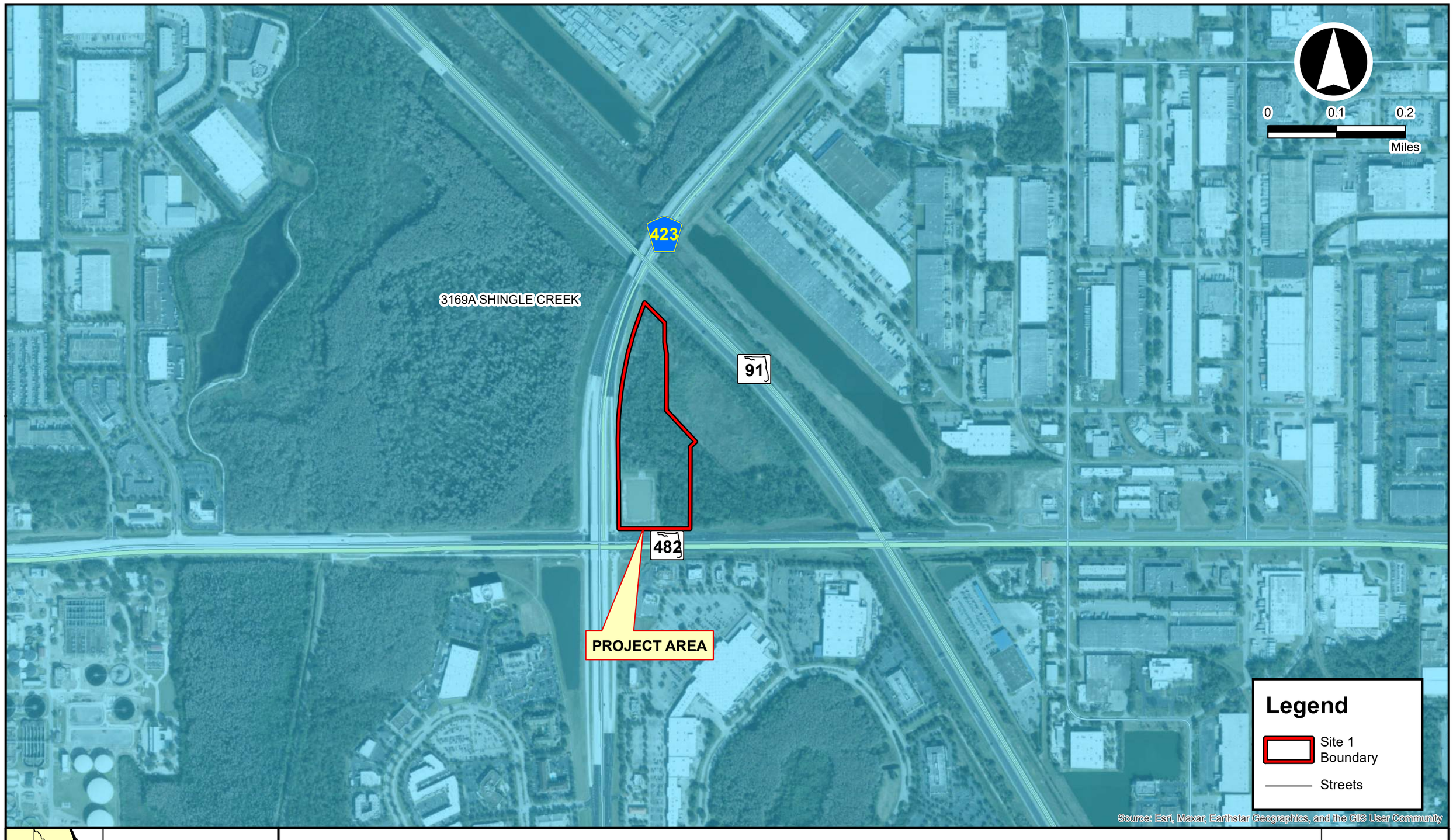
Freight Parking PD&E Study

Site 1
Orange County, Florida

Financial Project ID: 447724-1-22-01

FEMA FLOODPLAINS MAP

Figure
2-5



FDOT

Freight Parking PD&E Study

Site 1
Orange County, Florida

Financial Project ID: 447724-1-22-01

WBID MAP

Figure
2-6

Total Area of Impacted Floodplain Area = 288.43 Ac
Remaining Floodplain Impact Volume to be Compensated = 11.02 Ac - Ft
Rise in Flood Stage (Volume/ Area) = 0.038 Ft

Panel No. 12095C0405F
Eff. Date 9/25/2009

Panel No. 12095C0410F
Eff. Date 9/25/2009

Panel No. 12095C0385F
Eff. Date 9/25/2009

Panel No. 12095C0430F
Eff. Date 9/25/2009

Panel No. 12095C0415F
Eff. Date 9/25/2009

Panel No. 12095C0415F
Eff. Date 9/25/2009

Panel No. 12095C0420F
Eff. Date 9/25/2009

SHINGLE CREEK
REGULATORY FLOODWAY

PROJECT AREA

0 3,000 6,000
50 Feet

Legend

- Site 1 Boundary
- Total Floodplain Shape Uninhibited by Constrictions
- Base Flood Elevation
- FEMA FIRM Panel
- Regulatory Floodway

Flood Zone

- A
- AE
- AH
- Streets

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

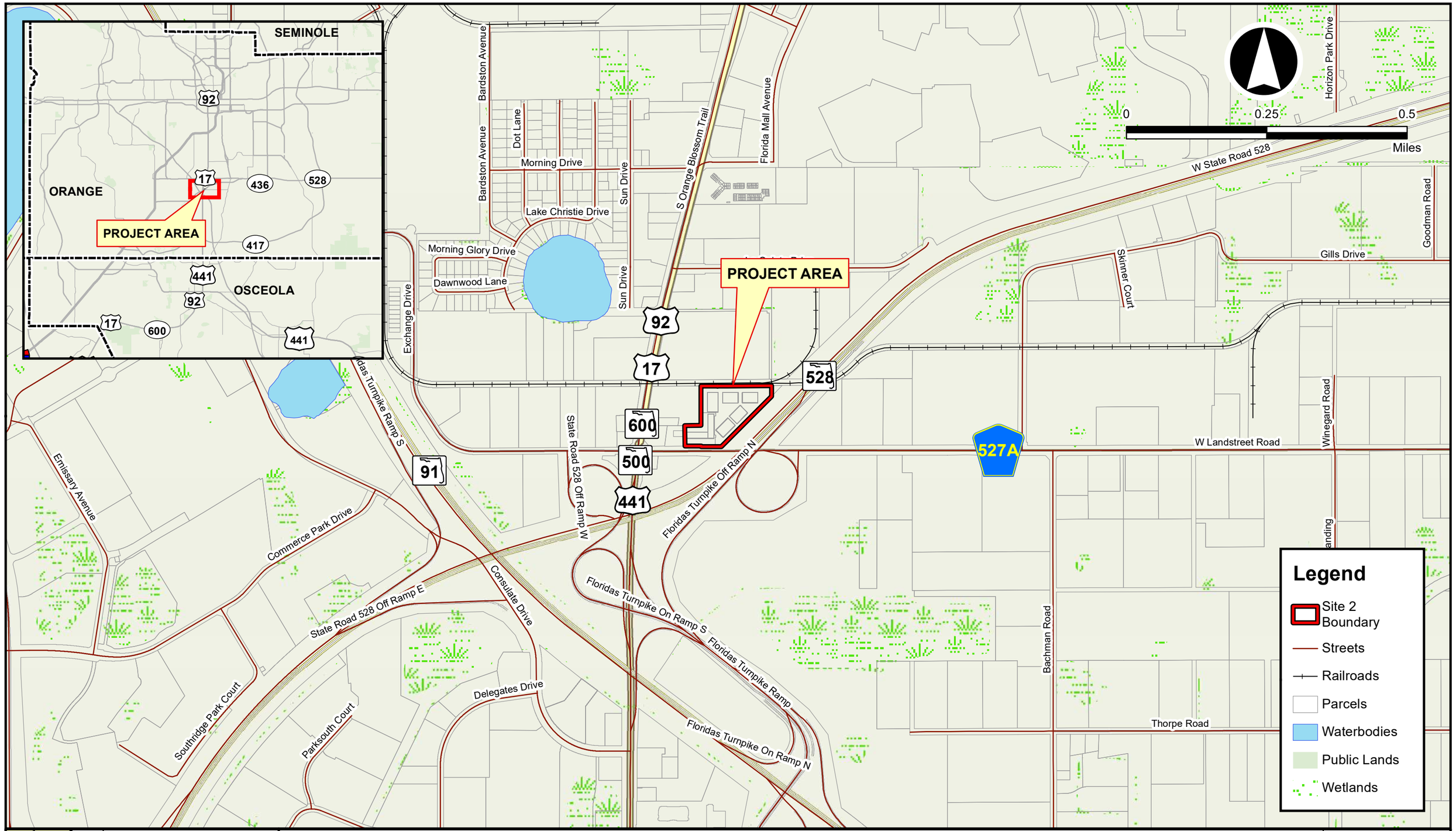
Freight Parking PD&E Study

Site 1
Orange County, Florida

Financial Project ID: 447724-1-22-01

IMPACTED FEMA FLOODPLAIN MAP

Figure
2-7



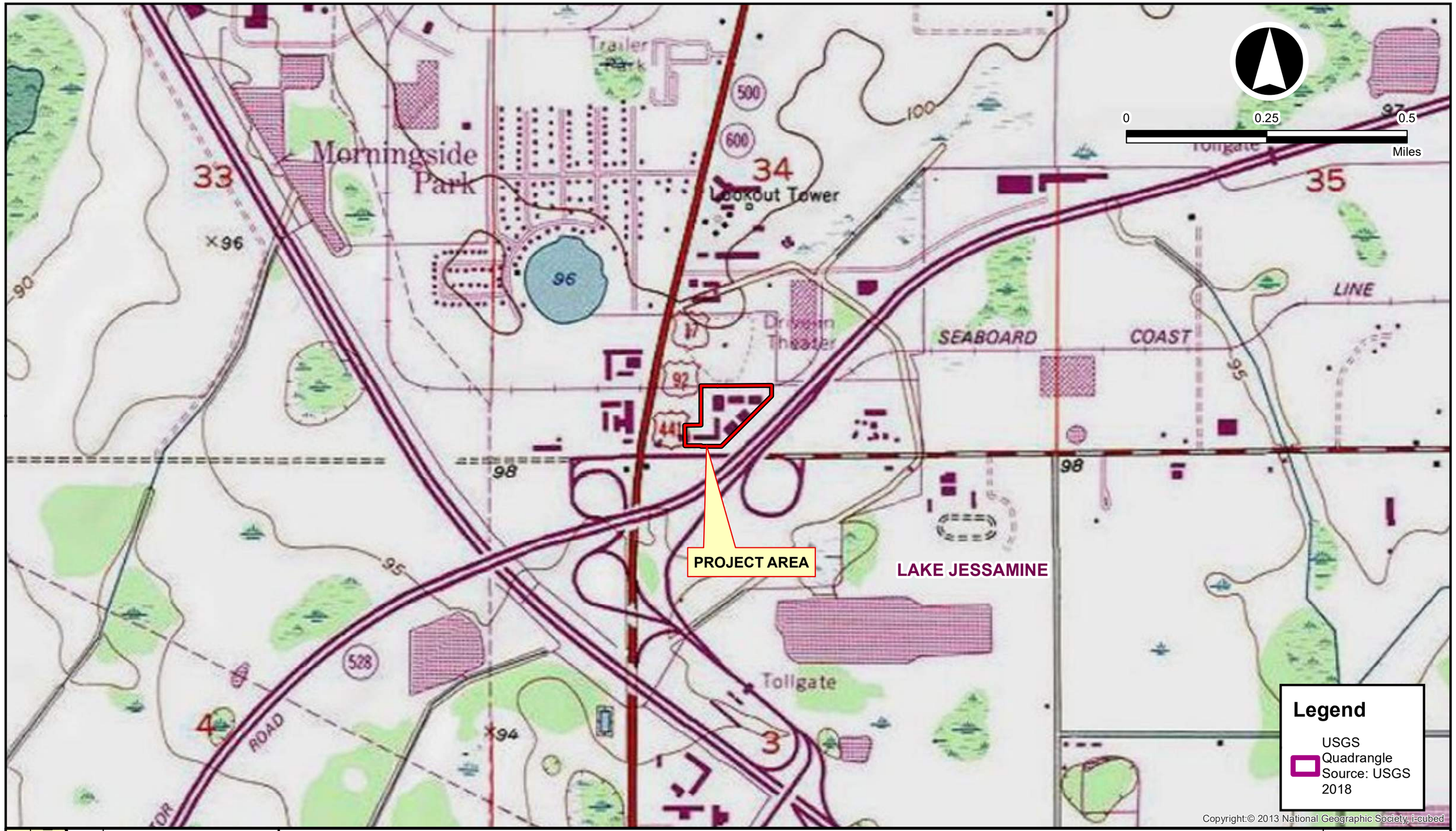
Freight Parking PD&E Study

Site 2
Orange County, Florida

Financial Project ID: 447724-1-22-01

PROJECT LOCATION MAP

Figure 3-1



Freight Parking PD&E Study

Site 2
Orange County, Florida

Financial Project ID: 447724-1-22-01

USGS QUADRANGLE MAP

Figure

3-2

Orange County Soil Descriptions

3: Basinger fine sand, frequently ponded

20: Immokalee fine sand

27: Ona-urband land complex

37: St. Johns fine sand

42: Sanibel muck

44: Smyrna-smyrna, wet, fine sand

45: Smyrna fine sand-urban land complex

99: Water

0 0.125 0.25 Miles

PROJECT AREA

Soil Group

- A/D
- B/D
- Water

Legend

- Site 2 Boundary
- Streets

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Freight Parking PD&E Study

Site 2
Orange County, Florida

Financial Project ID: 447724-1-22-01

NRCS SOILS MAP

Figure 3-3

Orange County Land Use

Urban and Built Up

- 1210: Residential, Medium Density
- 1400: Commercial and Services
- 1423: Commercial and Services

Upland Forests

- 4340: Upland Mixed Forests

Water

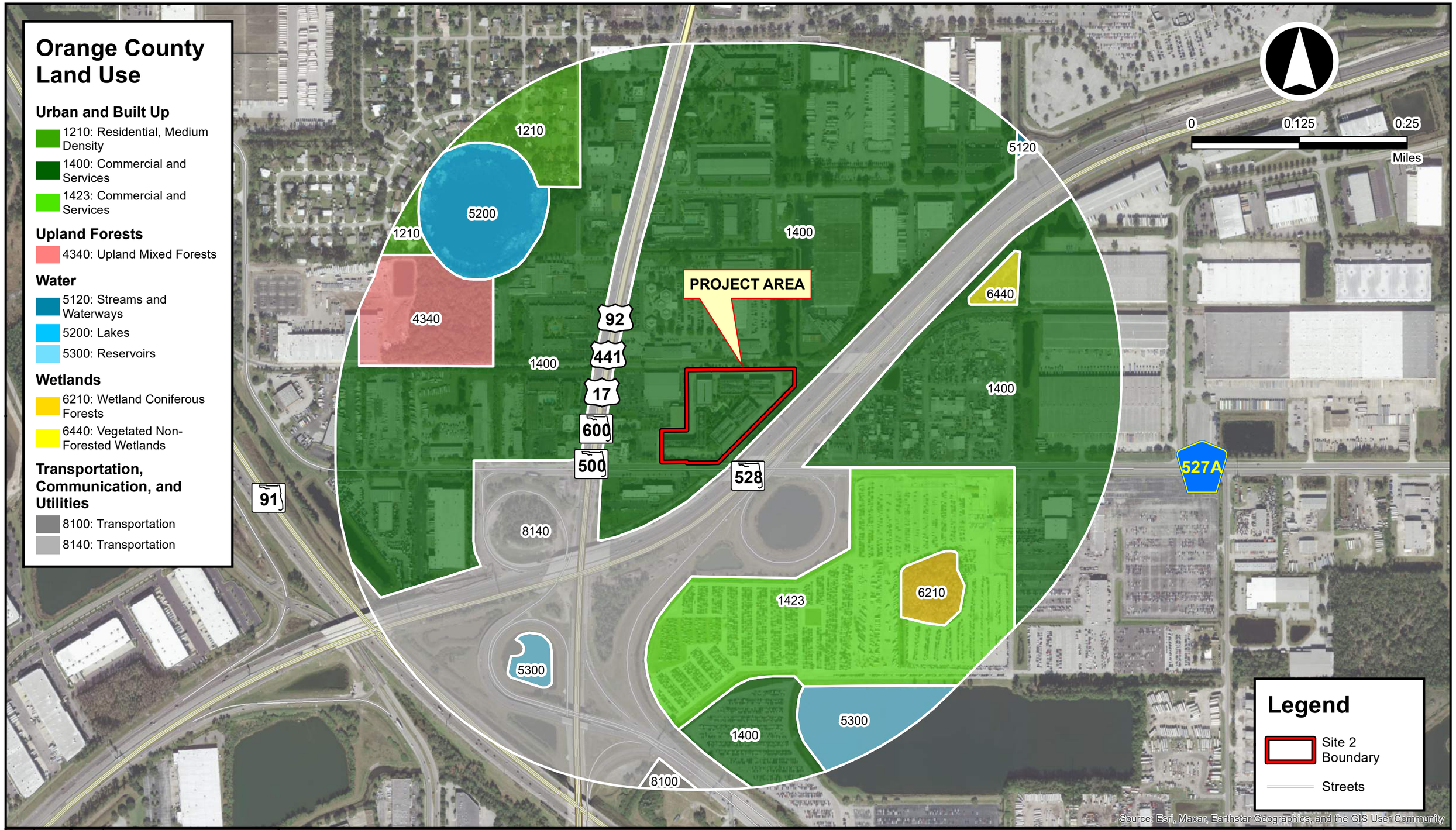
- 5120: Streams and Waterways
- 5200: Lakes
- 5300: Reservoirs

Wetlands

- 6210: Wetland Coniferous Forests
- 6440: Vegetated Non-Forested Wetlands

Transportation, Communication, and Utilities

- 8100: Transportation
- 8140: Transportation



Freight Parking PD&E Study

Site 2
Orange County, Florida

Financial Project ID: 447724-1-22-01

LAND USE MAP

Figure 3-4

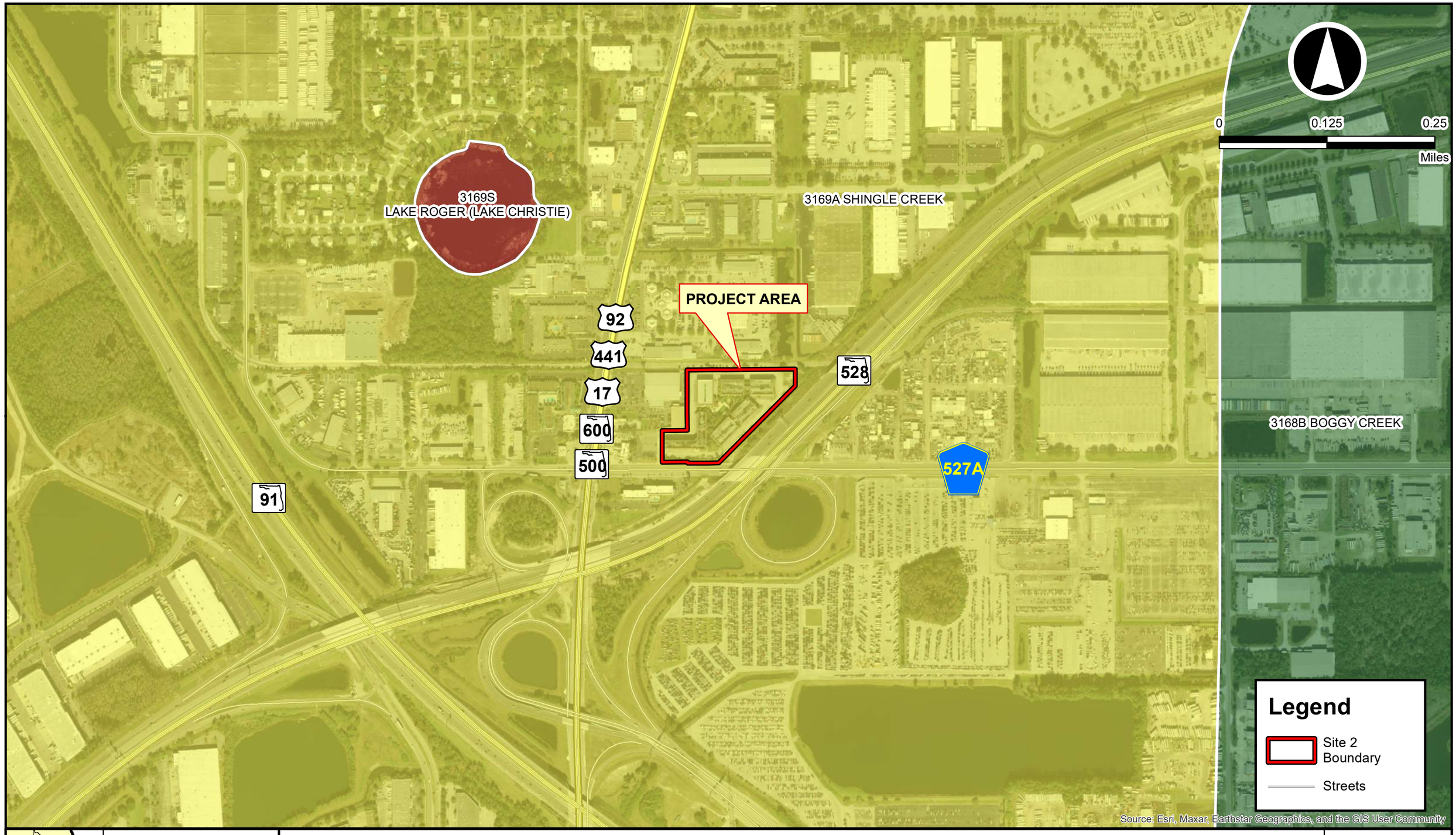
Freight Parking PD&E Study

Site 2
Orange County, Florida

Financial Project ID: 447724-1-22-01

FEMA FLOODPLAINS MAP

Figure
3-5



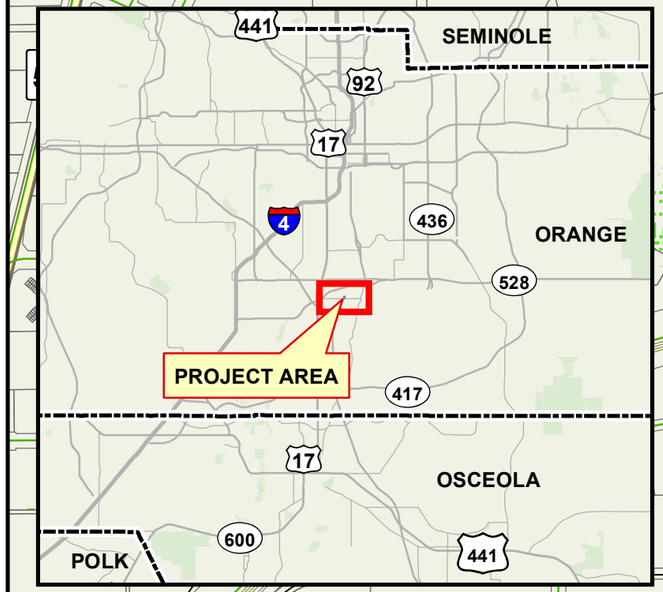
Freight Parking PD&E Study

Site 2
Orange County, Florida

Financial Project ID: 447724-1-22-01

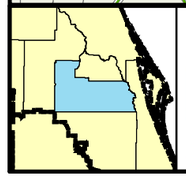
WATER BODY MAP

Figure
3-6



Legend

- SIte 4 Boundary
- Streets
- Railroads
- Parcels
- Public Lands
- Waterbodies
- Wetlands



FDOT

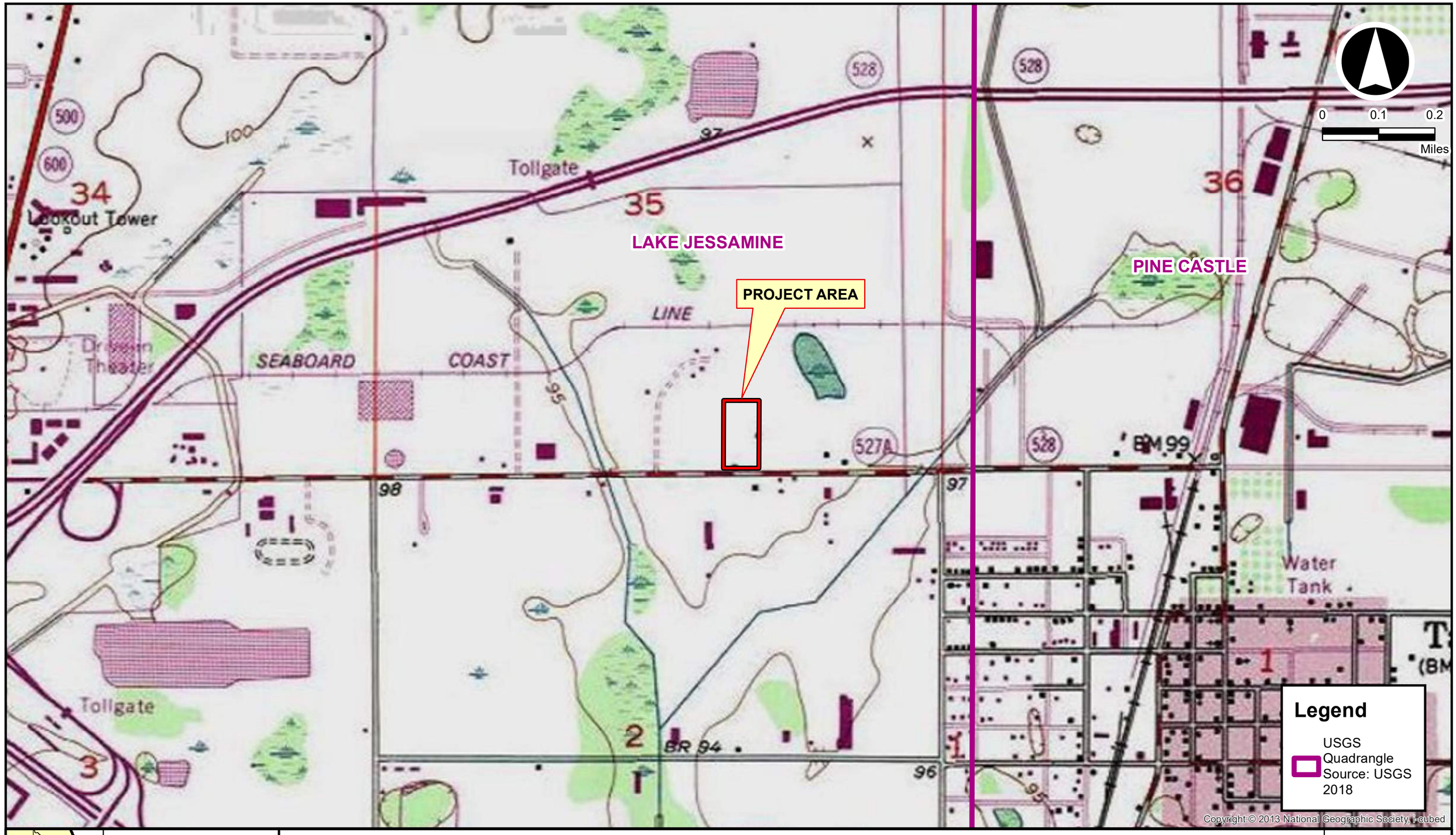
Freight Parking PD&E Study

Site 4
Orange County, Florida

Financial Project ID: 447724-1-22-01

PROJECT LOCATION MAP

Figure
4-1



Freight Parking PD&E Study

Site 4
Orange County, Florida

Financial Project ID: 447724-1-22-01

USGS QUADRANGLE MAP

Figure
4-2

Orange County Soil Descriptions

3: Basinger fine sand, frequently ponded

20: Immokalee fine sand

26: Ona fine sand

27: Ona-urban land complex

34: Pomello fine sand

37: St. Johns fine sand

44: Smyrna-Smyrna, wet, fine sand

45:Smyrna find sand-urban land complex

99: Water

PROJECT AREA

527A

0 0.1 0.2 Miles

Soil Group

- A
- A/D
- B/D
- Water

Legend

- Site 4 Boundary
- Streets

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

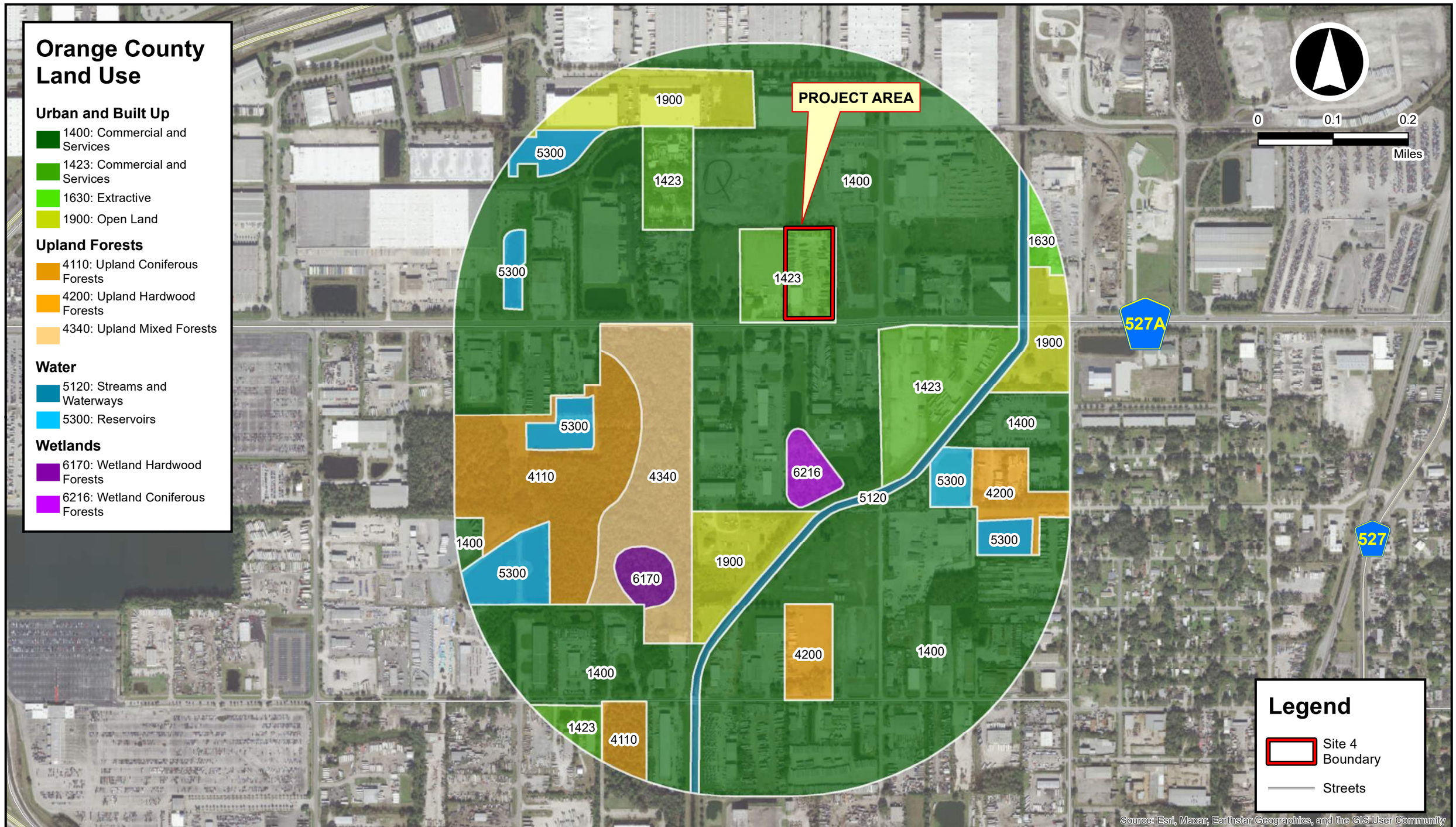
Freight Parking PD&E Study

Site 4
Orange County, Florida

Financial Project ID: 447724-1-22-01

NRCS SOILS MAP

Figure
4-3



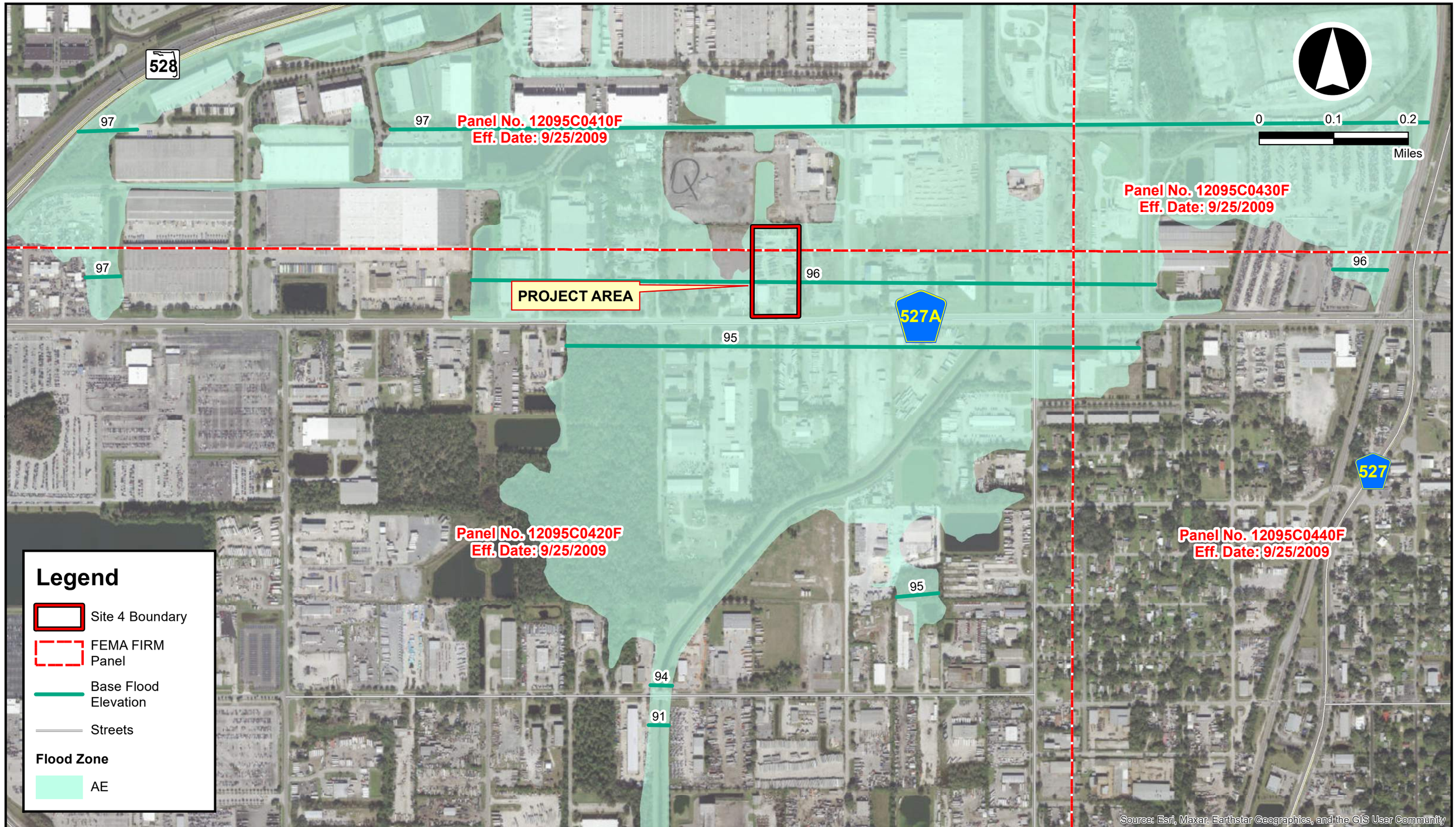
Freight Parking PD&E Study

Site 4
Orange County, Florida

Financial Project ID: 447724-1-22-01

LAND USE MAP

Figure 4-4



Freight Parking PD&E Study

Site 4
Orange County, FL

Financial Project ID: 447724-1-22-01

FEMA FLOODPLAINS MAP

Figure
4-5

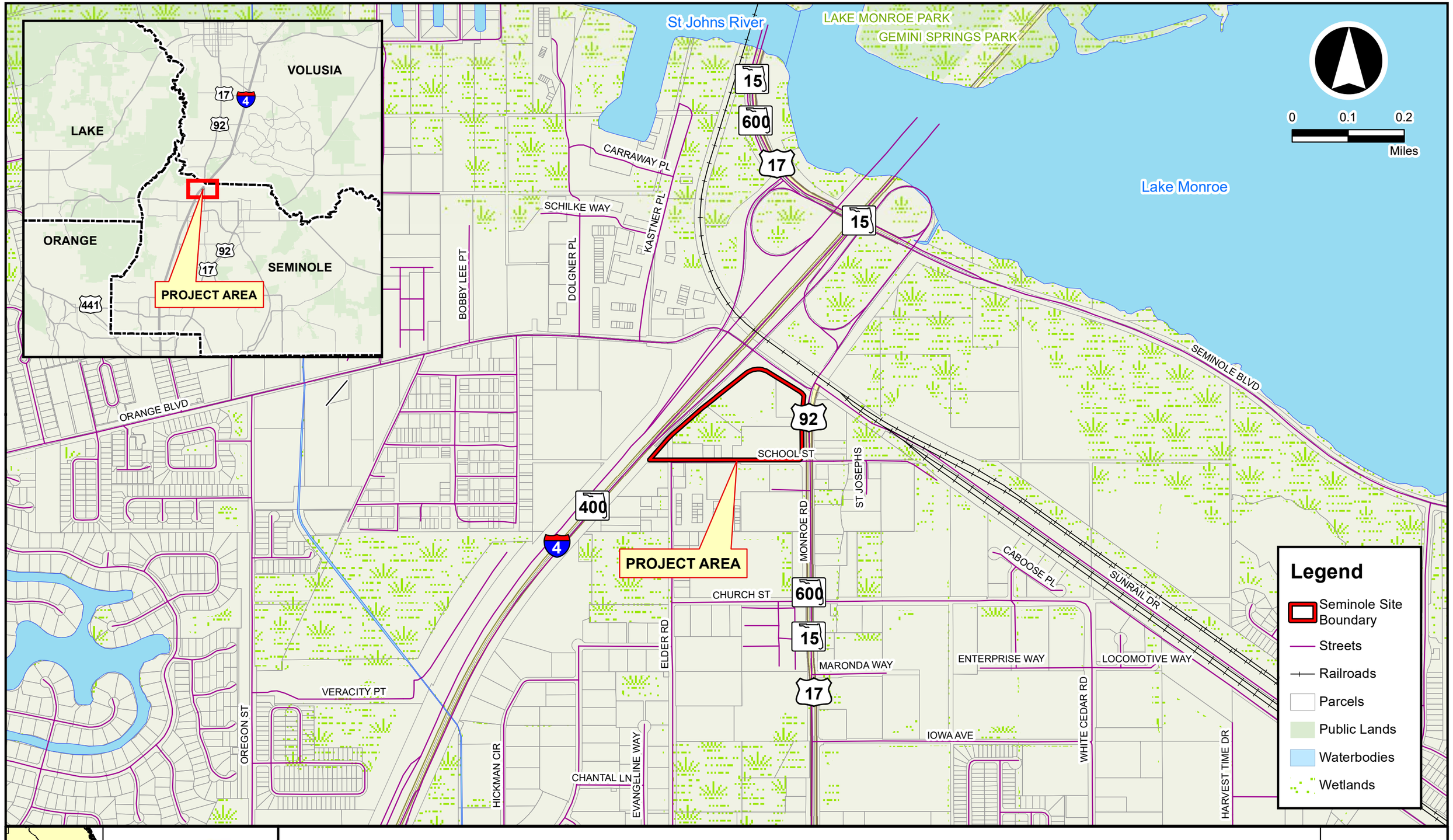
Freight Parking PD&E Study

Site 4
Orange County, Florida

Financial Project ID: 447724-1-22-01

WBID MAP

Figure
4-6



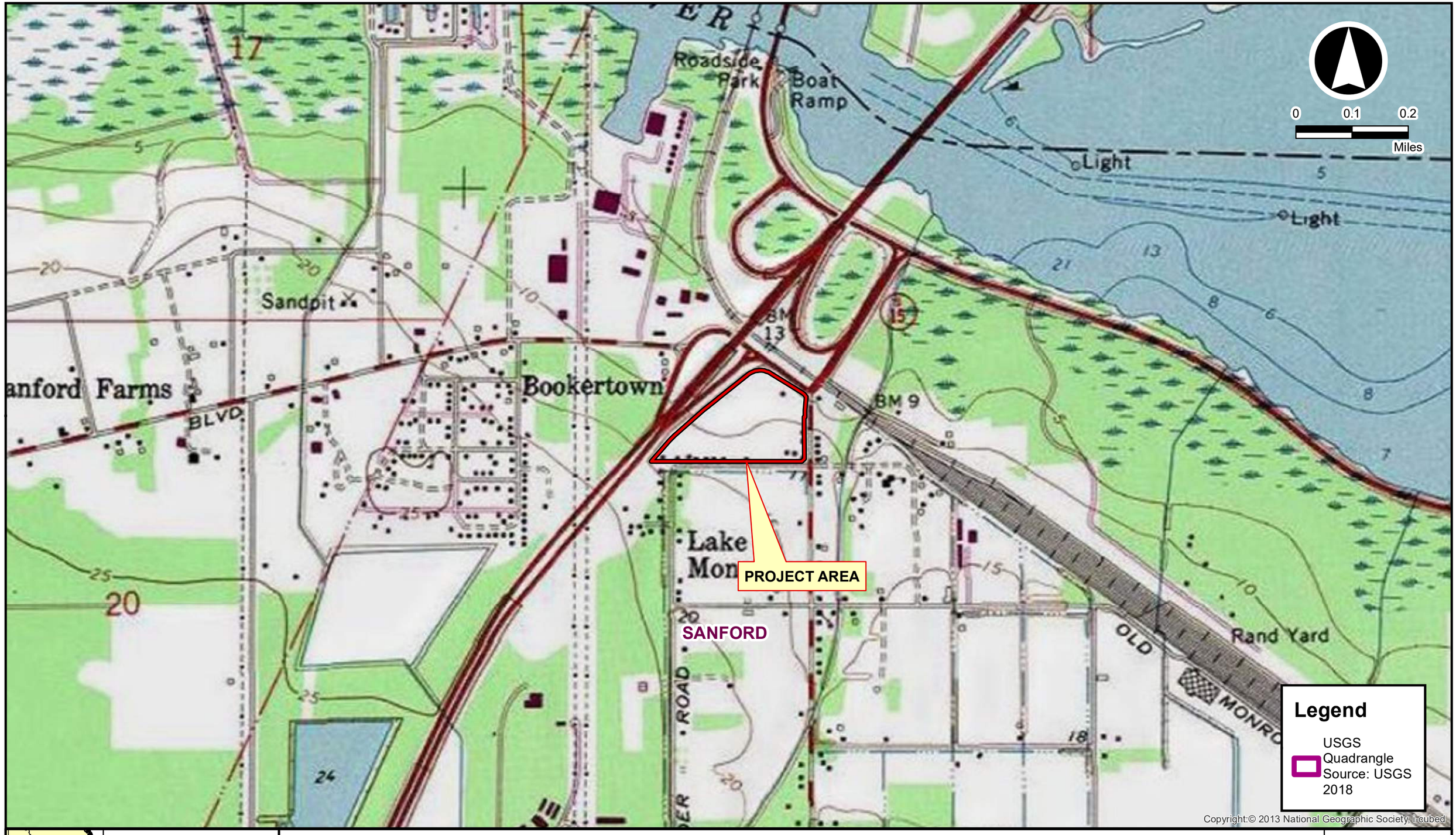
Freight Parking PD&E Study

Seminole County, Florida

Financial Project ID: 447724-1-22-01

PROJECT LOCATION MAP

Figure 5-1



Freight Parking PD&E Study

Seminole County, Florida

Financial Project ID: 447724-1-22-01

USGS QUADRANGLE MAP

Figure

5-2

Seminole County Soil Descriptions

3: Arents

9: Basinger and Delray fine sands

10: Basinger, Samsula, and Hontoon soils, depressional

13: Eaugallie and Immokalee fine sands

15: Felda and Manatee mucky fine sands, depressional

20: Myakka and Eaugallie fine sands

21: Nittaw mucky fine sand, depressional

23: Nittaw, Okeelanta, and Basinger soils, frequently flooded

25: Pineda-Pineda, wet, fine sand

26: Urodthents, excavated

34: Urban land

0 0.1 0.2 Miles

PROJECT AREA

600 400 4 17 92 15

Soil Group

- A
- A/D
- C/D
- Urban Land

Legend

- Seminole Site Boundary
- Streets

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Freight Parking PD&E Study

Seminole County, Florida

Financial Project ID: 447724-1-22-01

NRCS SOILS MAP

Figure 5-3

Seminole County Land Use

Urban and Built Up

- 1100: Residential, low density - <2 dwelling units per acre
- 1180: Residential, rural, <0.5 dwelling units per acre
- 1200: Residential, med. density, 2-5 dwelling units per acre
- 1400: Commericial and Services
- 1460: Oil and gas storage
- 1530: Mineral processing
- 1550: Other light industry
- 1560: Other heavy industry
- 1700: Institutional
- 1850: Parks and zoos

Agriculture

- 2150: Field crops

Upland Nonforested

- 3100: Herbaceous upland nonforested

Upland Forests

- 4110: Pine flatwoods
- 4340: Upland mixed coniferous/hardwood

Water

- 5300: Reservoirs

Wetlands

- 6170: Mixed wetland hardwoods
- 6210: Cypress
- 6410: Freshwater marshes
- 6430: Wet prairies
- 6440: Emergent aquatic vegetation
- 6460: Mixed scrub-scrub wetland

Barren Land

- 7400: Disturbed land

Transportation, Communication, and Utilities

- 8120: Railroads
- 8140: Roads and highways
- 8320: Electrical power transmission lines
- 8370: Surface water collection basin

PROJECT AREA

0 0.1 0.2 Miles

Legend

- Seminole Site Boundary
- Streets

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Freight Parking PD&E Study

Seminole County, Florida

Financial Project ID: 447724-1-22-01

LAND USE MAP

Figure 5-4

Freight Parking PD&E Study

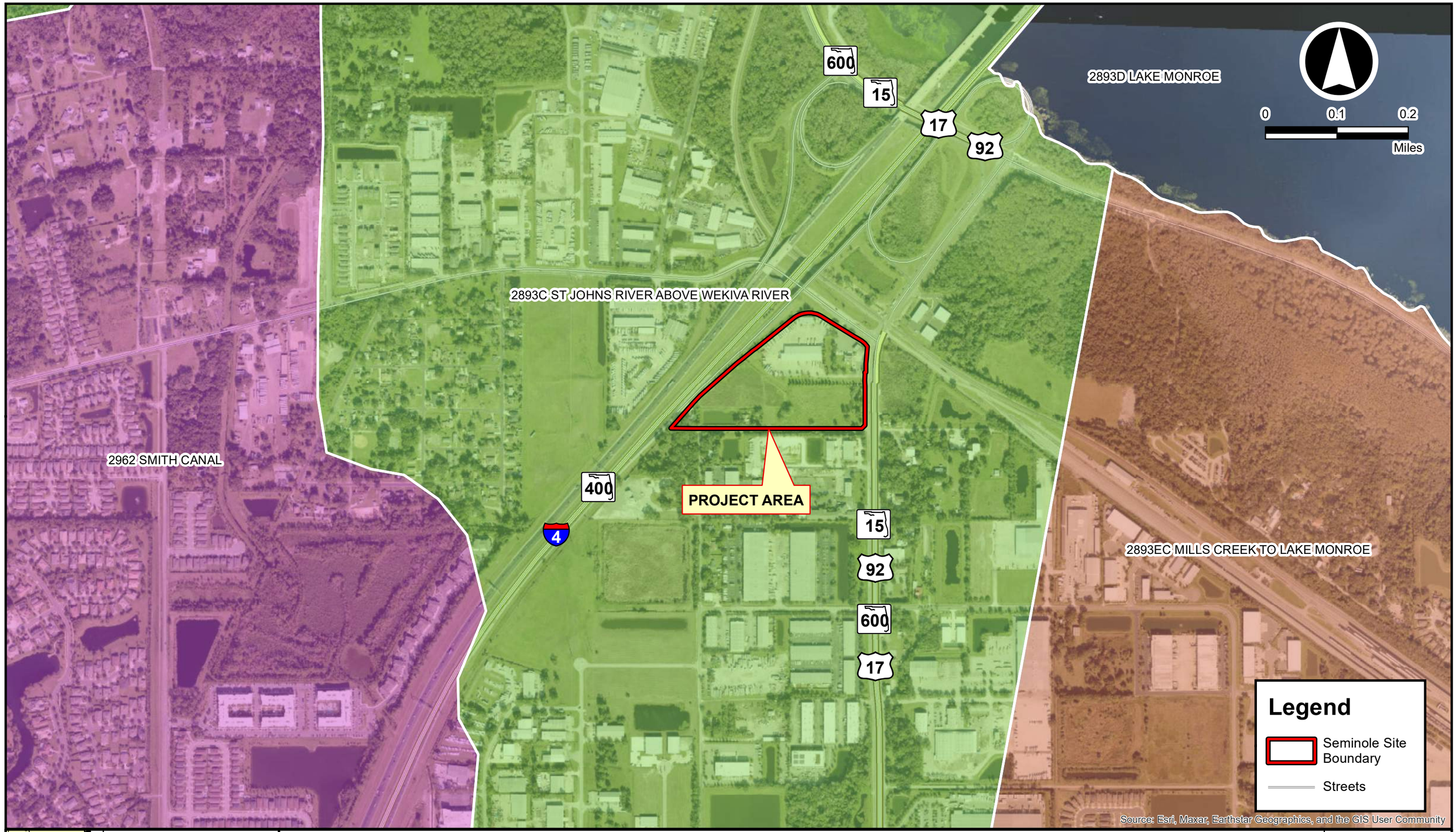
Seminole County, Florida

Financial Project ID: 447724-1-22-01

FEMA FLOODPLAINS MAP

Figure

5-5



Freight Parking PD&E Study

Seminole County, Florida

Financial Project ID: 447724-1-22-01

WBID MAP

Figure 5-6

SITE 1B PROJECT AREA

TIGER BAY STATE FOREST

PORT ORANGE CITY FOREST

PORT ORANGE CITY FOREST

SITE 1A PROJECT AREA

0 0.25 0.5 Miles

ATLANTIC OCEAN

FLAGLER

VOLUSIA

LAKE

Legend

- Volusia Site Boundary
- Streets
- Parcels
- Public Lands
- Wetland
- Waterbodies

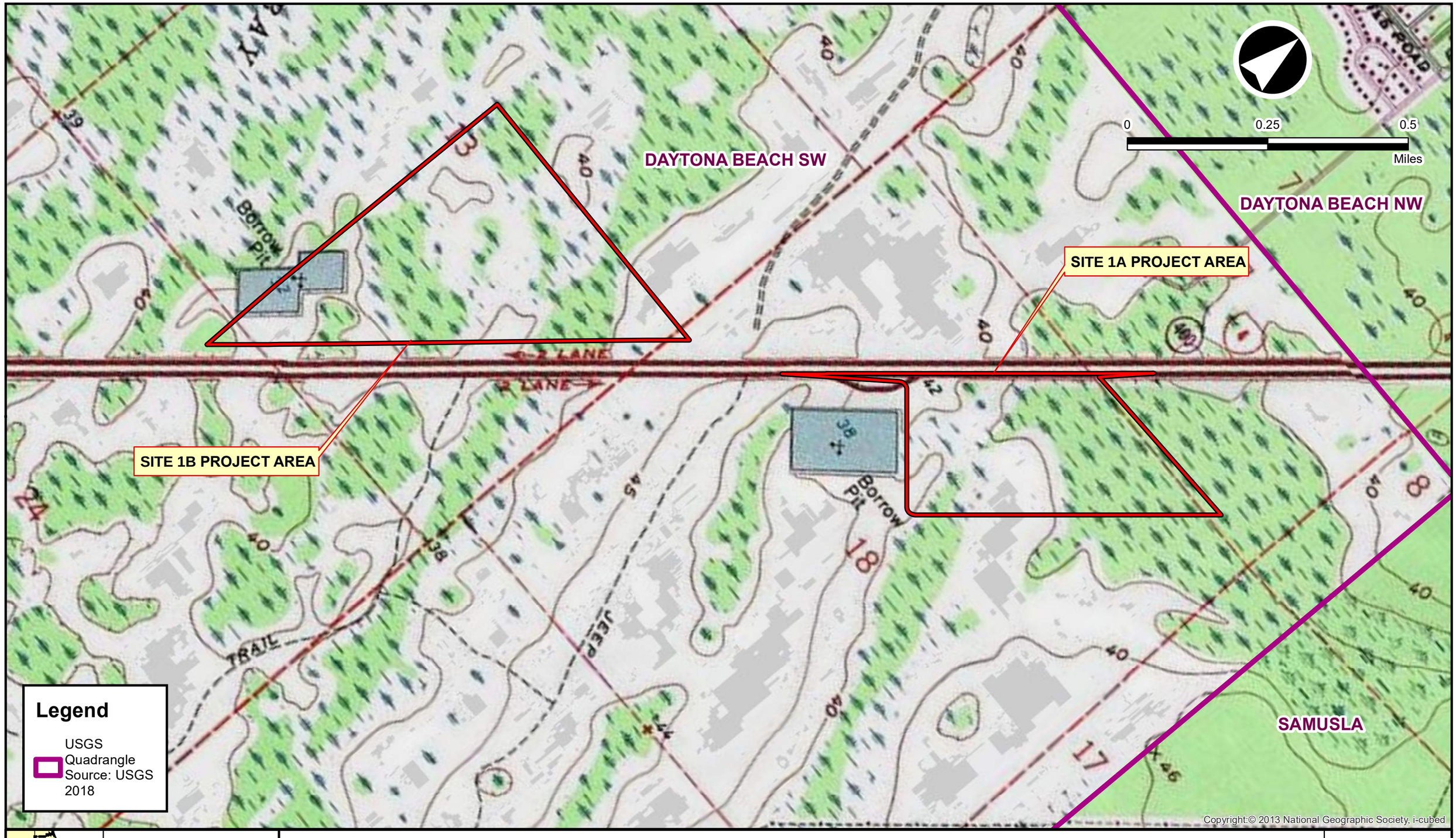
Freight Parking PD&E Study

Volusia County, Florida

Financial Project ID: 447724-1-22-01

PROJECT LOCATION MAP

Figure 6-1



Freight Parking Study

Volusia County, Florida

Financial Project ID: 447724-1-22-01

USGS QUADRANGLE MAP

Figure

6-2

Volusia County Soil Descriptions

17: Daytona sand

27: Hontoon muck, frequently flooded

29: Immokalee sand

32: Myakka-Myakka, wet, fine sands

34: Myakka-St. Johns complex

49: Pomona fine sand

56: Samsula muck, frequently ponded

57: Satellite sand

60: Smyrna-Smyrna, wet, fine sand

99: Water

0 0.25 0.5 Miles

92

600

400

4

SITE 1B PROJECT AREA

SITE 1A PROJECT AREA

Soil Group

- A
- A/D
- B/D
- Water

Soil Group

- Volusia Site Boundary
- Streets

Freight Parking PD&E Study

Volusia County, Florida

Financial Project ID: 447724-1-22-01

NRCS SOILS MAP

Figure 6-3

Volusia County Land Use

Urban and Built Up
- 1180: Residential, rural, <0.5 dwelling units per acre
- 1620: Sand and gravel pits
- 1660: Holding ponds

Upland Nonforested
- 3200: Scrub and brush land
- 3300: Mixed upland nonforested

Upland Forests
- 4110: Upland coniferous forests
- 4120: Longleaf pine - xeric oak
- 4130: Sand pine
- 4410: Coniferous pine

Water
- 5300: Reservoirs

Wetlands
- 6110: Bay swamps
- 6170: Mixed wetland hardwoods
- 6210: Cypress
- 6250: Hydric pine flatwoods
- 6300: Wetland forested mixed
- 6410: Freshwater marshes
- 6430: Wet prairies
- 6440: Emergent aquatic vegetation
- 6460: Mixed scrub-shrub wetland

Transportation, Communication, and Utilities
- 8140: Roads and highways

SITE 1B PROJECT AREA

SITE 1A PROJECT AREA

92

400

4

0 0.25 0.5 Miles

Legend
- Volusia Site Boundary
- Streets

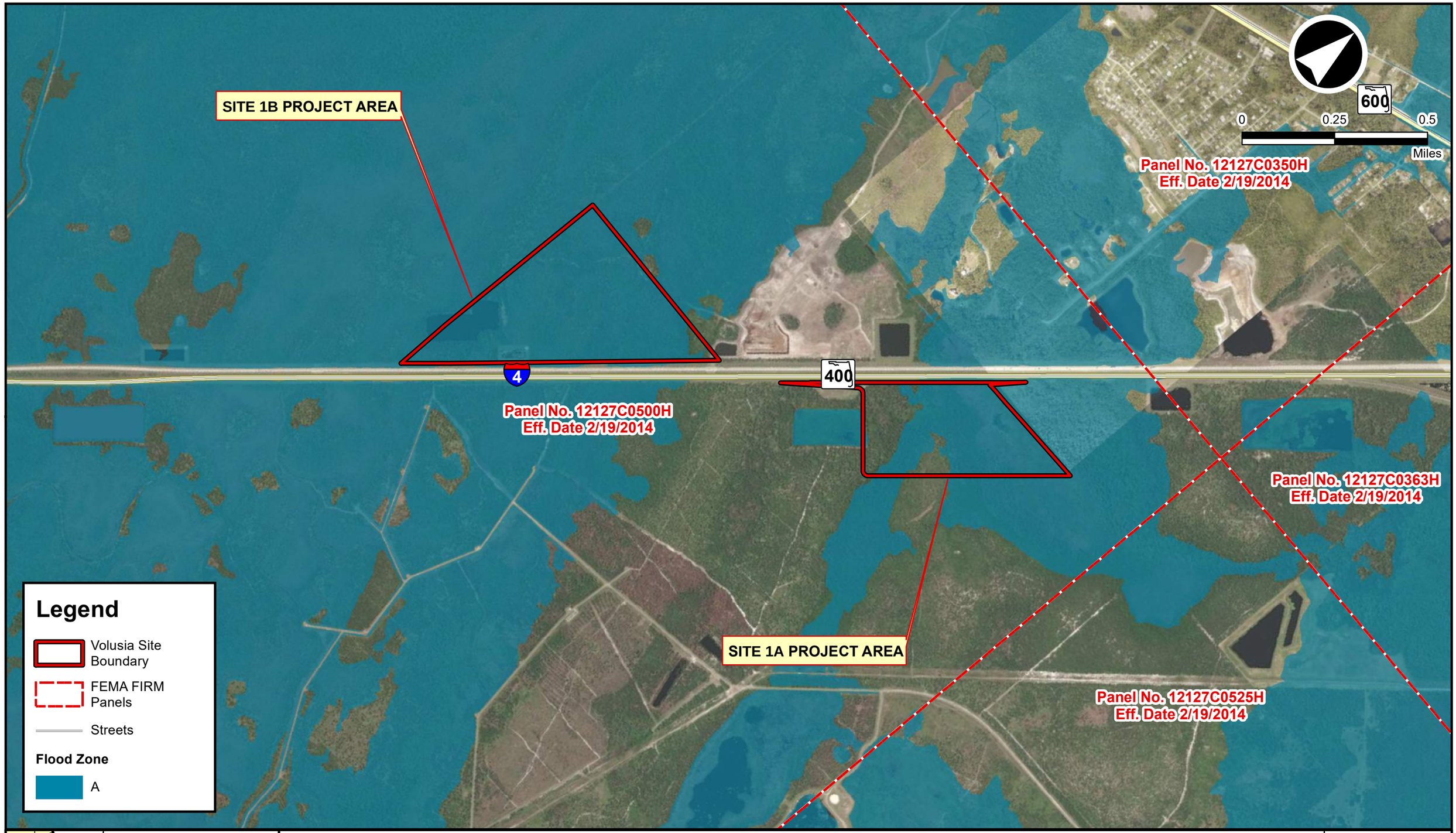
Freight Parking PD&E Study

Volusia County, Florida

Financial Project ID: 447724-1-22-01

LAND USE MAP

Figure 6-4



Freight Parking PD&E Study

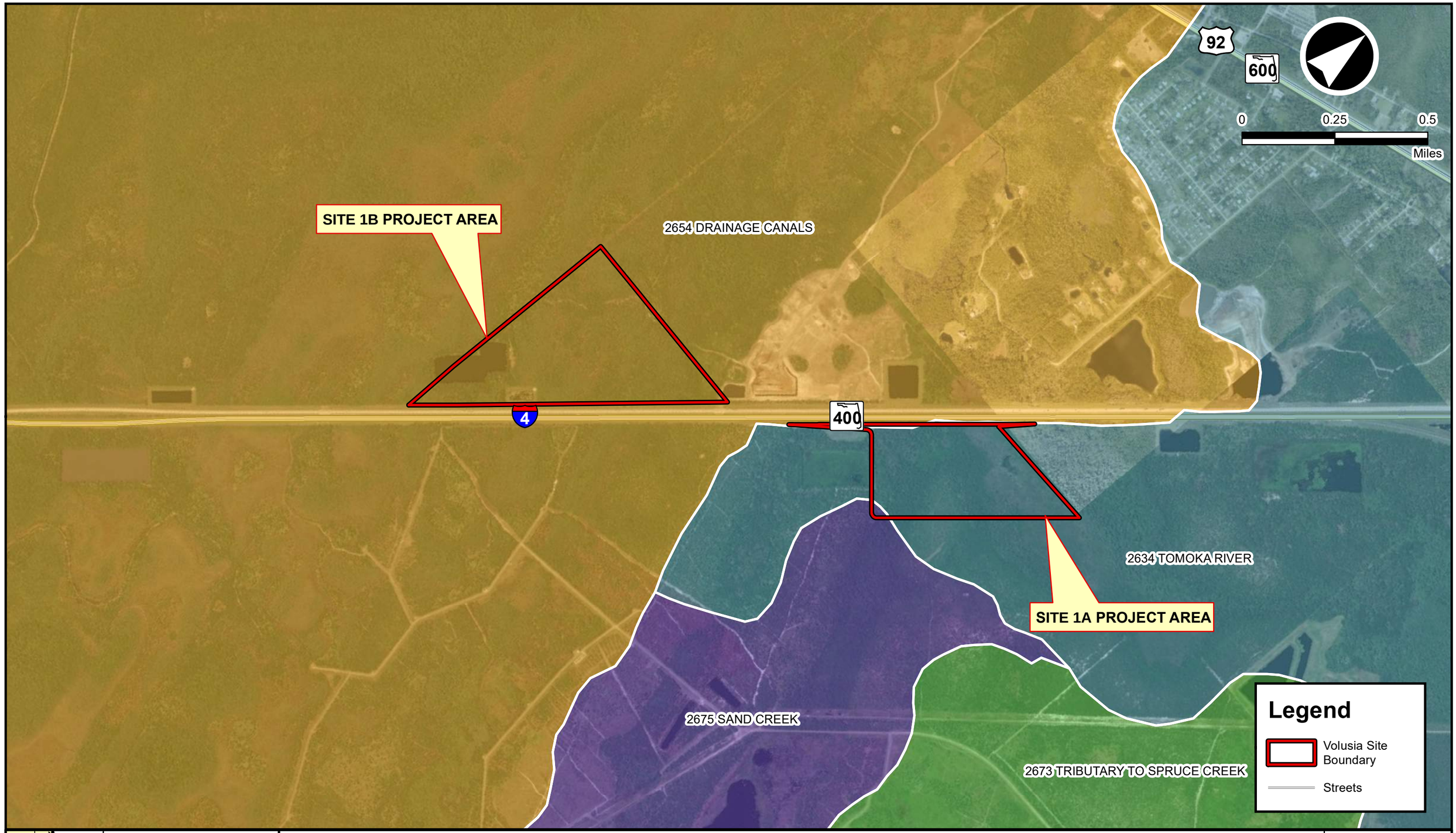
Volusia County, Florida

Financial Project ID: 447724-1-22-01

FEMA FLOODPLAINS MAP

Figure

6-5



Freight Parking PD&E Study

Volusia County, Florida

Financial Project ID: 447724-1-22-01

WBID MAP

Figure 6-6

Site 1B Project Area
Total Area of Floodplain Area = 11834.82 Ac
Remaining Floodplain Impact Volume to be Compensated = 49.22 Ac-Ft
Rise in Flood Stage = 0.0041 Ft

SITE 1B PROJECT AREA

SITE 1A PROJECT AREA

Legend

- Volusia Site Boundary
- Total Floodplain Shape Uninhibited by Constrictions
- Total Floodplain Shape Uninhibited by Constrictions

Flood Zone

- A
- AE
- AH
- VE
- Streets

0 2 4 Miles

Site 1A Project Area
Total Area of Floodplain Area = 3029.00 Ac
Remaining Floodplain Impact Volume to be Compensated = 11.31 Ac-Ft
Rise in Flood Stage = 0.0037 Ft

Freight Parking PD&E Study

Volusia County, Florida

Financial Project ID: 447724-1-22-01

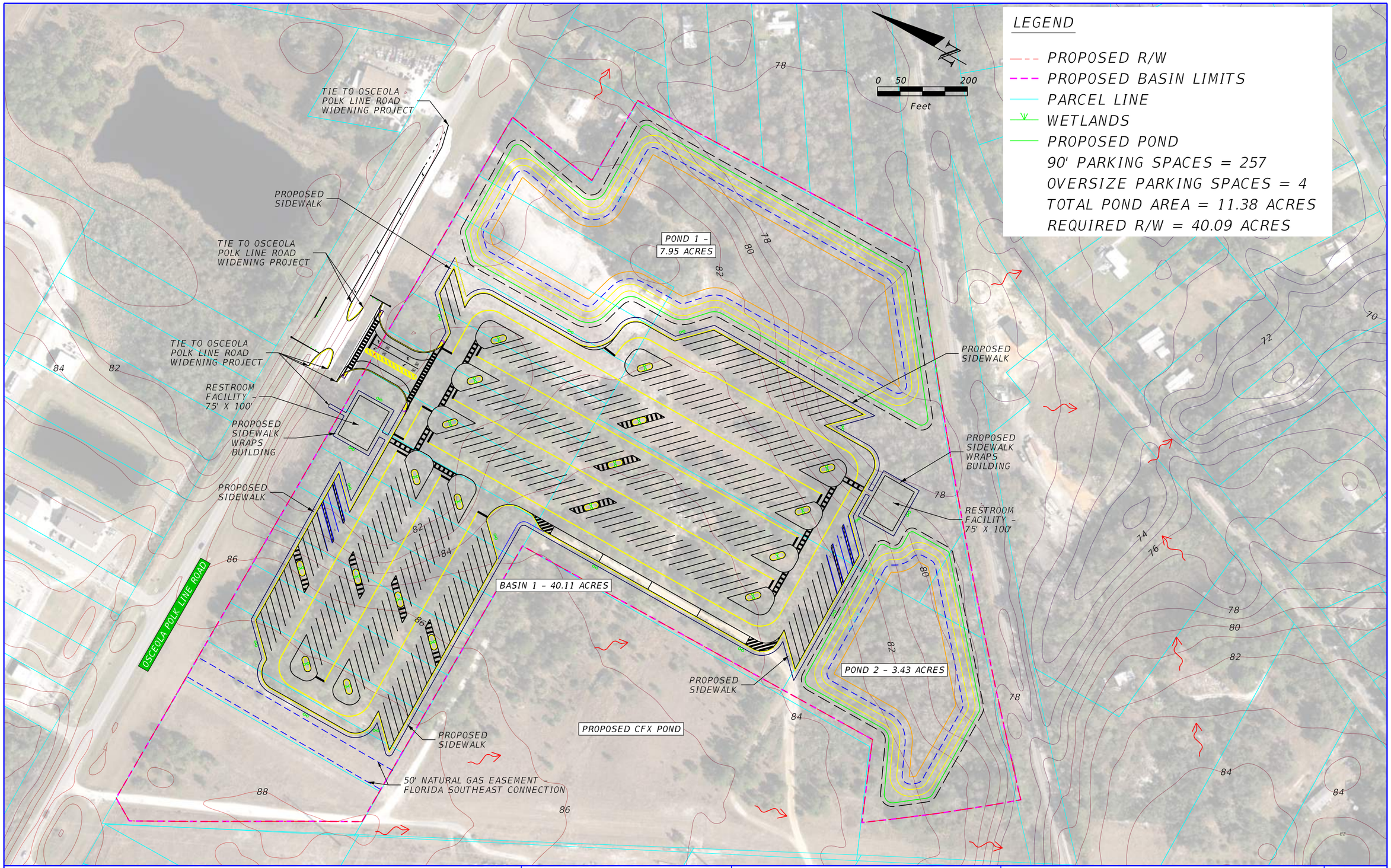
IMPACTED FEMA FLOODPLAIN MAP

Figure

6-7

APPENDIX B

Basin Maps



REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			OSCEOLA COUNTY - SITE 1 TRUCK PARKING CONCEPT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					OSCEOLA	447724-1		

cdewitt 11/17/2023 9:53:20 AM Default F:\Projects\DT5-030-00\TWO 10 - Truck Parking\admin\Drainage\CAD\Osceola County - South Site\Internal\PLANRD01_Osceola.dgn

JOHN YOUNG PARKWAY NB ON-RAMP

JOHN YOUNG PARKWAY

SAND LAKE ROAD EB

SAND LAKE ROAD WB

EXISTING JOHN YOUNG POND 4

PROPOSED OUTFALL

PROPOSED SIDEWALK

PROPOSED SIDEWALK WRAPS BUILDING

POND 2 – 1.10 ACRES

PROPOSED SIDEWALK

POND 1 – 3.91 ACRES

RESTROOM FACILITY – 75' X 100'

BASIN 1 – 16.30 ACRES

PROPOSED SIDEWALK

PROPOSED OUTFALL

EXISTING FLORIDA TURNPIKE FLOODPLAIN COMP AREA

RE-DESIGNED FTE POND

PROPOSED FTE POND

RE-CONFIGURED FTE POND – 5.62 ACRES

TURNPIKE SB OFF-RAMP

TURNPIKE SB

TURNPIKE NB

N

0 30 150

Feet

LEGEND

- PROPOSED R/W
- TURNPIKE OFF-RAMP R/W
- PROPOSED BASIN LIMITS
- PARCEL LINE
- WETLANDS
- PROPOSED POND

PARKING SPACES = 93

TOTAL POND AREA = 5.01 ACRES

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	ORANGE	446445-1

ORANGE COUNTY - SITE 1 TRUCK PARKING CONCEPT

SHEET NO.

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LEGEND

- PROPOSED R/W
- PROPOSED BASIN LIMITS
- PARCEL LINE
- WETLANDS
- PROPOSED POND
- PARKING SPACES = 59
- TOTAL POND AREA = 1.44 ACRES

CSX RAILROAD

BASIN 1 - 6.82 ACRES

PROPOSED SIDEWALK

RESTROOM FACILITY - 75' X 100'

PROPOSED SIDEWALK WRAPS BUILDING

POND 1 - 0.80 ACRES

POND 2 - 0.64 ACRES

PROPOSED SIDEWALK

PROPOSED SIDEWALK

ORANGE BLOSSOM TRAIL

LANDSTREET ROAD

SR 528 WB

SR 528 EB

SR 528 EB OVI-RAMP

N

0 20 100

Feet

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	ORANGE	447724-1

ORANGE COUNTY - SITE 2 TRUCK PARKING CONCEPT

SHEET NO.

cdewitt 11/17/2023 9:54:29 AM Default F:\Projects\DT5-030-00\TWO 10 - Truck Parking\admin\Drainage\CAD\Orange County - Former Motel\Internal\PLANRD01_Orange_Motel.dgn

LEGEND

PROPOSED R/W
PROPOSED BASIN LIMITS
PARCEL LINE
WETLANDS
PROPOSED POND
PARKING SPACES = 48
TOTAL POND AREA = 0.91 ACRES

N
0 10 50
Feet

PROPOSED SIDEWALK

POND 3 - 0.35 ACRES

POND 2 - 0.49 ACRES

PROPOSED SIDEWALK

LANDSTREET ROAD

POND 1 - 0.07 ACRES

PROPOSED SIDEWALK

BASIN 1 - 4.86 ACRES

REVISIONS					STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ORANGE COUNTY - SITE 4 TRUCK PARKING CONCEPT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
						ORANGE	447724-1		

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LEGEND

PROPOSED R/W
PARCEL LINE
WETLANDS
PROPOSED POND
PROPOSED BASIN LIMITS
PARKING SPACES = 156
TOTAL POND AREA = 4.17 ACRES
REQUIRED R/W = 18.52 ACRES

I-4 WB
I-4 EB
I-4 EB OFF-RAMP
ORANGE BLVD
RAISED BERM
N
0 20 100
Feet
BASIN 1 – 13.40 ACRES
BASIN 2 – 5.86 ACRES
PROPOSED SIDEWALK
U.S. 17
PROPOSED SIDEWALK
POND 1 – 2.28 ACRES
PRE – TREATMENT AREA – 0.32 ACRES
PROPOSED SIDEWALK
POND 2 – 1.57 ACRES
SCHOOL STREET
RESTROOM FACILITY – 75' X 100'
PROPOSED SIDEWALK WRAPS BUILDING
PROPOSED SIDEWALK

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	SEMINOLE	447724-1

SEMINOLE COUNTY - SITE 1B
TRUCK PARKING CONCEPT

SHEET NO.

cdewitt 11/17/2023 9:55:00 AM Default F:\Projects\DT5-030-00\TWO 10 - Truck Parking\admin\Drainage\CAD\Seminole County - Small Site\Internal\PLANRD01_Seminole.dgn

I-4 EB

FPCA 1 – 1.47 ACRES

FPCA 2 – 1.63 ACRES

POND 1 – 7.15 ACRES

BASIN 1 – 46.27 ACRES

0 50 200

Feet

LEGEND

- PROPOSED R/W
- PROPOSED BASIN LIMITS
- PARCEL LINE
- WETLANDS
- PROPOSED POND
- TRUCK PARKING SPACES = 275
- MAINTENANCE VEHICLE PARKING SPACES = 10
- TOTAL POND AREA = 7.15 ACRES
- R/W REQUIRED = 73.34 ACRES

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	VOLUSIA	447724-1

VOLUSIA COUNTY - SITE 1A TRUCK PARKING CONCEPT

SHEET NO.

cdewitt 11/17/2023 9:55:26 AM EB DIRECTION F:\Projects\DT5-030-00\TWO 10 - Truck Parking\admin\Drainage\CAD\Volusia County - Both Sides\Internal\PLANRD01_Volusia.dgn

LEGEND

- PROPOSED R/W
- PROPOSED BASIN LIMITS
- PARCEL LINE
- WETLANDS
- PROPOSED POND
- TRUCK PARKING SPACES = 253
- MAINTENANCE VEHICLE PARKING SPACES = 10
- TOTAL POND AREA = 10.17 ACRES
- R/W REQUIRED = 116.83 ACRES

BASIN 1 – 52.18 ACRES

POND 1 – 3.45 ACRES

I-4 POND I EXTENSION – 6.72 ACRES

FPCA 1 – 2.20 ACRES

I-4 WB

I-4 EB

0 50 200
Feet

REVISIONS				
DATE	DESCRIPTION	DATE	DESCRIPTION	

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
	VOLUSIA	447724-1

VOLUSIA COUNTY - SITE 1B TRUCK PARKING CONCEPT

SHEET NO.

cdewitt 11/17/2023 9:55:13 AM WB DIRECTION F:\Projects\DT5-030-00\TWO 10 - Truck Parking\admin\Drainage\CAD\Volusia County - Both Sides\Internal\PLANRD01_Volusia.dgn

APPENDIX C

Pond Evaluation Matrix

Inwood consulting engineers
3000 Dovera Drive, Suite 200, Oviedo FL32765
(407) 971-8850 phone (407) 971-8955 fax

I-4 Truck Parking PD&E Study

FDOT

SUMMARY OF POND SITES

ENGINEERING DATA & ANALYSIS

Pond	Location	Existing Ground Elevation (ft)	Pond Type	Soil Names & Hydrologic Groups	Estimated SHWT Elevation (ft)	Lowest Allowable Site Elevation (ft)	Distance From Site Center to Pond (ft)	Estimated Allowable DHW (ft)	Estimated Allowable Treatment & Attenuation Depth (ft)	Design Storm Event	Outfall Location	Site Drainage Area Including Pond (ac)	Required Treatment & Attenuation Volume (ac-ft)	Required Pond Area (ac)
Volusia County - Site 1A	Parcel No. 621800000010	37.00	Wet Detention	Immokalee sand (HSG B/D), Samsula muck (HSG A/D), & Myakka-Myakka fine sand (HSG A/D)	36.00	40.00	400	38.00	2.00	25 yr / 24 hr (SJRWMD)	Adjacent Wetlands	46.27	8.68	7.15
Volusia County - Site 1B	Parcel No. 610100000020	38.00	Wet Detention	Myakka-Myakka fine sand (HSG A/D) & Myakka-St. Johns complex (HSG A/D)	37.90	41.40	400	40.50	2.60	25 yr / 24 hr (SJRWMD)	Adjacent Wetlands	52.18	11.71	10.17
Seminole County - Site 1b	Parcel Nos. 21-19-30-511-0000-0010, 21-19-30-511-0000-0020, 21-19-30-511-0A00-0000, 16-19-30-5AC-0000-026B, 16-19-30-5AC-0000-026E, 16-19-30-5AC-0000-027A, 21-19-30-511-0000-0030, 21-19-30-502-0400-0000	11.00	Wet Detention	Pineda-Pineda fine sand (HSG A/D), Eaugallie and Immokalee fine sands (HSG A/D), & Felda and Manatee mucky fine sand (HSG A/D)	6.50	13.00	400	12.00	5.50	25 yr / 24 hr (SJRWMD)	Ditch along I-4 to Lake Monroe	13.40	5.38	2.28
		11.00	Wet Detention		8.50	13.00	400	10.00	3.50	25 yr / 24 hr (SJRWMD)	Ditch along I-4 to Lake Monroe	5.86	0.78	1.57
Orange County - Site 1	Parcel Nos. 28-23-29-0000-00-002, 29-23-29-0000-00-006	84.00	Wet Detention	Smyrna-Smyrna fine sand (HSG A/D) & St. Johns fine sand (HSG B/D)	83.50	88.00	550	86.90	3.40	25 yr / 24 hr (Orange County)	CD-7, CD-8 & CD-9 Under John Young Parkway to Shingle Creek Wetlands	16.30	8.52	5.01
Orange County - Site 2	Parcel No. 34-23-29-7268-12-101	98.00	Wet Detention	Smyrna-Smyrna fine sand (HSG A/D)	94.50	100.00	250	98.50	4.00	25 yr / 24 hr (Orange County)	SR 528 Stormsewer System	6.82	1.35	1.44
Orange County - Site 4	Parcel No. 35-23-29-7268-11-802	97.00	Dry Retention	Smyrna-Smyrna fine sand (HSG A/D)	92.00	97.50	225	96.00	1.00	25 yr / 24 hr (Orange County)	Landstreet Road Ditch & Stormsewer System	4.86	0.52	0.91
Osceola County - Site 1	Parcel Nos. 06-26-28-4785-0001-0010, 06-26-28-4785-0001-0020, 06-26-28-4785-0001-0030, 06-26-28-4785-0001-0040, 06-26-28-4785-0001-0050, 06-26-28-4785-0001-0060, 06-26-28-4785-0001-0070, 06-26-28-4785-0001-0080, 06-26-28-4785-0001-0090, 06-26-28-4785-0001-0100, 06-26-28-4785-0001-0110, 06-26-28-4785-0001-0120, 06-26-28-4785-0001-0130, 06-26-28-4785-0001-0140, 06-26-28-4785-0001-0150, 06-26-28-0000-0073-0000, 06-26-28-0000-0070-0000, 06-26-28-0000-0092-0000	82.00	Wet Detention	Immokalee sand (HSG B/D), Myakka fine sand (HSG A/D), & Riviera fine sand (HSG A/D)	81.00	84.50	1100	83.00	2.00	10 yr / 72 hr (Osceola County)	Adjacent Wetlands	40.11	14.39	11.38

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I-4 Truck Parking PD&E Study

SUMMARY OF POND SITES

IMPACT ANALYSIS

Pond	Site Floodplain Impacts (ac-ft)	FEMA Floodzone	Arch. / Historical Impact Potential	Wetland Impacts (ac)	Environmental Impact Risk	Threatened or Endangered Species Impacts	Hazardous Materials & Contamination Potential	Major Utility Conflict Potential (Y/N)	Existing Land Use
Volusia County - Site 1A	17.48	A	Low/Low	31.56	High	Wood Stork, Southeastern American Kestrel, and Florida Black Bear	Low	N	Upland Nonforested, Upland Forests, & Wetlands
Volusia County - Site 1B	62.75	A	Low/Low	29.87	High	Wood Stork, Florida Sandhill Crane, Wading Birds, Southeastern American Kestrel, and Florida Black Bear	Low	N	Upland Forests & Wetlands
Seminole County - Site 1b	0	X	Moderate to High	1.40	Moderate	Wood Stork, Gopher Tortoise, Florida Sandhill Crane, and Wading Birds	High	N	Urban and Builtup & Agriculture
Orange County - Site 1	24.62	AE	Low/Low	9.45	Moderate	American Alligator, Wood Stork, Gopher Tortoise, Florida Sandhill Crane, Wading Birds, and Southeastern American Kestrel	Low	N	Upland Forests, Urban and Builtup & Wetlands
Orange County - Site 2	0	X	Low/Moderate	0.00	Low	N/A	Medium	N	Urban and Builtup
Orange County - Site 4	0.42	AE	Low/Low	0.00	Low	N/A	Medium	N	Urban and Builtup
Osceola County - Site 1	0	X	High/Low	17.89	High	Sand Skink, Gopher Tortoise, Eastern Indigo Snake, Florida Burrowing Owl, Florida Pine Snake, Southeastern American Kestrel, Wading Birds, and Southern Fox Squirrel	Low	N	Cropland and Pastureland, Wetlands, & Residential Low Density

Note: The potential occurrence of any listed species within each proposed pond site was valued as low, medium, or high based on FLUCFCS type, FNAI reports, and data gathered during field reviews. A determination of low was given for areas that are developed and exhibited minimal to no available habitat for listed species. A determination of medium was given for areas where suitable habitat was identified within one quarter mile of the pond site, or suboptimal habitat was observed within the pond site. A determination of high was given for direct observations of listed species, or areas with greater than one mile of contiguous suitable habitat.

APPENDIX D

Pond Sizing Calculations

Osceola County Site 1

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: DLD
Checked by: REC
DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Osecola Site 1**
POND NAME : **Ponds 1 & 2**

Note: The proposed parking site for Osceola South impacts a future wet detention pond that is proposed as part of the CR 532 widening by CFX. These calculations include compensation for the treatment and attenuation volume that will be lost in the pond. The new proposed pond will serve as a joint use pond between CFX and FDOT.

EXISTING CONDITION

Total Area:

Impervious Area: **0.00 ac**
Pervious Area: **40.11 ac**
Total Area: **40.11 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Residential Areas (2.0 acre, 12% Impervious)	D	82	2.92 ac	239.4
Woods & Wetlands Combination	D	97	7.72 ac	748.8
Woods; Fair condition (Woods grazed but not burned, and with some forest litter)	D	79	29.47 ac	2328.1
		Total:	40.11 ac	3316.4

CN = Total CN*Area / Total Area = **82.7**

Runoff:

			Osceola 10yr/72hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) =	$\frac{1000}{CN} - 10$ =	**2.09 in**	Precipitation (P) =	7.89 in	6.27 in	
Runoff (Q) =	$\frac{(P - 0.2S)^2}{(P + 0.8S)}$		Runoff (Q) =	**5.84 in**	**4.31 in**	

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DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Osecola Site 1**
POND NAME : **Ponds 1 & 2**

Note: The proposed parking site for Osceola South impacts a future wet detention pond that is proposed as part of the CR 532 widening by CFX. These calculations include compensation for the treatment and attenuation volume that will be lost in the pond. The new proposed pond will serve as a joint use pond between CFX and FDOT.

PROPOSED CONDITION

Pond Area:

Pervious Pond Area :	3.86 ac		
Water Surface Area:	7.52 ac	Wet Pond	(Pond Areas Include Add. 10% F.S.)
Total Pond Area:	11.39 ac		

Total Area:

Impervious Area:	**18.63 ac**
Pervious Area:	**13.96 ac**
Water Surface Area:	**7.52 ac**
Total Area:	**40.11 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	18.63 ac	1825.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	10.10 ac	807.6
Proposed Ponds (Water Surface)	D	100	7.52 ac	752.4
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	3.86 ac	308.9
Denotes Pervious Pond Area		Total:	40.11 ac	3694.6

CN = Total CN*Area / Total Area = **92.1**

Runoff:

			Osceola 10yr/72hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) =	$\frac{1000}{CN} - 10 =$	0.86 in	Precipitation (P) =	7.89 in	6.27 in	
Runoff (Q) =	$\frac{(P - 0.2S)^2}{(P + 0.8S)}$		Runoff (Q) =	**6.95 in**	**5.35 in**	

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PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Osecola Site 1**
POND NAME : **Ponds 1 & 2**

Note: The proposed parking site for Osceola South impacts a future wet detention pond that is proposed as part of the CR 532 widening by CFX. These calculations include compensation for the treatment and attenuation volume that will be lost in the pond. The new proposed pond will serve as a joint use pond between CFX and FDOT.

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
OFW	**Yes** (Lake Okeechobee BMAP)
Open/Closed Basin	**Open**

Wet Detention	**2.50 in**	x Impervious Areas =	3.88 ac-ft
	1.00 in	x Total Basin Area =	3.34 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 3.88 ac-ft
Additional 50% Trt. Vol. (OFW) = 1.94 ac-ft
Compensate for Treatment from CR 532 Pond 5 = 1.25 ac-ft
Total Required Treatment Volume = 7.07 ac-ft

Required Attenuation Volume:

Total Runoff (ac-ft)	Osceola 10yr/72hr	Storm Sewer 10yr/24hr	
Q_{pre} =	19.50 ac-ft	14.40 ac-ft	
Q_{post} =	23.22 ac-ft	17.88 ac-ft	
ΔQ =	**3.72 ac-ft**	**3.47 ac-ft**	
ΔQ from CR 532 Pond 5 =	**3.60 ac-ft**	**3.60 ac-ft**	
Total ΔQ =	**7.32 ac-ft**	**7.07 ac-ft**	

Attenuation V_{req} = 7.32 ac-ft (use largest value)

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Job Number: DT5-030-10

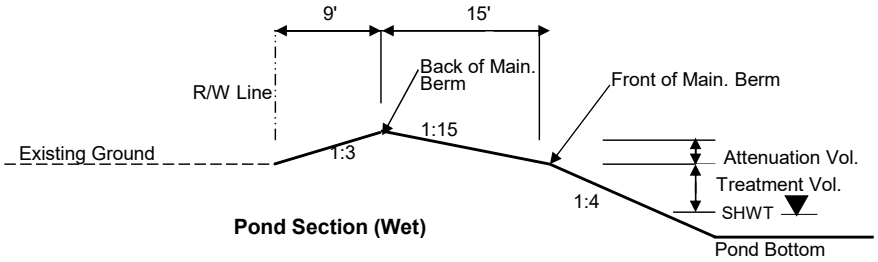
PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Osecola Site 1**
POND NAME : **Ponds 1 & 2**

Note: The proposed parking site for Osceola South impacts a future wet detention pond that is proposed as part of the CR 532 widening by CFX. These calculations include compensation for the treatment and attenuation volume that will be lost in the pond. The new proposed pond will serve as a joint use pond between CFX and FDOT.

Maintenance Area Width =	15.0 ft	@ 1:15	Existing Ground Elevation =	82.00
Pond Tie-In Width =	9.0 ft	@ 1:3	Normal Water Elevation =	81.00
Maximum Storage Depth (**SD**) =	2.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	84.50

Hydraulic Grade Line (HGL) check

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	1100 ft	
Estimated Energy Losses =	0.6 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Estimated Storm Sewer Tailwater EL =	83.0 ft	



Pond Section (Wet)

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Made by: DLD
Checked by: REC
DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Osecola Site 1**
POND NAME : **Ponds 1 & 2**

Note: The proposed parking site for Osceola South impacts a future wet detention pond that is proposed as part of the CR 532 widening by CFX. These calculations include compensation for the treatment and attenuation volume that will be lost in the pond. The new proposed pond will serve as a joint use pond between CFX and FDOT.

Pond Stage / Storage Calculations - POND 1

ELEVATION	DESCRIPTION	AREA	STORAGE
82.00	Pond Tie-Down	7.23 ac	
85.00	Back of Main. Berm	6.61 ac	21.98 ac-ft
84.00	Front of Main. Berm	5.64 ac	15.86 ac-ft
83.00	Provided Treat.Vol.+Att.Vol	5.40 ac	10.33 ac-ft
83.00	Req'd Treat.Vol+Att. Vol	5.40 ac	10.33 ac-ft
82.97	Estimated Storm Sewer TW	5.40 ac	10.15 ac-ft
82.01	Top of Treatment Vol.	5.17 ac	5.08 ac-ft
81.00	Normal Water Level	4.93 ac	0.00 ac-ft
79.00		4.47 ac	
75.00	Pond Bottom	4.02 ac	

Pond Stage / Storage Calculations - POND 2

ELEVATION	DESCRIPTION	AREA	STORAGE
82.00	Pond Tie-Down	3.12 ac	
85.00	Back of Main. Berm	2.76 ac	8.79 ac-ft
84.00	Front of Main. Berm	2.27 ac	6.27 ac-ft
83.00	Provided Treat.Vol.+Att.Vol	2.15 ac	4.06 ac-ft
83.00	Req'd Treat.Vol+Att. Vol	2.15 ac	4.06 ac-ft
82.97	Estimated Storm Sewer TW	2.15 ac	3.99 ac-ft
82.01	Top of Treatment Vol.	2.03 ac	1.98 ac-ft
81.00	Normal Water Level	1.91 ac	0.00 ac-ft
79.00		1.68 ac	
75.00	Pond Bottom	1.45 ac	

POND STAGE/STORAGE TOTALS

ELEVATION	DESCRIPTION	AREA	STORAGE	
82.00	Pond Tie-Down	10.35 ac		
85.00	Back of Main. Berm	9.37 ac	30.77 ac-ft	
84.00	Front of Main. Berm	7.91 ac	22.13 ac-ft	
83.00	Provided Treat.Vol.+Att.Vol	7.55 ac	14.39 ac-ft	
83.00	Req'd Treat.Vol+Att. Vol	7.55 ac	14.39 ac-ft	ok
82.97	Estimated Storm Sewer TW	7.55 ac	14.14 ac-ft	ok
82.01	Top of Treatment Vol.	7.20 ac	7.07 ac-ft	ok
81.00	Normal Water Level	6.84 ac	0.00 ac-ft	

Required Treatment+Attenuation Vol.= 14.39 ac-ft
Required Treatment+Attenuation Stage= 83.00 ft

Provided Treatment+Attenuation Vol.= 14.39 ac-ft
Provided Treatment+Attenuation Stage= 83.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 14.14 ac-ft
Estimated Storm Sewer TW EL.= 82.97 ft ok

Top of Treatment Vol= 82.01 ac-ft
Required Treatment Vol= 7.07 ac-ft ok

Use a 10% safety factor:

Pond 1 Provided Pond R/W =	**7.95 ac**
Pond 2 Provided Pond R/W =	**3.43 ac**
Total Provided Pond R/W =	**11.38 ac**

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Made by: DLD
Checked by: REC

DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Osecola Site 1**
POND NAME : **CR 532 Pond 5 (Supplemental Calculations)**

Note: These supplemental calculations serve to estimate the attenuation volume in the proposed CR 532 Pond 5. The drainage report for this pond does not include volumetric attenuation calculations.

Pond Stage / Storage Calculations - CR 532 POND 5

ELEVATION	DESCRIPTION	AREA	STORAGE	
84.00	Back of Main. Berm	3.11 ac		
84.00	Front of Main. Berm	2.78 ac	6.56 ac-ft	
83.00	Provided Att.Vol	2.65 ac	3.84 ac-ft	
82.91	Req'd Att. Vol	2.64 ac	3.60 ac-ft	<--Use as required attenuation vol.
82.91	Estimated Storm Sewer TW	2.64 ac	3.60 ac-ft	<--Use as required storm sewer attenuation vol.
82.00	Top of Treatment Vol.	2.53 ac	1.25 ac-ft	
81.50	Normal Water Level	2.46 ac	0.00 ac-ft	
79.50		2.20 ac		
69.50	Pond Bottom	0.92 ac		

NOAA Atlas 14, Volume 9, Version 2
Location name: Davenport, Florida, USA*
Latitude: 28.2587°, Longitude: -81.5528°
Elevation: 83.03 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.477** (0.396-0.576)	**0.544** (0.450-0.657)	**0.647** (0.534-0.785)	**0.729** (0.598-0.889)	**0.835** (0.656-1.05)	**0.911** (0.700-1.17)	**0.984** (0.727-1.31)	**1.05** (0.743-1.45)	**1.14** (0.769-1.62)	**1.19** (0.789-1.75)
10-min	**0.699** (0.580-0.843)	**0.796** (0.659-0.961)	**0.948** (0.782-1.15)	**1.07** (0.875-1.30)	**1.22** (0.960-1.54)	**1.34** (1.02-1.71)	**1.44** (1.07-1.91)	**1.54** (1.09-2.12)	**1.66** (1.13-2.38)	**1.75** (1.16-2.57)
15-min	**0.852** (0.707-1.03)	**0.971** (0.804-1.17)	**1.16** (0.954-1.40)	**1.30** (1.07-1.59)	**1.49** (1.17-1.87)	**1.63** (1.25-2.09)	**1.76** (1.30-2.33)	**1.88** (1.33-2.59)	**2.03** (1.37-2.90)	**2.13** (1.41-3.13)
30-min	**1.37** (1.14-1.66)	**1.56** (1.29-1.88)	**1.85** (1.53-2.24)	**2.08** (1.70-2.53)	**2.37** (1.86-2.98)	**2.59** (1.99-3.32)	**2.79** (2.06-3.70)	**2.98** (2.11-4.10)	**3.22** (2.18-4.59)	**3.38** (2.23-4.96)
60-min	**1.83** (1.51-2.20)	**2.08** (1.72-2.51)	**2.48** (2.05-3.00)	**2.79** (2.29-3.41)	**3.20** (2.52-4.02)	**3.50** (2.69-4.49)	**3.78** (2.79-5.01)	**4.04** (2.86-5.57)	**4.37** (2.96-6.24)	**4.60** (3.04-6.75)
2-hr	**2.28** (1.90-2.73)	**2.60** (2.17-3.12)	**3.11** (2.58-3.74)	**3.51** (2.90-4.25)	**4.03** (3.19-5.03)	**4.41** (3.41-5.63)	**4.77** (3.55-6.28)	**5.11** (3.63-6.98)	**5.52** (3.76-7.84)	**5.81** (3.87-8.49)
3-hr	**2.49** (2.08-2.97)	**2.85** (2.38-3.41)	**3.43** (2.86-4.11)	**3.89** (3.22-4.69)	**4.51** (3.58-5.62)	**4.96** (3.85-6.32)	**5.40** (4.04-7.11)	**5.83** (4.17-7.97)	**6.38** (4.37-9.04)	**6.78** (4.52-9.86)
6-hr	**2.88** (2.43-3.41)	**3.29** (2.77-3.90)	**3.98** (3.34-4.74)	**4.57** (3.81-5.48)	**5.41** (4.36-6.78)	**6.08** (4.77-7.76)	**6.77** (5.11-8.93)	**7.48** (5.40-10.2)	**8.46** (5.86-12.0)	**9.22** (6.20-13.3)
12-hr	**3.34** (2.84-3.93)	**3.78** (3.20-4.45)	**4.58** (3.87-5.42)	**5.33** (4.48-6.35)	**6.50** (5.32-8.21)	**7.49** (5.96-9.62)	**8.58** (6.56-11.4)	**9.77** (7.14-13.4)	**11.5** (8.03-16.3)	**12.9** (8.71-18.5)
24-hr	**3.83** (3.28-4.49)	**4.33** (3.70-5.08)	**5.31** (4.52-6.24)	**6.27** (5.30-7.42)	**7.81** (6.48-9.90)	**9.18** (7.38-11.8)	**10.7** (8.27-14.2)	**12.4** (9.15-17.0)	**14.9** (10.5-21.1)	**17.0** (11.5-24.2)
2-day	**4.37** (3.76-5.08)	**4.98** (4.28-5.80)	**6.17** (5.29-7.21)	**7.35** (6.25-8.63)	**9.23** (7.71-11.6)	**10.9** (8.81-13.9)	**12.7** (9.91-16.8)	**14.8** (11.0-20.2)	**17.8** (12.7-25.1)	**20.3** (13.9-28.8)
3-day	**4.78** (4.13-5.54)	**5.42** (4.68-6.28)	**6.67** (5.73-7.76)	**7.89** (6.74-9.23)	**9.86** (8.26-12.4)	**11.6** (9.41-14.7)	**13.5** (10.6-17.7)	**15.7** (11.7-21.3)	**18.8** (13.4-26.4)	**21.5** (14.8-30.3)
4-day	**5.16** (4.47-5.96)	**5.80** (5.02-6.70)	**7.04** (6.07-8.17)	**8.27** (7.09-9.65)	**10.2** (8.61-12.8)	**12.0** (9.77-15.2)	**13.9** (10.9-18.2)	**16.1** (12.1-21.8)	**19.3** (13.8-27.0)	**22.0** (15.2-30.9)
7-day	**6.19** (5.39-7.11)	**6.80** (5.92-7.82)	**8.02** (6.95-9.25)	**9.22** (7.95-10.7)	**11.2** (9.44-13.8)	**12.9** (10.6-16.2)	**14.8** (11.7-19.2)	**17.0** (12.8-22.8)	**20.2** (14.5-28.0)	**22.8** (15.8-31.9)
10-day	**7.10** (6.21-8.13)	**7.74** (6.77-8.87)	**8.98** (7.82-10.3)	**10.2** (8.82-11.8)	**12.1** (10.3-14.9)	**13.8** (11.4-17.3)	**15.7** (12.4-20.3)	**17.8** (13.4-23.8)	**20.9** (15.1-28.9)	**23.5** (16.3-32.7)
20-day	**9.71** (8.55-11.0)	**10.6** (9.33-12.1)	**12.2** (10.7-13.9)	**13.6** (11.8-15.6)	**15.6** (13.2-18.8)	**17.3** (14.2-21.2)	**19.1** (15.1-24.2)	**21.0** (15.9-27.7)	**23.7** (17.2-32.3)	**25.9** (18.2-35.9)
30-day	**12.0** (10.6-13.6)	**13.2** (11.6-14.9)	**15.1** (13.3-17.2)	**16.7** (14.6-19.2)	**19.0** (16.0-22.6)	**20.8** (17.1-25.2)	**22.6** (17.9-28.3)	**24.4** (18.5-31.8)	**26.9** (19.5-36.3)	**28.8** (20.2-39.7)
45-day	**15.0** (13.4-17.0)	**16.6** (14.7-18.7)	**19.1** (16.9-21.6)	**21.1** (18.5-24.0)	**23.7** (20.0-27.9)	**25.6** (21.1-30.8)	**27.5** (21.8-34.2)	**29.3** (22.2-37.8)	**31.6** (22.9-42.3)	**33.2** (23.5-45.7)
60-day	**17.8** (15.8-20.0)	**19.7** (17.5-22.1)	**22.6** (20.1-25.6)	**25.0** (22.0-28.3)	**27.9** (23.6-32.7)	**30.1** (24.8-35.9)	**32.0** (25.4-39.6)	**33.9** (25.7-43.4)	**36.1** (26.2-48.1)	**37.6** (26.7-51.6)

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

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

Please refer to NOAA Atlas 14 document for more information.

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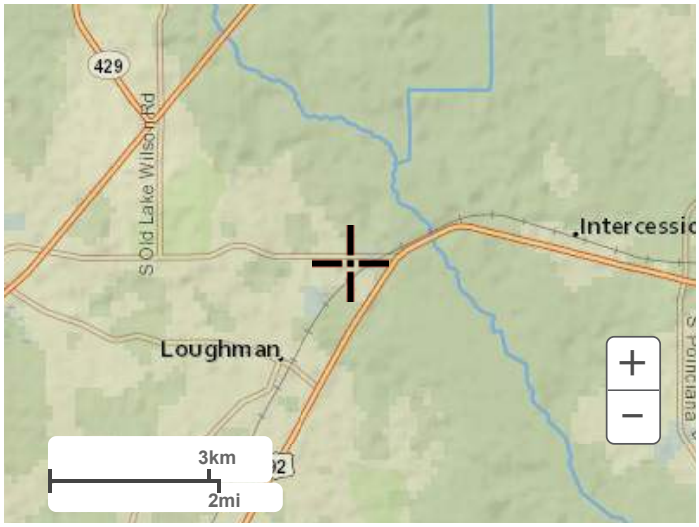
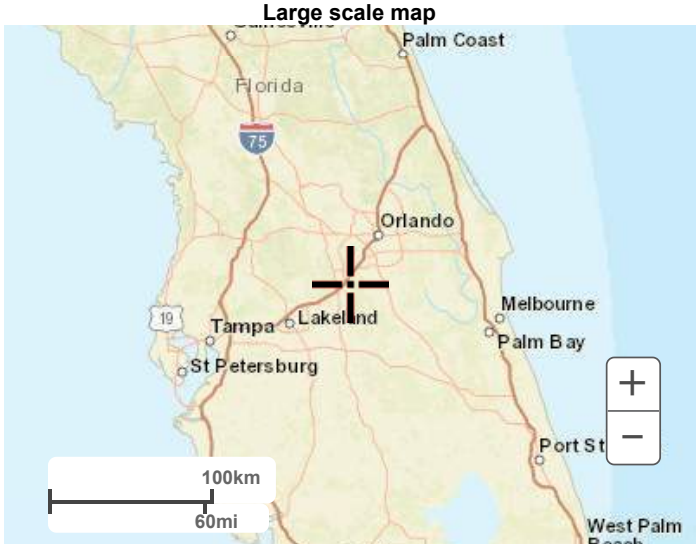
PF graphical



Large scale terrain

Large scale map



Large scale aerial

Orange County Site 1

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: CND
Checked by: REC

DATE: August 17, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 1**
POND NAME : **Ponds 1 & 2**

EXISTING CONDITION

Total Area:

Impervious Area: **0.07 ac**
Pervious Area: **16.23 ac**
Total Area: **16.30 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	0.07 ac	6.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor condition (grass cover < 50%)	D	89	1.42 ac	126.4
Woods; Good condition (Woods are protected from grazing and covered with forest litter and brush)	D	77	12.92 ac	994.8
Existing Lakes (Water surface)	D	100	1.89 ac	189.0
		Total:	16.30 ac	1317.1

CN = Total CN*Area / Total Area = **80.8**

Runoff:

		Orange 25yr/24hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) = $\frac{1000}{CN} - 10$ =	**2.38 in**	Precipitation (P) =	7.67 in	6.19 in	
Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$		Runoff (Q) =	**5.41 in**	**4.04 in**	

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PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 1**
POND NAME : **Ponds 1 & 2**

PROPOSED CONDITION

Pond Area:

Pervious Pond Area:	2.69 ac		
Water Surface Area:	2.42 ac	Wet Pond	(Pond Areas Include Add. 10% F.S.)
Total Pond Area:	5.11 ac		

Total Area:

Impervious Area:	**8.43 ac**
Pervious Area:	**5.45 ac**
Water Surface Area:	**2.42 ac**
Total Area:	**16.30 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	8.43 ac	826.1
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	2.76 ac	220.8
Proposed Ponds (Water Surface)	D	100	2.42 ac	242.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	2.69 ac	215.2
Denotes Pervious Pond Area		Total:	16.30 ac	1504.1
CN = Total CN*Area / Total Area =	**92.3**			

Runoff:

		Orange 25yr/24hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) = $\frac{1000}{CN} - 10$ =	0.84 in	Precipitation (P) =	7.67 in	6.19 in	
Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$		Runoff (Q) =	**6.75 in**	**5.29 in**	

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PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 1**
POND NAME : **Ponds 1 & 2**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
OFW	**Yes**
Open/Closed Basin	**Open**

(Lake Okeechobee BMAP)

Wet Detention	**2.50 in**	x Impervious Areas =	1.76 ac-ft
	1.00 in	x Total Basin Area =	1.36 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 1.76 ac-ft
OFW Criteria, Add. 50% Trt. Vol. = 0.88 ac-ft
Additional Trt. Vol. (John Young Pkwy Pond 4) = 1.95 ac-ft
Total Required Treatment Volume = 4.58 ac-ft

Required Attenuation Volume:

Total Runoff (ac-ft)

	Orange 25yr/24hr	**Storm Sewer 10yr/24hr**	
Q_{pre} =	7.35 ac-ft	5.48 ac-ft	
Q_{post} =	9.17 ac-ft	7.18 ac-ft	
ΔQ =	**1.82 ac-ft**	**1.70 ac-ft**	
ΔQ (John Young Pkwy Pond 4) =	**2.12 ac-ft**	**1.72 ac-ft**	
TOTAL ΔQ =	**3.94 ac-ft**	**3.42 ac-ft**	

Attenuation V_{req} = 3.94 ac-ft (use largest value)

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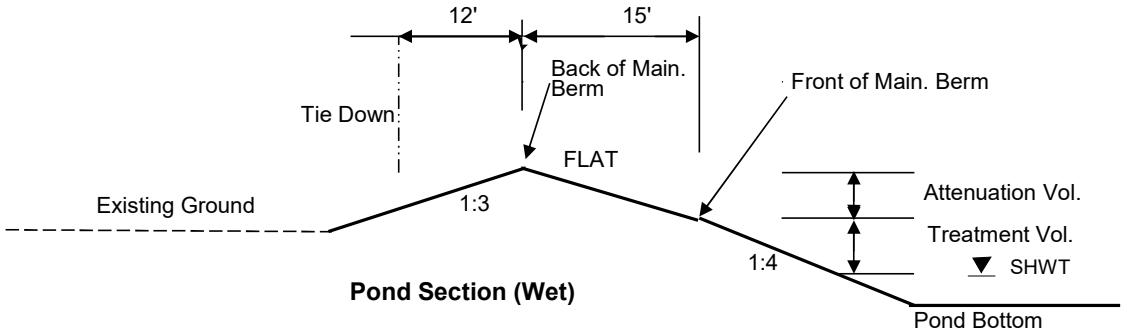
PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 1**
POND NAME : **Ponds 1 & 2**

Maintenance Area Width =	15.0 ft	FLAT	Existing Ground Elevation =	84.00
Pond Tie-In Width =	11.7 ft	@ 1:3	Normal Water Elevation =	83.50
Maximum Storage Depth (**SD**) =	3.40 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	88.00

Hydraulic Grade Line (HGL) check

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	550 ft	
Estimated Energy Losses =	0.3 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Estimated Storm Sewer Tailwater EL =	86.7 ft	



Pond Section (Wet)

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Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 1**
POND NAME : **Ponds 1 & 2**

Pond 1 Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	STORAGE
84.00	Pond Tie-Down	3.55 ac	
87.90	Back of Main. Berm	3.06 ac	9.77 ac-ft
87.90	Front of Main. Berm	2.52 ac	9.77 ac-ft
87.00	Floodplain Comp. Storage	2.40 ac	7.56 ac-ft
86.90	Provided Treat.Vol.+Att.Vol	2.38 ac	7.32 ac-ft
86.85	Req'd Treat.Vol+Att. Vol	2.38 ac	7.20 ac-ft
86.67	Estimated Storm Sewer TW	2.35 ac	6.77 ac-ft
85.41	Top of Treatment Vol.	2.18 ac	3.92 ac-ft
83.50	Normal Water Level	1.92 ac	0.00 ac-ft
81.50		1.71 ac	
77.50	Pond Bottom	1.40 ac	

Pond 2 Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	STORAGE
87.00	Pond Tie-Down	1.10 ac	
87.90	Back of Main. Berm	0.88 ac	1.90 ac-ft
87.90	Front of Main. Berm	0.58 ac	1.90 ac-ft
87.00	Floodplain Comp. Storage	0.52 ac	1.40 ac-ft
86.90	Provided Treat.Vol.+Att.Vol	0.51 ac	1.35 ac-ft
86.85	Req'd Treat.Vol+Att. Vol	0.51 ac	1.33 ac-ft
86.67	Estimated Storm Sewer TW	0.50 ac	1.24 ac-ft
85.41	Top of Treatment Vol.	0.41 ac	0.66 ac-ft
83.50	Normal Water Level	0.28 ac	0.00 ac-ft
81.50		0.20 ac	
77.50	Pond Bottom	0.05 ac	

Higher Existing Ground Elevation

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PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 1**
POND NAME : **Ponds 1 & 2**

POND STAGE/STORAGE TOTALS

ELEVATION	DESCRIPTION	AREA	STORAGE	
Varies	Pond Tie-Down	4.65 ac		
87.90	Back of Main. Berm	3.94 ac	11.67 ac-ft	
87.90	Front of Main. Berm	3.10 ac	11.67 ac-ft	
87.00	Floodplain Comp. Storage	2.92 ac	8.96 ac-ft	
86.90	Provided Treat.Vol.+Att.Vol	2.90 ac	8.67 ac-ft	
86.85	Req'd Treat.Vol+Att. Vol	2.89 ac	8.52 ac-ft	ok
86.67	Estimated Storm Sewer TW	2.85 ac	8.01 ac-ft	ok
85.41	Top of Treatment Vol.	2.59 ac	4.58 ac-ft	ok
83.50	Normal Water Level	2.20 ac	0.00 ac-ft	

Required Treatment+Attenuation Vol.= 8.52 ac-ft
Required Treatment+Attenuation Stage= 86.85 ft

Provided Treatment+Attenuation Vol.= 8.67 ac-ft
Provided Treatment+Attenuation Stage= 86.90 ft

Estimated Treat. Vol.+Storm Sewer Att.= 8.01 ac-ft
Estimated Storm Sewer TW EL.= 86.67 ft ok

Top of Treatment Vol= 85.41 ac-ft
Required Treatment Vol= 4.58 ac-ft

Use a 10% safety factor:

Pond 1 Provided Pond R/W = **3.91 ac**
Pond 2 Provided Pond R/W = **1.10 ac**

Total Provided Pond R/W =	**5.01 ac**

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PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 1**
POND NAME : **John Young Parkway Pond 4 (Supplemental Calculations)**

Note: These supplemental calculations serve to estimate the attenuation volume in the existing John Young Parkway Pond 4. The drainage report for this pond does not include volumetric attenuation calculations.

EXISTING CONDITION

Total Area:

Impervious Area: **6.90 ac**
Pervious Area: **0.56 ac**
Total Area: **7.46 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	6.90 ac	676.2
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	4.85 ac	388.0
Woods; Good condition (Woods are protected from grazing and covered with forest litter and brush)	D	77	1.89 ac	145.5
Existing Lakes (Water surface)	D	100	0.56 ac	56.0
		Total:	14.20 ac	1265.7

CN = Total CN*Area / Total Area = **89.1**

Runoff:

		Orange 25yr/24hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) = $\frac{1000}{CN} - 10$ =	**1.22 in**	Precipitation (P) =	7.67 in	6.19 in	
Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$		Runoff (Q) =	**6.38 in**	**4.93 in**	

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Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 1**
POND NAME : **John Young Parkway Pond 4 (Supplemental Calculations)**

Note: These supplemental calculations serve to estimate the attenuation volume in the existing John Young Parkway Pond 4. The drainage report for this pond does not include volumetric attenuation calculations.

PROPOSED CONDITION

Total Area:

Impervious Area: **8.67 ac**
Pervious Area: **1.89 ac**
Total Area: **10.56 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	8.67 ac	849.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	3.64 ac	291.2
Existing Lakes (Water surface)	D	100	1.89 ac	189.0
		Total:	14.20 ac	1329.9

CN = Total CN*Area / Total Area = **93.7**

Runoff:

		Orange 25yr/24hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) =	$\frac{1000}{CN} - 10 =$ 0.68 in	Precipitation (P) =	7.67 in	6.19 in	
Runoff (Q) =	$\frac{(P - 0.2S)^2}{(P + 0.8S)}$	Runoff (Q) =	**6.91 in**	**5.44 in**	

Required Attenuation Volume:

Total Runoff (ac-ft)

	Orange 25yr/24hr	**Storm Sewer 10yr/24hr**	
Q_{pre} =	3.97 ac-ft	3.07 ac-ft	
Q_{post} =	6.08 ac-ft	4.79 ac-ft	
ΔQ =	**2.12 ac-ft**	**1.72 ac-ft**	

Attenuation V_{req} = 2.12 ac-ft (use largest value)

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DATE: August 17, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Turnpike Basin 1**
POND NAME : **Turnpike Pond 1B**

Note: These supplemental calculations serve to estimate the treatment volume in the existing Turnpike Pond 1B that will be impacted by the truck parking site.

EXISTING CONDITION

Pond Stage / Storage Calculations - Turnpike Pond 1B Existing

ELEVATION	DESCRIPTION	AREA	STORAGE	
90.00	Back of Main. Berm	5.62 ac		
89.00	Front of Main. Berm	4.88 ac		
87.50	Provided Treat.Vol.+Att.Vol	4.60 ac	7.55 ac-ft	<--Existing 1.5' freeboard provided
86.60	Top of Treatment Vol. (Weir El.)	4.43 ac	3.48 ac-ft	<--Existing treatment vol.
85.80	Normal Water Level	4.28 ac	0.00 ac-ft	
83.80		3.93 ac		
78.00	Pond Bottom	2.92 ac		

Pond Stage / Storage Calculations - Turnpike Pond 1B Proposed

ELEVATION	DESCRIPTION	AREA	STORAGE	
90.00	Back of Main. Berm	5.27 ac		
89.00	Front of Main. Berm	4.58 ac		
87.50	Provided Treat.Vol.+Att.Vol	4.31 ac	7.07 ac-ft	
86.65	Top of Treatment Vol. (Weir El.)	4.16 ac	3.48 ac-ft	<--Equivalent treatment vol.
85.80	Normal Water Level	4.01 ac	0.00 ac-ft	
83.80		3.69 ac		
78.00	Pond Bottom	2.76 ac		

Weir El. Increase = 0.05 ft.

NOAA Atlas 14, Volume 9, Version 2
Location name: Orlando, Florida, USA*
Latitude: 28.4512°, Longitude: -81.4264°
Elevation: 83.05 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.469** (0.379-0.578)	**0.540** (0.436-0.666)	**0.649** (0.522-0.804)	**0.735** (0.588-0.915)	**0.845** (0.649-1.08)	**0.923** (0.695-1.21)	**0.996** (0.726-1.34)	**1.06** (0.745-1.49)	**1.15** (0.773-1.66)	**1.20** (0.794-1.79)
10-min	**0.687** (0.555-0.847)	**0.790** (0.638-0.975)	**0.951** (0.765-1.18)	**1.08** (0.861-1.34)	**1.24** (0.950-1.58)	**1.35** (1.02-1.77)	**1.46** (1.06-1.97)	**1.56** (1.09-2.17)	**1.68** (1.13-2.43)	**1.76** (1.16-2.62)
15-min	**0.838** (0.677-1.03)	**0.964** (0.778-1.19)	**1.16** (0.933-1.44)	**1.31** (1.05-1.63)	**1.51** (1.16-1.93)	**1.65** (1.24-2.15)	**1.78** (1.30-2.40)	**1.90** (1.33-2.65)	**2.05** (1.38-2.96)	**2.15** (1.42-3.19)
30-min	**1.40** (1.13-1.73)	**1.60** (1.29-1.97)	**1.90** (1.53-2.36)	**2.14** (1.71-2.67)	**2.45** (1.88-3.13)	**2.67** (2.01-3.49)	**2.88** (2.10-3.88)	**3.07** (2.15-4.28)	**3.30** (2.23-4.78)	**3.46** (2.29-5.15)
60-min	**1.87** (1.51-2.30)	**2.14** (1.73-2.64)	**2.56** (2.06-3.17)	**2.89** (2.31-3.60)	**3.31** (2.55-4.24)	**3.61** (2.72-4.72)	**3.89** (2.84-5.24)	**4.15** (2.91-5.79)	**4.46** (3.01-6.45)	**4.67** (3.09-6.95)
2-hr	**2.34** (1.90-2.86)	**2.68** (2.18-3.29)	**3.22** (2.61-3.96)	**3.64** (2.94-4.50)	**4.18** (3.23-5.30)	**4.56** (3.46-5.91)	**4.91** (3.60-6.57)	**5.24** (3.69-7.25)	**5.62** (3.82-8.07)	**5.88** (3.91-8.70)
3-hr	**2.54** (2.07-3.09)	**2.92** (2.39-3.57)	**3.53** (2.88-4.33)	**4.01** (3.25-4.94)	**4.64** (3.61-5.87)	**5.09** (3.88-6.58)	**5.51** (4.06-7.35)	**5.91** (4.19-8.17)	**6.40** (4.37-9.18)	**6.75** (4.50-9.94)
6-hr	**2.90** (2.39-3.51)	**3.33** (2.74-4.04)	**4.05** (3.32-4.92)	**4.64** (3.79-5.68)	**5.47** (4.31-6.95)	**6.11** (4.71-7.91)	**6.75** (5.04-9.03)	**7.41** (5.31-10.3)	**8.29** (5.71-11.9)	**8.96** (6.02-13.1)
12-hr	**3.34** (2.77-4.02)	**3.79** (3.14-4.56)	**4.59** (3.79-5.54)	**5.32** (4.37-6.47)	**6.44** (5.17-8.26)	**7.38** (5.77-9.61)	**8.39** (6.34-11.3)	**9.49** (6.88-13.2)	**11.1** (7.71-15.9)	**12.3** (8.33-17.9)
24-hr	**3.82** (3.19-4.56)	**4.31** (3.60-5.16)	**5.27** (4.38-6.32)	**6.19** (5.13-7.47)	**7.67** (6.24-9.87)	**8.96** (7.09-11.7)	**10.4** (7.93-14.0)	**12.0** (8.77-16.6)	**14.3** (10.1-20.5)	**16.2** (11.0-23.4)
2-day	**4.33** (3.65-5.14)	**4.96** (4.17-5.89)	**6.15** (5.16-7.33)	**7.31** (6.10-8.76)	**9.14** (7.50-11.7)	**10.7** (8.56-13.9)	**12.5** (9.62-16.7)	**14.5** (10.7-20.0)	**17.3** (12.3-24.7)	**19.7** (13.5-28.3)
3-day	**4.76** (4.03-5.62)	**5.44** (4.60-6.43)	**6.73** (5.67-7.98)	**7.96** (6.67-9.50)	**9.92** (8.16-12.6)	**11.6** (9.29-15.0)	**13.5** (10.4-17.9)	**15.6** (11.5-21.4)	**18.6** (13.2-26.4)	**21.1** (14.5-30.1)
4-day	**5.15** (4.37-6.06)	**5.85** (4.96-6.89)	**7.16** (6.06-8.48)	**8.43** (7.08-10.0)	**10.4** (8.60-13.2)	**12.2** (9.75-15.6)	**14.1** (10.9-18.6)	**16.2** (12.0-22.1)	**19.2** (13.7-27.2)	**21.8** (15.0-31.0)
7-day	**6.22** (5.31-7.28)	**6.92** (5.90-8.11)	**8.23** (7.00-9.69)	**9.49** (8.03-11.2)	**11.5** (9.52-14.4)	**13.2** (10.6-16.8)	**15.1** (11.7-19.8)	**17.2** (12.8-23.3)	**20.2** (14.5-28.4)	**22.7** (15.8-32.2)
10-day	**7.17** (6.15-8.37)	**7.91** (6.78-9.24)	**9.27** (7.92-10.9)	**10.5** (8.96-12.4)	**12.5** (10.4-15.6)	**14.2** (11.5-18.0)	**16.1** (12.6-21.0)	**18.1** (13.6-24.5)	**21.1** (15.1-29.4)	**23.5** (16.3-33.2)
20-day	**9.93** (8.59-11.5)	**10.9** (9.45-12.7)	**12.7** (10.9-14.7)	**14.2** (12.1-16.6)	**16.3** (13.6-19.9)	**18.1** (14.6-22.5)	**19.9** (15.6-25.5)	**21.8** (16.3-29.0)	**24.4** (17.6-33.6)	**26.5** (18.6-37.1)
30-day	**12.4** (10.7-14.3)	**13.6** (11.8-15.8)	**15.7** (13.6-18.2)	**17.5** (15.0-20.4)	**19.9** (16.5-24.0)	**21.7** (17.6-26.7)	**23.5** (18.4-29.9)	**25.3** (19.0-33.4)	**27.7** (20.0-37.9)	**29.5** (20.8-41.3)
45-day	**15.6** (13.6-17.9)	**17.2** (15.0-19.8)	**19.8** (17.2-22.9)	**21.9** (18.9-25.4)	**24.6** (20.4-29.4)	**26.5** (21.6-32.4)	**28.4** (22.3-35.7)	**30.1** (22.7-39.3)	**32.3** (23.4-43.7)	**33.8** (23.9-47.0)
60-day	**18.5** (16.2-21.1)	**20.4** (17.9-23.4)	**23.4** (20.4-27.0)	**25.8** (22.3-29.8)	**28.7** (23.9-34.1)	**30.8** (25.1-37.3)	**32.7** (25.7-40.9)	**34.4** (25.9-44.7)	**36.4** (26.4-49.0)	**37.7** (26.7-52.3)

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

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

Please refer to NOAA Atlas 14 document for more information.

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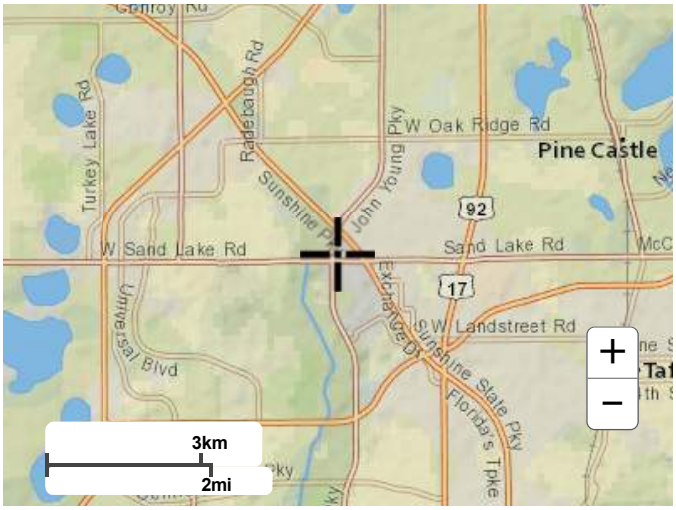
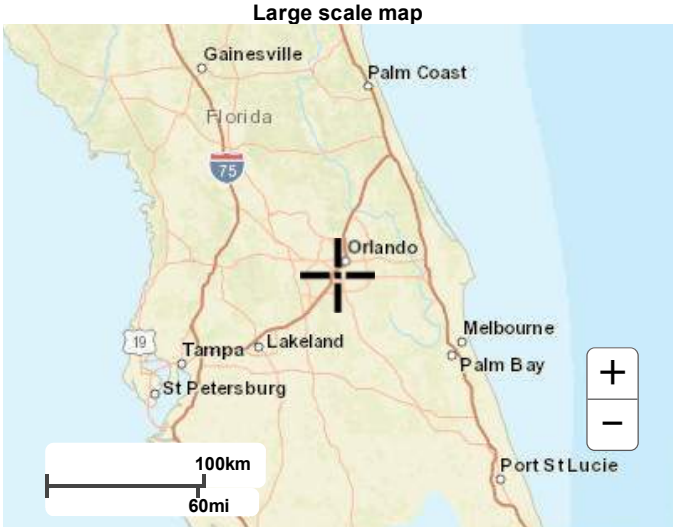
PF graphical



Large scale terrain

Large scale map



Large scale aerial

Orange County Site 2

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: CND
Checked by: REC

DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 2**
POND NAME : **Ponds 1 & 2**

EXISTING CONDITION

Total Area:

Impervious Area: **5.79 ac**
Pervious Area: **1.02 ac**
Total Area: **6.82 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Commercial & business (85% impervious)	D	95	6.82 ac	647.4
		Total:	6.82 ac	647.4

CN = Total CN*Area / Total Area = **95.0**

Runoff:

			Orange 25yr/24hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) =	$\frac{1000}{CN} - 10$ =	**0.53 in**	Precipitation (P) =	7.72 in	6.23 in	
Runoff (Q) =	$\frac{(P - 0.2S)^2}{(P + 0.8S)}$		Runoff (Q) =	**7.12 in**	**5.64 in**	

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Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 2**
POND NAME : **Ponds 1 & 2**

PROPOSED CONDITION

Pond Area:

Pervious Pond Area :	1.20 ac		
Water Surface Area:	0.23 ac	Wet Pond	(Pond Areas Include Add. 10% F.S.)
Total Pond Area:	1.43 ac		

Total Area:

Impervious Area:	**4.33 ac**
Pervious Area:	**2.25 ac**
Water Surface Area:	**0.23 ac**
Total Area:	**6.82 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	4.33 ac	424.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	1.06 ac	84.4
Proposed Ponds (Water Surface)	D	100	0.23 ac	23.1
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	1.20 ac	95.9
Denotes Pervious Pond Area		Total:	6.82 ac	627.8

CN = Total CN*Area / Total Area = **92.1**

Runoff:

		Orange 25yr/24hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) = $\frac{1000}{CN} - 10$ =	0.86 in	Precipitation (P) =	7.72 in	6.23 in	
Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$		Runoff (Q) =	**6.78 in**	**5.31 in**	

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PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 2**
POND NAME : **Ponds 1 & 2**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SFWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
OFW	**Yes**
Open/Closed Basin	**Open**

(Lake Okeechobee BMAP)

Wet Detention	**2.50 in**	x Impervious Areas =	0.90 ac-ft
	1.00 in	x Total Basin Area =	0.57 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 0.90 ac-ft
OFW Critereia, Add. 50% Trt. Vol. = 0.45 ac-ft
Total Required Treatment Volume = 1.35 ac-ft

Required Attenuation Volume:

Total Runoff (ac-ft)

	Orange 25yr/24hr	**Storm Sewer 10yr/24hr**	
Q_{pre} =	4.04 ac-ft	3.20 ac-ft	
Q_{post} =	3.85 ac-ft	3.01 ac-ft	
ΔQ =	**-0.19 ac-ft**	**-0.19 ac-ft**	

Attenuation V_{req} = 0.00 ac-ft (use largest value)

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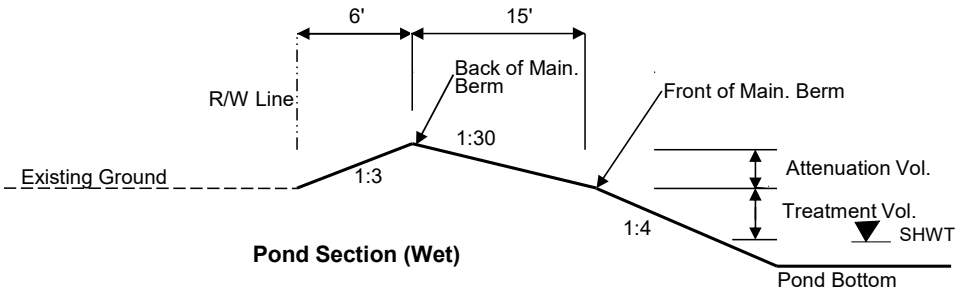
PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 2**
POND NAME : **Ponds 1 & 2**

Maintenance Area Width =	15.0 ft	@ 1:30	Existing Ground Elevation =	98.00
Pond Tie-In Width =	6.0 ft	@ 1:3	Normal Water Elevation =	94.50
Maximum Storage Depth (**SD**) =	4.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	100.00

Hydraulic Grade Line (HGL) check

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	250 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Estimated Storm Sewer Tailwater EL =	98.9 ft	



Pond Section (Wet)

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
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Made by: CND
Checked by: REC

DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 2**
POND NAME : **Ponds 1 & 2**

Pond Stage / Storage Calculations - POND 1

ELEVATION	DESCRIPTION	AREA	STORAGE
98.00	Pond Tie-Down	0.72 ac	
100.00	Back of Main. Berm	0.56 ac	1.25 ac-ft
99.50	Front of Main. Berm	0.33 ac	1.03 ac-ft
98.50	Provided Treat.Vol.+Att.Vol	0.28 ac	0.72 ac-ft
98.26	Req'd Treat.Vol+Att. Vol	0.27 ac	0.65 ac-ft
97.88	Estimated Storm Sewer TW	0.25 ac	0.56 ac-ft
98.26	Top of Treatment Vol.	0.27 ac	0.65 ac-ft
94.50	Normal Water Level	0.08 ac	0.00 ac-ft
92.50		0.04 ac	
88.50	Pond Bottom	0.01 ac	

Pond Stage / Storage Calculations - POND 2

ELEVATION	DESCRIPTION	AREA	STORAGE
98.00	Pond Tie-Down	0.58 ac	
100.00	Back of Main. Berm	0.45 ac	1.21 ac-ft
99.50	Front of Main. Berm	0.28 ac	1.03 ac-ft
98.50	Provided Treat.Vol.+Att.Vol	0.25 ac	0.76 ac-ft
98.26	Req'd Treat.Vol+Att. Vol	0.24 ac	0.70 ac-ft
97.88	Estimated Storm Sewer TW	0.23 ac	0.61 ac-ft
98.26	Top of Treatment Vol.	0.24 ac	0.70 ac-ft
94.50	Normal Water Level	0.13 ac	0.00 ac-ft
92.50		0.08 ac	
88.50	Pond Bottom	0.04 ac	

POND STAGE/STORAGE TOTALS

ELEVATION	DESCRIPTION	AREA	STORAGE	
98.00	Pond Tie-Down	1.30 ac		
100.00	Back of Main. Berm	1.01 ac	2.46 ac-ft	
99.50	Front of Main. Berm	0.61 ac	2.05 ac-ft	
98.50	Provided Treat.Vol.+Att.Vol	0.53 ac	1.48 ac-ft	
98.26	Req'd Treat.Vol+Att. Vol	0.51 ac	1.35 ac-ft	ok
97.88	Estimated Storm Sewer TW	0.48 ac	1.16 ac-ft	ok
98.26	Top of Treatment Vol.	0.51 ac	1.35 ac-ft	ok
94.50	Normal Water Level	0.21 ac	0.00 ac-ft	

Required Treatment+Attenuation Vol.= 1.35 ac-ft
Required Treatment+Attenuation Stage= 98.26 ft

Provided Treatment+Attenuation Vol.= 1.48 ac-ft
Provided Treatment+Attenuation Stage= 98.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 1.16 ac-ft
Estimated Storm Sewer TW EL.= 97.88 ft ok

Top of Treatment Vol= 98.26 ac-ft
Required Treatment Vol= 1.35 ac-ft ok

Use a 10% safety factor:

Pond 1 Provided Pond R/W = **0.80 ac**
Pond 2 Provided Pond R/W = **0.64 ac**

Total Provided Pond R/W =	**1.44 ac**

NOAA Atlas 14, Volume 9, Version 2
Location name: Orlando, Florida, USA*
Latitude: 28.437°, Longitude: -81.4019°
Elevation: 96.85 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.470** (0.379-0.586)	**0.540** (0.436-0.674)	**0.650** (0.523-0.814)	**0.736** (0.589-0.926)	**0.846** (0.650-1.09)	**0.924** (0.696-1.22)	**0.997** (0.727-1.35)	**1.07** (0.746-1.49)	**1.15** (0.774-1.66)	**1.20** (0.795-1.79)
10-min	**0.688** (0.555-0.857)	**0.791** (0.638-0.987)	**0.952** (0.766-1.19)	**1.08** (0.862-1.36)	**1.24** (0.952-1.60)	**1.35** (1.02-1.78)	**1.46** (1.06-1.98)	**1.56** (1.09-2.18)	**1.68** (1.13-2.43)	**1.76** (1.16-2.62)
15-min	**0.839** (0.677-1.05)	**0.965** (0.779-1.20)	**1.16** (0.934-1.45)	**1.31** (1.05-1.65)	**1.51** (1.16-1.95)	**1.65** (1.24-2.17)	**1.78** (1.30-2.41)	**1.90** (1.33-2.66)	**2.05** (1.38-2.97)	**2.15** (1.42-3.19)
30-min	**1.40** (1.13-1.75)	**1.60** (1.29-2.00)	**1.91** (1.53-2.38)	**2.15** (1.72-2.70)	**2.45** (1.89-3.17)	**2.68** (2.02-3.52)	**2.88** (2.10-3.90)	**3.08** (2.15-4.31)	**3.31** (2.23-4.79)	**3.47** (2.29-5.16)
60-min	**1.87** (1.51-2.33)	**2.15** (1.73-2.68)	**2.57** (2.07-3.22)	**2.90** (2.32-3.65)	**3.32** (2.55-4.28)	**3.62** (2.73-4.76)	**3.90** (2.84-5.28)	**4.16** (2.91-5.82)	**4.47** (3.01-6.46)	**4.67** (3.09-6.95)
2-hr	**2.34** (1.90-2.90)	**2.69** (2.19-3.34)	**3.23** (2.62-4.02)	**3.65** (2.94-4.57)	**4.19** (3.24-5.36)	**4.57** (3.46-5.96)	**4.92** (3.61-6.61)	**5.24** (3.69-7.28)	**5.62** (3.81-8.08)	**5.88** (3.91-8.68)
3-hr	**2.54** (2.07-3.14)	**2.94** (2.39-3.62)	**3.55** (2.88-4.39)	**4.03** (3.25-5.01)	**4.65** (3.61-5.94)	**5.10** (3.88-6.64)	**5.52** (4.06-7.40)	**5.92** (4.19-8.20)	**6.40** (4.36-9.18)	**6.74** (4.50-9.92)
6-hr	**2.92** (2.39-3.57)	**3.35** (2.75-4.11)	**4.06** (3.32-5.00)	**4.66** (3.79-5.77)	**5.49** (4.32-7.04)	**6.13** (4.71-8.00)	**6.77** (5.04-9.10)	**7.43** (5.31-10.3)	**8.31** (5.72-11.9)	**8.97** (6.03-13.1)
12-hr	**3.36** (2.78-4.09)	**3.81** (3.14-4.64)	**4.61** (3.79-5.63)	**5.35** (4.37-6.57)	**6.47** (5.18-8.37)	**7.42** (5.78-9.73)	**8.44** (6.36-11.4)	**9.54** (6.91-13.3)	**11.1** (7.76-16.0)	**12.4** (8.39-18.0)
24-hr	**3.84** (3.19-4.64)	**4.34** (3.60-5.25)	**5.30** (4.39-6.43)	**6.23** (5.13-7.61)	**7.72** (6.26-10.0)	**9.03** (7.12-11.9)	**10.5** (7.98-14.1)	**12.1** (8.84-16.8)	**14.4** (10.2-20.7)	**16.4** (11.2-23.6)
2-day	**4.35** (3.64-5.22)	**4.99** (4.17-5.99)	**6.20** (5.16-7.48)	**7.37** (6.10-8.93)	**9.22** (7.52-11.9)	**10.8** (8.59-14.1)	**12.6** (9.67-16.9)	**14.6** (10.7-20.2)	**17.5** (12.4-24.9)	**19.9** (13.6-28.5)
3-day	**4.77** (4.01-5.71)	**5.46** (4.58-6.54)	**6.76** (5.65-8.12)	**8.01** (6.66-9.67)	**9.98** (8.16-12.8)	**11.7** (9.30-15.2)	**13.6** (10.4-18.1)	**15.7** (11.6-21.6)	**18.7** (13.3-26.5)	**21.2** (14.6-30.3)
4-day	**5.16** (4.35-6.16)	**5.87** (4.93-7.00)	**7.19** (6.03-8.61)	**8.46** (7.05-10.2)	**10.5** (8.58-13.4)	**12.2** (9.73-15.8)	**14.1** (10.9-18.8)	**16.2** (12.0-22.3)	**19.3** (13.8-27.3)	**21.8** (15.1-31.1)
7-day	**6.23** (5.27-7.38)	**6.93** (5.86-8.23)	**8.26** (6.96-9.83)	**9.52** (7.98-11.4)	**11.5** (9.47-14.6)	**13.2** (10.6-17.0)	**15.1** (11.7-20.0)	**17.2** (12.8-23.5)	**20.3** (14.5-28.5)	**22.8** (15.8-32.3)
10-day	**7.18** (6.09-8.48)	**7.92** (6.71-9.36)	**9.29** (7.85-11.0)	**10.6** (8.89-12.6)	**12.6** (10.4-15.8)	**14.3** (11.5-18.2)	**16.1** (12.5-21.2)	**18.2** (13.6-24.6)	**21.1** (15.2-29.5)	**23.5** (16.4-33.2)
20-day	**9.92** (8.48-11.6)	**10.9** (9.34-12.8)	**12.7** (10.8-14.9)	**14.2** (12.0-16.8)	**16.3** (13.4-20.1)	**18.1** (14.5-22.7)	**19.9** (15.5-25.7)	**21.8** (16.3-29.1)	**24.4** (17.6-33.7)	**26.5** (18.6-37.2)
30-day	**12.3** (10.6-14.4)	**13.6** (11.7-15.9)	**15.7** (13.4-18.5)	**17.5** (14.8-20.6)	**19.8** (16.3-24.2)	**21.7** (17.4-26.9)	**23.5** (18.3-30.0)	**25.3** (19.0-33.5)	**27.7** (20.0-37.9)	**29.6** (20.8-41.3)
45-day	**15.6** (13.4-18.1)	**17.2** (14.8-20.1)	**19.8** (17.0-23.2)	**21.9** (18.6-25.7)	**24.5** (20.2-29.6)	**26.5** (21.4-32.6)	**28.3** (22.1-35.9)	**30.1** (22.6-39.5)	**32.3** (23.3-43.8)	**33.8** (23.9-47.1)
60-day	**18.4** (15.9-21.4)	**20.4** (17.6-23.7)	**23.4** (20.1-27.3)	**25.7** (22.0-30.1)	**28.7** (23.6-34.4)	**30.7** (24.8-37.6)	**32.6** (25.5-41.1)	**34.4** (25.8-44.8)	**36.4** (26.3-49.1)	**37.7** (26.7-52.3)

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

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

Please refer to NOAA Atlas 14 document for more information.

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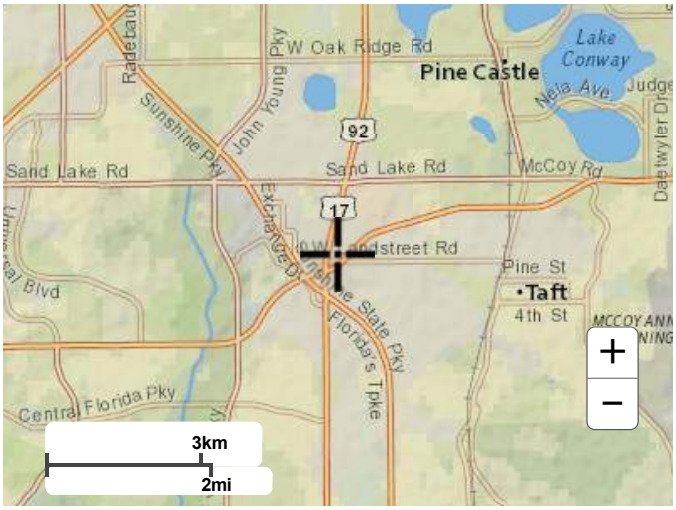
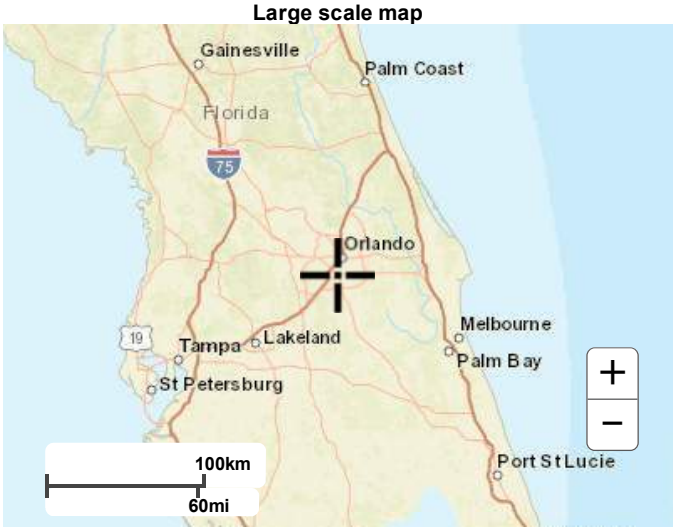
PF graphical



Large scale terrain

Large scale map



Large scale aerial

Orange County Site 4

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: CND
Checked by: REC

DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 4**
POND NAME : **Ponds 1, 2 & 3**

EXISTING CONDITION

Total Area:

Impervious Area: **4.59 ac**
Pervious Area: **0.27 ac**
Total Area: **4.86 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Paved parking lots, roofs, driveways, etc.	D	98	0.44 ac	43.1
Impervious areas; Gravel including right-of-way	D	91	4.15 ac	377.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	0.27 ac	21.6
		Total:	4.86 ac	442.4

CN = Total CN*Area / Total Area = **91.0**

Runoff:

		Orange 25yr/24hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) = $\frac{1000}{CN} - 10$ =	**0.99 in**	Precipitation (P) =	7.73 in	6.24 in	
Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$		Runoff (Q) =	**6.66 in**	**5.19 in**	

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DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 4**
POND NAME : **Ponds 1, 2 & 3**

PROPOSED CONDITION

Pond Area:

Pervious Pond Area:	0.92 ac	Dry Pond	(Pond Areas Include Add. 10% F.S.)
Water Surface Area:	0.00 ac		
Total Pond Area:	0.92 ac		

Total Area:

Impervious Area:	**3.13 ac**
Pervious Area:	**1.73 ac**
Water Surface Area:	**0.00 ac**
Total Area:	**4.86 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	3.13 ac	306.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	0.81 ac	64.8
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	0.92 ac	73.6
Denotes Pervious Pond Area		Total:	4.86 ac	445.1
CN = Total CN*Area / Total Area =	**91.6**			

Runoff:

		Orange 25yr/24hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) = $\frac{1000}{CN} - 10$ =	0.92 in	Precipitation (P) =	7.73 in	6.24 in	
Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$		Runoff (Q) =	**6.73 in**	**5.26 in**	

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DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 4**
POND NAME : **Ponds 1, 2 & 3**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SFWMD**
StormW.Mgmt.	**Dry Retention**
Online/Offline	**Online**
OFW	**Yes**
Open/Closed Basin	**Open**

(Lake Okeechobee BMAP)

Dry Retention	**1.25 in**	x Impervious Areas =	0.33 ac-ft
	0.50 in	x Total Basin Area =	0.20 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 0.33 ac-ft
OFW Criteria, Add. 50% Trt. Vol. = 0.16 ac-ft
Total Required Treatment Volume = 0.49 ac-ft

Required Attenuation Volume:

Total Runoff (ac-ft)

	Orange 25yr/24hr	Storm Sewer 10yr/24hr	
Q_{pre} =	2.70 ac-ft	2.10 ac-ft	
Q_{post} =	2.72 ac-ft	2.13 ac-ft	
ΔQ =	**0.03 ac-ft**	**0.03 ac-ft**	

Attenuation V_{req} = 0.03 ac-ft (use largest value)

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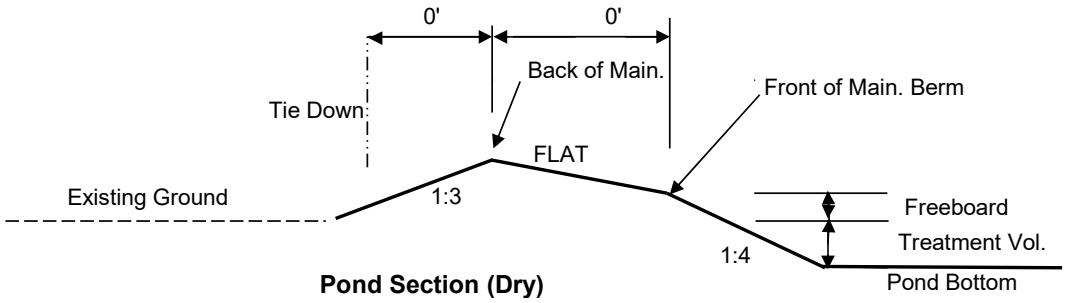
PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 4**
POND NAME : **Ponds 1, 2 & 3**

Maintenance Area Width =	0.0 ft	FLAT	Existing Ground Elevation =	97.00
Pond Tie-In Width =	0.0 ft	@ 1:3	Est. Seasonal High Water Elevation =	92.00
Maximum Storage Depth (**SD**) =	1.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	97.50

Hydraulic Grade Line (HGL) check

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	225 ft	
Estimated Energy Losses =	0.1 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Estimated Storm Sewer Tailwater EL =	96.4 ft	



Pond Section (Dry)

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: CND
Checked by: REC

DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 4**
POND NAME : **Ponds 1, 2 & 3**

Pond 1 Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	STORAGE
97.00	Pond Tie-Down	0.06 ac	
97.00	Back of Main. Berm	0.05 ac	0.07 ac-ft
97.00	Front of Main. Berm	0.05 ac	0.07 ac-ft
96.00	Floodplain Comp. Storage	0.03 ac	0.03 ac-ft
96.00	Provided Treat.Vol.+Att.Vol	0.03 ac	0.03 ac-ft
95.92	Req'd Treat.Vol+Att. Vol	0.03 ac	0.02 ac-ft
95.92	Estimated Storm Sewer TW	0.03 ac	0.02 ac-ft
95.87	Top of Treatment Vol.	0.03 ac	0.02 ac-ft
95.00	Pond Bottom	0.02 ac	0.00 ac-ft

Pond 2 Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	STORAGE
97.00	Pond Tie-Down	0.45 ac	
97.00	Back of Main. Berm	0.43 ac	0.67 ac-ft
97.00	Front of Main. Berm	0.43 ac	0.67 ac-ft
96.00	Floodplain Comp. Storage	0.34 ac	0.29 ac-ft
96.00	Provided Treat.Vol.+Att.Vol	0.34 ac	0.29 ac-ft
95.92	Req'd Treat.Vol+Att. Vol	0.33 ac	0.27 ac-ft
95.92	Estimated Storm Sewer TW	0.33 ac	0.27 ac-ft
95.87	Top of Treatment Vol.	0.33 ac	0.25 ac-ft
95.00	Pond Bottom	0.25 ac	0.00 ac-ft

Pond 3 Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	STORAGE
97.00	Pond Tie-Down	0.33 ac	
97.00	Back of Main. Berm	0.32 ac	0.55 ac-ft
97.00	Front of Main. Berm	0.32 ac	0.55 ac-ft
96.00	Floodplain Comp. Storage	0.27 ac	0.25 ac-ft
96.00	Provided Treat.Vol.+Att.Vol	0.27 ac	0.25 ac-ft
95.92	Req'd Treat.Vol+Att. Vol	0.27 ac	0.23 ac-ft
95.92	Estimated Storm Sewer TW	0.27 ac	0.23 ac-ft
95.87	Top of Treatment Vol.	0.27 ac	0.22 ac-ft
95.00	Pond Bottom	0.23 ac	0.00 ac-ft

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Made by: CND
Checked by: REC

DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 4**
POND NAME : **Ponds 1, 2 & 3**

POND STAGE/STORAGE TOTALS

ELEVATION	DESCRIPTION	AREA	STORAGE	
97.00	Pond Tie-Down	0.84 ac		
97.00	Back of Main. Berm	0.79 ac	1.29 ac-ft	
97.00	Front of Main. Berm	0.79 ac	1.29 ac-ft	
96.00	Floodplain Comp. Storage	0.64 ac	0.57 ac-ft	
96.00	Provided Treat.Vol.+Att.Vol	0.64 ac	0.57 ac-ft	
95.92	Req'd Treat.Vol+Att. Vol	0.63 ac	0.52 ac-ft	ok
95.92	Estimated Storm Sewer TW	0.63 ac	0.52 ac-ft	ok
95.87	Top of Treatment Vol.	0.62 ac	0.49 ac-ft	ok
95.00	Pond Bottom	0.50 ac	0.00 ac-ft	

Required Treatment+Attenuation Vol.= 0.52 ac-ft
Required Treatment+Attenuation Stage= 95.92 ft

Provided Treatment+Attenuation Vol.= 0.57 ac-ft
Provided Treatment+Attenuation Stage= 96.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 0.52 ac-ft
Estimated Storm Sewer TW EL.= 95.92 ft ok

Top of Treatment Vol= 95.87 ac-ft
Required Treatment Vol= 0.49 ac-ft

Use a 10% safety factor:

Pond 1 Provided Pond R/W = **0.07 ac**
Pond 2 Provided Pond R/W = **0.49 ac**
Pond 3 Provided Pond R/W = **0.35 ac**

Total Provided Pond R/W =	**0.91 ac**

NOAA Atlas 14, Volume 9, Version 2
Location name: Orlando, Florida, USA*
Latitude: 28.4367°, Longitude: -81.3817°
Elevation: 94.9 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.469 (0.379-0.588)	0.540 (0.436-0.678)	0.650 (0.523-0.818)	0.736 (0.589-0.931)	0.846 (0.650-1.10)	0.925 (0.697-1.22)	0.998 (0.727-1.36)	1.07 (0.747-1.49)	1.15 (0.774-1.66)	1.20 (0.796-1.79)
10-min	0.687 (0.555-0.861)	0.790 (0.638-0.992)	0.951 (0.765-1.20)	1.08 (0.862-1.36)	1.24 (0.952-1.60)	1.35 (1.02-1.79)	1.46 (1.07-1.98)	1.56 (1.09-2.19)	1.68 (1.13-2.43)	1.76 (1.17-2.62)
15-min	0.837 (0.677-1.05)	0.964 (0.778-1.21)	1.16 (0.934-1.46)	1.31 (1.05-1.66)	1.51 (1.16-1.96)	1.65 (1.24-2.18)	1.78 (1.30-2.42)	1.90 (1.33-2.67)	2.05 (1.38-2.97)	2.15 (1.42-3.20)
30-min	1.40 (1.13-1.76)	1.60 (1.29-2.01)	1.91 (1.54-2.40)	2.15 (1.72-2.72)	2.46 (1.89-3.19)	2.68 (2.02-3.54)	2.89 (2.11-3.92)	3.08 (2.16-4.32)	3.32 (2.24-4.80)	3.48 (2.30-5.17)
60-min	1.87 (1.51-2.35)	2.15 (1.73-2.70)	2.57 (2.07-3.24)	2.91 (2.33-3.68)	3.33 (2.56-4.31)	3.63 (2.73-4.79)	3.91 (2.85-5.30)	4.17 (2.92-5.84)	4.47 (3.02-6.47)	4.68 (3.09-6.96)
2-hr	2.34 (1.91-2.92)	2.70 (2.19-3.36)	3.24 (2.62-4.05)	3.66 (2.95-4.61)	4.20 (3.24-5.40)	4.58 (3.47-6.00)	4.93 (3.61-6.64)	5.25 (3.70-7.30)	5.63 (3.82-8.09)	5.88 (3.91-8.69)
3-hr	2.55 (2.08-3.16)	2.94 (2.40-3.65)	3.56 (2.89-4.43)	4.04 (3.26-5.06)	4.66 (3.62-5.98)	5.11 (3.89-6.68)	5.53 (4.07-7.44)	5.93 (4.19-8.23)	6.41 (4.37-9.19)	6.74 (4.50-9.92)
6-hr	2.92 (2.39-3.60)	3.36 (2.75-4.14)	4.07 (3.32-5.04)	4.67 (3.79-5.81)	5.50 (4.32-7.08)	6.14 (4.72-8.04)	6.78 (5.05-9.13)	7.44 (5.32-10.3)	8.31 (5.73-11.9)	8.98 (6.03-13.1)
12-hr	3.37 (2.78-4.13)	3.81 (3.14-4.67)	4.61 (3.79-5.67)	5.35 (4.37-6.61)	6.47 (5.17-8.41)	7.42 (5.78-9.77)	8.44 (6.36-11.4)	9.55 (6.91-13.3)	11.1 (7.76-16.0)	12.4 (8.40-18.0)
24-hr	3.84 (3.19-4.68)	4.34 (3.60-5.29)	5.30 (4.38-6.48)	6.24 (5.12-7.66)	7.73 (6.25-10.1)	9.04 (7.11-11.9)	10.5 (7.98-14.2)	12.1 (8.84-16.9)	14.5 (10.2-20.7)	16.4 (11.2-23.7)
2-day	4.35 (3.63-5.26)	4.99 (4.16-6.04)	6.21 (5.15-7.54)	7.38 (6.10-9.00)	9.24 (7.52-12.0)	10.9 (8.59-14.2)	12.6 (9.67-17.0)	14.6 (10.8-20.3)	17.5 (12.4-24.9)	19.9 (13.6-28.5)
3-day	4.78 (3.99-5.75)	5.47 (4.57-6.59)	6.77 (5.64-8.19)	8.03 (6.65-9.75)	10.00 (8.15-12.9)	11.7 (9.29-15.3)	13.6 (10.4-18.2)	15.7 (11.6-21.6)	18.7 (13.3-26.5)	21.2 (14.6-30.3)
4-day	5.17 (4.33-6.20)	5.87 (4.92-7.06)	7.21 (6.01-8.68)	8.48 (7.04-10.3)	10.5 (8.57-13.5)	12.2 (9.72-15.9)	14.1 (10.9-18.9)	16.3 (12.0-22.3)	19.3 (13.8-27.3)	21.8 (15.1-31.1)
7-day	6.23 (5.24-7.43)	6.94 (5.84-8.29)	8.27 (6.94-9.91)	9.54 (7.96-11.5)	11.5 (9.46-14.7)	13.3 (10.6-17.1)	15.2 (11.7-20.1)	17.2 (12.8-23.5)	20.3 (14.5-28.5)	22.8 (15.8-32.2)
10-day	7.18 (6.06-8.54)	7.93 (6.69-9.44)	9.31 (7.83-11.1)	10.6 (8.87-12.7)	12.6 (10.3-15.9)	14.3 (11.4-18.3)	16.2 (12.5-21.3)	18.2 (13.6-24.7)	21.1 (15.2-29.5)	23.5 (16.4-33.2)
20-day	9.93 (8.44-11.7)	10.9 (9.29-12.9)	12.7 (10.7-15.0)	14.2 (11.9-16.9)	16.4 (13.4-20.3)	18.1 (14.5-22.8)	19.9 (15.5-25.8)	21.8 (16.3-29.2)	24.5 (17.6-33.7)	26.5 (18.6-37.2)
30-day	12.3 (10.5-14.5)	13.6 (11.6-16.1)	15.8 (13.4-18.6)	17.5 (14.8-20.8)	19.9 (16.3-24.4)	21.7 (17.4-27.1)	23.5 (18.3-30.2)	25.4 (18.9-33.6)	27.8 (20.0-38.0)	29.6 (20.8-41.3)
45-day	15.6 (13.3-18.2)	17.2 (14.7-20.2)	19.8 (16.9-23.3)	21.9 (18.5-25.9)	24.6 (20.1-29.8)	26.5 (21.3-32.8)	28.4 (22.1-36.1)	30.1 (22.6-39.6)	32.3 (23.3-43.9)	33.9 (23.9-47.1)
60-day	18.4 (15.8-21.5)	20.4 (17.5-23.8)	23.4 (20.0-27.5)	25.7 (21.9-30.3)	28.7 (23.5-34.6)	30.8 (24.7-37.8)	32.7 (25.4-41.3)	34.4 (25.8-44.9)	36.4 (26.3-49.1)	37.8 (26.8-52.4)

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

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

Please refer to NOAA Atlas 14 document for more information.

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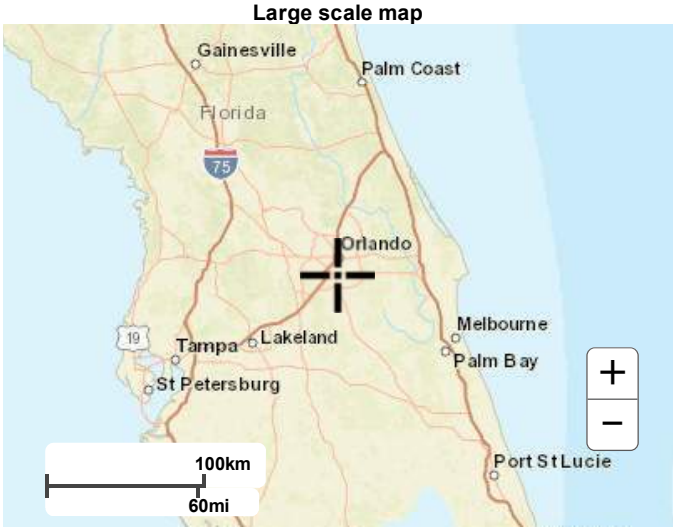
PF graphical

Large scale terrain

Large scale map



Large scale aerial

Seminole County Site 1B

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: DLD
Checked by: REC

DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Seminole Site 1B**
POND NAME : **Pond 1**

Note: The proposed parking site for Seminole County impacts a future wet detention pond that is proposed as part of the I-4 Beyond the Ultimate. These calculations include compensation for the treatment and attenuation volume that will be lost in the pond.

EXISTING CONDITION

Note: Existing condition curve number calculations are based on the pre-development condition prior to the construction of Donnie Myers RV. The original site calculations can be found in SJRMD Permit No. 48756-5

Total Area:

Impervious Area: **1.43 ac**
Pervious Area: **11.97 ac**
Total Area: **13.40 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	1.43 ac	140.1
Brush-weed-grass mixture; Fair condition (50% to 75% ground cover)	D	77	4.35 ac	335.0
Industrial (72% Impervious)	D	93	1.51 ac	140.4
Woods; Fair condition (Woods grazed but not burned, and with some forest litter)	D	80	6.11 ac	488.8
		Total:	13.40 ac	1104.3

CN = Total CN*Area / Total Area = **82.4**

Runoff:

			SJRWMD 25yr/24hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) =	$\frac{1000}{CN} - 10$ =	**2.13 in**	Precipitation (P) =	7.74 in	6.20 in	
Runoff (Q) =	$\frac{(P - 0.2S)^2}{(P + 0.8S)}$		Runoff (Q) =	**5.66 in**	**4.22 in**	

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DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Seminole Site 1B**
POND NAME : **Pond 1**

Note: The proposed parking site for Seminole County impacts a future wet detention pond that is proposed as part of the I-4 Beyond the Ultimate. These calculations include compensation for the treatment and attenuation volume that will be lost in the pond.

PROPOSED CONDITION

Pond Area:

Pervious Pond Area :	1.43 ac		
Water Surface Area:	0.85 ac	Wet Pond	(Pond Areas Include Add. 10% F.S.)
Total Pond Area:	2.28 ac		

Total Area:

Impervious Area:	**9.21 ac**
Pervious Area:	**3.34 ac**
Water Surface Area:	**0.85 ac**
Total Area:	**13.40 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	9.21 ac	902.6
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	1.91 ac	152.8
Proposed Ponds (Water Surface)	D	100	0.85 ac	84.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	1.43 ac	114.4
Denotes Pervious Pond Area		Total:	13.40 ac	1254.5

CN = Total CN*Area / Total Area = **93.6**

Runoff:

		SJRWMD 25yr/24hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) = $\frac{1000}{CN} - 10$ =	0.68 in	Precipitation (P) =	7.74 in	6.20 in	
Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$		Runoff (Q) =	**6.98 in**	**5.45 in**	

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Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Seminole Site 1B**
POND NAME : **Pond 1**

Note: The proposed parking site for Seminole County impacts a future wet detention pond that is proposed as part of the I-4 Beyond the Ultimate. These calculations include compensation for the treatment and attenuation volume that will be lost in the pond.

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SJRWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**2.50 in**	x Impervious Areas =	1.92 ac-ft
	1.00 in	x Total Basin Area =	1.12 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 1.92 ac-ft

Compensate for Treatment from BTU Pond 317D = 0.56 ac-ft

Total Required Treatment Volume = 2.48 ac-ft

Required Attenuation Volume:

Total Runoff (ac-ft)

	SJRWMD 25yr/24hr	**Storm Sewer 10yr/24hr**	
Q_{pre} =	6.32 ac-ft	4.71 ac-ft	
Q_{post} =	7.79 ac-ft	6.09 ac-ft	
ΔQ =	**1.47 ac-ft**	**1.38 ac-ft**	
ΔQ from BTU Pond 317D =	**1.43 ac-ft**	**0.96 ac-ft**	
Total ΔQ =	**2.90 ac-ft**	**2.34 ac-ft**	

Attenuation V_{req} = 2.90 ac-ft (use largest value)

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DATE: June 30, 2022
Job Number: DT5-030-10

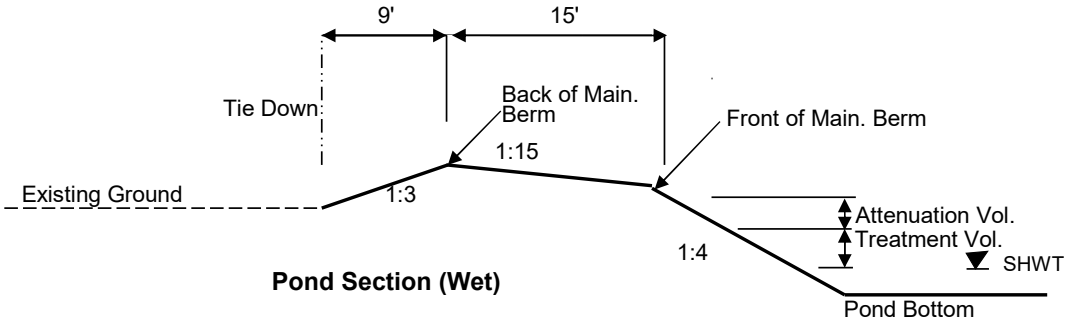
PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Seminole Site 1B**
POND NAME : **Pond 1**

Note: The proposed parking site for Seminole County impacts a future wet detention pond that is proposed as part of the I-4 Beyond the Ultimate. These calculations include compensation for the treatment and attenuation volume that will be lost in the pond.

Maintenance Area Width =	15.0 ft	@ 1:15	Existing Ground Elevation =	11.00
Pond Tie-In Width =	9.0 ft	@ 1:3	Normal Water Elevation =	6.50
Maximum Storage Depth (**SD**) =	5.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	13.00

Hydraulic Grade Line (HGL) check

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	400 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Estimated Storm Sewer Tailwater EL =	11.8 ft	



Pond Section (Wet)

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Made by: DLD
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DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Seminole Site 1B**
POND NAME : **Pond 1**

Note: The proposed parking site for Seminole County impacts a future wet detention pond that is proposed as part of the I-4 Beyond the Ultimate. These calculations include compensation for the treatment and attenuation volume that will be lost in the pond.

Pond Stage / Storage Calculations - POND 1

ELEVATION	DESCRIPTION	AREA	STORAGE	
11.00	Pond Tie Down	2.07 ac		
14.00	Back of Main. Berm	1.69 ac	8.34 ac-ft	
13.00	Front of Main. Berm	1.33 ac	6.83 ac-ft	
12.00	Provided Treat.Vol.+Att.Vol	1.24 ac	5.54 ac-ft	
11.87	Req'd Treat.Vol+Att. Vol	1.23 ac	5.38 ac-ft	ok
11.41	Estimated Storm Sewer TW	1.19 ac	4.82 ac-ft	ok
9.29	Top of Treatment Vol.	1.01 ac	2.48 ac-ft	ok
6.50	Normal Water Level	0.77 ac	0.00 ac-ft	
4.50		0.62 ac		
-1.50	Pond Bottom	0.43 ac		

Required Treatment+Attenuation Vol.= 5.38 ac-ft
Required Treatment+Attenuation Stage= 11.87 ft

Provided Treatment+Attenuation Vol.= 5.54 ac-ft
Provided Treatment+Attenuation Stage= 12.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 4.82 ac-ft
Estimated Storm Sewer TW EL.= 11.41 ft ok

Top of Treatment Vol= 9.29 ac-ft
Required Treatment Vol= 2.48 ac-ft ok

Use a 10% safety factor:

Total Provided Pond R/W =	**2.28 ac**

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DATE: September 13, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Seminole Site 1B**
POND NAME : **Pond 2**

EXISTING CONDITION

Note: Existing condition curve number calculations are based on the pre-development condition prior to the construction of Donnie Myers RV. The original site calculations can be found in SJRMD Permit No. 48756-5

Total Area:

Impervious Area: **0.20 ac**
Pervious Area: **5.66 ac**
Total Area: **5.86 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	0.20 ac	19.6
Brush-weed-grass mixture; Fair condition (50% to 75% ground cover)	D	77	3.92 ac	301.8
Commercial & business (85% impervious)	D	95	1.74 ac	165.3
		Total:	5.86 ac	486.7

CN = Total CN*Area / Total Area = **83.1**

Runoff:

			SJRWMD 25yr/24hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) =	$\frac{1000}{CN} - 10$ =	**2.04 in**	Precipitation (P) =	7.74 in	6.20 in	
Runoff (Q) =	$\frac{(P - 0.2S)^2}{(P + 0.8S)}$		Runoff (Q) =	**5.74 in**	**4.28 in**	

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Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Seminole Site 1B**
POND NAME : **Pond 2**

PROPOSED CONDITION

Pond Area:

Pervious Pond Area :	1.11 ac		
Water Surface Area:	0.46 ac	Wet Pond	(Pond Areas Include Add. 10% F.S.)
Total Pond Area:	1.57 ac		

Total Area:

Impervious Area:	**2.17 ac**
Pervious Area:	**3.23 ac**
Water Surface Area:	**0.46 ac**
Total Area:	**5.86 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	2.17 ac	212.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	2.12 ac	169.2
Proposed Ponds (Water Surface)	D	100	0.46 ac	46.2
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	1.11 ac	88.9
Denotes Pervious Pond Area		Total:	5.86 ac	516.9

CN = Total CN*Area / Total Area = **88.2**

Runoff:

		SJRWMD 25yr/24hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) = $\frac{1000}{CN} - 10$ =	1.33 in	Precipitation (P) =	7.74 in	6.20 in	
Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$		Runoff (Q) =	**6.34 in**	**4.85 in**	

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Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Seminole Site 1B**
POND NAME : **Pond 2**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SJRWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
OFW	**No**
Open/Closed Basin	**Open**

Wet Detention	**2.50 in**	x Impervious Areas =	0.45 ac-ft
	1.00 in	x Total Basin Area =	0.49 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 0.49 ac-ft

Total Required Treatment Volume = 0.49 ac-ft

Required Attenuation Volume:

Total Runoff (ac-ft)

	SJRWMD 25yr/24hr	Storm Sewer 10yr/24hr	
Q_{pre} =	2.80 ac-ft	2.09 ac-ft	
Q_{post} =	3.10 ac-ft	2.37 ac-ft	
ΔQ =	**0.30 ac-ft**	**0.27 ac-ft**	

Attenuation V_{req} = 0.30 ac-ft (use largest value)

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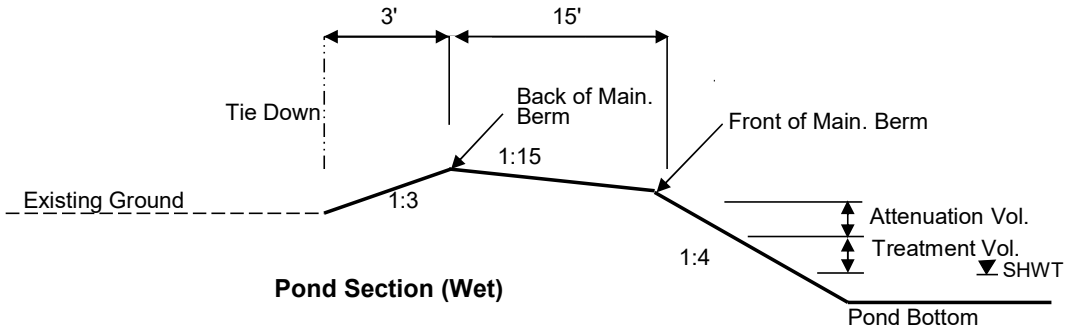
PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Seminole Site 1B**
POND NAME : **Pond 2**

Maintenance Area Width =	15.0 ft	@ 1:15	Existing Ground Elevation =	11.00
Pond Tie-In Width =	3.0 ft	@ 1:3	Normal Water Elevation =	8.50
Maximum Storage Depth (**SD**) =	3.50 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	13.00

Hydraulic Grade Line (HGL) check

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	400 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Estimated Storm Sewer Tailwater EL =	11.8 ft	



Pond Section (Wet)

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DATE: September 13, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Seminole Site 1B**
POND NAME : **Pond 2**

Pond Stage / Storage Calculations - POND 2

ELEVATION	DESCRIPTION	AREA	STORAGE	
11.00	Pond Tie Down	1.43 ac		
12.00	Back of Main. Berm	1.31 ac	2.51 ac-ft	
11.00	Front of Main. Berm	0.76 ac	1.48 ac-ft	
10.00	Provided Treat.Vol.+Att.Vol	0.62 ac	0.78 ac-ft	
10.00	Req'd Treat.Vol+Att. Vol	0.62 ac	0.78 ac-ft	ok
9.96	Estimated Storm Sewer TW	0.62 ac	0.76 ac-ft	ok
9.50	Top of Treatment Vol.	0.56 ac	0.49 ac-ft	ok
8.50	Normal Water Level	0.42 ac	0.00 ac-ft	
6.50		0.18 ac		
5.50	Pond Bottom	0.12 ac		

Required Treatment+Attenuation Vol.= 0.78 ac-ft
Required Treatment+Attenuation Stage= 11.94 ft

Provided Treatment+Attenuation Vol.= 0.78 ac-ft
Provided Treatment+Attenuation Stage= 12.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 0.76 ac-ft
Estimated Storm Sewer TW EL.= 11.08 ft ok

Top of Treatment Vol= 9.50 ac-ft
Required Treatment Vol= 0.49 ac-ft

Use a 10% safety factor:

Total Provided Pond R/W =	**1.57 ac**

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DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Seminole Site 1B**
POND NAME : **BTU Pond 317D**

Note: These supplemental calculations serve to estimate the attenuation volume in the proposed I-4 BTU Pond 317D. The drainage report for this pond does not include volumetric attenuation calculations.

Pond Stage / Storage Calculations - I-4 BTU Pond 317D

ELEVATION	DESCRIPTION	AREA	STORAGE	
12.01	Back of Main. Berm	0.95 ac		
12.00	Front of Main. Berm	0.70 ac	2.10 ac-ft	
11.00	Provided Att.Vol	0.64 ac	1.43 ac-ft	
11.00	Req'd Att. Vol	0.64 ac	1.43 ac-ft	<--Use as required attenuation vol.
10.25	Estimated Storm Sewer TW	0.60 ac	0.96 ac-ft	<--Use as required storm sewer attenuation vol.
9.55	Top of Treatment Vol.	0.56 ac	0.56 ac-ft	
8.50	Normal Water Level	0.50 ac	0.00 ac-ft	
6.50		0.57 ac		
3.50	Pond Bottom	0.26 ac		

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Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Seminole Site 1B**
POND NAME : **Pre-treatment Dry Detention**

Pond Stage / Storage Calculations - Dry Detention Pre-treatment

ELEVATION	DESCRIPTION	AREA	STORAGE
12.00	Back of Main. Berm	0.40 ac	
12.00	Front of Main. Berm	0.32 ac	0.81 ac-ft
11.00	Provided Treatment/Att.Vol	0.27 ac	0.51 ac-ft
8.50	Pond Bottom (Dry Pond)	0.14 ac	0.00 ac-ft

NOAA Atlas 14, Volume 9, Version 2
Location name: Sanford, Florida, USA*
Latitude: 28.8275°, Longitude: -81.3245°
Elevation: 8.95 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.480** (0.391-0.587)	**0.547** (0.445-0.669)	**0.652** (0.529-0.800)	**0.735** (0.593-0.907)	**0.843** (0.654-1.07)	**0.923** (0.700-1.19)	**0.998** (0.732-1.33)	**1.07** (0.753-1.47)	**1.16** (0.785-1.64)	**1.22** (0.809-1.78)
10-min	**0.703** (0.573-0.860)	**0.801** (0.652-0.980)	**0.954** (0.774-1.17)	**1.08** (0.868-1.33)	**1.24** (0.958-1.57)	**1.35** (1.03-1.74)	**1.46** (1.07-1.94)	**1.57** (1.10-2.15)	**1.70** (1.15-2.41)	**1.79** (1.18-2.60)
15-min	**0.857** (0.699-1.05)	**0.976** (0.795-1.20)	**1.16** (0.944-1.43)	**1.31** (1.06-1.62)	**1.51** (1.17-1.91)	**1.65** (1.25-2.13)	**1.78** (1.31-2.37)	**1.91** (1.34-2.62)	**2.07** (1.40-2.94)	**2.18** (1.44-3.17)
30-min	**1.41** (1.15-1.72)	**1.60** (1.30-1.96)	**1.90** (1.54-2.34)	**2.14** (1.73-2.64)	**2.46** (1.90-3.11)	**2.68** (2.04-3.46)	**2.90** (2.13-3.85)	**3.11** (2.18-4.26)	**3.36** (2.27-4.76)	**3.54** (2.34-5.14)
60-min	**1.86** (1.51-2.27)	**2.13** (1.73-2.60)	**2.55** (2.07-3.13)	**2.89** (2.33-3.57)	**3.34** (2.59-4.23)	**3.66** (2.78-4.73)	**3.98** (2.92-5.28)	**4.28** (3.01-5.87)	**4.66** (3.15-6.60)	**4.92** (3.26-7.15)
2-hr	**2.31** (1.89-2.80)	**2.65** (2.17-3.23)	**3.20** (2.62-3.90)	**3.64** (2.96-4.46)	**4.22** (3.30-5.32)	**4.64** (3.55-5.96)	**5.05** (3.73-6.68)	**5.45** (3.86-7.44)	**5.95** (4.05-8.39)	**6.31** (4.20-9.11)
3-hr	**2.50** (2.06-3.02)	**2.88** (2.37-3.49)	**3.50** (2.87-4.25)	**4.01** (3.27-4.89)	**4.69** (3.69-5.91)	**5.20** (4.00-6.67)	**5.71** (4.24-7.53)	**6.21** (4.42-8.46)	**6.87** (4.70-9.66)	**7.35** (4.91-10.6)
6-hr	**2.85** (2.37-3.43)	**3.27** (2.72-3.94)	**3.99** (3.31-4.82)	**4.62** (3.80-5.60)	**5.52** (4.40-6.98)	**6.25** (4.86-8.02)	**7.00** (5.26-9.25)	**7.79** (5.61-10.6)	**8.88** (6.15-12.5)	**9.74** (6.55-13.9)
12-hr	**3.29** (2.76-3.93)	**3.72** (3.11-4.45)	**4.53** (3.77-5.43)	**5.29** (4.38-6.37)	**6.47** (5.25-8.24)	**7.49** (5.91-9.66)	**8.61** (6.55-11.4)	**9.84** (7.17-13.4)	**11.6** (8.12-16.3)	**13.1** (8.84-18.5)
24-hr	**3.79** (3.20-4.49)	**4.28** (3.61-5.08)	**5.24** (4.40-6.24)	**6.20** (5.17-7.41)	**7.74** (6.37-9.88)	**9.12** (7.27-11.8)	**10.6** (8.18-14.1)	**12.4** (9.10-16.9)	**14.9** (10.5-20.9)	**17.0** (11.6-24.0)
2-day	**4.37** (3.72-5.14)	**5.01** (4.25-5.90)	**6.24** (5.29-7.38)	**7.46** (6.28-8.87)	**9.41** (7.80-11.9)	**11.1** (8.94-14.3)	**13.1** (10.1-17.2)	**15.2** (11.3-20.6)	**18.3** (13.0-25.6)	**20.9** (14.4-29.3)
3-day	**4.84** (4.14-5.68)	**5.56** (4.74-6.52)	**6.93** (5.89-8.16)	**8.27** (6.99-9.79)	**10.4** (8.65-13.1)	**12.3** (9.90-15.6)	**14.4** (11.2-18.8)	**16.7** (12.4-22.5)	**20.1** (14.3-27.8)	**22.9** (15.7-31.9)
4-day	**5.27** (4.51-6.16)	**6.01** (5.15-7.04)	**7.44** (6.35-8.74)	**8.83** (7.49-10.4)	**11.0** (9.20-13.9)	**13.0** (10.5-16.5)	**15.1** (11.8-19.7)	**17.5** (13.1-23.6)	**21.0** (15.0-29.1)	**23.9** (16.5-33.3)
7-day	**6.34** (5.47-7.37)	**7.12** (6.13-8.28)	**8.59** (7.38-10.0)	**10.0** (8.55-11.8)	**12.3** (10.3-15.3)	**14.2** (11.6-17.9)	**16.4** (12.8-21.2)	**18.8** (14.1-25.1)	**22.3** (16.0-30.6)	**25.1** (17.5-34.8)
10-day	**7.28** (6.31-8.44)	**8.10** (7.01-9.39)	**9.63** (8.30-11.2)	**11.1** (9.49-12.9)	**13.3** (11.2-16.5)	**15.3** (12.4-19.1)	**17.4** (13.7-22.4)	**19.7** (14.8-26.2)	**23.1** (16.7-31.6)	**25.9** (18.1-35.7)
20-day	**9.98** (8.71-11.5)	**11.1** (9.65-12.7)	**12.9** (11.2-14.9)	**14.6** (12.6-16.9)	**17.0** (14.3-20.6)	**19.0** (15.5-23.4)	**21.1** (16.6-26.7)	**23.3** (17.6-30.5)	**26.4** (19.1-35.6)	**28.9** (20.2-39.5)
30-day	**12.3** (10.8-14.1)	**13.7** (12.0-15.7)	**16.0** (13.9-18.4)	**17.9** (15.5-20.7)	**20.5** (17.2-24.6)	**22.6** (18.5-27.6)	**24.7** (19.5-31.0)	**26.9** (20.3-34.8)	**29.8** (21.6-39.9)	**32.0** (22.5-43.7)
45-day	**15.4** (13.6-17.6)	**17.2** (15.1-19.6)	**20.0** (17.6-22.9)	**22.3** (19.4-25.7)	**25.3** (21.3-30.0)	**27.6** (22.6-33.3)	**29.8** (23.5-37.0)	**31.9** (24.1-41.0)	**34.7** (25.2-46.0)	**36.7** (25.9-49.8)
60-day	**18.1** (16.0-20.6)	**20.3** (17.9-23.1)	**23.6** (20.8-27.0)	**26.3** (23.0-30.1)	**29.7** (24.9-34.9)	**32.1** (26.4-38.5)	**34.4** (27.2-42.5)	**36.6** (27.7-46.7)	**39.2** (28.5-51.7)	**41.0** (29.1-55.6)

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

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

Please refer to NOAA Atlas 14 document for more information.

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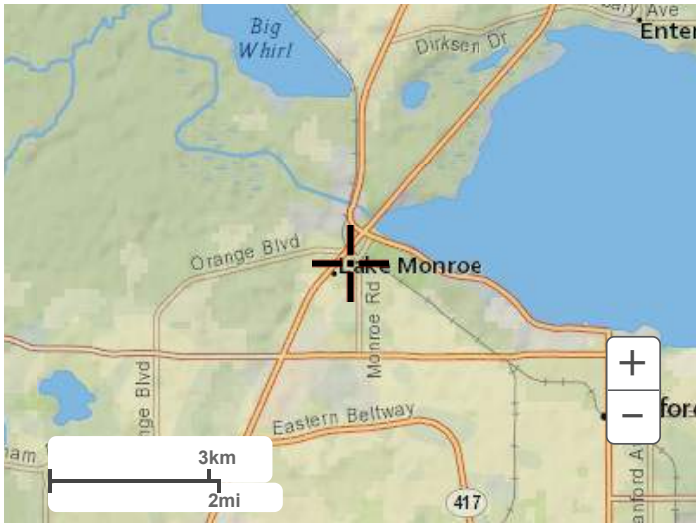
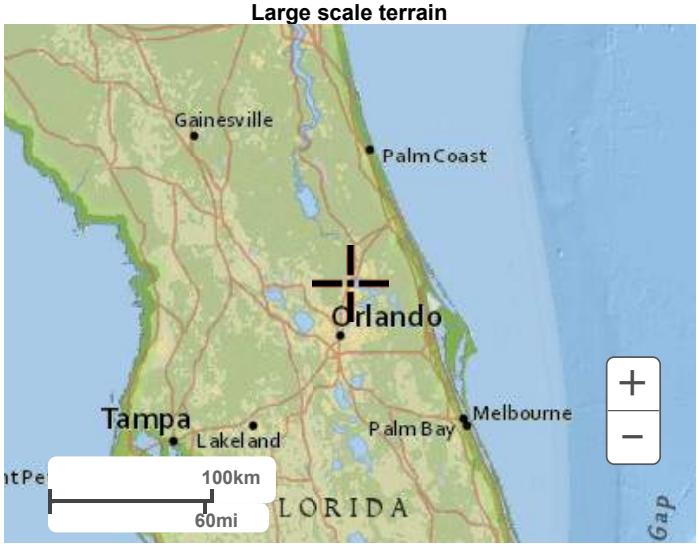
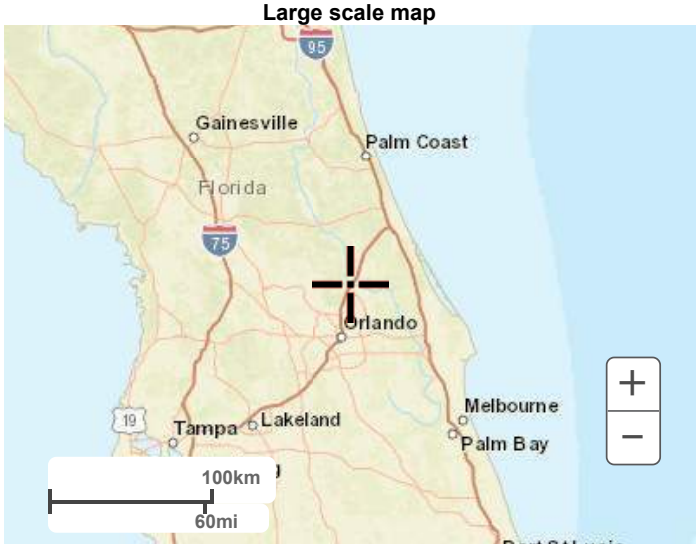
PF graphical



Large scale terrain



Large scale map



Large scale aerial

Volusia County Site 1A

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: DLD
Checked by: REC

DATE: November 14, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Volusia Site 1A**
POND NAME : **Pond 1**

EXISTING CONDITION

Total Area:

Impervious Area: **0.00 ac**
Pervious Area: **46.27 ac**
Total Area: **46.27 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor condition (grass cover < 50%)	D	89	4.34 ac	386.3
Woods & Wetlands Combination	D	97	22.87 ac	2218.4
Woods; Fair condition (Woods grazed but not burned, and with some forest litter)	D	79	19.06 ac	1505.7
		Total:	46.27 ac	4110.4

CN = Total CN*Area / Total Area = **88.8**

Runoff:

		SJRWMD 25yr/24hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) = $\frac{1000}{CN} - 10$ =	**1.26 in**	Precipitation (P) =	8.69 in	6.84 in	
Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$		Runoff (Q) =	**7.34 in**	**5.53 in**	

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(407) 971-8850 (phone)
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Made by: DLD
Checked by: REC

DATE: November 14, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Volusia Site 1A**
POND NAME : **Pond 1**

PROPOSED CONDITION

Pond Area:

Pervious Pond Area:	2.61 ac	
Water Surface Area:	4.54 ac	Wet Pond (Pond Areas Include Add. 10% F.S.)
Total Pond Area:	7.15 ac	

Total Area:

Impervious Area:	**24.07 ac**
Pervious Area:	**17.66 ac**
Water Surface Area:	**4.54 ac**
Total Area:	**46.27 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	24.07 ac	2358.9
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	15.05 ac	1204.0
Proposed Ponds (Water Surface)	D	100	4.54 ac	454.3
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	2.61 ac	208.6
		Total:	46.27 ac	4225.7

CN = Total CN*Area / Total Area = **91.3**

Runoff:

		SJRWMD 25yr/24hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) = $\frac{1000}{CN} - 10$ =	0.95 in			
Precipitation (P) =		8.69 in	6.84 in	
Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$				
Runoff (Q) =		**7.65 in**	**5.82 in**	

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Made by: DLD
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DATE: November 14, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Volusia Site 1A**
POND NAME : **Pond 1**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SJRWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
OFW	**Yes**
Open/Closed Basin	**Open**

Wet Detention	**2.50 in**	x Impervious Areas =	5.01 ac-ft
	1.00 in	x Total Basin Area =	3.86 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 5.01 ac-ft
Additional 50% Trt. Vol. (OFW) = 2.51 ac-ft
Total Required Treatment Volume = 7.52 ac-ft

Required Attenuation Volume:

Total Runoff (ac-ft)

	SJRWMD 25yr/24hr	**Storm Sewer 10yr/24hr**	
Q_{pre} =	28.32 ac-ft	21.33 ac-ft	
Q_{post} =	29.48 ac-ft	22.44 ac-ft	
ΔQ =	**1.16 ac-ft**	**1.10 ac-ft**	

Attenuation V_{req} = 1.16 ac-ft (use largest value)

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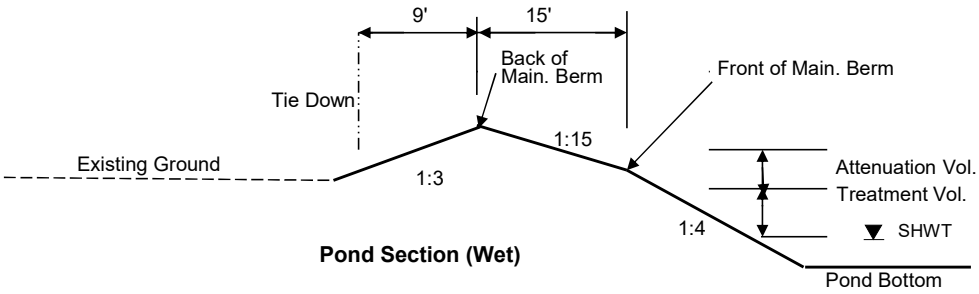
PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Volusia Site 1A**
POND NAME : **Pond 1**

Maintenance Area Width =	15.0 ft	@ 1:15	Existing Ground Elevation =	37.00
Pond Tie-In Width =	9.0 ft	@ 1:3	Normal Water Elevation =	36.00
Maximum Storage Depth (**SD**) =	2.00 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	40.00

Hydraulic Grade Line (HGL) check

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	400 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Estimated Storm Sewer Tailwater EL =	38.8 ft	



Pond Section (Wet)

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
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(407) 971-8955 (fax)

Made by: DLD
Checked by: REC

DATE: November 14, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Volusia Site 1A**
POND NAME : **Pond 1**

Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	STORAGE	
37.00	Pond Tie-Down	6.50 ac		
40.00	Back of Main. Berm	5.82 ac	18.89 ac-ft	
39.00	Front of Main. Berm	4.89 ac	13.53 ac-ft	
38.00	Provided Treat.Vol.+Att.Vol	4.64 ac	8.77 ac-ft	
37.98	Req'd Treat.Vol+Att. Vol	4.63 ac	8.68 ac-ft	ok
37.97	Estimated Storm Sewer TW	4.63 ac	8.62 ac-ft	ok
37.73	Top of Treatment Vol.	4.57 ac	7.52 ac-ft	ok
37.00	Floodplain Comp. Storage	4.38 ac	4.26 ac-ft	
36.00	Normal Water Level	4.13 ac	0.00 ac-ft	
34.00		3.62 ac		
30.00	Pond Bottom	3.13 ac		

Required Treatment+Attenuation Vol.= 8.68 ac-ft
Required Treatment+Attenuation Stage= 37.98 ft

Provided Treatment+Attenuation Vol.= 8.77 ac-ft
Provided Treatment+Attenuation Stage= 38.00 ft

Estimated Treat. Vol.+Storm Sewer Att.= 8.62 ac-ft
Estimated Storm Sewer TW EL.= 37.97 ft ok

Top of Treatment Vol= 37.73 ac-ft
Required Treatment Vol= 7.52 ac-ft

Use a 10% safety factor:

Total Provided Pond R/W =	**7.15 ac**

NOAA Atlas 14, Volume 9, Version 2
Location name: Port Orange, Florida, USA*
Latitude: 29.1155°, Longitude: -81.1353°
Elevation: 35.43 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.544** (0.449-0.658)	**0.620** (0.511-0.752)	**0.740** (0.608-0.899)	**0.834** (0.681-1.02)	**0.957** (0.749-1.20)	**1.05** (0.800-1.33)	**1.13** (0.833-1.48)	**1.21** (0.853-1.63)	**1.31** (0.885-1.82)	**1.38** (0.909-1.96)
10-min	**0.797** (0.658-0.964)	**0.909** (0.749-1.10)	**1.08** (0.890-1.32)	**1.22** (0.997-1.49)	**1.40** (1.10-1.75)	**1.53** (1.17-1.95)	**1.65** (1.22-2.16)	**1.77** (1.25-2.39)	**1.91** (1.30-2.66)	**2.01** (1.33-2.87)
15-min	**0.972** (0.802-1.18)	**1.11** (0.913-1.34)	**1.32** (1.09-1.61)	**1.49** (1.22-1.82)	**1.71** (1.34-2.14)	**1.87** (1.43-2.38)	**2.02** (1.49-2.64)	**2.16** (1.52-2.91)	**2.33** (1.58-3.24)	**2.46** (1.62-3.50)
30-min	**1.48** (1.22-1.79)	**1.69** (1.39-2.04)	**2.01** (1.65-2.45)	**2.27** (1.86-2.77)	**2.61** (2.04-3.26)	**2.86** (2.19-3.63)	**3.09** (2.28-4.04)	**3.31** (2.33-4.46)	**3.58** (2.42-4.98)	**3.77** (2.49-5.37)
60-min	**1.93** (1.59-2.33)	**2.21** (1.82-2.67)	**2.65** (2.17-3.22)	**3.00** (2.45-3.67)	**3.48** (2.73-4.36)	**3.83** (2.93-4.88)	**4.17** (3.08-5.46)	**4.50** (3.18-6.07)	**4.92** (3.33-6.85)	**5.22** (3.45-7.44)
2-hr	**2.38** (1.98-2.86)	**2.73** (2.26-3.28)	**3.28** (2.71-3.96)	**3.74** (3.07-4.53)	**4.34** (3.43-5.42)	**4.80** (3.70-6.09)	**5.25** (3.90-6.84)	**5.69** (4.05-7.64)	**6.26** (4.27-8.67)	**6.68** (4.44-9.45)
3-hr	**2.60** (2.17-3.11)	**2.98** (2.48-3.58)	**3.61** (3.00-4.34)	**4.14** (3.41-5.00)	**4.86** (3.87-6.07)	**5.43** (4.21-6.88)	**5.99** (4.48-7.81)	**6.57** (4.70-8.82)	**7.33** (5.03-10.1)	**7.91** (5.28-11.2)
6-hr	**2.98** (2.50-3.54)	**3.43** (2.87-4.08)	**4.20** (3.51-5.01)	**4.88** (4.05-5.86)	**5.89** (4.74-7.38)	**6.71** (5.26-8.53)	**7.58** (5.73-9.89)	**8.51** (6.15-11.4)	**9.80** (6.79-13.6)	**10.8** (7.28-15.2)
12-hr	**3.39** (2.86-4.01)	**3.91** (3.30-4.62)	**4.86** (4.09-5.76)	**5.76** (4.81-6.86)	**7.16** (5.84-9.01)	**8.36** (6.62-10.6)	**9.67** (7.38-12.6)	**11.1** (8.11-14.9)	**13.2** (9.22-18.2)	**14.9** (10.1-20.7)
24-hr	**3.85** (3.27-4.51)	**4.48** (3.80-5.25)	**5.68** (4.80-6.68)	**6.84** (5.75-8.09)	**8.69** (7.17-10.9)	**10.3** (8.24-13.1)	**12.1** (9.31-15.8)	**14.1** (10.4-18.9)	**17.0** (12.0-23.4)	**19.4** (13.2-26.8)
2-day	**4.43** (3.79-5.16)	**5.20** (4.44-6.06)	**6.66** (5.67-7.78)	**8.07** (6.83-9.48)	**10.3** (8.57-12.9)	**12.3** (9.89-15.5)	**14.5** (11.2-18.7)	**16.9** (12.5-22.5)	**20.4** (14.5-27.9)	**23.3** (16.0-32.0)
3-day	**4.97** (4.27-5.76)	**5.74** (4.92-6.66)	**7.23** (6.18-8.41)	**8.69** (7.38-10.2)	**11.0** (9.22-13.8)	**13.1** (10.6-16.5)	**15.4** (12.0-19.9)	**18.0** (13.4-23.9)	**21.8** (15.5-29.7)	**24.9** (17.1-34.1)
4-day	**5.42** (4.67-6.27)	**6.18** (5.31-7.15)	**7.66** (6.56-8.89)	**9.13** (7.77-10.6)	**11.5** (9.64-14.3)	**13.6** (11.0-17.1)	**16.0** (12.5-20.6)	**18.6** (13.9-24.6)	**22.5** (16.1-30.6)	**25.7** (17.7-35.1)
7-day	**6.46** (5.59-7.43)	**7.23** (6.25-8.32)	**8.75** (7.53-10.1)	**10.2** (8.77-11.9)	**12.7** (10.6-15.6)	**14.8** (12.1-18.4)	**17.2** (13.5-21.9)	**19.8** (14.9-26.1)	**23.7** (17.1-32.1)	**27.0** (18.7-36.6)
10-day	**7.35** (6.38-8.42)	**8.21** (7.12-9.41)	**9.84** (8.50-11.3)	**11.4** (9.80-13.2)	**13.9** (11.7-16.9)	**16.0** (13.1-19.8)	**18.4** (14.5-23.3)	**21.0** (15.8-27.4)	**24.8** (17.9-33.3)	**27.9** (19.4-37.8)
20-day	**9.96** (8.70-11.3)	**11.2** (9.79-12.8)	**13.4** (11.6-15.3)	**15.3** (13.2-17.5)	**18.0** (15.1-21.5)	**20.3** (16.5-24.6)	**22.6** (17.8-28.1)	**25.0** (18.9-32.2)	**28.5** (20.6-37.7)	**31.2** (21.8-41.9)
30-day	**12.2** (10.7-13.8)	**13.8** (12.1-15.6)	**16.4** (14.3-18.6)	**18.5** (16.1-21.2)	**21.6** (18.1-25.5)	**23.9** (19.5-28.7)	**26.3** (20.7-32.4)	**28.7** (21.6-36.5)	**31.8** (23.0-41.8)	**34.3** (24.1-45.9)
45-day	**15.0** (13.2-16.9)	**16.9** (14.9-19.1)	**20.1** (17.6-22.7)	**22.6** (19.7-25.7)	**25.9** (21.7-30.3)	**28.4** (23.3-33.8)	**30.8** (24.4-37.8)	**33.2** (25.1-42.0)	**36.3** (26.3-47.3)	**38.5** (27.2-51.3)
60-day	**17.4** (15.4-19.6)	**19.6** (17.3-22.1)	**23.1** (20.3-26.1)	**25.9** (22.6-29.3)	**29.5** (24.7-34.3)	**32.1** (26.4-38.1)	**34.7** (27.4-42.2)	**37.1** (28.1-46.6)	**40.2** (29.2-52.1)	**42.3** (30.0-56.2)

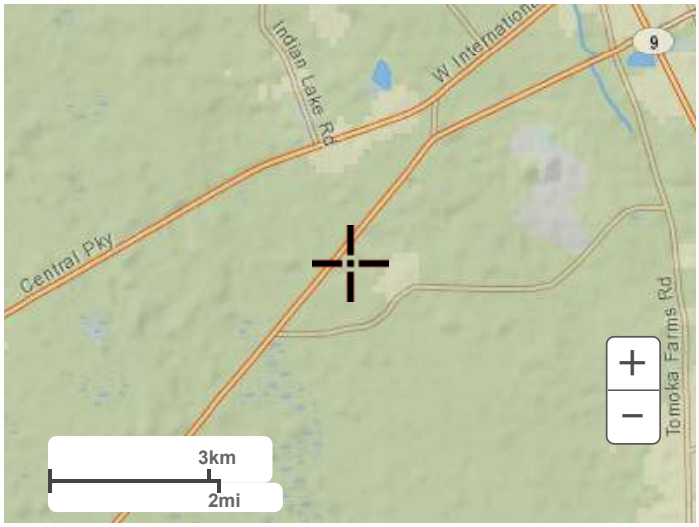
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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

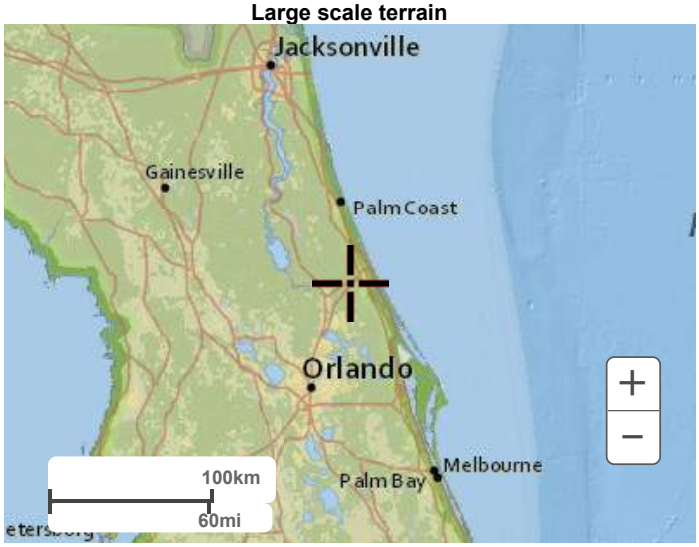
Please refer to NOAA Atlas 14 document for more information.

Back to Top

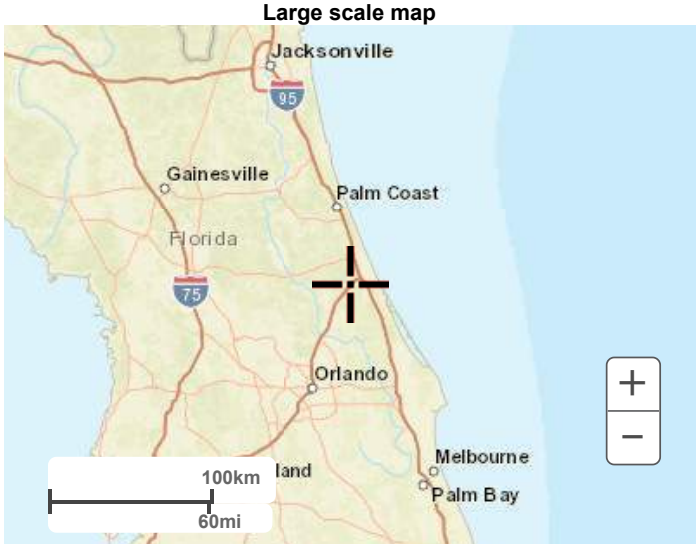
PF graphical



Large scale terrain



Large scale map



Large scale aerial

Volusia County Site 1B

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: CND
Checked by: REC

DATE: November 14, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Volusia Site 1B**
POND NAME : **I-4 Pond I & Pond 1**

EXISTING CONDITION

Total Area:

Impervious Area: **0.00 ac**
Pervious Area: **52.18 ac**
Total Area: **52.18 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	10.47 ac	837.6
Existing Lakes (Water surface)	D	100	1.26 ac	126.0
Woods & Wetlands Combination	D	97	24.55 ac	2381.4
Woods; Fair condition (Woods grazed but not burned, and with some forest litter)	D	79	15.90 ac	1256.1
		Total:	52.18 ac	4601.1

CN = Total CN*Area / Total Area = **88.2**

Runoff:

		SJRWMD 25yr/24hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) = $\frac{1000}{CN} - 10$ = **1.34 in**	Precipitation (P) =	8.69 in	6.84 in	
Runoff (Q) = $\frac{(P - 0.2S)^2}{(P + 0.8S)}$	Runoff (Q) =	**7.27 in**	**5.46 in**	

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Made by: CND
Checked by: REC

DATE: November 14, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Volusia Site 1B**
POND NAME : **I-4 Pond I & Pond 1**

PROPOSED CONDITION

Pond Area:

Pervious Pond Area:	5.20 ac		
Water Surface Area:	5.12 ac	Wet Pond	(Pond Areas Include Add. 10% F.S.)
Total Pond Area:	10.32 ac		

Total Area:

Impervious Area:	**23.67 ac**
Pervious Area:	**23.40 ac**
Water Surface Area:	**5.12 ac**
Total Area:	**52.18 ac**

Curve Number:

Land Use Description	Soil Group	CN	Area	CN*Area
Impervious areas; Streets & roads	D	98	23.67 ac	2319.7
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	18.19 ac	1455.4
Proposed Ponds (Water Surface)	D	100	5.12 ac	511.5
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80	5.20 ac	416.2
		Total:	52.18 ac	4702.8

CN = Total CN*Area / Total Area = **90.1**

Runoff:

			SJRWMD 25yr/24hr	Storm Sewer 10yr/24hr	
Soil Capacity (S) =	$\frac{1000}{CN} - 10$ =	1.10 in	Precipitation (P) =	8.69 in	6.84 in	
Runoff (Q) =	$\frac{(P - 0.2S)^2}{(P + 0.8S)}$		Runoff (Q) =	**7.50 in**	**5.68 in**	

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
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Made by: CND
Checked by: REC

DATE: November 14, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Volusia Site 1B**
POND NAME : **I-4 Pond I & Pond 1**

POND SIZING

Required Treatment Volume (TV)

Selection criteria

Permitting Agency	**SJRWMD**
StormW.Mgmt.	**Wet Detention**
Online/Offline	**Online**
OFW	**Yes**
Open/Closed Basin	**Open**

Wet Detention	**2.50 in**	x Impervious Areas =	4.93 ac-ft
	1.00 in	x Total Basin Area =	4.35 ac-ft

Treatment V_{req} = Largest of Trt. Vol. = 4.93 ac-ft
Additional 50% Trt. Vol. (OFW) = 2.47 ac-ft
Compensate for Treatment Vol. in Pond I = 2.99 ac-ft
Total Required Treatment Volume = 10.39 ac-ft

Required Attenuation Volume:

Total Runoff (ac-ft)

	SJRWMD 25yr/24hr	Storm Sewer 10yr/24hr	
Q_{pre} =	31.59 ac-ft	23.73 ac-ft	
Q_{post} =	32.62 ac-ft	24.70 ac-ft	
ΔQ =	**1.02 ac-ft**	**0.97 ac-ft**	
ΔQ from I-4 Pond I =	**0.29 ac-ft**	**0.25 ac-ft**	**(Att. Vol. Available - Treat. Vol.)**
Total ΔQ =	**1.32 ac-ft**	**1.22 ac-ft**	

Attenuation V_{req} = 1.32 ac-ft (use largest value)

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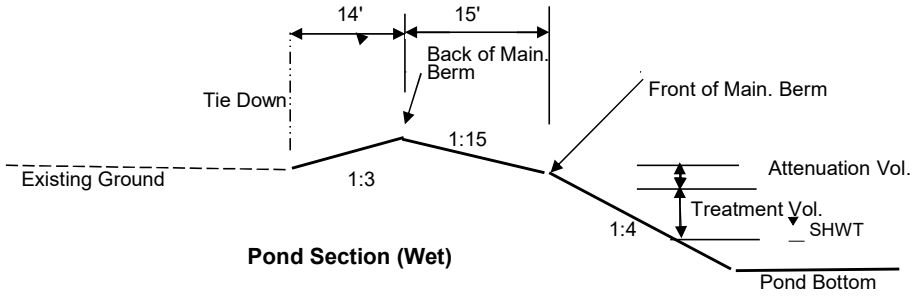
BASIN NAME : **Volusia Site 1B**
POND NAME : **I-4 Pond I & Pond 1**

Maintenance Area Width =	15.0 ft	@ 1:15	Existing Ground Elevation =	38.00
Pond Tie-In Width =	13.5 ft	@ 1:3	Normal Water Elevation =	37.90
Maximum Storage Depth (**SD**) =	2.60 ft	with 1.0 ft freeboard	Lowest EOP Elevation =	41.40

Hydraulic Grade Line (HGL) check

HGL Slope =	0.050%	Use 0.05% for very flat terrain to 0.1% for flat terrain
Distance from Pond to Lowest EOP =	400 ft	
Estimated Energy Losses =	0.2 ft	
HGL Clearance =	1.0 ft	Use 1.0 foot as a standard HGL clearance (no junction losses)
Estimated Storm Sewer Tailwater EL =	40.2 ft	



Pond Section (Wet)

I-4 Modified Pond I Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	STORAGE	
38.00	Pond Tie-Down	6.28 ac		
42.50	Back of Main. Berm	5.68 ac	20.25 ac-ft	
41.50	Front of Main. Berm	4.66 ac	15.08 ac-ft	
40.50	Provided Treat.Vol.+Att.Vol	4.40 ac	10.55 ac-ft	
40.17	Req'd Treat.Vol+Att. Vol	4.31 ac	9.10 ac-ft	ok
40.15	Estimated Storm Sewer TW	4.31 ac	9.02 ac-ft	ok
40.00	Floodplain Comp. Storage	4.27 ac	8.39 ac-ft	
39.93	Top of Treatment Vol.	4.25 ac	8.09 ac-ft	ok
37.90	Normal Water Level	3.72 ac	0.00 ac-ft	
35.90		3.22 ac		
31.90	Pond Bottom	2.22 ac		

Pond 1 Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	STORAGE	
38.00	Pond Tie-Down	3.10 ac		
42.50	Back of Main. Berm	2.41 ac	6.65 ac-ft	
41.50	Front of Main. Berm	1.64 ac	4.63 ac-ft	
40.50	Provided Treat.Vol.+Att.Vol	1.44 ac	3.08 ac-ft	
40.17	Req'd Treat.Vol+Att. Vol	1.38 ac	2.61 ac-ft	ok
40.15	Estimated Storm Sewer TW	1.37 ac	2.59 ac-ft	ok
40.00	Floodplain Comp. Storage	1.34 ac	2.39 ac-ft	
39.93	Top of Treatment Vol.	1.33 ac	2.30 ac-ft	ok
37.90	Normal Water Level	0.93 ac	0.00 ac-ft	
35.90		0.62 ac		
31.90	Pond Bottom	0.01 ac		

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DATE: November 14, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Volusia Site 1B**
POND NAME : **I-4 Pond I & Pond 1**

Total Pond Stage / Storage Calculations

ELEVATION	DESCRIPTION	AREA	STORAGE	
38.00	Pond Tie-Down	9.38 ac		
42.50	Back of Main. Berm	8.09 ac	26.91 ac-ft	
41.50	Front of Main. Berm	6.30 ac	19.71 ac-ft	
40.50	Provided Treat.Vol.+Att.Vol	5.84 ac	13.64 ac-ft	
40.17	Req'd Treat.Vol+Att. Vol	5.69 ac	11.71 ac-ft	ok
40.15	Estimated Storm Sewer TW	5.68 ac	11.61 ac-ft	ok
40.00	Floodplain Comp. Storage	5.61 ac	10.78 ac-ft	
39.93	Top of Treatment Vol.	5.58 ac	10.39 ac-ft	ok
37.90	Normal Water Level	4.65 ac	0.00 ac-ft	
35.90		3.84 ac		
31.90	Pond Bottom	2.23 ac		

Required Treatment+Attenuation Vol.= 11.71 ac-ft
Required Treatment+Attenuation Stage= 40.15 ft

Provided Treatment+Attenuation Vol.= 13.64 ac-ft
Provided Treatment+Attenuation Stage= 40.50 ft

Estimated Treat. Vol.+Storm Sewer Att.= 11.61 ac-ft
Estimated Storm Sewer TW EL.= 40.15 ft ok

Top of Treatment Vol= 39.93 ac-ft
Required Treatment Vol= 10.39 ac-ft

Use a 10% safety factor:

Pond I Provided Pond R/W =	**6.72 ac**
Pond 1 Provided Pond R/W =	**3.45 ac**
Total Provided Pond R/W =	**10.17 ac**

NOAA Atlas 14, Volume 9, Version 2
Location name: Port Orange, Florida, USA*
Latitude: 29.1155°, Longitude: -81.1353°
Elevation: 35.43 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.544** (0.449-0.658)	**0.620** (0.511-0.752)	**0.740** (0.608-0.899)	**0.834** (0.681-1.02)	**0.957** (0.749-1.20)	**1.05** (0.800-1.33)	**1.13** (0.833-1.48)	**1.21** (0.853-1.63)	**1.31** (0.885-1.82)	**1.38** (0.909-1.96)
10-min	**0.797** (0.658-0.964)	**0.909** (0.749-1.10)	**1.08** (0.890-1.32)	**1.22** (0.997-1.49)	**1.40** (1.10-1.75)	**1.53** (1.17-1.95)	**1.65** (1.22-2.16)	**1.77** (1.25-2.39)	**1.91** (1.30-2.66)	**2.01** (1.33-2.87)
15-min	**0.972** (0.802-1.18)	**1.11** (0.913-1.34)	**1.32** (1.09-1.61)	**1.49** (1.22-1.82)	**1.71** (1.34-2.14)	**1.87** (1.43-2.38)	**2.02** (1.49-2.64)	**2.16** (1.52-2.91)	**2.33** (1.58-3.24)	**2.46** (1.62-3.50)
30-min	**1.48** (1.22-1.79)	**1.69** (1.39-2.04)	**2.01** (1.65-2.45)	**2.27** (1.86-2.77)	**2.61** (2.04-3.26)	**2.86** (2.19-3.63)	**3.09** (2.28-4.04)	**3.31** (2.33-4.46)	**3.58** (2.42-4.98)	**3.77** (2.49-5.37)
60-min	**1.93** (1.59-2.33)	**2.21** (1.82-2.67)	**2.65** (2.17-3.22)	**3.00** (2.45-3.67)	**3.48** (2.73-4.36)	**3.83** (2.93-4.88)	**4.17** (3.08-5.46)	**4.50** (3.18-6.07)	**4.92** (3.33-6.85)	**5.22** (3.45-7.44)
2-hr	**2.38** (1.98-2.86)	**2.73** (2.26-3.28)	**3.28** (2.71-3.96)	**3.74** (3.07-4.53)	**4.34** (3.43-5.42)	**4.80** (3.70-6.09)	**5.25** (3.90-6.84)	**5.69** (4.05-7.64)	**6.26** (4.27-8.67)	**6.68** (4.44-9.45)
3-hr	**2.60** (2.17-3.11)	**2.98** (2.48-3.58)	**3.61** (3.00-4.34)	**4.14** (3.41-5.00)	**4.86** (3.87-6.07)	**5.43** (4.21-6.88)	**5.99** (4.48-7.81)	**6.57** (4.70-8.82)	**7.33** (5.03-10.1)	**7.91** (5.28-11.2)
6-hr	**2.98** (2.50-3.54)	**3.43** (2.87-4.08)	**4.20** (3.51-5.01)	**4.88** (4.05-5.86)	**5.89** (4.74-7.38)	**6.71** (5.26-8.53)	**7.58** (5.73-9.89)	**8.51** (6.15-11.4)	**9.80** (6.79-13.6)	**10.8** (7.28-15.2)
12-hr	**3.39** (2.86-4.01)	**3.91** (3.30-4.62)	**4.86** (4.09-5.76)	**5.76** (4.81-6.86)	**7.16** (5.84-9.01)	**8.36** (6.62-10.6)	**9.67** (7.38-12.6)	**11.1** (8.11-14.9)	**13.2** (9.22-18.2)	**14.9** (10.1-20.7)
24-hr	**3.85** (3.27-4.51)	**4.48** (3.80-5.25)	**5.68** (4.80-6.68)	**6.84** (5.75-8.09)	**8.69** (7.17-10.9)	**10.3** (8.24-13.1)	**12.1** (9.31-15.8)	**14.1** (10.4-18.9)	**17.0** (12.0-23.4)	**19.4** (13.2-26.8)
2-day	**4.43** (3.79-5.16)	**5.20** (4.44-6.06)	**6.66** (5.67-7.78)	**8.07** (6.83-9.48)	**10.3** (8.57-12.9)	**12.3** (9.89-15.5)	**14.5** (11.2-18.7)	**16.9** (12.5-22.5)	**20.4** (14.5-27.9)	**23.3** (16.0-32.0)
3-day	**4.97** (4.27-5.76)	**5.74** (4.92-6.66)	**7.23** (6.18-8.41)	**8.69** (7.38-10.2)	**11.0** (9.22-13.8)	**13.1** (10.6-16.5)	**15.4** (12.0-19.9)	**18.0** (13.4-23.9)	**21.8** (15.5-29.7)	**24.9** (17.1-34.1)
4-day	**5.42** (4.67-6.27)	**6.18** (5.31-7.15)	**7.66** (6.56-8.89)	**9.13** (7.77-10.6)	**11.5** (9.64-14.3)	**13.6** (11.0-17.1)	**16.0** (12.5-20.6)	**18.6** (13.9-24.6)	**22.5** (16.1-30.6)	**25.7** (17.7-35.1)
7-day	**6.46** (5.59-7.43)	**7.23** (6.25-8.32)	**8.75** (7.53-10.1)	**10.2** (8.77-11.9)	**12.7** (10.6-15.6)	**14.8** (12.1-18.4)	**17.2** (13.5-21.9)	**19.8** (14.9-26.1)	**23.7** (17.1-32.1)	**27.0** (18.7-36.6)
10-day	**7.35** (6.38-8.42)	**8.21** (7.12-9.41)	**9.84** (8.50-11.3)	**11.4** (9.80-13.2)	**13.9** (11.7-16.9)	**16.0** (13.1-19.8)	**18.4** (14.5-23.3)	**21.0** (15.8-27.4)	**24.8** (17.9-33.3)	**27.9** (19.4-37.8)
20-day	**9.96** (8.70-11.3)	**11.2** (9.79-12.8)	**13.4** (11.6-15.3)	**15.3** (13.2-17.5)	**18.0** (15.1-21.5)	**20.3** (16.5-24.6)	**22.6** (17.8-28.1)	**25.0** (18.9-32.2)	**28.5** (20.6-37.7)	**31.2** (21.8-41.9)
30-day	**12.2** (10.7-13.8)	**13.8** (12.1-15.6)	**16.4** (14.3-18.6)	**18.5** (16.1-21.2)	**21.6** (18.1-25.5)	**23.9** (19.5-28.7)	**26.3** (20.7-32.4)	**28.7** (21.6-36.5)	**31.8** (23.0-41.8)	**34.3** (24.1-45.9)
45-day	**15.0** (13.2-16.9)	**16.9** (14.9-19.1)	**20.1** (17.6-22.7)	**22.6** (19.7-25.7)	**25.9** (21.7-30.3)	**28.4** (23.3-33.8)	**30.8** (24.4-37.8)	**33.2** (25.1-42.0)	**36.3** (26.3-47.3)	**38.5** (27.2-51.3)
60-day	**17.4** (15.4-19.6)	**19.6** (17.3-22.1)	**23.1** (20.3-26.1)	**25.9** (22.6-29.3)	**29.5** (24.7-34.3)	**32.1** (26.4-38.1)	**34.7** (27.4-42.2)	**37.1** (28.1-46.6)	**40.2** (29.2-52.1)	**42.3** (30.0-56.2)

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

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

Please refer to NOAA Atlas 14 document for more information.

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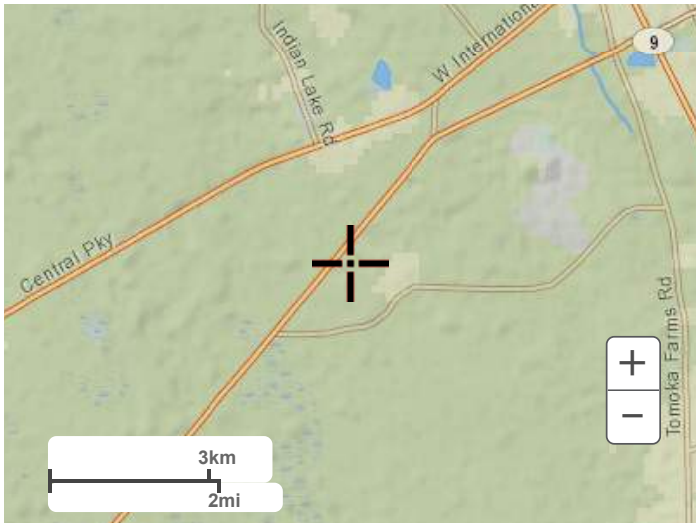
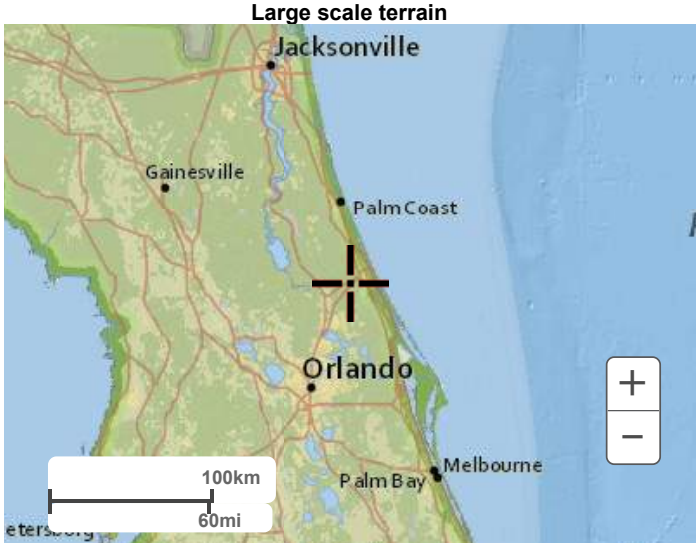
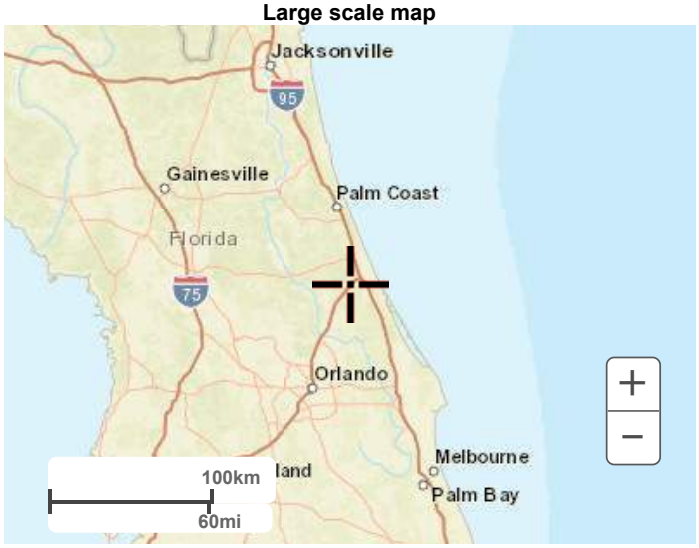
PF graphical



Large scale terrain



Large scale map



Large scale aerial

APPENDIX E

Nutrient Loading Calculations

Osceola County Site 1

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
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(407) 971-8955 (fax)

Made by: DLD
Checked by: REC

DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Osecola Site 1**
POND NAME : **Ponds 1 & 2**

PERMANENT POOL VOLUME CALCULATIONS

Basin Characteristics

Land Use	Area (ac)	Runoff Coeff.	Product
Roadway Paved Area	18.63	0.95	17.70
Roadway Pervious Area	10.10	0.20	2.02
Pond Pervious Area	3.86	0.20	0.77
Pond Area at NWL	7.52	1.00	7.52
Total	**40.11**		28.01

Composite C = **0.70**

Annual Rainfall (P) = **49** **in**

Min. Permanent Pool Vol. = Area x Composite C x P x 14 / (365 x 12) = **4.39** **ac-ft**

Stage Storage Calc. for Permanent Pool

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
81.00	NWL	6.84				36.23
			6.50	2.00	12.99	
79.00	Slope Break	6.15				23.24
			5.81	4.00	23.24	
75.00	Pond Bottom	5.47				

Permanent Pool Volume Provided = **36.23** **ac-ft**
Mean Depth = Permanent Pool Volume / Area at NWL = **5.30** **ft**

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DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Osecola Site 1**
POND NAME : **Ponds 1 & 2**

Non-DCIA Curve Number Calculations:

Existing Condition:

Land Use Description	Soil Group	CN	DCIA Area	Non-DCIA Area	CN* Non-DCIA Area
Woods & Wetlands Combination	D	97		7.72 ac	748.8
Residential Areas (2.0 acre, 12% Impervious)	D	80		2.57 ac	205.6
	D	98	0.35		
Woods; Fair condition (Woods grazed but not burned, and with some forest litter)	D	79		29.47 ac	2328.1
		Total:	0.35 ac	39.76 ac	3282.6

Non-DCIA CN =	82.56
% DCIA =	0.9%

Proposed Condition:

Land Use Description	Soil Group	CN	Area	Non-DCIA Area	CN* Non-DCIA Area
Impervious areas; Streets & roads	D	98	18.63 ac		0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80		10.10 ac	808.0
Proposed Ponds (Water Surface)	D	100		7.52 ac	752.4
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80		3.86 ac	308.8
		Total:	18.63 ac	21.48 ac	1869.2

Non-DCIA CN =	87.00
% DCIA =	46.4%

Composite Nutrient Loading:

Existing Condition:

Land Use Description	TN	TP	Area	TN* Area	TP*Area
Residential Low Density	1.645	0.270	2.92 ac	4.80	0.79
Upland Hardwood	1.042	0.346	29.47 ac	30.71	10.20
Wet Flatwood	1.213	0.021	7.72 ac	9.36	0.16
	Total:		40.11 ac	44.88	11.15

TN = Total TN / Area =	1.119
TP = Total TP / Area =	0.278

Complete Report

Project: Truck Parking – Osceola Site 1
Date: 6/28/2022 4:30:32 PM

Site and Catchment Information

Analysis: Net Improvement

Catchment Name	Osceola
Rainfall Zone	Florida Zone 2
Annual Mean Rainfall	49.00

Pre-Condition Landuse Information

Landuse	User Defined Values
Area (acres)	40.11
Rational Coefficient (0-1)	0.14
Non DCIA Curve Number	82.56
DCIA Percent (0-100)	0.90
Nitrogen EMC (mg/l)	1.119
Phosphorus EMC (mg/l)	0.278
Runoff Volume (ac-ft/yr)	23.275
Groundwater N (kg/yr)	0.000
Groundwater P (kg/yr)	0.000
Nitrogen Loading (kg/yr)	32.114
Phosphorus Loading (kg/yr)	7.978

Post-Condition Landuse Information

Landuse	Highway: TN=1.520 TP=0.200
Area (acres)	40.11
Rational Coefficient (0-1)	0.48
Non DCIA Curve Number	87.00
DCIA Percent (0-100)	46.40
Wet Pond Area (ac)	7.52
Nitrogen EMC (mg/l)	1.520
Phosphorus EMC (mg/l)	0.200
Runoff Volume (ac-ft/yr)	63.716
Groundwater N (kg/yr)	0.000
Groundwater P (kg/yr)	0.000
Nitrogen Loading (kg/yr)	119.413
Phosphorus Loading (kg/yr)	15.712

Catchment Number: 1 Name: Osceola

Project: Truck Parking – Osceola Site 1
Date: 6/28/2022

Wet Detention Design

Permanent Pool Volume (ac-ft)	36.230
Permanent Pool Volume (ac-ft) for 31 days residence	5.411
Annual Residence Time (days)	208
Littoral Zone Efficiency Credit	
Wetland Efficiency Credit	

Watershed Characteristics

Catchment Area (acres)	40.11
Contributing Area (acres)	32.590
Non-DCIA Curve Number	87.00
DCIA Percent	46.40
Rainfall Zone	Florida Zone 2
Rainfall (in)	49.00

Surface Water Discharge

Required TN Treatment Efficiency (%)	73
Provided TN Treatment Efficiency (%)	43
Required TP Treatment Efficiency (%)	49
Provided TP Treatment Efficiency (%)	80

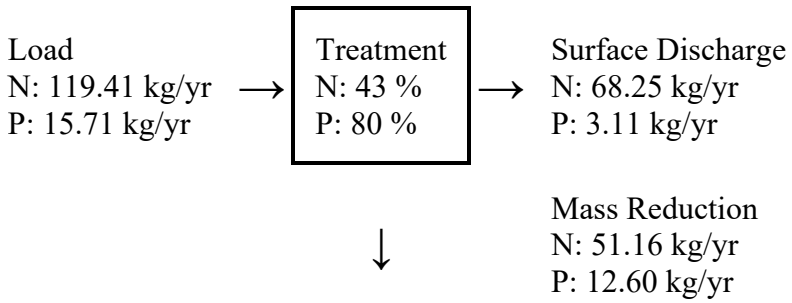
Media Mix Information

Type of Media Mix	Not Specified
Media N Reduction (%)	
Media P Reduction (%)	

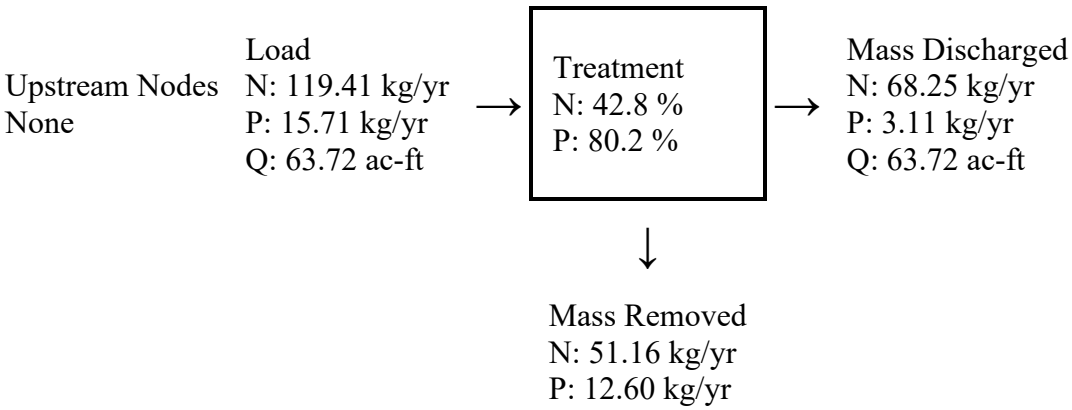
Groundwater Discharge (Stand-Alone)

Treatment Rate (MG/yr)	0.000
TN Mass Load (kg/yr)	0.000
TN Concentration (mg/L)	0.000
TP Mass Load (kg/yr)	0.000
TP Concentration (mg/L)	0.000

Load Diagram for Wet Detention (stand-alone)



Load Diagram for Wet Detention (As Used In Routing)



Summary Treatment Report Version: 4.3.5

Project: Truck Parking – Osceola
Site 1

Date:6/28/2022

Analysis Type: Net Improvement
BMP Types:
Catchment 1 - (Osceola) Wet Detention
Based on % removal values to the nearest percent

Routing Summary
Catchment 1 Routed to Outlet

Total nitrogen target removal met? **No**
Total phosphorus target removal met? **Yes**

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	32.11 kg/yr	
Total N post load	119.41 kg/yr	
Target N load reduction	73 %	
Target N discharge load	32.11 kg/yr	
Percent N load reduction	43 %	
Provided N discharge load	68.25 kg/yr	150.49 lb/yr
Provided N load removed	51.16 kg/yr	112.82 lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	7.978 kg/yr	
Total P post load	15.712 kg/yr	
Target P load reduction	49 %	
Target P discharge load	7.978 kg/yr	
Percent P load reduction	80 %	
Provided P discharge load	3.113 kg/yr	6.86 lb/yr
Provided P load removed	12.6 kg/yr	27.782 lb/yr

Orange County Site 1

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: CND
Checked by: REC

DATE: August 17, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 1**
POND NAME : **Ponds 1 & 2**

PERMANENT POOL VOLUME CALCULATIONS

Basin Characteristics

Land Use	Area (ac)	Runoff Coeff.	Product
Roadway Paved Area	8.43	0.95	8.01
Roadway Pervious Area	2.76	0.20	0.55
Pond Pervious Area	2.69	0.20	0.54
Pond Area at NWL	2.42	1.00	2.42
Total	**16.30**		11.52

Composite C = **0.71**

Annual Rainfall (P) = **50** **in**

Min. Permanent Pool Vol. = Area x Composite C x P x 14 / (365 x 12) = **1.84** **ac-ft**

Stage Storage Calc. for Permanent Pool - Ponds 1

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
83.50	NWL	1.92				9.85
			1.82	2.00	3.63	
81.50	Slope Break	1.71				6.22
			1.56	4.00	6.22	
77.50	Pond Bottom	1.40				

Stage Storage Calc. for Permanent Pool - Pond 2

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
83.50	NWL	0.28				0.99
			0.24	2.00	0.48	
81.50	Slope Break	0.20				0.51
			0.13	4.00	0.51	
77.50	Pond Bottom	0.05				

Permanent Pool Volume Provided = **10.84** **ac-ft**
Mean Depth Pond 1 = Permanent Pool Volume / Area at NWL = **5.13** **ft**
Mean Depth Pond 2 = Permanent Pool Volume / Area at NWL = **3.54** **ft**

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: DLD
Checked by: REC

DATE: August 17, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 1**
POND NAME : **Ponds 1 & 2**

Non-DCIA Curve Number Calculations:

Existing Condition:

Land Use Description	Soil Group	CN	DCIA Area	Non-DCIA Area	CN* Non-DCIA Area
Impervious areas; Streets & roads	D	98	0.07		
Open Space (lawns, parks, golf courses, cemeteries, etc.) Poor condition (grass cover < 50%)	D	89		1.42	126.4
Woods; Good condition (Woods are protected from grazing and covered with forest litter and brush)	D	77		12.92	994.8
Existing Lakes (Water surface)	D	100		1.89	189.0
		Total:	0.07 ac	16.23 ac	1310.2

Non-DCIA CN =	80.73
% DCIA =	0.4%

Proposed Condition:

Land Use Description	Soil Group	CN	DCIA Area	Non-DCIA Area	CN* Non-DCIA Area
Impervious areas; Streets & roads	D	98	8.43 ac		
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80		2.76 ac	220.8
Proposed Ponds (Water Surface)	D	100		2.42 ac	242.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80		2.69 ac	215.2
		Total:	8.43 ac	7.87 ac	678.0

Non-DCIA CN =	86.15
% DCIA =	51.7%

Composite Nutrient Loading:

Existing Condition:

Land Use Description	TN	TP	Area	TN* Area	TP*Area
Wet Pond Area	0.000	0.000	1.89 ac	0.00	0.00
Upland Hardwood	1.042	0.346	12.92 ac	13.46	4.47
Rangeland/Parkland	1.150	0.055	1.49 ac	1.71	0.08
	Total:		16.30 ac	15.18	4.55

TN = Total TN / Area =	0.931
TP = Total TP / Area =	0.279

Complete Report (not including cost) Ver 4.3.5

Project: Truck Parking - Orange Sand Lake
Date: 8/15/2023 5:11:31 PM

Site and Catchment Information

Analysis: Net Improvement

Catchment Name	Orange Sand Lake
Rainfall Zone	Florida Zone 2
Annual Mean Rainfall	50.00

Pre-Condition Landuse Information

Landuse	User Defined Values
Area (acres)	16.30
Rational Coefficient (0-1)	0.12
Non DCIA Curve Number	80.73
DCIA Percent (0-100)	0.40
Nitrogen EMC (mg/l)	0.931
Phosphorus EMC (mg/l)	0.279
Runoff Volume (ac-ft/yr)	8.212
Groundwater N (kg/yr)	0.000
Groundwater P (kg/yr)	0.000
Nitrogen Loading (kg/yr)	9.427
Phosphorus Loading (kg/yr)	2.825

Post-Condition Landuse Information

Landuse	Highway: TN=1.520 TP=0.200
Area (acres)	16.30
Rational Coefficient (0-1)	0.50
Non DCIA Curve Number	86.15
DCIA Percent (0-100)	51.70
Wet Pond Area (ac)	2.42
Nitrogen EMC (mg/l)	1.520
Phosphorus EMC (mg/l)	0.200
Runoff Volume (ac-ft/yr)	29.206

Groundwater N (kg/yr)	0.000
Groundwater P (kg/yr)	0.000
Nitrogen Loading (kg/yr)	54.736
Phosphorus Loading (kg/yr)	7.202

Catchment Number: 1 Name: Orange Sand Lake

Project: Truck Parking - Orange Sand Lake
Date: 8/15/2023

Wet Detention Design

Permanent Pool Volume (ac-ft)	10.840
Permanent Pool Volume (ac-ft) for 31 days residence	2.480
Annual Residence Time (days)	135
Littoral Zone Efficiency Credit	
Wetland Efficiency Credit	

Watershed Characteristics

Catchment Area (acres)	16.30
Contributing Area (acres)	13.880
Non-DCIA Curve Number	86.15
DCIA Percent	51.70
Rainfall Zone	Florida Zone 2
Rainfall (in)	50.00

Surface Water Discharge

Required TN Treatment Efficiency (%)	83
Provided TN Treatment Efficiency (%)	42
Required TP Treatment Efficiency (%)	61
Provided TP Treatment Efficiency (%)	77

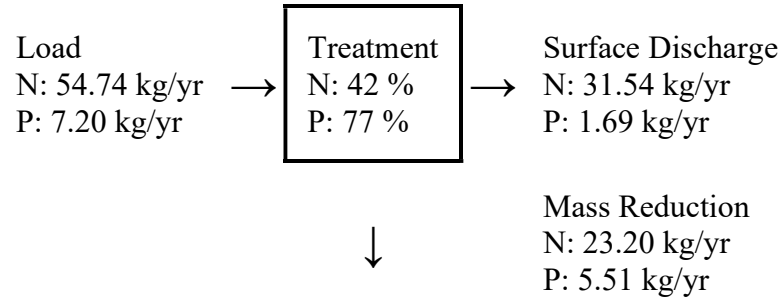
Media Mix Information

Type of Media Mix	Not Specified
Media N Reduction (%)	
Media P Reduction (%)	

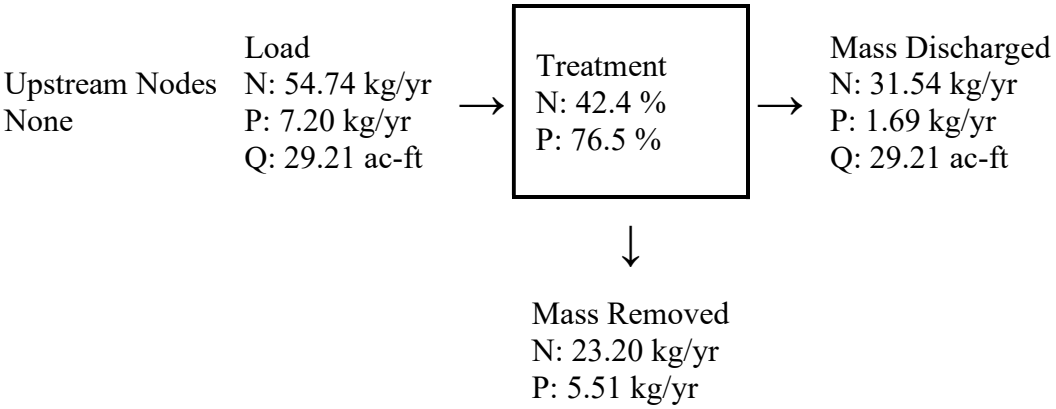
Groundwater Discharge (Stand-Alone)

Treatment Rate (MG/yr)	0.000
TN Mass Load (kg/yr)	0.000
TN Concentration (mg/L)	0.000
TP Mass Load (kg/yr)	0.000
TP Concentration (mg/L)	0.000

Load Diagram for Wet Detention (stand-alone)



Load Diagram for Wet Detention (As Used In Routing)



Summary Treatment Report Version: 4.3.5

Date:8/15/2023

Project: Truck Parking - Orange Sand Lake

Routing Summary
Catchment 1 Routed to Outlet

Analysis Type: Net Improvement

BMP Types:

Catchment 1 - (Orange Sand Lake) Wet Detention Based on % removal values to the nearest percent

Total nitrogen target removal met? **No**

Total phosphorus target removal met? **Yes**

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	9.43 kg/yr	
Total N post load	54.74 kg/yr	
Target N load reduction	83 %	
Target N discharge load	9.43 kg/yr	
Percent N load reduction	42 %	
Provided N discharge load	31.54 kg/yr	69.54 lb/yr
Provided N load removed	23.2 kg/yr	51.15 lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	2.825 kg/yr	
Total P post load	7.202 kg/yr	
Target P load reduction	61 %	
Target P discharge load	2.825 kg/yr	
Percent P load reduction	77 %	
Provided P discharge load	1.69 kg/yr	3.73 lb/yr
Provided P load removed	5.513 kg/yr	12.155 lb/yr

Orange County Site 2

870 Clark Street, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: DLD
Checked by: REC

DATE: June 30, 2022
Job Number: DT5-030-01

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 2**
POND NAME : **Ponds 1 & 2**

PERMANENT POOL VOLUME CALCULATIONS

Basin Characteristics

Land Use	Area (ac)	Runoff Coeff.	Product
Roadway Paved Area	4.33	0.95	4.11
Roadway Pervious Area	1.06	0.20	0.21
Pond Pervious Area	1.20	0.20	0.24
Pond Area at NWL	0.23	1.00	0.23
Total	**6.82**		4.80

Composite C = **0.70**

Annual Rainfall (P) = **50** **in**

Min. Permanent Pool Vol. = Area x Composite C x P x 14 / (365 x 12) = **0.77** **ac-ft**

Stage Storage Calc. for Permanent Pool

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
94.50	NWL	0.21				0.67
			0.17	2.00	0.33	
92.50	Slope Break	0.12				0.34
			0.09	4.00	0.34	
88.50	Pond Bottom	0.05				

Permanent Pool Volume Provided = **0.67** **ac-ft**
Mean Depth = Permanent Pool Volume / Area at NWL = **3.19** **ft**

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: DLD
Checked by: REC

DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 2**
POND NAME : **Ponds 1 & 2**

Non-DCIA Curve Number Calculations:

Existing Condition:

Land Use Description	Soil Group	CN	DCIA Area	Non-DCIA Area	CN* Non-DCIA Area
Commercial & business (85% impervious)	D	80		1.02 ac	81.6
	D	98	5.80		
		Total:	5.80 ac	1.02 ac	81.6

Non-DCIA CN =	80.00
% DCIA =	85.0%

Proposed Condition:

Land Use Description	Soil Group	CN	Area	Non-DCIA Area	CN* Non-DCIA Area
Impervious areas; Streets & roads	D	98	4.33 ac		
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80		1.06 ac	84.8
Proposed Ponds (Water Surface)	D	100		0.23 ac	23.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover >	D	80		1.20 ac	96.0
		Total:	4.33 ac	2.49 ac	203.8

Non-DCIA CN =	81.85
% DCIA =	63.5%

Composite Nutrient Loading:

Existing Condition:

Land Use Description	TN	TP	Area	TN* Area	TP*Area
Low Intensity Commercial	1.130	0.188	6.82 ac	7.71	1.28
	Total:		6.82 ac	7.71	1.28

TN = Total TN / Area =	1.130
TP = Total TP / Area =	0.188

Complete Report

Project: Truck Parking - Orange County Site 2
Date: 6/28/2022 4:21:06 PM

Site and Catchment Information

Analysis: Net Improvement

Catchment Name	Orange Site 2
Rainfall Zone	Florida Zone 2
Annual Mean Rainfall	50.00

Pre-Condition Landuse Information

Landuse	Low-Intensity Commercial: TN=1.13 TP=0.188
Area (acres)	6.82
Rational Coefficient (0-1)	0.71
Non DCIA Curve Number	80.00
DCIA Percent (0-100)	85.00
Nitrogen EMC (mg/l)	1.130
Phosphorus EMC (mg/l)	0.188
Runoff Volume (ac-ft/yr)	20.034
Groundwater N (kg/yr)	0.000
Groundwater P (kg/yr)	0.000
Nitrogen Loading (kg/yr)	27.913
Phosphorus Loading (kg/yr)	4.644

Post-Condition Landuse Information

Landuse	Highway: TN=1.520 TP=0.200
Area (acres)	6.82
Rational Coefficient (0-1)	0.56
Non DCIA Curve Number	81.85
DCIA Percent (0-100)	63.50
Wet Pond Area (ac)	0.23
Nitrogen EMC (mg/l)	1.520
Phosphorus EMC (mg/l)	0.200
Runoff Volume (ac-ft/yr)	15.408
Groundwater N (kg/yr)	0.000
Groundwater P (kg/yr)	0.000
Nitrogen Loading (kg/yr)	28.876
Phosphorus Loading (kg/yr)	3.799

Catchment Number: 1 Name: Orange Former Motel

Project: Truck Parking - Orange County Site 2
Date: 6/28/2022

Wet Detention Design

Permanent Pool Volume (ac-ft)	0.670
Permanent Pool Volume (ac-ft) for 31 days residence	1.309
Annual Residence Time (days)	16
Littoral Zone Efficiency Credit	
Wetland Efficiency Credit	

Watershed Characteristics

Catchment Area (acres)	6.82
Contributing Area (acres)	6.590
Non-DCIA Curve Number	81.85
DCIA Percent	63.50
Rainfall Zone	Florida Zone 2
Rainfall (in)	50.00

Surface Water Discharge

Required TN Treatment Efficiency (%)	3
Provided TN Treatment Efficiency (%)	34
Required TP Treatment Efficiency (%)	
Provided TP Treatment Efficiency (%)	59

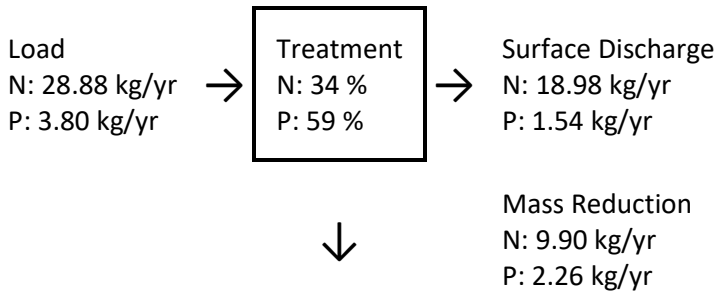
Media Mix Information

Type of Media Mix	Not Specified
Media N Reduction (%)	
Media P Reduction (%)	

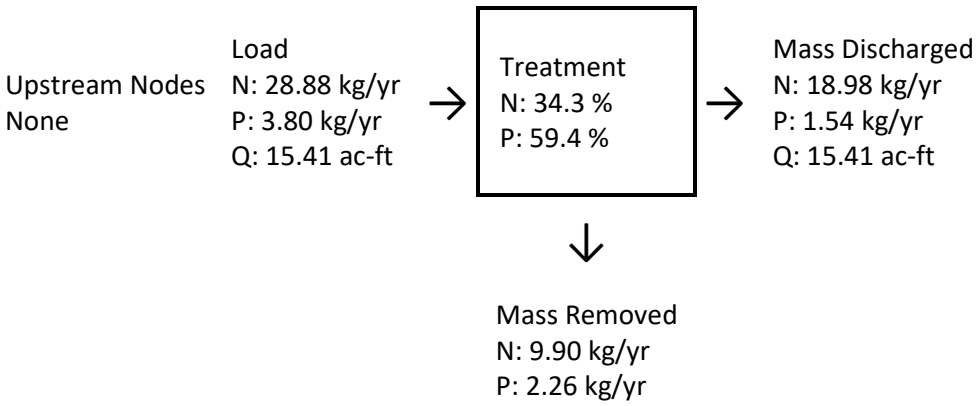
Groundwater Discharge (Stand-Alone)

Treatment Rate (MG/yr)	0.000
TN Mass Load (kg/yr)	0.000
TN Concentration (mg/L)	0.000
TP Mass Load (kg/yr)	0.000
TP Concentration (mg/L)	0.000

Load Diagram for Wet Detention (stand-alone)



Load Diagram for Wet Detention (As Used In Routing)



Summary Treatment Report Version: 4.3.5

Project: Truck Parking - Orange County Site 2

Date:6/28/2022

Analysis Type: Net Improvement

BMP Types:

Catchment 1 - (Orange Site 2) Wet Detention

Based on % removal values to the nearest percent

Total nitrogen target removal met? **Yes**

Total phosphorus target removal met? **Yes**

Routing Summary

Catchment 1 Routed to Outlet

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	27.91 kg/yr	
Total N post load	28.88 kg/yr	
Target N load reduction	3 %	
Target N discharge load	27.91 kg/yr	
Percent N load reduction	34 %	
Provided N discharge load	18.98 kg/yr	41.84 lb/yr
Provided N load removed	9.9 kg/yr	21.83 lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	4.644 kg/yr	
Total P post load	3.799 kg/yr	
Target P load reduction	%	
Target P discharge load	4.644 kg/yr	
Percent P load reduction	59 %	
Provided P discharge load	1.544 kg/yr	3.4 lb/yr
Provided P load removed	2.256 kg/yr	4.974 lb/yr

Orange County Site 4

Inwood consulting engineers
3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: DLD
Checked by: REC

DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 4**
POND NAME : **Ponds 1, 2 & 3**

Non-DCIA Curve Number Calculations:

Existing Condition:

Land Use Description	Soil Group	CN	DCIA Area	Non-DCIA Area	CN* Non-DCIA Area
Impervious areas; Paved parking lots, roofs, driveways, etc.	D	98	0.44		
Impervious areas; Gravel including right-of-way	D	91	4.15		
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80		0.27 ac	21.6
		Total:	4.59 ac	0.27 ac	21.6

Non-DCIA CN =	80.00
% DCIA =	94.4%

Proposed Condition:

Land Use Description	Soil Group	CN	DCIA Area	Non-DCIA Area	CN* Non-DCIA Area
Impervious areas; Streets & roads	D	98	3.13 ac		
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80		0.81 ac	64.8
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80		0.92 ac	73.6
		Total:	3.13 ac	1.73 ac	138.4

Non-DCIA CN =	80.00
% DCIA =	64.4%

Composite Nutrient Loading:

Existing Condition:

Land Use Description	TN	TP	Area	TN* Area	TP*Area
Light Industrial	1.200	0.260	6.82 ac	8.18	1.77
	Total:		6.82 ac	8.18	1.77

TN = Total TN / Area =	1.200
TP = Total TP / Area =	0.260

Complete Report

Project: Truck Parking - Orange County Site 4
Date: 6/23/2022 11:00:54 AM

Site and Catchment Information

Analysis: Net Improvement

Catchment Name	Orange Site 4
Rainfall Zone	Florida Zone 2
Annual Mean Rainfall	50.00

Pre-Condition Landuse Information

Landuse	Light Industrial: TN=1.200 TP=0.260
Area (acres)	4.86
Rational Coefficient (0-1)	0.77
Non DCIA Curve Number	80.00
DCIA Percent (0-100)	94.40
Nitrogen EMC (mg/l)	1.200
Phosphorus EMC (mg/l)	0.260
Runoff Volume (ac-ft/yr)	15.591
Groundwater N (kg/yr)	0.000
Groundwater P (kg/yr)	0.000
Nitrogen Loading (kg/yr)	23.068
Phosphorus Loading (kg/yr)	4.998

Post-Condition Landuse Information

Landuse	Highway: TN=1.520 TP=0.200
Area (acres)	4.86
Rational Coefficient (0-1)	0.56
Non DCIA Curve Number	80.00
DCIA Percent (0-100)	64.40
Wet Pond Area (ac)	0.00
Nitrogen EMC (mg/l)	1.520
Phosphorus EMC (mg/l)	0.200
Runoff Volume (ac-ft/yr)	11.356
Groundwater N (kg/yr)	0.000
Groundwater P (kg/yr)	0.000
Nitrogen Loading (kg/yr)	21.283
Phosphorus Loading (kg/yr)	2.800

Catchment Number: 1 Name: Orange Site 4

Project: Truck Parking - Orange County Site 4
Date: 6/23/2022

Retention Design

Retention Depth (in)	1.407
Retention Volume (ac-ft)	0.570

Watershed Characteristics

Catchment Area (acres)	4.86
Contributing Area (acres)	4.860
Non-DCIA Curve Number	80.00
DCIA Percent	64.40
Rainfall Zone	Florida Zone 2
Rainfall (in)	50.00

Surface Water Discharge

Required TN Treatment Efficiency (%)	
Provided TN Treatment Efficiency (%)	86
Required TP Treatment Efficiency (%)	
Provided TP Treatment Efficiency (%)	86

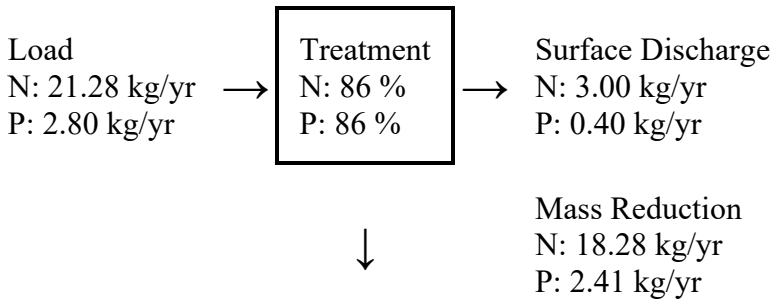
Media Mix Information

Type of Media Mix	Not Specified
Media N Reduction (%)	
Media P Reduction (%)	

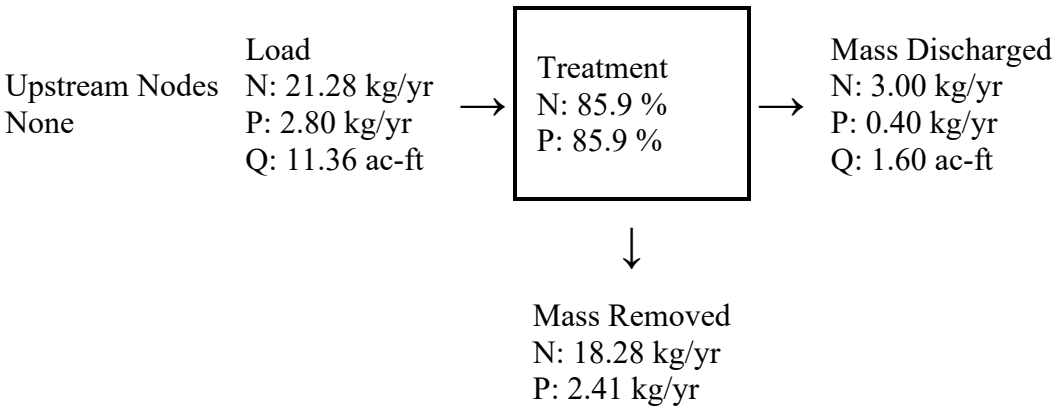
Groundwater Discharge (Stand-Alone)

Treatment Rate (MG/yr)	0.000
TN Mass Load (kg/yr)	18.281
TN Concentration (mg/L)	0.000
TP Mass Load (kg/yr)	2.405
TP Concentration (mg/L)	0.000

Load Diagram for Retention (stand-alone)



Load Diagram for Retention (As Used In Routing)



Summary Treatment Report Version: 4.3.5

Project: Truck Parking - Orange County Site 4

Date:6/23/2022

Analysis Type: Net Improvement
BMP Types:
Catchment 1 - (Orange Site 4) Retention
Based on % removal values to the nearest percent

Routing Summary
Catchment 1 Routed to Outlet

Total nitrogen target removal met? **Yes**
Total phosphorus target removal met? **Yes**

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	23.07 kg/yr	
Total N post load	21.28 kg/yr	
Target N load reduction	%	
Target N discharge load	23.07 kg/yr	
Percent N load reduction	86 %	
Provided N discharge load	3 kg/yr	6.62 lb/yr
Provided N load removed	18.28 kg/yr	40.31 lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	4.998 kg/yr	
Total P post load	2.8 kg/yr	
Target P load reduction	%	
Target P discharge load	4.998 kg/yr	
Percent P load reduction	86 %	
Provided P discharge load	.395 kg/yr	.87 lb/yr
Provided P load removed	2.405 kg/yr	5.304 lb/yr

Seminole County Site 1B

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: DLD
Checked by: REC

DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Seminole Site 1B**
POND NAME : **Pond 1**

PERMANENT POOL VOLUME CALCULATIONS

Basin Characteristics

Land Use	Area (ac)	Runoff Coeff.	Product
Roadway Paved Area	9.21	0.95	8.75
Roadway Pervious Area	1.91	0.20	0.38
Pond Pervious Area	1.43	0.20	0.29
Pond Area at NWL	0.85	1.00	0.85
Total	**13.40**		10.26

Composite C = **0.77**

Annual Rainfall (P) = **51** **in**

Min. Permanent Pool Vol. = Area x Composite C x P x 14 / (365 x 12) = **1.67** **ac-ft**

Stage Storage Calc. for Permanent Pool - Pond 1

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
6.50	NWL	0.77				4.54
			0.70	2.00	1.39	
4.50	Slope Break	0.62				3.15
			0.53	6.00	3.15	
-1.50	Pond Bottom	0.43				

Permanent Pool Volume Provided = **4.54** **ac-ft**
Mean Depth = Permanent Pool Volume / Area at NWL = **5.90** **ft**

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Made by: DLD
Checked by: REC

DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Seminole Site 1B**
POND NAME : **Pond 2**

PERMANENT POOL VOLUME CALCULATIONS

Basin Characteristics

Land Use	Area (ac)	Runoff Coeff.	Product
Roadway Paved Area	2.17	0.95	2.06
Roadway Pervious Area	1.96	0.20	0.39
Pond Pervious Area	1.27	0.20	0.25
Pond Area at NWL	0.46	1.00	0.46
Total	**5.86**		3.17

Composite C = **0.54**

Annual Rainfall (P) = **51** **in**

Min. Permanent Pool Vol. = Area x Composite C x P x 14 / (365 x 12) = **0.52** **ac-ft**

Stage Storage Calc. for Permanent Pool - Pond 2

ELEV. (ft)		AREA (ac)	AVG AREA (ac)	Delta D (ft)	Delta storage (ac-ft)	Sum Storage (ac-ft)
8.50	NWL	0.42				0.81
			0.27	3.00	0.81	
5.50	Pond Bottom	0.12				

Permanent Pool Volume Provided = **0.81** **ac-ft**
Mean Depth = Permanent Pool Volume / Area at NWL = **1.93** **ft**

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Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Seminole Site 1B**
POND NAME : **Pond 1**

Non-DCIA Curve Number Calculations:

Existing Condition:

Land Use Description	Soil Group	CN	DCIA Area	Non-DCIA Area	CN* Non-DCIA Area
Impervious areas; Streets & roads	D	98	1.43 ac		
Brush-weed-grass mixture; Fair condition (50% to 75% ground cover)	D	77		4.35 ac	335.0
Industrial (72% Impervious)	D	80		0.42 ac	33.6
	D	98	1.09		
Woods; Fair condition (Woods grazed but not burned, and with some forest litter)	D	80		6.11 ac	488.8
		Total:	2.52 ac	10.88 ac	857.4

Non-DCIA CN =	78.80
% DCIA =	18.8%

Proposed Condition:

Land Use Description	Soil Group	CN	Area	Non-DCIA Area	CN* Non-DCIA Area
Impervious areas; Streets & roads	D	98	9.21 ac		0.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover > 75%)	D	80		1.91 ac	152.8
Proposed Ponds (Water Surface)	D	100		0.85 ac	85.0
Open Space (lawns, parks, golf courses, cemeteries, etc.) Good condition (grass cover >	D	80		1.43 ac	114.4
		Total:	9.21 ac	4.19 ac	352.2

Non-DCIA CN =	84.06
% DCIA =	68.7%

Composite Nutrient Loading:

Existing Condition:

Land Use Description	TN	TP	Area	TN* Area	TP*Area
Light Industrial	1.200	0.260	1.51 ac	1.81	0.39
Highway	1.520	0.200	1.43 ac	2.17	0.29
Rangeland/Parkland	1.150	0.055	4.35 ac	5.00	0.24
Wet Flatwood	1.213	0.021	6.11 ac	7.41	0.13
	Total:		13.40 ac	16.40	1.05

TN = Total TN / Area =	1.224
TP = Total TP / Area =	0.078

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(407) 971-8850 (phone)
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Made by: DLD
Checked by: REC

DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Seminole Site 1B**
POND NAME : **Pond 2**

Non-DCIA Curve Number Calculations:

Existing Condition:

Land Use Description	Soil Group	CN	DCIA Area	Non-DCIA Area	CN* Non-DCIA Area
Impervious areas; Streets & roads	D	98	0.20 ac		
Brush-weed-grass mixture; Fair condition (50% to 75% ground cover)	D	77		3.92 ac	301.8
Commercial & business (85% impervious)		98	1.48		
	D	80		0.26 ac	20.8
		Total:	1.68 ac	4.18 ac	322.6

Non-DCIA CN =	77.19
% DCIA =	28.7%

Proposed Condition:

Land Use Description	Soil Group	CN	Area	Non-DCIA Area	CN* Non-DCIA Area
Impervious areas; Streets & roads	D	98	2.17 ac		0.0
Open Space (lawns, parks, golf courses,	D	80		1.96 ac	156.8
Proposed Ponds (Water Surface)	D	100		0.64 ac	64.0
Open Space (lawns, parks, golf courses,	D	80		1.09 ac	87.2
		Total:	2.17 ac	3.69 ac	308.0

Non-DCIA CN =	83.47
% DCIA =	37.0%

Composite Nutrient Loading:

Existing Condition:

Land Use Description	TN	TP	Area	TN* Area	TP*Area
Low Intensity Commercial	1.130	0.188	1.74 ac	1.97	0.33
Highway	1.520	0.200	0.20 ac	0.30	0.04
Rangeland/Parkland	1.150	0.055	3.92 ac	4.51	0.22
	Total:		5.86 ac	6.78	0.58

TN = Total TN / Area =	1.157
TP = Total TP / Area =	0.099

Complete Report

Project: Truck Parking – Seminole Site 1B
Date: 6/27/2022 6:01:09 PM

Site and Catchment Information

Analysis: Net Improvement

Catchment Name	Basin 1	Basin 2
Rainfall Zone	Florida Zone 2	Florida Zone 2
Annual Mean Rainfall	51.00	51.00

Pre-Condition Landuse Information

Landuse	User Defined Values	User Defined Values
Area (acres)	13.40	5.86
Rational Coefficient (0-1)	0.24	0.30
Non DCIA Curve Number	78.80	77.19
DCIA Percent (0-100)	18.80	28.70
Nitrogen EMC (mg/l)	1.224	1.157
Phosphorus EMC (mg/l)	0.078	0.099
Runoff Volume (ac-ft/yr)	13.457	7.431
Groundwater N (kg/yr)	0.000	0.000
Groundwater P (kg/yr)	0.000	0.000
Nitrogen Loading (kg/yr)	20.310	10.601
Phosphorus Loading (kg/yr)	1.294	0.907

Post-Condition Landuse Information

Landuse	Highway: TN=1.520 TP=0.200	Highway: TN=1.520 TP=0.200
Area (acres)	13.40	5.86
Rational Coefficient (0-1)	0.60	0.39
Non DCIA Curve Number	84.06	83.47
DCIA Percent (0-100)	68.70	37.00
Wet Pond Area (ac)	0.85	0.64
Nitrogen EMC (mg/l)	1.520	1.520
Phosphorus EMC (mg/l)	0.200	0.200
Runoff Volume (ac-ft/yr)	32.157	8.667
Groundwater N (kg/yr)	0.000	0.000
Groundwater P (kg/yr)	0.000	0.000
Nitrogen Loading (kg/yr)	60.268	16.243
Phosphorus Loading (kg/yr)	7.930	2.137

Catchment Number: 1 Name: Basin 1

Project: Truck Parking – Seminole Site 1B
Date: 6/27/2022

Multiple BMP in Series Design Parameters

BMP in Series Number: 1
BMP Type: Retention

Retention Depth (in)	0.488
Retention Volume (ac-ft)	0.510

BMP in Series Number: 2
BMP Type: Wet Detention

Permanent Pool Volume (ac-ft)	4.540
Permanent Pool Volume (ac-ft) for 31 days residence	2.731
Annual Residence Time (days)	52
Littoral Zone Efficiency Credit	
Wetland Efficiency Credit	

BMP in Series Number: 3
BMP Type: None

BMP in Series Number: 4
BMP Type: None

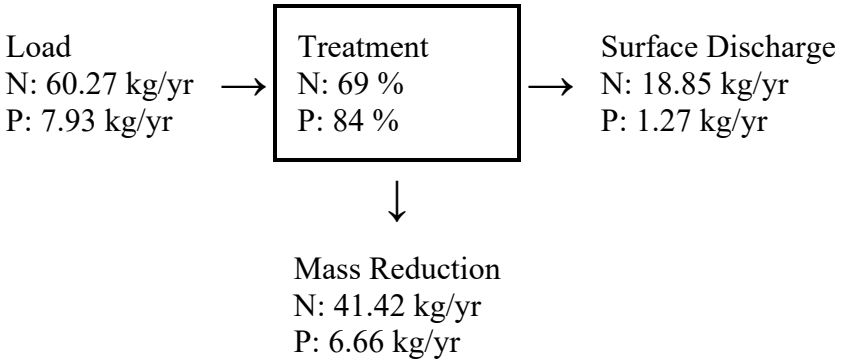
Watershed Characteristics

Catchment Area (acres)	13.40
Contributing Area (acres)	12.550
Non-DCIA Curve Number	84.06
DCIA Percent	68.70
Rainfall Zone	Florida Zone 2
Rainfall (in)	51.00

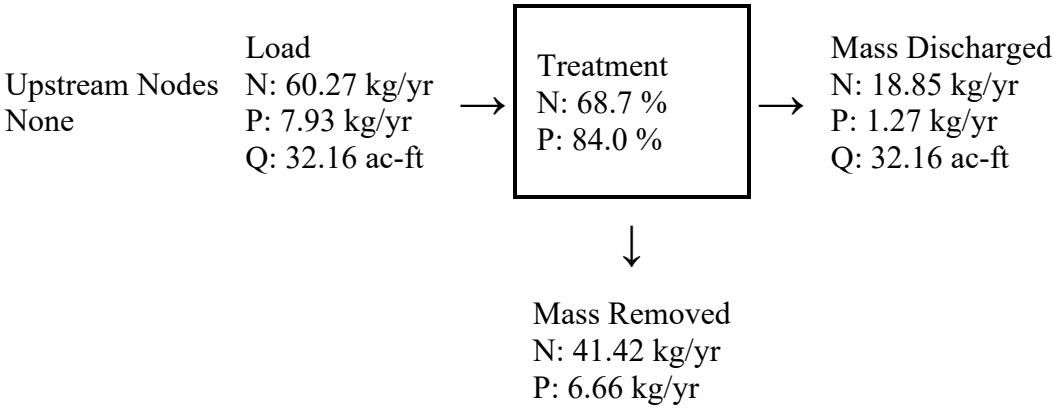
Surface Water Discharge

Required TN Treatment Efficiency (%)	66
Provided TN Treatment Efficiency (%)	69
Required TP Treatment Efficiency (%)	84
Provided TP Treatment Efficiency (%)	84

Load for Multiple BMP in Series



Load Diagram for Multiple BMP (As Used In Routing)



Catchment Number: 2 Name: Basin 2

Project: Truck Parking – Seminole Site 1B
Date: 6/27/2022

Wet Detention Design

Permanent Pool Volume (ac-ft)	0.810
Permanent Pool Volume (ac-ft) for 31 days residence	0.736
Annual Residence Time (days)	34
Littoral Zone Efficiency Credit	
Wetland Efficiency Credit	

Watershed Characteristics

Catchment Area (acres)	5.86
Contributing Area (acres)	5.220
Non-DCIA Curve Number	83.47
DCIA Percent	37.00
Rainfall Zone	Florida Zone 2
Rainfall (in)	51.00

Surface Water Discharge

Required TN Treatment Efficiency (%)	35
Provided TN Treatment Efficiency (%)	39
Required TP Treatment Efficiency (%)	58
Provided TP Treatment Efficiency (%)	65

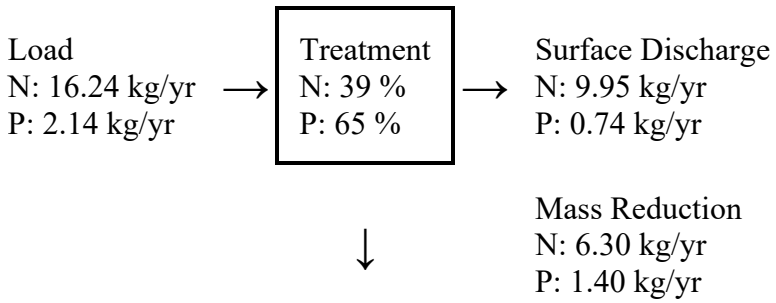
Media Mix Information

Type of Media Mix	Not Specified
Media N Reduction (%)	
Media P Reduction (%)	

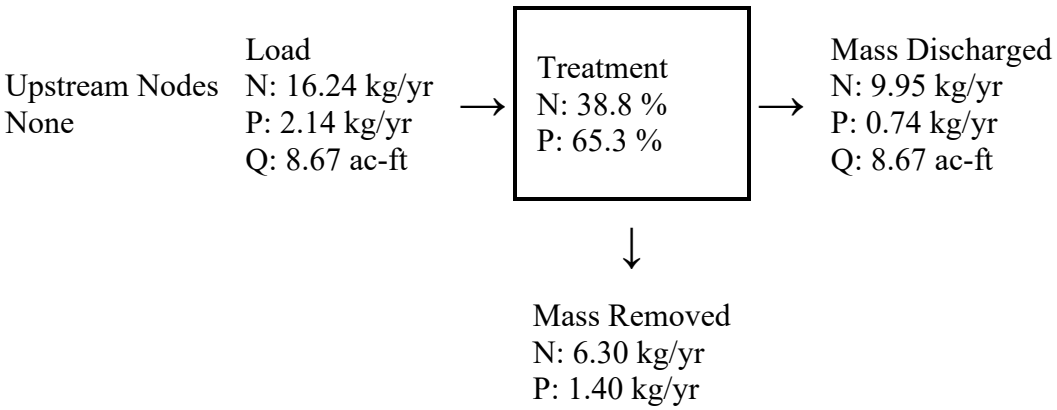
Groundwater Discharge (Stand-Alone)

Treatment Rate (MG/yr)	0.000
TN Mass Load (kg/yr)	0.000
TN Concentration (mg/L)	0.000
TP Mass Load (kg/yr)	0.000
TP Concentration (mg/L)	0.000

Load Diagram for Wet Detention (stand-alone)



Load Diagram for Wet Detention (As Used In Routing)



Summary Treatment Report Version: 4.3.5

Project: Truck Parking – Seminole
Site 1B

Date:6/27/2022

Analysis Type: Net Improvement

BMP Types:

Catchment 1 - (Basin 1) Multiple BMP
Catchment 2 - (Basin 2) Wet Detention

Based on % removal values to the nearest percent

Routing Summary
Catchment 1 Routed to Outlet
Catchment 2 Routed to Outlet

Total nitrogen target removal met? **Yes**
Total phosphorus target removal met? **Yes**

Summary Report

Nitrogen

Surface Water Discharge

Total N pre load	30.91 kg/yr	
Total N post load	76.51 kg/yr	
Target N load reduction	60 %	
Target N discharge load	30.91 kg/yr	
Percent N load reduction	62 %	
Provided N discharge load	28.8 kg/yr	63.5 lb/yr
Provided N load removed	47.71 kg/yr	105.21 lb/yr

Phosphorus

Surface Water Discharge

Total P pre load	2.201 kg/yr	
Total P post load	10.067 kg/yr	
Target P load reduction	78 %	
Target P discharge load	2.201 kg/yr	
Percent P load reduction	80 %	
Provided P discharge load	2.013 kg/yr	4.44 lb/yr
Provided P load removed	8.054 kg/yr	17.759 lb/yr

APPENDIX F

Floodplain Impact & Compensation Calculations

Orange County Site 1

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: CND
Checked by: REC
DATE: November 14, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 1**

FLOODPLAIN IMPACT ANALYSIS

Floodplain Impact Area	Area (ac)	Avg. Ground / SHW Elevation (ft)	Floodplain Elevation (ft)	Impact Volume (ac-ft)	Total Impact Volume for FIA (ac-ft)
Orange - Site 1	5.92	84.5	87	14.80	19.22
	2.14	85		4.28	
	0.14	86		0.14	
John Young Pond 4 Existing Floodplain Compensation Provided					5.40
				TOTAL IMPACT:	24.62

*SHW estimated at 84.50' (taken from FL Turnpike Floodplain Compensation Site SHW, ERP 48-01443-P)

Ponds 1 & 2 Compensation Volume (ac-ft)	8.96
Excess Compensation in Turnpike FPC (ac-ft)	0.88
Excess Compensation in John Young Ponds (ac-ft)	3.76
TOTAL COMPENSATION:	13.60
Remaining Impacts:	11.02

Remaining floodplain impacts can be mitigated for by hydraulic modeling to show no significant rise in the 100-year flood elevation over the large area of the floodplain shape or by expansion of the pond size to increase the amount of provided compensation volume.

Orange County Site 4

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: CND
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DATE: June 30, 2022
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Orange County Site 4**

FLOODPLAIN IMPACT ANALYSIS

Floodplain Impact Area	Area (ac)	Floodplain Elevation (ft)	Avg. Ground Elevation (ft)	Impact Volume (ac-ft)	Total Impact Volume for FIA (ac-ft)
Orange - Site 1	0.03	96	94	0.06	0.42
	0.02		94.5	0.03	
	0.66		95.5	0.33	
				TOTAL IMPACT:	0.42

Ponds 1, 2 & 3 Compensation Volume (ac-ft)	0.57
TOTAL COMPENSATION:	0.57
Excess Compensation:	0.15

Volusia County Site 1A

3000 Dovera Drive, Suite 200, Oviedo, FL 32765
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: FJM **DATE:** November 14, 2023
Checked by: REC **Job Number:** DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Volusia Site 1A**

FLOODPLAIN IMPACT ANALYSIS

Floodplain Impact Area	Area (ac)	Floodplain Elevation (ft)	Avg. Ground / SHW Elevation (ft)	Impact Volume (ac-ft)	Total Impact Volume for FIA (ac-ft)
Volusia - South (EB)	12.22	37	36	12.22	17.48
	10.52		36.5	5.26	
	0.00		37	0.00	
				TOTAL IMPACT:	17.48

Pond 1 Compensation Volume (ac-ft)	4.26
FPCA 1 Compesation Volume (ac-ft)	0.91
FPCA 2 Compesation Volume (ac-ft)	1.00
TOTAL COMPENSATION:	6.17
Remaining Impacts:	11.31

*Remaining floodplain impacts will be modeled to show no adverse rise in 100-year flood stage due to the large area of the floodplain.

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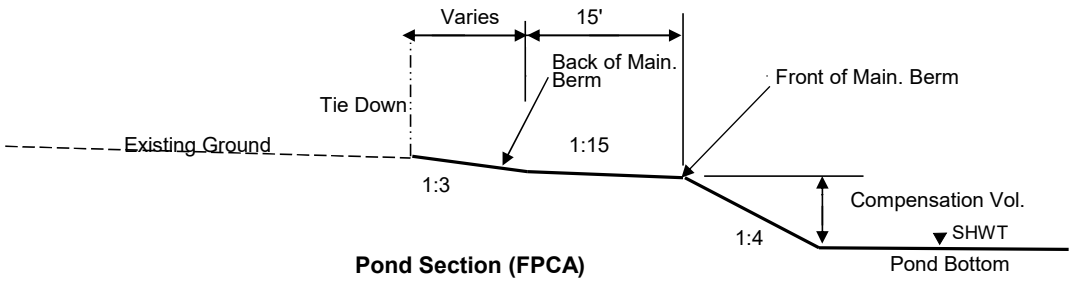
Checked by: REC

DATE: November 14, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Volusia Site 1A**
POND NAME : **FPCA**

Note: These calculations serve to estimate the available volume within two Floodplain Compensation Areas that are available on the site.

EXISTING CONDITION



Pond Section (FPCA)

Pond Stage / Storage Calculations - FPCA 1

ELEVATION	DESCRIPTION	AREA	STORAGE
Varies	Tie Down Elevation	1.47 ac	
38.00	Back of Main. Berm	1.27 ac	
37.00	Front of Main Berm	0.95 ac	0.91 ac-ft
37.00	Floodplain Comp. Storage	0.95 ac	0.91 ac-ft
36.00	Normal Water Level	0.87 ac	0.00 ac-ft

Pond Stage / Storage Calculations - FPCA 2

ELEVATION	DESCRIPTION	AREA	STORAGE
Varies	Tie Down Elevation	1.63 ac	
38.00	Back of Main. Berm	1.39 ac	2.22 ac-ft
37.00	Front of Main Berm	1.04 ac	1.00 ac-ft
37.00	Floodplain Comp. Storage	1.04 ac	1.00 ac-ft
36.00	Normal Water Level	0.96 ac	0.00 ac-ft

Volume in Stormwater Pond 1 = 4.26 ac-ft
Volume in FPCA 1 = 0.91 ac-ft
Volume in FPCA 2 = 1.00 ac-ft

Total Provided Compensation =	**6.17 ac-ft**

Volusia County Site 1B

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(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: FJM **DATE:** November 14, 2023
Checked by: REC **Job Number:** DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Volusia Site 1B**

FLOODPLAIN IMPACT ANALYSIS

Floodplain Impact Area	Area (ac)	Floodplain Elevation (ft)	Avg. Ground Elevation (ft)	Impact Volume (ac-ft)	Total Impact Volume for FIA (ac-ft)
Volusia - North (WB)	24.45	40	38	48.90	62.75
	7.26		38.5	10.89	
	5.92		39.5	2.96	
				TOTAL IMPACT:	62.75

Expanded Pond I Compensation Volume (ac-ft)	8.39
Pond 1 Compesation Volume (ac-ft)	2.39
FPCA 1 Compesation Volume (ac-ft)	2.75
TOTAL COMPENSATION:	13.53
Remaining Impacts:	49.22

*Remaining floodplain impacts will be modeled to show no adverse rise in 100-year flood stage due to the large area of the floodplain.

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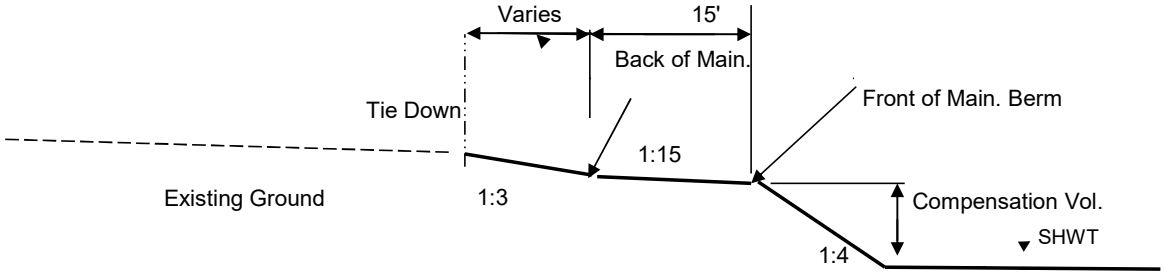
(407) 971-8850 (phone)
(407) 971-8955 (fax)

Made by: CND
Checked by: REC

DATE: November 14, 2023
Job Number: DT5-030-10

PROJECT : **I-4 Truck Parking Study**
BASIN NAME : **Volusia Site 1B**
POND NAME : **FPCA**

Note: These calculations serve to estimate the available volume within a Floodplain Compensation Area that is available on site.



Pond Section (FPCA)

Pond Stage / Storage Calculations - FPCA 1

ELEVATION	DESCRIPTION	AREA	STORAGE
Varies	Tie Down Elevation	2.20 ac	
41.00	Back of Main. Berm	1.83 ac	
40.00	Front of Main Berm	1.42 ac	2.75 ac-ft
40.00	Floodplain Comp. Storage	1.42 ac	2.75 ac-ft
37.90	Pond Bottom	1.20 ac	0.00 ac-ft

Volume in Stormwater Ponds = 10.78 ac-ft
Volume in FPCA 1 = 2.75 ac-ft

Total Provided Compensation =	**13.53 ac-ft**

APPENDIX G

Cultural Resources Analysis

Memorandum

To: Kevin Freeman
225 E. Robinson Street, Suite 300
Landmark Center Two
Orlando, FL 32801-4326

Date: 3/9/2022

Project #: 63640.01

From: Ben Donnan MA, RPA - 43930265
1355 Peachtree St NE
Suite 100
Atlanta, GA 30309

Re: FDOT D5 PD&E: I-4 Truck Stop Analysis Desktop Survey

Introduction

In March 2022, a Desktop Survey as part of the Freight Parking PD&E Study for Interstate 4(I-4) in Florida. The Freight Parking PD&E Study will evaluate potential solutions and alternatives for the I-4 corridor to recommend viable concept sites for truck and freight parking that includes social, economic, and environmental assessment and effects of the proposed improvements.

Potential Site Location Overview

Potential site areas were evaluated in four separate Florida Counties: Osceola, Orange, Seminole, and Volusia (Table 1; Figures 1 through 4). These areas represent potential site locations that could be developed for freight parking. The sites were evaluated for archaeological and historical site potential based on Florida Master Site Files, USGS topographic maps, historic maps and aerial imagery.

Table 1: Potential Site Locations for Development

County	Township-Range-Section	Latitude	Longitude
Osceola			
OS_1	T25S, R28E Sec 31	28.258045	-81.5557
OS_2	T25S, R28E, Sec 31; T26S, R28E, Sec 6	28.262724	-81.5517
Orange			
OR_1	T23S R29E, Sec 34	28.436676	-81.4022
OR_2	T24S R29E, Sec 2	28.43519	-81.3826
OR_3	T23S R29E, Sec 35	28.436985	-81.3814
OR_4	T24S, R29E, Sec 12	28.418661	-81.3679
OR_5	T24S R30E Sec 07	28.41546	-81.3554
OR_6	T24S R30E Sec 07	28.417457	-81.3526
OR_7	T24S R30E Sec 07	28.414321	-81.353
OR_8	T23S R29E Sec 28 and 29	28.451091	-81.4236
Seminole			
SE_1	T19S R30E Sec 21	28.825175	-81.3276
SE_2	T19S R30E Sec 21	28.826687	-81.3272
SE_3	T19S R30E Sec 21	28.827111	-81.3261
SE_4	T19S R30E Sec 21	28.826155	-81.3267
Volusia			
VO_1	T16S R31E Sec 12; T16S R31E Sec 13; T16S R32E Sec 18	29.115209	-81.1457
VO_2	T16S R32E Sec 18	29.110761	-81.1378
VO_3	T16S R32E Sec 18	29.106054	-81.1271

Memorandum

Potential Site Location Maps

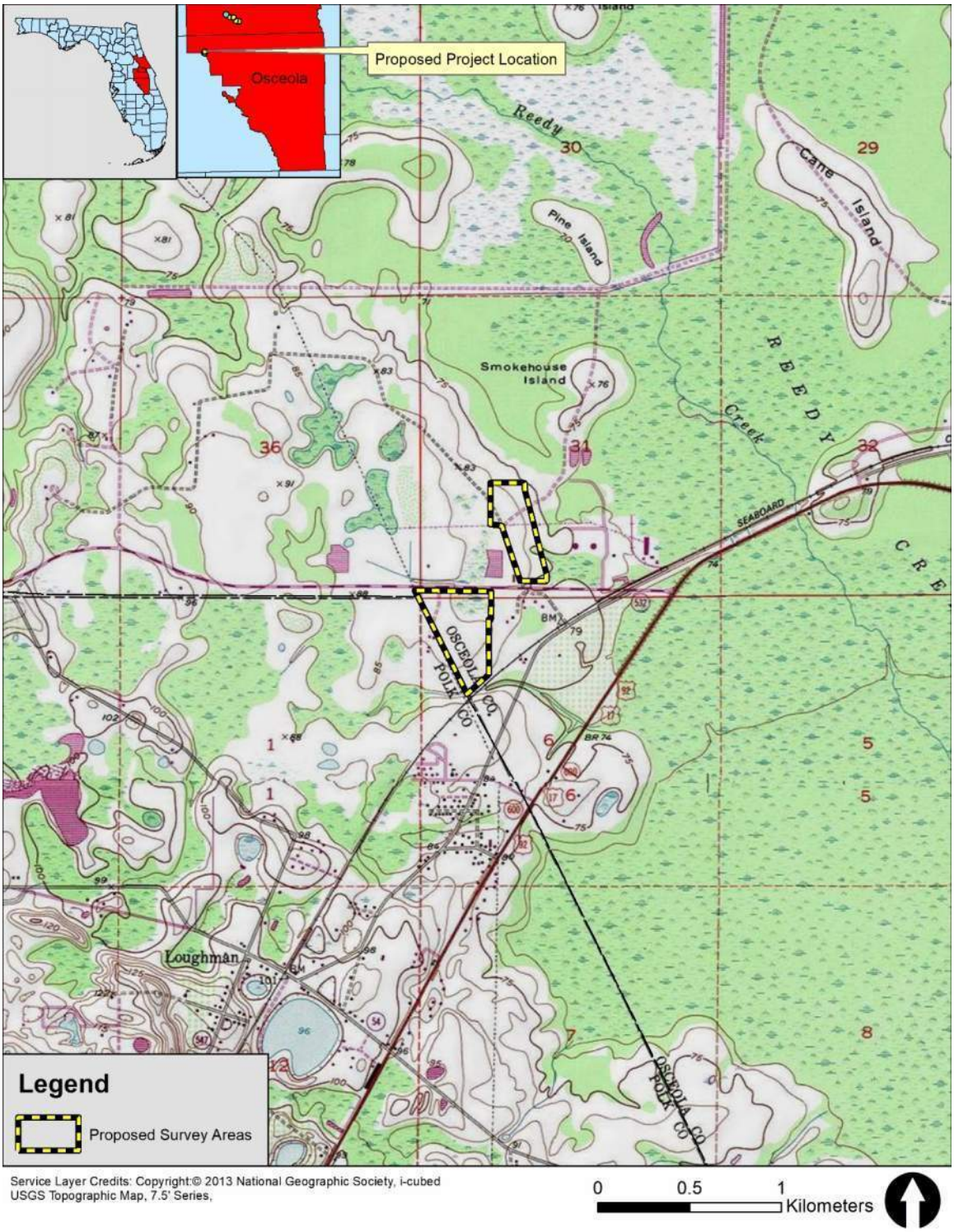


Figure 1. USGS Overview Map of Potential Site Locations in Osceola County, Florida.

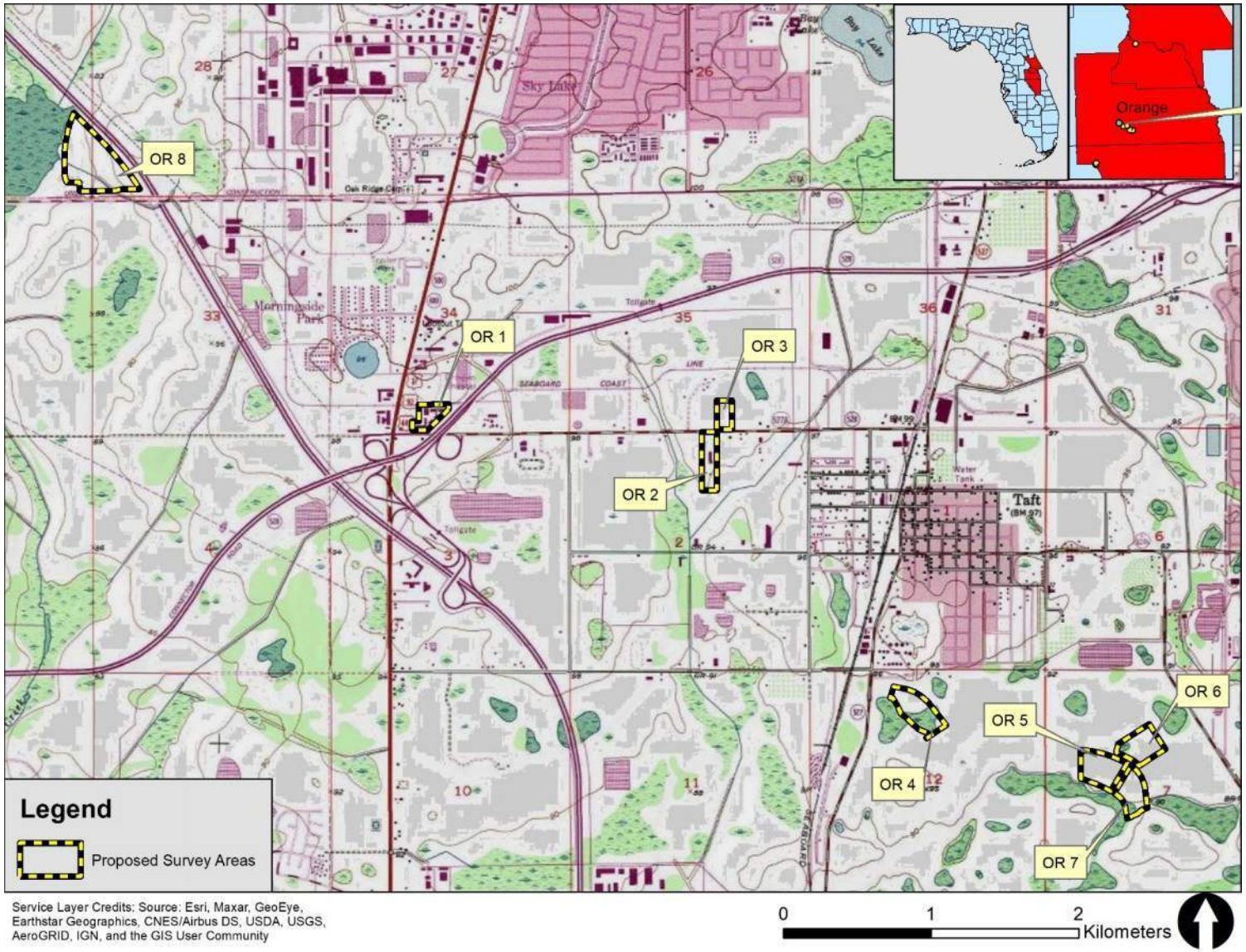


Figure 2. USGS Overview Map of Potential Site Locations in Orange County, Florida.

Figure 3. USGS Overview Map of Potential Site Locations in Seminole County, Florida.

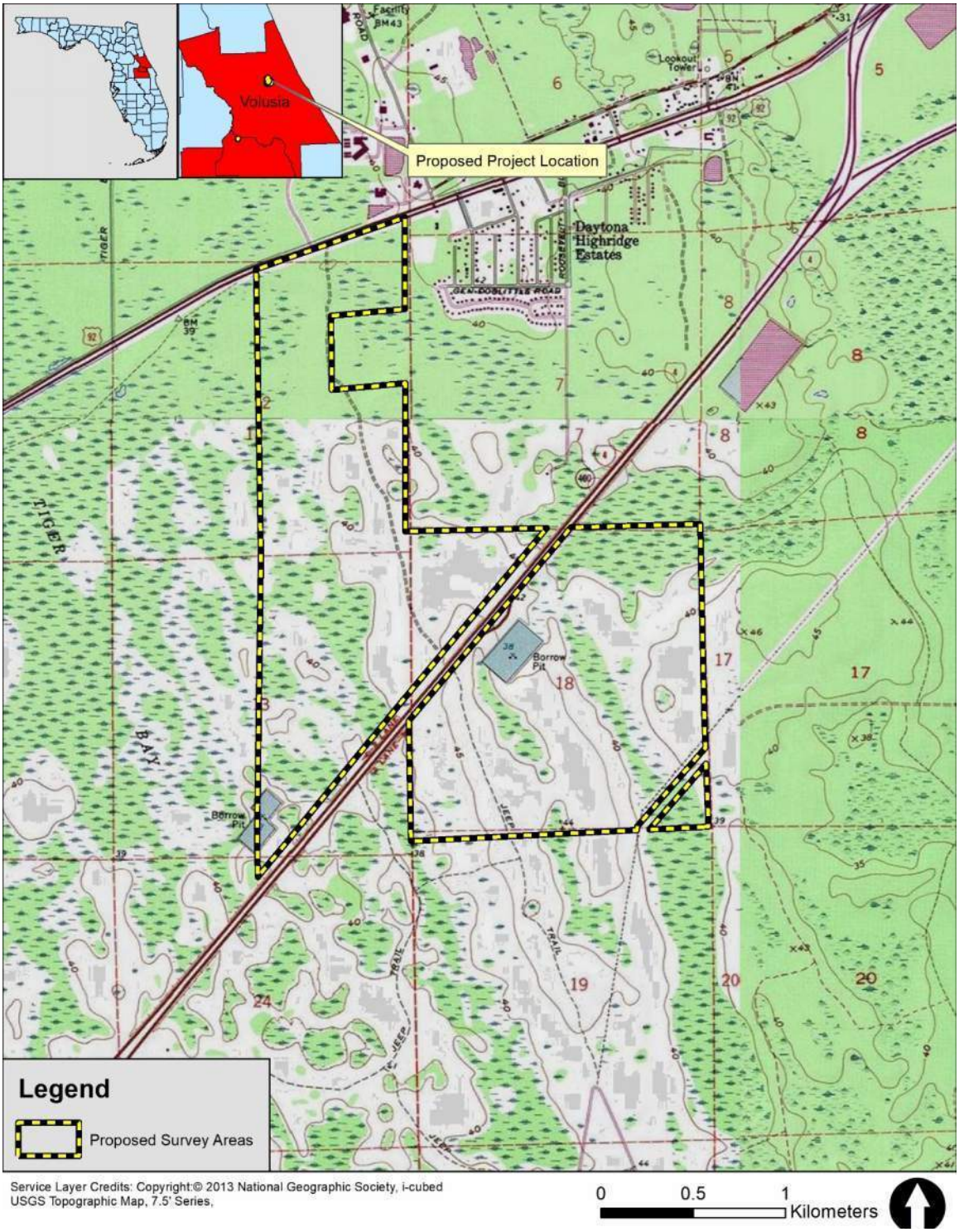


Figure 4. USGS Overview Map of Potential Site Locations in Volusia County, Florida.

Background Review

Osceola County

In Osceola County, two locations were evaluated for archaeological and historical potential (Figure 5). The surrounding area contained eight archaeological sites (8OS1721, 8OS1722, 8OS1861, 8OS2765, 8OS2941, 8PO3968, 8PO7756 and 8PO3972) within 1 kilometer (km) of the site footprints. Site 8OS2765 was recommended as having insufficient information (INSF) and therefore has unknown eligibility for listing on the NRHP under Criterion D. The other sites have all been determined ineligible for listing on the NRHP under Criterion D.

Table 1. Previously Recorded Sites within 1-km of the Potential Site Locations.

Site Number	Site Type	Components	NRHP Eligibility
8OS1721	Lithic Scatter	Aceramic	Ineligible
8OS1722	Lithic Scatter/Campsite	Aceramic	Ineligible
8OS1861	Campsite	Aceramic	Ineligible
8OS2765	Artifact Scatter	Aceramic and Refuge	Ineligible
8OS2941	Lithic Scatter	Aceramic	Insufficient Information
8PO3968	Lithic Scatter/Isolated Find	Aceramic	Ineligible
8PO3972	Artifact Scatter	Aceramic and St. Johns	Ineligible
8PO7756	Ceramic Scatter	St. Johns	Ineligible

Orange County

In Orange County, eight locations were evaluated for archaeological and historical potential (Figures 6 and 7). The surrounding area did not contain any recorded archaeological sites within 1-km of the site footprints. OR 1 and OR 4 were found to have historic structures with potential to be of greater than 50 years in the vicinity. The remaining areas have low potential for archaeological or historical sites.

Seminole County

In Seminole County, four locations were evaluated for archaeological and historical potential (Figures 8 and 9). The surrounding area contained a single historic site (8SE1720) within 1-km of the site footprints. In addition, three potential historic resources (all residential) that are greater than 50 years in age are within the potential site locations.

Volusia County

In Volusia County, two locations were evaluated for archaeological and historical potential. The surrounding area contained a single precontact site (8VO7094) within 1-km of the site footprints. The site is located at the edge of an upland area on the edge of wetland and is ineligible for listing on the NRHP under Criterion D. Borrow pits are located within the footprint indicating some level of industrial impact.

Memorandum

Recommendation

Osceola County Potential Site Location

In Osceola County, there is a high potential for archaeological resources within the proposed site footprints due to the high concentration of known sites surrounding the potential site locations. It is likely these sites will be lithic or ceramic scatters (see Figure 5). There is a low potential for historic resources, as none have been identified in the vicinity.

Orange County Potential Site Location

In Orange County, there is a low potential for archaeological resources within the proposed site footprints. OR_1 and OR_4 have potential for historic resources that would need to be recorded in the vicinity (see Figures 6 and 7).

Seminole County Potential Site Location

In Seminole County, there is moderate to high potential for both archaeological and historical resources within the proposed site footprints. For archaeological resources, multiple historic structures have been removed from the location and there is a historic site adjacent to the potential site locations. Multiple historic structures are present within two of the Seminole County potential site locations (see Figure 8).

Volusia County Potential Site Location

In Volusia County, there is a low potential for archaeological resources. Upland areas along wetlands may have moderate potential for archaeological sites, which potentially would account for roughly 40-50% of the current footprint (see Figure 9). There is a low potential for historic resources, as none have been identified in the vicinity.

Memorandum

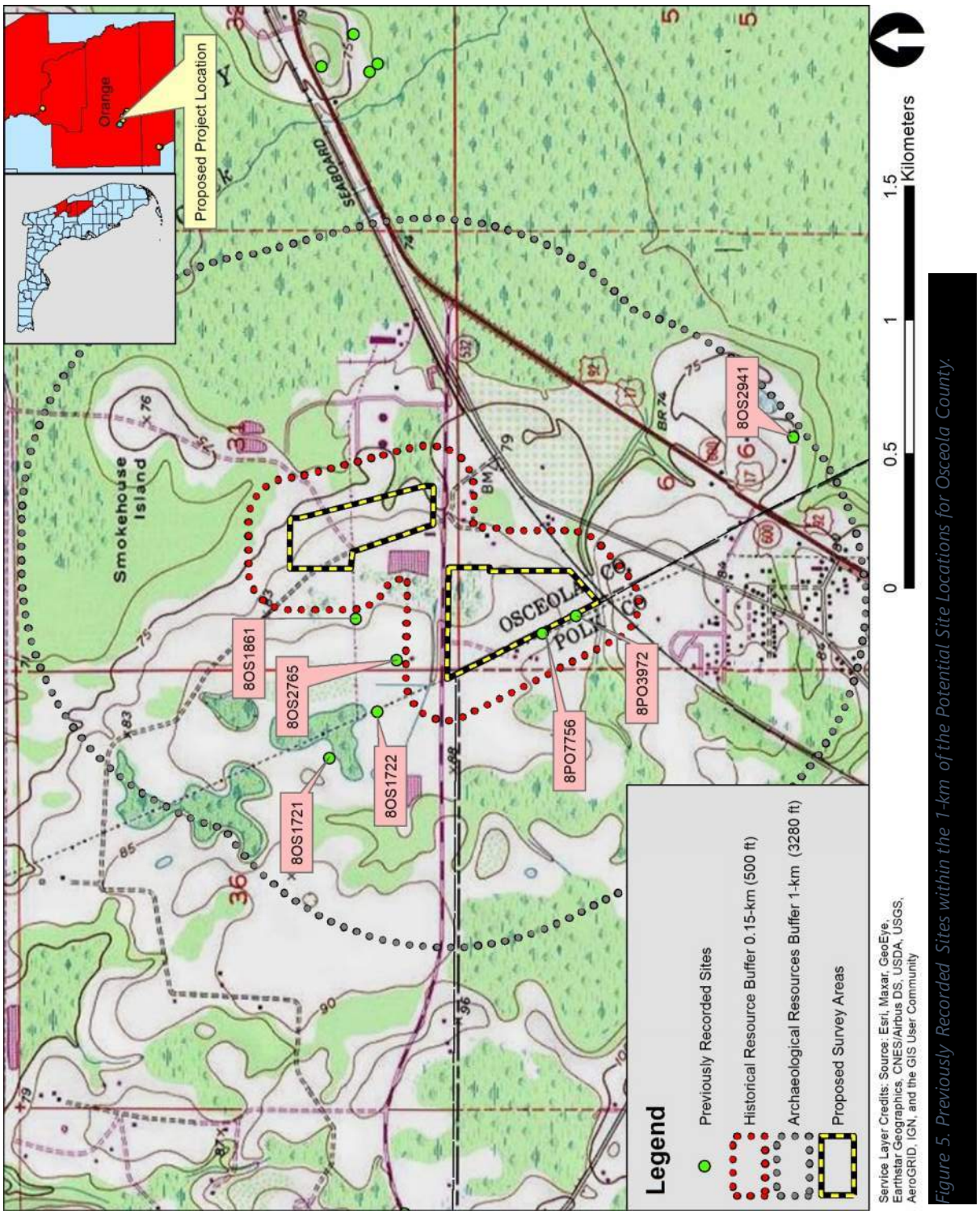


Figure 5. Previously Recorded Sites within the 1-km of the Potential Site Locations for Osceola County.

Memorandum

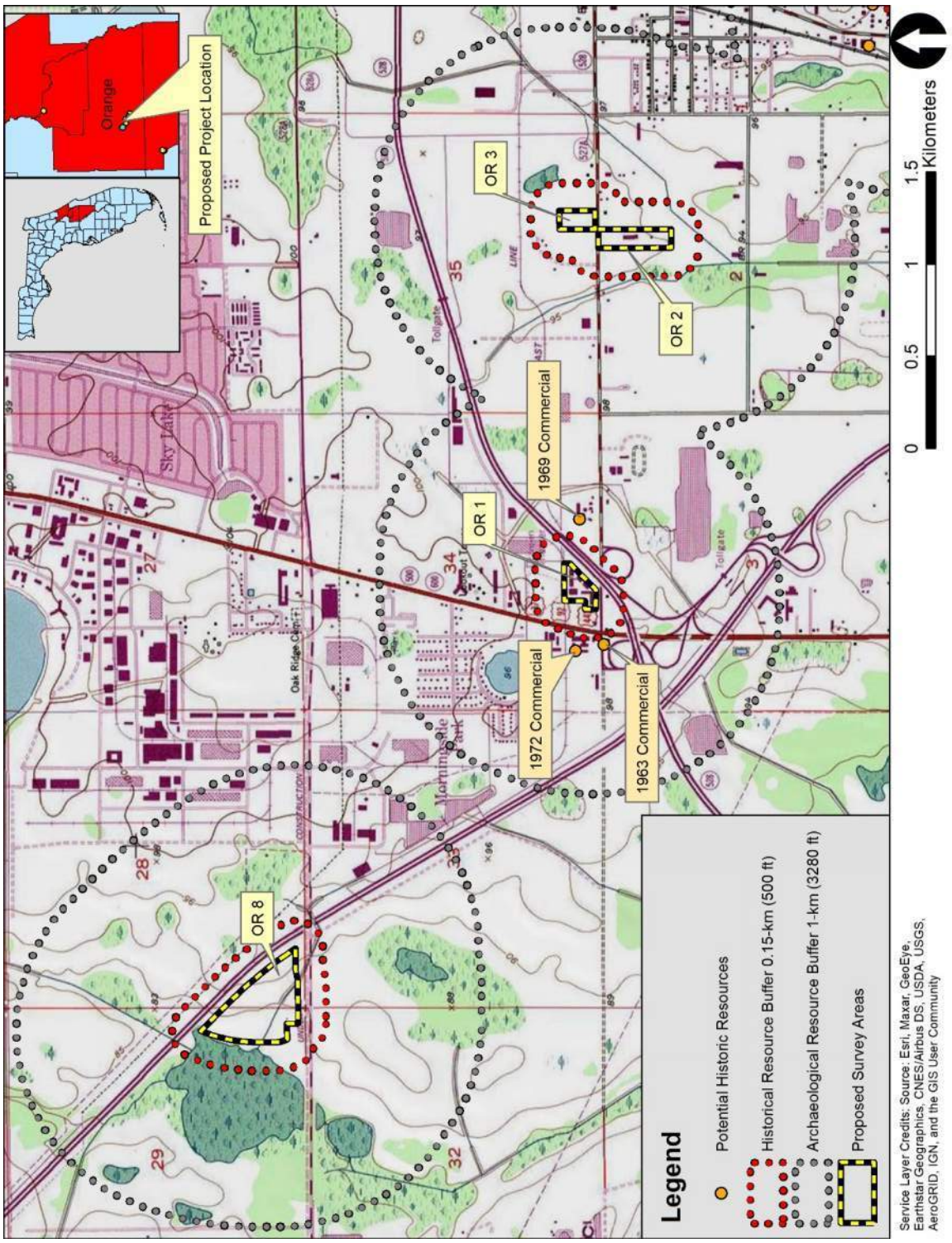


Figure 6. Possible Historic Structures Present within Potential Site Locations in Orange County.

Memorandum

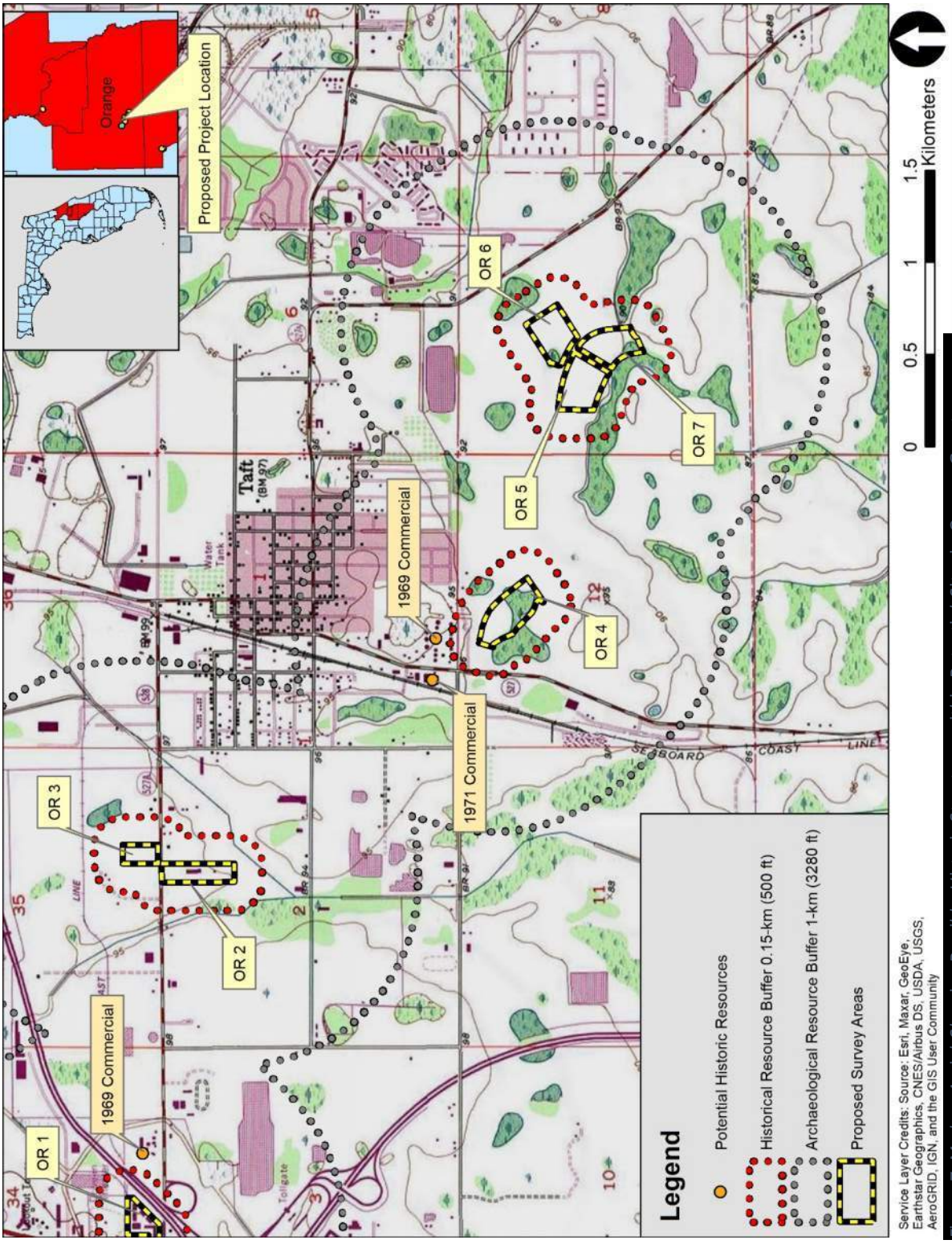


Figure 7. Modern Aerial Showing Possible Historic Structures within Potential Sites in Orange County.

Memorandum

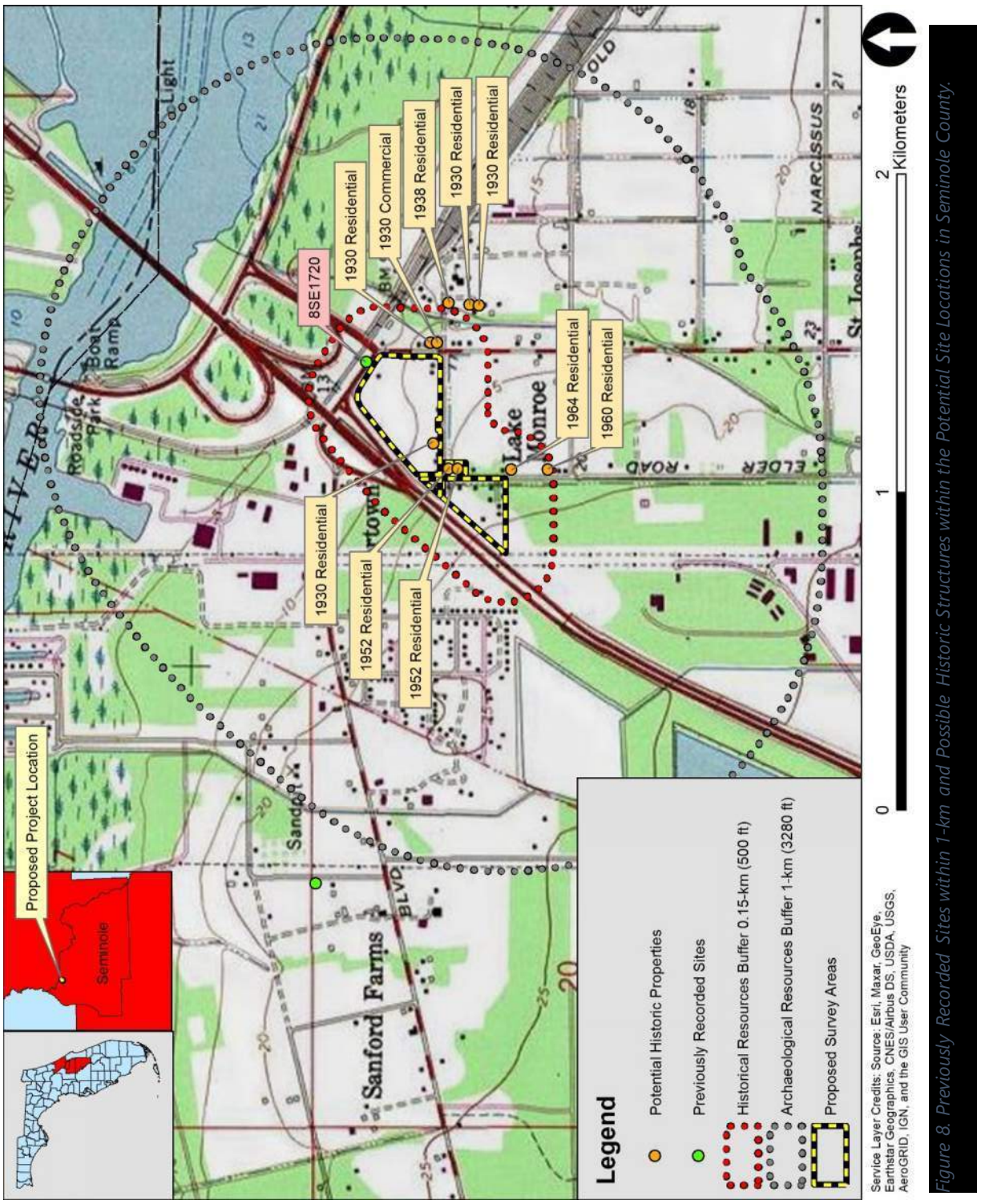


Figure 8. Previously Recorded Sites within 1-km and Possible Historic Structures within the Potential Site Locations in Seminole County.

Memorandum

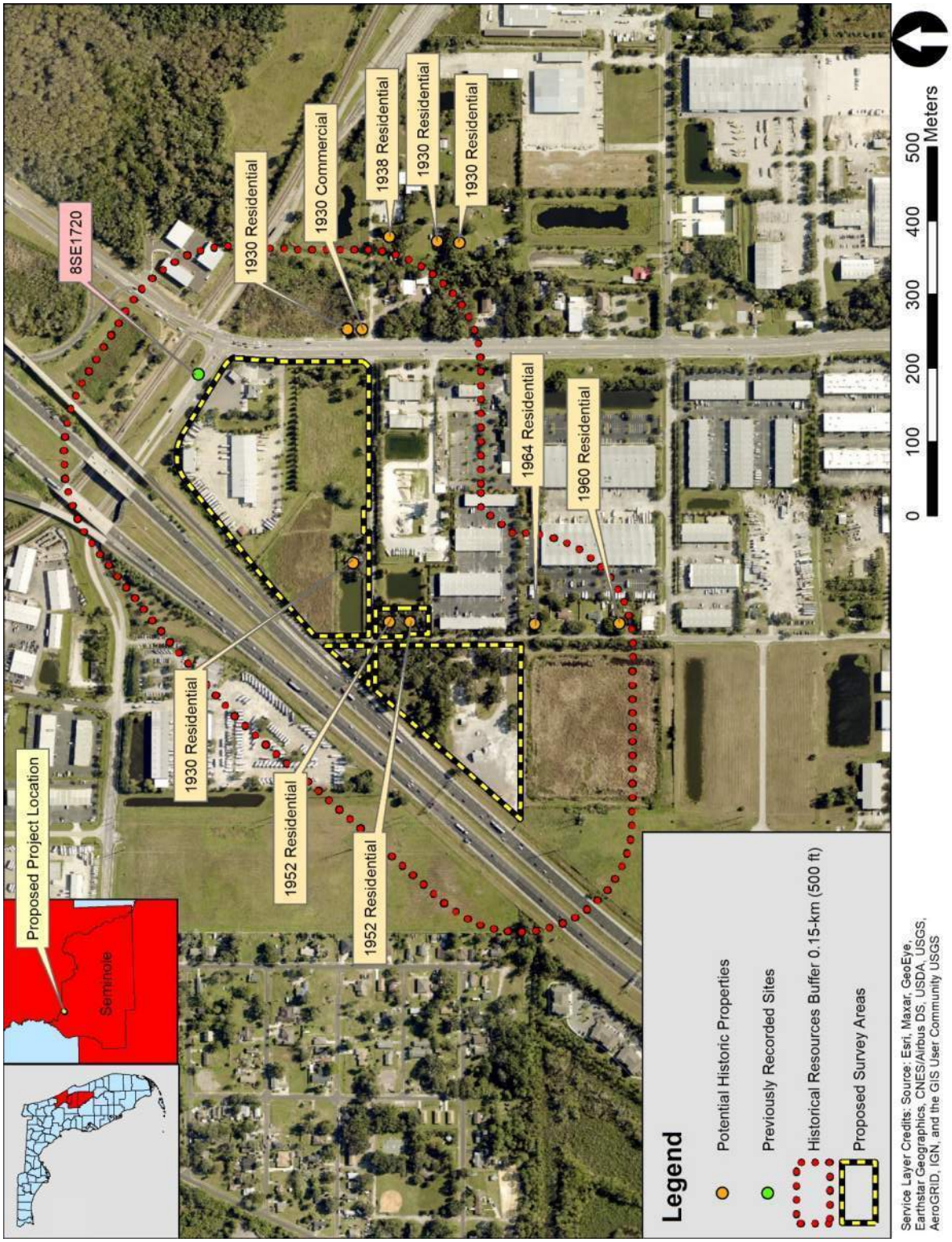


Figure 9. Modern Aerial Showing Possible Historic Structures within Potential Site Location in Seminole County.

Memorandum

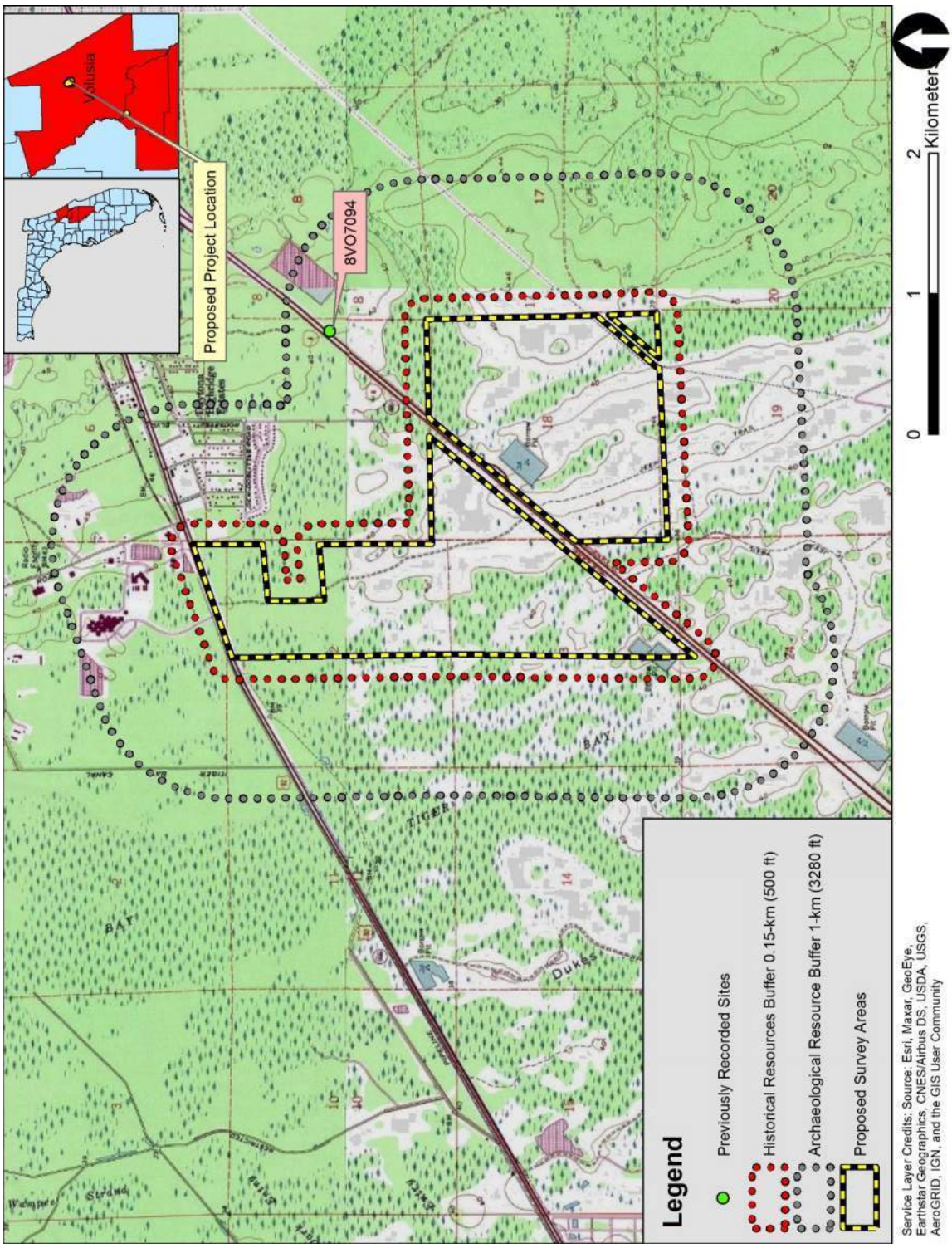


Figure 10. Previously Recorded Sites within 1-km of Potential Site Location in Volusia County.

APPENDIX H

Desktop Contamination Analysis

Cameron DeWitt

Subject: Truck Parking Contamination update

From: Kevin Freeman <KFreeman@VHB.com>
Sent: Monday, August 8, 2022 6:00 PM
To: Renato Chuw <rchuw@inwoodinc.com>
Subject: Truck Parking Contamination update

Renato,

Updated based on comments on the Contamination. Please use below for Conceptual Drainage Report

	Low-Risk Properties	Medium- Risk Property Records	High-Risk Property Records	Overall Site Risk
Osceola Co. Site 1	2	1	0	**Low**
Orange Co. Site 1	16	1	0	**Low**
Orange Co. Site 2	20	6	1	**Medium**
Orange Co. Site 4	33	2	0	**Medium**
Seminole Co. Site 1	27	1	0	**High**
Volusia Co. Site 1	*4*	1	0	**Low**

Thanks,

Kevin Freeman, PE
Project Manager

P 407.965.0500
www.vhb.com

225 E. Robinson Street, Suite 300
Landmark Center Two
Orlando FL 32801-4326

APPENDIX I

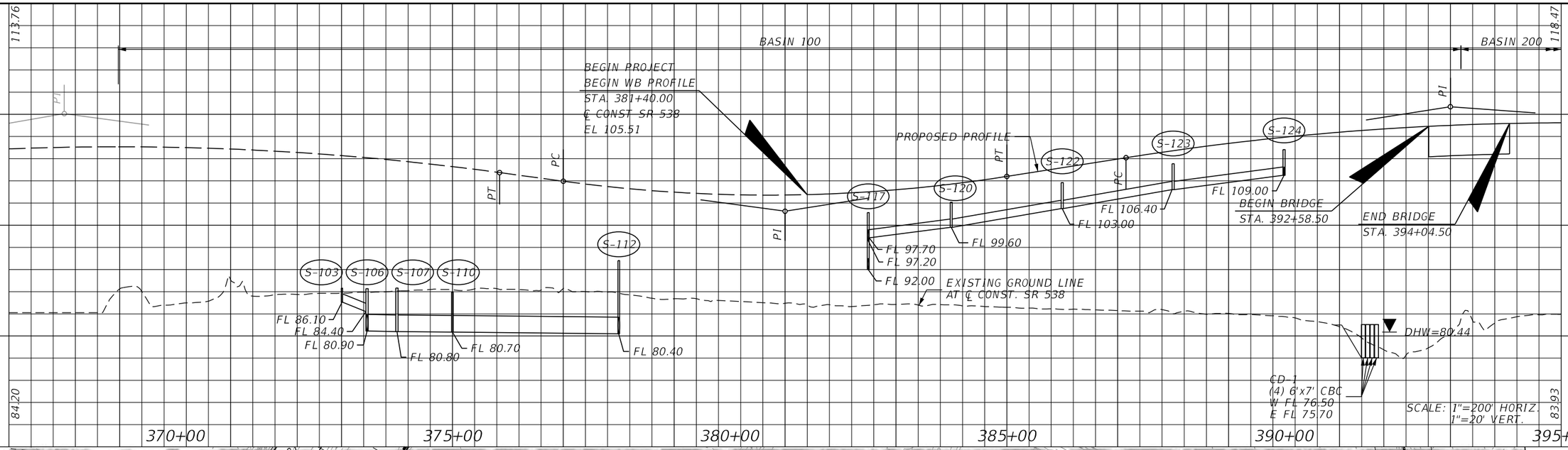
Existing Permits & Backup Information (Excerpts)

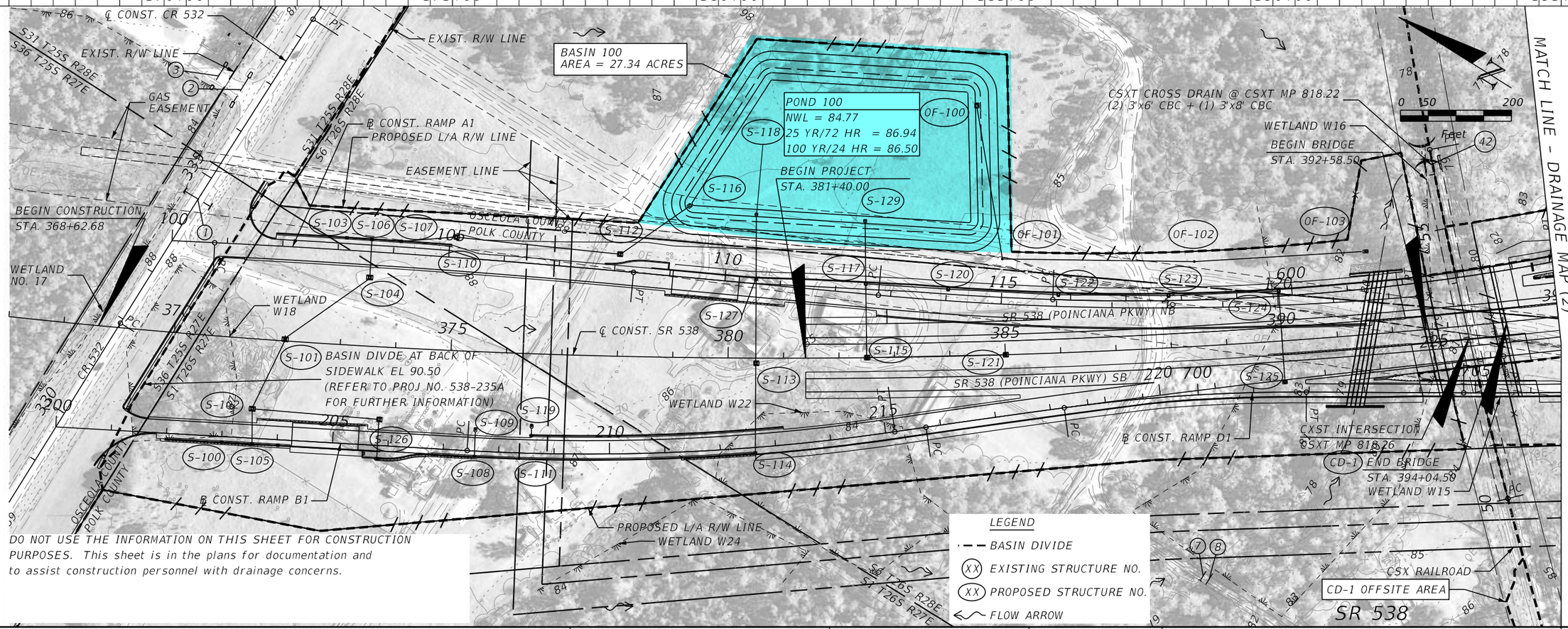
Osceola County

SFWMD

Application No. 220627-34970 (Under Review)

SR 538 Extension (Poinciana Parkway)





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

DAVID R. VERLANDER, P.E.
P.E. LICENSE NUMBER 81420
GAI CONSULTANTS, INC.
618 E. SOUTH STREET - SUITE 700
ORLANDO, FL 32801

SR 538 EXTENSION
CR 532 TO US 17/92

ROAD NO.	PROJECT NO.
SR 538	538-235

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

DRAINAGE MAP (1)

SHEET NO. 2

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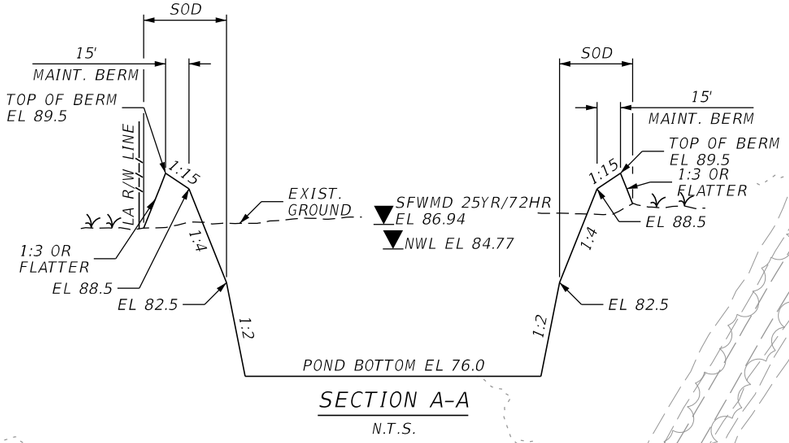

SECTION A-A

N.T.S.

0 20 100

Feet

STA. 380+49.59
575.75' (LT)

A

LIMITS OF CONSTRUCTION

STA. 385+20.44
541.16' (LT)

PROPOSED L/A R/W LINE

89.5
88.5
84.77
82.5
76
1:15
1:4
1:2

END ℄ CONST. POND 100
STA. 1109+30.00=
STA. 114+90.83, 286.04' LT
℄ CONST. RAMP A1

4' R

+05.30
87.78' (LT)

PBS-1-1

PBS-1-3

PBS-1-6

+54.45
87.78' (LT)

OF-100

1105

℄ CONST. POND 100

PI STA. 1102+70.00

S 28° 32' 48" E

POND 100

91°41'26"

24" PIPE

PBS-1-2

PBS-1-4

PBS-1-5

PBS-1-7
+73.87
139.09' (RT)

+34.16
112.19' (RT)

S-118

S-129

S-116

EASEMENT
LINE

N 63° 08' 38" E

18" PIPE

24" PIPE

36" PIPE

STA. 385+17.11
185.47' (LT)

PROPOSED L/A R/W LINE

STA. 378+32.56
241.23' (LT)

S-112

90°

OF-101

OF-102

℄ CONST. RAMP A1

PC STA. 112+17.98

PC STA. 113+67.13

PT STA. 120+25.76

PC STA. 120+00.00

S-117

S-120

S-122

S-123

S-124

1100

110

115

120

300

PT STA. 108+34.43

S-127

18" PIPE

24" PIPE

SR 538 WESTBOUND

BEGIN ℄ CONST. POND 100
STA. 1100+00.00=
STA. 108+20.00
℄ CONST. RAMP A1

380

385

390

S-113

S-121

S-125

S-115

PT STA. 116+65.00

SR 538 EASTBOUND

220

400

83

84

88

Z:\Infra\2019\A190993.00 - CFX Poinciana Parkway\CAD\drainage\DRDTRD01.dgn
4/20/2022 4:29:40 PM
hundlw j

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DAVID R. VERLANDER, P.E.
P.E. LICENSE NUMBER 81420
GAI CONSULTANTS, INC.
618 E. SOUTH STREET - SUITE 700
ORLANDO, FL 32801

SR 538 EXTENSION
CR 532 TO US 17/92

ROAD NO.	PROJECT NO.
SR 538	538-235

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

POND DETAILS

SHEET NO. 100

WET POND CALCULATIONS

Project No.	538-235	Prepared by:	DV	Date:	01/22/2022
Description	SR 538 (Poinciana Parkway) Extension, Segment 2	Checked by:	BS	Date:	01/25/2022

BASIN 100 INFORMATION:

SR 538 Road Total Area	27.34 AC
SR 538 Road New Impervious	9.40 AC
Total Drainage Area	27.34 AC

THE PROPOSED WET RETENTION POND SYSTEM HAS THE FOLLOWING STAGE-STORAGE RELATIONSHIP:

POND 100	ACRE	STAGE (FT)	STAGE (ELEVATION)	STORAGE (AC-FT)
BOTTOM	**2.32**	0.00	**76.00**	0.00
1:2 BREAK	**2.74**	6.00	**82.00**	15.18
NWL	**3.05**	8.77	**84.77**	23.20
TOB	**3.58**	12.50	**88.50**	35.56

AT WEIR	
VOLUME (AC-FT)	AREA(AC)
26.614	3.196

1 CALCULATE TREATMENT VOLUME REQUIRED (TV):

Treatment Volume provided in existing pond — 0.00 AC-FT

ADDITIONAL TREATMENT VOLUME REQUIRED FOR SR 538 ROAD

a. 1" OVER THE DRAINAGE AREA = DRAINAGE AREA * 1-INCH/(12 IN/FT) — 2.28 AC-FT
b. 2.5 INCHES OVER IMPERVIOUS AREA = IMPERVIOUS AREA*2.5 INCHES/(12 IN/FT) — 1.96 AC-FT

DOES PROJECT DISCHARGE INTO OFW? YES OR NO? NO ADD 0

TREATMENT VOLUME (REQUIRED FOR SR 538 ROAD) = 2.28 AC-FT

TOTAL TREATMENT VOLUME REQUIRED FOR POND = **2.28 AC-FT**

2 SET WEIR ELEVATION:

a. MIN.WEIR ELEVATION = $= \frac{[\text{TOB(EL)-NWL(EL)}]*\text{TV(AC-FT)}}{[\text{STORAGE(TOB)-STORAGE(NWL)}]} + \text{NWL(EL)}$ — 85.46 FT

b. SET POND WEIR ELEVATION = 85.80 FT

c. **TREATMENT VOLUME PROVIDED : 3.21 AC-FT**

3 CALCULATE PERMANENT POOL VOLUME (PPV)

a. PPV(REQUIRED) = $= \frac{\text{DRAINAGE AREA} * C * R * RT}{WS * CF}$

C = COEFFICIENT OF RUNOFF
R = WET SEASON RAINFALL (FIG. 26-1) 31.00
RT = RESIDENCE TIME IN DAYS (NON L 21.00
WS = NO. OF WET SEASON DAYS (153 DAYS)
CF = 12 IN/FT

b.

	C	AREA (AC)
IMPERVIOUS AREA	0.95	9.40
PERVIOUS AREA	0.2	15.51
	C =	0.48

c. **PPV (REQUIRED) = 4.68 AC-FT**

d. **PPV (PROVIDED) = 23.20 AC-FT**

Osceola County

CR 532 Widening (Osceola Polk Line Road)

Not Yet Permitted

Basin	Area (ac)	Off-Site Impervious Area (ac)	10-yr/72-hr Equivalent CN	Time of Concentration (min)	Type of Basin
B21A	2.40	0.03	84.1	54.20	Off-site
B21B	11.21	0.00	87	10.00	Off-site
B21C	1.25	0.02	83	19.70	Off-site
B22	1.27	0.08	84.9	10.00	Off-site
B23	0.59	0.02	84.6	10.00	Off-site
B23A	2.11	0.00	83	29.80	Off-site
B23B	21.70	0.05	82.5	64.90	Off-site
B24	2.75	0.00	83.4	54.00	Off-site
B24A	7.34	0.38	84.7	41.60	Off-site
B25A	4.05	0.28	92.5	10.00	Off-site
B25B	4.15	0.00	85.6	37.00	Off-site
B26	4.45	0.03	83.1	51.70	Off-site
B27	38.36	2.08	84.3	137.50	Off-site
B28	3.50	0.54**	85.3	57.00	Off-site
B29	0.96	0.24**	86.8	30.60	Off-site

** Old Lake Wilson Roadway Impervious, ** US 17-92 Roadway Impervious*

A summary of the ponds is included in **Table 6** along with a water quality summary provided in **Table 7** for each proposed pond. The proposed ponds provide more than the required treatment volume since the entire roadway impervious is routed to the pond for treatment. The recovery of the treatment volume also meets criteria or utilizes the minimum dimensional criteria for orifices.

Table 6 - Pond Summary Table

Pond	ICPR Node	Pond Bottom Elev. (ft NAVD)	NWL (ft NAVD)	10yr/72hr (DHW) Stage (ft NAVD)	100yr/72hr Stage (ft NAVD)	Pond Berm Elev. (ft NAVD)	Low Edge of Pavement Elev. (ft NAVD)	Station of Low Edge of Pavement (CL Const.)	DHW Freeboard (ft)
2	POND2	78.50	90.5	92.31	93.46	93.50	93.18	106+47	1.19
3	POND3	73.50	85.5	88.57	89.62	90.00	90.52	163+15	1.43
5	POND5	69.50	81.5	82.91	83.49	84.00	85.21	187+09	1.09
6	POND6_1	62.70	70.7	73.45	74.31	74.50	74.95	213+46	1.05
	POND6_2			73.42	74.22				1.08
7	POND7	56.50	68.5	70.43	70.92	71.50	70.98	222+47	1.07

Table 7 - Water Quality Summary Table

Pond	ICPR Node	Type	Required Treatment Volume (ac-ft)	Controlling Factor	Provided Treatment Volume (ac-ft)	Overflow Weir Elevation (ft-NAVD)
2	POND2	Wet Detention	2.07	1.0" runoff from drainage area	2.94	91.15
3	POND3	Wet Detention	1.38	1.0" runoff from drainage area	2.43	86.5
5	POND5	Wet Detention	0.85	1.0" runoff from drainage area	1.25	82.0
6	POND6_1	Wet Detention	0.75	2.5" runoff from new impervious area	1.10	72.1
	POND6_2	Wet Detention				
7	POND7	Wet Detention	0.40	1.0" runoff from drainage area	0.58	69.1

A summary of the pre- and post-development discharges and the difference in these discharges is provided in **Table 8** to demonstrate that attenuation criteria is met by the proposed pond sites for the 10-year/72-hour and 25-yr/72-hour storm events. The ultimate discharge locations remain the same as the pre-development condition and utilize the same tailwater information as described in **Section 1.4**.

Table 8 - Water Quantity Summary

Node	Peak Discharge Flow Rate (cfs)				Difference (Post-Pre)(cfs)	
	Pre-Development		Post-Development			
	10-yr/72 hr	25-yr/72 hr	10-yr/72 hr	25-yr/72 hr	10-yr/72 hr	25-yr/72 hr
TW1	88.75	123.52	69.11	80.49	-19.64	-43.03
TW2	126.91	155.77	125.82	152.02	-1.09	-3.75
TW3	50	66	48.18	63.66	-1.82	-2.34
TW4	28.08	36.52	23.46	30.35	-4.62	-6.17
TW5	48.33	60.5	39.81	49.19	-8.52	-11.31
TW_RC	78.65	129.2	71.43	118.92	-7.22	-10.28

Nutrient removal summary is provided in **Table 9**. For the nutrient removal analysis, the pre-development condition was assumed to be the original natural condition prior to the construction of the existing CR 532 roadway. Land use classifications utilized historic aerials and original 1959 construction plans. Note the project is only required to meet phosphorous removal; however, nitrogen removal calculations are provided for informational purposes.

VOLUME CALCULATIONS FOR PROPOSED CONDITION

Project: CR532 Widening from Lake Wilson Road to US 17-92
FPID: 538-235A **Designer:** MM **Date:** 1/28/2022
County: Osceola County **Reviewer:** JN **Checked:** 1/28/2022

Wet Detention Online Pond Treatment Calculations:
Pond 5

Existing Impervious =	1.44 Ac
Post Dev. Total Impervious Area =	5.23 Ac
Net Additional Impervious =	3.79 Ac
Total Drainage area =	10.20 Ac
Drainage Area Excluding Pond =	7.09 Ac
2.5" runoff from new impervious area =	0.79 Ac-Ft *(Net Imperv. Area)*
1.0" runoff from drainage area =	0.85 Ac-Ft *(Including Pond)*
Required Treatment Volume (T.V.) =	**0.85** Ac-ft

Provided Treatment Volume Based on Contributing Basin

Total Impervious Area to Pond =	5.23 Ac
Total Drainage Area =	10.20 Ac
2.5" runoff from new impervious area =	1.09 Ac-Ft *(Total Imperv. Area)*
1.0" runoff from drainage area =	0.85 Ac-Ft *(Including Pond)*
Provided Treatment Volume (T.V.) =	**1.09** Ac-ft

Storage Calculations: Pond 5

Elev	h	Area	Area	Inc. Volume	Cumulative Vol.	
---	ft	sf	ac	Ac-ft	Ac-ft	
84.00	--	--	3.11	--	--	Outside Top of Berm
84.00	1.0	121,066	2.78	2.72	6.55	Inside Top of Berm
83.00	1.0	115,482	2.65	2.59	3.84	
82.00	0.5	110,002	2.53	1.25	1.25	
81.50	0.0	107,297	2.46	0.00	0.00	NWL

Overflow Weir Elevation (Top of Treatment Volume):
Elev. = 82.0 = **1.25** **Ac-Ft** Provided Treatment Volume

Profile Grade Line

Low Pt. STA	Side	PGL Elev	X Slope	Pav't Width (PGL Location to LEOP)	LEOP Elev
187+08.74	RT/LT	85.69	2.0%	24.0	85.21

ORIFICE SIZING FOR PROPOSED CONDITION

Project: CR532 Widening from Lake Wilson Road to US 17-92
FPID: 538-235A **Designer:** MM **Date:** 1/28/2022
County: Osceola County **Reviewer:** JN **Checked:** 1/28/2022

Pond 5 Orifice Calculations

Size the orifice to discharge no more than 1/2-inch of detention volume in 24 hours (min. 6 sq-in).

Total Drainage Basin = 7.09 Ac *(Excluding Pond)*

1/2-Inch over Basin for Orifice Drawdown Volume ($TV_{1/2}$) = 0.30 Ac-Ft

Elev. (NAVD ft)	Pond Volume Ac-ft	
82.00	1.25	Top of Provided TV
81.50	0.00	NWL

Elev. = 81.75 ft. provides 0.62 Ac-Ft

Average Discharge Rate (Q) to Drawdown Half the TV in a Desired Amount of Time (t)

Recovery Time (t) =	24.0	hr
Conversion Factor (CF) =	3,600	sec/hr
Q =	0.151	cfs

$$Q = \frac{TV_{1/2}}{t * CF}$$

Average Depth of Water Above the Orifice Flow Line

Orifice Flow Line =	81.67	ft
Depth from Top of Provided TV (h_1) =	0.33	ft
Depth from Drawdown Volume (h_2) =	0.08	ft
Average Depth of Water (h) =	0.21	ft

$$h = \frac{(h_1 + h_2)}{2}$$

Required Maximum Orifice Dimensions

Orifice Equation: $Q = C\,A\sqrt{2gh}$

Where:

C =	0.6	
g =	32.2	ft/s^2
Orifice Area (A) =	0.069	ft^2
Diameter of a Circular Orfice (D) =	3.55 inch	

$$A = \frac{Q}{C\sqrt{2gh}}$$

$$D = \sqrt{4A/\pi}$$

Provided Recovery Time of Drawdown Volume

Provided Orifice Size =	**4.00 inch**	**Diameter**
Rate of discharge (Q) =	0.192	cfs
Provided Recovery Time (t) =	18.9	hrs

$$t = \frac{TV_{1/2}}{Q * CF}$$

LITTORAL ZONE CALCULATIONS FOR PROPOSED CONDITION

PROJECT: CR532 Widening from Lake Wilson Road to PREPARED: MM DATE: 1/28/2022

LOCATION: Osceola County, FL CHECKED: JN DATE: 1/28/2022

Littoral Zone Calculations (Pond 5):

Elev. (NAVD) (ft)	h ft	Area sf	Area ac	Inc. Volume Ac-ft	Cum. Volume Ac-ft	Cum. Volume Cu-ft
81.50	6.0	107,297	2.46	13.18	23.77	1,035,421
75.50	6.0	84,071	1.93	10.59	10.59	461,300
69.50	0.0	69,696	1.60	0.00	0.00	0

Mean Depth of Pond = 9.7 ft

Littoral Zone Criteria

Lesser of: 20% of Wet Det Area or 2.5% of Total Basin Area (Including Pond)

Required Littoral Zone Area

Detention Area = 3.11 ac
Total Basin Area w/o Pond = 7.09 ac
Total Basin Area w/ Pond = 10.20 ac

20% Pond Area = 0.62 ac
2.5% of Total Area = 0.25 ac

Required Littoral Zone Area = **0.25 ac**

Provided Littoral Zone Area = *(Area at NWL - Area at Littoral Zone Bottom)* = **0.53 ac**

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM SEWER TABULATION FORM

Financial Project ID: 538-235A | **County:** Osceola | **Network:** O-502 | **Sheet:** _____ of _____
Description: CR 532 | **Organization:** | **State Road:** | **Prepared by:** KAG | **Date:** 01/24/2022
Checked by: VHG | **Date:** 01/24/2022

LOCATION OF UPPER END			STRUCTURE NO.	TYPE OF STRUCTURE	LENGTH (ft)	DRAINAGE AREA (ac. or ha.)			TIME OF CONCENTRATION (min)	TIME OF FLOW IN SECTION (min)	INTENSITY (in/hr)	TOTAL (C*A)	BASE FLOW (cfs)	TOTAL FLOW (cfs)	MINOR LOSSES (ft)	INLET ELEVATION (ft)	HGL CLEARANCE (ft)	HYDRAULIC GRADIENT			NUMBER OF BARRELS	PIPE SIZE (in)	SLOPE (%)	ACTUAL VELOCITY (fps)	FULL FLOW CAPACITY (cfs)	NOTES AND REMARKS
						INCREMENTAL												CROWN				RISE				ZONE: Zone 7
ALIGNMENT NAME						CUMULATIVE												FLOWLINE ELEVATION					HYD. GRAD.			FREQUENCY (yrs): 10.00 Year
STATION	OFFSET DISTANCE (ft.)	SIDE	UPPER LOWER			COMPOSITE C VALUE	AREA	SUB-TOTAL (C*A)										UPPER END ELEVATION (ft)	LOWER END ELEVATION (ft)	FALL (ft)		SPAN	PHYSICAL MIN. PHYSICAL	PHYSICAL VELOCITY (fps)		MANNINGS n:
BL_CR-532			S-513	Type 3 CI	56.50	0.831	0.340	0.283	10.00	0.79	7.41	0.283	0.000	2.09	0.00	83.93	0.56	83.37	83.35	0.02	1	18	0.355%	1.18	6.79	TAILWATER EL. (ft): 83.00
195+50.00	-51.00	Lt.	S-514			0.831	0.340	0.283										81.20	81.00	0.20			0.35%	3.84		
																		79.70	79.50	0.20			0.15%			
BL_CR-532			S-514	Type D DBI	56.50	0.300	0.850	0.255	10.28	0.42	7.34	0.538	0.000	3.95	0.00	82.80	-0.55	83.35	83.28	0.07	1	18	0.350%	2.23	6.79	
195+50.00	0.00	Lt.	S-515			0.452	1.190	0.538										81.00	80.80	0.20			0.35%	3.84		
																		79.50	79.30	0.20			0.15%			
BL_CR-532			S-515	Type 3 CI	116.01	0.881	0.260	0.229	10.52	0.61	7.28	0.767	0.000	5.58	0.00	83.93	0.65	83.28	83.00	0.28	1	18	0.860%	3.16	10.59	
195+50.00	51.00	Rt.	O-502			0.529	1.450	0.767										72.00	71.00	1.00			0.86%	5.99		
																		70.50	69.50	1.00			0.15%			

used for stormsewer TW estimate

Remarks: Computations performed using GEOPAK Drainage.

Orange County

SFWMD

Permit No. 48-00123-S

John Young Parkway & Sand Lake Road Interchange Improvements

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE PERMIT NO. 48-00123-S
DATE ISSUED: 3/30/2016

PERMITTEE: ORANGE COUNTY PUBLIC WORKS
4200 SOUTH JOHN YOUNG PARKWAY
ORLANDO, FL 32839

F D O T - DISTRICT 5
719 SOUTH WOODLAND BOULEVARD
DELAND, FL 32720

PROJECT DESCRIPTION: Modification for construction and operation of a stormwater management system serving 38.24 acres of roadway development for a project known as John Young Parkway and Sand Lake Road Interchange Improvements.

PROJECT LOCATION: ORANGE COUNTY,

SEC 29 TWP 23S RGE 29E
SEC 28 TWP 23S RGE 29E
SEC 33 TWP 23S RGE 29E
SEC 32 TWP 23S RGE 29E

PERMIT DURATION: See Special Condition No:1.

This is to notify you of the District's agency action for Permit Application No. 151112-13, dated November 12, 2015. This action is taken pursuant to the provisions of Chapter 373, Part IV, Florida Statues (F.S).

Based on the information provided, District rules have been adhered to and an Environmental Resource Permit is in effect for this project subject to:

1. Not receiving a filed request for a Chapter 120, Florida Statutes, administrative hearing.
2. the attached 18 General Conditions (See Pages : 2 - 4 of 6),
3. the attached 10 Special Conditions (See Pages : 5 - 6 of 6) and
4. the attached 3 Exhibit(s)

Should you object to these conditions, please refer to the attached "Notice of Rights" which addresses the procedures to be followed if you desire a public hearing or other review of the proposed agency action. Please contact this office if you have any questions concerning this matter. If we do not hear from you in accordance with the "Notice of Rights," we will assume that you concur with the District's action.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY THAT this written notice has been mailed or electronically transmitted to the Permittee (and the persons listed in the attached distribution list) this , in accordance with Section 120.60(3), F.S. Notice was also electronically posted on this date through a link on the home page of the District's website (my.sfwmd.gov/Permitting).

BY:_____
Charles R. Walter, P.G., CFM
Orlando Regulatory Service Center Administrator
Orlando Service Center

Dewberry

100% Submittal

Drainage Design Report

County Road 423 - John Young Parkway

From South Park Cir. to Florida's Turnpike Bridge

Orange County, Florida

District 6

Contract No. Y13-806

November 2015

SUBMITTED BY:

Dewberry
520 S. Magnolia Avenue
Orlando, Florida 32801
407.843.5120

SUBMITTED TO:

Orange County Public Works
Engineering Division
4200 South John Young Parkway
Orlando, Florida 32829
407.836.7908

attenuation before discharging via an outfall structure to the existing ditch along the south side of Sand Lake Road. The existing ditch conveys flows to Shingle Creek.

3.2 Basin 2:

Basin 2 extends from an existing driveway to the centerline of Sand Lake Road. The proposed stormwater Pond 2 collects stormwater runoff from Ramp B and northbound John Young Parkway from Sta. 413+47 to Sta. 420+00. The stormwater runoff from the roadway improvements sheet flows into either an existing ditch at the south end of the basin or directly into the pond. The existing ditch discharges into the stormwater pond via a ditch bottom inlet. Pond 2 provides the required water quality treatment and peak attenuation before discharging via an outfall structure to the existing ditch along the south side of Sand Lake Road. The existing ditch conveys flows westward beneath John Young Parkway via CD-5 and to Shingle Creek.

3.3 Basin 4:

Basin 4 extends from the crest of the proposed John Young Parkway flyover at Station 433+00 to the bridge over the Florida Turnpike at Sta. 455+00 and includes both Ramp C and Ramp D. The proposed stormwater Pond 4 is an expansion of the existing Pond 4. The control elevation and top of bank has remained the same as previously designed but the weir has been replaced to account for the increase in impervious area per these improvements. The stormwater runoff from the roadway improvements is collected into a closed conveyance system and discharges via two outfalls into the pond. Pond 4 provides the required water quality treatment and peak attenuation before discharging via the existing bleeder and proposed concrete weir to the adjacent wetlands. The proposed concrete weir includes a concrete spreader swale to dissipate flows into the wetlands. The wetlands discharge westward towards Shingle Creek through existing cross drains under John Young Parkway.

IV. Cross Drain Summary:

There are five (5) proposed cross-drains with the John Young Parkway and Sand Lake Road Interchange improvements. Cross Drain CD-5 will replace an existing cross drain which lies beneath John Young Parkway just south of Sand Lake Road. Cross Drain CD-6 is an extension of the existing cross drain beneath John Young Parkway just north of Sand Lake

Road. Both CD-5 and CD-6 convey flows from existing ditches westward to Shingle Creek. Cross Drains CD-7, CD-8, and CD-9 are existing cross drains beneath John Young Parkway north of Sand Lake Road that provide connectivity between the existing wetlands east of John Young Parkway and Shingle Creek. These existing cross drains will be extended to account for the proposed widening of the John Young Parkway embankment. These cross drain analyses are provided in Appendix F.

V. Floodplain Compensation:

The proposed Basin 4 roadway improvements north of Sand Lake Road and the sidewalk improvements are within the Shingle Creek floodplain with elevation 87'. The SHWT on the east side of John Young Parkway was estimated at 82.9 and the SHWT on the west side of John Young Parkway, north and south of Sand Lake Road was estimated at 82.7. The 15.67 ac-ft of floodplain impacts from the proposed roadway widening are compensated for in stormwater Pond 1 (14.03 ac-ft) and Pond 4 (5.40 ac-ft), totaling 19.43 ac-ft of provided floodplain compensation. The concrete outfall weirs in both ponds have elevations below the floodplain elevation of 87' and therefore allow the floodwaters to stage into the wet detention ponds. See Appendix J.

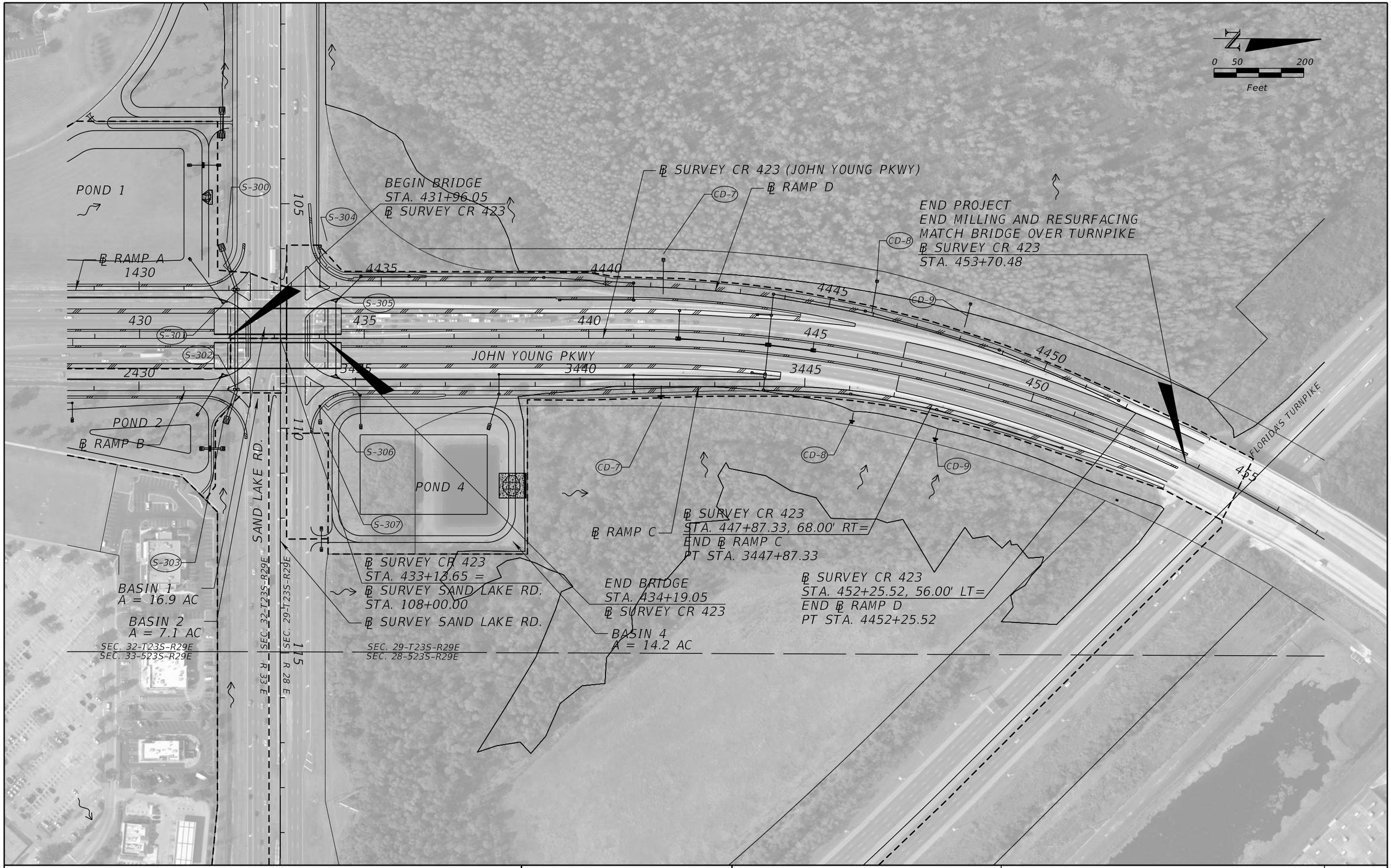
Floodplain Calculations 11/2/2015
John Young Parkway Interchange

Station	LT		RT		Total
	Area (sf)	Volume (cf)	Area (sf)	Volume (cf)	Volume (cf)
CR 423 (JOHN YOUNG PARKWAY)					
434+00	57	0	0	0	0
434+19	5	585	0	0	585
435+00	77	3,300	50	2,009	5,310
436+00	133	10,482	111	8,042	18,523
437+00	175	15,382	166	13,852	29,234
438+00	193	18,371	240	20,270	38,641
439+00	191	19,182	50	14,484	33,666
440+00	237	21,420	84	6,701	28,120
441+00	266	25,173	102	9,298	34,471
442+00	325	29,567	146	12,412	41,978
443+00	321	32,321	157	15,171	47,491
444+00	305	31,287	157	15,727	47,014
445+00	285	29,457	143	15,036	44,493
446+00	257	27,075	105	12,421	39,496
447+00	232	24,452	113	10,920	35,372
448+00	217	22,440	104	10,887	33,327
449+00	176	19,647	109	10,654	30,301
450+00	151	16,366	103	10,582	26,947
451+00	119	13,495	91	9,672	23,166
452+00	52	8,538	75	8,284	16,821
453+00	0	2,595	96	8,580	11,175
SR 482 (SAND LAKE ROAD)					
98+00	-		0	0	0
99+00	-		80	4,008	4,008
100+00	-		82	8,100	8,100
101+00	-		81	8,133	8,133
102+00	-		113	9,668	9,668
103+00	-		343	22,762	22,762
104+00	-		149	24,569	24,569
105+00	-		90	11,950	11,950
106+00	-		53	7,190	7,190
	Subtotal	**371,130**	**Subtotal**	**311,375**	**682,505**

Total Floodplain Impacts LEFT (AC-FT) =	8.52
Total Floodplain Impacts RIGHT (AC-FT) =	7.15
Total Floodplain Impacts (AC-FT) =	**15.67**

Flooplain Compensating Storage - Pond 1 (AC-FT) =	14.03
Flooplain Compensating Storage - Pond 4 (AC-FT) =	5.40
Total Compensating Storage (AC-FT) =	**19.43**

Note: Floodplain Comp Storage in ponds is from the WQT weir elevation to the 100 yr floodplain elevation (87.0 NAVD88).



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DANIEL F. CHRISTIE, P.E.
P.E. LICENSE NUMBER 64849
DEWBERRY | BOWYER-SINGLETON
520 S. MAGNOLIA AVE.
ORLANDO, FL 32801
CERTIFICATE OF AUTHORIZATION 8794

ORANGE COUNTY PUBLIC WORKS
ENGINEERING DIVISION
4200 SOUTH JOHN YOUNG PARKWAY
ORLANDO, FLORIDA 32839-9205
(407) 836-7908

DRAINAGE MAPS

SHEET NO. A - 5

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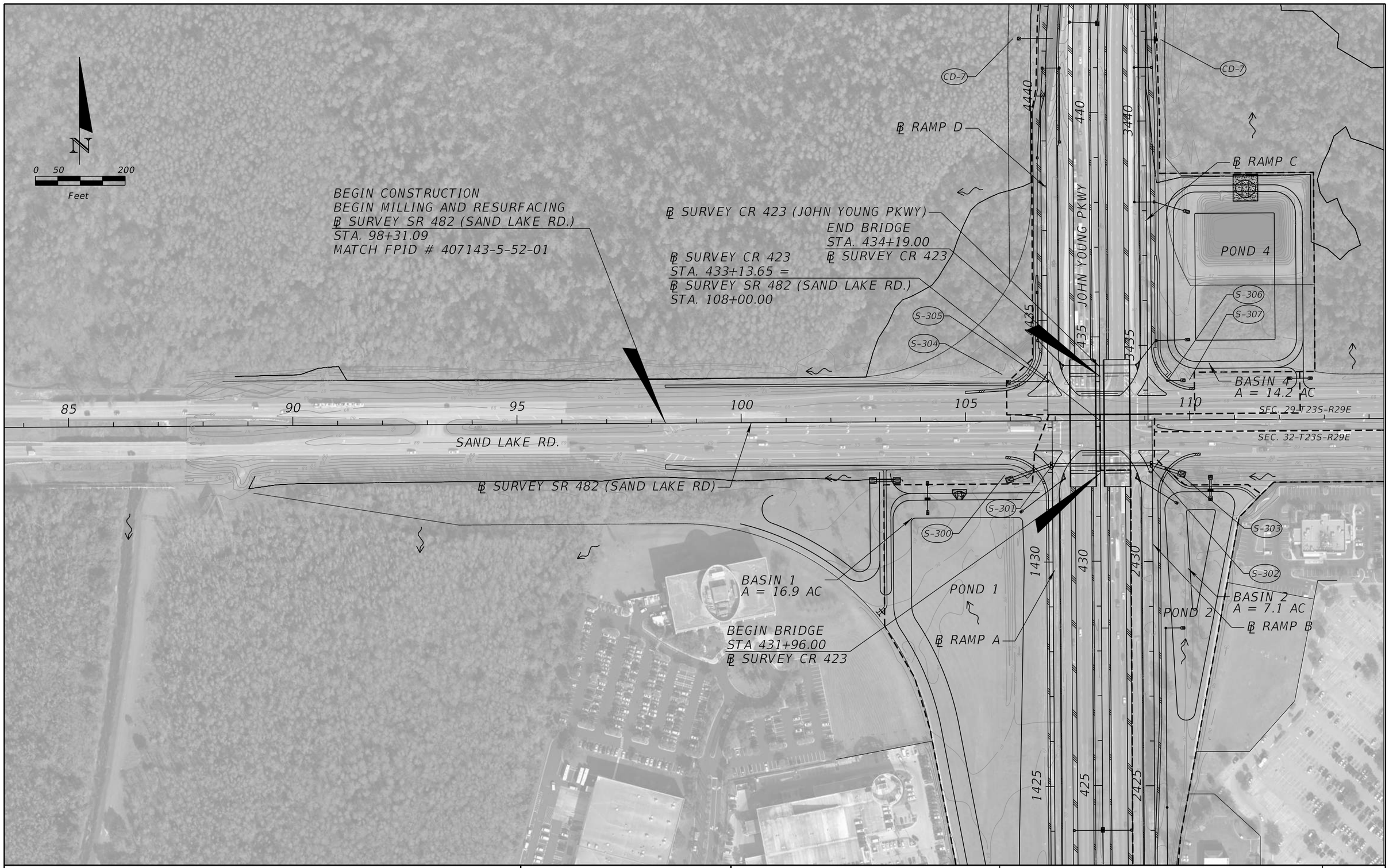

REVISIONS			
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ENGINEERING DIVISION
4200 SOUTH JOHN YOUNG PARKWAY
ORLANDO, FLORIDA 32839-9205
(407) 836-7908

DRAINAGE MAPS

SHEET NO. A - 6

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Basin 4

Pond 4

Pre & Post Development Analysis

Project:	John Young Parkway
Project Number:	50064696

Basin:	**4**	Calculated by:	KMK		Date:	12/15/2014
Basin Analysis (pre/post):	**Runoff Calcs (Post)**	Checked by:	CJL		Date:	12/15/2014

Avg. R / W Impervious Width (ft)	115	***Proposed Road (NB & SB Bridge)***			
Avg. R / W Pervious Width (ft)	0	***Total R/W Width:***	***Begin***	***End***	
Total R / W Width (ft)	115'	115'	433+00.00	434+19.00	
Length (ft)	119				

Avg. R / W Impervious Width (ft)	206	***Proposed Road (NB, SB & Ramps)***			
Avg. R / W Pervious Width (ft)	94	***Total R/W Width:***	***Begin***	***End***	
Total R / W Width (ft)	300'	300'	434+19.00	440+50.00	
Length (ft)	631				

Avg. R / W Impervious Width (ft)	185	***Proposed Road (NB, SB & Ramps)***			
Avg. R / W Pervious Width (ft)	65	***Total R/W Width:***	***Begin***	***End***	
Total R / W Width (ft)	250'	275'	440+50.00	445+00.00	
Length (ft)	450	225'			

Avg. R / W Impervious Width (ft)	165	***Proposed Road (NB, SB & Transitions)***			
Avg. R / W Pervious Width (ft)	50	***Total R/W Width:***	***Begin***	***End***	
Total R / W Width (ft)	215'	225'	445+00.00	447+00.00	
Length (ft)	200	205'			

Avg. R / W Impervious Width (ft)	150	***Proposed Road (NB, SB & Transitions)***			
Avg. R / W Pervious Width (ft)	30	***Total R/W Width:***	***Begin***	***End***	
Total R / W Width (ft)	180'	205'	447+00.00	453+50.00	
Length (ft)	650	155'			

Avg. R / W Impervious Width (ft)	135'	***Proposed Road (NB & SB Bridge)***			
Avg. R / W Pervious Width (ft)	20	***Total R/W Width:***	***Begin***	***End***	
Total R / W Width (ft)	155'	155'	453+50.00	455+00.00	
Length (ft)	150				

Total Length (ft)	2200

Basin Area (Ac):	14.20

Calculate Basin Runoff Curve Number - CN

Pervious/Impervious	Land-Use Description	Soil Name	Soil Group		Area	CN	Product
					(ac)		
IMPERVIOUS:							
	Roadway R / W		N/A		8.67	98	850
				Totals Impervious	8.67		850
PERVIOUS:							
Open Space R / W	Good (grass cover > 75%)	Smyrna	B/D		2.78	80	222
Pond Area	Good (grass cover > 75%)	Smyrna	B/D		0.86	80	69
				Total Pervious	**3.64**		**291**
OFF-SITE:							
Pond @ SHWT	Water	-			1.89	100	189
				Total Pond	**1.89**		**189**
				Total Area	**14.20**		**1330**
				Weighted CN		**94**	

Calculate Runoff Volume, V(R)

	.		P	S	R	V(R)
Basin Type	Design Storm	Agency	(in)	(in)	(in)	(ac-ft)
Open	25 yr, 24 hr		8.6	0.68	7.84	9.27
	10 yr, 24 hr		5.0	0.68	4.27	**5.05**
	25 yr, 72 hr	SFWMD	9.5	0.68	8.73	**10.33**
	10 yr, 72 hr	SFWMD	7.5	0.68	6.74	**7.98**

Sample Calculations:

Determine Soil Storage, S				
S = (1000/CN) - 10	for CN =	94	S =	0.68

Determine Runoff, R	for P =	8.6		
R = (P - 0.2*S)2/(P+(0.8*S))	S =	0.68	R =	7.84

Determine Runoff Volume, V(R)				
V(R) = R/12 * Area	for R =	7.84	V(R) =	9.27

Project:	John Young Parkway
Project Number:	50064696

Basin:	**4**	Calculated by:	KMK		Date:	7/24/2015
Basin Analysis (pre/post):	**Runoff Calcs (Pre)**	Checked by:	CJL		Date:	7/24/2015

Avg. R / W Impervious Width (ft)	158'				
Avg. R / W Pervious Width (ft)	127'	***Impervious Width:***	***Begin***	***End***	***R/W Width***
Total R / W Width (ft)	285'	158'	434+00.00	438+00.00	285'
Length (ft)	400				

Avg. R / W Impervious Width (ft)	150'				
Avg. R / W Pervious Width (ft)	135'	***Impervious Width:***	***Begin***	***End***	***R/W Width***
Total R / W Width (ft)	285'	158'	438+00.00	439+00.00	285'
Length (ft)	100	142'			

Avg. R / W Impervious Width (ft)	139'				
Avg. R / W Pervious Width (ft)	104'	***Impervious Width:***	***Begin***	***End***	***R/W Width***
Total R / W Width (ft)	243'	139'	439+00.00	448+00.00	285'
Length (ft)	900'				200'

Avg. R / W Impervious Width (ft)	139'				
Avg. R / W Pervious Width (ft)	39'	***Impervious Width:***	***Begin***	***End***	***R/W Width***
Total R / W Width (ft)	178'	139'	448+00.00	455+00.00	200'
Length (ft)	700				155'

Avg. R / W Impervious Width (ft)					
Avg. R / W Pervious Width (ft)		***Impervious Width:***	***Begin***	***End***	***R/W Width***
Total R / W Width (ft)					
Length (ft)					

Total Length (ft)	2100

Basin Area (Ac):	**14.20**

Calculate Basin Runoff Curve Number - CN

Pervious/Impervious	Land-Use Description	Soil Name	Hydrologic Soil Group		Area (Ac)	CN	Product of CN x A
IMPERVIOUS:							
	Roadway R / W		N/A		6.90	98	676
				Total Impervious	**6.90**		**676**
PERVIOUS:							
Open Space R / W	Good (grass cover > 75%)	Smyrna	B/D		4.23	80	339
Pond Area	Good (grass cover > 75%)	Smyrna	B/D		0.62	80	50
Woods	Good	Smyrna	B/D		1.89	77	146
				Total Pervious	**6.74**		**534**
OFF-SITE:							
Pond @ SHWT	Water	-			0.56	100	56
				Total Pond	**0.56**		**56**
				Total Area	**14.20**		**1266**
				Weighted CN		**89**	

Calculate Runoff Volume, V(R)

	.		P	S	R	V(R)
Basin Type	Design Storm	Agency	(in)	(in)	(in)	(ac-ft)
Open	25 yr, 24 hr		8.6	1.22	7.29	8.63
	10 yr, 24 hr		5.0	1.22	3.79	4.48
	25 yr, 72 hr	SFWMD	9.5	1.22	8.18	**9.68**
	10 yr, 72 hr	SFWMD	7.5	1.22	6.21	**7.35**

Sample Calculations:

Determine Soil Storage, S				
S = (1000/CN) - 10	for CN =	89	S =	1.22

Determine Runoff, R	for P =	8.6		
R = (P - 0.2*S)2/(P+(0.8*S))	S =	1.22	R =	7.29

Project:	John Young Parkway
Project Number:	50064696

Basin:	**4**	Calculated by:	KMK	Date:	7/30/2015
Basin Analysis:	**Stage - Storage Calcs**	Checked by:	CJL	Date:	7/30/2015

Pond 4

	Elevation	Area	Average Area	Delta D	Delta Storage	Storage
	(ft)	(ac)	(ac)	(ft)	(ac-ft)	(ac-ft)
Pond Bottom	78.00	1.15				
Control EL.	**84.00**	**1.89**				0
			1.95	1.00	1.95	
WEIR EL.	85.00	**2.01**				1.95
			2.16	2.5	5.40	
Slope Break (1:5)	87.50	2.31				7.35
			2.53	0	0.00	
OTB (flat)	87.50	2.75				7.35

Approximate SHWT	84.5
Existing Control EL.	84.0
Required Detention PAV Volume (ac-ft)	1.81
Provided Treatment (ac-ft)	1.95

Project:	John Young Parkway
Project Number:	50064696

Basin:	**4**	Calculated by:	KMK	Date:	12/15/2014
Basin Analysis:	**PAV Calcs**	Checked by:	CJL	Date:	12/15/2014

Condition	Area (Ac)
Total Post-Developed Area	14.20
Total Treatment Area (Imperviousness Calc)	12.31
Impervious Treatment Area	8.67
Imperviousness	70%

Excludes the Pond 4 area @ NWL

Wet Detention			(Ac-ft)
1 inch over Total Post Area	1" / (12"/1ft) * (Total Post-Developed Area) =		1.18
2.5 inches x Imperviousness x Total Treatment Area	2.5" / (12"/1ft) * (Imperviousness) * (Total Treatment Area) =		1.81
Wet Detention Pollution Abatement Volume =			1.81

Water Quality Volume using Wet Detention Pond =	**1.81**	**Ac-ft**

JOHN YOUNG PARKWAY PROJECT
Orange County, FL

CROSS-DRAIN SUMMARY TABLE

ID	Station	Existing/Permitted Cross-Drain			Proposed Cross-Drain			Remarks
		Length	Size	DHW	Length	Size	DHW	
CD-5 (S-300 to S-303)	432+15	290'	(2) 42" pipe	84.68	395'	(2) 42" pipe	84.92	Sand Lake Road Ditch (South Side)
CD-6 (S-304 to S-307)	434+02	360'	24" x 38" pipe	86.18	378'	24" x 38" pipe	86.13	Sand Lake Road Ditch (North Side)
CD-7	441+64	216'	36" pipe	86.18	298'	36" pipe	86.13	Wetland Equalizer Pipe
CD-8	446+14	248'	24" pipe	86.18	312'	24" pipe	86.13	Wetland Equalizer Pipe
CD-9	448+15	240'	24" pipe	86.18	306'	24" pipe	86.13	Wetland Equalizer Pipe

NOTES:

DHW: Design High Water Elevation (50yr)

Table 2 - Culvert Summary Table: CD-7

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)
99.00	44.20	86.13	3.80	4.03	7-M2c	3.00	2.16	2.16	1.70	8.10	0.00
104.60	45.89	86.34	3.95	4.24	7-M2c	3.00	2.20	2.20	1.70	8.24	0.00
110.20	47.65	86.56	4.12	4.46	7-M2c	3.00	2.25	2.25	1.70	8.40	0.00
115.00	49.49	86.80	4.31	4.70	7-M2c	3.00	2.29	2.29	1.70	8.56	0.00
121.40	51.89	87.10	4.56	5.00	7-M2c	3.00	2.34	2.34	1.70	8.77	0.00
127.00	53.98	87.38	4.78	5.29	7-M2c	3.00	2.38	2.38	1.70	8.96	0.00
132.60	56.10	87.68	5.02	5.58	7-M2c	3.00	2.43	2.43	1.70	9.16	0.00
138.20	58.38	87.97	5.29	5.87	7-M2c	3.00	2.47	2.47	1.70	9.38	0.00
143.80	60.56	88.28	5.56	6.18	7-M2c	3.00	2.51	2.51	1.70	9.59	0.00
149.40	62.69	88.60	5.82	6.50	7-M2c	3.00	2.55	2.55	1.70	9.80	0.00
155.00	64.77	88.92	6.09	6.82	7-M2c	3.00	2.58	2.58	1.70	10.01	0.00

****

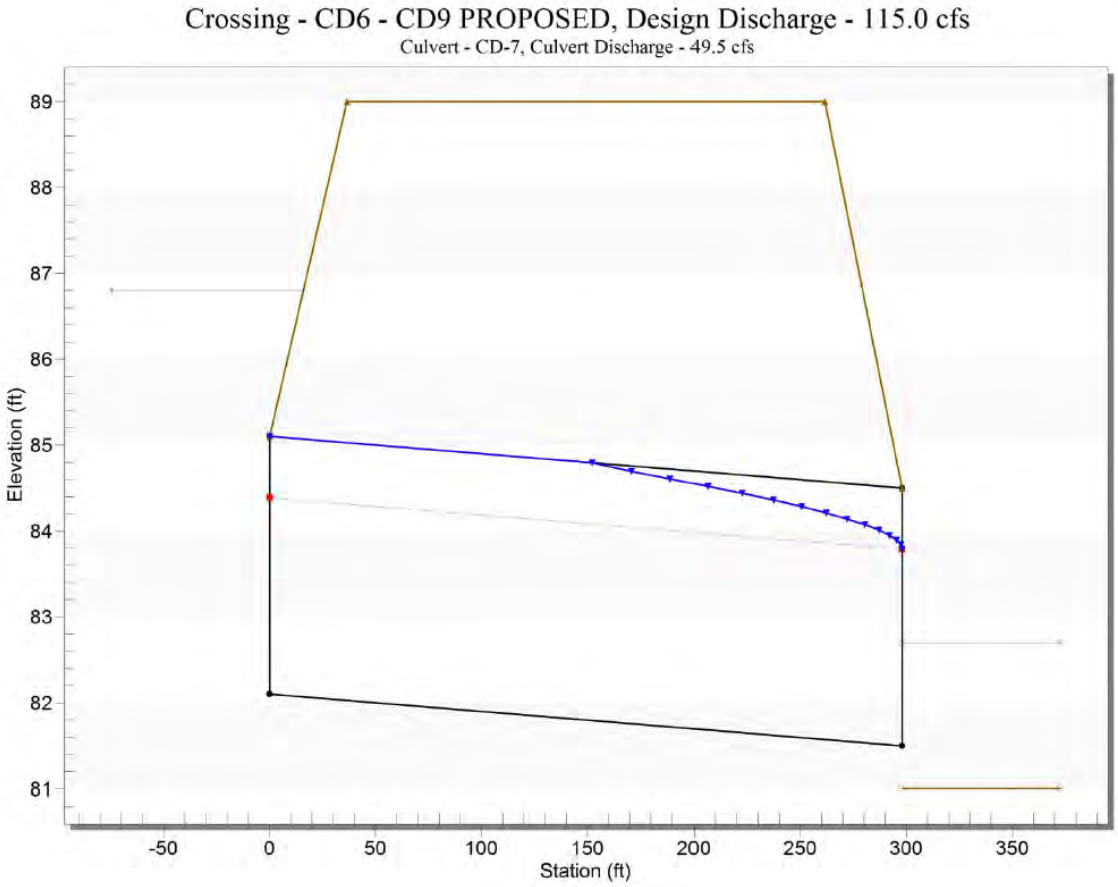
Straight Culvert

Inlet Elevation (invert): 82.10 ft, Outlet Elevation (invert): 81.50 ft

Culvert Length: 298.00 ft, Culvert Slope: 0.0019

****

Water Surface Profile Plot for Culvert: CD-7



Site Data - CD-7

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 82.10 ft

Outlet Station: 298.00 ft

Outlet Elevation: 81.50 ft

Number of Barrels: 1

Culvert Data Summary - CD-7

Barrel Shape: Circular

Barrel Diameter: 3.00 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 3 - Culvert Summary Table: CD-8

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)
99.00	19.15	86.13	3.10	3.63	7-M2c	2.00	1.57	1.57	1.70	7.23	0.00
104.60	19.74	86.34	3.22	3.84	7-M2c	2.00	1.59	1.59	1.70	7.35	0.00
110.20	20.39	86.56	3.36	4.06	7-M2c	2.00	1.62	1.62	1.70	7.49	0.00
115.00	21.07	86.80	3.50	4.29	7-M2c	2.00	1.64	1.64	1.70	7.63	0.00
121.40	21.92	87.10	3.69	4.60	7-M2c	2.00	1.67	1.67	1.70	7.82	0.00
127.00	22.67	87.38	3.86	4.89	7-M2c	2.00	1.70	1.70	1.70	7.98	0.00
132.60	23.44	87.68	4.05	5.18	7-M2c	2.00	1.72	1.72	1.70	8.16	0.00
138.20	24.19	87.97	4.23	5.47	7-M2c	2.00	1.74	1.74	1.70	8.34	0.00
143.80	24.96	88.28	4.42	5.78	7-M2c	2.00	1.76	1.76	1.70	8.52	0.00
149.40	25.74	88.60	4.62	6.10	7-M2c	2.00	1.78	1.78	1.70	8.72	0.00
155.00	26.50	88.92	4.82	6.42	7-M2c	2.00	1.80	1.80	1.70	8.91	0.00

****

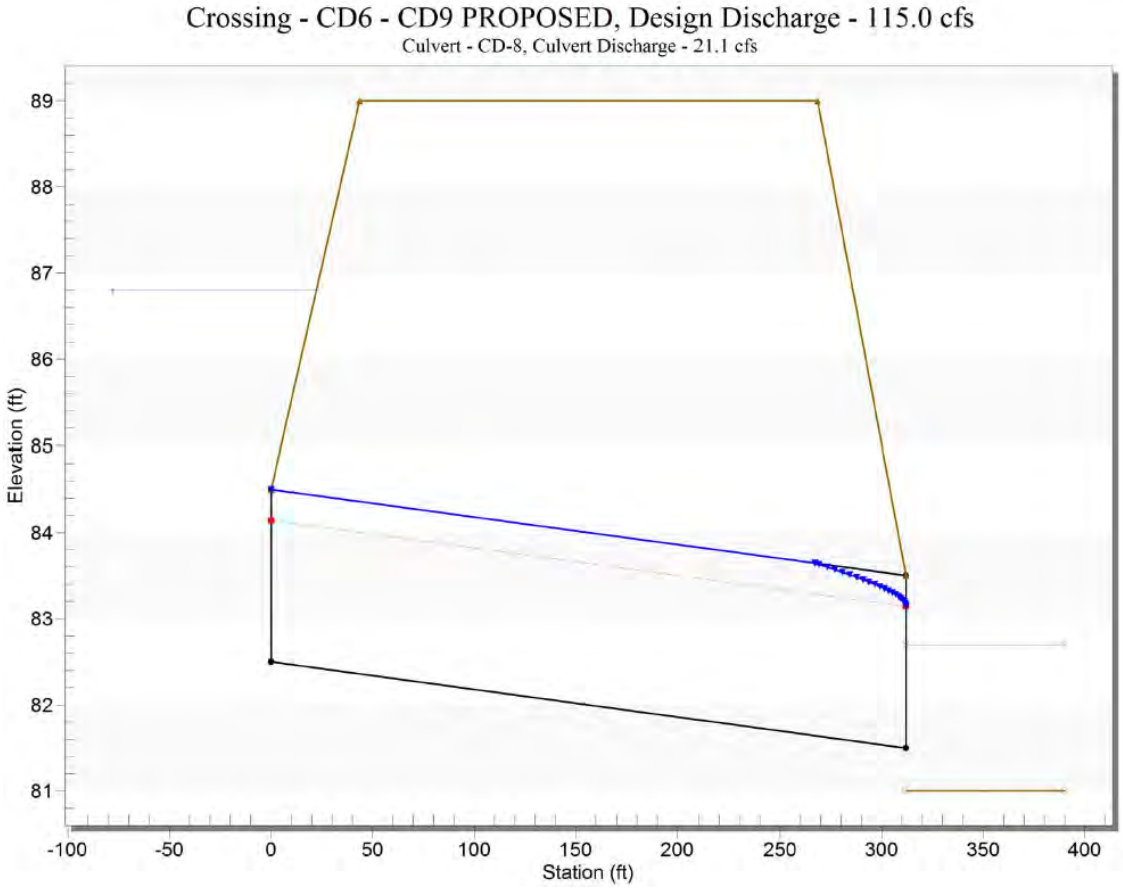
Straight Culvert

Inlet Elevation (invert): 82.50 ft, Outlet Elevation (invert): 81.50 ft

Culvert Length: 312.00 ft, Culvert Slope: 0.0033

****

Water Surface Profile Plot for Culvert: CD-8



Site Data - CD-8

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 82.50 ft

Outlet Station: 312.00 ft

Outlet Elevation: 81.50 ft

Number of Barrels: 1

Culvert Data Summary - CD-8

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 4 - Culvert Summary Table: CD-9

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)
99.00	19.20	86.13	3.11	4.03	7-M2c	2.00	1.57	1.57	1.70	7.24	0.00
104.60	19.82	86.34	3.24	4.24	7-M2c	2.00	1.60	1.60	1.70	7.37	0.00
110.20	20.48	86.56	3.37	4.46	7-M2c	2.00	1.62	1.62	1.70	7.51	0.00
115.00	21.16	86.80	3.52	4.70	7-M2c	2.00	1.65	1.65	1.70	7.65	0.00
121.40	22.02	87.10	3.71	5.01	7-M2c	2.00	1.67	1.67	1.70	7.84	0.00
127.00	22.80	87.38	3.89	5.28	7-M2c	2.00	1.70	1.70	1.70	8.01	0.00
132.60	23.57	87.68	4.08	5.58	7-M2c	2.00	1.72	1.72	1.70	8.19	0.00
138.20	24.34	87.97	4.26	5.87	7-M2c	2.00	1.74	1.74	1.70	8.37	0.00
143.80	25.11	88.28	4.46	6.18	7-M2c	2.00	1.76	1.76	1.70	8.56	0.00
149.40	25.89	88.60	4.65	6.50	7-M2c	2.00	1.78	1.78	1.70	8.75	0.00
155.00	26.66	88.92	4.85	6.82	7-M2c	2.00	1.80	1.80	1.70	8.95	0.00

****

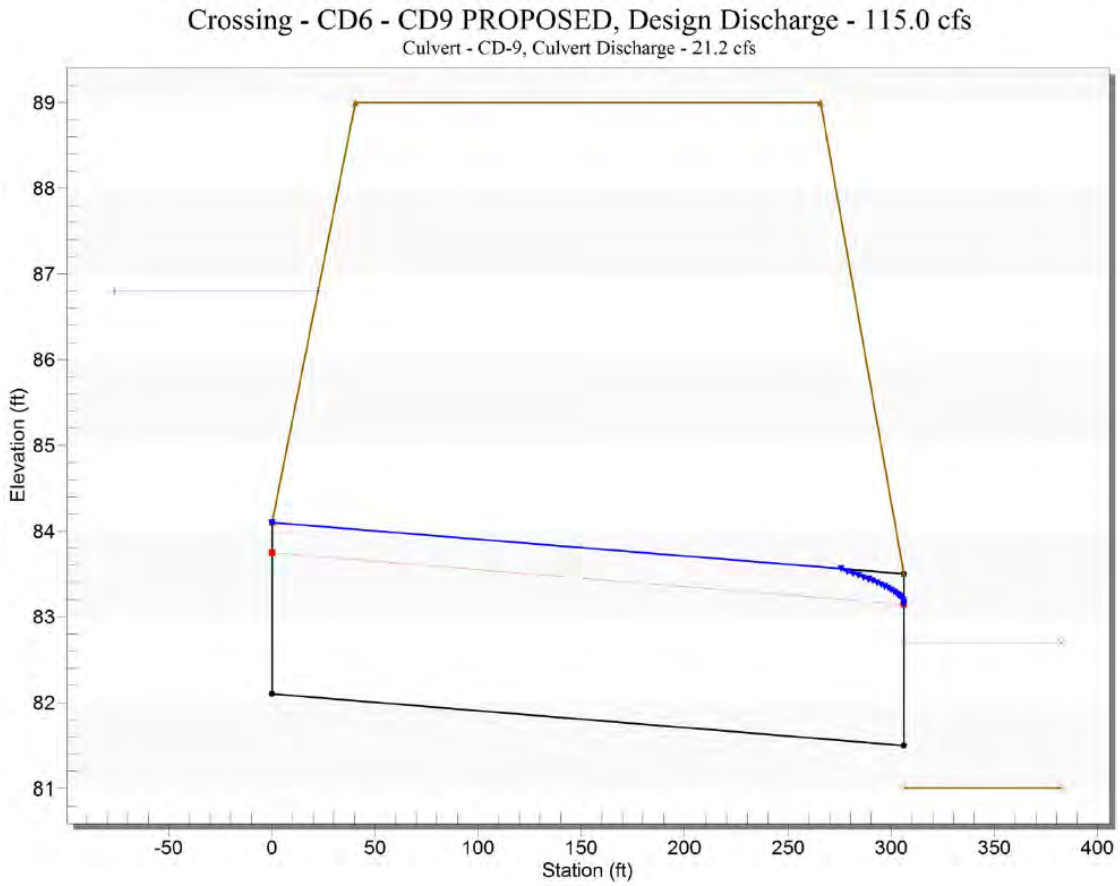
Straight Culvert

Inlet Elevation (invert): 82.10 ft, Outlet Elevation (invert): 81.50 ft

Culvert Length: 306.00 ft, Culvert Slope: 0.0019

****

Water Surface Profile Plot for Culvert: CD-9



Site Data - CD-9

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 82.10 ft

Outlet Station: 306.00 ft

Outlet Elevation: 81.50 ft

Number of Barrels: 1

Culvert Data Summary - CD-9

Barrel Shape: Circular

Barrel Diameter: 2.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120

Culvert Type: Straight

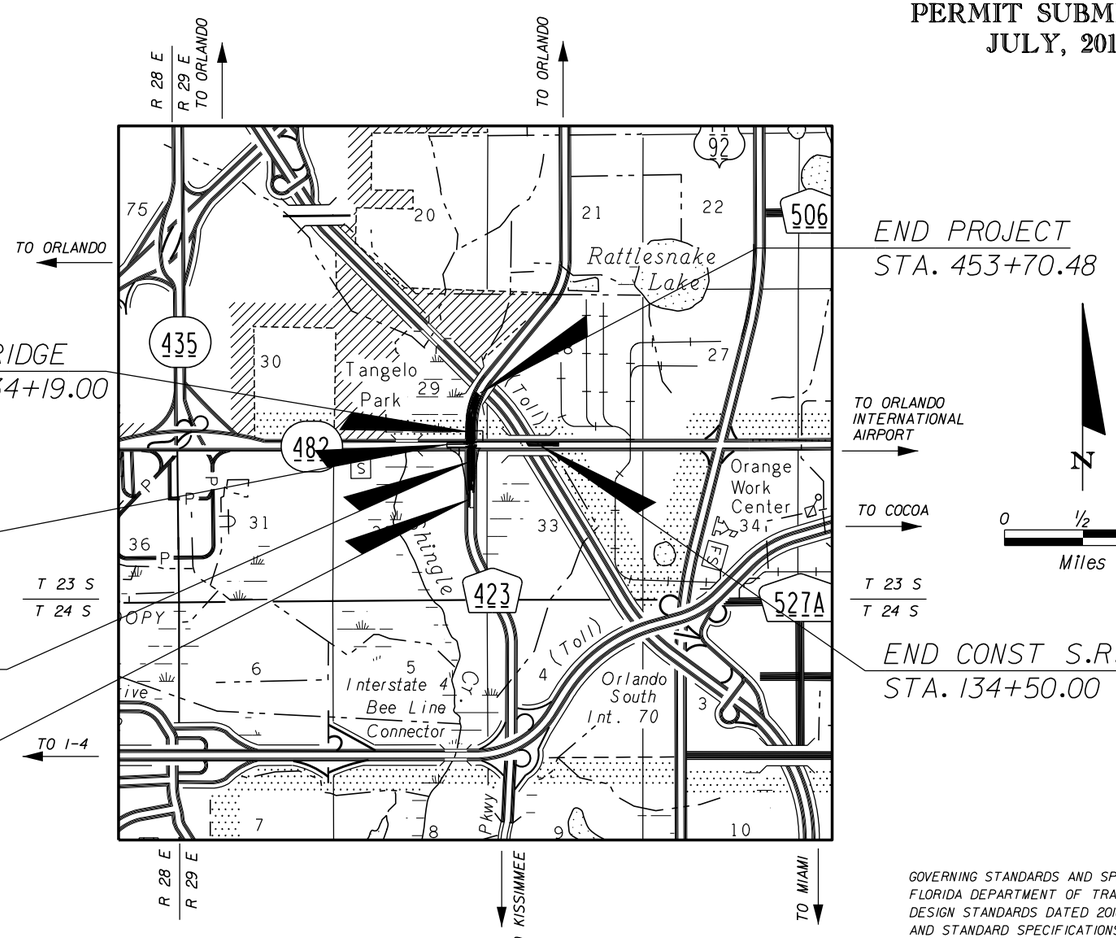
Inlet Configuration: Mitered to Conform to Slope

Inlet Depression: NONE

CONSTRUCTION PLANS FOR
CR 423 - JOHN YOUNG PARKWAY INTERCHANGE
WITH SR 482 - SAND LAKE ROAD
ORANGE COUNTY, FLORIDA

DISTRICT 6
CONTRACT Y13-806
FPID 407143-6-52-01

90% PLANS
PERMIT SUBMITTAL
JULY, 2015



SOURCE OF BENCH MARK DATUM

HORIZONTAL SURVEY IS BASED ON THE 83/90 ADJUSTMENT DATUM. VERTICAL SURVEY IS BASED ON THE NAVD88 SURVEY DATUM.

(1) DESIGNATED "L 715 014" BY THE NATIONAL GEODETIC SURVEY, PID-AA6754, A FOUND ORANGE COUNTY BRASS DISK, 2" DIAMETER STAMPED "L-715-014", ELEVATION = 89.00 FEET, ADJUSTED, LOCATED IN THE SOUTHEAST CORNER OF A CONCRETE FOOT PAD FOR TOWER #57 LYING 400 FEET +/- EAST OF THE CENTERLINE OF STATE ROAD 441, AND 200 FEET +/- SOUTH OF PARKING LOT
(2) DESIGNATED "L 715 017" BY THE NATIONAL GEODETIC SURVEY, PID-AA6757, A FOUND ORANGE COUNTY ENGINEERING DISK, 2" DIAMETER STAMPED "L-715-017", ELEVATION = 92.90 FEET, ADJUSTED, LOCATED IN THE NORTHWEST CORNER OF A DROP INLET ON THE EAST SIDE OF STATE ROAD 441, 40 FEET SOUTH OF DRIVEWAY

LENGTH OF PROJECT

	LINEAR FEET	MILES
ROADWAY	4000.95	0.758
BRIDGES	223.00	0.042
NET LENGTH OF PROJECT	4223.95	0.800
EXCEPTIONS	0.000	0.000
GROSS LENGTH OF PROJECT	4223.95	0.800

TERESA JACOBS, COUNTY MAYOR

BOARD OF COUNTY COMMISSIONERS

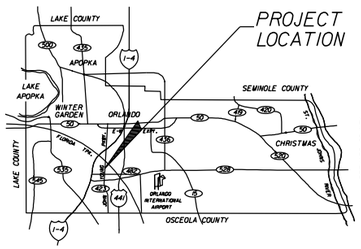
S. SCOTT BOYD	DISTRICT 1
BRYAN NELSON	DISTRICT 2
PETE CLARKE	DISTRICT 3
JENNIFER THOMPSON	DISTRICT 4
TED EDWARDS	DISTRICT 5
VICTORIA P. SIPLIN	DISTRICT 6
MARK V. MASSARO, P.E.	PUBLIC WORKS DIRECTOR

NOTE:
PLANS WERE PREPARED ACCORDING TO AVAILABLE INFORMATION TO ADEQUATELY ADDRESS CONDITIONS AS THEY EXISTED AT THE TIME OF PLAN PREPARATION. DEEDS, CONDITIONS, AND OWNERSHIP OF PROPERTIES MAY HAVE CHANGED SINCE THE PROJECT DESIGN. THE COUNTY'S REPRESENTATIVE WILL ADDRESS CHANGES AND NEEDS WITH THE PROPERTY OWNER OR THEIR REPRESENTATIVE. CONTRACTOR SHALL WORK WITH THE COUNTY'S REPRESENTATIVE IN ADDRESSING AND MEETING NEEDS AND CONDITIONS THAT MAY HAVE CHANGED SINCE PLANS PREPARATION.

CERTIFICATION TO PLANS

I HEREBY CERTIFY THAT THE DESIGN FOR THIS PROJECT AND THE ATTACHED CONSTRUCTION PLANS COMPLY WITH THE REQUIREMENTS OF SECTION 336.045 OF THE FLORIDA STATUTES AND ARE IN SUBSTANTIAL CONFORMANCE WITH THE STANDARDS CONTAINED IN THE EDITION OF THE "MANUAL OF UNIFORM MINIMUM STANDARDS FOR DESIGN, CONSTRUCTION AND MAINTENANCE FOR STREETS AND HIGHWAYS" IN EFFECT ON THIS DATE AS ADOPTED BY THE FLORIDA DEPARTMENT OF TRANSPORTATION PURSUANT TO SUBSECTION 336.045 (1) OF THE FLORIDA STATUTES.

DATE: _____ ENGINEER: _____ FLORIDA REG. NO. 64849
DANIEL F. CHRISTIE, P.E.



SEC. 29,32 TWP. 23 S RGE. 29 E.

LOCATION MAP

INDEX OF SHEETS

UTILITIES ENCOUNTERED

ORANGE COUNTY UTILITIES (WATER AND SEWER)	407-254-9711
ORANGE COUNTY PUBLIC WORKS	407-836-7890
FLORIDA'S TURNPIKE ENTERPRISE	954-934-1624
AT&T DISTRIBUTION	407-273-5084
BRIGHT HOUSE	407-532-8504
COMCAST	352-315-8528
LEVEL 3 COMMUNICATIONS	720-888-4988
ORLANDO UTILITIES COMMISION (ELECTRIC)	407-434-2558
ORLANDO UTILITIES COMMISION (WATER)	407-434-2557
DUKE ENERGY DISTRIBUTION	407-905-3319
AT&T LONG DISTANCE(PEA)	407-578-8000
FPL FIBERNET	305-552-2931
ORLANDO TELEPHONE CO. /SUMMIT BROADBAND	407-996-1176
VERIZON BUSINESS	813-740-1231
TECO PEOPLES GAS	407-420-2674

GOVERNING STANDARDS AND SPECIFICATIONS:
FLORIDA DEPARTMENT OF TRANSPORTATION, DESIGN STANDARDS DATED 2016, AND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED JANUARY 2016, AS AMENDED BY CONTRACT DOCUMENTS.

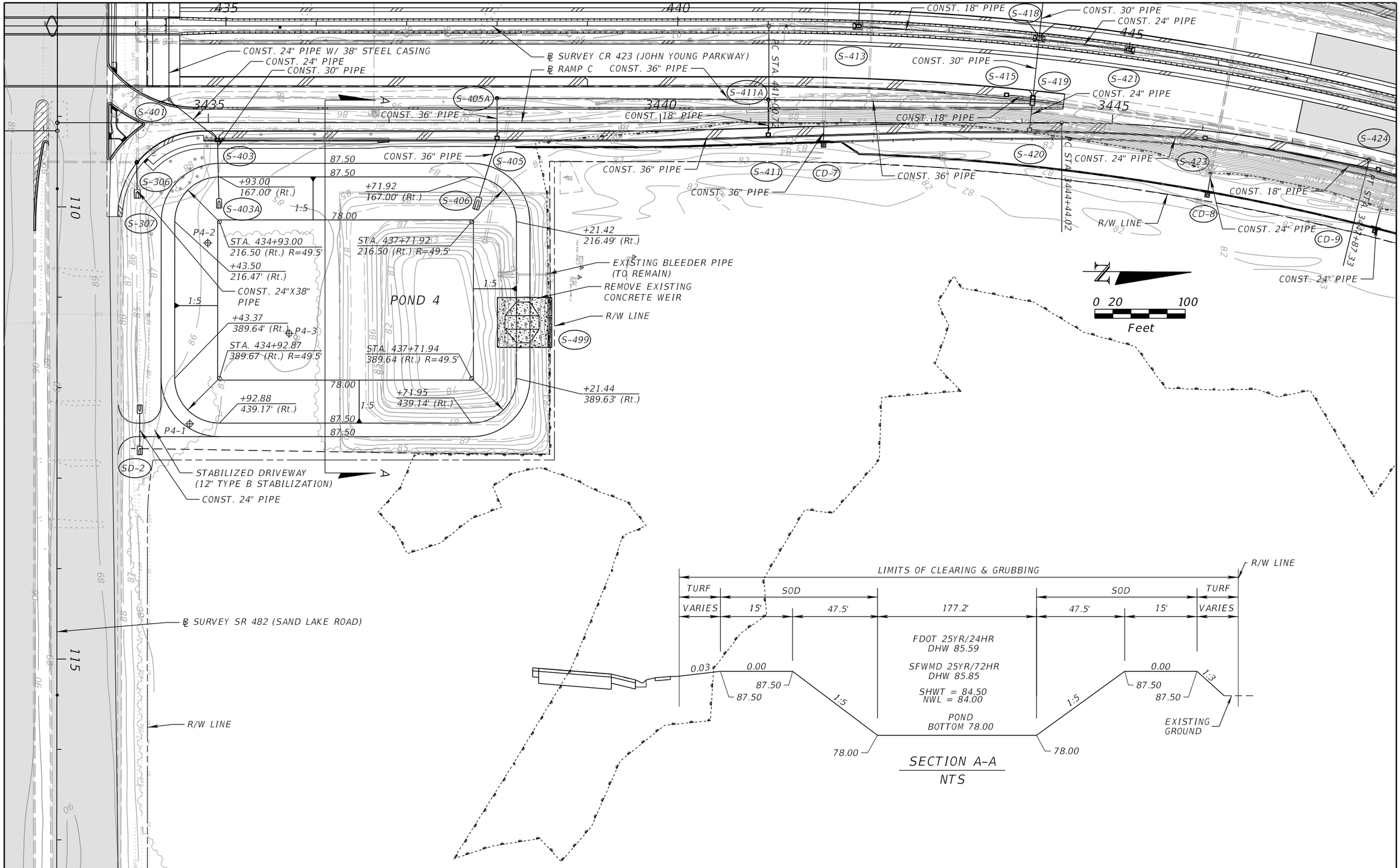
PLANS PREPARED BY:

DEWBERRY
520 SOUTH MAGNOLIA AVENUE
ORLANDO, FLORIDA 32801
407-843-5120
VENDOR NUMBER 59-1373777

REVISIONS	DATE	BY

DESIGNED BY: DFC	DATE:
CHECKED BY: KEK	DATE:
DRAWN BY: PRS	DATE:
APPROVED BY: KEK	DATE:
PROJECT NO:	

SHEET 1 OF _____



SECTION A-A
NTS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

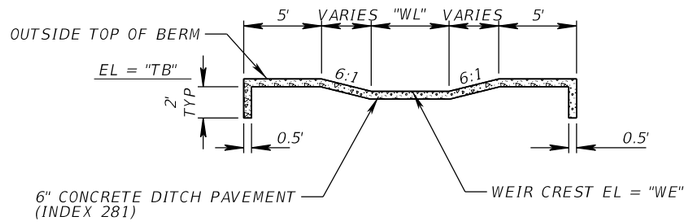
CLAYTON J. LEE, P.E.
P.E. LICENSE NUMBER 44032
DEWBERRY ENGINEERS INC.
520 SOUTH MAGNOLIA AVENUE
ORLANDO, FL 32801
CERTIFICATE OF AUTHORIZATION 8794

ORANGE COUNTY PUBLIC WORKS
ENGINEERING DIVISION
4200 SOUTH JOHN YOUNG PARKWAY
ORLANDO, FLORIDA 32839-9205
(407) 836-7908

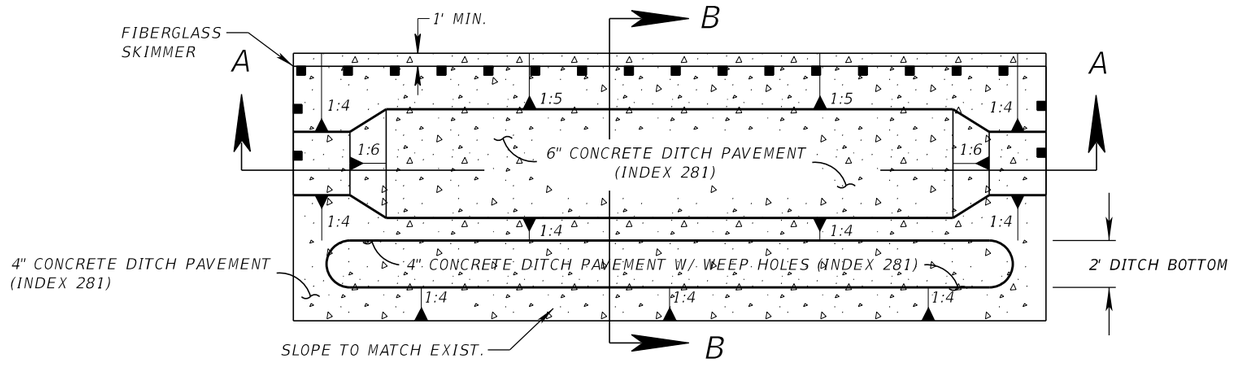
DRAINAGE DETAILS
POND 4

SHEET NO. 114

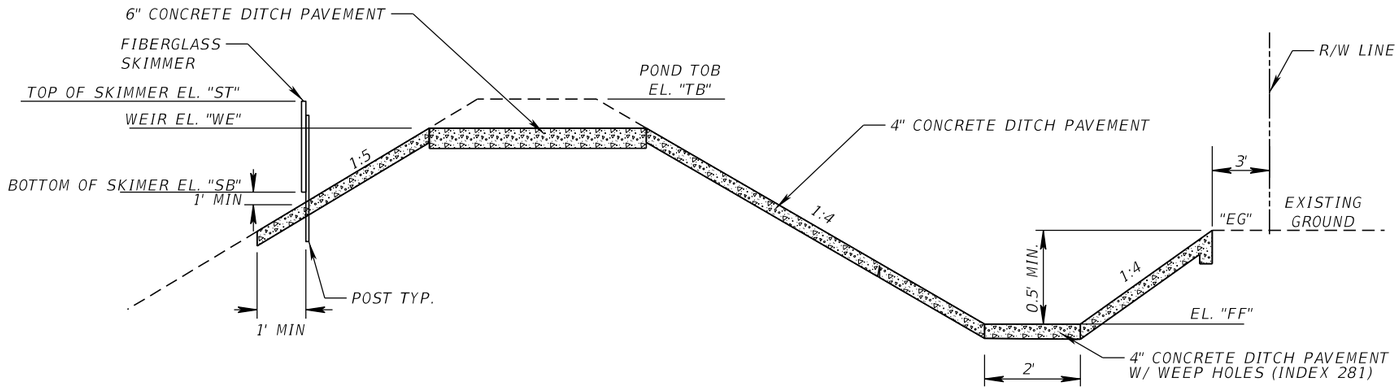
psand 11/11/2015 2:24:01 PM S:\50064696_JYP_Sand_Lake_Rd-Interchange\50064696\drainage\DRDTRD_POND4.dgn



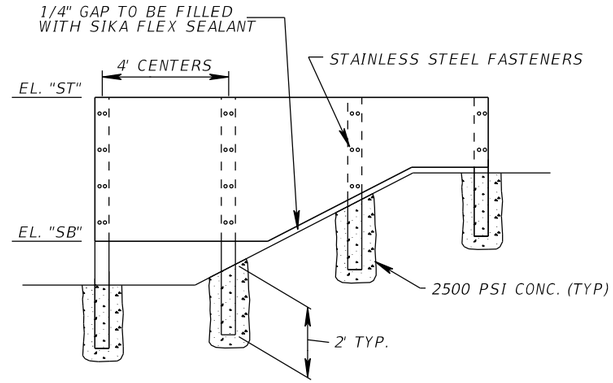
SECTION A-A
NTS



PLAN DETAIL
NTS



SECTION B-B
NTS



NOTE:
BOLTS SHALL BE INSTALLED WITH HEADS ON OUTSIDE OF STRUCTURE TO PRESENT A SMOOTH, SNAG-FREE SURFACE.

POSTS AVAILABLE
2" SQUARE FIBREPOST
3" SQUARE FIBREPOST
3" ROUND ALUMN. SCHED. 40
6" ROUND ALUMN, SCHED. 40

POST MOUNTED FIBERGLASS SKIMMER
NTS

WEIR AND SKIMMER SUMMARY

Pond No.	Structure No.	Weir Length (ft)	Weir Elevation	Top of Bank	Top of Skimmer	Bottom of Skimmer	Spreader Swale Bottom Elevation	Existing Ground Elevation (Max)
		'WL'	**'WE'**	**'TB'**	**'ST'**	**'SB'**	**'FF'**	**'EG'**
1	S-198	10	86.0	87.0	N/A	N/A	N/A	85.0
4	S-499	15	85.0	87.5	87.0	84.5	82.5	83.0

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

CLAYTON J. LEE, P.E.
P.E. LICENSE NUMBER 44032
DEWBERRY ENGINEERS INC.
520 SOUTH MAGNOLIA AVENUE
ORLANDO, FL 32801
CERTIFICATE OF AUTHORIZATION 8794

ORANGE COUNTY PUBLIC WORKS
ENGINEERING DIVISION
4200 SOUTH JOHN YOUNG PARKWAY
ORLANDO, FLORIDA 32839-9205
(407) 836-7908

DRAINAGE DETAILS

SHEET NO. 115

Orange County

SFWMD

Permit No. 48-01443-P

Widening of Florida's Turnpike (SR 91) from Beeline to I-4

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE PERMIT NO. 48-01443-P
DATE ISSUED: MAY 12, 2004

FORI #0145
Rev. 6/95

PERMITTEE: FLORIDA'S TURNPIKE ENTERPRISE
(WIDENING OF FLORIDA'S TURNPIKE (SR 91) FROM BEELIN)
P O BOX 613069,
OCOEE , FL 34761

PROJECT DESCRIPTION: CONSTRUCTION AND OPERATION OF A SURFACE WATER MANAGEMENT SYSTEM TO SERVE A 299.4 ACRE HIGHWAY PROJECT KNOWN AS TURNPIKE WIDENING BETWEEN THE BEELINE EXPRESSWAY AND I-4.

PROJECT LOCATION: ORANGE COUNTY , SECTION 19,20,28,29,33 TWP 23S RGE 29E
SECTION 3,4 TWP 24S RGE 29E

PERMIT DURATION: See Special Condition No:1. See attached Rule 40E-4.321, Florida Administrative Code.

This Permit is issued pursuant to Application No. 031222-15 , dated December 22, 2003. Permittee agrees to hold and save the South Florida Water Management District and its successors harmless from any and all damages, claims or liabilities which may arise by reason of the construction, operation, maintenance or use of activities authorized by this Permit. This Permit is issued under the provisions of Chapter 373 , Part IV Florida Statutes (F.S.), and the Operating Agreement Concerning Regulation Under Part IV, Chapter 373 F.S., between South Florida Water Management District and the Department of Environmental Protection. Issuance of this Permit constitutes certification of compliance with state water quality standards where neccessary pursuant to Section 401, Public Law 92-500, 33 USC Section 1341 , unless this Permit is issued pursuant to the net improvement provisions of Subsections 373.414(1)(b), F.S., or as otherwise stated herein.

This Permit may be transferred pursuant to the appropriate provisions of Chapter 373, F.S, and Sections 40E-1,6107(1) and (2), and 40E-4.351(1), (2), and (4), Florida Administrative Code (F.A.C.). This Permit may be revoked, suspended, or modified at any time pursuant to the appropriate provisions of Chapter 373, F.S, and Sections 40E-4,351(1), (2), and (4), F.A.C.

This Permit shall be subject to the General Conditions set forth in Rule 40E-4.381, F.A.C., unless waived or modified by the Governing Board. The Application, and the Environmental Resource Permit Staff Review Summary of the Application, including all conditions, and all plans and specifications incorporated by reference, are a part of this Permit. All activities authorized by this Permit shall be implemented as set forth in the plans, specifications, and performance criteria as set forth and incorporated in the Environmental Resource Permit Staff Review Summary. 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, pursuant to the appropriate provisions of Chapter 373, F.S. and Sections 40E-4.361 and 40E-4,381, F.A.C.

In the event the property is sold or otherwise conveyed, the Permittee will remain liable for compliance with this Permit until transfer is approved by the District pursuant to Rule 40E-1,6107, F.A.C.

SPECIAL AND GENERAL CONDITIONS ARE AS FOLLOWS:

SEE PAGES 2 - 3 OF 6 (16 SPECIAL CONDITIONS).
SEE PAGES 4 - 6 OF 6 (19 GENERAL CONDITIONS).

FILED WITH THE CLERK OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT

On ORIGINAL SIGNED BY:
By ELIZABETH VEGUILLA
DEPUTY CLERK

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD

By ORIGINAL SIGNED BY:
LORI OJALA
SECRETARY

COMPONENTS OF CONTRACT PLANS SET
ROADWAY PLANS
SIGNING AND PAVEMENT MARKING PLANS
STRUCTURE PLANS
LIGHTING PLANS

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

CONTRACT PLANS

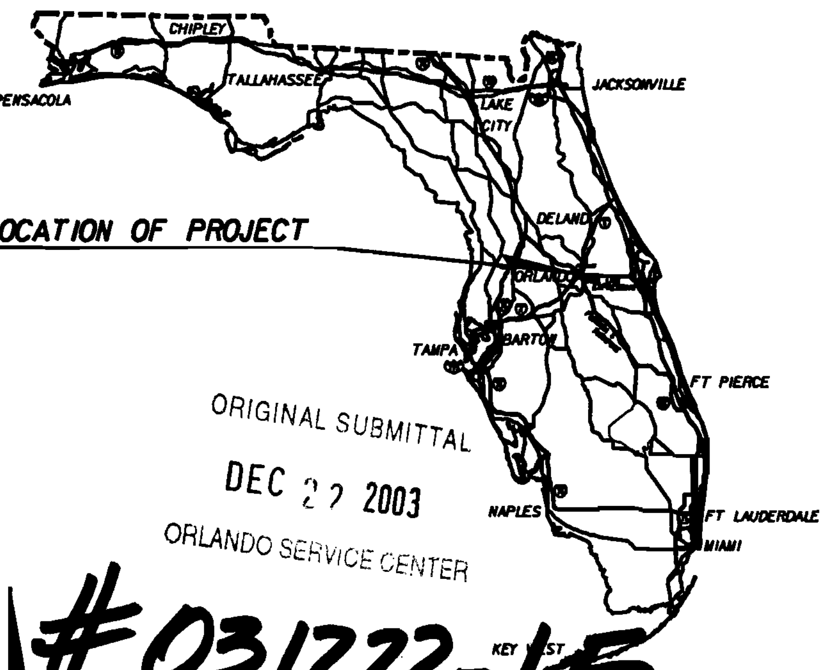
FINANCIAL PROJECT ID 406091-1-52-01

ORANGE COUNTY (75470)

STATE ROAD NO. 91

WIDEN FLORIDA'S TURNPIKE-ORLANDO SOUTH TO INTERSTATE I-4

LOCATION OF PROJECT



ORIGINAL SUBMITTAL
DEC 22 2003
ORLANDO SERVICE CENTER

#031222-15

A DETAILED INDEX APPEARS ON THE
KEY SHEET OF EACH COMPONENT

INDEX OF ROADWAY PLANS

END PROJECT
STA. 2588+22.00
MP 259.893

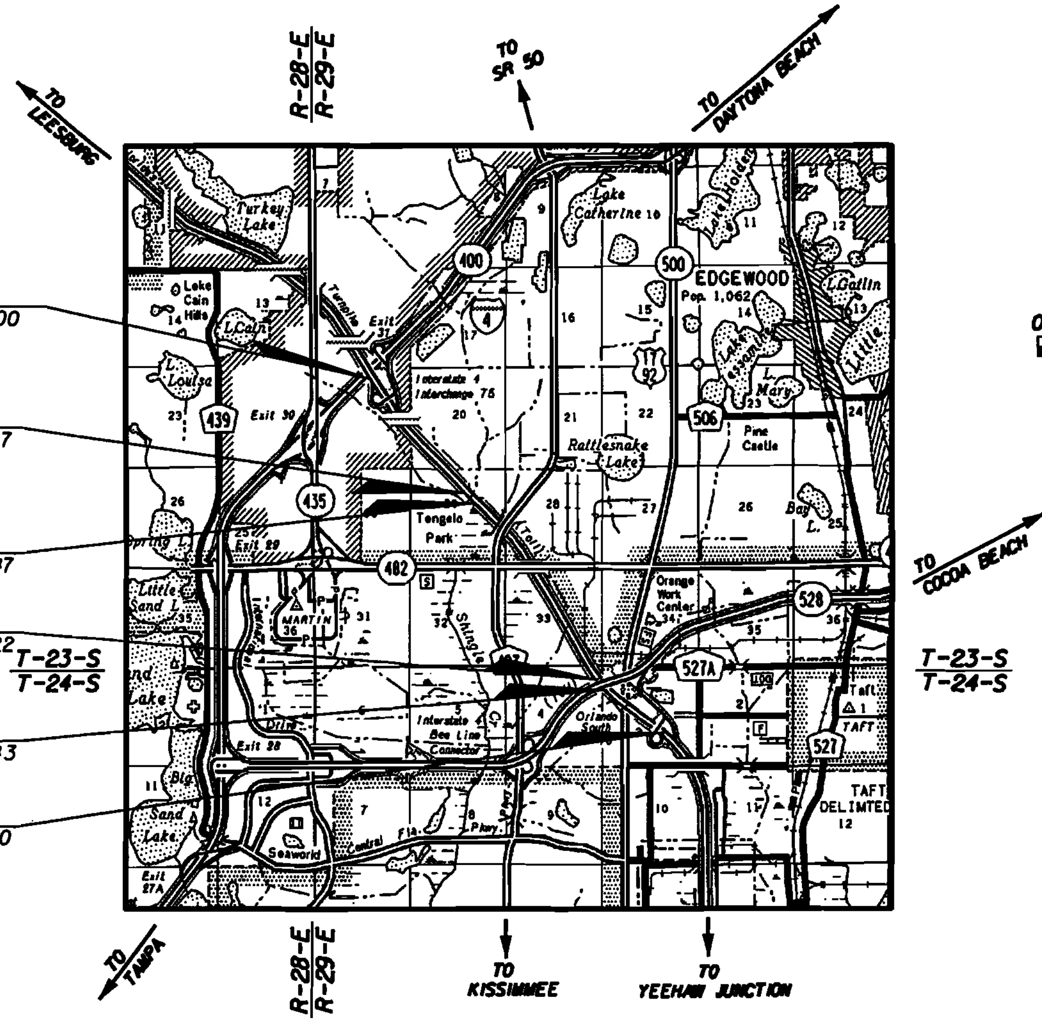
END BRIDGE
STA. 2503+02.47

BEGIN BRIDGE
STA. 2500+56.47

END BRIDGE
STA. 2361+17.22

BEGIN BRIDGE
STA. 2359+30.43

BEGIN PROJECT
STA. 2340+30.00
MP 255.198



ROADWAY SHOP DRAWINGS
TO BE SUBMITTED TO:

JOHN SAUNDERS, P.E
URS CORPORATION
7650 W. COURTNEY CAMPBELL CSWY.
TAMPA, FLORIDA 33607-1462
(813) 286-1711

PLANS PREPARED BY:

URS
URS CORPORATION
7650 W. COURTNEY CAMPBELL CSWY.
TAMPA, FLORIDA 33607-1462
PH. (813) 286-1711
FAX. (813) 287-8229

VENDOR NO. F592087895002

CONTRACT. NO. C-8274

C.A. NO. 00000002

NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.

PERMIT
SUBMITTAL
12/19/2003

GOVERNING STANDARDS AND SPECIFICATIONS:
FLORIDA DEPARTMENT OF TRANSPORTATION,
DESIGN STANDARDS DATED JANUARY 2002,
AND STANDARD SPECIFICATIONS FOR ROAD
AND BRIDGE CONSTRUCTION DATED 2004,
AS AMENDED BY CONTRACT DOCUMENTS.

REVISIONS

NOTE:
ALL ELEVATIONS ARE NAVD '88 DATUM
(NAVD '88 EL. 0.00 = NGVD '29 EL. 0.90)
For example: 99.10 shown in plans is equal to 100.00 NGVD '29.

PROJECT LENGTH IS BASED ON ℄ CONSTRUCTION

LENGTH OF PROJECT		
	LINEAR FEET	MILES
ROADWAY	24359.210	4.613
BRIDGES	432.790	0.082
NET LENGTH OF PROJECT	24792.000	4.695
EXCEPTIONS	0.000	0.000
GROSS LENGTH OF PROJECT	24792.000	4.695

FDOT PROJECT MANAGER: WILLIAM F. SLOUP, P.E.
GENERAL CONSULTANT PROJECT MANAGER: BRIAN KIRWAN, P.E.

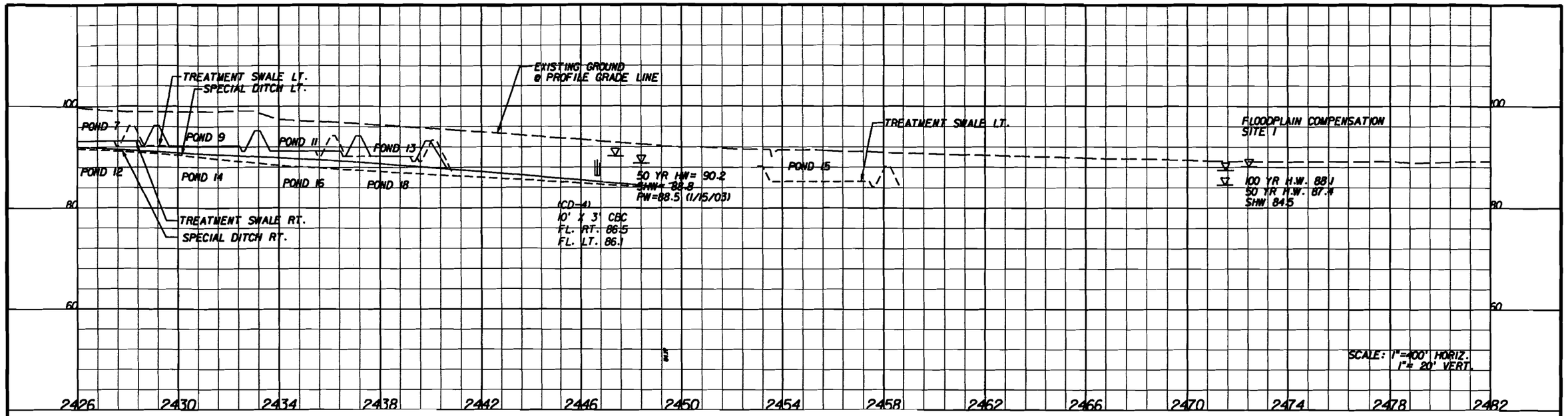
KEY SHEET REVISIONS		
DATE	BY	DESCRIPTION

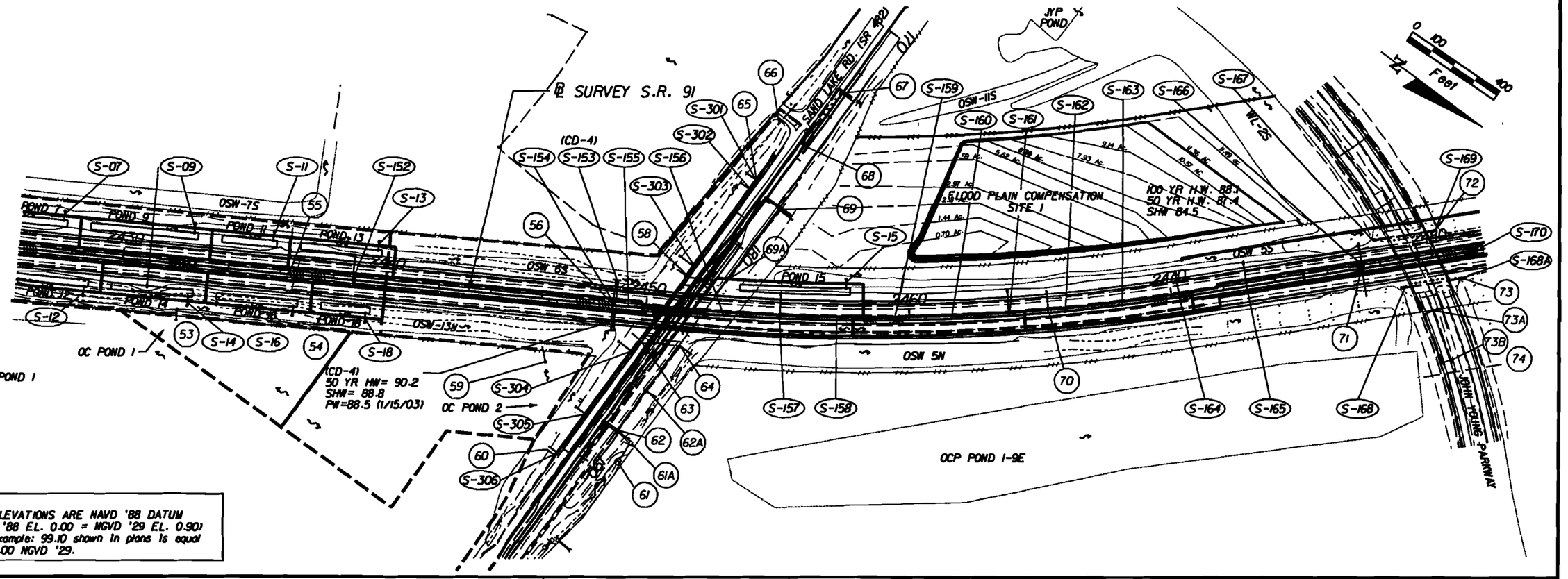
John K. Saunders
12/19/03

ROADWAY PLANS
ENGINEER OF RECORD: JOHN K. SAUNDERS, P.E.

P.E. NO.: 45371

FISCAL YEAR	SHEET NO.
05	1





NOTE:
ALL ELEVATIONS ARE NAVD '88 DATUM
(NAVD '88 EL. 0.00 = NGVD '29 EL. 0.90)
For example: 99.10 shown in plans is equal to 100.00 NGVD '29.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John T. Westgate, P.E. 18483

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

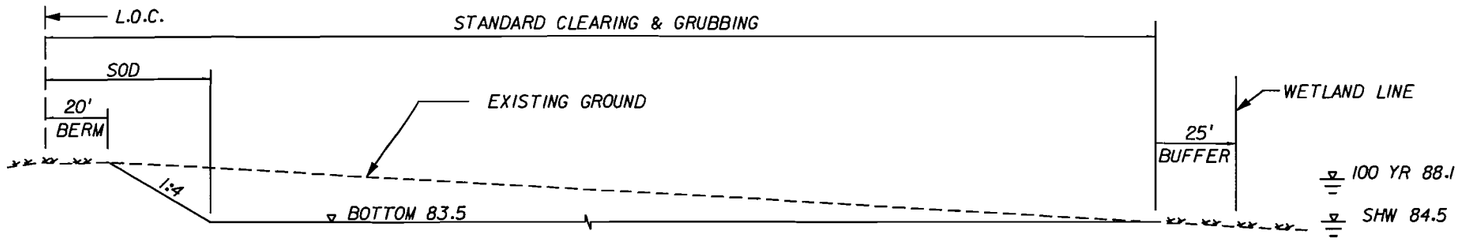
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

DRAINAGE MAP (3)

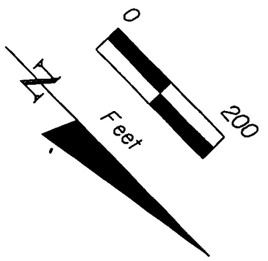
SHEET NO. 5

12/19/03 10:32:30 AM e:\406091\320\drainage\drmpr03.dgn

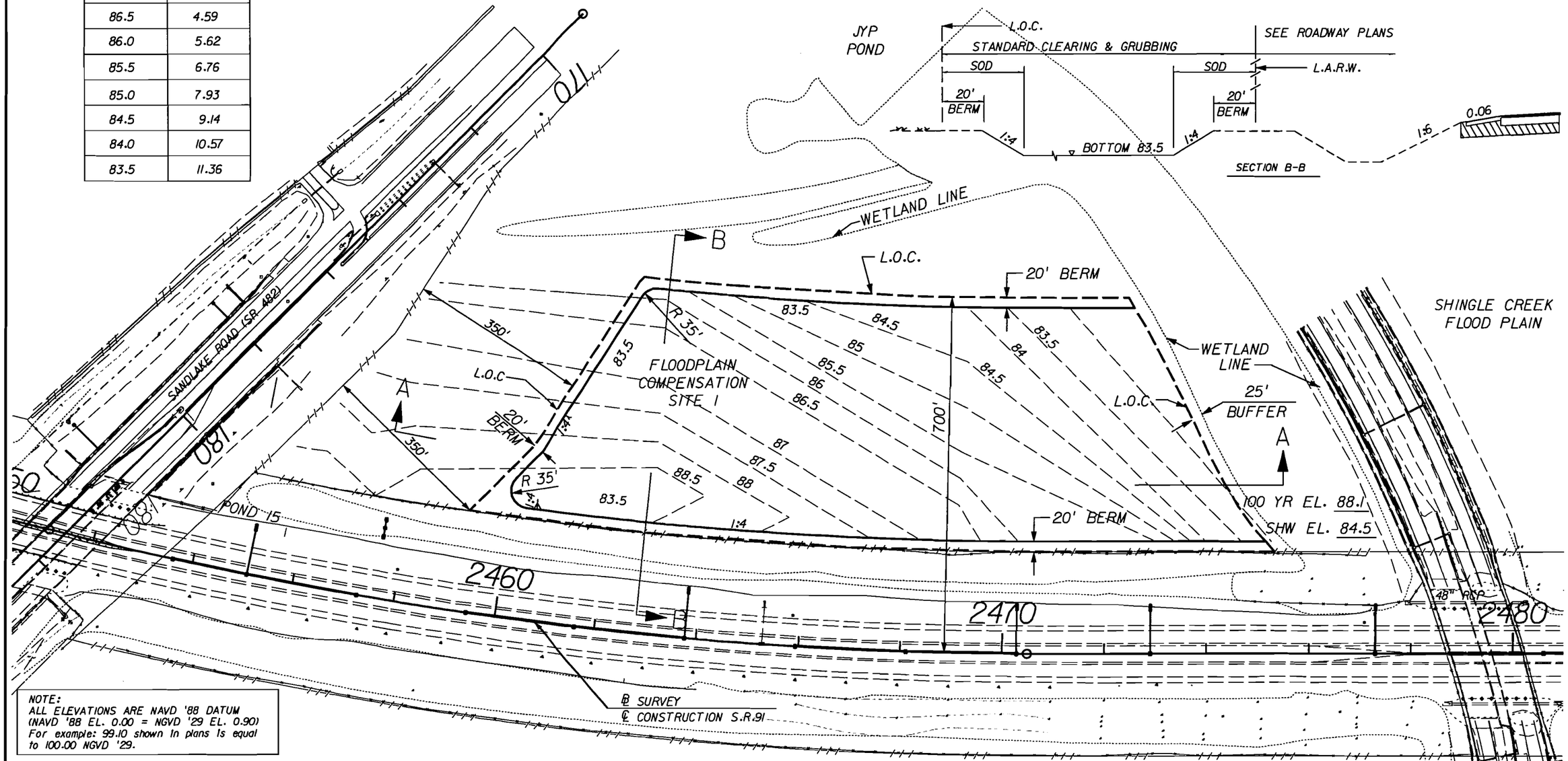
FPC SITE	
ELEV (FT NAVD)	CUT AREA (ACRE)
88.5	0.70
88.0	1.44
87.5	2.18
87.0	2.97
86.5	4.59
86.0	5.62
85.5	6.76
85.0	7.93
84.5	9.14
84.0	10.57
83.5	11.36



SECTION A-A



SECTION B-B



NOTE:
ALL ELEVATIONS ARE NAVD '88 DATUM
(NAVD '88 EL. 0.00 = NGVD '29 EL. 0.90)
For example: 99.10 shown in plans is equal to 100.00 NGVD '29.

REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

URS
URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
John K. Saunders, P.E. 45371

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	406091-1-52-01

FLOODPLAIN COMPENSATION DETAILS (1)

SHEET NO. 109

12/19/03 09:29:46 AM e:\406091\320\drainage\plpdrd02.dgn

Florida Department of Transportation
Turnpike Enterprise

Florida's Turnpike Widening
from Orlando South to I-4

FPID No. 406091-1-52-01

Orange County

DRAINAGE REPORT

Permit Submittal

December 19, 2003

URS Corporation

John J. Westgate
PE# 18483
12/19/03

Cross Drains

There are six cross drains under the Turnpike within the Project limits. See **Exhibit 4 – Cross Drain Basin Map**. These include twin bridges over Shingle Creek, four box culverts, and one pipe culvert. There are also four side drain culverts under crossing roads which are classified as cross drains. The cross drains under the mainline will be lengthened from 36 to 65 feet to place the end walls outside of the clear zone of the eight lane roadway. Calculations indicate that lengthening these cross drains will increase the 100-year high waters by less than 0.1 foot. Upstream development was evaluated to determine that this amount of increase would not cause flooding problems. The upstream development is generally FDOT right-of-way or off site stormwater ponds. The slight increase in 100-year high waters were determined to be acceptable. Table 1 provides a summary of the Pre and Post hydraulic analysis for Project cross drains. See **Appendix C – Cross Drain Design** for supporting calculations.

Floodplains and Floodways

Based on the current FEMA Flood Insurance Study and FIRM maps, the project will cross the Shingle Creek floodplain and floodway. Based on the currently adopted FEMA study, the 100-year floodplain elevation at the Florida Turnpike is Elevation 88.1 NAVD (Elevation 89.0 NGVD on the FEMA Map). The limits of impact extend from Station 2438+00 to Station 2524+00, for a length of approximately 8600 feet. See **Exhibit 5 – FEMA Map**.

The Turnpike crosses a FEMA floodway of Shingle Creek. The proposed widening of the Turnpike will require the double bridges over Shingle Creek to be replaced with elevated structures. The existing bridges do not currently provide the desired 2.0 feet of debris clearance above the 50-year water surface elevation. Bridge hydraulic modeling indicates that the same length bridges with greater pier spacing will maintain the existing 100-year profile through the bridges. See **Bridge Hydraulics Report** for supporting calculations.

The existing 100-year Floodway, as cited in the Flood Insurance Study for Orange County, Florida and Incorporated Areas (FEMA, 12-06-2000) is 1,490 feet wide just upstream of the northbound bridge. Since the replacement bridges will be designed to maintain existing conveyance for the 100-year flood flows, there will be no change in floodway width upstream or downstream of the bridge.

SFWMD rules require that there be no net floodplain encroachment up to the 100-year elevation that would adversely impact the existing rights of others. The widening of the Turnpike from four lanes to eight lanes will require the widening of the roadway embankment through approximately 7500 feet of Shingle Creek floodplain. Compensation for this encroachment will be provided on land owned by FDOT located immediately west of the Turnpike between Sand Lake Road and John Young Parkway. Floodplain compensation will provided on a "cup for cup" basis by excavating uplands

down to seasonal high water in the adjacent wetlands of Shingle Creek. This area is connected to the Shingle Creek floodplain through a 48-inch cross drain under John Young Parkway. In addition to the encroachment volume, this floodplain compensation facility has been sized to provide volume for the additional runoff from the added pavement discharging directly to the Shingle Creek floodplain. **Table 2** provides a summary of the floodplain encroachment and compensation volumes. Supporting calculations are found in **Appendix D**.

Permitting

The project is located within the Shingle Creek Basin of the South Florida Water Management District (SFWMD). The project is an improvement to an existing public roadway. The project area is approximately 299 acres. The project area includes all right-of-way within limits of the project and the floodplain compensation area. The project will add approximately 38 acres of impervious area. The project will disturb approximately 214 acres of land.

There is no existing permit for the Turnpike mainline. The Turnpike District has obtained permits for improvements to Orlando South Toll and I-4 toll facilities that are located within or adjacent to the project. The Turnpike District has recently obtained a permit for the Sunpass Only Off Ramp from southbound Turnpike to Consulate Drive. It is anticipated that the project will require an Individual ERP from SFWMD. Permit application fee for a new Individual ERP for a project area more than 100 acres and less than 640 acres is $7,500.

The project will raise Oak Ridge Road as it passes over the Turnpike. Oak Ridge Road over Florida's Turnpike has a SFWMD permit (#86-00021-S January 30, 1986) to City of Orlando. Oak Ridge Road currently drains to two storm water ponds located on the north side of Oak Ridge Road either side of the Turnpike and a third pond on the south side of Oak Ridge Road. The replacement of the Oak Ridge Road bridge and approach roadways will result in a minor increase of impervious area to these three ponds.

A 404 Dredge and Fill permit from the Corps of Engineers is anticipated to be required. The application fee associated with this permit is included in the SFWMD ERP application fee.

Because Shingle Creek is a FEMA Floodway; design of replacement bridges must conform to FEMA's "No-Rise" policy. An agreement exists between FEMA Region IV, the State's DOT's and the FHWA concerning encroachment issues. According to correspondence date September 2001 (see **Bridge Hydraulics Report**), a formal "No-Rise" Certification will not be required unless the proposed work requires revision to a flood map, changes the floodway width, or results in a hydraulic impact beyond the project limits. The bridge will be hydraulically equivalent to the existing structure at the 100-year level, and will require no special certification review by FEMA.

Shingle Creek is not considered navigable waters in the project area. A Coast Guard

FPID: 406091-1-32-01 SHT 4 OF 4
PROJECT: Turnpike Widening , Orlando South to I-4 BY: JTW DATE: 11-25-03
SUBJECT: Floodplain Compensation CK: _____ DATE: _____

Floodplain compensation volume is calculated using incremental plan areas of excavation Cut areas are measured by connecting existing contours with proposed contours at incremental elevations.

Cut area shapes are found in file E:\ 40609113201 \ drainage \ fpc.dgn

STAGE	ELEV. (Ft NAVD)	CUT AREA (Acre)	INC VOL. (Ac Ft)	
Contour	88.5	0.70		
			0.37	
100-Year	88.1	1.15		100-Year HW Shingle Creek
			0.13	
Contour	88.0	1.44		
			0.91	
Contour	87.5	2.18		
			1.29	
Contour	87.0	2.97		
			1.89	
Contour	86.5	4.59		
			2.55	
Contour	86.0	5.62		
			3.10	
Contour	85.5	6.76		
			3.67	
Contour	85.0	7.93		
			4.27	
Contour	84.5	9.14		SHW in downstream wetland
TOTAL			18.17	Floodplain Compensation Volume

Orange County

Florida’s Turnpike (SR 91) & Sand Lake Road Interchange

Not Yet Permitted

CONTRACT PLANS COMPONENTS

ROADWAY PLANS
SIGNING AND PAVEMENT MARKING PLANS
SIGNALIZATION PLANS
INTELLIGENT TRANSPORTATION SYSTEMS PLANS
LIGHTING PLANS
STRUCTURE PLANS
TOLL FACILITIES PLANS

INDEX OF ROADWAY PLANS

* This sheet is included in the index of roadway plans only to indicate that it is part of the roadway plans. This sheet is contained in a separate digitally signed and sealed document.

GOVERNING DESIGN STANDARDS:

Florida Department of Transportation, FY2023-24 Standard Plans for Road and Bridge Construction and applicable Interim Revisions (IRS).

Standard Plans for Road Construction and associated IRs are available at the following website: http://www.fdot.gov/design/standardplans

Standard Plans for Bridge Construction are included in the Structures Plans Component.

GOVERNING STANDARD SPECIFICATIONS:

Florida Department of Transportation, July 2023 Standard Specifications for Road and Bridge Construction at the following website:
http://www.fdot.gov/programmanagement/Implemented/SpecBooks

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

CONTRACT PLANS

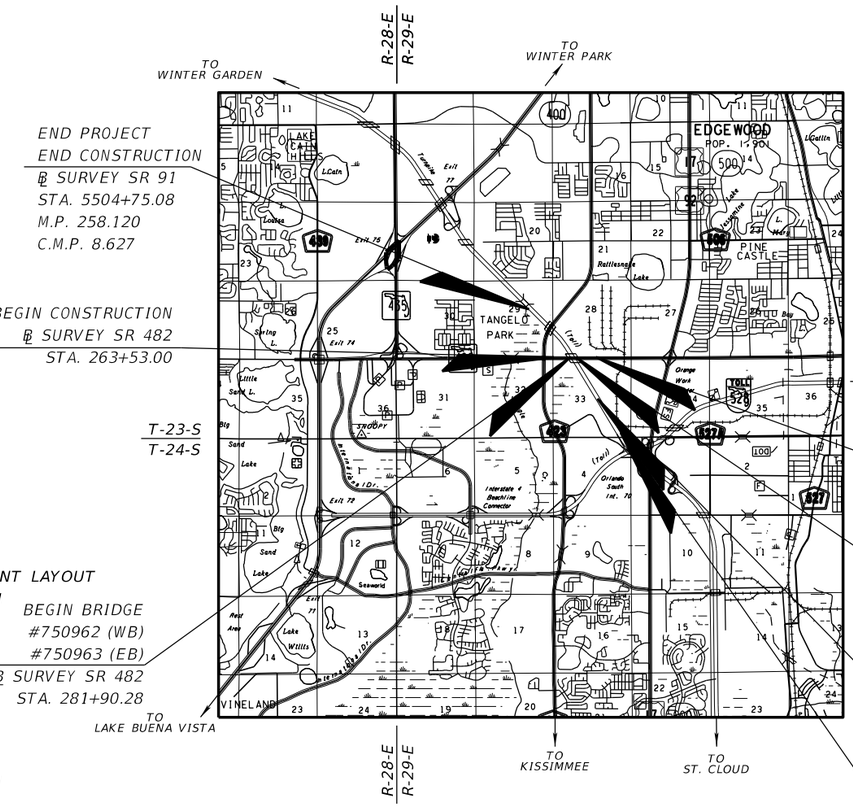
FINANCIAL PROJECT ID 433663-1-52-01

ORANGE COUNTY (75470)

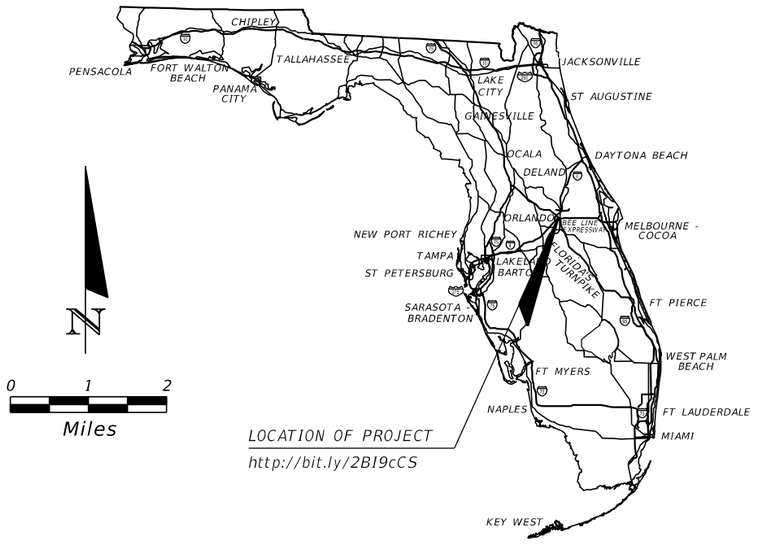
STATE ROAD NO. 91

SAND LAKE RD/TPK INTERCHANGE

(SR 482/SR 91)(MP 257)



THIS PROJECT TO BE LET TO CONTRACT WITH FINANCIAL PROJECT ID(S):
433663-1-56-03
433663-1-56-04



This project is designed to NAVD, 1988 Datum.

ROADWAY PLANS ENGINEER OF RECORD:

RAMON BRETON, P.E.
P.E. LICENSE NUMBER 53139
KIMLEY HORN AND ASSOCIATES
189 SOUTH ORANGE AVENUE, SUITE 1000
ORLANDO, FL 32801
CONTRACT NO.: C9K72
VENDOR NO.: VF-560-885-615-001

FDOT PROJECT MANAGER:

ASHRAF ELMAGHRABY, P.E.

G.E.C. PROJECT MANAGER:

JASON J. CHRISTOPHER, P.E.

OCU PERMIT NUMBER: 23-E-107

100% SUBMITTAL
MAY 2023

KEY SHEET REVISIONS

DATE	DESCRIPTION

CONSTRUCTION CONTRACT NO.	FISCAL YEAR	SHEET NO.
E8U30	24	1

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

BEGIN RAMP D PROPOSED PROFILE
STA. 600+00.00 ℄ CONST. RAMP D =
STA. 5454+76.49 ℄ SURVEY SR 91

END BRIDGE
STA. 602+62.33 ℄ CONST. RAMP D =
STA. 5457+35.00 ℄ SURVEY SR 91

PROFILE GRADE AT
℄ CONST. RAMP C

PROFILE GRADE AT
℄ CONST. RAMP D

END SPECIAL DITCH LT.
STA. 620+00.00 ℄ CONST. RAMP D =
STA. 5474+39.64 ℄ SURVEY SR 91
EL. 88.70

BEGIN NB WIDENING
BEGIN NB SHOULDER RECONSTRUCTION
END RAMP D PROPOSED PROFILE
STA. 620+20.54 ℄ CONST. RAMP D =
STA. 5474+59.85 ℄ SURVEY SR 91

EL. 108.79

SPECIAL DITCH RT.

50 YR DHW= 88.33
SHW= 88.8
PW=88.5 (1/15/03)

ESHWL (BASED ON
FPID 406091-1-52-01)

BEGIN SPECIAL DITCH LT.
STA. 603+00.00 ℄ CONST. RAMP D =
STA. 5457+71.87 ℄ SURVEY SR 91
EL. 90.00

SPECIAL DITCH LT.

BEGIN SPECIAL DITCH RT.
STA. 618+00.00 ℄ CONST. RAMP D =
STA. 5472+44.41 ℄ SURVEY SR 91
EL. 85.80

EL. 87.96

EL 88.8

EL 85.5

EL. 92.40

SPECIAL
DITCH LT.

CD-4A
CD-4B
(CD-4)
10' X 3' CBC
FL. RT. 86.10
FL. LT. 84.65

END RAMP C PROPOSED PROFILE
STA. 531+23.91 ℄ CONST. RAMP C =
STA. 5454+81.45 ℄ SURVEY SR 91

EXISTING GROUND
@ ℄ SURVEY SR 91

BEGIN BRIDGE
STA. 530+16.46 ℄ CONST. RAMP C =
STA. 5453+73.96 ℄ SURVEY SR 91

ESHWL (BASED ON FPID 406091-1-52-01)

EL. 87.35

SCALE: 1" = 200' HORIZ.
1" = 20' VERT.

120 100 80 60

5450 5455 5460 5465 5470 5475

END SPECIAL DITCH LT.
STA. 530+20 ℄ CONST. RAMP C =
STA. 5452+57.51 ℄ SURVEY SR 91
EL. 90.90

END SPECIAL DITCH RT.
STA. 528+58.00 ℄ CONST. RAMP C =
STA. 5452+07.01 ℄ SURVEY SR 91
EL. 91.10

R/W LINE

BEGIN BRIDGE ℄ SURVEY SR 482
STA 281+90.28
℄ SURVEY SR 482

END RAMP C
STA. 531+23.94 ℄ CONST. RAMP C =
STA. 5454+81.45 ℄ SURVEY SR 91

℄ CONST. RAMP B

POND 1B
1.07 AC @ NWL

POND 1A
3.59 AC @ NWL

L/A R/W LINE

EXIST. POND 15
(S-Tx151EW)

℄ SURVEY SR 91

℄ CONST. RAMP A

℄ CONST. RAMP D

℄ CONST. RAMP C

END BRIDGE
STA 284+67.93
℄ SURVEY SR 482

FEMA FLOODPAIN ZONE AH

BEGIN RAMP D PROPOSED PROFILE
STA. 600+00.00 ℄ CONST. RAMP D =
STA. 5454+76.49 ℄ SURVEY SR 91

FEMA FLOODPAIN ZONE AE (EL. 87.0)

MATCHLINE 5450+00.00

MATCHLINE 5478+00.00

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.

WETLAND LINE
24' WETLAND BUFFER LINE

LEGEND
FLOW ARROW
S-### PROPOSED STRUCTURE
DRAINAGE DIVIDE
EXISTING STRUCTURE

N

0 50 200
Feet

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

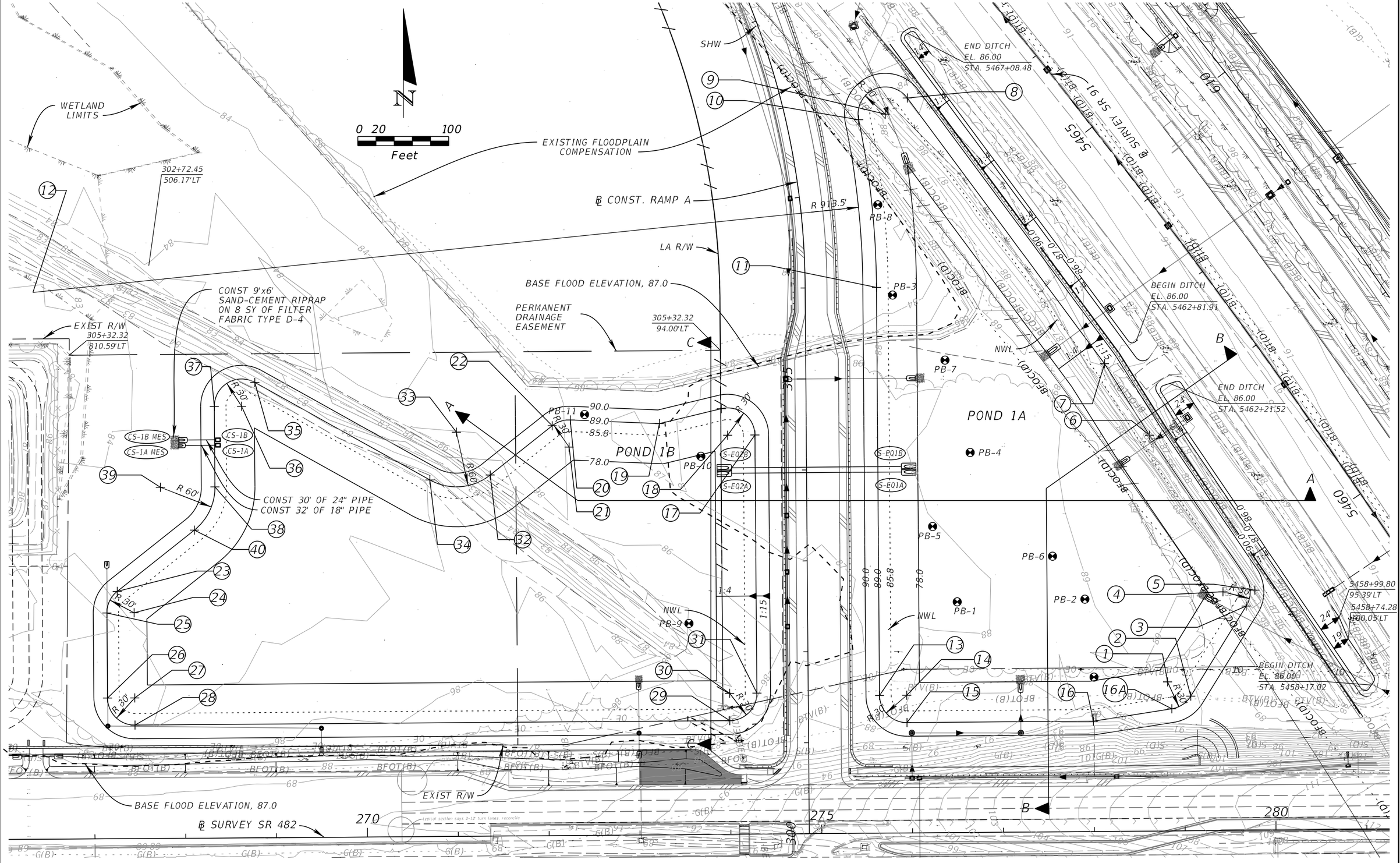
Kimley-Horn and Associates, Inc.
Victor Gallo, P.E.
P.E. License No. 75592
189 South Orange Avenue, Suite 1000
Orlando, Florida 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	433663-1-52-01

INTERCHANGE DRAINAGE MAP

SHEET NO. 24



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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
Ramon F. Breton, P.E.
P.E. License No. 53139
189 South Orange Avenue, Suite 1000
Orlando, Florida 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	433663-1-52-01

POND PLAN SHEET

SHEET NO. 258

Chris.Davidson 6/19/2023 10:09:08 PM c:\pw\kh1\dms58205\PDPLRD01.DGN

POND LAYOUT TIES (℄ CONST. RAMP A)				
ID	STATION	OFFSET	RP	POT
1	301+63.97	395.62' RT	X	
2	301+48.05	421.05' RT		X
3	302+46.64	482.76' RT		X
4	302+62.56	457.33' RT	X	
5	302+64.05	492.43' RT		X
6	304+35.31	377.80' RT		X
7	305+14.37	328.84' RT		X
8	307+81.05	135.81' RT		X
9	307+70.19	108.50' RT	X	
10	307+70.19	78.50' RT		X
11	306+00.09	78.50' RT		X
12	306+01.58	850.00' LT	X	
13	301+51.35	78.50' RT		X
14	301+51.35	108.50' RT	X	
15	301+21.35	108.50' RT		X
16	301+21.35	313.73' RT		X
17	304+38.86	56.50' LT		X
18	304+38.86	86.50' LT	X	
19	304+52.15	161.55' LT		X
20	304+56.99	259.67' LT		X
21	304+27.03	261.15' LT	X	
22	304+50.66	279.63' LT		X
23	302+72.19	759.75' LT		X
24	302+48.56	741.27' LT	X	
25	302+48.56	771.27' LT		X
26	301+55.00	771.27' LT		X
27	301+55.00	741.27' LT	X	
28	301+25.00	741.27' LT		X
29	301+25.00	86.50' LT		X
30	301+55.00	86.50' LT	X	
31	301+55.00	56.50' LT		X

POND LAYOUT TIES (℄ CONST. RAMP A)				
ID	STATION	OFFSET	RP	POT
32	303+97.10	348.13' LT		X
33	304+44.37	385.09' LT	X	
34	303+92.17	414.67' LT		X
35	305+00.85	606.48' LT		X
36	304+74.75	621.27' LT	X	
37	304+74.75	651.27' LT		X
38	303+86.26	651.27' LT		X
39	303+86.26	711.27' LT	X	
40	303+38.99	674.31' LT		X
16A	301+34.30	400.07' RT		X

		POND 1A	POND 1B	COMBINED
OUTSIDE BERM	EL. 90.00	4.76 AC	5.62 AC	10.38 AC
INSIDE BERM	EL. 89.00	4.10 AC	4.88 AC	8.98 AC
WEIR	EL. 86.60	3.70 AC	4.44 AC	8.14 AC
SHW/CONTROL	EL. 85.80	3.56 AC	4.28 AC	7.84 AC
BOTTOM	EL. 78.00	2.36 AC	2.92 AC	5.28 AC

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
Ramon F. Breton, P.E.
P.E. License No. 53139
189 South Orange Avenue, Suite 1000
Orlando, Florida 32801

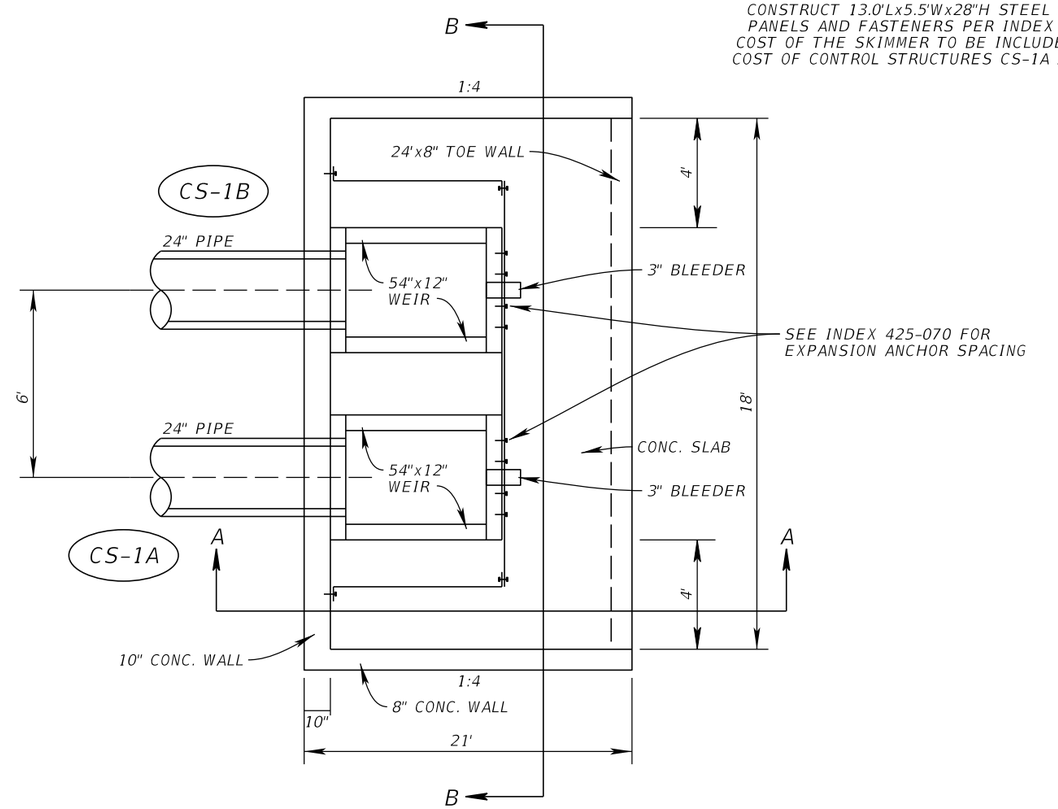
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	433663-1-52-01

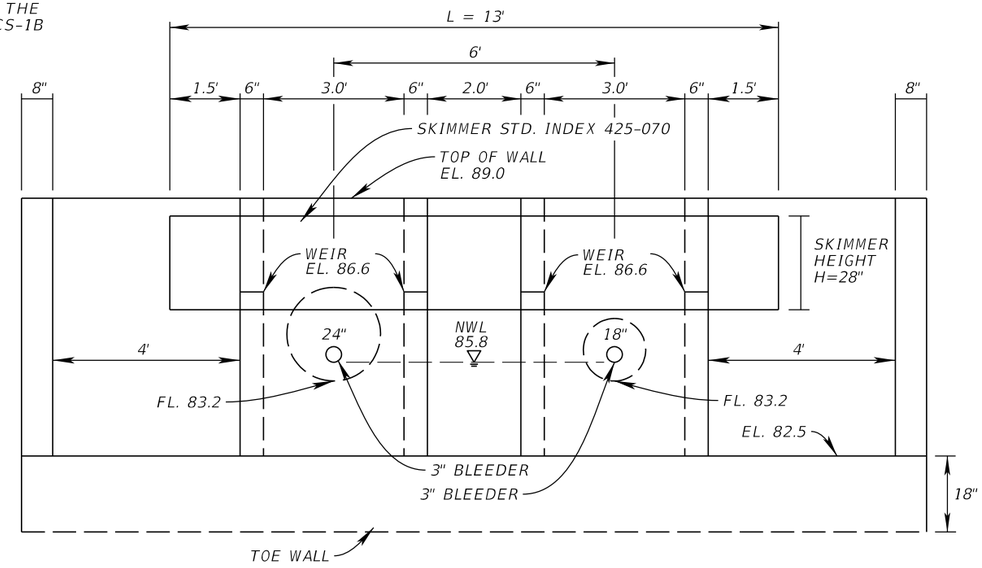
POND PLAN SHEET

SHEET NO. 259

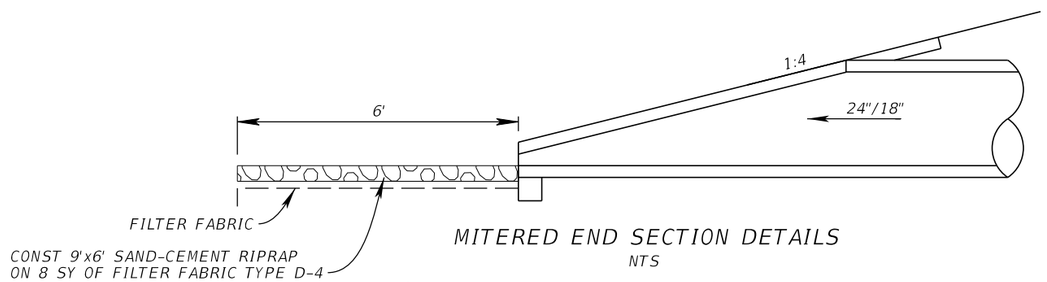
CONSTRUCT 13.0'Lx5.5'Wx28"H STEEL SKIMMER PANELS AND FASTENERS PER INDEX 425-070. COST OF THE SKIMMER TO BE INCLUDED IN THE COST OF CONTROL STRUCTURES CS-1A AND CS-1B



CONTROL STRUCTURE DETAILS
NTS



FRONT VIEW
SECTION B-B
NTS



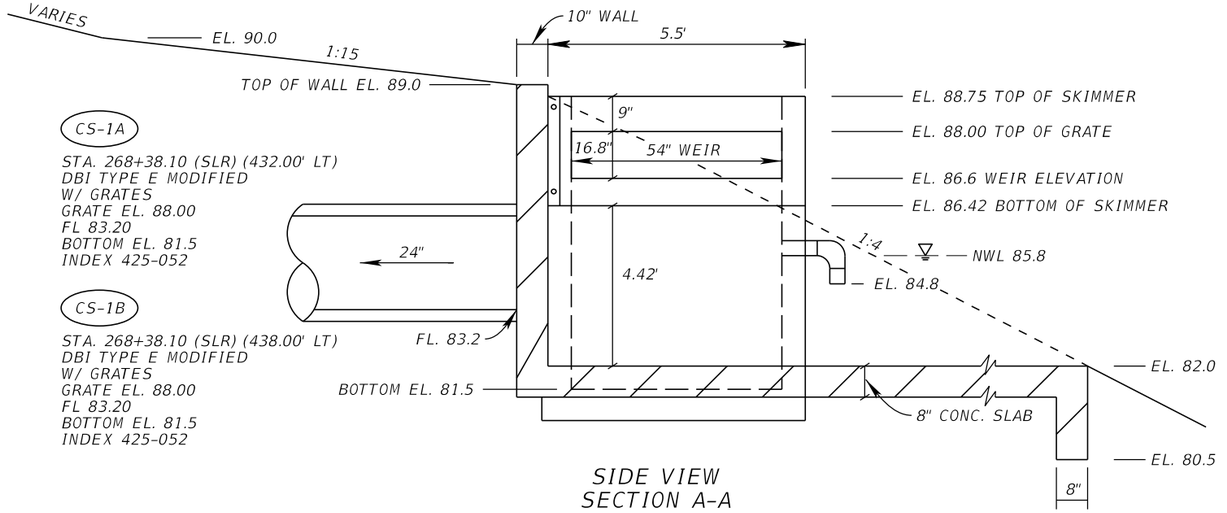
MITERED END SECTION DETAILS
NTS

CS-1A MES

STA. 268+00.00 (SLR) (432.00' LT)
18" MES (1:4) CD
FL 83.10
INDEX 430-021

CS-1B MES

STA. 268+02.00 (SLR) (438.00' LT)
24" MES (1:4) CD
FL 83.10
INDEX 430-021



SIDE VIEW
SECTION A-A
NTS

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
Ramon F. Breton, P.E.
P.E. License No. 53139
189 South Orange Avenue, Suite 1000
Orlando, Florida 32801

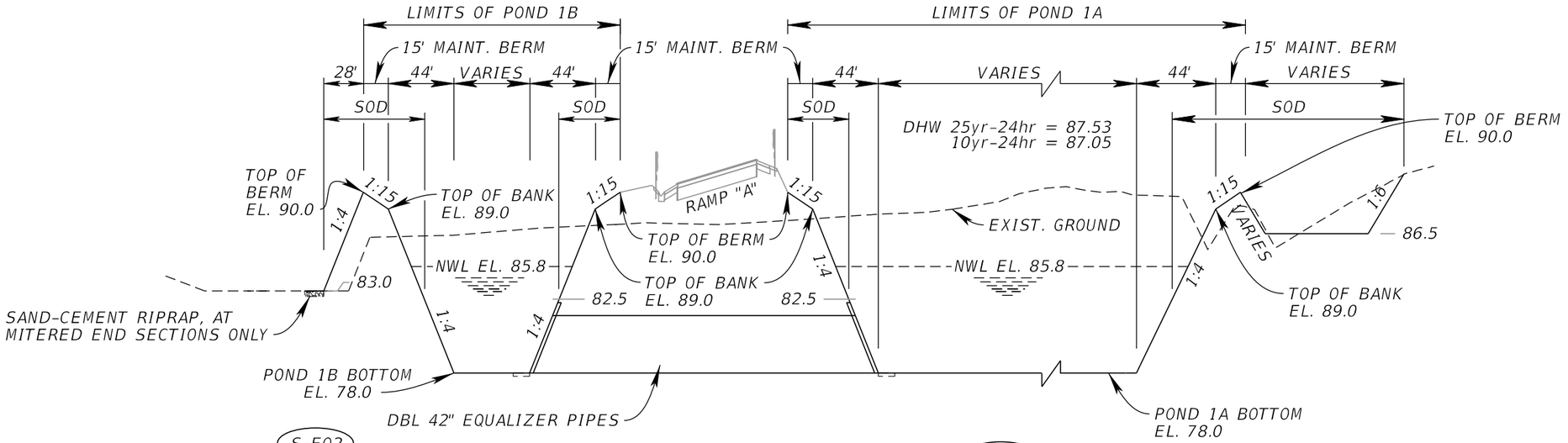
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	433663-1-52-01

POND DETAILS

SHEET NO. 260

Chris.Davidson 6/19/2023 10:09:15 PM c:\pw\kh1\dms58205\PDPLRD01_ControlStructures.DGN



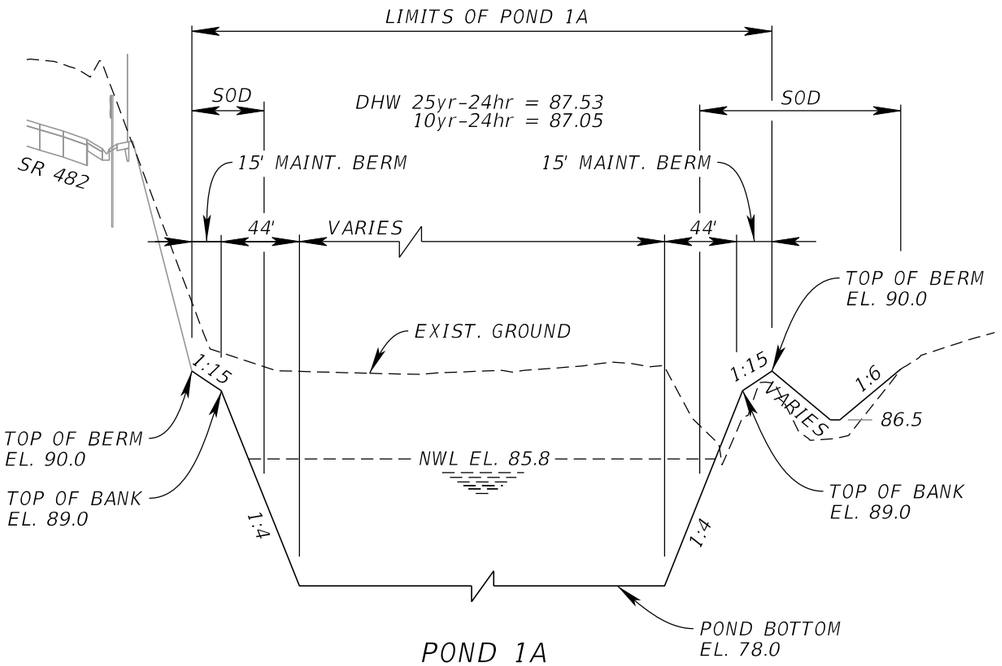
S-EQ2

RAMP A: STA. 304+00.00 (87.50' LT.)
CONST. MITERED END SECTION (1:4)
INDEX NO. 430-021
FL 78.00

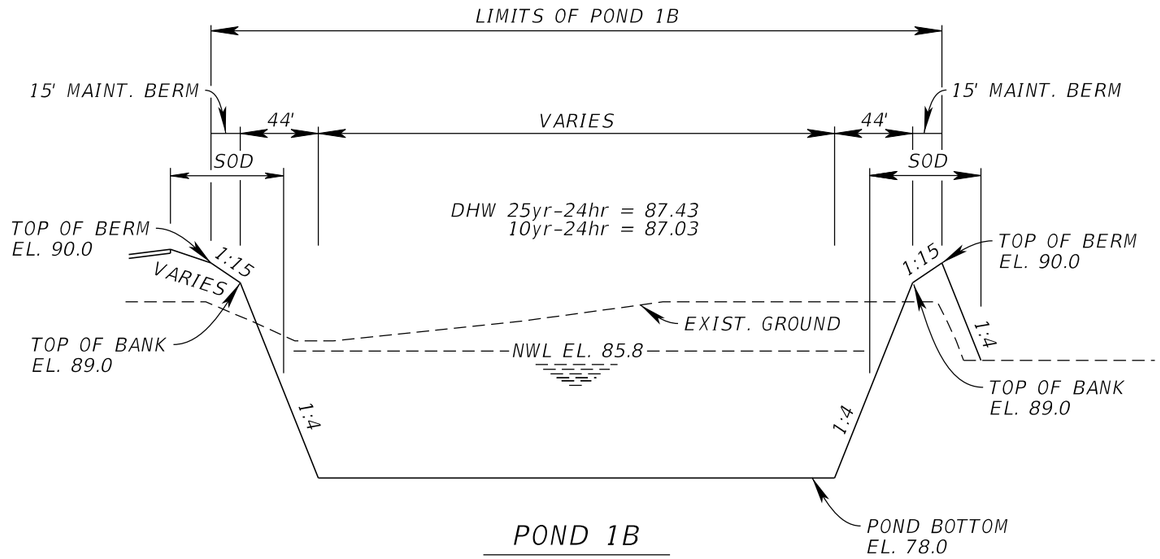
POND 1A - POND 1B
SECTION A-A

S-EQ1

RAMP A: STA. 304+00.00 (107.40' RT.)
CONST. MITERED END SECTION (1:4)
INDEX NO. 430-021
FL 78.00



POND 1A
SECTION B-B



POND 1B
SECTION C-C

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
Ramon F. Breton, P.E.
P.E. License No. 53139
189 South Orange Avenue, Suite 1000
Orlando, Florida 32801

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	433663-1-52-01

POND DETAILS

SHEET NO. 261

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Phase IV Submittal

Drainage Report

Sand Lake Road (SR 482) Interchange
Orange County
Florida's Turnpike Enterprise

FINANCIAL PROJECT ID. ***433663-1-52-01***

Contract No C-9K72
FPID 433663-1-52-01

Turnpike Project Manager: Pamela Nagot, P.E.
KHA Project Manager: Ramon Breton, P.E.

May 2023

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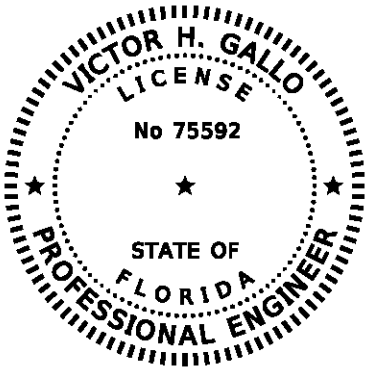

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PE NUMBER: FL # 75592
DATE: 5/2023

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SECTION 1.0 – GENERAL INFORMATION

This State Road 91 (Florida's Turnpike) and State Road 482 (Sand Lake Road) Interchange project includes the construction of new access ramps at the four quadrants of the interchange. The northbound on and southbound off-ramps (Ramps A and D) will include Sun Pass only toll facilities. The southbound on and northbound off-ramps (Ramps B and C) will be non-tolled. The project also includes the construction of associated drainage conveyance and Stormwater Management Facilities (SMF's). Some existing structures will be relocated, lengthened, adjusted, or replaced. Challenges to the design include:

- High water tables, and low Turnpike roadway profile that adversely affect the ability to connect, convey and provide adequate stormwater management (SWM) for all proposed new impervious areas.
- Impacts on existing (8-laning) Turnpike roadside linear dry detention ponds.
- Limited available areas for pond construction. Project traverses the Shingle Creek Floodplain.
- Floodplain impacts and compensation.
- Elevated tailwater conditions in the principal outfall canal are problematic for maintaining allowable headwaters below the mainline pavement.
- Florida Gas Transmission (FGT) line prohibits the construction of drainage structures and pipes crossings within their easement.

1.1 Project Location

The project is located within Orange County at the intersection of State Road 91 (Florida's Turnpike) and State Road 482 (Sand Lake Road) between Section 29-32, TWP 23S, Range 29E. The limits of the project are from just north of the Consulate Drive exit ramp to just south of the Shingle Creek Bridge. The begin milepost is 256.1 and the end milepost is 258.1 for an approximate total length of 2.0 miles. Project survey datum is referenced to NAVD88. Datum conversion from NGVD29 to NAVD88 = - 0.90 ft.

1.2 Purpose

The purpose of the drainage report is to document and demonstrate adherence to various FDOT, Turnpike Enterprise drainage, Environmental Permitting (ERP) and regulatory agency criteria.

1.21 – Project Amendments

Four (4) amendments (No.2, No.3, No. 10, and No. 12) were added to the original scope and contract that affected proposed project drainage. Stormwater management and design for these amendments are addressed in this section and summarized in the Project Summary Tables in **Section 11.0**.

Amendment No.2

The purpose of this Amendment No. 2 was to design and permit an auxiliary lane from the proposed Sand Lake Road (SLR) Interchange southbound on-ramp to the existing Consulate Drive southbound off-ramp (approximately 0.64 miles).

The Drainage Report from the original project was expanded to include documentation for the southbound on-ramp auxiliary lane widening to support Water Management District permitting. The following tasks included in the amendment were:

1. Updates to the pre-development and post-development drainage maps for the southbound on-ramp auxiliary lane and box culvert extension.
2. The Drainage Report will be updated to include calculations for the base clearance at the southbound on-ramp auxiliary lane location.
3. Design of a box culvert extension at CD-3 to accommodate the southbound on-ramp auxiliary lane widening.
4. Re-grading of the existing ditches to accommodate the southbound on-ramp auxiliary lane widening.
5. Revise the design of two impacted roadside stormwater facilities within the limits of the southbound on-ramp auxiliary lane widening.
6. Design of approximately six (6) additional inlets and structures to accommodate the southbound on-ramp auxiliary lane widening.

Proposed Drainage

The proposed auxiliary lane under Amendment 2 caused additional impacts to the roadside retention ditches permitted for the 8-laning project. Most of the SR 91 impacted roadside retention ponds were deemed ineffective after the proposed impacts. Treatment associated with the impacted ponds were compensated for in wet detention Pond 1. See **Table 3** in **Section 11.0** of the report.

Associated pollutant abatement volume based on the additional required wet detention was to be compensated in Pond 1. Note that compensated treatment area is provided by the capture and treatment of previously untreated mainline and Sand Lake Road impervious areas, all within the Shingle Creek basin. Runoff from the proposed auxiliary lane will be discharged into the R/W canal and into Shingle Creek ultimately. See

Amendment and Total Project Summary Tables in **Section 11.0**. Cross drain CD-3 was extended to provide necessary clear zone offset to the headwall.

Cross Drains

Cross drain CD-3 is located at station 2414+18 baseline Turnpike. The structure is an 8'x4' concrete box culvert, constructed in 1962. CD-3 has no reported flood or scour problems. The culvert was previously extended from 153' to 196 feet in 2003. For this amendment, the culvert was extended for an additional twelve (12) feet increase for clear-zone requirements. The design flows and tailwater conditions were obtained from the previous culvert extension analysis and SFWMD permits No. 48-01443-P (2004) for consistency. This is to illustrate the relative DHW change to the previous culvert extension. The original design flows were obtained using the rational method. A copy of the analysis is included in **Appendix E**.

Amendment No. 3

The purpose of this Amendment No. 3 was to design and permit a lane widening along Sand Lake Road (SLR) between Presidents Drive and Chancellor Drive in the eastbound direction, design and permit a lane widening along Presidents Drive approximately 600 feet north and 600 feet south of Sand Lake Road and the design of a sidewalk on the north side of SLR between John Young Parkway and Ramp A.

The Drainage Report from the original project was expanded to include documentation for the southbound on-ramp auxiliary lane widening to support Water Management District permitting. The following tasks were included in the amendment:

1. Develop a pre-development drainage map and a post-development drainage map for the SLR widening, Presidents Drive widening and sidewalk between JYP and Ramp A.
2. The Drainage Report will be updated to include calculations for the base clearance at SLR and Presidents Drive.
3. Re-grading of the existing ditches to accommodate SLR widening, Presidents Drive widening and Sidewalk between JYP and Ramp A.
4. Revise and update the design of the infield pond to accommodate the SLR widening and Presidents Drive widening.
5. Design additional drainage structures associated with the SLR widening and Presidents Drive widening.

Proposed Drainage

The proposed widening of SLR East from the initial limits to the new proposed limit under Amendment No. 3 included 0.275 acres. The total area anticipated for the additional SLR

east widening and included in the initial stormwater management design was 0.90 acres. Additional impervious areas for the widening on both South and North side of Presidents Drive was calculated as 0.0628 acres. The relatively small increase in impervious area for the Presidents Drive widening is due to the wider than typical existing lanes and reduced proposed lane widths within the project limits. There were a few inlet tops that needed minimal adjustments. Runoff within the proposed Amendment 3 areas (Presidents Drive and Sand Lake Road east) will be discharged without treatment and conveyed as historically. Compensatory treatment for the widening on SLR was provided in the Sand Lake Road Interchange Pond 1.

Amendment No. 10

The purpose of Amendment No. 10 was to modify the 60% plans to adapt to profile and geometry changes along Sand Lake Road. The modifications to the Sand Lake Road profile were to account for the following:

1. Future 10-lane expansion of Florida's Turnpike.
2. Cross slope requirements per latest Florida Design Manual (FDM).
3. Adjustments to Ramp D profile, to provide a continuous 2% longitudinal grade.
4. Consideration for the cross-slope corrections to be implemented with the I-4 Direct Connect Project (FPID 437987-1).
5. Adjustment of Florida's Turnpike Mainline Profile to provide 3 ft of base clearance.

Other modifications to the current 60% plans included lengthening the Sand Lake Road bridge, such that a minimum 36-ft clear zone is provided for the proposed future 10-lane expansion of Florida's Turnpike. With this bridge lengthening, the Sand Lake Road profile adjustment also included additional height to account for the increase in beam depth.

Proposed Drainage

Proposed drainage under Amendment 10 included accommodation and management of the future 10-lanes configuration in the projects stormwater management system. The analysis included, but was not limited to the following:

1. Stormwater management system redesign to accommodate impervious areas associated with the future 10-laning (WQ, Quantity, and TW). Adjust basin Pre- and Post-Hydrology.
2. Replace offsite conveyance ditches with partially closed systems along Ramp B, C, and D, due to shifting of the Ramps outwards. Update onsite conveyance ditches and storm drain systems to clear the future widening, where feasible. Update all ditch calculations in the affected areas.

3. Re-assess and adjust floodplain impact and compensation calculations, affected by Pond expansion and ditch impacts.
4. Realign box culvert CD-4 to adapt to the ramp shift into the SLR outfall ditch.

Amendment No. 12

The purpose of Amendment No. 12 was to update the plans and drainage design to reflect the latest FDOT and Turnpike standards. This included design standard checks as well as Index number updates for drainage infrastructure.

1.3 Existing Drainage Patterns

Drainage from the Turnpike flows southwards, through a canal with an ultimate discharge into Shingle creek. The previous TPE 8-laning project included permitted stormwater management provided in roadside dry retention ditches. The retention ditches were designed to outfall into the R/W ditches that ultimately outfall through the West-SLR ditch into Shingle creek. Existing cross culvert (CD-3) conveys discharges from the east of the Turnpike along the East SLR under the Turnpike into the West SLR outfall ditch. Maps detailing pre and post-development limits are included in the hydrology section in **Appendix A**.

Runoff from both the South and North Presidents drive drain away from SLR and into their connected storm drain systems for ultimate discharge into their master stormwater systems.

1.31 – Offsite Contributions

Much of offsite flows into the R/W are from unregulated commercial areas historically discharging into the SLR corridor. The KMZ file in **Figure 1A** shows the Orange County Public Utility at MP 255.8 as the sole contributor of permitted flows into the Turnpike R/W and permitted under TP-75-DC-031-93. The permitted flows are pond discharges and are included as base flows in the offsite bypass collection system.

Figure 1A – TPE KMZ DC-Permits

1.32 – Basin Classification

The project basin is historically classified as an "Open basin."

1.33 – Description of Receiving Waterbodies

The SLR /FTE Interchange project discharges into the Shingle Creek Basin. Shingle Creek ultimately outfalls into Lake Tohopekaliga. Shingle Creek is not classified as an Outstanding Florida Water (OFW) but identified as a Class III waterbody.

1.34 – Description of Potable Well fields/Wellfield Protection Zones

A desktop review of the Orange County wellfield map was conducted to identify potential wellfield intrusion and the subsequent impacts that are associated with the proposed stormwater management facility. Upon review, there are no foreseen impacts associated with wellfields within the project limits.

1.35 – Historical Flooding

There is no known historical flooding on the project. However high water conditions have been reported in the Sand Lake Road Outfall ditch. Improvements have been proposed to CD-4 to help reduce these conditions.

1.4 Tailwater

Drainage in the project area can be described as poor, due to sustained high water levels in the Sand Lake Road outfall ditch, serving as the principal outfall for the project area. Poor drainage conditions are also observed in poor recovery off the Turnpike treatment ditches and high normal water level (NWL) and tailwater (TW) at box culvert CD-4. TW elevations for the proposed cross-drain extensions/outfall ditch canal are based on the Shingle Creek Flood Insurance Study (FIS) hydraulic model (See **Table 1)**. TW elevations for the lower return frequencies are based on water stains, biological indicators, or crown of pipe, whichever is greater. TW elevations for the ditches are based on normal depth and local seasonal water elevations. TW conditions for the storm sewer design are calculated from either the time stage of peak inflow for a similar event or peak water stage in the ponds.

Table 1. **Shingle Creek FEMA Flood Profiles**

FEMA FIS Flood Profile Location	10% Annual Chance Flood 10 Yr.	2% Annual chance Flood 50 Yr.	1 % Annual chance Flood 100Yr
SR 482/west Sand Lake Road	84.8 ft. NAVD	86.1 ft. NAVD	86.4 ft. NAVD

1.5 Floodplain Impacts and Mitigation

The project encroaches into the adjacent FEMA zone AE (87.0 NAVD) along Ramp A, and into an existing floodplain compensation area, permitted under SFWMD Permit No. 48-01443-P. Floodplain impact and compensation calculations are included in **Appendix D.**

1.6 Rules & Regulations

The project is within the jurisdiction of the South Florida Water Management District (SFWMD). The State's presumptive stormwater management water quality rule requires treatment of a volume equivalent to 2.5 inches of runoff from an area equal to the additional impervious area while preserving any previously permitted treatment volume. This treatment is to be

accommodated in dry or wet detention ponds. Dry ponds require 75% of the above volume to be detained. Dry ponds are defined as facilities having a bottom elevation at least one foot higher than the average wet season water table and recover either through infiltration (Retention) or bleed down devices (Dry/Wet detention). Bleed down devices are required to discharge at a rate not exceeding one-half inch of the detention volume in 24 hours unless limited by minimum dimensions. This project will use minimum dimensions for bleeders and is thus presumed to meet criteria.

Dry detention treatment swales are currently used in the project area to provide treatment for the turnpike 8-laning project, constructed in 2004.

The SLR /FTE Interchange project is located in and discharges into the Shingle Creek Basin. Shingle Creek ultimately outfalls into Lake Tohopekaliga. Shingle Creek is not classified as an Outstanding Florida Water (OFW) but identified as a Class III waterbody. The basin is also classified as an open basin. The Shingle Creek basin has adopted a basin watershed management plan. See the FDEP Adopted Management Action (BMAP) plan map in **Figure 1B**.

The peak discharge (25-YR/24-HR) from the post-project condition must be less than or equal to the pre-project condition. Although other limiting discharge criteria within the drainage basin are required, FTE widening projects are subject to the pre-vs. post criteria. Storage and attenuation capacity of existing (impacted) linear ponds are considered (See **Appendix B** and **Appendix C**) in the project pre-development discharges.

This project will propose changes to the existing mainline and side streets as well as add a pair of interconnected proposed ponds to the NW intersection of proposed Ramp A, Sand Lake Road, and SR 91 (Turnpike). It has been negotiated that the proposed ponds in this section will be constructed and permitted to treat the proposed impervious as well as provide adequate treatment volume for additional impervious expected to be routed to the pond in the future condition. Calculations for the pre basin and post basin are provided in **Appendix B.**

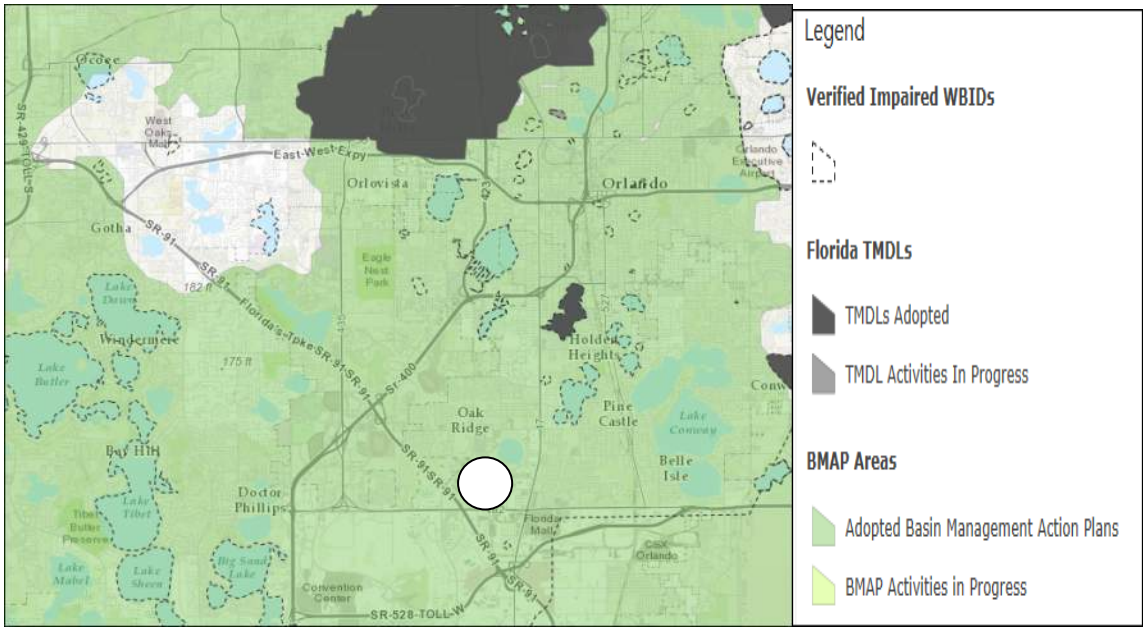

Figure 1B – FDEP BMAP

SECTION 2.0 – PRE-DEVELOPMENT

2.1 Existing Basin Determination and Drainage Patterns

State Road 91 is an 8-lane divided limited-access toll road with a posted speed of 70 miles per hour. State Road 482 is a 6-lane rural minor arterial with a posted speed of 45 miles per hour. State Road 482 has two bridges over State Road 482 (#750568 and #750294) with no existing connection to State Road 91.

Stormwater runoff is managed in eleven (11) roadside dry detention ponds in pre-development conditions, as permitted under SFWMD Permit No. 48-01443-P, within the project limits. The ponds are located along the NB and SB lanes of the Turnpike. The Ponds collectively receive and treat a required 4.51 acres of pavement and discharge into the right-of-way (R/W) ditches (See **Appendix I**). The R/W ditches ultimately outfall into the Shingle Creek floodplain through the SLR outfall ditch. The dry detention ditches appear to be in poor conditions as can be seen in **Figure 6**.

Ten (10) of these permitted dry detention ditches along the Turnpike will be impacted by proposed Ramps “B” and “C.” The eleventh pond (Exist. Pond 15) will be mainly regraded but considered totally impacted. Three (3) major cross drains will be impacted by the proposed improvements.

CD-4 (State number 75Q004) is located just south of the Sand Lake Road overpass at Station 2448+79. CD-4 is a 10 x 3 feet concrete box culvert. CD-4 was extended from 127 feet to 196 feet in 2004. Initial inspection reports indicated pavement settlement and joint (fill) leaks. The noted deficiencies were absent from the 2011 and 2015 inspection reports and are assumed to have been corrected.

High water conditions were observed in the ditch due to an inverted ditch slope and inconsistent culvert sizing. This is evident in the elevated high-water conditions in the ditch. See **Figure 2 thru Figure 4.**

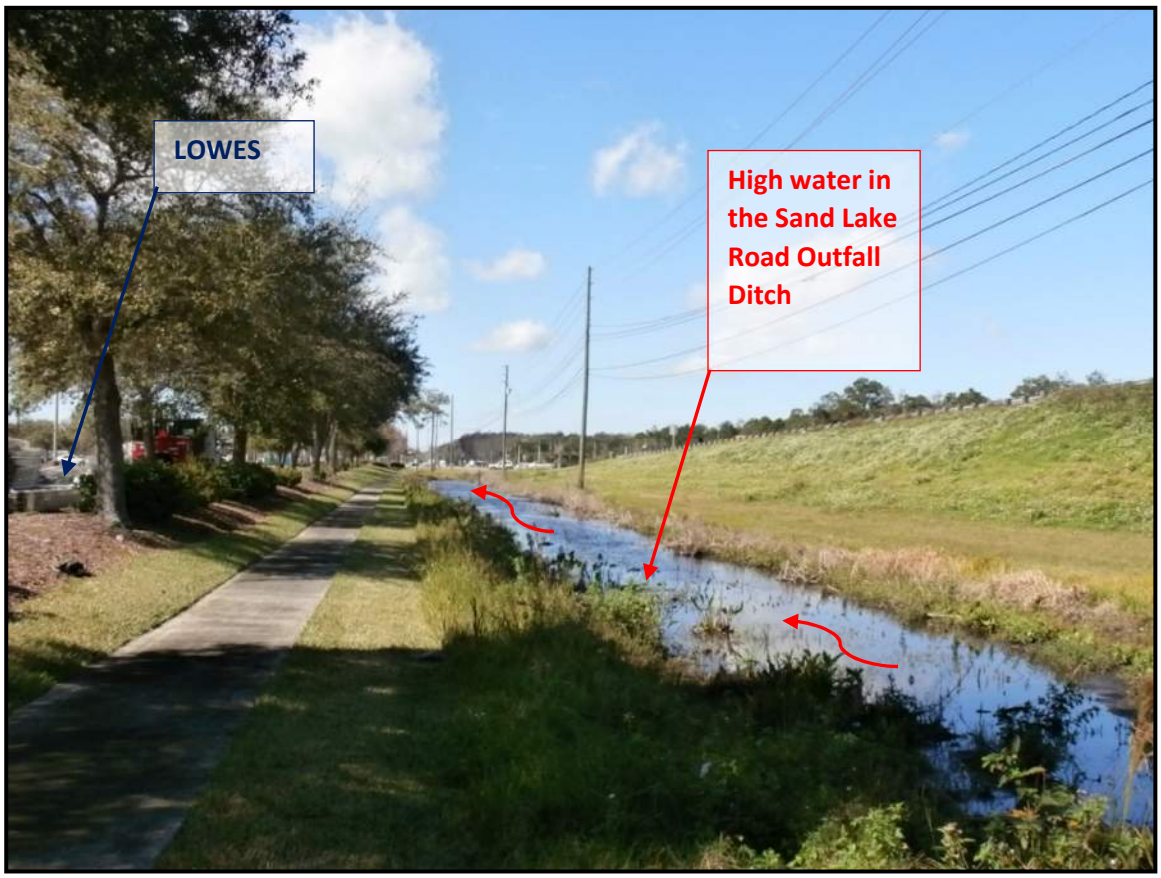

Figure 2 – High Water Conditions, Existing SLR-West Outfall Ditch

Figure 3 – High Water Conditions, Along the Turnpike and SLR Outfall Ditch

Figure 4 – High Water Condition, CD-4

CD-5 is a double 7 x 4 feet concrete box culvert located at Station 2482+29. The structure is identified as structure 75Q005. The 2011 inspection report lists the structure as in good condition. The structure was extended in 2004 from 150 to 196 feet outside the roadway clear zone. Both design tailwaters were based on the previous Shingle Creek FEMA FIS basin model. See the culvert inspection picture from 1/15/2015 in **Figure 5** below.

Figure 5 – High Water Condition, CD-5

Design flows were calculated using the same methodology as the previous culvert extension analysis, using the "Rational" method for CD-4 and the "Velocity" method for CD-5.

2.2 Existing Land Uses

In existing condition, the mainline, Sand Lake Road, and President's drive serve as transportation highway land use as well as the existing swales on either side of the mainline and side streets. Area within the proposed pond areas is denoted as undeveloped in the existing condition.

2.3 Ultimate Outfall Location

The ultimate outfall location and tailwater in the proposed and future development continues to be Shingle Creek. The tailwater used in the 25-YR design storm 85.36 (NAVD88) was estimated from interpolation of the FEMA FIS stages for the 10-YR and 50-YR storms. See **Appendix C** for the ICPR tailwater determination.

2.4 Hazardous Materials

There is Hazardous Material within the project limits. For Hazardous Material information on the project see the Geotechnical Report (**Appendix I**) as well as the Muck Delineation Plan within the Roadway Plan set for this project.

2.5 Existing Utilities

Existing utilities within the project area are noted to remain or be relocated in the Utility Adjustment Plans within the Roadway Plan set for this project.

2.6 Archaeological, Historical, and Environmental Information

There are no archaeological or historical sites within the project area. For more environmental information, please see the Geotechnical Report located in **Appendix I**.

SECTION 3.0 – POST DEVELOPMENT

3.1 Proposed Basin Determination and Drainage Patterns

In the proposed roadway configuration, drainage is directed to either continue flowing to existing cross drains (extended in the proposed condition) or has been redirected to Proposed Ponds 1A and 1B in the NW quadrant of the Sand Lake Road and Turnpike intersection. Ramps A, B, C, and D have been added to connect the Turnpike mainline to Sand Lake Road. Sand Lake Road's profile and horizontal configuration has been revised for these new connections. There were also minor alterations to Presidents Drive that did not affect overall existing drainage patterns.

3.2 Proposed Land Uses

In the proposed condition, the mainline, Sand Lake Road, and Presidents Drive continue to serve as transportation highway land use as well as the existing and revised swales on either side of the mainline and side streets. Area within the proposed pond areas is denoted to now also serve as transportation highway in the proposed condition.

3.3 Ultimate Outfall Location and Tailwater

The ultimate outfall location and tailwater in the proposed and future development continues to be Shingle Creek with 25-YR design storm tailwater of 85.36 (NAVD88). See **Appendix C** for the ICPR design storm tailwater determination.

3.4 Water Quality and Water Quantity

The project stormwater management design consists of two (2) interconnected Ponds (1A and 1B). Both ponds are designed for wet detention and provide treatment and attenuation. Post Development discharges are attenuated to Pre-Development levels for the 25-YR/24-HR. (See **Appendix I** for Pre-Application Meeting Minutes.) The project is modeled utilizing Interconnected Pond Routing (ICPRv3) hydraulic modeling software. Shingle Creek, as the ultimate receiving water body in the project area, was selected as the boundary for pre-post-future discharge demonstration. The interconnected ponds are designed to provide treatment for all new impervious areas, allowing for compensation of areas managed and permitted in the displaced roadside facilities. In addition, the ponds are designed to provide treatment capacity to accommodate **10.78 AC of future impervious areas** associated with the 12-laning from the future OSUI project (9.74 AC) and the future 10-laning (1.04 AC) within the current project limits.

The project water quality and quantity analysis for the project is split into two conditions: **Pre-Development** and **Post Development (Proposed)**. From there, area is sub-divided into **Managed Area** and **Unmanaged Area**. Managed Area refers to area to be routed to a stormwater management facility. This includes area routed to the roadside dry linear ponds in the existing condition and the proposed interconnected ponds in the proposed condition. Managed area is thus defined as treated and attenuated. Unmanaged Area refers to area not routed to linear swales or ponds and is thus considered untreated and unattenuated. These unmanaged areas are included for CN comparison of the different conditions. All area on this project, managed and unmanaged, outfall to Shingle Creek Basin. Please note, the impacted existing treatment swales in the Pre-Development condition has been accounted for in the overall treatment volume shown in **Appendix B**. Please see **Appendix A** for Pre and Post Basin Exhibits.

The interconnected ponds are in the NW quadrant of the intersection on State-owned property on the east and west side of Ramp A. An existing floodplain compensation area with 1.60 AC-FT of surplus compensation volume from the 2004 TPE 8-laning project is located west of the ponds. The proposed interconnected ponds include compensation treatment for the impacts on the linear dry detention ditches, as permitted and constructed for the 2004 Turnpike 8-laning project. Compensation is provided through the treatment of previously untreated areas along the mainline and Sand Lake Road. The design is centered upon rerouting and reducing runoff into the FGT specified areas.

Stages associated with unmanaged direct discharges into the SLR outfall ditch are mitigated by the proposed improvements in the ditch, as demonstrated in the HEC-RAS models. Pond routing, supporting composite runoff curve number (CN), and ICPR model input and output data are included in **Appendix B** and **Appendix C**. The T_C times for the pre-development and post-development roadside swale areas are estimated at 128.60 min. This is sourced from the Time of

Concentration Map to Single Creek, **Appendix C**. The Pond T_C times are estimated from storm sewer design and are set at 49.00 min.

The stormwater management design includes the design and analysis of the project onsite and offsite ditches to assure containment of the normal water depth within the section and R/W. The project onsite ditches are designed to convey runoff to ditch bottom inlets connected to the pond. Minimum ditch grade and minimum clearance to the local SHWT are provided for maintenance considerations.

Compensatory Treatment

Roadway improvements are proposed in each of the interchange quadrants, at a significant distance from the only available pond site in the area. The inherent conveyance challenges are further exacerbated by the 24" FGT gas transmission line running on the East side of the Turnpike, prohibiting storm drain crossings through the FGT easement. No drainage crossings are allowed under the current FTE and FGT agreement. Compensatory treatment is, therefore, the most viable solution for stormwater management. For this concept to work, sufficient untreated surface areas will need to be captured and managed to compensate for untreated new impervious areas.

Total project net new proposed impervious area is 15.40 acres. Areas associated with the impacted treatment ditches along the Turnpike amounts to 4.51 acres of treated impervious area. Captured new and existing impervious condition routed to the ponds in the proposed condition is 21.01 acres.

2.25 AC-FT of excess treatment volume is reserved for future use.

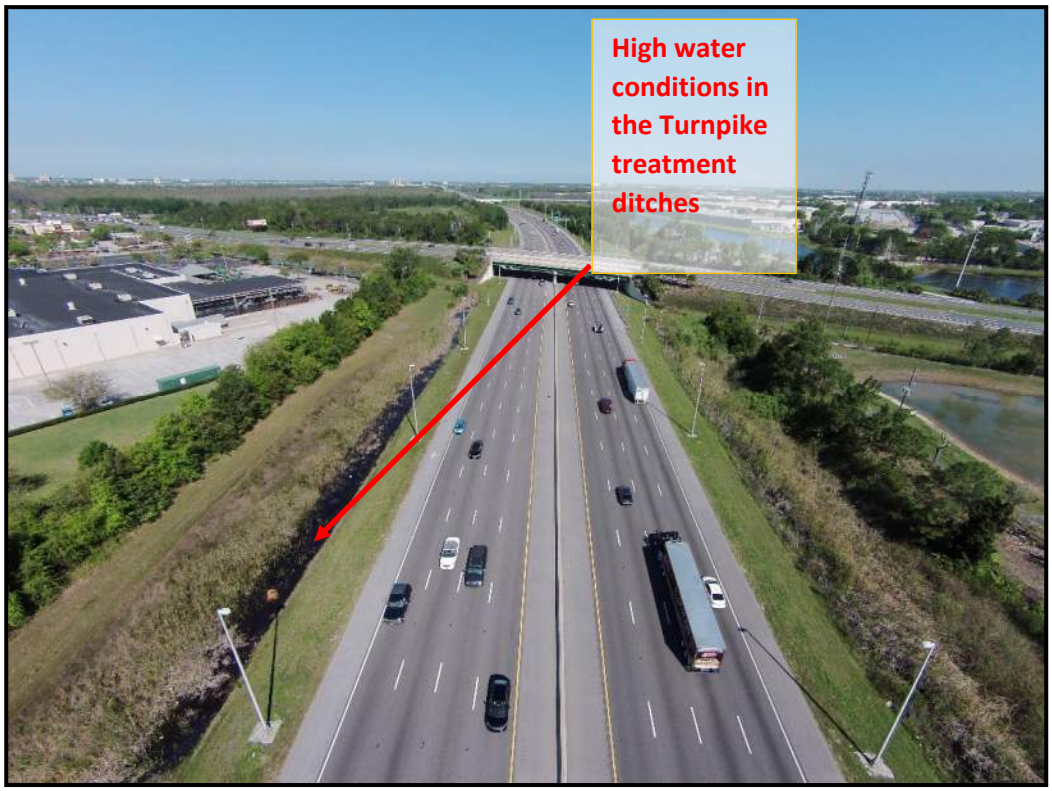

Figure 6 – High Water Conditions, Roadside Ponds

SECTION 4.0 – FLOODPLAIN ANALYSIS

Floodplain impacts associated with the construction of the interchange and ramps are compensated using the excess capacity of 1.60 AC-FT in the adjacent floodplain compensation area (See SFWMD Permit No. 48-01443-P). However, recent geotechnical testing has shown the estimated SHW at a value of 85.80' NAVD rather than 84.50' NAVD. Thus, the excess capacity of the existing floodplain compensation area has been equivalently reduced to **0.77 AC-FT** of surplus. The remainder is compensated within excavated portions of the proposed ponds that is hydraulically connected to, but outside, the floodplain limits. Floodplain impact and compensation summary and analysis are included in **Appendix D.**

SECTION 5.0 – BASE CLEARANCE ANALYSIS

Base Clearance Criteria

For ponds, BCWE shall be set at the 24-hour design high water elevation. In the absence of ponds and treatment swales, the BCWE is set at the SHW elevation.

Base Clearance Criteria per FDM (FDOT Design Manual) Section 210.10.3:

- Mainline Turnpike - 3.0 feet of base clearance.
- Ramps - 2.0 feet of base clearance.
- Crossing roads with rural sections - 3.0 feet of base clearance.
- Crossing roads with urban sections - 1.0 foot of base clearance.

Base clearance is measured from the bottom of the base to the Design High Water (DHW).

BCWE for Ramp "A" elevation 86.6 from the 24-HR DHW in Pond 1A (See ICPR output **Appendix C**). Others at local SHW.

SECTION 6.0 – CROSS DRAIN ANALYSIS

There are three (3) major cross culverts in the project area (CD-3, CD-4, and CD-5). CD-3 and CD-5 will be extended to meet clear zone requirements. CD-4 needs to be modified and extended to accommodate the proposed new FTE/SLR Ramps. The culvert is shortened on the upstream side to allow for both the construction of on and offsite storm drain systems. The onsite systems collect and convey the proposed ramp and untreated Turnpike pavement runoff to the pond. The offsite system is designed to convey pond discharges flow from the Orange County Utilities operation center, existing Turnpike and from east SLR.

Design flows through the structures were kept consistent with the flows from the TPE 8-laning project to highlight relative changes. Design flows through CD-4 that included project improvements were compared to the previous analysis were found in general agreement with the original flows when excluding Orange County Utility operations pond discharges (due to Pond discharge timing).

Additional hydraulic head losses associated with a conventional box culvert extension were a major concern. This due to high tailwater conditions in the Sand Lake Road outfall ditch and increased flood levels for discharges outside the R/W upstream.

High water conditions in the SLR outfall ditch are mitigated by altering the physical slope of the ditch grade towards Shingle Creek. This in combination with the upsizing of the undersized culvert under the Lowes Home Improvements store driveway. The improvements are designed to mitigate for potential additional head losses associated with culvert realignment. In conclusion, flood stages are negatively impacted. See **Table 8** for a results summary.

HEC-RAS Models

The US Army Corps of Engineers River Analysis System (HEC-RAS) version 4.1 was selected to generate backwater profiles in the outfall ditch in pre-and post-development conditions. The purpose was to provide tailwater data for the FHWA HY-8 culvert design and overtopping models. The Post-development HEC-RAS model showed significant improvements in design high water (DHW) performance over the pre-development model (Pre $DHW_{50\ yr}$ = 91.05 vs Post $DHW_{50\ yr}$ = 88.23). DHW data from multiple design events were used to generate tailwater rating curves for the HY-8 culvert model. The HY8 model output provided hydraulic performance data for the flood data boxes, shown on the Drainage map.

HEC-RAS pre-and post-outfall models, TW elevations and cross drain design are included in **Appendix B**.

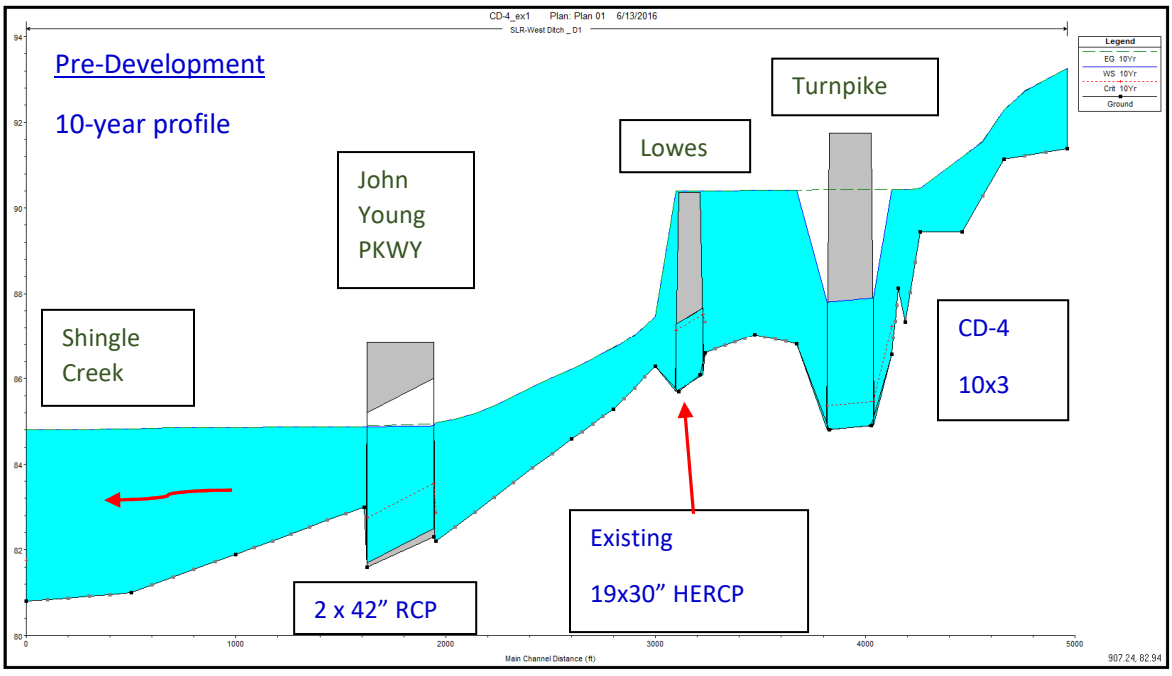

Figure 7 – HEC-RAS Profile of Existing SLR Outfall Ditch

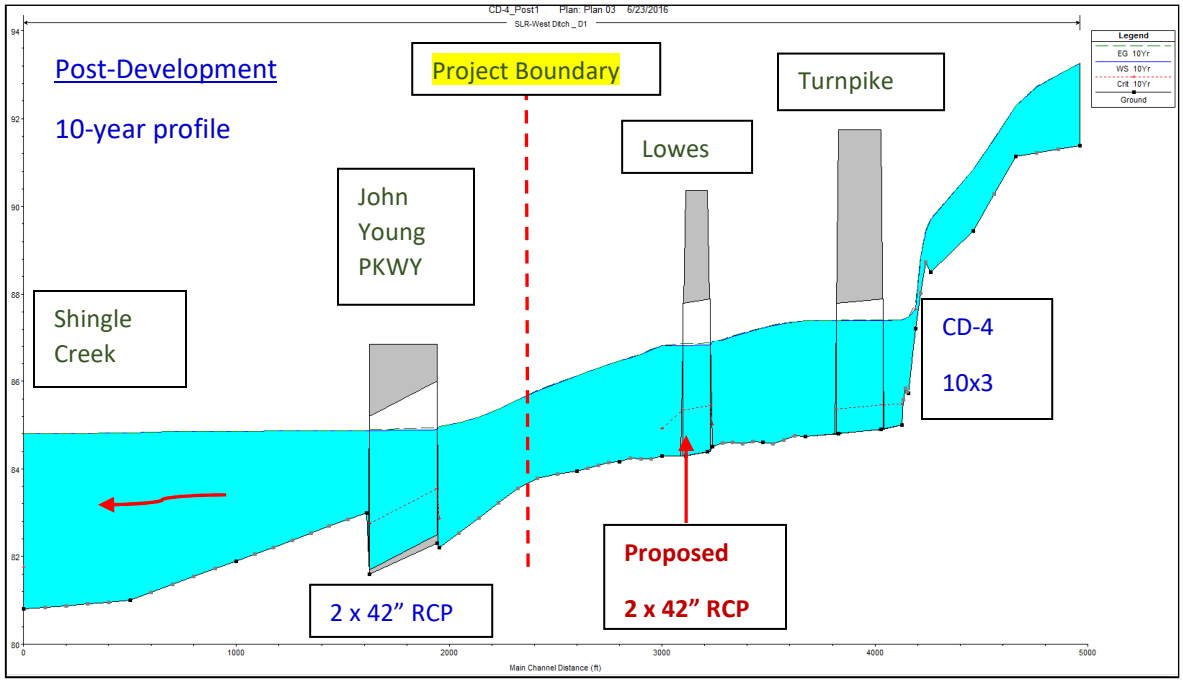

Figure 8 - HEC-RAS Profile of Improved SLR Outfall Ditch

Cross Drain Extensions

Cross drain flow was determined from either velocity or rational method. The Velocity Method is a segmental approach, which can be used to account for overland flow, shallow channel flow (rills or gutters), and main channel flow. Rational Method calculates flow quantity based on the "C" value, a value determined based on the ratio of impervious to pervious area in the area, rainfall intensity, and total area.

All cross drain culvert extensions are analyzed using FHWA HY-8 software using the most relevant hydrological data. There are 3 Cross drains in the project limits.

CD-3 is located at station 2414+18 baseline Turnpike. The structure is an 8'x4' concrete box culvert, constructed in 1962. **CD-3** has no apparent scour problems. The culvert was previously extended from 153' to 196 feet in 2003. The culvert will be extended 12 feet to maintain the headwalls outside of the clear zone. The design flows and tailwater conditions were obtained from the previous culvert extension analysis and SFWMD permits No. 48-01443-P (2004). This is to illustrate the relative DHW change to the previous culvert extension. These design flows were obtained using the rational method. A copy of the analysis is included in **Appendix E**.

CD-4 proposed flow data is considered conservative as majority of the runoff from the proposed ramps will be routed through the pond and therefore removed from its historical contributing basin. The Shingle Creek Flood Insurance Study (FIS) hydraulic model was used to determine ultimate tailwater conditions in the HEC-RAS model. The HEC-RAS Model extends from the Turnpike to Shingle Creek, west along the south side of Sand Lake Road. The HEC-RAS flows for the proposed improved outfall condition are taken from the previous permit. The flows used for final HY-8 Pre-Post analysis are the revised flows based on the rational method for the pre-condition, which is considered conservative in comparison to the reduced contributing basin of the proposed condition. Tailwater elevations used in the HY-8 post culvert analysis model are from the HEC-RAS model of the improved outfall ditch.

Pre-development TW elevations at the headwall of the 10x3 RCBC under the mainline are:

90.93, 91.05, and 91.31 NAVD for the 50, 100 and 500-year events, respectively.

Post-development TW elevations at the extended culvert in the improved outfall ditch are:

87.89, 88.12, and 88.74 NAVD for the 50, 100 and 500-year events, respectively.

Flow data for **CD-5** is based on data from the last Turnpike 8-laning project. The extension for CD-5 is approximately 12 feet to the west. A minor extension and the lack of maintenance or performance issues qualify the structure for using the flow data obtained through the velocity method, as used in the previous TPE widening project.

SECTION 7.0 – ON SITE CONVEYANCE CALCULATIONS

7.1 R/W Ditch Analysis

The stormwater management design includes the design and analysis of the project onsite and offsite ditches to assure containment of the normal water depth within the section and R/W. The project onsite ditches are designed to convey runoff to ditch bottom inlets connected to the pond. Minimum ditch grade and minimum clearance to the local SHWT are provided for maintenance considerations. Ditch design calculations are included in **Appendix F**.

7.2 Storm Sewer Design and Tabulations

Storm sewer design calculations and hydraulic grade line tabulations are included in **Appendix F**.

7.3 Gutter Spread Analysis

Inlet spacing justification/Gutter spread calculations for barrier wall, shoulder gutter and curb inlets are included in **Appendix F.**

SECTION 8.0 – MOT DRAINAGE

Please see the Roadway Plan Set for this project for Traffic Control Plans including the phases of drainage implementation.

SECTION 9.0 – OPTIONAL PIPE ANALYSIS

Optional Pipe Analysis was conducted using FDOT Culvert Service Life Estimator (CSLE). See the results of these calculations in **Appendix H**.

SECTION 10.0 – HYDROPLANING ANALYSIS

Hydroplaning risk assessments are performed using the FDOT Hydroplaning Analysis Tool. The Hydroplaning Evaluation procedure uses an estimated driver response speed during rainfall events from 0.1 and 4 in/hr. intensities. The hydroplaning potential speed is compared to the predicted driver speed and found acceptable if the potential hydroplaning speed is equal or higher than the predicted driver's speed. The critical event is 2 in/hour intensity. The hydroplaning speed was higher than the predicted speed in all critical sections analyzed. See **Table 2** and full hydroplaning analysis in **Appendix G**.

Table 2. Hydroplaning Performance Sample Summary

Cross slope	*0.02*	*0.02*	*0.03*	*0.03*	
Rainfall Intensity (in/hr)	**Lane 1**	**Lane 2**	**Lane 3**	**Lane 4**	**Predicted Driver Speed (mph)**
0.1	--	--	--	n/a	70
0.25	--	--	--	n/a	70
0.5	--	--	--	n/a	64
1	--	--	--	83	62
2	--	--	--	58	58
3	--	--	--	51	45
4	--	--	--	48	45

SECTION 11.0 – SUMMARY AND RESULTS

Table 3. Existing Turnpike Swale Treatment Summary

Exist. Swales	5	7	9	11	13	10	12	14	16	18	15	**Total**
Treated Pavement (AC)	0.79	0.14	0.18	0.11	0.57	0.79	0.13	0.69	0.13	0.09	0.89	**4.51**

Figure 9 - Impacted TPE treatment ditches

Table 4. Basin Area Summary

	Managed Pre-Development to Shingle Creek (AC)	Unmanaged Pre-Development to Shingle Creek (AC)	Managed Post Development to Shingle Creek (AC)	Unmanaged Post Development to Shingle Creek (AC)
Impervious	9.01	29.78	21.01	33.18
Pervious	6.83	47.33	13.41	19.95
Water	2.34	0.00	7.74	0.00
Grand Totals	**95.29**		**95.29**	

Table 5. Total Project Water Quality Summary

	Area	WQ required	WQ provided
Proposed Additional Impervious	15.40 AC	3.21 AC-FT	**6.39 AC-FT**
Existing Impacted Swales Required Treatment	4.51 AC	0.94 AC-FT	
Total Required Impervious Treatment	**19.91 AC**	**4.15 AC-FT**	
Future Additional Impervious	10.78 AC	2.25 AC-FT	WQ provided >>= Required
Proposed Impervious Treatment including Future Imp.	**30.69 AC**	**6.39 AC-FT**	

Table 6. Basin Discharge Summary

	Pre-Development Discharge (CFS)	Post Development Discharge (CFS)	Post Stages (FT)	Post Freeboard from Berm (EL. 89.00) (FT)
Pond 10/24 (Pond 1A)	N/A	--	87.05	1.95
Pond 25/24 (Pond 1A)	N/A	37.09	87.53	1.47
Pond 10/24 (Pond 1B)	N/A	--	87.03	1.97
Pond 24/24 (Pond 1B)	N/A	--	87.43	1.57
Total to Shingle Creek (25/24)	112.99	99.35	--	--

Table 7. Floodplain Impact and Compensation Summary

	*Revised Existing FPC Credit	Total Proposed Fill	Proposed Compensation	**Net Overall Compensation
Floodplain compensation	**0.77 AC-FT**	**4.99 AC-FT**	**5.10 AC-FT**	**+0.88 AC-FT**

*Revised Calculation of SFWMD Permit No. 48-01443-P (2004). **Includes ERP FPC credit

Table 8. Total Cross Drain Extension Summary

	Pre-Development Stages	Post-Development Stages	Flows (cfs)
CD-3 50 Year DHW	96.15 ft.	**96.09 ft.**	***204.0**
CD-3 100 Year DHW	96.77 ft.	**96.76 ft.**	***240.0**
CD-3 500 Year DHW	99.11 ft.	**99.23 ft.**	***340.0**
CD-4 50 Year DHW	91.79 ft.	**89.61 ft.**	****82.03**
CD-4 100 Year DHW	92.01 ft.	**90.06 ft.**	****94.01**
CD-4 500 Year DHW	92.52 ft.	**91.61 ft.**	****128.85**
CD-5 50 Year DHW	88.56 ft.	**88.58 ft.**	*****335.0**
CD-5 100 Year DHW	89.75 ft.	**89.77 ft.**	*****399.0**
CD-5 500 Year DHW	90.90 ft.	**90.91 ft.**	*****559.0**

Hydrology Sources: * Data from Permit No. 48-01443-P (2004)

** Revised hydrology, See Appendix E

***Velocity Method

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Floodplain Impact Calculations

Existing Surplus Floodplain Compensation Available= 1.60 AC-FT
(See SFWMD Permit #48-01443-P (2004))

The existing surplus is based on a value with assumed SHW of 84.50 and FPE of 87.00. Geotechnical survey shows current SHW at elevation 85.80. The existing surplus value is thus reduced equally,

*Revised Existing Surplus Compensation Available= 0.77 AC-FT

Floodplain Impact=	2.52 AC-FT	(Net Fill from Ramp A)
Floodplain Impact=	1.04 AC-FT	(Fill from Pond 1A)
Floodplain Impact=	1.43 AC-FT	(Fill from Pond 1B)
Floodplain Impact=	0.00 AC-FT	(Pond 1A and 1B in Floodplain)
Total Floodplain Impact=	4.99 AC-FT	

Proposed Floodplain Compensation will provided in Ponds 1A and 1B for the cut sections between the SHW and Floodplain Elevation (87.00) outside of the floodplain limits.

Project Required Floodplain Compensation Volume:	4.99 AC-FT
Revised Existing Surplus Floodplain Compensation Volume:	0.77 AC-FT
Net Total Required Compensation Volume:	4.22 AC-FT
Project Provided Floodplain Compensation Volume:	5.10 AC-FT

Stage-Area Table

Pond 1A Fill Impact

	Stage (FT)	Area (AC)	Avg. Area (AC)	Incr. Volume (AC-FT)	Total Volume (AC-FT)
SHW	85.80	0.85	0.87	1.04	1.04
Floodplain El.	87.00	0.89			

Pond 1B Fill Impact

	Stage (FT)	Area (AC)	Avg. Area (AC)	Incr. Volume (AC-FT)	Total Volume (AC-FT)
SHW	85.80	0.76	1.19	1.43	1.43
Floodplain El.	87.00	1.62			

Combined Pond 1A and Pond 1B Compensation

	Stage (FT)	Area (AC)	Avg. Area (AC)	Incr. Volume (AC-FT)	Total Volume (AC-FT)
Floodplain El.	87.00	4.79	4.25	5.10	5.10
SHW	85.80	3.71			

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Ramp A Floodplain Impact Calculations

Proposed Floodplain Fill from Ramp A:

Station	Fill Area (SF)	Avg. Fill Area (SF)	Incr. Fill Volume (CF)	Total Fill Volume (CF)
305+00.00	0			
305+50.00	98	49	2450	2450
306+00.00	88	93	4650	7100
306+50.00	84	86	4300	11400
307+00.00	88	86	4300	15700
307+50.00	89	89	4425	20125
308+00.00	89	89	4450	24575
308+50.00	109	99	4950	29525
309+00.00	107	108	5400	34925
309+50.00	98	103	5125	40050
310+00.00	80	89	4450	44500
310+50.00	91	86	4275	48775
311+00.00	91	91	4550	53325
311+50.00	97	94	4700	58025
312+00.00	110	104	5175	63200
312+50.00	121	116	5775	68975
313+00.00	114	118	5875	74850
313+50.00	111	113	5625	80475
314+00.00	104	108	5375	85850
314+50.00	93	99	4925	90775
315+00.00	81	87	4350	95125
315+50.00	68	75	3725	98850
316+00.00	32	50	2500	101350
316+50.00	47	40	1975	103325
317+00.00	41	44	2200	105525
317+50.00	41	41	2050	107575
318+00.00	39	40	2000	109575
318+50.00	37	38	1900	111475
319+00.00	35	36	1800	113275
319+50.00	31	33	1650	114925
320+00.00	30	31	1525	116450
320+50.00	28	29	1450	117900
321+00.00	24	26	1300	119200
321+50.00	20	22	1100	120300
322+00.00	16	18	900	121200
322+50.00	17	17	825	122025
323+00.00	0	9	425	122450

Total Floodplain Volume from Ramp A:			
	=	122450	CF
	=	2.81	AC-FT

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Ramp A Floodplain Cut Calculations

Proposed Floodplain Cut from Ramp A:

Station	Cut Area (SF)	Avg. Cut Area (SF)	Incr. Cut Volume (CF)	Total Cut Volume (CF)
310+00.00	0			
310+50.00	14	7	350	350
311+00.00	25	20	975	1325
311+50.00	31	28	1400	2725
312+00.00	15	23	1150	3875
312+50.00	17	16	800	4675
313+00.00	36	27	1325	6000
313+50.00	27	32	1575	7575
314+00.00	33	30	1500	9075
314+50.00	23	28	1400	10475
315+00.00	18	21	1025	11500
315+50.00	8	13	650	12150
316+00.00	6	7	350	12500
316+50.00	0	3	150	12650

Total Floodplain Cut from Ramp A:			
	=	12650	CF
	=	0.29	AC-FT

Ramp A Floodplain Net Fill Calculations

Proposed Ramp A Fill	=	2.81	AC-FT
Proposed Ramp A Cut	=	0.29	AC-FT
Net Proposed Ramp A Fill	=	2.52	AC-FT

FLOODPLAIN NEW CUT

FLOODPLAIN INCREASED CUT

POND FILL IMPACT

NO IMPACT

*PLEASE SEE CROSS-SECTION EXHIBIT FOR RAMP A FLOODPLAIN CALCULATIONS

N

0 20 100

Feet

WETLAND LIMITS

EXISTING FLOODPLAIN COMPENSATION

℄ CONST. RAMP A

LA R/W

PC STA. 306+01.58

BASE FLOOD ELEVATION, 87.0

EXIST R/W

PI STA. 268+86.91

BASE FLOOD ELEVATION, 87.0

℄ SURVEY SR 482

PC STA. 300+00.00

RP SURVEY SR 91

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POND FLOODPLAIN EXHIBIT

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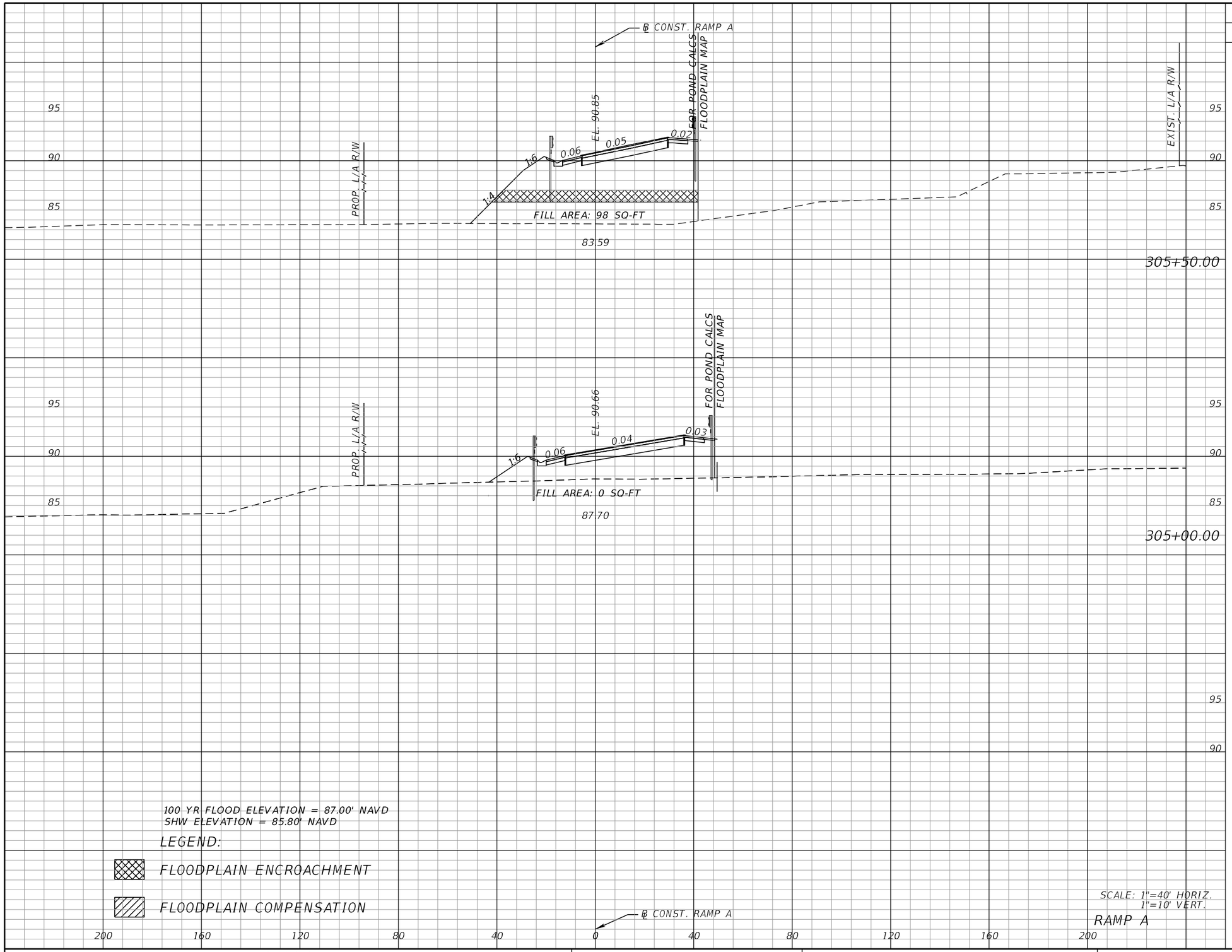

Subsoil Exc.		Regular Exc.		Embankment	
A	V	A	V	A	V
452	418.5	0	0.0	893	1007.2
0	0.0	0	0.0	194	330.7
0	0.0	0	0.0	163	302.4

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FLOODPLAIN IMPACT CROSS SECTIONS

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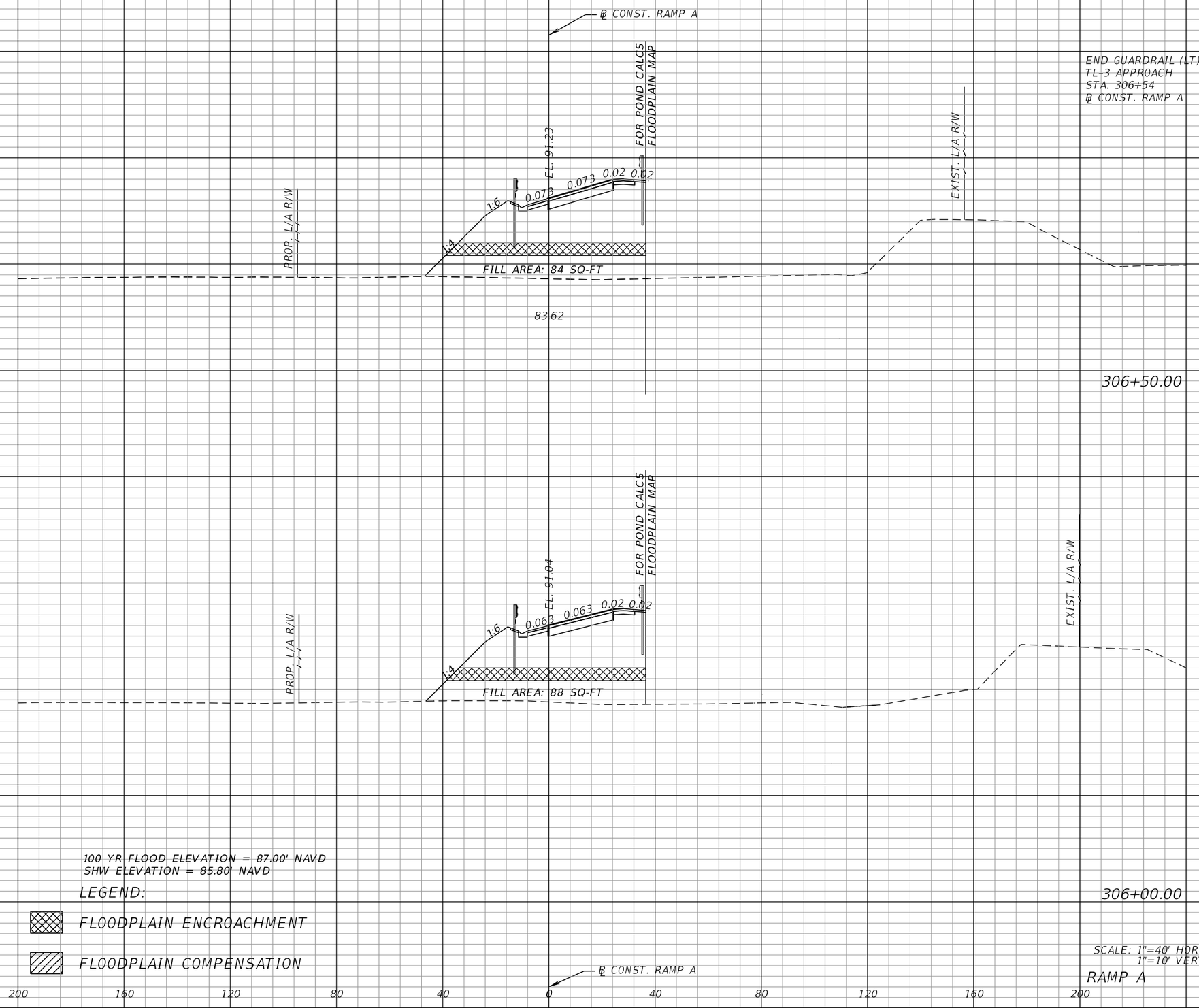

Subsoil Exc.		Regular Exc.		Embankment	
A	V	A	V	A	V
146	217.8	0	0.0	654	1043.4
89	501.2	0	0.0	473	1265.5

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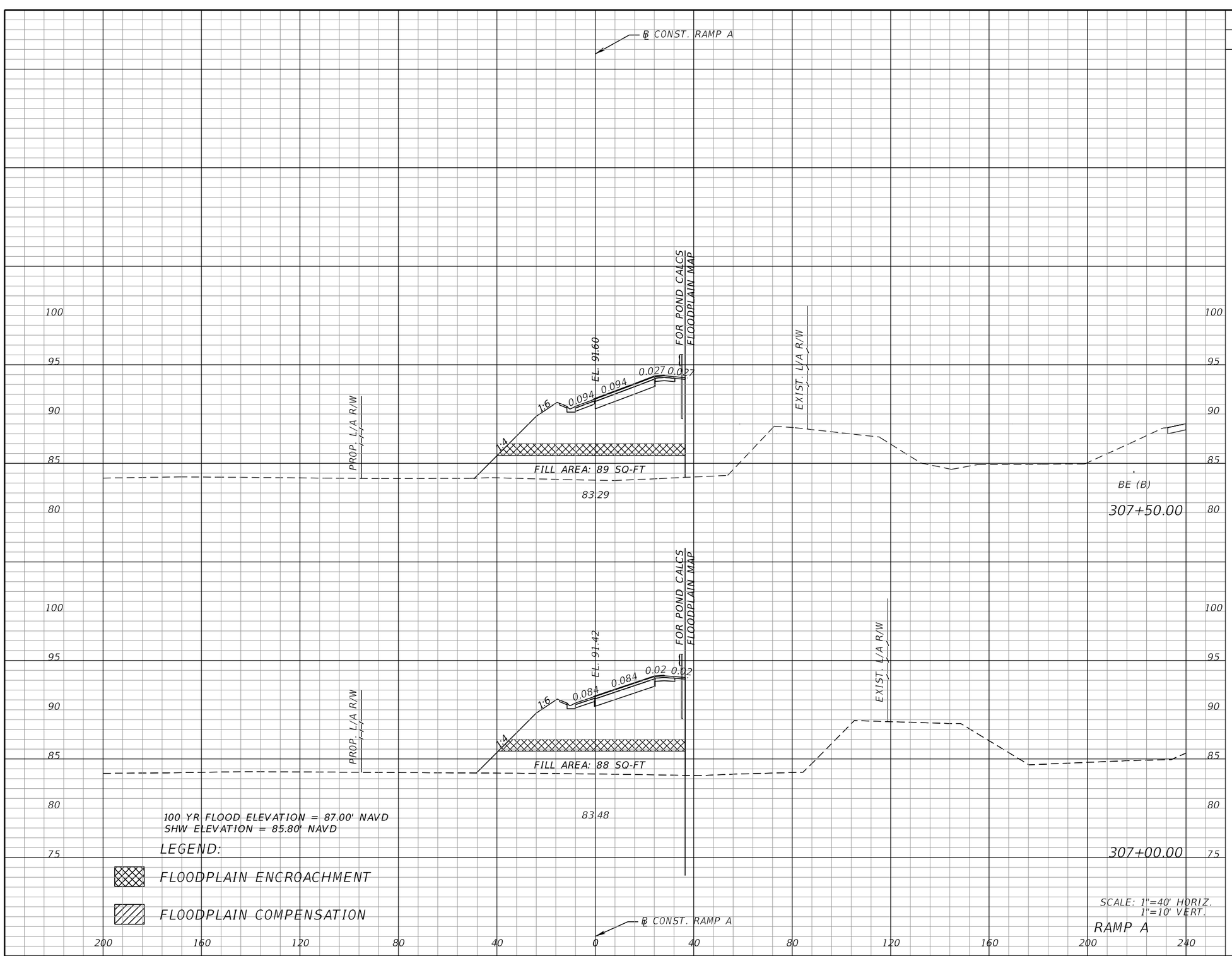

Subsoil Exc.		Regular Exc.		Embankment	
A	V	A	V	A	V
514	955.5	0	0.0	1100	2016.9
518	614.3	0	0.0	1078	1603.6

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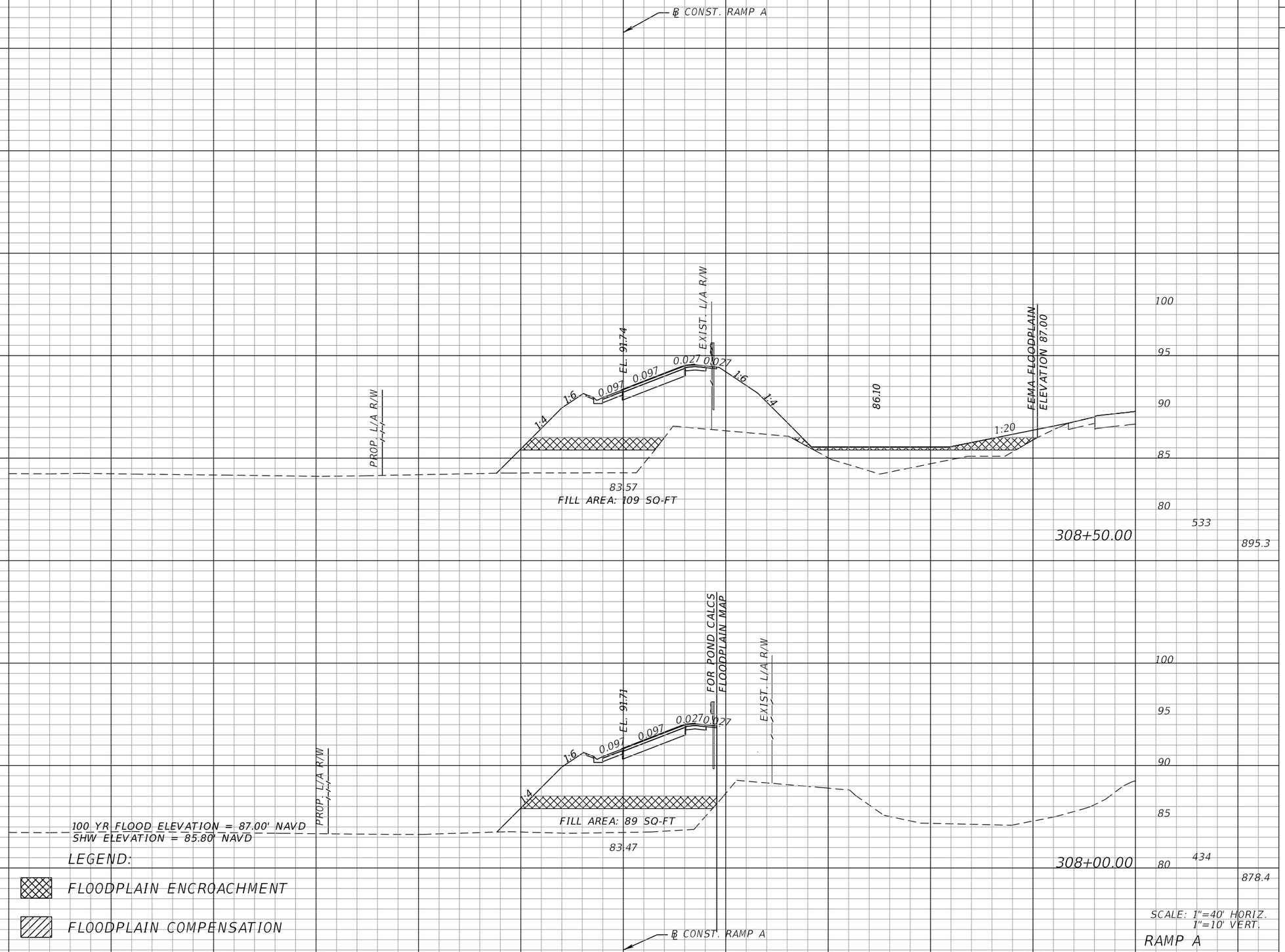

Regular Exc.		Embankment	
A	V	A	V
533	0	1007	
895.3	0.0		1863.8
434	0	1005	
878.4	0.0		1949.6

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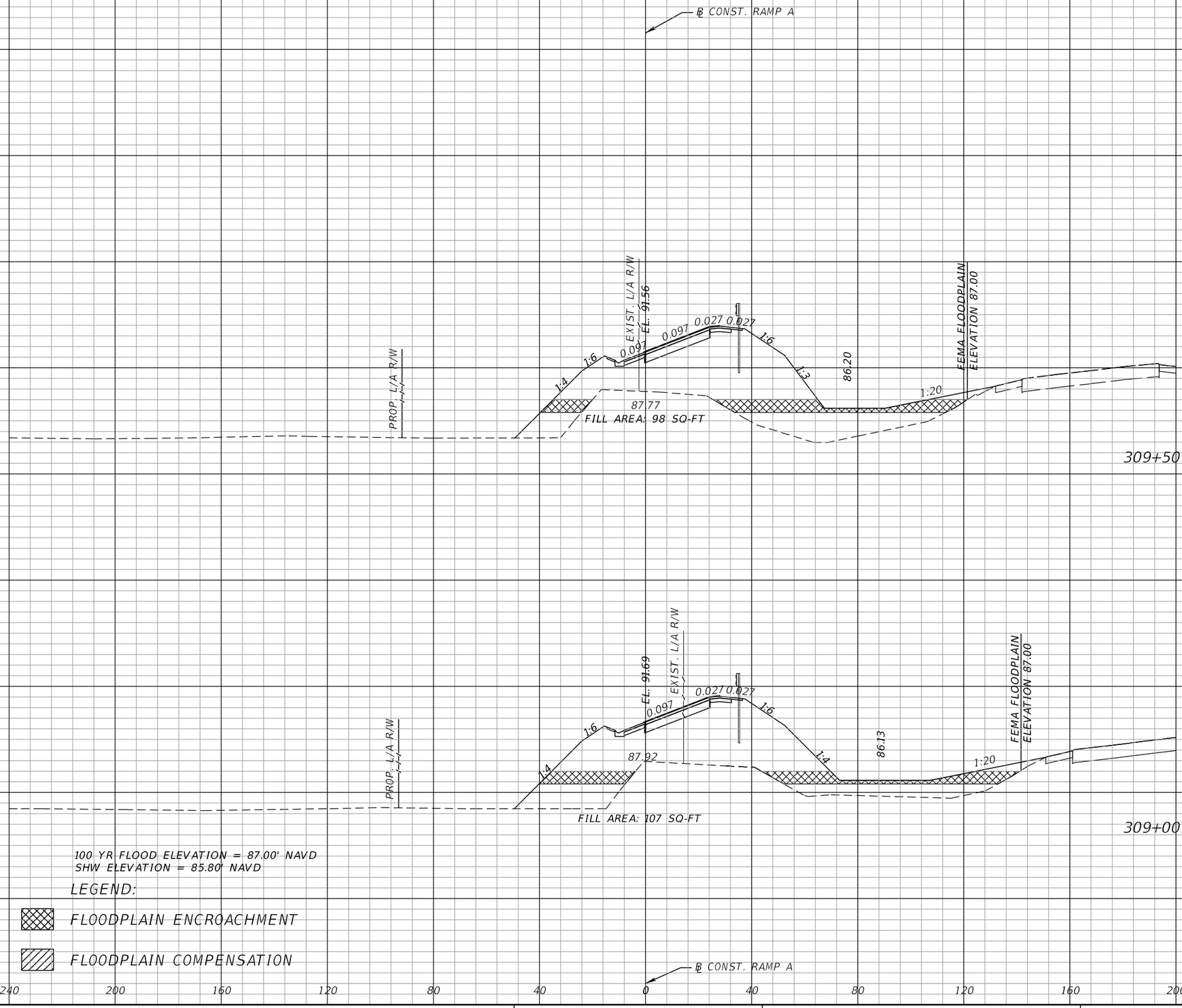

Regular Exc.		Embankment	
A	V	A	V
251	565.9	907	1801.0
0	0.0	0	0.0
361	827.1	1038	1893.8

SCALE: 1"=40' HORIZ.
1"=10' VERT.

RAMP A

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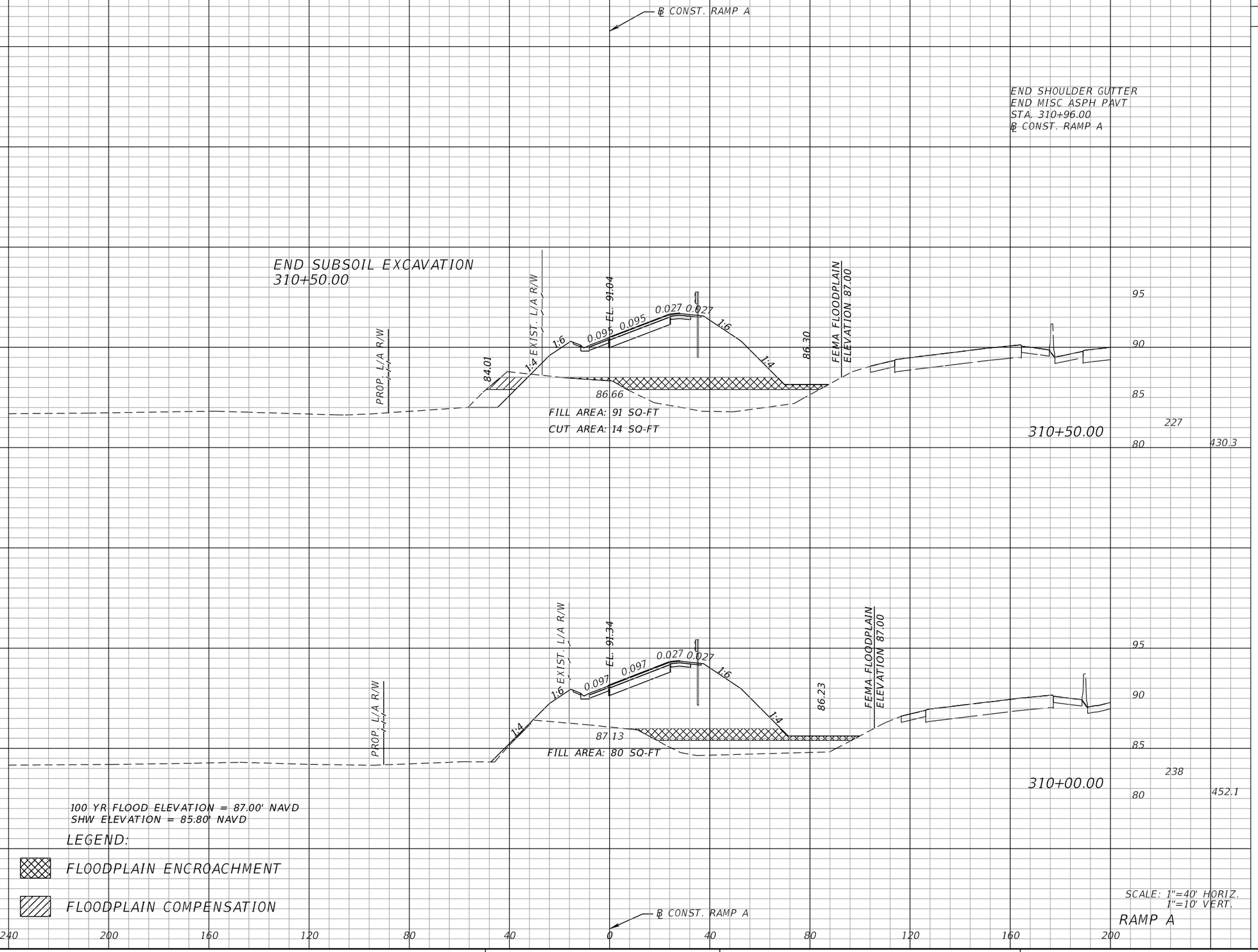

Regular Exc.		Embankment	
A	V	A	V
227			
0		5927	
	0.0		6210.8
430.3			
238			
0		781	
	0.0		1562.9
452.1			

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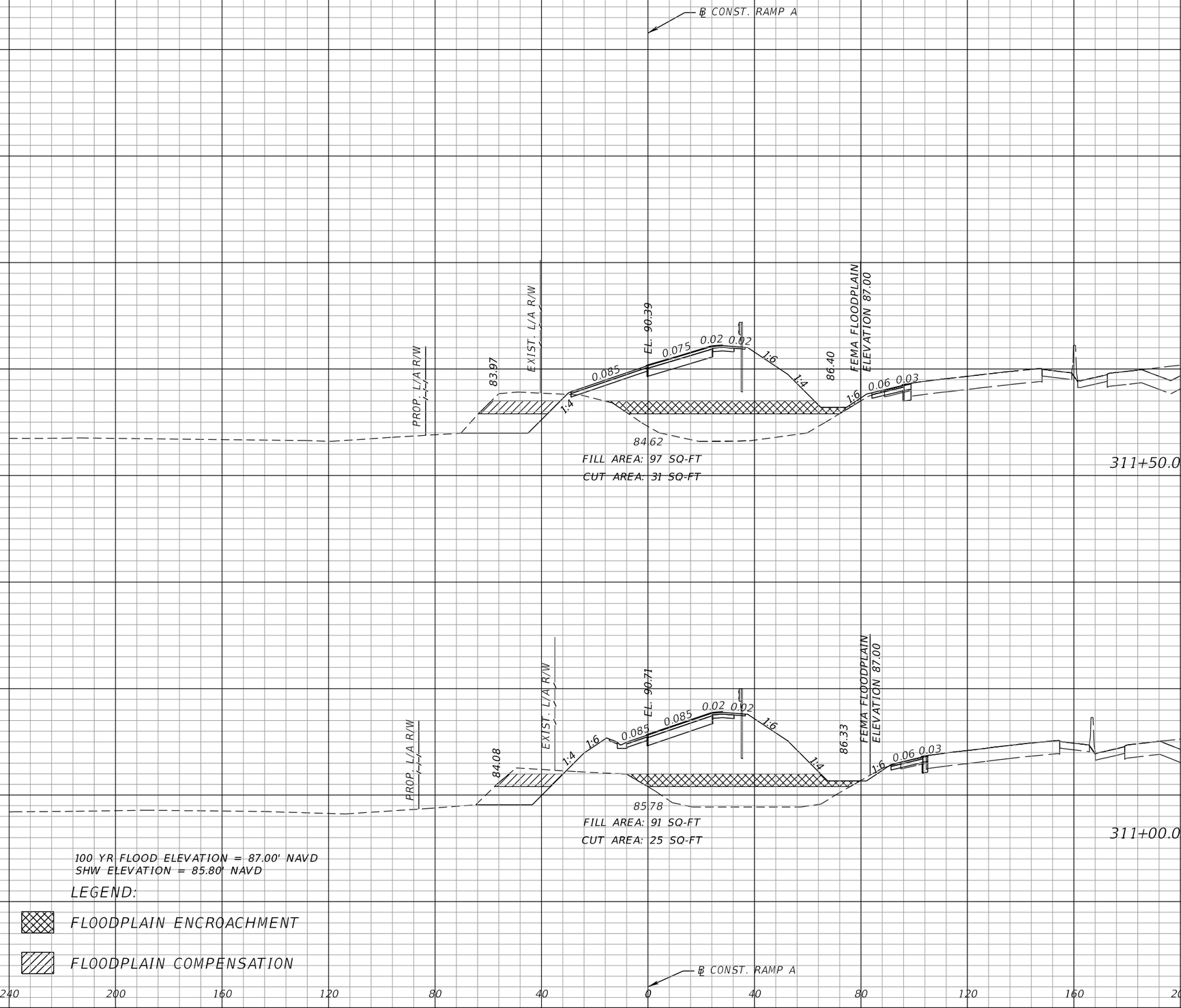

Regular Exc.		Embankment	
A	V	A	V
18	23.9	502	953.7
8	7.4	528	5976.8

0 0.0
0 210.1

SCALE: 1"=40' HORIZ.
1"=10' VERT.

RAMP A

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FLOODPLAIN IMPACT CROSS SECTIONS

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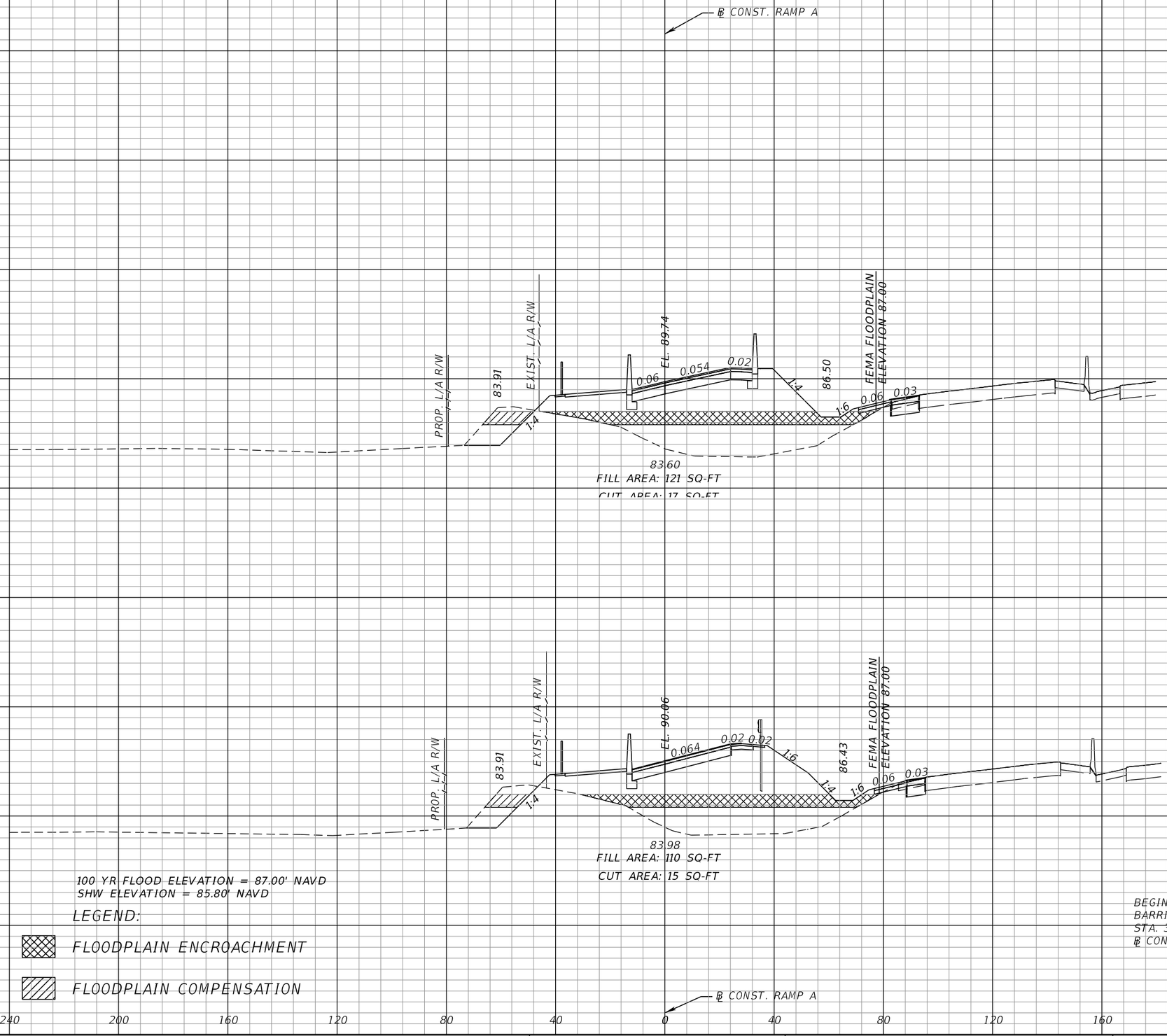

100 YR FLOOD ELEVATION = 87.00' NAVD
SHW ELEVATION = 85.80' NAVD

LEGEND:

FLOODPLAIN ENCROACHMENT

FLOODPLAIN COMPENSATION

BEGIN MEDIAN CONC.
BARRIER WALL
STA. 311+71.08 (LT)
℄ CONST. RAMP A

SCALE: 1"=40' HORIZ.
1"=10' VERT.

RAMP A

Regular Exc.		Embankment	
A	V	A	V
8	18.2	499	943.9
11	27.0	521	947.2

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FLOODPLAIN IMPACT CROSS SECTIONS

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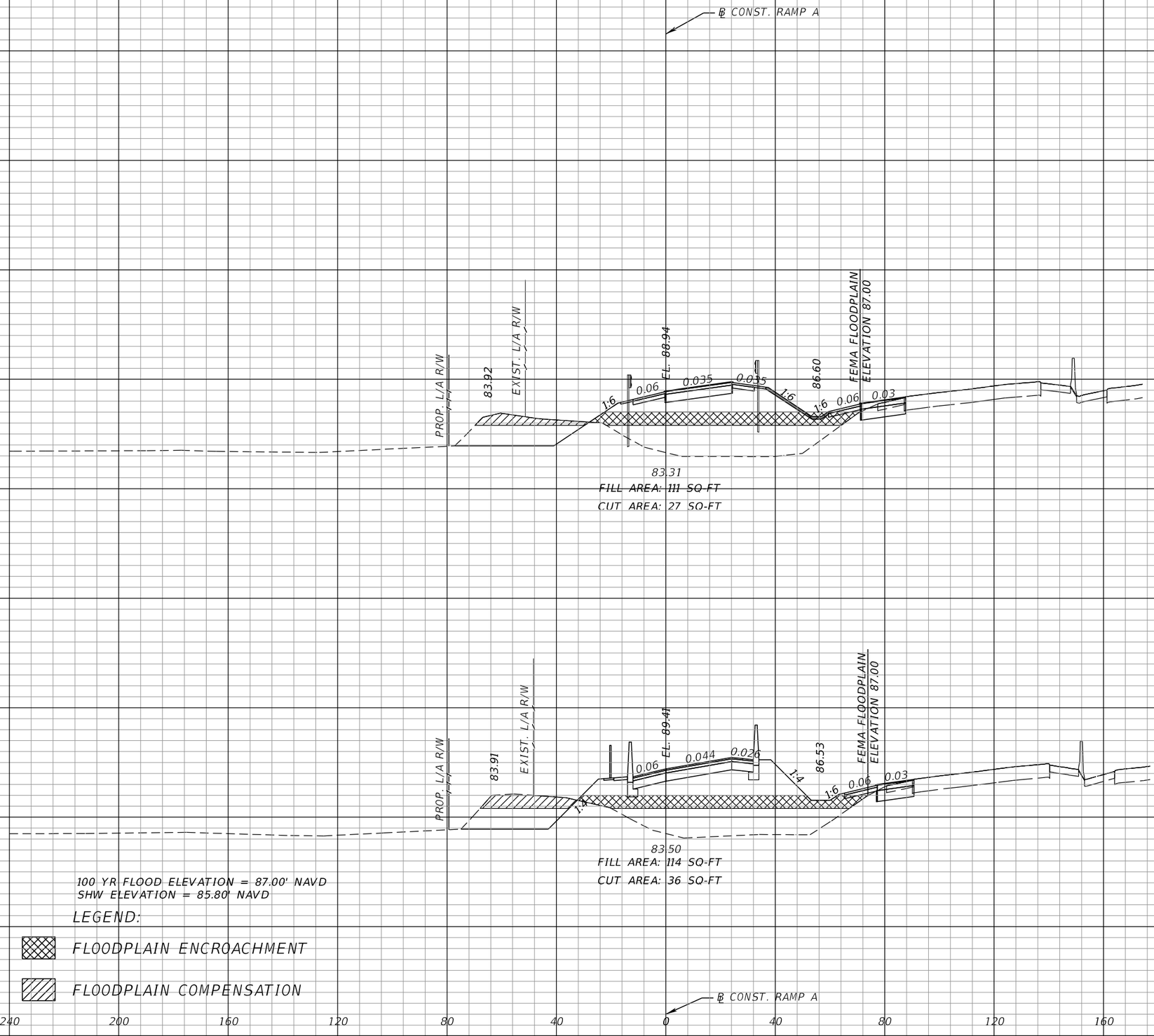

Regular Exc.		Embankment	
A	V	A	V
13	23.4	410	773.1
12	18.6	425	855.3

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

Kimley-Horn and Associates, Inc.
Victor Gallo, P.E.
P.E. License No. 75592
189 South Orange Avenue, Suite 1000
Orlando, Florida 32801

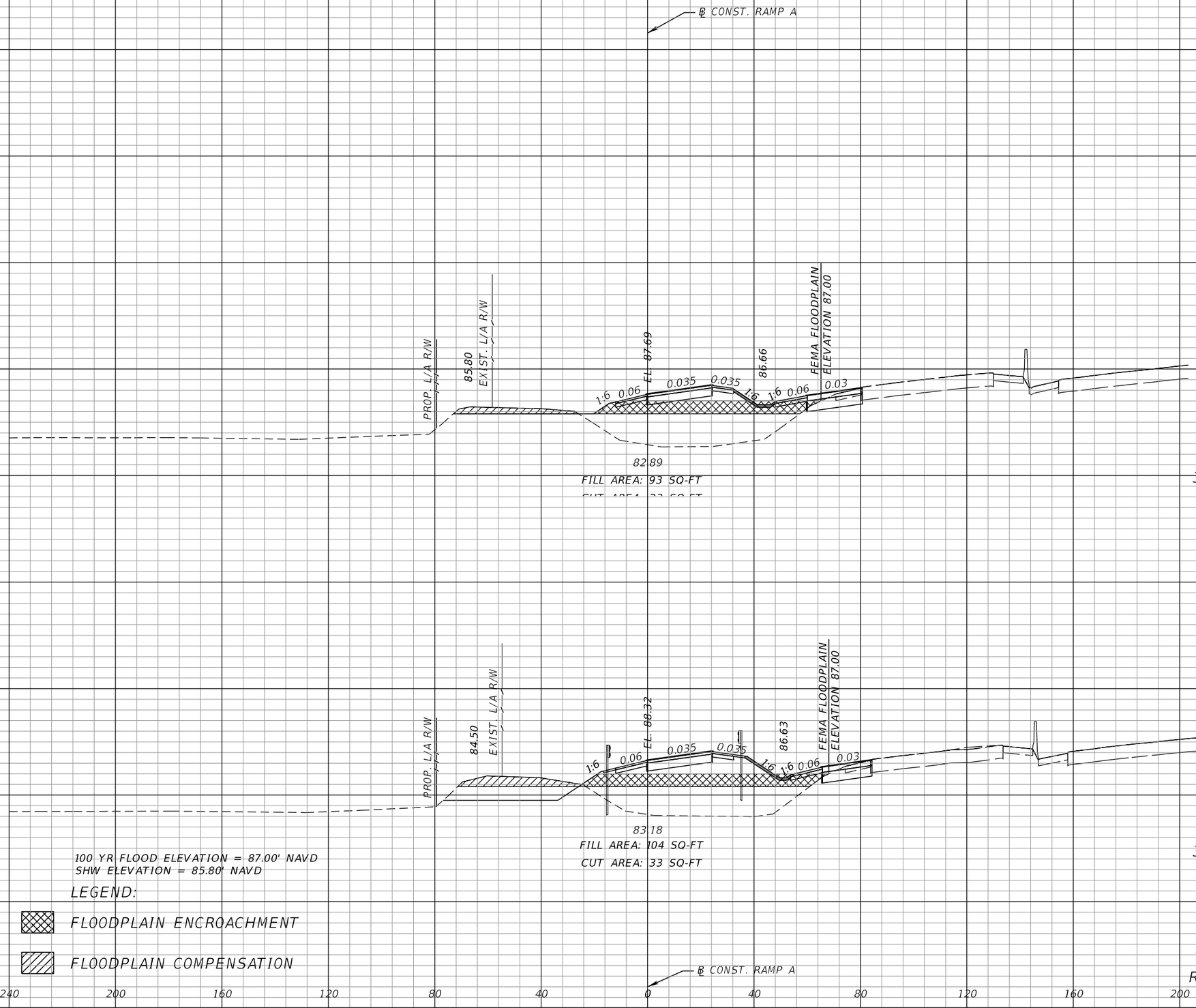
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	433663-1-52-01

FLOODPLAIN IMPACT CROSS SECTIONS

SHEET NO.

Morgan.Stephens 2/7/2023 11:08:06 AM c:\pw\kh1\dms58205\DRXSRD99_Floodplain_REV2.DGN



Regular Exc.		Embankment	
A	V	A	V
16	29.1	288	580.1
15	26.3	339	693.1

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SR 91	ORANGE	433663-1-52-01

FLOODPLAIN IMPACT CROSS SECTIONS

SHEET NO.

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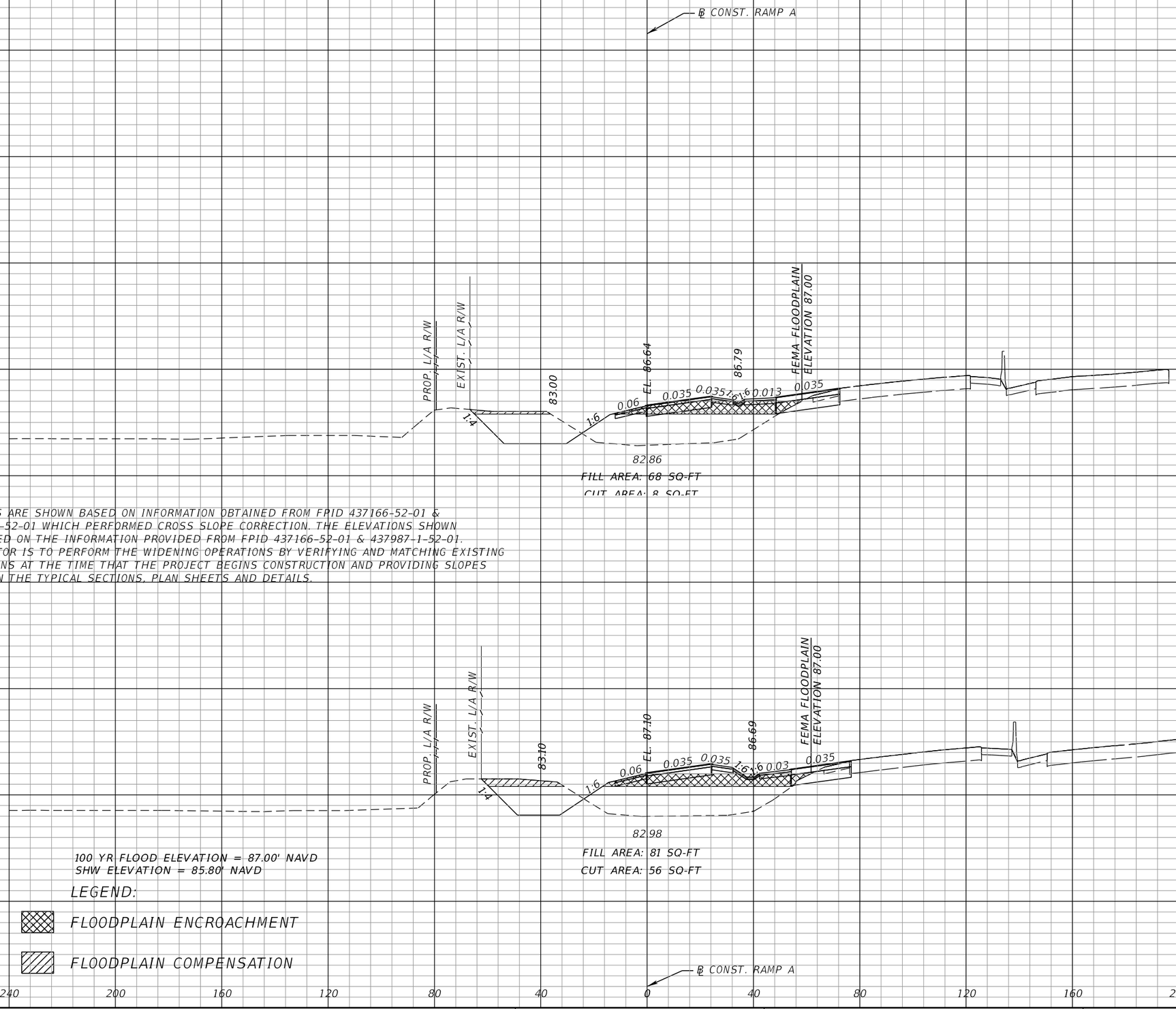

NOTE: SECTIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FPID 437166-52-01 & 437987-1-52-01 WHICH PERFORMED CROSS SLOPE CORRECTION. THE ELEVATIONS SHOWN ARE BASED ON THE INFORMATION PROVIDED FROM FPID 437166-52-01 & 437987-1-52-01. CONTRACTOR IS TO PERFORM THE WIDENING OPERATIONS BY VERIFYING AND MATCHING EXISTING ELEVATIONS AT THE TIME THAT THE PROJECT BEGINS CONSTRUCTION AND PROVIDING SLOPES BASED ON THE TYPICAL SECTIONS, PLAN SHEETS AND DETAILS.

100 YR FLOOD ELEVATION = 87.00' NAVD
SHW ELEVATION = 85.80' NAVD

LEGEND:

FLOODPLAIN ENCROACHMENT

FLOODPLAIN COMPENSATION

SCALE: 1"=40' HORIZ.
1"=10' VERT.

RAMP A

	Regular Exc.		Embankment	
	A	V	A	V
315+50.00	59	126.6	195	394.6
315+00.00	78	87.2	231	480.6

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 91	ORANGE	433663-1-52-01

FLOODPLAIN IMPACT CROSS SECTIONS

SHEET NO.

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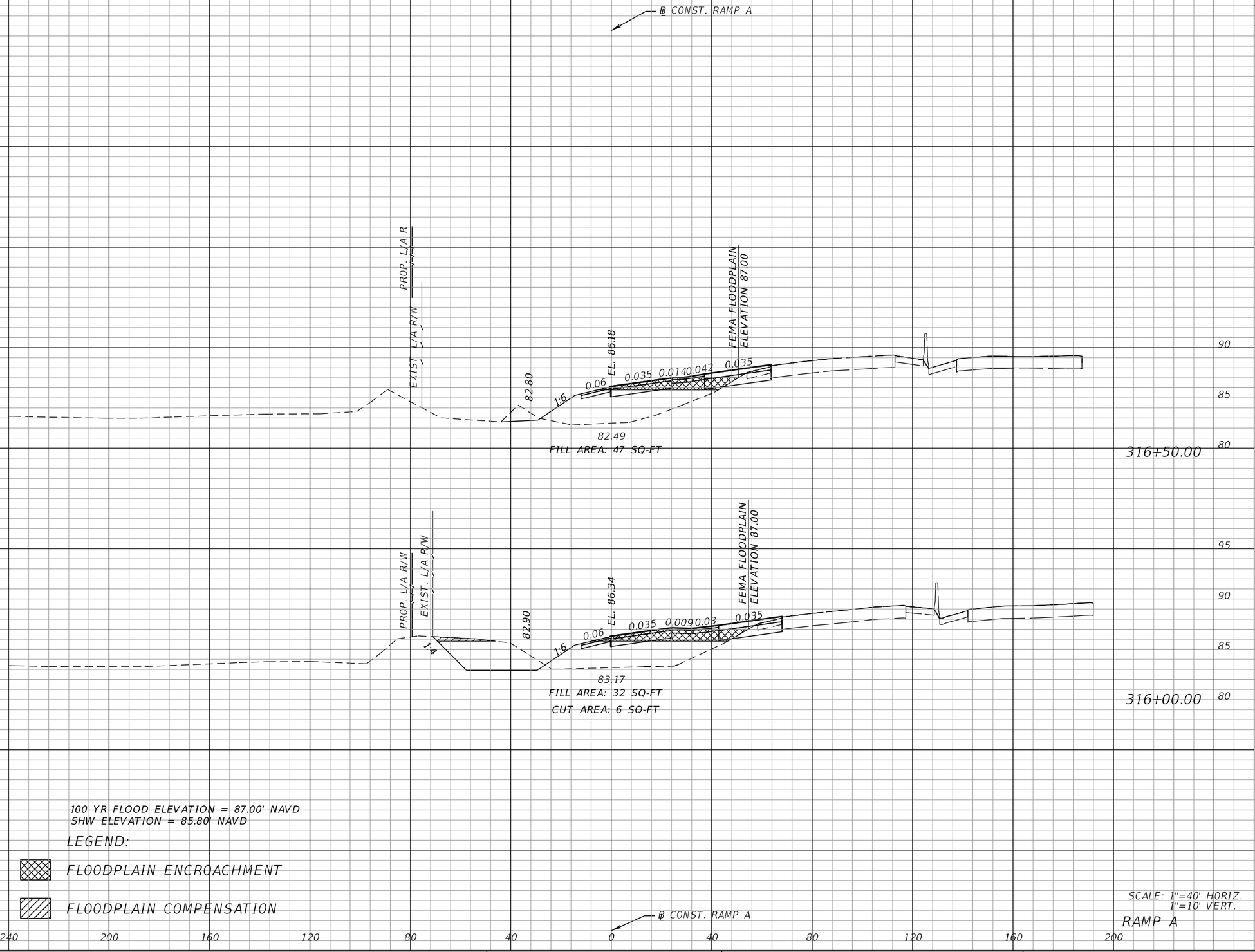

100 YR FLOOD ELEVATION = 87.00' NAVD
SHW ELEVATION = 85.80' NAVD

LEGEND:

FLOODPLAIN ENCROACHMENT

FLOODPLAIN COMPENSATION

SCALE: 1"=40' HORIZ.
1"=10' VERT.

RAMP A

Regular Exc.		Embankment	
A	V	A	V
23	60.3	154	285.2
42	93.4	154	323.0

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SR 91	ORANGE	433663-1-52-01

FLOODPLAIN IMPACT CROSS SECTIONS

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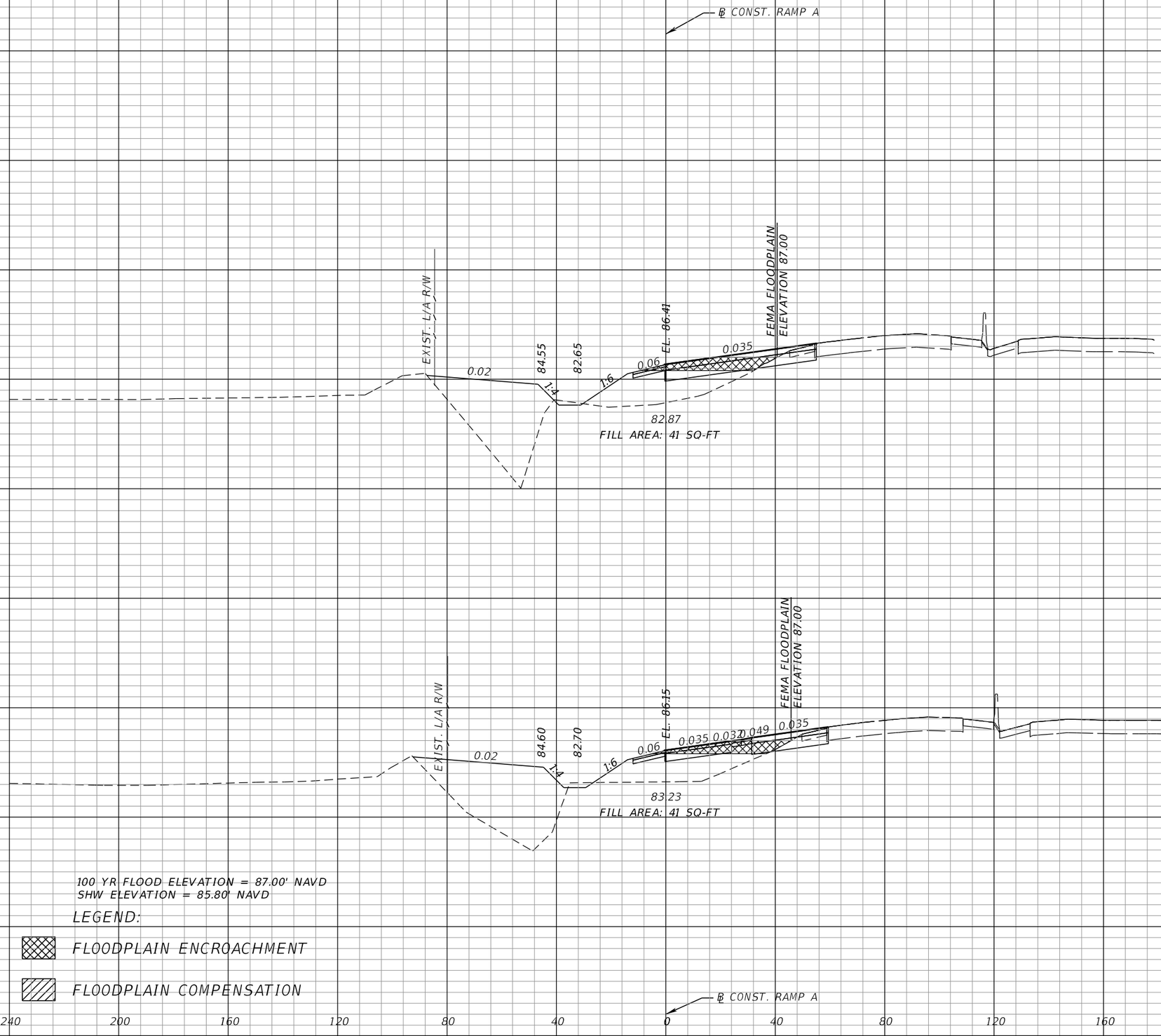

Regular Exc.		Embankment	
A	V	A	V
17	30.6	328	638.5
16	36.6	361	477.0

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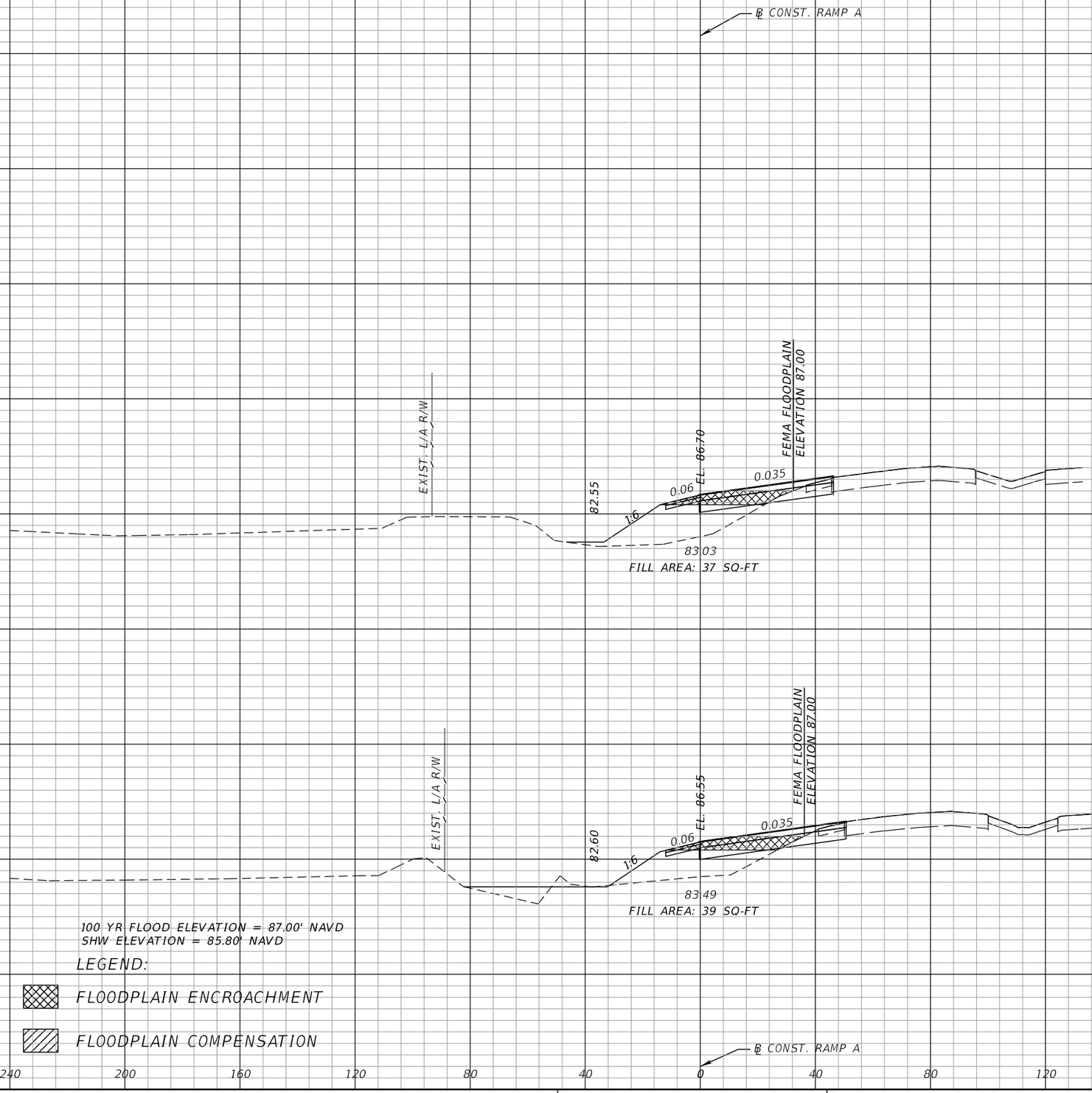

Regular Exc.		Embankment	
A	V	A	V
13	29.8	111	203.2
19	33.1	108	404.4

318+50.00

318+00.00

SCALE: 1"=40' HORIZ.
1"=10' VERT.

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FLOODPLAIN IMPACT CROSS SECTIONS

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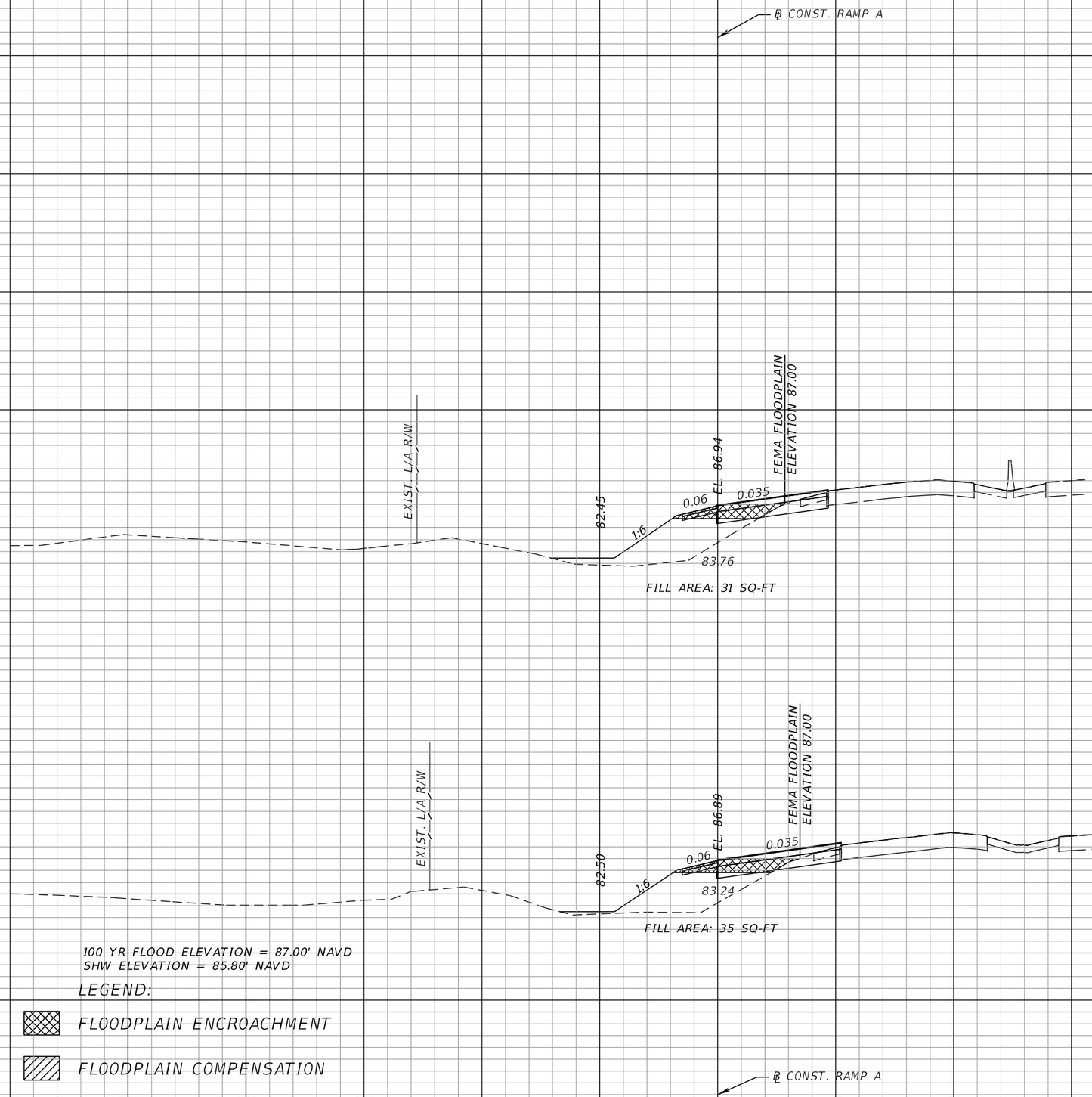

Regular Exc.		Embankment	
A	V	A	V
14	23.8	109	202.1
12	22.8	109	204.1

319+50.00

319+00.00

SCALE: 1"=40' HORIZ.
1"=10' VERT.

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SR 91	ORANGE	433663-1-52-01

FLOODPLAIN IMPACT CROSS SECTIONS

SHEET NO.

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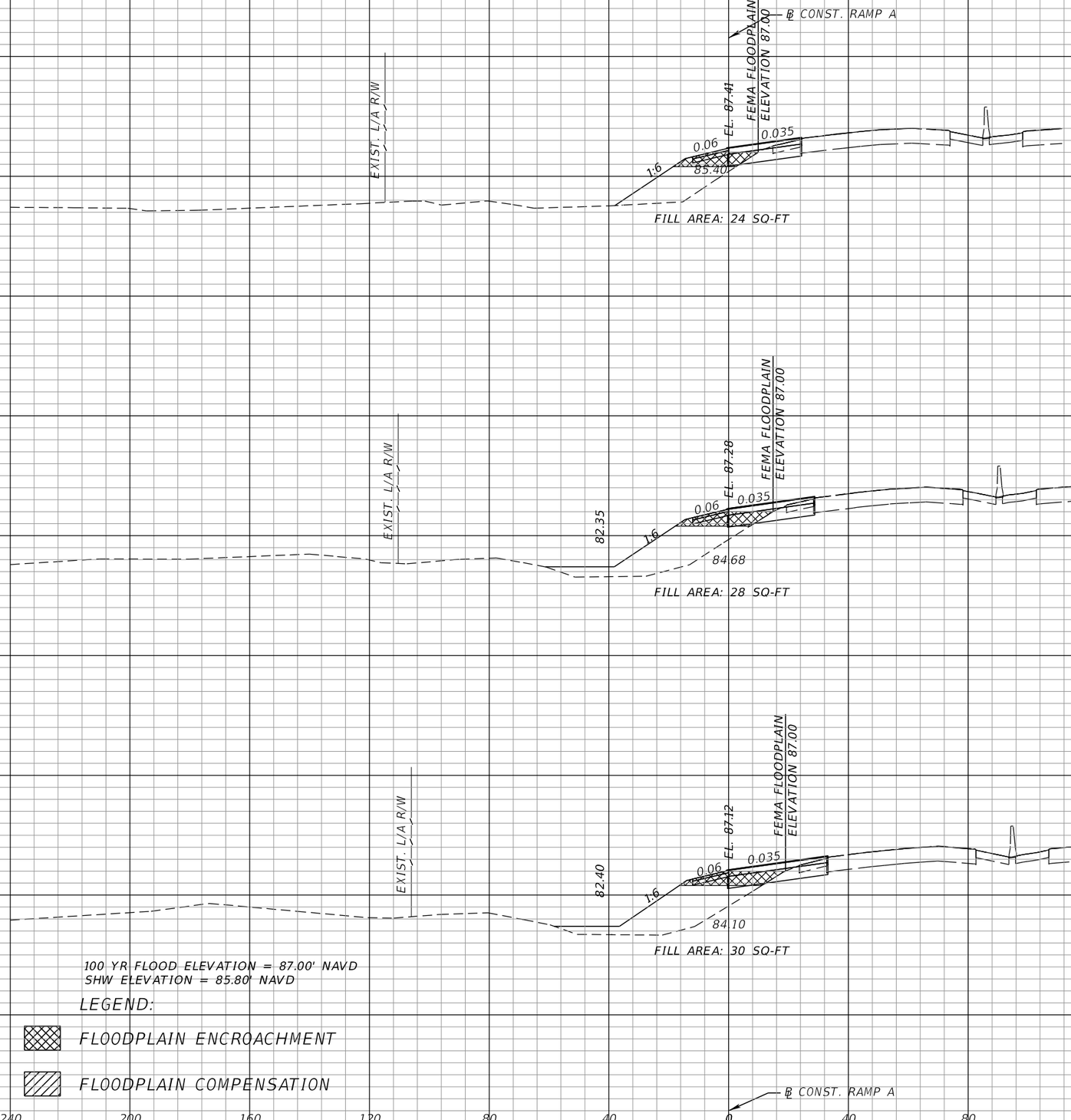

	Regular Exc.		Embankment	
	A	V	A	V
321+00.00	14	24.2	76	181.2
320+50.00	12	23.2	120	224.4
320+00.00	13	24.8	122	214.4

SCALE: 1"=40' HORIZ.
1"=10' VERT.

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SR 91	ORANGE	433663-1-52-01

FLOODPLAIN IMPACT CROSS SECTIONS

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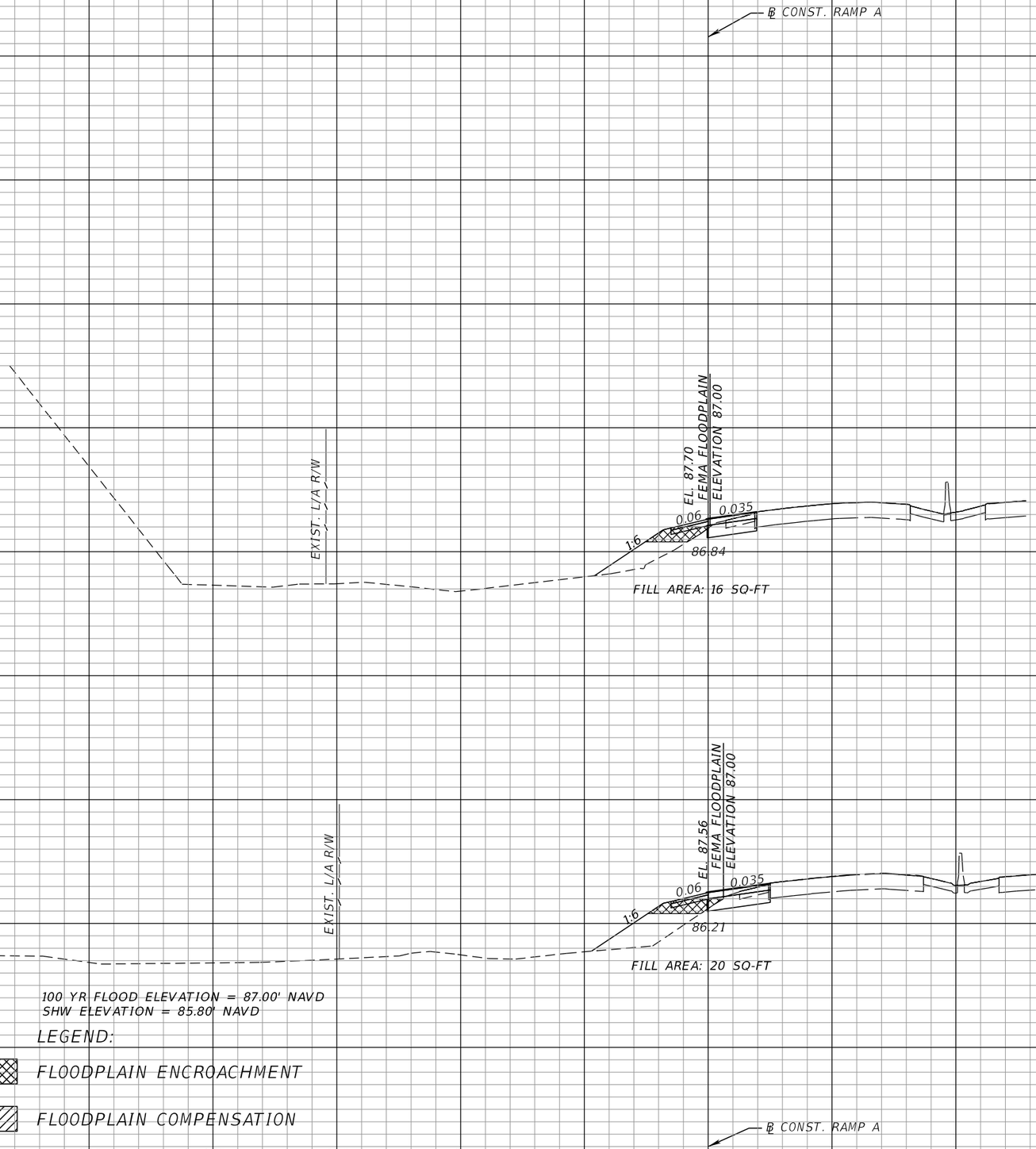

Regular Exc.		Embankment	
A	V	A	V
13	25.8	44	97.7
15	26.6	62	127.3

322+00.00

321+50.00

SCALE: 1"=40' HORIZ.
1"=10' VERT.

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SHEET NO.

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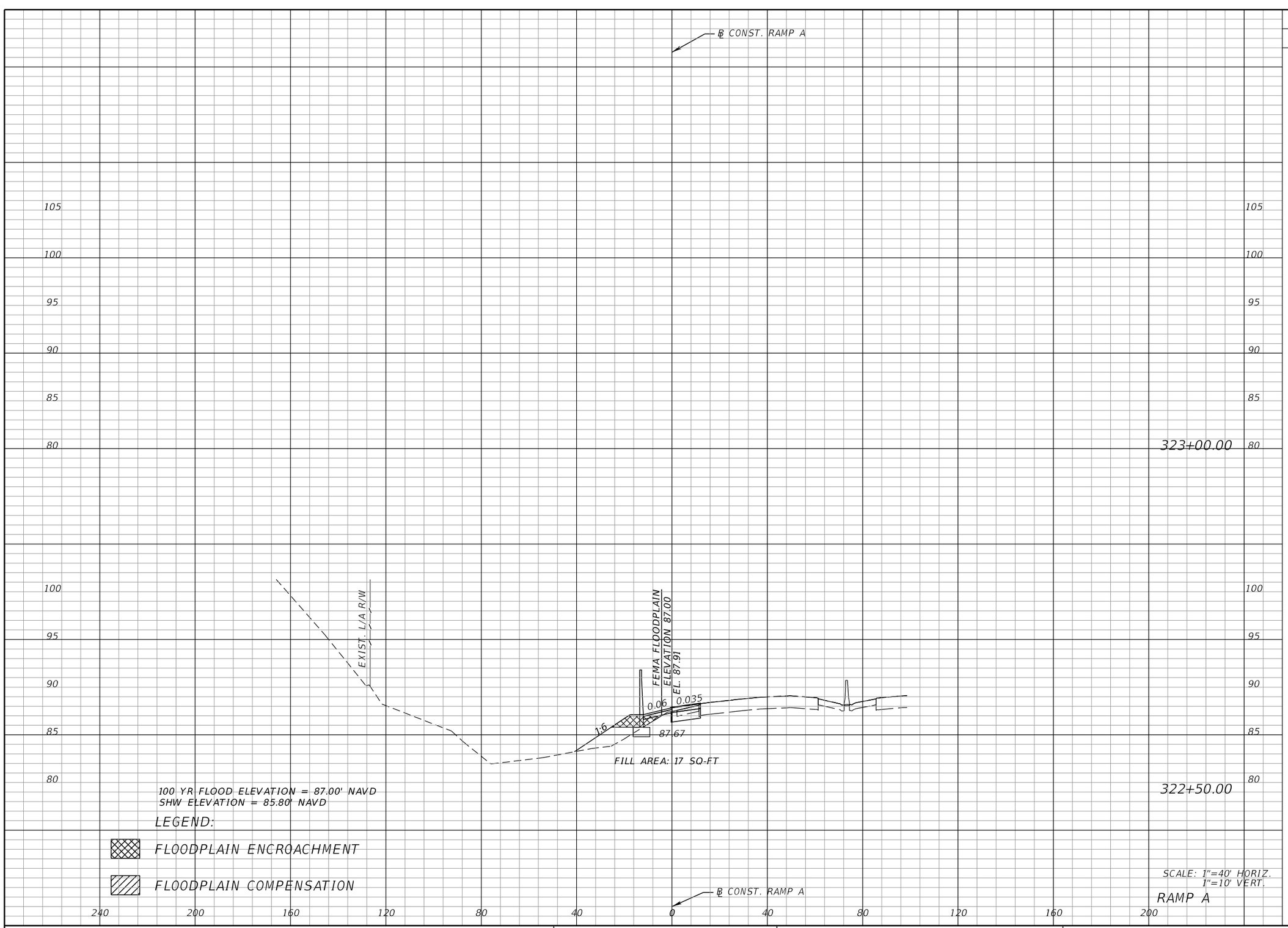

	Regular Exc.		Embankment	
	A	V	A	V
323+00.00	12	19.5	1	38.7
322+50.00	9	20.3	41	78.5

SCALE: 1"=40' HORIZ.
1"=10' VERT.

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FLOODPLAIN IMPACT CROSS SECTIONS

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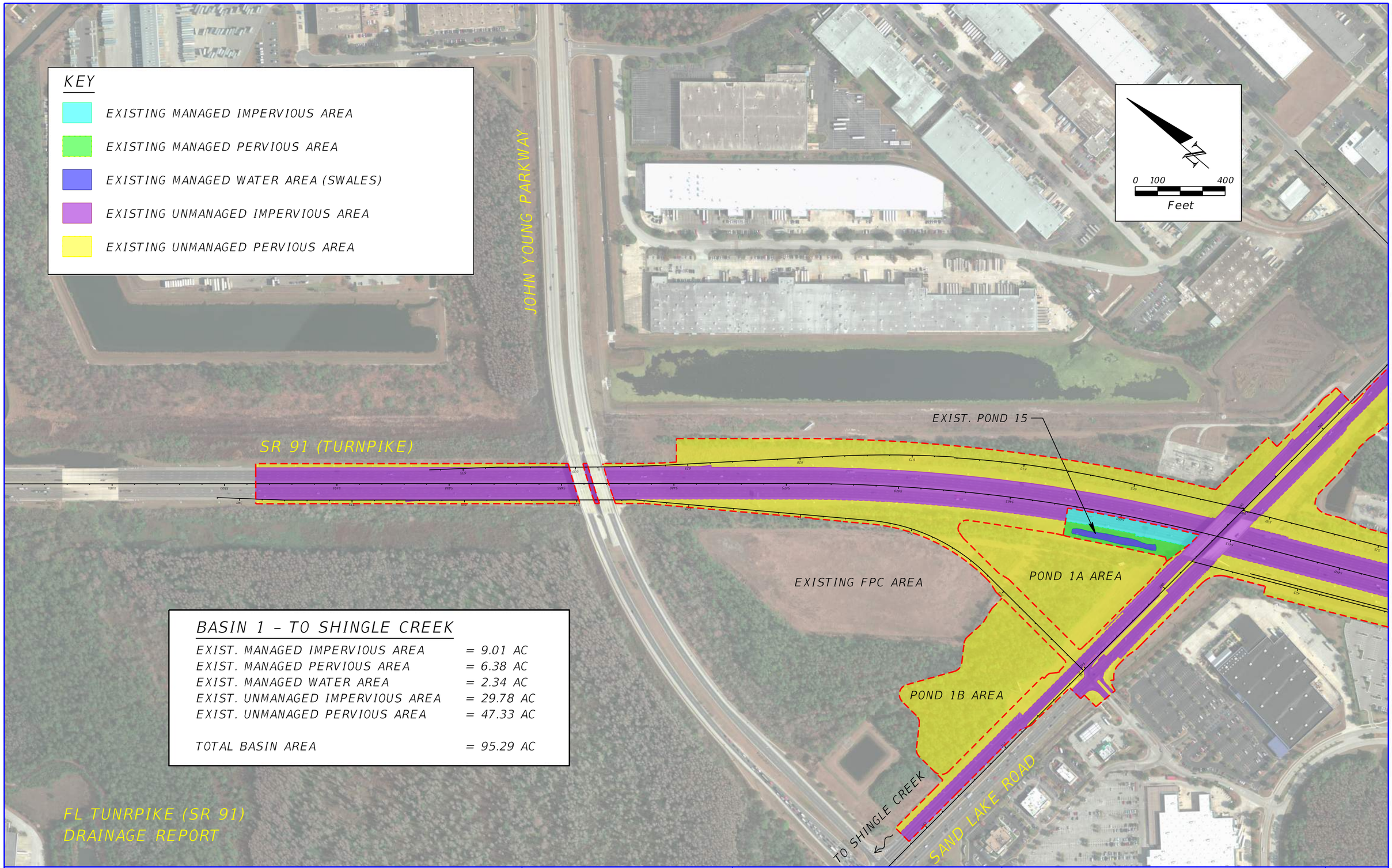

BASIN 1 – TO SHINGLE CREEK

EXIST. MANAGED IMPERVIOUS AREA	= 9.01 AC
EXIST. MANAGED PERVIOUS AREA	= 6.38 AC
EXIST. MANAGED WATER AREA	= 2.34 AC
EXIST. UNMANAGED IMPERVIOUS AREA	= 29.78 AC
EXIST. UNMANAGED PERVIOUS AREA	= 47.33 AC
TOTAL BASIN AREA	= 95.29 AC

FL TUNRPIKE (SR 91)
DRAINAGE REPORT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
91	ORANGE	433663-1-52-01

PRE-DEVELOPMENT

SHEET NO.

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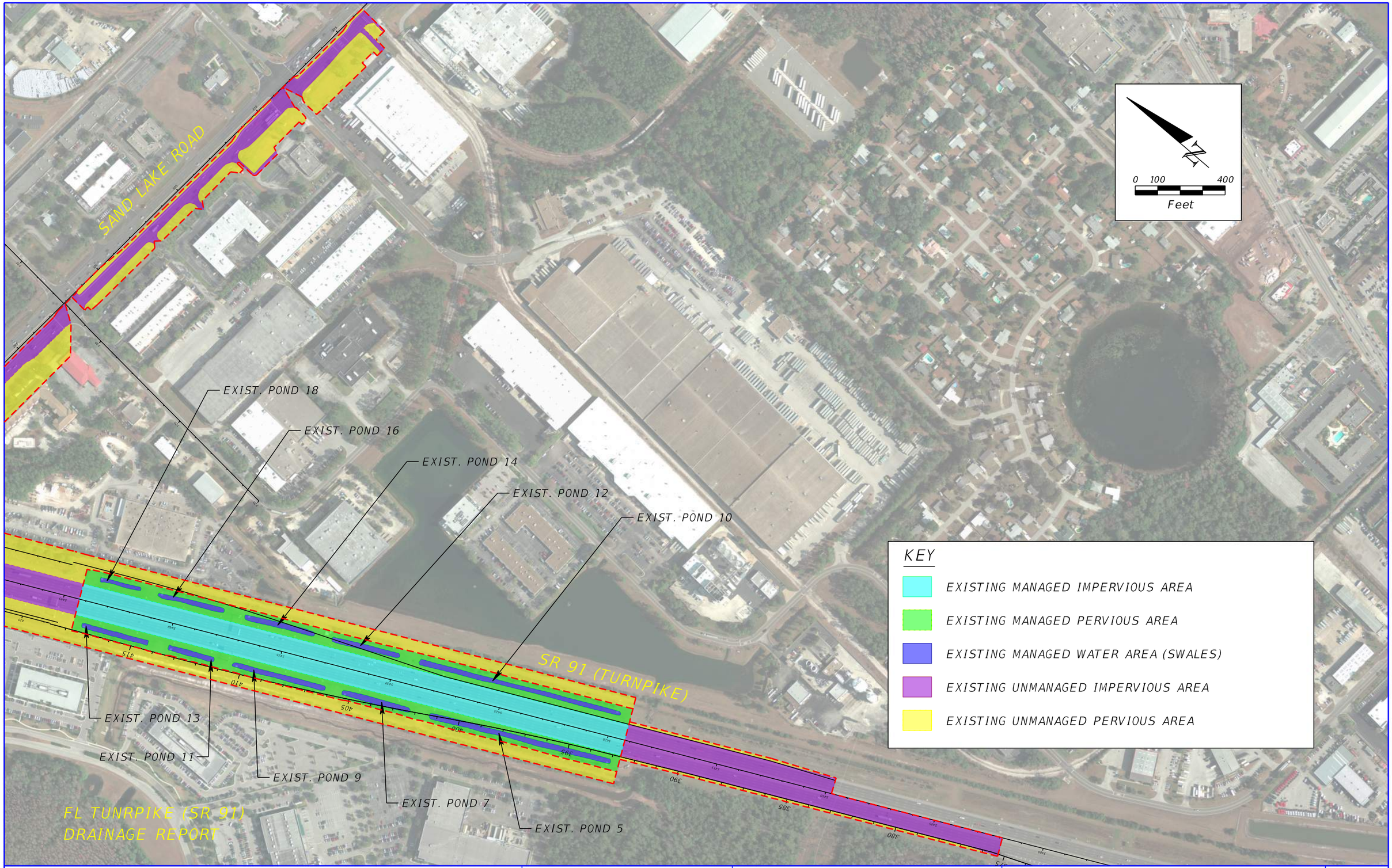

FL TUNRPIKE (SR 91)
DRAINAGE REPORT

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
91	ORANGE	433663-1-52-01

PRE-DEVELOPMENT

SHEET NO.

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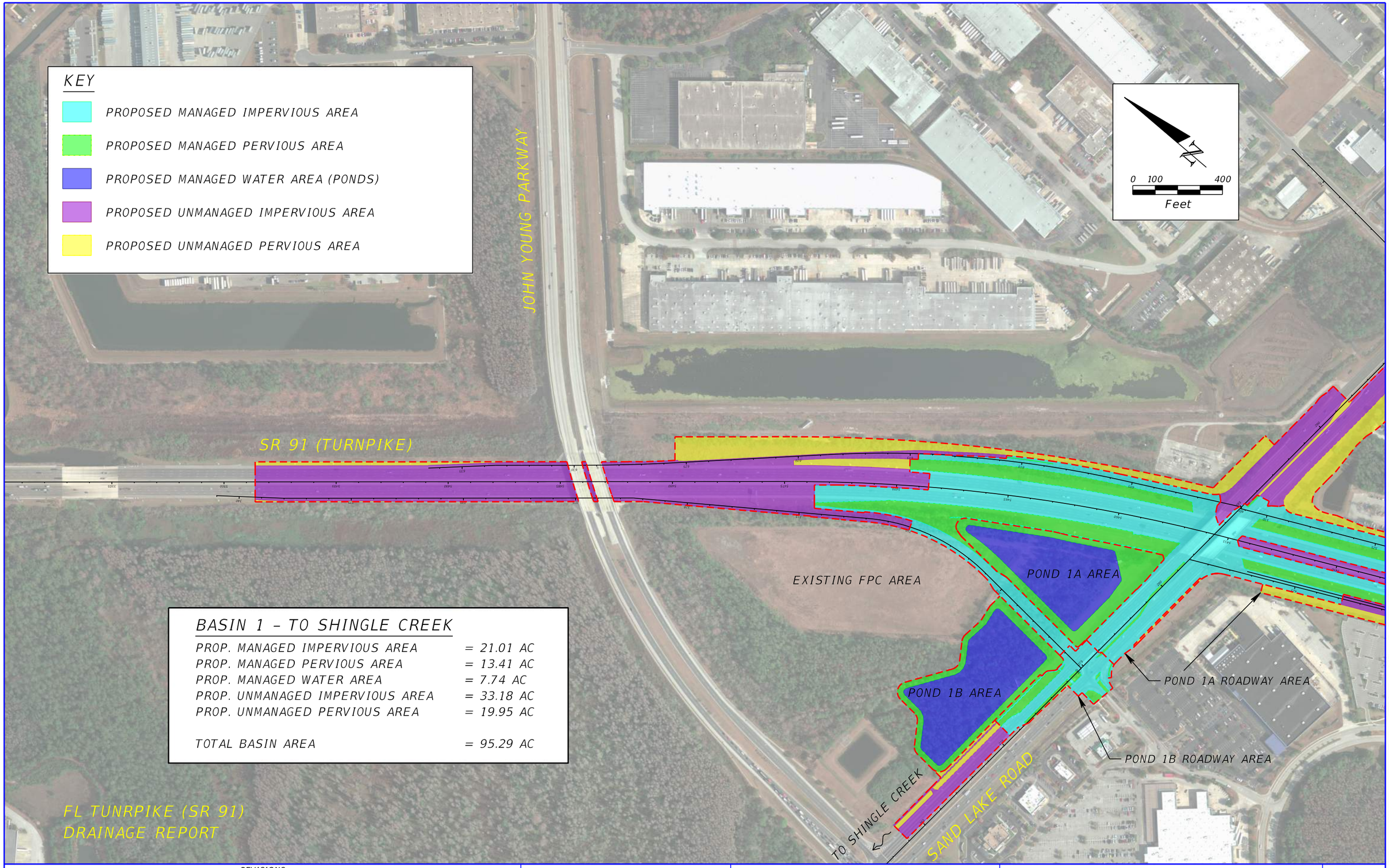

REVISIONS			
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STATE OF FLORIDA
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91	ORANGE	433663-1-52-01

POST DEVELOPMENT

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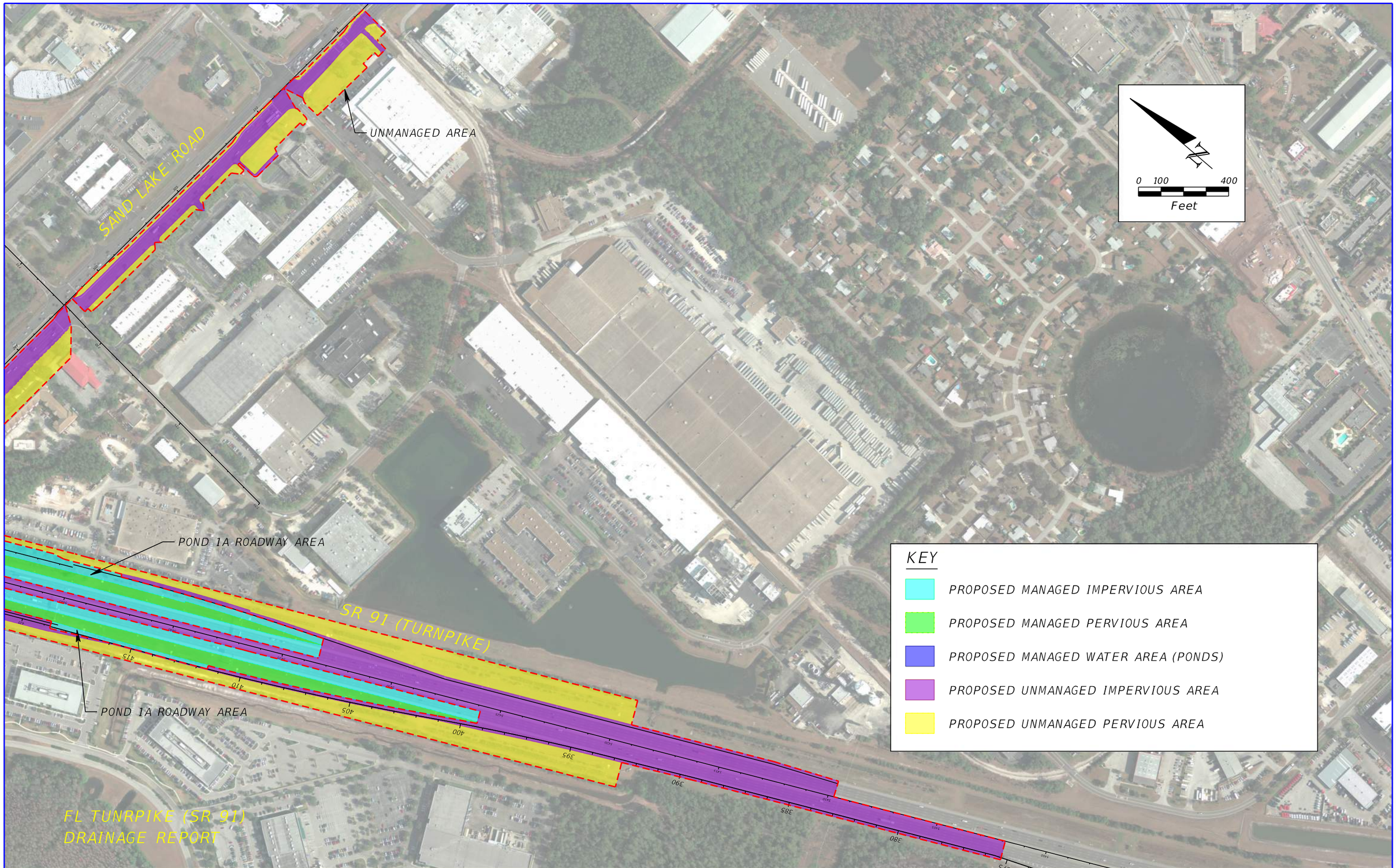

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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
91	ORANGE	433663-1-52-01

POST DEVELOPMENT

SHEET NO.

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Kimley-Horn and Associates, Inc.
189 S Orange Avenue, Suite 1000
Orlando, FL 32801

Pre Developed Composite CN and Quantity Calculation

Stationing: STA. 5419+20 to STA. 5444+30

Existing Condition - Managed Area - Roadway (Routed to Existing Swales) and Existing Swales

Land Use	Soil Description	Soil Group	CN	Area (AC)	Product (CN X Area)
Impervious	Asphalt/Pavement/Concrete	-	98	9.01	882.98
Pervious	Open Space	D	78	6.83	532.74
Water	Existing Pond Bottom	-	100	2.34	234.00
			Subtotal:	18.18	1649.72
			Composite CN:		90.74

Pre Developed Managed Area (AC):	18.18
Pre Developed Managed Composite CN:	90.74

Stationing: N/A

Existing Condition - Unmanaged Area - Proposed Pond Site 1A and 1B

Land Use	Soil Description	Soil Group	CN	Area (AC)	Product (CN X Area)
Water	Normal Water Level	-	100	0.00	0.00
Pervious	Open Space	D	78	11.62	906.36
			Subtotal:	11.62	906.36
			Composite CN:		78.00

Stationing: STA. 5401+90 to STA. 5419+20; STA. 5444+30 to STA. 5498+60

Existing Condition - Unmanaged Area - Roadway (Not Routed to Existing Swales)

Land Use	Soil Description	Soil Group	CN	Area (AC)	Product (CN X Area)
Impervious	Asphalt/Pavement/Concrete	-	98	29.78	2918.44
Pervious	Open Space	D	78	35.71	2785.38
			Subtotal:	65.49	5703.82
			Composite CN:		87.09

Pre Developed Unmanaged Area (AC):	77.11
Pre Dev. Unmanaged Composite CN:	85.72

Pre Developed Basin Total Area (AC):	95.29

Notes:

Total Project Basin Area to Shingle Creek is equal in both conditions.

Kimley-Horn and Associates, Inc.
189 S Orange Avenue, Suite 1000
Orlando, FL 32801

Proposed Developed Composite CN and Quantity Calculation

Stationing: STA. 5425+90 to STA. 5473+70

Proposed Condition - Managed Area - Roadway (Routed to Proposed Pond 1A)

Land Use	Soil Description	Soil Group	CN	Area (AC)	Product (CN X Area)
Impervious	Asphalt/Pavement/Concrete	-	98	19.73	1933.54
Pervious	Open Space	D	78	8.90	694.2
			Subtotal:	28.63	2627.74
				Composite CN:	91.78

Stationing: N/A

Proposed Condition - Managed Area - Proposed Pond 1A

Land Use	Soil Description	Soil Group	CN	Area (AC)	Product (CN X Area)
Water	Normal Water Level	-	100	3.56	356.00
Pervious	Open Space	D	78	2.23	173.94
			Subtotal:	5.79	529.94
				Composite CN:	91.53

Stationing: STA. 270+50 to STA. 276+00 (Sand Lake Road)

Proposed Condition - Managed Area - Roadway (Routed to Proposed Pond 1B)

Land Use	Soil Description	Soil Group	CN	Area (AC)	Product (CN X Area)
Impervious	Asphalt/Pavement/Concrete	-	98	1.28	125.44
Pervious	Open Space	D	78	0.62	48.36
			Subtotal:	1.90	173.8
				Composite CN:	91.47

Stationing: N/A

Proposed Condition - Managed Area - Proposed Pond 1B

Land Use	Soil Description	Soil Group	CN	Area (AC)	Product (CN X Area)
Water	Normal Water Level	-	100	4.28	428.00
Pervious	Open Space	D	78	1.56	121.68
			Subtotal:	5.84	549.68
				Composite CN:	94.12

Prop. Developed Managed Area (AC):	42.16
Prop. Dev. Managed Composite CN:	92.06

Notes:

Total Project Basin Area to Shingle Creek is equal in both conditions.

Kimley-Horn and Associates, Inc.
189 S Orange Avenue, Suite 1000
Orlando, FL 32801

Proposed Developed Composite CN and Quantity Calculation

Stationing: STA. 5401+90 to STA. 5425+90; STA. 5473+70 to STA. 5498+60

Proposed Condition - Unnmanaged Area - Roadway (Not Routed to Proposed Ponds)

Land Use	Soil Description	Soil Group	CN	Area (AC)	Product (CN X Area)
Impervious	Asphalt/Pavement/Concrete	-	98	33.18	3251.64
Pervious	Open Space	D	78	19.95	1556.10
			Subtotal:	53.13	4807.74
				Composite CN:	90.49

Prop. Developed Unmanaged Area (AC):	53.13
Prop. Dev. Unmanaged Composite CN:	90.49

Prop. Developed Basin Total Area (AC):	95.29

Notes:

Total Project Basin Area to Shingle Creek is equal in both conditions.

Kimley-Horn and Associates, Inc.
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Orlando, FL 32801

Pre Developed Total Quantity Calculation

Pre Developed Unmanaged Area (AC):	77.11
Pre Dev. Unmanaged Composite CN:	85.72

*	Pre-Dev. Unmanaged Quantity to Shingle Creek:	84.28	CFS	
**	Pre-Developed Discharge from Existing Swales:	28.71	CFS	
	Pre Developed Total Quantity to Shingle Creek:	112.99	CFS	(25-YR/24-HR)

** Exist. Linear Pond (Swale) Outfalls:

Existing Linear Pond	Side	Q (CFS)	Notes
Existing Pond 5	LT	2.33	
Existing Pond 7	LT	1.46	
Existing Pond 9	LT	1.47	
Existing Pond 11	LT	1.10	
Existing Pond 13	LT	2.93	
Existing Pond 10	RT	2.40	
Existing Pond 12	RT	1.38	
Existing Pond 14	RT	5.54	
Existing Pond 16	RT	4.51	Inflow Used, Outflow Unreadable
Existing Pond 18	RT	1.09	
Existing Pond 15	RT	4.50	Estimated from 18" @ 2.5 FPS

Proposed Developed Total Quantity Calculation

Proposed Unmanaged Basin Area (AC):	53.13
Proposed Unmanaged Composite CN:	90.49

*	Prop. Dev. Unmanaged Quantity to Shingle Creek:	62.26	CFS	
*	Prop. Development Discharge from Pond 1B:	37.09	CFS	
	Prop. Development Total Quantity to Shingle Creek	99.35	CFS	(25-YR/24-HR)

Notes:

*See ICPR Analysis for Unmanaged and Proposed Discharge Calculations.
**Pre-Developed Rate from Previous Permit #48-01443-P (See References Appendix)
Unmanaged Time of Concentration used: 128.60 min.
Pond 1A Time of Concentration used: 49 min. (From Storm Tabs for System N-406MES)

TPK - Sand Lake Road
Basin 1 Treatment and Pond Sizing / Pond 1A and 1B

Kimley-Horn and Associates, Inc.
189 S Orange Avenue, Suite 1000
Orlando, FL 32801

Created by: MS
3/31/2023

Water Quality Volume Required

Water Management Type: Wet Detention
OFW? No
SFWMD Water Quality Criteria: Greater of...
1 Inch X Total Basin Area + Existing Treatment
USED -> 2.5 Inches X Additional Impervious Area + Existing Treatment

Existing Impervious Area (Total)=	38.79	AC
Proposed Impervious Area (Total)=	54.19	AC
Additional Impervious Area=	15.40	AC

There is also impact to the existing required treatment within the swales along the mainline of 4.51 AC.

Min. Required Treatment= Additional Impervious Area + Existing Treated Area

Min. Required Treatment=	19.91	AC
Min. Required Treatment Volume=	4.15	AC-FT

This project will provide additional treatment volume for future impervious area:

Future Additional Impervious=	10.78	AC	
Future Required Treatment=	2.25	AC-FT	
Combined (Min. + Future) Required Treatment=	6.39	AC-FT	
			In 24 hrs,
Proposed Pond Basin Impervious:	21.01	AC	(Drawdown = Pond Imp X 0.5")
Proposed Water Quality Volume:	4.38	AC-FT	(Drawdown Max = 0.88 AC-FT)
Provided Treatment Volume:	6.39	AC-FT	*Minimum Dimensions Used

Stage-Area Table

Combined Pond 1A and Pond 1B

	Stage (FT)	Area (AC)	Avg. Area (AC)	Incr. Volume (AC-FT)	Total Volume (AC-FT)
Outside Berm	90.00	10.38	9.68	9.68	87.78
Inside Berm	89.00	8.98	8.56	20.54	78.10
Weir	86.60	8.14	7.99	6.39	57.56
SHW/Control	85.80	7.84	6.56	51.17	51.17
Bottom	78.00	5.28			

Design High Water:	87.5	FT	(25-YR/24-HR, Pond 1A)
Freeboard Provided:	1.5	FT	

Notes:

Low EOP elevation:	89.54	FT	(STA. 302+88.00, Ramp A)
Tailwater:	85.36	FT	(25-YR Shingle Creek, See TW Justification)
SHW:	85.80	FT	(See Geotechnical Report)

Orange County

SFWMD

Permit No. 48-00633-S

SR 528 (Beachline Exp.) from Florida's Turnpike to McCoy Road

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
ENVIRONMENTAL RESOURCE PERMIT NO. 48-00633-S
DATE ISSUED: 12/11/15

PERMITTEE: FLORIDA DEPARTMENT OF TRANSPORTATION
FLORIDAS TURNPIKE ENTERPRISE
P O BOX 613069
OCOEE, FL 34761

PROJECT DESCRIPTION: This Environmental Resource Permit Modification authorizes works consistent with previously permitted stormwater management system serving 47.80 acres of a highway facility for a project known as S R 528 (Beachline Exp) from Florida's Turnpike to McCoy Rd.

PROJECT LOCATION: ORANGE COUNTY,
SEC 34-36 TWP 23S RGE 29E
SEC 31 TWP 23S RGE 30E
SEC 3,4 TWP 24S RGE 29E

PERMIT DURATION: See Special Condition No:1.

This is to notify you of the District's agency action for Permit Application No. 151022-9, dated October 22, 2015. This action is taken pursuant to the provisions of Chapter 373, Part IV, Florida Statues (F.S).

Based on the information provided, District rules have been adhered to and an Environmental Resource Permit is in effect for this project subject to:

1. Not receiving a filed request for a Chapter 120, Florida Statutes, administrative hearing.
2. the attached 18 General Conditions (See Pages : 2 - 4 of 5),
3. the attached 8 Special Conditions (See Pages : 5 - 5 of 5) and
4. the attached 3 Exhibit(s)

Should you object to these conditions, please refer to the attached "Notice of Rights" which addresses the procedures to be followed if you desire a public hearing or other review of the proposed agency action. Please contact this office if you have any questions concerning this matter. If we do not hear from you in accordance with the "Notice of Rights," we will assume that you concur with the District's action.

CERTIFICATE OF SERVICE

I HEREBY CERTIFY THAT this written notice has been mailed or electronically transmitted to the Permittee (and the persons listed in the attached distribution list) this , in accordance with Section 120.60(3), F.S. Notice was also electronically posted on this date through a link on the home page of the District's website (my.sfwmd.gov/e-permitting).

BY:_____

Charles R. Walter, P.G., CFM
Orlando Regulatory Service Center Administrator
Orlando Service Center

Drainage Design Documentation

Beachline Expressway SR 528 Widening

From West of Florida's Turnpike to East of McCoy Road

Permit Submittal

Financial Project ID 437156-1-52-01

Submitted To:

SFWMD

Prepared By:

DRMP Inc.

Submitted October 2015

BASIN 9

Basin Area: 15.59 acres
Description: Sta. 444+80 to Sta. 466+80, Mainline and Ramp
Outfall Waterbody: Boggy Creek

Weighted CN Calculations

Land Use	Soil Class	Area (Ac)	CN	Product
*Impervious (Rdwy)		8.82	98	864.36
Grassed R/W	C	6.77	74	500.98
TOTAL		15.59		1365.34

Weighted CN = 87.6

* Originally permitted impervious area did not include miscelaneous asphalt (1.4 acre increase).

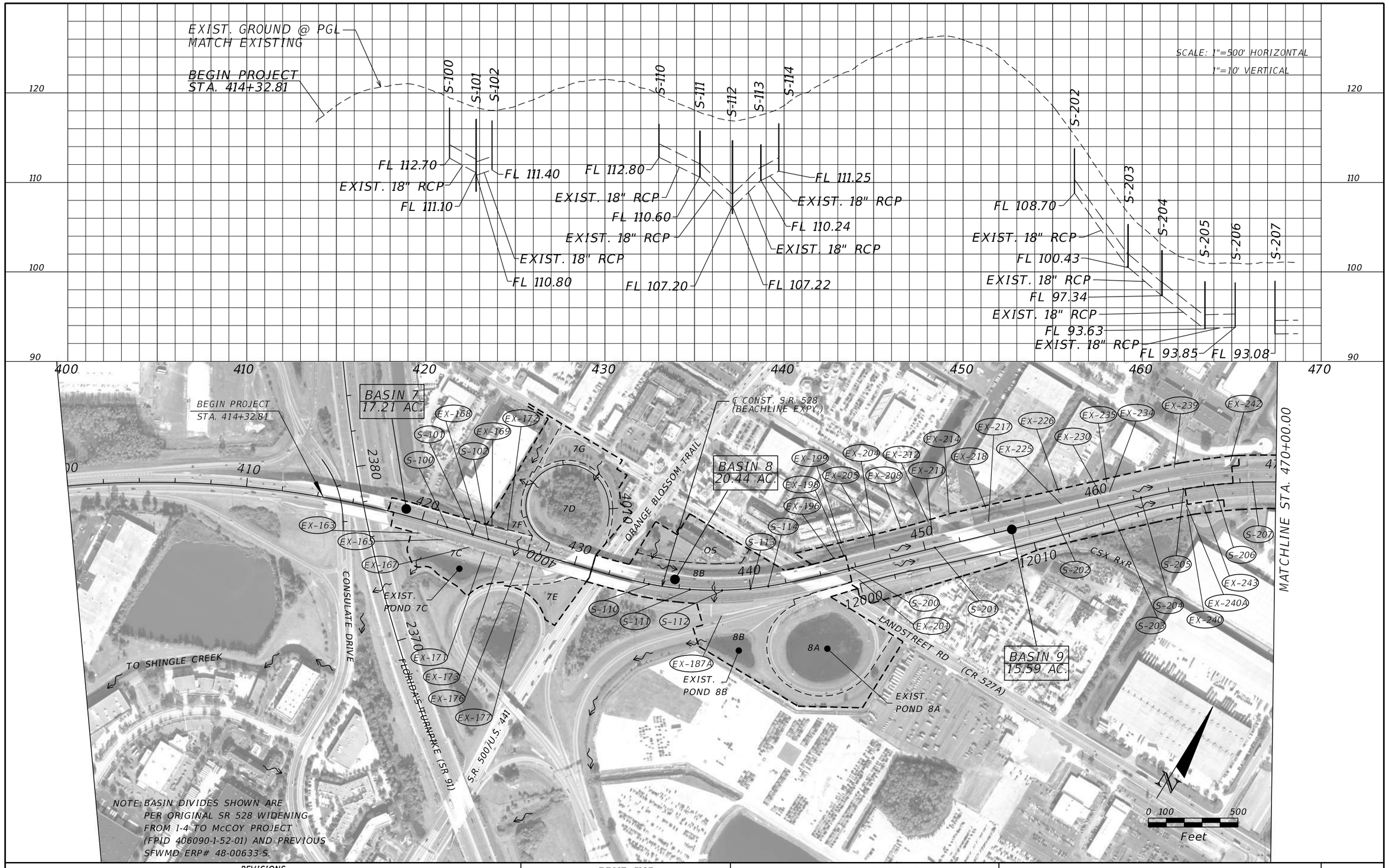
Note: This basin is untreated and discharges to the existing cross-drain at 466+80 (Lake Cristie Outfall Canal).
New pavement in this basin is compensated for by treating existing pavement in Pond 10B.
See ERP No. 48-00633-S/App. No. 040702-13 calculations.

Basin 9:

Additional Impervious (8-lanes)= 2.36 (permitted) + 1.4 (new) = 3.76 Ac (See Pg. A-36)

Basin 10:

Existing Impervious (To Pond 10B)= 4.76 Ac (Compensation) (See Pg. A-42)



NOTE: BASIN DIVIDES SHOWN ARE PER ORIGINAL SR 528 WIDENING FROM I-4 TO McCOY PROJECT (FPID 406090-1-52-01) AND PREVIOUS SFWMD ERP# 48-00633-S.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

DRMP, INC.
941 Lake Baldwin Lane, Orlando, FL 32814
Phone: (407) 896-0594 Fax: (407) 896-4856
Certificate Of Authorization No. 2648
CHAD A. CROFT, P.E.
LICENSE NO. 66554

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 528	ORANGE	437156-1-52-01

DRAINAGE MAP (1)

SHEET NO. 4 II-1

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Orange County

SFWMD

Permit Application No. 220504-34304 (Under Review)

Orange Blossom Storage Center

DRAINAGE REPORT

for

ORANGE BLOSSOM STORAGE CENTER
ORANGE COUNTY, FLORIDA

mitch collins, pe, inc.
801 e. south st. p. 407.850.8557
orlando, fl 32801 c. 407.448.8979
mitchcollins@
earthlink.net

Mitch Collins, P.E.# 54608
State of Florida, C.A.# 9523

Date

April 23, 2022

1.0 INTRODUCTION

The proposed Orange Blossom Storage Center project is located at 1851 W. Landstreet Road, near the northeast corner of U.S. Highway 441 and Landstreet Road in Orange County, Florida. The existing site is mostly developed with the remnants of a motel complex that was constructed in 1973. No SFWMD permits have been issued for the project site.

2.0 PRE-DEVELOPMENT

2.1 FLOODZONE

The Orange Blossom Storage Center property is not located within the 100-year floodzone per FEMA maps 120095C0420 F (see Exhibit 5).

2.2 ENVIRONMENTAL SUMMARY

There are no wetlands located within the project area.

2.3 EXISTING DRAINAGE

The existing site is mostly developed. The site was originally developed as a 7.586 acre motel complex in 1973 simultaneously with the construction of State Road 528 (see Exhibit EX-7). The project included six separate motel buildings and a separate reception building (see Exhibit EX-8). Construction included a series of storm pipes and inlets with a direct connection the State Road 528 stormwater system near the northeast corner of the project site. No on site water quality treatment or flood attenuation was provided.

As part of an Orange County pilot program, the motel buildings were recently demolished.

3.0 POST-DEVELOPMENT

3.1 PROPOSED DEVELOPMENT

The proposed Orange Blossom Storage Center project will include the remaining demolition of the easternmost 6.952 acres of the original project and the construction of a three-story storage building along with the associated parking, utilities and stormwater management facilities. There will be one wet detention pond located at the northeast corner of the project area. Stormwater will be directed to the proposed detention pond via a system of storm inlets and pipes. Overflow discharge from the proposed detention pond will be connected to the existing stormwater outfall pipe into the State Road 528 drainage system.

Stormwater management for off site runoff from the west (the remainder of the original 7.586 acre project) will be handled separately with a small dry retention area located just west of the proposed project driveway. Outfall from the dry retention area will be directed to the main project stormwater management system after water quality treatment.

3.2 WATER QUALITY

Exhibit 12 shows water quality and pond volume calculations for Basin 1 of the project. As shown, the required water quality volume is 68,957 CF. With the pond control set at elevation 94.0 and the top of pond set at elevation 98.0, the provided pond volume is 71,479 CF (below the weir elevation of 96.8). This is in excess of the required 68,957 CF. Exhibit 14 shows the results for the water quality recovery analysis. As shown, half of the required water quality volume (34,479 CF) recovers within the required 30 hours (it recovers half in about 28 hours).

Exhibit 13 shows water quality and pond volume calculations for Basin 2 of the project. As shown, the required water quality volume is 3,887 CF. With the pond bottom set at elevation 96.0 and the top of pond set at elevation 97.0, the provided pond volume is 7,329 CF (below the weir elevation of 96.8). This is in excess of the required 3,887 CF. Exhibit 15 shows the results for the water quality recovery analysis. As shown, the full water quality volume (3,887 CF) recovers within the required 72 hours (it recovers in about 56 hours).

3.3 FLOOD CONTROL

As shown on Exhibit EX-12, the pre-development impervious coverage over the entire basin area (7.586 acres) is 81.12%. As shown on Exhibit EX-13, the post-development impervious coverage is 80% for Basin 1 and 54.5% for Basin 2. Even without the proposed on site water quality treatment ponds, discharge from the project site will be reduced in the post-development condition for all storm events.

3.4 ANALYSIS:

Water Quality: Water quality calculations and recovery analyses are included on Exhibits 12, 13, 14 and 15. As shown on these exhibits, the required water quality volume is provided below the proposed weir for each basin and recovery occurs within the required time frame. Appendix 1 includes input data and raw results for the water quality recovery analyses.

Peak Stages: Routing simulations for the entire post-development basin area (basins 1 and 2 combined) were conducted to establish minimum parking area and finish floor elevations. Results are included in Appendix 1. The 10yr-24hr peak stage is 97.03 and the 100yr-24hr peak stage is 97.14.

Nutrient Loading: As shown on Exhibits EX-12 and EX-13, the impervious coverage for the pre-development condition is higher than that of the post-development condition. Even without the proposed on site water quality treatment ponds, nutrient loads from the project site will be reduced in the post-development condition.

4.0 CONCLUSION

As shown in the attached calculations, the proposed stormwater management system has been designed such that the water quality volume and peak attenuation criteria for each review agency has been met.

DRAWN BY:	M.C.
CHECKED BY:	M.C.
DATE:	4-20-22
SCALE:	1"=100'
JOB NO:	221-013

mitch collins, pe, inc.
801 east south street PH. 407.850.8557
orlando, fl 32803 FAX. 407.448.8979
www.mcpe.com
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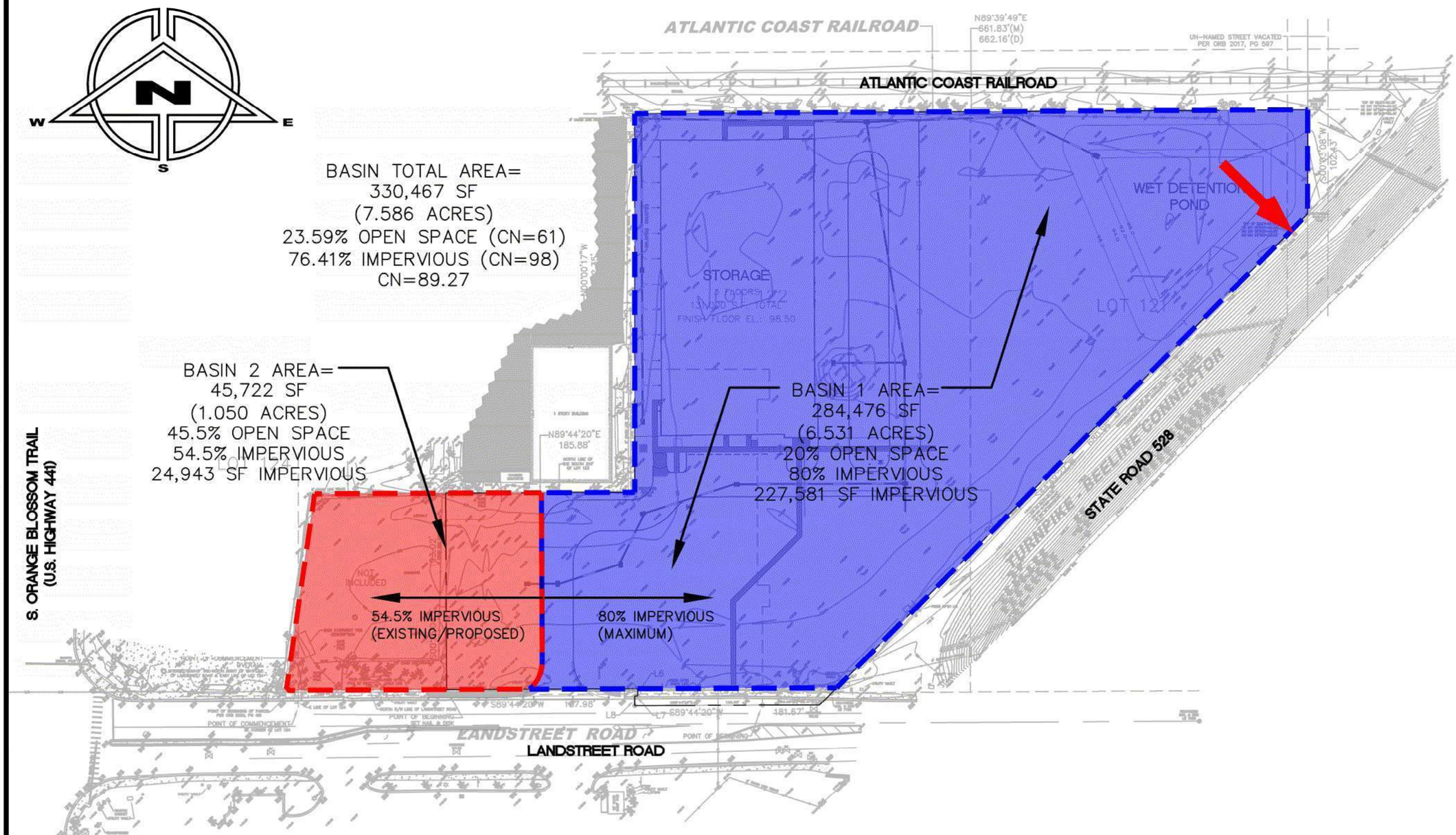
ORANGE BLOSSOM STORAGE CENTER

MITCH COLLINS, P.E.# 54606
STATE OF FLORIDA, C.A.# 9523

DATE

SHEET NUMBER

EX-10



POST-DEVELOPMENT BASIN MAP

DRAWN BY:	M.C.
CHECKED BY:	M.C.
DATE:	4-20-22
SCALE:	1"=100'
JOB NO:	221-013

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ORANGE BLOSSOM STORAGE CENTER

MITCH COLLINS, P.E.# 54606
STATE OF FLORIDA, C.A.# 9523

DATE

SHEET NUMBER

EX-11

WATER QUALITY VOLUME REQUIRED:

2.50" TIMES THE PERCENTAGE OF IMPERVIOUSNESS

SITE AREA FOR WATER QUALITY PURPOSES:
=TOTAL BASIN AREA–(WATER SURFACE+ROOFS)
=284,746–(22,053+44,262) *
=218,431 SF

IMPERVIOUS AREA FOR WATER QUALITY PURPOSES:
=SITE AREA FOR WATER QUALITY PURPOSES–PERVIOUS AREA
=218,431–34,896
=183,535 SF

PERCENTAGE OF IMPERVIOUSNESS:
=(IMPERVIOUS AREA FOR WATER QUALITY/SITE AREA FOR WATER QUALITY)X100
=(183,535/218,431)X100
=84.02%

2.50 INCHES TIMES THE PERCENTAGE OF IMPERVIOUSNESS:
=2.50X0.8402
=2.10 INCHES

WATER QUALITY VOLUME:
=INCHES TO BE TREATEDX(TOTAL BASIN AREA–WATER SURFACES)
=2.10X(284,746–22,053)X($\frac{1}{12}$)
=45,971 CF

OR

1.00" OVER THE PROJECT AREA
=(1.00"/12)(284,746 SF)=23,729 CF

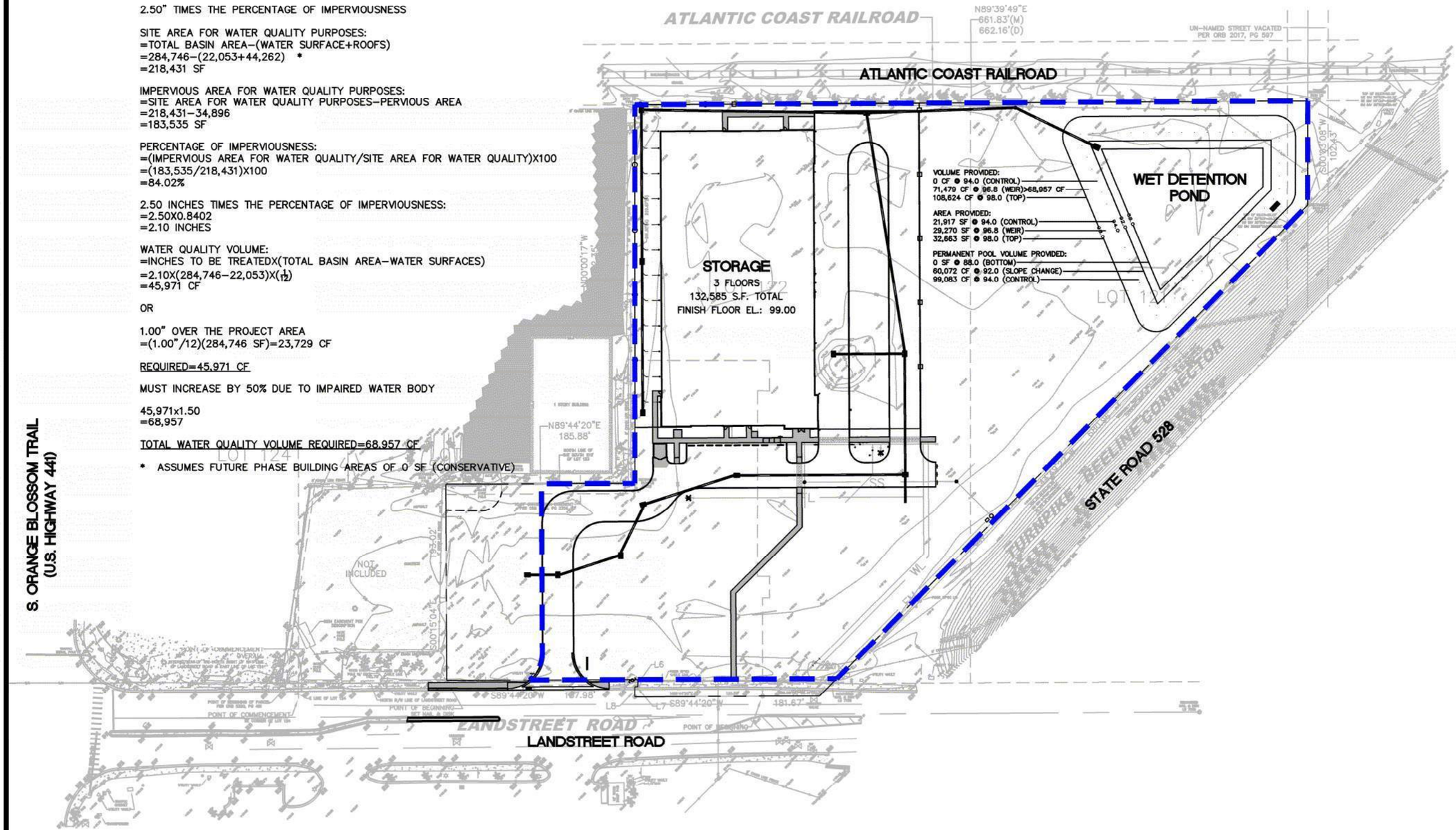
REQUIRED=45,971 CF

MUST INCREASE BY 50% DUE TO IMPAIRED WATER BODY

45,971x1.50
=68,957

TOTAL WATER QUALITY VOLUME REQUIRED=68,957 CF

* ASSUMES FUTURE PHASE BUILDING AREAS OF 0 SF (CONSERVATIVE)



WATER QUALITY AND POND VOLUME CALCULATIONS (BASIN 1)

DRAWN BY:	M.C.
CHECKED BY:	M.C.
DATE:	4-20-22
SCALE:	1"=100'
JOB NO:	221-013

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ORANGE BLOSSOM STORAGE CENTER

MITCH COLLINS, P.E.# 54608
STATE OF FLORIDA, C.A.# 9523

DATE

SHEET NUMBER

EX-12

WATER QUALITY VOLUME REQUIRED:

2.50" TIMES THE PERCENTAGE OF IMPERVIOUSNESS

SITE AREA FOR WATER QUALITY PURPOSES:
=TOTAL BASIN AREA–(WATER SURFACE+ROOFS)
=45,722–(0+0)
=45,722 SF

IMPERVIOUS AREA FOR WATER QUALITY PURPOSES:
=SITE AREA FOR WATER QUALITY PURPOSES–PERVIOUS AREA
=45,722–20,779
=24,943 SF

PERCENTAGE OF IMPERVIOUSNESS:
=(IMPERVIOUS AREA FOR WATER QUALITY/SITE AREA FOR WATER QUALITY)X100
=(24,943/45,722)X100
=54.55%

2.50 INCHES TIMES THE PERCENTAGE OF IMPERVIOUSNESS:
=2.50X0.5455
=1.36 INCHES

WATER QUALITY VOLUME:
=INCHES TO BE TREATEDX(TOTAL BASIN AREA–WATER SURFACES)
$=1.36X(45,722-0)X(\frac{1}{12})$
=5,182 CF

OR

1.00" OVER THE PROJECT AREA
=(1.00"/12)(45,722 SF)=3,810 CF

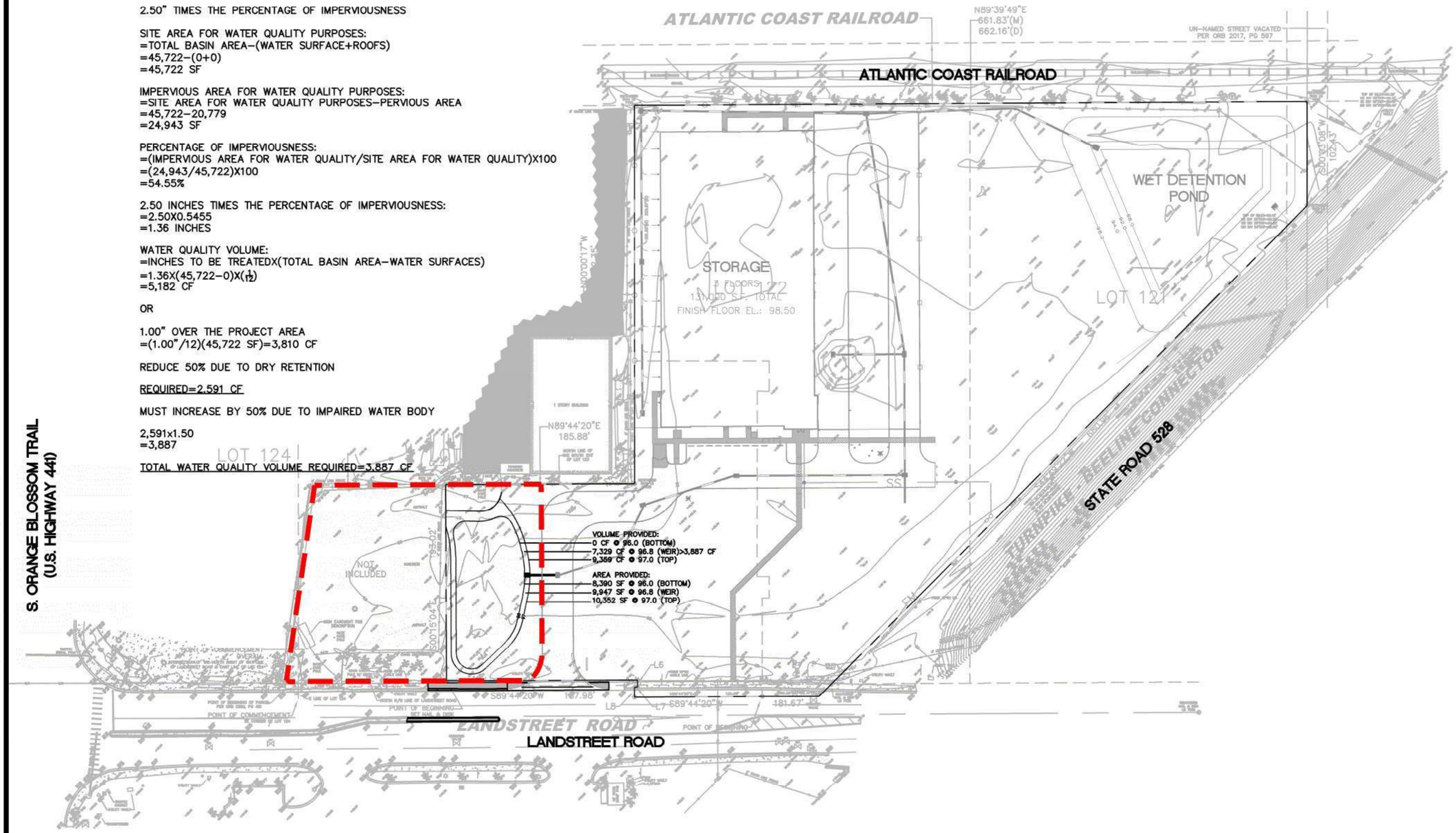
REDUCE 50% DUE TO DRY RETENTION

REQUIRED=2,591 CF

MUST INCREASE BY 50% DUE TO IMPAIRED WATER BODY

2,591x1.50
=3,887

TOTAL WATER QUALITY VOLUME REQUIRED=3,887 CF



WATER QUALITY AND POND VOLUME CALCULATIONS (BASIN 2)

DRAWN BY:	M.C.
CHECKED BY:	M.C.
DATE:	4–20–22
SCALE:	1"=100'
JOB NO:	221–013

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ORANGE BLOSSOM STORAGE CENTER

MITCH COLLINS, P.E.# 54606
STATE OF FLORIDA, C.A.# 9523

DATE

SHEET NUMBER

EX–13

Report
Geotechnical Engineering Services
Proposed Self-Storage Facility
1851 West Landstreet Road
Orlando, Orange County, Florida
PSI Project No. 07572818

Project Number: 07572818
April 25, 2022

Professional Service Industries, Inc.
1748 33rd Street, Orlando, FL 32839
Phone: (407) 304-5560
Fax: (407) 304-5561

Mr. Gary Klein
Senior Vice President, Project Management
Criterion Construction, LLC
221 NE Ivanhoe Boulevard, Suite 330
Orlando, Florida, 32840

RE: Report
Geotechnical Engineering Services
Proposed Self-Storage Facility
1851 West Landstreet Road
Orlando, Orange County, Florida
PSI Project No.: 07572818

Dear Mr. Klein:

In general accordance with PSI Proposal No. 0757-369139, **Professional Service Industries, Inc. (PSI), an Intertek company**, has completed a geotechnical exploration program at the site of the referenced project. The evaluation was conducted to provide geotechnical engineering recommendations related to site preparation and foundation design for the proposed self-storage facility.

PROJECT INFORMATION

The project is a new self-storage facility to be built at 1851 West Landstreet Road in Orlando, Florida. The site is located in the northeast quadrant of the intersection of U.S. 441 and West Landstreet Road and is just west of S.R. 528. The property totals some 6.96 +/- acres and formerly contained a condominium complex that was recently demolished and removed. Currently, the site is vacant with a groundcover of mostly exposed sands in the former condo areas.

Based on the information and site development plan provided to PSI, new construction for the project will include a 3-story self-storage building that provides 135,000 +/- total square feet of floor space (approximately 45,000 square feet per floor), along with an associated paved loading/unloading loop, plus parking areas and driveways. From our recent communications with Mr. Mitch Collins, P.E., the project civil engineer, we understand that stormwater for the overall site will be managed by two new ponds to be constructed in the northeast and southwest corners of the site. The northeasterly pond will be a wet bottom design with the southwesterly pond being a dry bottom detention system.

Foundation loads are unknown to PSI at this time. Based on experience with similar self-storage projects, we anticipate maximum column and wall loads for the building will be on the order of 300 kips and 5 to 8 kips per lineal foot, respectively. On this basis, we anticipate support of the building will be provided by shallow spread foundations with a slab on grade ground floor (i.e., no basements).

The noted information/assumptions have been used for the purpose of preparing this report. Adjustments to the scope of services may be necessary if the planned development differs from the noted information/assumptions.

REVIEW OF PUBLISHED DATA

USGS Topographic Map

The topographic survey map published by the USGS entitled "Lake Jessamine, Florida" was reviewed for ground surface features in the area of the proposed development. Based on this review, ground surface elevations at the site are on the order of +90 to +95 feet NGVD29.

A review of the site-specific topographic survey data provided to PSI indicates current elevations across the site are in the general range +96 to +99 feet NAVD88. In the localized area of the demolished swimming pool of the former condominium complex that previously occupied the site, elevations are on the order of +94 feet.

An excerpt of the USGS map is included on **Figure 1**.

SCS Soil Survey

The "Soil Survey of Orange County, Florida," published by the USDA SCS, was reviewed for general near-surface soil information within the project vicinity. This information indicates that there is one soil group mapped within the project site. The general information provided by the SCS for the mapped soil unit is summarized in the following table.

Soil Series	Depth (inches)	Unified Classification	USDA Seasonal High Groundwater Table
			Depth (feet)
45 – Smyrna fine sand-Urban land complex, 0 to 2 percent slopes	0 to 80	SP, SP-SM, SM	0 to 1.0

It should be noted that the soil and groundwater information summarized above is based on the Smyrna fine sand component of the soil group. Urban land and Urban land complexes refer to developed or partially developed areas where the natural soil and groundwater conditions have been altered.

An excerpt of the SCS Soil Survey map for the project site is provided on **Figure 2**.

SUBSURFACE CONDITIONS

General

To evaluate subsurface conditions at the site, PSI drilled/sampled 5 Standard Penetration Test (SPT) borings in the planned self-storage building area, and 7 auger borings in the planned pavement and pond areas. The self-storage building borings were extended to depths in the range 20 to 40 feet below existing grades, with the pavement and pond auger borings being advanced to depths of 8 feet and 20 feet below grade, respectively. In

addition, we obtained one relatively undisturbed Shelby tube soil sample for laboratory permeability testing from each of the two proposed stormwater pond areas. The various borings were completed at the approximate locations shown on **Sheet 1**. Pond borings PB-3 and PB-4 were shifted slightly to the east due to inaccessibility where an existing fence was present at the proposed boring sites.

The SPT borings were completed using rotary wash procedures and sampled in general accordance with ASTM D-1586. An automatic hammer was used to obtain the SPT samples. In the SPT borings, the upper 4 feet was augered by hand to confirm clearance from shallow buried utilities. Below this depth, SPT samples and resistances were collected virtually continuously to 10 feet with the sampling frequency being at 5-foot centers thereafter to boring termination. In the auger borings, samples were collected at regular intervals and or each change in soil stratum.

The borings were field located using a handheld GPS device and the plan provided to PSI. Existing groundcover at the boring locations included asphalt pavement (that remains from the former condominium complex) or exposed sands. Upon completion of drilling, the borings were backfilled with soil cuttings and bentonite chips.

Select soil samples were subjected to laboratory testing to determine pertinent engineering properties/parameters. Testing included a few moisture content determinations and wash 200 sieve evaluations. The laboratory testing program also included falling-head permeability testing of two tube samples collected from the planned pond areas. The various tests were carried out following appropriate ASTM standards. The results of the natural moisture content and 200 wash sieve testing are included with the soil profiles on **Sheets 2** and **3** adjacent to the depth increment of the test specimen. The results of the permeability tests are presented in the Stormwater Management section of this report.

The stratification presented is based on visual observation of the recovered soil samples, laboratory testing results and interpretation of field logs by a geotechnical engineer. It should be noted that variations in the subsurface conditions are expected and may be encountered between and away from PSI's borings. Also, whereas the individual boring logs indicate distinct strata breaks, the actual transition between the soil layers may be more gradual than shown on the soil profiles.

Stratigraphy

Based on the borings completed for the project, subsurface conditions are reasonably consistent across the site. In general, the borings revealed a varying sequence of fine sands grading relatively clean to slightly silty/clayey and silty/clayey in composition (i.e., SP, SP-SM, SP-SC, SM and SC materials). The upper sands tend to comprise cleaner sands that are underlain by the more silty/clayey soils. In the deeper SPT boring (B-3), a clay layer was encountered from a depth of 33.5 feet to boring termination at 40 feet.

Recorded SPT blow counts indicate the sands are generally in a loose to medium dense condition with occasional isolated zones of very loose or dense soils. The clay encountered at depth in boring B-3 grades firm to stiff.

Detailed descriptions of the individual borings are shown as soil profiles on **Sheets 2** and **3**.

Groundwater Conditions

Groundwater was disclosed in the borings at depths in the range 3.5 to 4.5 feet below existing grade at the time of drilling. Groundwater levels will fluctuate seasonally in response to rainfall or lack thereof. Additionally, water levels will to some degree be influenced by drainage improvements and irrigation practices in any given area.

The estimated normal seasonal high groundwater level presented herein is based on the observed soil stratigraphy, conditions observed in the borings, USDA Soil Survey information, and our experience in the project vicinity. In this regard, we estimate the normal wet seasonal high groundwater table (SHWT) will occur at depths some 1 to 1.5 feet higher than observed in the borings. Based on our understanding of the site-specific topographic data/current ground surface elevations at the property as discussed herein, we estimate the normal seasonal high water table at the site will occur at an elevation on the order of +94.5 feet NAVD88. We anticipate the average wet season water level will occur approximately one foot lower than the noted estimated seasonal high water table (i.e. +93.5 feet NAVD88).

SITE SUITABILITY

Based on the results of the borings, it is our opinion that subsurface conditions are generally suitable for the proposed self-storage facility from a geotechnical engineering perspective. Following the completion of appropriate site preparation activities as recommended herein, shallow spread foundations can be used for building support. Such foundations can be designed using a net allowable bearing pressure of 3,000 pounds per square foot (psf).

Provided adequate separation is maintained between the estimated normal seasonal high groundwater table and the bottom of pavement base, pavements can be constructed using either asphalt or concrete sections. With respect to stormwater management, the prevailing soil and groundwater conditions generally appear suitable for a wet bottom pond(s) and or a shallow dry bottom system(s). For a dry bottom pond system to function properly, adequate separation should be provided between the bottom of the pond and the normal seasonal high groundwater table. The excavations for ponds are anticipated to generate some granular/sand materials suitable for use as fill on the project.

More detailed recommendations regarding site preparation, foundation design, pavements and stormwater management for the project are provided in the following sections of this report.

SITE PREPARATION CONSIDERATIONS

General

The following recommendations have been developed on the basis of the previously described project characteristics and subsurface conditions encountered. If there is any change in the project criteria, including the location or orientation of the structure, a review must be made by PSI to determine if additional fieldwork and/or any modifications to our recommendations will be required.

Once final design plans and specifications are available, a general review by PSI is strongly recommended as a means to check that the evaluations made in preparation of this report are correct and that earthwork and foundation recommendations are properly interpreted and implemented.

Site Clearing/Stripping

Prior to subgrade preparation and fill placement, clearing and grubbing including root raking and removal of any organic-laden topsoil, plus any remaining conflicting unwanted construction that may remain on the site should be completed. This normally includes removing the surface vegetation, stripping topsoil, grubbing major root systems, and removing any miscellaneous debris and/or other deleterious materials. At a minimum, it is recommended that the clearing/stripping operations extend at least ten feet beyond the proposed pavement and building perimeters, where possible. Material generated during stripping operations should be disposed of off-site in a proper manner as directed by the Owner.

Initial site clearing and preparation work should be carried out under the observation of a representative of the geotechnical engineer.

Demolition

Demolition work should be carried out in accordance with Federal, State and municipal requirements, especially as they relate to handling and disposal of hazardous materials (i.e., asbestos, lead based paint, chemicals, etc.). Elements to be demolished should be removed in their entirety, including subsurface utilities, building foundations and associated slabs, sidewalks, curbs and pavements. Any buried utilities/conduits that are to be abandoned in place should be grout filled. If pipes/conduits are not filled, they may serve as catalysts to subsurface erosion that could result in excess settlement.

Demolition work should be carried out with care so as not to adversely affect facilities that are to remain. Excavations resulting from the removal of buried elements should be backfilled with clean, compacted, structural fill.

Fill Placement and Subgrade Preparation

Following the clearing/stripping operations, the exposed subgrade should be evaluated as directed by representatives of PSI to confirm that all unsuitable materials have been removed. Building and pavement areas should then be proof-rolled to provide a stable/unyielding subgrade prior to placing fill. Proof rolling should consist of compaction with a large diameter, vibratory drum roller. The roller should have a drum weight of at least ten tons. Proof rolling should consist of a minimum of ten overlapping coverages of the roller in a criss-cross pattern with a maximum travel speed of 2 feet per second.

Compaction can be completed in the vibratory or static mode in order to meet the minimum density requirements stated below. Based on past experience, we recommend compaction equipment be operated in the static mode within 75 feet of existing structures to reduce vibrations that could cause structural distress or disturb building occupants. Careful observations should be made during proof rolling to help identify any areas of soft/yielding soils that may require over-excavation and replacement filling.

For the building and pavement areas, we recommend that the subgrade, to a minimum depth of one foot below stripped grade, be compacted to at least 95 percent of the material's modified Proctor (ASTM D-1557) maximum dry density. Following satisfactory completion of initial compaction of the stripped subgrade, the proposed development areas may be brought up to finished grades as required.

Engineered Fill

Any off-site fill imported for the project should consist of clean fine sand with less than 12 percent by dry weight passing the U.S. Standard No. 200 sieve and be free of rubble, organics, clay, debris and other deleterious material. Fill should be tested and approved prior to import and placement. Each lift should have a loose thickness not exceeding 12 inches. Density tests should be performed to confirm the required compaction is being achieved prior to placing the next lift.

Prior to beginning compaction, soil moisture conditioning may be required. Soil moisture contents should be controlled in order to facilitate proper compaction. A moisture content within two percentage points of the material's optimum indicated by the modified Proctor test (ASTM D-1557) is recommended prior to compaction of the natural ground and fill. All engineered fill should be compacted to at least 95 percent of the material's modified Proctor (ASTM D-1557) maximum dry density.

On-Site Soil Suitability

Materials to be used for backfill or compacted fill for construction should be evaluated and, if necessary, tested by PSI prior to placement to determine if they are suitable for the intended use. In general, based on the results of the borings, the on-site relatively clean to slightly silty sands (Strata 1, 5 and 7) appear to be suitable for use as engineered fill, provided the material is free of debris, rubble, clay, roots, and organics.

Soils in Strata 2, 3 and 4 generally comprise silty to clayey fine sands and will be difficult to moisture condition and compact, especially during the wet season. Due to the poor drainage characteristics of silty/clayey sands, these soils should not be used within 36 inches of pavement base materials and 24 inches of floor slabs. If it is desired to use these soils, they should be thoroughly blended/mixed with other, more suitable/cleaner granular materials in such a way that the content of fines of the hybrid material is less than 12 percent passing the No. 200 sieve.

Stratum 6 consists of clay and should not be utilized as engineered fill.

DESIGN RECOMMENDATIONS

Foundations

Based on the anticipated construction and recommended site preparation, shallow foundations can be used for support of the proposed self-storage building. Such foundations may be designed for a net allowable bearing pressure of 3,000 pounds per square foot (psf). The foundations and ground floor slab should bear on properly placed and compacted cohesionless (sand) fills or on compacted native soils. All footings should be embedded so that the bottom of the foundation is a minimum of 18 inches below adjacent finished grades on all sides. Strip and wall foundations should be a minimum of 18 inches wide, while column footings should be at least 30 inches

square. For load combinations that include wind, the allowable bearing capacity can be increased by 30 percent as permissible by Code.

The subgrade soils should be compacted to a minimum density requirement of 95 percent of the material's modified Proctor (ASTM D-1557) maximum dry density for a minimum depth of two feet below the bottom of footings, as determined by field density compaction tests. Backfill soils placed adjacent to footings or walls should be carefully compacted with a light walk-behind roller or vibratory plate compactor to avoid damaging in-place footings or walls.

All foundation excavations should be observed by the Geotechnical Engineer or his representative to explore the extent of any fill, excessively loose, soft, or otherwise undesirable materials. If soft or undesirable materials are encountered in the footing excavations, then such materials should be removed, and the subgrade re-established by backfilling. This backfilling may be done with a well-compacted, suitable fill such as clean sand (engineered fill), gravel, or crushed FDOT No. 57 or FDOT No. 67 stone. Sand backfill should be compacted to at least 95 percent of the material's modified Proctor maximum dry density (ASTM D-1557), as previously described. Gravel/stone should be compacted/tamped to a firm/unyielding condition for its full depth.

Immediately prior to placement of reinforcing steel, it is suggested that the bearing surfaces of all footing and floor slab areas be re-compacted using hand operated mechanical tampers. In this manner, any localized areas that have been loosened by excavation operations should be adequately recompacted.

Provided the recommended subgrade preparation operations presented herein are properly performed, total foundation settlement should be on the order of one inch or less. Differential settlements should be approximately 50 percent of the total movements. These estimates are based on foundation loads discussed herein. The settlement of shallow foundations supported on sandy soils should occur relatively quickly after initial loading. Thus, the majority of expected settlement should occur during construction as dead loads are imposed.

Lateral loads that are applied to the foundations may be resisted by earth pressure mobilized on the buried vertical faces of the footings and by shearing forces acting along the footing-subgrade interface. Earth pressure resistance may be determined using an equivalent fluid density of 360 pounds per cubic foot for moist soil and 180 pounds per cubic foot for submerged soil below the water table. A friction factor of 0.4 should be used to determine base shearing resistance. The noted values are based on the assumption that the footings are surrounded by compacted sand fill.

To develop passive resistances, the foundations must be able to tolerate some lateral movement. We estimate lateral movements in the range one-quarter to three-eighths of an inch to fully develop the passive resistance. In order to minimize the movement required to develop resistance, the pressure values presented above can be halved. A factor of safety of at least 1.5 is recommended for design.

Floor Slab

The floor slab of the building can be safely supported as a slab-on-grade system provided the final subgrade elevation is densified and prepared as recommended herein. We further recommend that the upper one foot of the subgrade soils within the building pad be compacted to at least 95 percent of the maximum dry density of the soil's modified Proctor (ASTM D-1557).

We recommend the floor slab bearing soils be covered by lapped polyethylene sheeting in order to minimize the potential for floor dampness which can affect the performance of floor coverings. This membrane should consist of a minimum six mil thick, single layer of non-corroding, non-deteriorating sheeting material placed to minimize seams and to cover all of the soil below the building floor slabs. Seams should be overlapped a minimum of 12 inches.

For slab design, we recommend a subgrade modulus of 150 pounds per cubic inch (pci) for subgrade prepared as noted herein.

Pavement Support

Provided a minimum separation of 18 inches is maintained between the bottom of the pavement base course and the estimated normal seasonal high groundwater table, pavement base materials can consist of limerock or crushed concrete. Based on experience, we recommend the following minimum pavement sections for light-duty uses such as in the parking lots and medium duty uses such as in car driveway areas.

Light-Duty (Car Parking Areas)

1.5 inches	Type SP Asphaltic Concrete
6.0 inches	Limerock (LBR = 100) or crushed concrete basecourse (LBR = 150)
12.0 inches	Stabilized subgrade (LBR = 40) compacted to 98 percent of the material's ASTM D-1557 maximum dry density.

Medium-Duty (Driveway and Service Areas)

2.0 inches	Type SP Asphaltic Concrete
8.0 inches	Limerock (LBR = 100) or crushed concrete basecourse (LBR = 150)
12.0 inches	Stabilized subgrade (LBR = 40) compacted to 98 percent of the material's ASTM D-1557 maximum dry density.

For heavy-duty uses, such as in truck loading areas, dumpster pads/approach areas, as well as in areas to receive heavy truck traffic, we recommend the following minimum pavement section.

Heavy-Duty (Rigid Pavement)

7.0 inches	Portland cement concrete, minimum 28-day compressive strength of 4000 psi.
12.0 inches	Well-draining granular subgrade (AASHTO A-3 material), compacted to 98 percent of the material's ASTM D-1557 maximum dry density.

Pavement joints and reinforcing for concrete pavement should be in accordance with American Concrete Institute (ACI) standards. The recommended pavement sections are based on past experience with similar projects and the encountered subsurface conditions at the site. All pavement materials and construction should meet the more stringent of the Florida Department of Transportation (FDOT) and local city/county requirements. The noted pavement sections should be considered recommended minimums based on anticipated traffic loadings and our past experience. The project civil engineer should provide the pavement design using actual traffic loads, design criteria provided by the Owner, and the soil and groundwater conditions noted herein.

Stormwater Management

Stormwater management for the site will be handled by two proposed ponds to be built in the southwest and northeast portions of the site. The southwesterly pond will be a dry bottom detention system, with the northeasterly pond being a wet bottom retention system/pond. To evaluate subsoil conditions in the planned pond areas, PSI drilled four auger borings to depths of 20 feet below existing grade (2 borings per pond). Additionally, one relatively undisturbed Shelby tube soil sample was collected from each pond area to perform laboratory permeability testing. Results of the permeability testing are summarized in the following.

Boring / Sample Depth	Percent Fines Passing the U.S. No. 200 Sieve	Vertical Hydraulic Conductivity, Kv (feet per day)
PB-2 / 2 feet	9.0	14
PB-3 / 2 feet	3.1	30

The values presented above are based on raw laboratory results and do not include a factor of safety. Based on experience, the horizontal hydraulic conductivity rate can typically be taken as 1.5 times the vertical rate.

Based on the results of our borings and laboratory testing, we recommend the following parameters be used to model the shallow effective aquifer of the proposed stormwater ponds.

Southwest Dry Pond (PB-1 and PB-2)

- Estimated Seasonal High Water Table +94.5 feet, NAVD 88
- Base of Effective Aquifer +93 feet, NAVD 88
- Horizontal Hydraulic Conductivity, Kh 20 feet/day
- Fillable Porosity 25 percent

Northeast Wet Pond (PB-3 and PB-4)

- Estimated Seasonal High Water Table +94.5 feet, NAVD88
- Estimated Average Wet Season Water Table +93.5 feet, NAVD88
- Base of Effective Aquifer +91
- Horizontal Hydraulic Conductivity, Kh 25 feet/day
- Fillable Porosity 25 percent

The performance of a given stormwater system is dependent on the soil permeability as well as the groundwater table, system bottom elevation, system geometry, confining layer and water level in the system. We recommend a commercially available computer program such as PONDS or MODRET be used by an engineer experienced in groundwater modeling to evaluate the proposed stormwater system. The system should be designed and constructed in accordance with Water Management District requirements.

As design proceeds on the project, we will continue to work with your Civil Engineer to assist with stormwater management design matters. In order for dry bottom ponds to recover within Water Management District criteria, underdrains or a bleeder may be required.

OTHER CONSIDERATIONS

Site Dewatering

Based on prevailing soil and groundwater conditions, dewatering may be required. Excavations that are only a few feet below the water table can likely be dewatered with a sump pump. Deeper excavations will most likely require well-pointing or sock drains to achieve adequate drawdown. In either case, the dewatering system should be designed and operated to lower the groundwater table to a depth at least 2 feet below the bottom of surfaces to be compacted in any given area. The design and discharge of the dewatering system should be in accordance with current regulatory criteria.

Excavations

In Federal Register, Volume 54, No. 209 (October 1989) the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". This document was issued to better ensure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be utility trenches, general construction excavations or footing excavations, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed the Owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. PSI is providing this information solely as a service to our client. PSI does not assume responsibility for construction site safety or the contractor's or other parties' compliance with local, state, and federal safety or other regulations.

LIMITATIONS

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This company is not responsible for the conclusions, opinions or recommendations made by others based on these data.

The scope of our exploration was intended to evaluate soil conditions within the influence of the proposed structure foundations and does not include an evaluation of potential deep soil problems such as sinkholes. The analysis and recommendations submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated. If any subsoil variations become evident during the course of this project, a re-evaluation of the recommendations contained in this report will be necessary after we have had an opportunity to observe the characteristics of the conditions encountered. The applicability of the report should also be reviewed in the event significant changes occur in the design, nature or location of the proposed development.

The scope of our services provided herein does not include any environmental assessment or investigation for the presence or absence of hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site studied. Any statements in this report regarding odors, staining of soils, or other unusual conditions observed are strictly for the information of our client.

CLOSURE

PSI appreciates the opportunity to provide our services to Criterion Construction, LLC on this project and we trust that the foregoing and accompanying attachments are of assistance to you at this time. If you have any questions regarding the information provided in this report, or if we may be of further service, please contact the undersigned.

Sincerely,

PROFESSIONAL SERVICE INDUSTRIES, INC.
Certificate of Authorization No. 3684

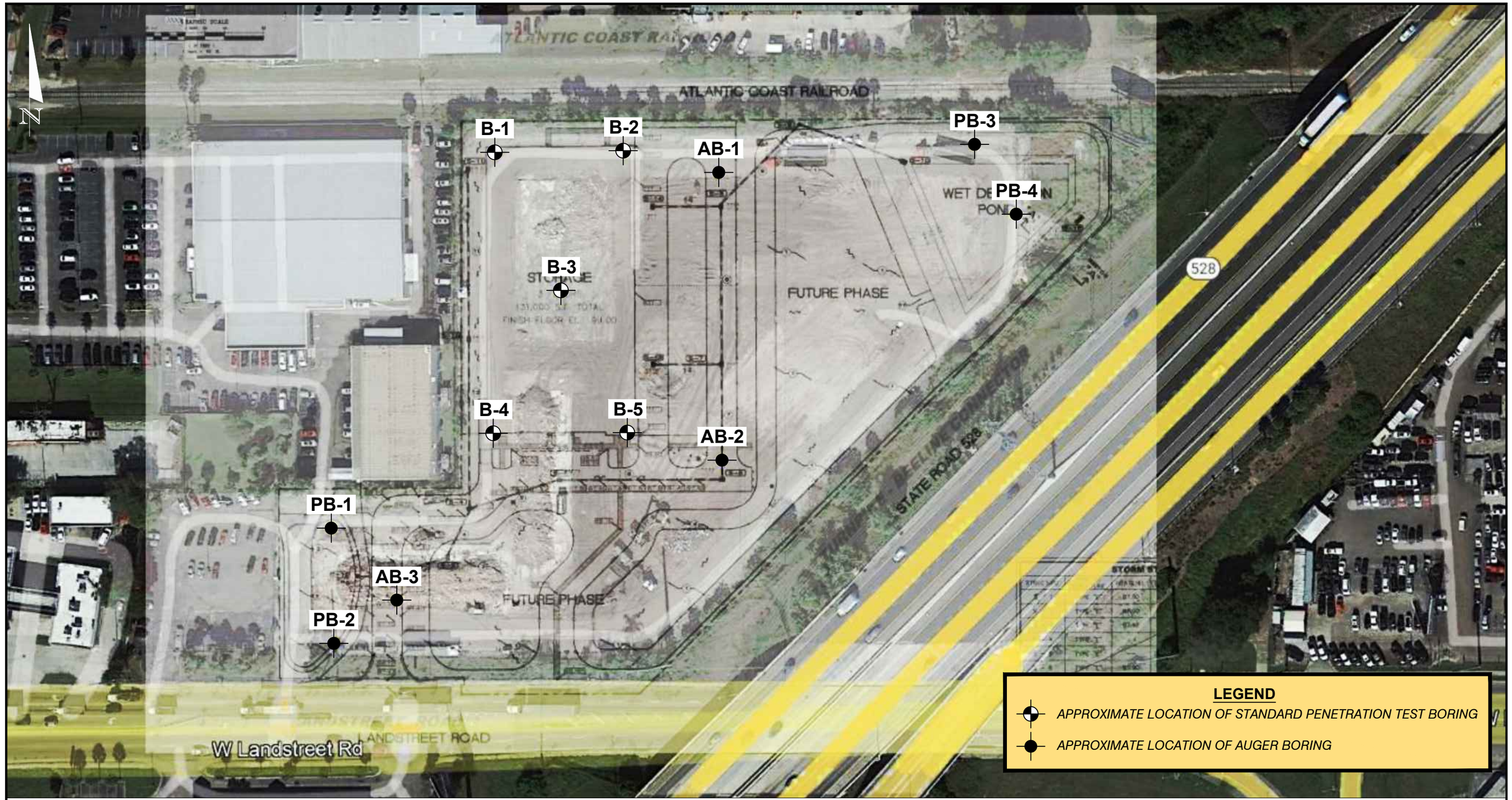
Max S. McGahan, P.E.
Project Engineer
Florida License No. 86580

Ian Kinnear, P.E.
Chief Geotechnical Engineer
Florida License No. 32614

07572818 Report (Landstreet Self Storage Facility).doc

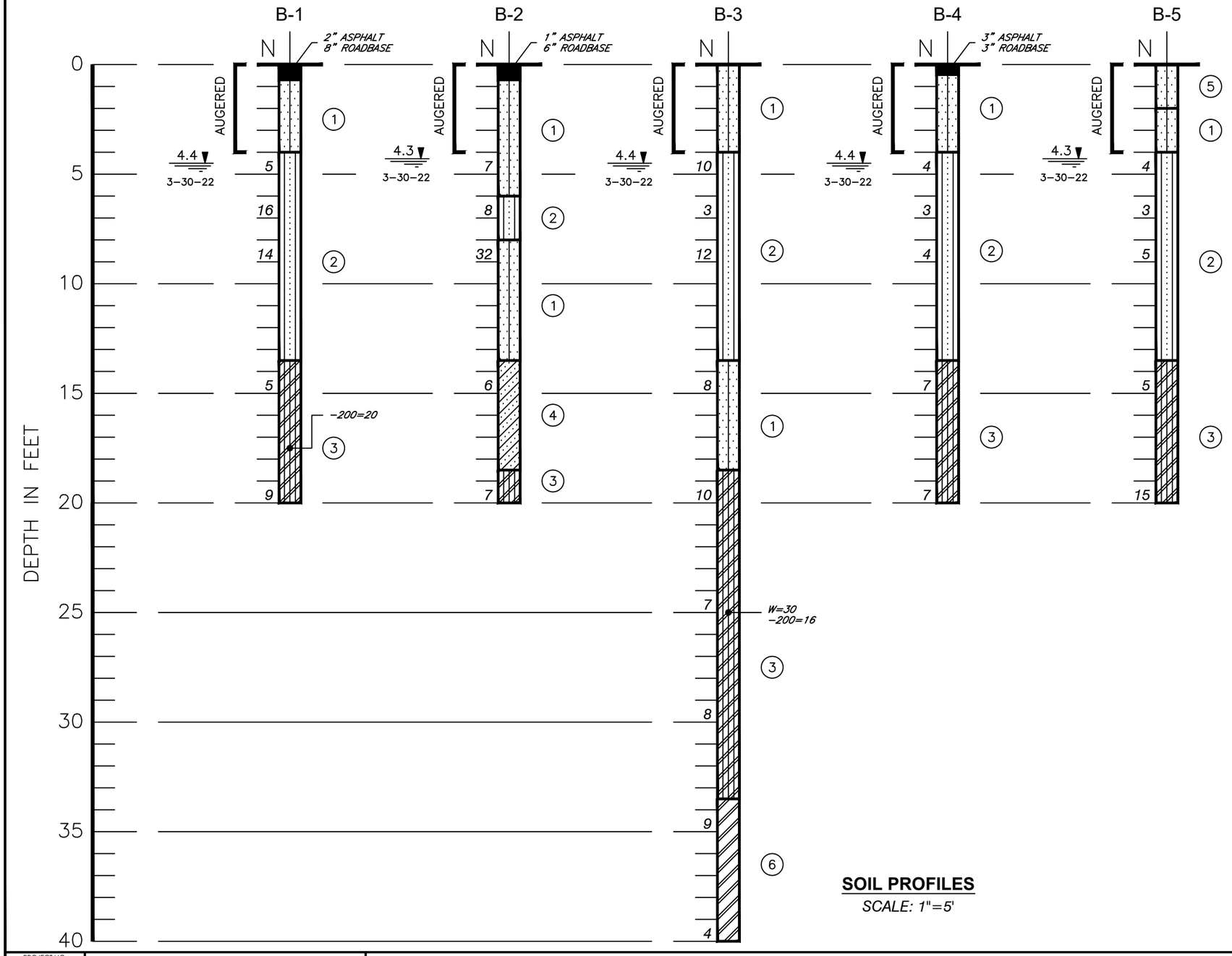
Appendix:

- Figure 1 – USGS Quadrangle Map
- Figure 2 – SCS Soil Survey Map
- Sheet 1 – Boring Location Plan
- Sheets 2 and 3 – Boring Profiles



REFERENCE: THE AERIAL PHOTOGRAPH WAS OBTAINED FROM GOOGLE EARTH. THE PRESENTED DATA IS FOR INFORMATION PURPOSES ONLY. IT IS NOT MEANT FOR DESIGN, LEGAL, OR ANY OTHER USES. INTERTEK–PSI ASSUMES NO RESPONSIBILITY FOR ANY DECISIONS MADE OR ANY ACTIONS TAKEN BY THE USER BASED UPON INFORMATION OBTAINED FROM THE ABOVE DATA.

PROJECT NO. 07572818 SCALE: 1"=100' DATE CREATED: 4-1-22	intertek psi 1748 33rd Street Orlando, FL 32839 (407)304-5560 (407)304-5561 fax	GEOTECHNICAL ENGINEERING SERVICES **PROPOSED SELF-STORAGE FACILITY** **1851 WEST LANSDTREET ROAD** ORLANDO, ORANGE COUNTY, FLORIDA	SHEET: 1 DRAWN: DJW CHECKED: PC



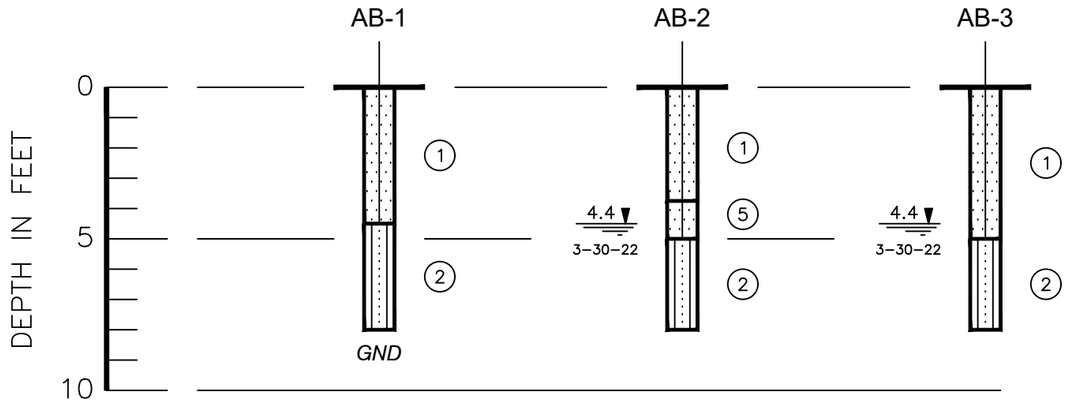
SOIL PROFILES

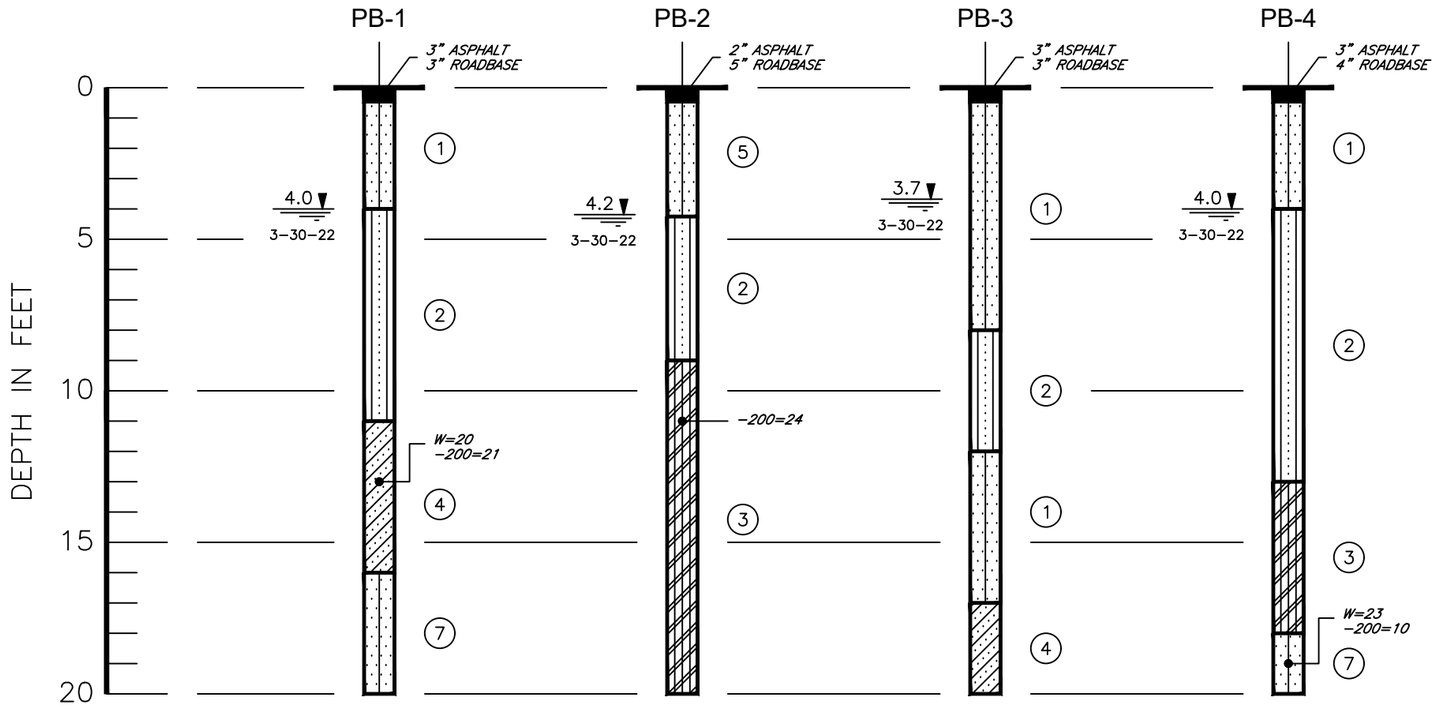
SCALE: 1"=5'

LEGEND

(1)	*GRAY TO BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND, (SP), (SP-SM)*
(2)	*DARK BROWN TO BROWN SILTY FINE SAND, (SM)*
(3)	*GRAY TO BROWN SILTY-CLAYEY FINE SAND TO CLAYEY FINE SAND, (SM-SC), (SC)*
(4)	*GRAY TO BROWN CLAYEY FINE SAND, (SC)*
(5)	*LIGHT BROWN TO BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND, (SP), (SP-SM)*
(6)	*GREEN-GRAY TO BROWN-GRAY CLAY, (CH)*
(7)	*GRAY-BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND, (SP), (SP-SM)*
(SP)	*UNIFIED SOIL CLASSIFICATION GROUP SYMBOL*
N	*STANDARD PENETRATION RESISTANCE IN BLOWS PER FOOT USING AN AUTOMATIC HAMMER*
4.4 ▼ 3-30-22	*DEPTH TO GROUNDWATER LEVEL IN FEET WITH DATE OF READING*
W	*NATURAL MOISTURE CONTENT IN PERCENT*
-200	*FINES PASSING #200 SIEVE IN PERCENT*

PROJECT NO. 07572818	intertek psi	1748 33rd Street Orlando, FL 32839 (407)304-5560 (407)304-5561 fax	GEOTECHNICAL ENGINEERING SERVICES **PROPOSED SELF-STORAGE FACILITY** **1851 WEST LANSDTREET ROAD** ORLANDO, ORANGE COUNTY, FLORIDA
SCALE: NOTED			SHEET: 2
DATE CREATED: 4-1-22			DRAWN: DJW CHECKED: PC





SOIL PROFILES

SCALE: 1"=5'

LEGEND

1	*GRAY TO BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND, (SP), (SP-SM)*
2	*DARK BROWN TO BROWN SILTY FINE SAND, (SM)*
3	*GRAY TO BROWN SILTY-CLAYEY FINE SAND TO CLAYEY FINE SAND, (SM-SC), (SC)*
4	*GRAY TO BROWN CLAYEY FINE SAND, (SC)*
5	*LIGHT BROWN TO BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND, (SP), (SP-SM)*
6	*GREEN-GRAY TO BROWN-GRAY CLAY, (CH)*
7	*GRAY-BROWN FINE SAND TO SLIGHTLY SILTY FINE SAND, (SP), (SP-SM)*
(SP)	*UNIFIED SOIL CLASSIFICATION GROUP SYMBOL*
4.4 ▼ 3-30-22	*DEPTH TO GROUNDWATER LEVEL IN FEET WITH DATE OF READING*
GND	*GROUNDWATER NOT DETERMINED*
W	*NATURAL MOISTURE CONTENT IN PERCENT*
-200	*FINES PASSING #200 SIEVE IN PERCENT*

PROJECT NO. 07572818
SCALE: NOTED
DATE CREATED: 4-1-22

intertek psi
1748 33rd Street
Orlando, FL 32839
(407)304-5560
(407)304-5561 fax

GEOTECHNICAL ENGINEERING SERVICES

PROPOSED SELF-STORAGE FACILITY
1851 WEST LANSDTREET ROAD
ORLANDO, ORANGE COUNTY, FLORIDA

SHEET: 3
DRAWN: DJW
CHECKED: PC

Orange County

SFWMD

Permit No. 48-100034-P

Soil Tech Facility - Orlando

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

September 14, 2017

Delivered via email

Bernardo Mijares
Mijares Landstreet Enterprises LLC
3355 NW 41st Street
Miami, FL 33142

Subject: Exemption for Soil Tech Facility - Orlando
Application No. 170619-9
Exemption No. 48-100034-P
Orange County

Dear Mr. Mijares:

The South Florida Water Management District (District) reviewed the information submitted for the proposed replacement of an existing office building structure and has determined that the proposed project is exempt from the requirement to obtain an Environmental Resource Permit, pursuant to rule 373.406, Florida Administrative Code.

Activities that qualify for this exemption must be conducted and operated using appropriate best management practices and in a manner which does not cause or contribute to a water quality violation. Pursuant to Chapters 62-302 or 62-4, Florida Administrative Code.

This letter does not relieve you from the responsibility of obtaining other permits (federal, state or local) which may be required for the project.

The determination that this project qualifies as an exempt activity may be revoked if the installation is substantially modified, if the basis of the exemption is determined to be materially incorrect, of if the installation results in violation to state water quality standards. Any changes made in the construction plans or location of the project may necessitate a permit from the District. Therefore you are advised to contact the District before beginning any work in wetlands which is not specifically described in the submittal.

The notice of determination that the project qualifies as an exempt activity constitutes final agency by the District unless a petition for administrative hearing is filed. Upon timely filing of petition, this Notice will not be effective until further Order of the District.

Should you have any questions concerning this matter, please contact Joseph Santangelo at (561) 682-2656 or jsantang@sfwmd.gov.

Sincerely,

Wayne Blythe
Natural Resources Administrator

c:

Bernardo Mijares, Mijares Landstreet Enterprises LLC
Michael Coats PE, Austin Construction Group Inc

ACG
Engineering & Construction

August 10, 2017

Mr. Carlos de Rojas, P.E.
Section Leader
South Florida Water Management District
3301 Gun Club Road
West Palm Beach, Florida 33406

Project:	Soil Tech Facility - Orlando
Application ID:	ERP Application No. 170619-9
Site Address:	345 W Landstreet Road, Orlando, Orange County, FL

Dear Mr. de Rojas,

This letter provides responses to your June 27, 2017, comments to the Environmental Resource Permit (ERP) exemption application. Hopefully we have addressed your concerns and we look forward to working with you on this important project. Presented below are your comments, and our response to comments in italics.

GENERAL COMMENTS

Comment 1 The submitted application lists Austin Construction Group, Inc. as the applicant; however, the subject parcel is owned by Mijares Landstreet Enterprises LLC. Please verify the entity to receive the Exemption Verification. Per section 62-330.4.2.3(d) of the Florida Administrative Code (F.A.C.) "A permit shall only be issued to the record title holder, holder of a recorded easement conveying the right to utilize the property for a purpose consistent with the authorization requested in the permit application, those having the right to exercise the power of eminent domain or having a contract to purchase real property". Please provide legal documentation, such as a recorded warranty deed, verifying the applicant's legal ability to obtain a permit for the subject property. [Section 4.2.3(d) of AH Vol. I].

Response 1 *Austin Construction Group, Inc. is the owner's representative and was inadvertently listed as the owner. The owner is:*

Mijares Landstreet Enterprises, LLC
3355 N.W. 41st Street
Miami, FL 33142

A copy of the warranty deed for the property is attached.

Comment 2 Please submit the required permit processing fee of $100.00 for an Exemption Verification. [Rule 62-330.071(1), FAC]

Response 2 *A check in the amount of $100.00 has been included with this response to comments.*

Comment 3 Please submit a construction plan set for the proposed activities. [Section 4.2.3(b) of AH Vol. I]

Response 3 *Construction plans have been included with these response to comments.*

Comment 4 Please provide a project narrative which addresses the basis for the exemption and please cite the exemption from 62-330.51 [Exempt Activities] you believe best suits the proposed activity.

Response 4 *Site reconnaissance shows the site is covered with crushed asphalt and concrete and is currently used for truck storage. Review of aerial photographs confirm that the site has historically been used for vehicle parking for over 20 years and that the site was covered in some sort of asphalt millings and/or crushed concrete for at least 20 years. Minimal site grading will be conducted, and in general all stormwater will continue to flow toward the southeast to an offsite stormwater swale and grate inlet.*

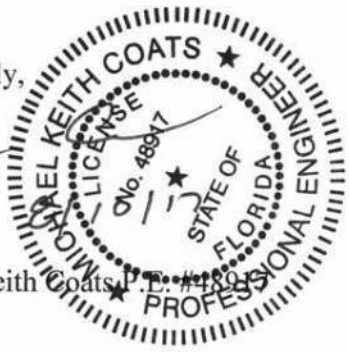
Based on historical and current land cover, the activity is expected to have only minimal or insignificant individual of cumulative adverse impacts on water resources and is exempt under Section 373.406(6) of the Florida Statutes from the need to obtain regulatory permit under Part IV of Chapter 373 of the Florida Statutes.

It is understood that this exemption is based on information provided and the current construction drawings. The exemption may not be valid if the project design is significantly modified.

Stormwater pollution prevention and best management practices will be implemented during construction.

If there are any questions regarding these response to comments or the revised plans please do not hesitate to contact me at 813-917-9267 or at kcoats@acgtampa.com.

Respectfully,



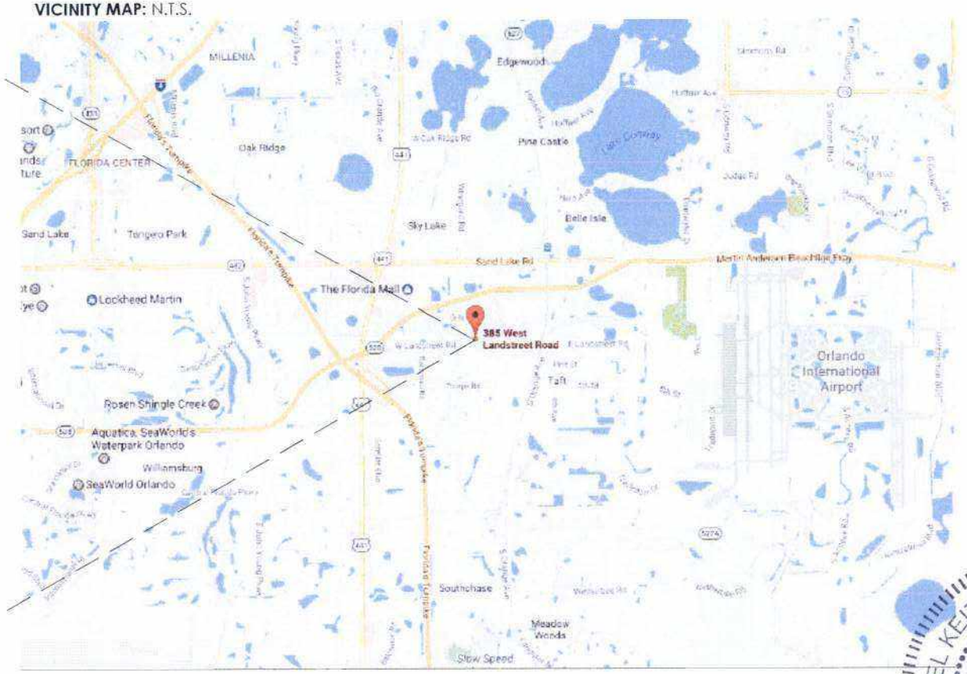
Michael Keith Coats, P.E. #48917

PROPOSED BUILDING FOR SOIL TECH:

385 W LANDSTREET ROAD
ORLANDO, FLORIDA

SITE PLAN: 1" = 80'-0"

VICINITY MAP: N.T.S.



PROJECT TEAM:

PRIME CONSTRUCTION:
ALL STEEL BUILDINGS
10159 U.S. 41 SOUTH
GIBSONTON, FL 33534

PHONE: 813-267-9894
CONTACT: MARK SCIME
EMAIL: MSCIME@ALLSTEEL-BUILDINGS.COM

ENGINEERS:
AUSTIN CONSTRUCTION GROUP
1302 N 23RD STREET
TAMPA, FL 33605

PHONE: 813-917-9267
CONTACT: KEITH COATS

EMAIL: KCOATS@ACGTAMPA.COM
AUSTIN@ACGTAMPA.COM

CODE INFORMATION:

BUILDING CODE INFORMATION:
2014 FLORIDA BUILDING CODE (5TH EDITION)
TYPE OF CONSTRUCTION: IIB
BUILDING AREA: 7,350 S.F.
DESIGN LOADS
1. SOIL PRESSURE: 2000 PSF
2. WIND VELOCITY: 140 MPH

LEGAL DESCRIPTION:

LOT 118, BLOCK D, PLAN OF BLOCK "D" PROSPER COLONY, ACCORDING TO THE MAP OR PLOT THEREOF AS RECORDED IN PLAT BOOK D, PAGE 100, PUBLIC RECORDS ORANGE COUNTY FLORIDA.

DRAWING INDEX:

MICHAEL KEITH COATS LICENSE No. 48917 STATE OF FLORIDA PROFESSIONAL ENGINEER SEAL
8/10/17

REVISIONS

NO.	DATE	COMMENTS

COVER SHEET

385 W. LANDSTREET RD
ORLANDO, FL. 32766

ACG
AUSTIN CONSTRUCTION GROUP, INC.
ACG TAMPA
1302N 23RD STREET
TAMPA, FL 33605
813-917-9267

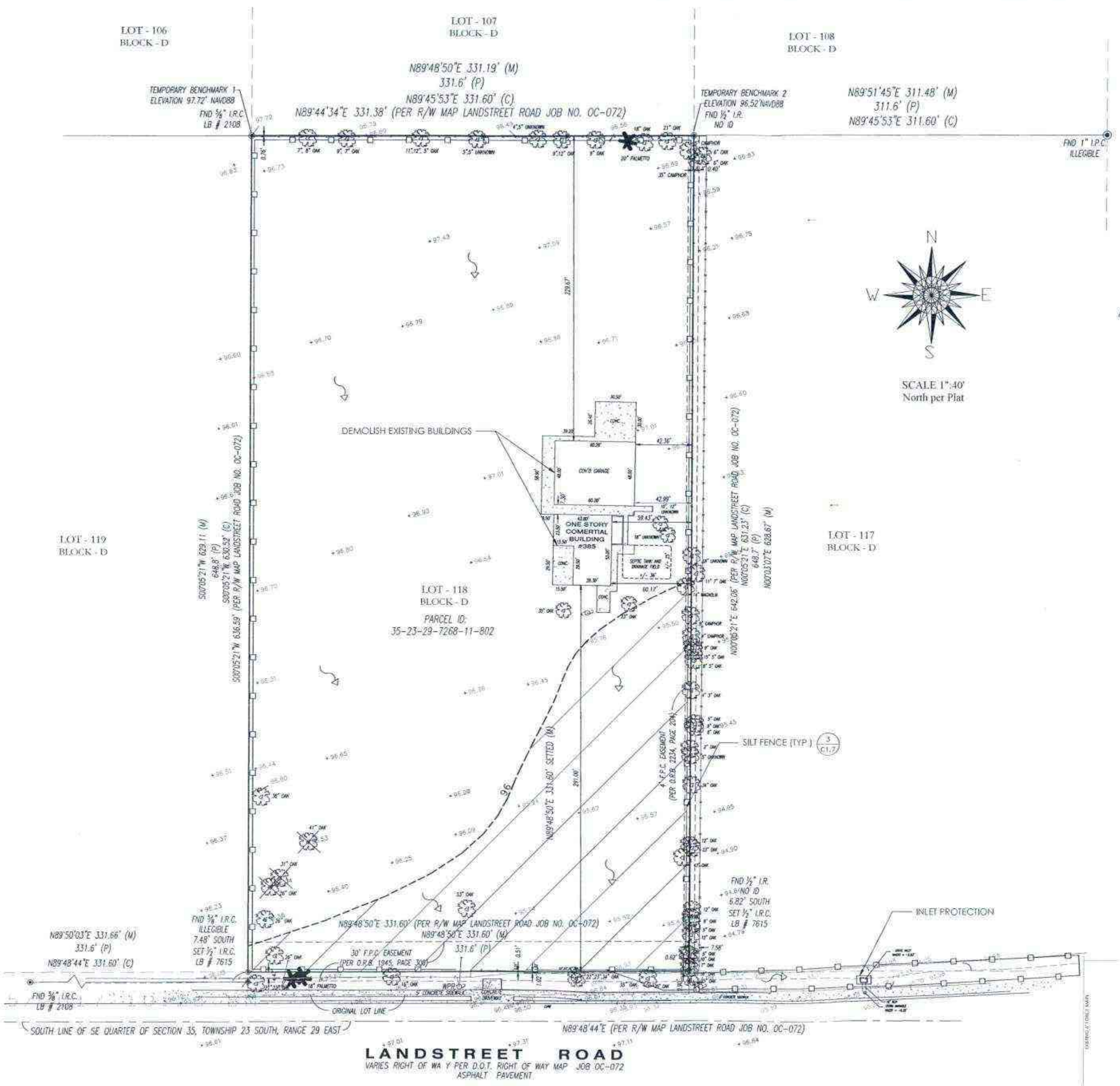
KEITH COATS
FL P.E. NO. 48917
FL C.O. NO. 30718

DRAWN: A.C.
DATE: 1/3/17
CHECKED: K.C.
DATE: 1/3/17
APPROVED:
DATE: XXX
PROJECT NUMBER:
SCALE: AS SHOWN
SHEET NO. C0.0
INDEX:

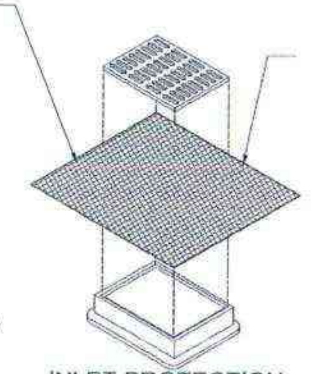
ALL STEEL BUILDINGS - MARK SCIME - (813)-267-9894

DRAWINGS SCALES SHOWN BASED ON 24"X36" DRAWING

BOUNDARY & TOPOGRAPHIC



(1/C1.1) BUILDING DEMOLITION
SCALE: N.T.S.



MAINTENANCE NOTES:

1. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED IN THE FABRIC DOES NOT FALL INTO THE STRUCTURE. MATERIAL THAT HAS FALLEN INTO INLET SHALL BE IMMEDIATELY REMOVED.

INLET PROTECTION
TYPE B
WITHOUT CURB BOX

(2/C1.1) STANDARD INLET PROTECTION
SCALE: N.T.S.

LEGEND:

- CURRENT STORMWATER FLOW DIRECTION
- BASE FLOOD CONTOUR LINE
- SILT FENCE (TYP.)

Flood Insurance Rate Map:
Community Number: 120179 Panel: 0420
Suffix F Flood Insurance Rate Map
Dated September 25, 2009 Flood Zone: " AE "
BASE FLOOD ELEVATION 96 NAVD

MICHAEL KEITH COATS LICENSE No. 48917 STATE OF FLORIDA PROFESSIONAL ENGINEER

ACG TAMPA, 1302 N 20TH STREET, TAMPA, FL 33605, 813-917-4357

SEAL

KEITH COATS
FL P.E. NO. 48917
FL C.O. NO. 30718

NO.	DATE
COMMENTS	REVISIONS

EXISTING CONDITIONS & EROSION CONTROL

385 W. LANDSTREET RD
ORLANDO, FL 32766

MARK SOMEL (813) 267-9894

ALL STEEL BUILDINGS

DRAWN: A.C.
DATE: 12/27/16

CHECKED: K.C.
DATE: 12/27/16

APPROVED:
DATE: XXX

PROJECT NUMBER:

SCALE:
AS SHOWN

SHEET NO.
C1.0

INDEX:

DRAWINGS SCALES SHOWN BASED ON 24"X36" DRAWING

GEOMETRY NOTES:

1. DIMENSIONS AND RADII IN PAVEMENT AREAS WITHOUT CURBING ARE SHOWN TO THE EDGE OF PAVEMENT.
2. ALL DISTURBED AREAS WITHIN ANY RIGHT-OF-WAY SHALL BE RESTORED TO EXISTING CONDITIONS PRIOR TO CONSTRUCTION.
3. ANY MATERIALS REMOVED FROM THE SITE DURING CONSTRUCTION SHALL BE PROPERLY DISPOSED OF OFF-SITE OR AS DIRECTED BY THE OWNER.
4. BUILDING DIMENSIONS AND TIES SHOWN ARE TO THE FACE OF BUILDING BASED ON THE INFORMATION PROVIDED BY THE BUILDING MANUFACTURER. COORDINATE AND VERIFY ALL BUILDING DIMENSIONS WITH THE BUILDING PLANS.
5. ALL SIGNS AND PAVEMENT MARKING TO CONFORM TO MUTCD LATEST EDITION.
6. ALL STRIPING AND PAVEMENT MARKING TO BE PAINT.
7. ALL DISTURBED AREAS, EXCLUDING BUILDING AND PAVED AREAS, TO BE SODDED WITH BAHIA SOD.

LEGEND:

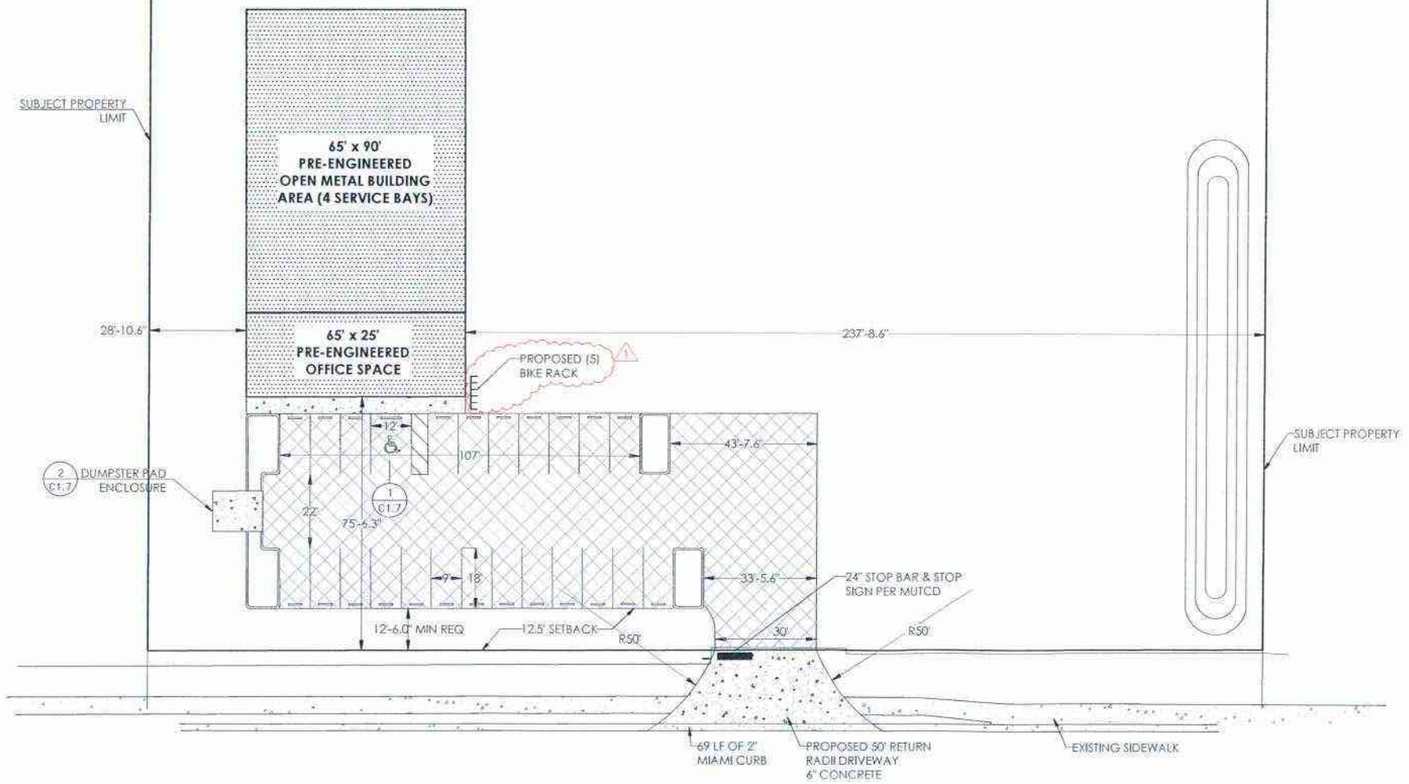
ASPHALT PAVEMENT (HEAVY USE)

CONCRETE SIDEWALK

SCALE: 1" = 20'-0"

N

MATCH LINE - SEE PAGE C1.2



LANDSTREET ROAD

VARIES RIGHT OF WAY PER D.O.T. RIGHT OF WAY MAP JOB OC-072
ASPHALT PAVEMENT

SITE DATA:

PROJECT ACREAGE: +/- 4.939 AC.
PARCEL ID: 35-23-29-7268-11-802
OWNER: SOIL TECH
SECTION 35 / TOWNSHIP 23 S / RANGE 29 E
CURRENT ZONING: COMMERCIAL
PROPERTY USE: OFFICE/TRUCK STORAGE
FLOOD ZONE: AE ELEV (NAVD)
FAR: 0.05 PROPOSED 2
FIRE DISTRICT: N/A
EVACUATION ZONE: LEVEL X

BLDG HEIGHT: 24' PROPOSED MAX

SETBACKS:
- WEST: 28.9 FT
- EAST: 232.6 FT
- SOUTH: 75.5 FT
- NORTH: 438.3 FT

PROPOSED BUILDING AREAS:
- BUILDING 1: 7,350 SF

PARKING REQUIREMENTS:
OFFICE: 1 SPACE PER 200 SF (1,625 SF) = 8.125 REQ
WAREHOUSE: 1 SPACE PER 1000 SF (5,850 SF) = 5.85 REQ
BAYS: 1 SPACE PER 1 BAY (4 BAYS) = 4 REQUIRED
PARKING REQUIRED: 18 SPACES
PARKING PROVIDED:
24 SPACES (INCLUDES 1 ACCESS.)

1
BIKE RACK REQUIREMENTS:
PARKING SPOTS PROVIDED = 24
24 SPACES/10 = 2.4 x 2 = 4.8 BIKE PARKING SPACES
BIKE PARKING SPACES PROVIDED = 5

PROPOSED BLDG FOOTPRINT: 0.172 AC. (3.483%)
EXISTING BLDG FOOTPRINT: 0.109 AC. (2.21%)
ONSITE PAVEMENT: 0.217 AC. (4.38%)
EXISTING IMPERVIOUS: 4.939 AC. (100%)
PROPOSED IMPERVIOUS: 0.389 AC. (7.88%) *NO CHANGE*
TOTAL IMPERVIOUS: 4.939 AC. (100%)
TOTAL OPEN SPACE: 0 AC. (0%)

BUILDING CODE SUMMARY:
APPLICABLE BUILDING CODES:
2014 FLORIDA BUILDING CODE (5TH ED.)
2011 FLORIDA ELECTRICAL CODE
2014 FLORIDA FIRE PREVENTION CODE

CONST. TYPE: V-B UNSPRINKLED

ALLOWABLE NO OF FLOOR: (1) ONE

OCCUPANT LOADS:
OFFICE AREA: 65' X 25' = 1,625/100 = 16 PEOPLE
OPEN AREA: 65' X 90' = 5,850/500 = 11 PEOPLE
TOTAL OCCUPANCY = 27 PEOPLE

HIGH VELOCITY HURRICANE ZONE: NO

MICHAEL KEITH COATS LICENSE No. 48917 STATE OF FLORIDA PROFESSIONAL ENGINEER

ACG

ACG TAMPA
1902 NORD COURT
TAMPA, FL 33607
813-267-9894

SEAL

KEITH COATS
FL P.E. NO. 48917
FL C.O. NO. 30718

DRAWN: A.C.
DATE: 12/21/16

CHECKED: K.C.
DATE: 12/21/16

APPROVED:
DATE: XXX

PROJECT NUMBER:

SCALE:
AS SHOWN

SHEET NO.
C1.1
INDEX

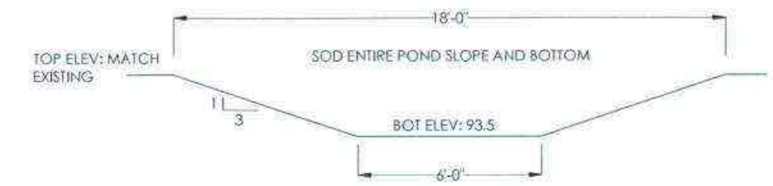
NO.	DATE	REVISIONS COMMENTS
1	6/17/17	BIKE RACK & CALCULATIONS
2	6/17/17	FAR CALCULATION REVISED

SITE PLAN

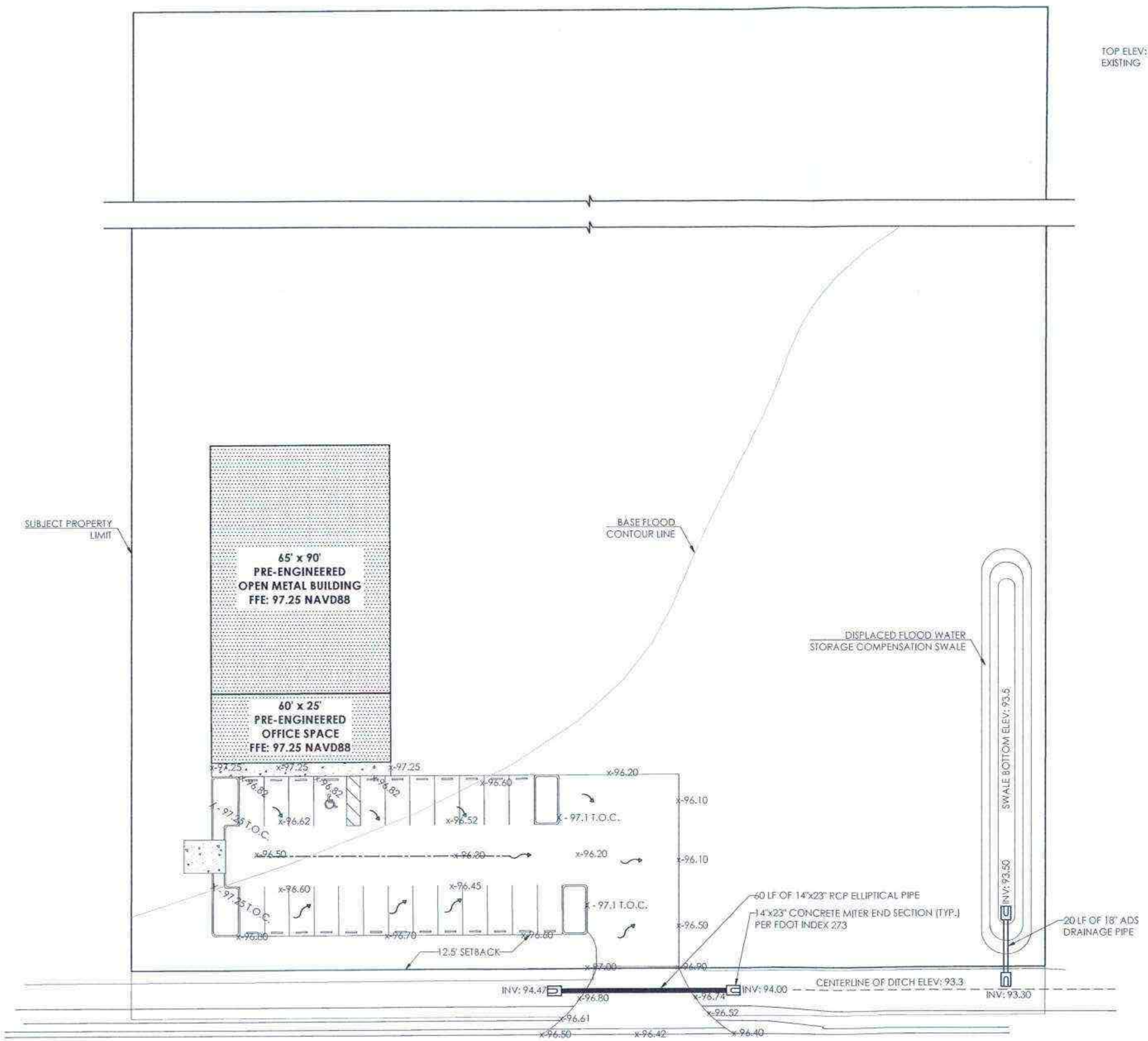
385 W. LANDSTREET RD
ORLANDO, FL. 32766

ALL STEEL BUILDINGS | MARK SCIME | (813) 267-9894

DRAWINGS SCALES SHOWN BASED ON 24"X36" DRAWING



DISPLACED FLOOD WATER STORAGE COMPENSATION:
SCALE: N.T.S.



LANDSTREET ROAD

VARIES RIGHT OF WAY PER D.O.T. RIGHT OF WAY MAP JOB OC-072
ASPHALT PAVEMENT

SCALE: 1" = 20'-0"

DRAINAGE NOTES:

1. ALL PIPE SHALL BE CAREFULLY LAID, TRUE TO THE LINES AND GRADES AS SHOWN O THE PLANS. ALL PIPE SHALL BE LAID WHEN SOIL IS DRY UNLESS SPECIFICALLY AUTHORIZED OTHERWISE BY THE COUNTY ENGINEER.
2. BACKFILLING SHALL PROGRESS AS RAPIDLY AS THE CONSTRUCTION AND TESTING OF THE WORK WILL PERMIT. ALL BACKFILL MATERIAL SHALL BE SUITABLE AND FREE OF DELETERIOUS MATERIAL. THE INITIAL BACKFILL SHALL BE CAREFULLY DEPOSITED ON BOTH SIDES OF THE PIPE AT THE SAME TIME AND UNIFORMLY COMPACTED AROUND THE BARREL OF THE PIPE UNTIL ENOUGH HAS BEEN PLACED TO PROVIDE A COVER OF ONE FOOT ABOVE THE CROWN OF THE PIPE. IN NO CASE SHALL BACKFILL MATERIAL BE PLACED IN THE TRENCH IN A MATTER THAT WILL CAUSE SHOCK TO OR UNEQUAL PRESSURE ON THE PIPE. THE BACKFILL SHALL BE PLACED AND COMPACTED TO 100 PERCENT OF MAXIMUM DENSITY AS DETERMINE BY AASHTO T-99 TO THE BOTTOM OF THE STABILIZED SUBGRADE AND 98 PERCENT OF T-180 FOR THE STABILIZED SUBGRADE AND BASE UNDER AND WITHIN SIX FEET OF THE TRAVELED WAY AND UNDER OTHER EXISTING HARD SURFACED ORT PREVIOUSLY COMPACTED AREAS.
3. ALL STORM PIPE ENTERING STRUCTURES SHALL BE GROUTED TO ASSURE CONNECTION AT STRUCTURE IS WATERTIGHT.
4. STORM INLET BOX TOP ELEVATIONS SHOWN ARE APPROXIMATE. ALL STORM BOXES IN PAVED AREAS SHALL BE FLUSH WITH PAVEMENT AND SHALL HAVE TRAFFIC BEARING LIDS.
5. ALL STRUCTURES ARE TO CONFORM WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION ROADWAY AND TRAFFIC DESIGN STANDARDS. CURB INLETS SHALL BE FDOT INDEX 211, CATCH BASINS SHALL HAVE TRAFFIC BEARING RETICULINE GRATES INDEX 232 AND FDOT INDEX 200 STRUCTURE BOTTOMS SIZED AS REQUIRED. CONCRETE ENDWALLS SHALL BE FDOT INDEX 250 AND MANHOLES SHALL BE FDOT INDEX 201 TOPS WITH FDOT INDEX 200 STRUCTURE BOTTOMS SIZED AS REQUIRED. MITERED END SECTIONS SHALL BE SIZED AS REQUIRED, MITERED END SECTIONS SHALL BE IN ACCORDANCE WITH INDEX 273. CONTRACTOR SHALL ENSURE THAT INLETS ARE INSTALLED WITH AN ORIENTATION CONSISTENT WITH THE ALLOWABLE PIPE SIZES AS LISTED IN FDOT INDEX 232.

GRADING NOTES:

1. PAVEMENT SPOT GRADES SHOWN ARE FINISH PAVEMENT GRADES AT THE FACE OF CURB. TOP OF STANDARD CURBING IN THESE AREAS IS 0.5 FEET ABOVE THE EDGE OF PAVEMENT, UNLESS NOTED OTHERWISE.
2. SPOT GRADES AND CONTOURS SHOWN IN GRASSES AND LANDSCAPED AREAS REPRESENT FINAL PROPOSED GRADES AFTER PLACEMENT OF SODDING AND/OR BEDDING MATERIALS.
3. DISABLED PARKING SPACES AND ADJACENT ACCESS AISLES ARE DESIGNED TO AVE 2% OR FLATTER CROSS SLOPES IN ALL DIRECTIONS. PROPOSED PAVEMENT GRADES ARE SHOWN AT ALL CORNER OF DISABLED SPACES AND ADJACENT ACCESS AISLES.
4. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS.

EROSION CONTROL NOTES:

1. EROSION CONTROL FENCING MUST BE IN PLACE PRIOR TO GRADING.

LEGEND:

REINFORCED CONCRETE PIPE

NO.	DATE	COMMENTS
		REVISIONS

SITE PLAN
385 W. LANDSTREET RD
ORLANDO, FL 32786

ACG — 302 N 23RD STREET, TAMPA, FL 33605, 813-917-9267

SEAL

KEITH COATS
FL P.E. NO. 48917
FL C.O. NO. 30718

DRAWN: A.C.
DATE: 1/24/17

CHECKED: K.C.
DATE: 1/24/17

APPROVED:
DATE: XXX

PROJECT NUMBER:

SCALE:
AS SHOWN

SHEET NO.
C1.3

INDEX:

MARK SOOE - 1 - ALL STEEL BUILDINGS

DRAWINGS SCALES SHOWN BASED ON 24"X36" DRAWING

Orange County

SFWMD

Permit No. 48-101958-P

Landstreet Asphalt Plant – Hubbard Construction

South Florida Water Management District
Individual Environmental Resource Permit No. 48-101958-P
Date Issued: September 16, 2019

Permittee: Hubbard Construction Company
1936 Lee Road Suite 300
Winter Park, 32789

Project: Hubbard Construction - Landstreet Asphalt Plant

Application No. 190816-16

Location: Orange County, See Exhibit 1

Your application for an Individual Environmental Resource Permit is approved. This action is taken based on Chapter 373, Part IV, of Florida Statutes (F.S.) and the rules in Chapter 62-330, Florida Administrative Code (F.A.C.). Unless otherwise stated, this permit constitutes certification of compliance with state water quality standards under section 401 of the Clean Water Act, 33 U.S.C. 1341, and a finding of consistency with the Florida Coastal Management Program. Please read this entire agency action thoroughly and understand its contents.

This permit is subject to:

- Not receiving a filed request for a Chapter 120, F.S., administrative hearing.
- The attached General Conditions for Environmental Resource Permits.
- The attached Special Conditions.
- All referenced Exhibits.

All documents are available online through the District's ePermitting site at www.sfwmd.gov/ePermitting.

If you object to these conditions, please refer to the attached "Notice of Rights" which addresses the procedures to be followed if you desire a public hearing or other review of the proposed agency action. Please contact this office if you have any questions concerning this matter. If we do not hear from you in accordance with the "Notice of Rights", we will assume that you concur with the District's action.

The District does not publish notices of action. If you wish to limit the time within which a person may request an administrative hearing regarding this action, you are 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. Legal requirements and instructions for publishing a notice of agency action, as well as a noticing format that can be used, are available upon request. If you publish a notice of agency action, please send of a copy of the affidavit of publication provided by the newspaper to the District's West Palm Beach office for retention in this file.

If you have any questions regarding your permit or need any other information, please call us at 1-800-432-2045 or email ERP@sfwmd.gov.

Ricardo A. Valera, P.E.
Bureau Chief, Environmental Resource Bureau

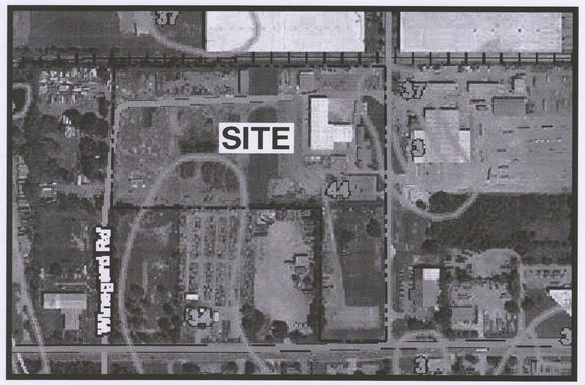
HUBBARD CONSTRUCTION - LANDSTREET ASPHALT PLANT

SITE IMPROVEMENTS PLANS FOR ORLANDO PAVING CORPORATION

ORANGE COUNTY TAX PARCEL ID NUMBER:
35-23-29-7268-01-070
35-23-29-7268-01-500

AUGUST 2019

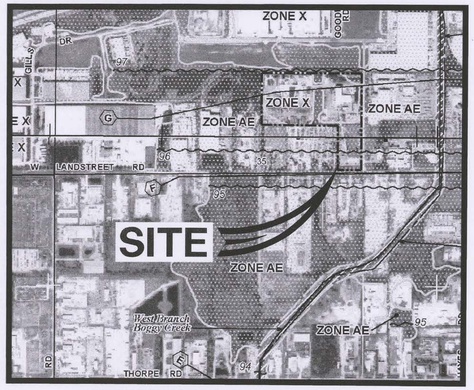
SOILS MAP
SCALE: N.T.S.



INFORMATION OBTAINED FROM USDA-NRCS WEBSITE:
SOIL SURVEY AREA: ORANGE COUNTY, FL
SURVEY AREA DATA: VERSION 15, SEPT. 13, 2018

CLASSIFICATION	DESCRIPTION
34	POMELLO FINE SAND, 0 TO 5 PERCENT SLOPES (MODERATELY WELL DRAINED)
37	ST. JOHNS FINE SAND, (POORLY DRAINED)
44	SMYRNA-SMYRNA, WET, FINE SAND, 0 TO 2 PERCENT SLOPES (POORLY DRAINED)

FLOOD INSURANCE RATE MAP
SCALE: N.T.S.

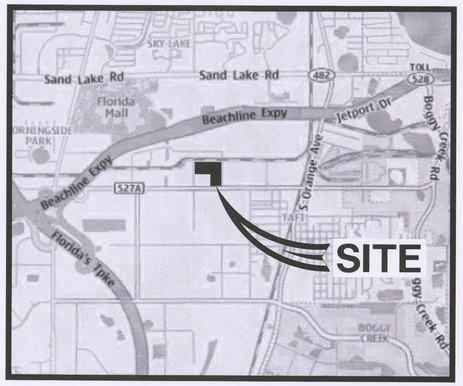


INFORMATION OBTAINED FROM FEMA WEBSITE:

MAP NUMBER 12095C0410F & 12095C0420F

FLOOD ELEVATIONS ACROSS SITE RANGE FROM 95 AT THE SOUTH EAST CORNER TO 97 ALONG THE NORTH BOUNDARY

LOCATION MAP
SCALE: N.T.S.



LEGAL DESCRIPTION

LOTS 105, 106, 107, 108 AND 117, BLOCK D, PROSPER COLONY, IN SECTION 35, TOWNSHIP 23 SOUTH, RANGE 29 EAST, ACCORDING TO THE PLAT THEREOF AS RECORDED IN PLAT BOOK D, PAGE 100, PUBLIC RECORDS OF ORANGE COUNTY, FLORIDA

CIVIL / SITE ENGINEERING, INC.
1645 N. MAITLAND AVENUE
MAITLAND, FL 32751
TEL.: 407.644.6570
FAX: 407.644.8945
WWW.CSEI-FL.COM
CERTIFICATE OF AUTHORIZATION No. 27346

SHEET INDEX

OWNER
HUBBARD CONSTRUCTION CO.
1936 LEE ROAD
SUITE 300
WINTER PARK, FL 32789
T: (407) 645-5500

DEVELOPER
ATTN.: Mr. MIKE STACEY
HUBBARD CONSTUCTION CO.
1936 LEE ROAD, STE. 300
WINTER PARK, FL 32789
T: (321) 303-2852

CIVIL ENGINEER
ATTN.: MR. TAN QU, P.E.
CIVIL/SITE ENGINEERING, INC.
1645 N. MAITLAND AVENUE
MAITLAND, FL 32751
T: (407)644-6570
F: (407)644-8945

SURVEYOR
SECOM LLC
1219 ROXBORO ROAD
LONGWOOD, FL 32750
T: (407)694-2461

GEOTECHNICAL ENGINEER
ATTN.: MALCOLM THOMPSON, E.I.
INTERTEK PSI
1748 33RD ST.
ORLANDO, FL 32839
T: (407)304-5560

LANDSCAPE ARCHITECT
ATTN.: STEPHEN PATEGAS
HORTUS OASIS
1425 BERKSHIRE AVENUE
WINTER PARK, FL 32789
T: (407)622-4886

UTILITY & COMMUNICATION CONTACT INFORMATION

WATER	SANITARY	STORMWATER	ELECTRIC PROVIDER	CABLE PROVIDER
OUC ENGINEERING 100 W. ANDERSON ST. ORLANDO, FL 32801 T: (407) 423-9018	OCU PUBLIC WORKS DEPT. 4200 S. JOHN YOUNG PKWY ORLANDO, FL 32839 T: (407) 836-7900	SOUTH FLORIDA WATER MGMT DISTRICT 1707 ORLANDO CENTRAL PKWY. ORLANDO, FL 32809 T: (407)858-6100	DUKE ENERGY - ENGINEERING Ms. LATOYA JAMES (407)650-2782	SPECTRUM (855)222-0102

CIVIL DESIGN CRITERIA:

1. ORANGE COUNTY UTILITIES STANDARDS AND CONSTRUCTION SPECIFICATIONS MANUAL
2. FDOT STANDARD PLANS FOR ROAD AND BRIDGE CONSTRUCTION FY 2019-2020
3. FLORIDA ACCESSIBILITY CODE FOR BUILDING CONSTRUCTION 2014 EDITION

SITE DATA

EXISTING USE: VEHICULAR, EQUIPMENT & MATERIAL STORAGE

PROPOSED USE: OFFICE, VEHICLE MAINTENANCE & STORAGE, ASPHALT PLANT & MATERIAL STORAGE

CURRENT ZONING: I-2/I-3

FUTURE LAND USE: INDUSTRIAL

ADJACENT LAND USE DESIGNATIONS:
NORTH: RAILROAD
SOUTH: LANDSTREET RIGHT OF WAY
EAST: TRUSSWAY BLVD RIGHT OF WAY
WEST: WINEGARD ROAD RIGHT OF WAY

BUILDING SETBACK:

	REQUIRED	EXISTING	PROPOSED
FRONT:	25 FEET	65.61' (TRUSSWAY); 851.46' (LANDSTREET)	194.64' (WINEGARD RD.)
REAR:	10 FEET	10.00'	10.15'
SIDE:	15 FEET		82.86' (LOT 119)

BUILDING HEIGHT:
MAXIMUM: 50 FEET
SILOS: 92 FEET PER VA-19-05-040 APPROVED MAY 02, 2019

FLOOR AREA RATIO (FAR):
MAXIMUM: 0.75
EXISTING: 0.03
PROPOSED: 0.04

SITE AREAS:
TOTAL SITE AREA: 1060226± SF OR 24.34± AC.
IMPERVIOUS ALLOWED: 70 PERCENT (742158± SF OR 17.04 AC.)

	EXISTING	PROPOSED
IMPERVIOUS (ASPHALT / CONCRETE)	5.42 AC.	5.20 AC. / 21.36%
IMPERVIOUS (CRUSHED AGGREGATE)	10.85 AC.	8.81 AC. / 36.20%
BUILDINGS	0.98 AC.	0.95 AC. / 3.90%
WET POND SURFACE	0.00 AC.	2.31 AC. / 9.49 %
PERVIOUS	7.09 AC.	7.07 AC. / 29.05%
	24.34 AC.	24.34 AC. / 100.0%

PARKING REQUIRED:
REQUIRED:
INDUSTRIAL: 1 SPACE / BAY PLUS 1 SPACE /1000SF
OFFICE: 1 SPACE / 200 SF

EXISTING INDUSTRIAL BAY: 5 BAYS = 5 SPACES
EXISTING OFFICE: 16168 SF (16168/200) = 80.84 USE 81 SPACES

EXISTING SPACES PROVIDED:
INDUSTRIAL: 11
OFFICE: 86

PARKING REQUIRED (CONT.):
PROPOSED OFFICE:
LAB BUILDING: 1800 SF
CONTROL BLDG.: 390 SF
ELECTRICAL BLDG.: 520 SF
2710 SF (2710/200) = 13.55 USE 14 SPACES

PARKING SPACES PROVIDED: 15

SIGNAGE:
SIGNS SHALL BE APPROVED SEPARATELY

POTABLE WATER:
SHALL BE PROVIDED BY ORLANDO UTILITY COMMISSION

WASTE WATER:
EXISTING ON-SITE SEPTIC/DRAINFIELD SHALL BE MAINTIANED
PROPOSED WASTEWATER SERVICE SHALL BE PROVIDED BY ORANGE COUNTY UTILITIES

SOLID WASTE:
SHALL BE PROVIDED BY PRIVATE CONTRACTOR

STORMWATER:
EASTERLY PORTION OF SITE WAS PREVIOUSLY PERMITTED THROUGH THE SFWMD. PERMIT NO. 48-00324-S. PROPOSED SITE IMPROVMENT MODIFICATIONS FOR REMAINDER OF SITE SHALL BE DESIGNED TO MEET CURRENT SFWMD AND ORANGE COUNTY REGULATIONS

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN:

NATURAL SURVEILLANCE WILL BE PROVIDED VIA RESTRICTED ACCESS TO ROOFS AND UPPER LEVELS

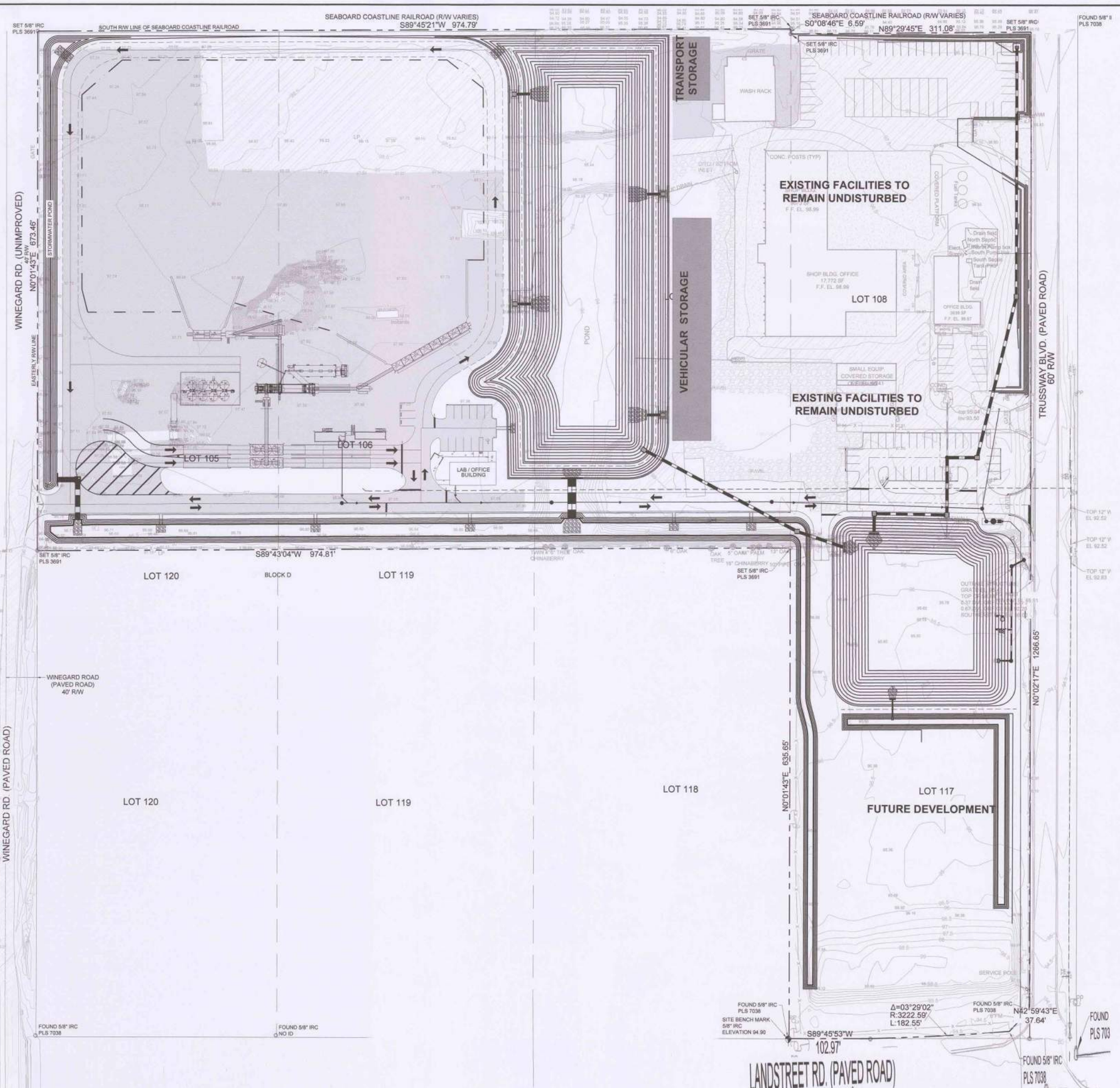
NATURAL ACCESS CONTROL (INCREASE VISIBILITY) ALL ENTRANCES AND EXITS UNDER VISUAL SURVEILLANCE.

TERRITORIAL REINFORCEMENT WILL BE PROVIDED BY A SIX FOOT CHAIN LINK FENCE AROUND PARCEL PERIMETER

MAINTENANCE AND MANAGEMENT WILL BE PROVIDED AT ALL TIMES. POSTING OF CURRENT INFORMATION WHO TO CALL WHEN MAINTENANCE IS REQUIRED WILL BE PROVIDED ON MAIN ENTRANCE GATE.

TAN QU
LICENSE
No. 66512
STATE OF FLORIDA
PROFESSIONAL ENGINEER

190816-16



TAN QU LICENSE NO. 66512 STATE OF FLORIDA PROFESSIONAL ENGINEER

LEGEND:

- EXISTING MILLINGS
- EXISTING ASPHALT
- EXISTING CONCRETE
- EXISTING GRAVEL DRIVE/STORAGE AREA

GRAPHIC SCALE

(IN FEET)
1 inch = 60 ft.

811 KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG
It's fast. It's free. It's the law.

CIVIL / SITE ENGINEERING, INC.
815 ORIENTA AVE., SUITE 1050
ALTAMONTE SPRINGS, FL 32701
PH: 407.644.6570
FAX: 407.644.8945
WWW.CSEI-FL.COM

DATE	DESCRIPTION	REV'D BY

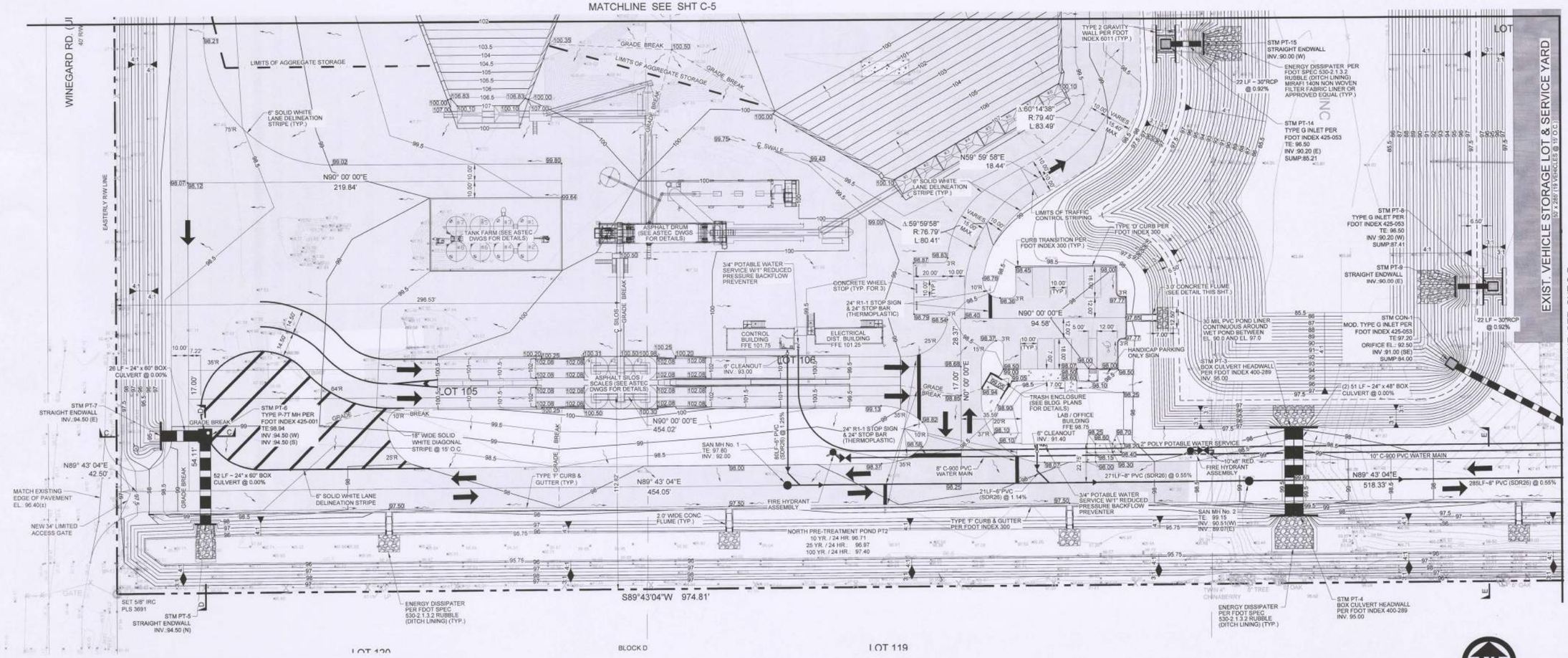
HUBBARD CONSTRUCTION LANDSTREET OPERATIONS ASPHALT PLANT

OVERALL SITE PLAN

DATE: 07/09/2019
PROJECT NO.: 09013
DRAWN BY: SLS
DESIGNED BY: TQ/SLS
CHECKED BY: TQ
ENGINEER IN CHARGE: TAN QU P.E. # 66512

CIVIL/SITE ENGINEERING, INC.
1645 N MAITLAND AVE
MAITLAND, FL 32751
LICENSE No. 27346

SHEET NO.
C-3
OF: 15



GRAPHIC SCALE

30 0 15 30

(IN FEET)

1 inch = 30 ft.

LEGEND:

- EXISTING MILLINGS
- EXISTING ASPHALT
- EXISTING CONCRETE
- EXISTING GRAVEL DRIVE/STORAGE AREA

TAN QU LICENSE No. 66512 STATE OF FLORIDA PROFESSIONAL ENGINEER

811 KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG

CS EI
CIVIL / SITE ENGINEERING, INC.
1645 N. MAITLAND AVENUE
MAITLAND, FL 32751
TEL.: 407.644.8575
FAX: 407.644.8577
WWW.CSEI-FL.COM
LICENSE No. 27346

NO.	DESCRIPTION	DATE	BY/CHK

HUBBARD CONSTRUCTION
LANDSTREET OPERATIONS
ASPHALT PLANT

SITE IMPROVEMENT PLAN

DATE: 07/09/2019
PROJECT NO.: 09013
DRAWN BY: SLS
DESIGNED BY: TQ/SLS
CHECKED BY: TQ
ENGINEER IN CHARGE: TAN QU P.E. # 66512

SHEET NO.
C-6
OF: 15

MATCH LINE SEE SHT C-8

MATCH LINE SEE SHT C-6

MATCH LINE SEE SHT C-9

TRUSSWAY

GRAPHIC SCALE

(IN FEET)
1 inch = 30 ft.

CIVIL / SITE ENGINEERING, INC.
1645 N. MAITLAND AVENUE
MAITLAND, FL 32751
PH: 407.644.4545
FAX: 407.644.8945
www.CSEI-FL.com
LICENSE No. 27346

LEGEND:

- EXISTING MILLINGS
- EXISTING ASPHALT
- EXISTING CONCRETE
- EXISTING GRAVEL DRIVE/STORAGE AREA

HUBBARD CONSTRUCTION
LANDSTREET OPERATIONS ASPHALT PLANT
SITE IMPROVEMENT PLAN

NO.	DESCRIPTION	DATE	CHK'D BY

DATE: 07/09/2019
PROJECT NO.: 09013
DRAWN BY: SLS
DESIGNED BY: TQ/SLS
CHECKED BY: TQ
ENGINEER IN CHARGE: TAN QU P.E. # 66512

TAN QU LICENSE No. 66512 STATE OF FLORIDA PROFESSIONAL ENGINEER

811 KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG

SHEET NO.
C-7
OF: 15

STORMWATER REPORT

FOR

Hubbard Construction Company
Landstreet Asphalt Plant
Orlando, Florida

SUBMITTED TO

SFWMD

August 6, 2019

PREPARED FOR:
Hubbard Construction Company
303 W. Landstreet Road
Orlando, FL 32824

PREPARED BY:
CIVIL/SITE ENGINEERING, INC.
1645 N. Maitland Avenue
Maitland, FL 32751
CA Lic. No: 27346

CIVIL / SITE ENGINEERING, INC. CSEI

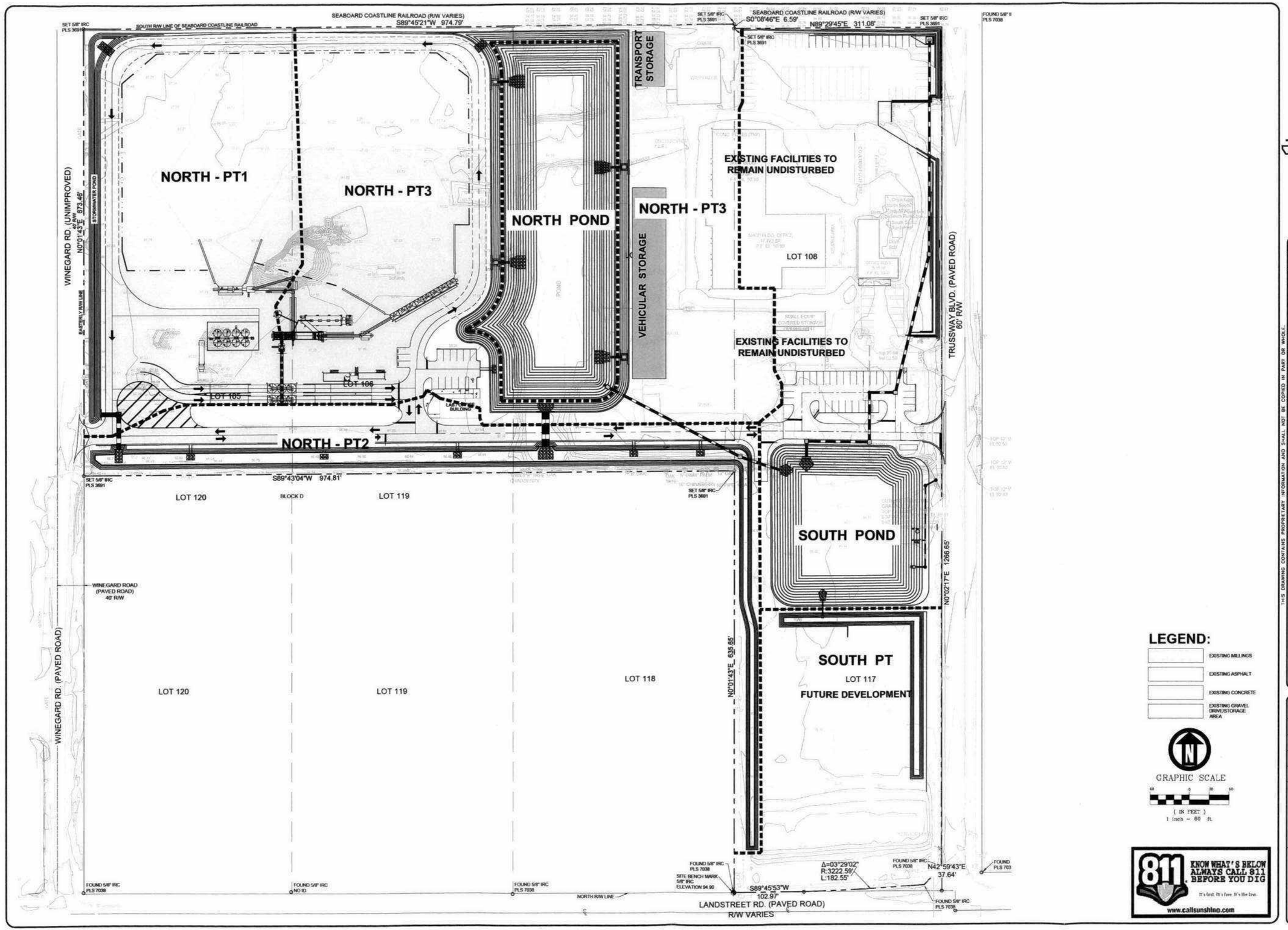
TAN QU
LICENSE
No. 66512
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Tan Qu
Florida P.E. # 66512

Hubbard Construction Company
Orlando, FL

PROPOSED CONDITIONS
DRAINAGE BASIN MAP

Civil/Site Engineering, Inc.
1645 N. Maitland Avenue, Maitland, FL 32751
T: 407.644.6570; F: 407.644.8945



CIVIL / SITE ENGINEERING, INC.
645 N. MAITLAND AVENUE
MAITLAND, FL 32751
PH: 407.644.4770
FAX: 407.644.8945
www.CSEI-FL.COM
LICENSE NO.: 27346

HUBBARD CONSTRUCTION
LANDSTREET OPERATIONS
ASPHALT PLANT
POST DEVELOPMENT
DRAINAGE BASIN MAP

NO'S	DATE	DESCRIPTION	BY

LEGEND:

- EXISTING MILLINGS
- EXISTING ASPHALT
- EXISTING CONCRETE
- EXISTING GRAVEL DRIVE/STORAGE AREA

GRAPHIC SCALE
60 0 30 60
(IN FEET)
1 inch = 60 ft.

811 KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG
It's fast. It's free. It's the law.
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DATE: 07/09/2019
PROJECT NO.: 09013
DRAWN BY: SLS
DESIGNED BY: TQ/SLS
CHECKED BY: TQ
ENGINEER IN CHARGE: TAN QU P.E. # 66512

SHEET NO.
EX-6
OF: 15

Hubbard Construction Company
Orlando, FL

PROPOSED CONDITIONS
DRAINAGE CALCULATIONS

Civil/Site Engineering, Inc.
1645 N. Maitland Avenue, Maitland, FL 32751
T: 407.644.6570; F: 407.644.8945

Post-development Runoff Volume Calculations

Rainfall excess and runoff volume calculations are based on the Soil Conservation Service (SCS) runoff equations, for which the equations and parameters are listed below:

EQUATIONS

1. SOIL STORAGE (S) = 1000/CN - 10
2. RAINFALL EXCESS (R) = $\frac{[P - 0.2(S)]^2}{P + 0.8(S)]}$
3. RUNOFF VOLUME (V) = $\frac{(DA)(R)}{12}$

ABBREVIATIONS

1. S = SOIL STORAGE IN INCHES
2. CN = RUNOFF CURVE NUMBER
3. R = RAINFALL EXCESS IN INCHES
4. P = RAINFALL DEPTH IN INCHES
5. DA = DRAINAGE AREA IN ACRES
6. V = RUNOFF VOLUME IN ACRE-FEET

NORTH BASIN

BASIN I.D.	HYDROLOGIC SOIL GROUP	LAND COVER Impervious Surfaces CN = 98	LAND COVER Storage Areas CN = 95	LAND COVER Open Area CN = 80	LAND COVER Water Area CN = 100	PERCENT IMPERVIOUS	TOTAL AREA	RUNOFF CN
North-1	B/D	1.22	2.41	0.55	0.00	86.8%	4.18	94
North-2	B/D	0.99	0.00	1.21	0.00	45.0%	2.20	89
North-3	B/D	1.65	4.18	1.34	0.00	81.3%	7.17	93
North-4	B/D	0.00	0.00	0.62	1.47	0.0%	2.09	95
Nortth		3.86	6.59	3.72	1.47	66.8%	15.64	93

Pre-treatment Volume Required = 0.5 inches on basin area = 0.65 ac-ft

Water Quality Volume Required = 2.5 inches on impervious area = 2.18 ac-ft

DESIGN STORM	DRAINAGE AREA (ac)	RAINFALL DEPTH (in)	COMPOSITE CN	RAINFALL EXCESS (in)	RUNOFF VOL (ac-ft)	STORAGE VOL (ac-ft)
100-yr/24-hr	15.64	10.6	93	9.75	12.70	6.21

NORTH PRE-TREATMENT PONDS

Stage (feet)	Incremental Depth (feet)	Surface Area (square feet)	Surface Area (acres)	Average Area (acres)	Incremental Volume (ac-Ft)	Total Volume (ac-Ft)
95.00		0	0.00	0.00	0.00	0.00
95.50	0.50	5,826	0.13	0.07	0.03	0.03
95.75	0.25	29,314	0.67	0.40	0.10	0.13
96.00	0.25	35,736	0.82	0.75	0.19	0.32
96.50	0.50	48,666	1.12	0.97	0.48	0.81
97.00	0.50	61,696	1.42	1.27	0.63	1.44
97.50	0.50	75,243	1.73	1.57	0.79	2.22

Pre-treatment Stage = 96.50 feet, Volume = 0.81 ac-ft

FEMA 100-year BFE = 96.00 feet, Volume = 0.32 ac-ft

NORTH WET DETENTION POND

Stage (feet)	Incremental Depth (feet)	Surface Area (square feet)	Surface Area (acres)	Average Area (acres)	Incremental Volume (ac-Ft)	Total Volume (ac-Ft)
92.50		64,132	1.47	0.00	0.00	0.00
93.00	0.5	66,672	1.53	1.50	0.75	0.75
93.50	0.5	69,247	1.59	1.56	0.78	1.53
94.00	0.5	71,857	1.65	1.62	0.81	2.34
95.00	1.0	77,184	1.77	1.71	1.71	4.05
96.00	1.0	82,622	1.90	1.83	1.83	5.89
97.00	1.0	88,310	2.03	1.96	1.96	7.85
97.50	0.5	91,200	2.09	2.06	1.03	8.88

PAV Treatment Stage = 94.00 feet, Volume = 2.34 ac-ft

FEMA 100-year BFE = 96.00 feet, Volume = 5.89 ac-ft

Post-development Runoff Volume Calculations

Rainfall excess and runoff volume calculations are based on the Soil Conservation Service (SCS) runoff equations, for which the equations and parameters are listed below:

EQUATIONS

1. SOIL STORAGE (S) = 1000/CN - 10
2. RAINFALL EXCESS (R) = $\frac{[P - 0.2(S)]^2}{P + 0.8(S)]}$
3. RUNOFF VOLUME (V) = $\frac{(DA)(R)}{12}$

ABBREVIATIONS

1. S = SOIL STORAGE IN INCHES
2. CN = RUNOFF CURVE NUMBER
3. R = RAINFALL EXCESS IN INCHES
4. P = RAINFALL DEPTH IN INCHES
5. DA = DRAINAGE AREA IN ACRES
6. V = RUNOFF VOLUME IN ACRE-FEET

SOUTH BASIN

BASIN I.D.	HYDROLOGIC SOIL GROUP	LAND COVER Impervious Surfaces CN = 98	Storage Areas CN = 95	Open Area CN = 80	Water Area CN = 100	PERCENT IMPERVIOUS	TOTAL AREA	RUNOFF CN
South-1	B/D	3.18	0.03	1.60	0.83	56.9%	5.64	94
South-2	B/D	0.00	1.22	1.83	0.00	40.0%	3.05	86
South		3.18	1.25	3.43	0.83	51.0%	8.69	91

Pre-treatment Volume Required = 0.5 inches on South-2 basin area = 0.13 ac-ft

Water Quality Volume Required = 2.5 inches on impervious area = 0.92 ac-ft

DESIGN STORM	DRAINAGE AREA (ac)	RAINFALL DEPTH (in)	COMPOSITE CN	RAINFALL EXCESS (in)	RUNOFF VOL (ac-ft)	STORAGE VOL (ac-ft)
100-yr/24-hr	8.69	10.6	91	9.50	6.88	3.99

SOUTH PRE-TREATMENT POND

Stage (feet)	Incremental Depth (feet)	Surface Area (square feet)	Surface Area (acres)	Average Area (acres)	Incremental Volume (ac-Ft)	Total Volume (ac-Ft)
95.25		3,499	0.08	0.00	0.00	0.00
95.50	0.25	4,159	0.10	0.09	0.02	0.02
96.00	0.50	5,488	0.13	0.11	0.06	0.08
96.50	0.50	6,832	0.16	0.14	0.07	0.15
97.00	0.50	8,190	0.19	0.17	0.09	0.23
97.50	0.50	10,405	0.24	0.21	0.11	0.34

Pre-treatment Stage = 96.50 feet, Volume = 0.15 ac-ft

FEMA 100-year BFE = 96.00 feet, Volume = 0.08 ac-ft

SOUTH WET DETENTION POND

Stage (feet)	Incremental Depth (feet)	Surface Area (square feet)	Surface Area (acres)	Average Area (acres)	Incremental Volume (ac-Ft)	Total Volume (ac-Ft)
92.00		36,310	0.83	0.00	0.00	0.00
93.00	1.0	39,344	0.90	0.87	0.87	0.87
94.00	1.0	42,482	0.98	0.94	0.94	1.81
95.00	1.0	45,720	1.05	1.01	1.01	2.82
96.00	1.0	49,059	1.13	1.09	1.09	3.91
97.00	1.0	52,498	1.21	1.17	1.17	5.07
97.50	0.5	58,083	1.33	1.27	0.63	5.71
97.60	0.1	58,500	1.34	1.34	0.13	5.84

PAV Treatment Stage = 93.10 feet, Volume = 0.96 ac-ft

FEMA 100-year BFE = 96.00 feet, Volume = 3.91 ac-ft

Seminole County

SJRWMD

Permit No. 48756-5

Donnie Myers RV Phase 1

St. Johns River
Water Management District
Kirby B. Green III, Director • David W. Fisk, Assistant Executive Director

4049 Reid Street • P.O. Box 1429 • Palatka, FL 32178-1429 • (386) 329-4500
On the Internet at floridaswater.com.

July 18, 2011

Southern Pride LLC
4240 Church St # 1156
Sanford, FL 32771

SUBJECT: Permit Number 4-117-48756-5
Donnie Myers RV, Phase 1

Dear Sir/Madam:

Enclosed is your permit as authorized by the St. Johns River Water Management District on July 18, 2011.

This permit is a legal document and should be kept with your other important documents. The attached MSSW/Stormwater As-Built Certification Form should be filled in and returned to the Palatka office within thirty days after the work is completed. By so doing, you will enable us to schedule a prompt inspection of the permitted activity.

In addition to the MSSW/Stormwater As-Built Certification Form, your permit also contains conditions which require submittal of additional information. All information submitted as compliance to permit conditions must be submitted to the Palatka office address.

Permit issuance does not relieve you from the responsibility of obtaining permits from any federal, state and/or local agencies asserting concurrent jurisdiction for this work.

In the event you sell your property, the permit can be transferred to the new owner, if we are notified by you within thirty days of the sale. Please assist us in this matter so as to maintain a valid permit for the new property owner.

Thank you for your cooperation and if this office can be of any further assistance to you, please do not hesitate to contact us.

Sincerely,

Victor Castro, Division Director
Division of Regulatory Support

Enclosures: Permit with EN Form(s), if applicable

cc: District Permit File
Consultant: Bryan Potts
Tannath Design Inc
2494 Rose Spring Dr
Orlando, FL 32825

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
Post Office Box 1429
Palatka, Florida 32178-1429

PERMIT NO. 4-117-48756-5 **DATE ISSUED:** July 18, 2011
PROJECT NAME: Donnie Myers RV, Phase 1

A PERMIT AUTHORIZING:

Construction of a surface water management system with stormwater treatment by dry detention with underdrains and by wet detention for Donnie Myers RV, Phase 1, a 6.11-acre commercial project to be constructed and operated as per plans received by the District on May 20, 2011, and by plan sheet Exhibit 1 received by the District on June 3, 2011, and as amended by plan sheet C-5, received by the District on June 10, 2011. This permit authorizes work in 5.95 acres of wetlands and other surface waters.

LOCATION:

Section(s): 39 Township(s): 19S Range(s): 30E

Seminole County

ISSUED TO:

Southern Pride LLC
4240 Church St # 1156
Sanford, FL 32771

Permittee agrees to hold and save the St. Johns River Water Management District and its successors harmless from any and all damages, claims, or liabilities which may arise from permit issuance. Said application, including all plans and specifications attached thereto, is by reference made a part hereof.

This permit does not convey to permittee any property rights nor any rights or privileges other than those specified herein, nor relieve the permittee from complying with any law, regulation or requirement affecting the rights of other bodies or agencies. All structures and works installed by permittee hereunder shall remain the property of the permittee.

This permit may be revoked, modified or transferred at any time pursuant to the appropriate provisions of Chapter 373, Florida Statutes:

PERMIT IS CONDITIONED UPON:

See conditions on attached "Exhibit A", dated July 18, 2011

AUTHORIZED BY: St. Johns River Water Management District

By: _____
Michael A. Register, Director
Department of Environmental
Resource Permitting

"EXHIBIT A"
CONDITIONS FOR ISSUANCE OF PERMIT NUMBER 4-117-48756-5
Southern Pride LLC
DATED JULY 18, 2011

1. All activities shall be implemented as set forth in the plans, specifications and performance criteria as approved by this permit. Any deviation from the permitted activity and the conditions for undertaking that activity shall constitute a violation of this permit.

2. This permit or a copy thereof, complete with all conditions, attachments, exhibits, and modifications, shall be kept at the work site of the permitted activity. The complete permit shall be available for review at the work site upon request by District staff. The permittee shall require the contractor to review the complete permit prior to commencement of the activity authorized by this permit.

3. Activities approved by this permit shall be conducted in a manner which do not cause violations of state water quality standards.

4. Prior to and during construction, the permittee shall implement and maintain all erosion and sediment control measures (best management practices) required to retain sediment on-site and to prevent violations of state water quality standards. All practices must be in accordance with the guidelines and specifications in chapter 6 of the Florida Land Development Manual: A Guide to Sound Land and Water Management (Florida Department of Environmental Regulation 1988), which are incorporated by reference, unless a project specific erosion and sediment control plan is approved as part of the permit, in which case the practices must be in accordance with the plan. If site specific conditions require additional measures during any phase of construction or operation to prevent erosion or control sediment, beyond those specified in the erosion and sediment control plan, the permittee shall implement additional best management practices as necessary, in accordance with the specifications in chapter 6 of the Florida Land Development Manual: A Guide to Sound Land and Water Management (Florida Department of Environmental Regulation 1988). The permittee shall correct any erosion or shoaling that causes adverse impacts to the water resources.

5. 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.

6. At least 48 hours prior to commencement of activity authorized by this permit, the permittee shall submit to the District a Construction Commencement Notice Form No. 40C-4.900(3) indicating the actual start date and the expected completion date.

7. When the duration of construction will exceed one year, the permittee shall submit construction status reports to the District on an annual basis utilizing an Annual Status Report Form No. 40C-4.900(4). These forms shall be submitted during June of each year.

8. For those systems which will be operated or maintained by an entity which will require an easement or deed restriction in order to provide that entity with the authority necessary to operate or maintain the system, such easement or deed restriction, together with any other final operation or maintenance documents as are required by subsections 7.1.1 through 7.1.4 of the Applicant's Handbook: Management and Storage of Surface Waters, must be submitted to the District for approval. Documents meeting the requirements set forth in these subsections of the Applicant's Handbook will be approved. Deed restrictions, easements and other operation and maintenance

documents which require recordation either with the Secretary of State or the Clerk of the Circuit Court must be so recorded prior to lot or unit sales within the project served by the system, or upon completion of construction of the system, whichever occurs first. For those systems which are proposed to be maintained by county or municipal entities, final operation and maintenance documents must be received by the District when maintenance and operation of the system is accepted by the local governmental entity. Failure to submit the appropriate final documents referenced in this paragraph will result in the permittee remaining liable for carrying out maintenance and operation of the permitted system.

9. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the initiation of the permitted use of site infrastructure located within the area served by the 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 local government or other responsible entity.

10. Within 30 days after completion of construction of the permitted system, or independent portion of the system, 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 As Built Certification Form 40C-1.181(13) or 40C-1.181(14) supplied with this permit. When the completed system differs substantially from the permitted plans, any substantial deviations shall be noted and explained and two copies of as-built drawings submitted to the District. Submittal of the completed form shall serve to notify the District that the system is ready for inspection. The statement of completion and certification shall be based on on-site observation of construction (conducted by the registered professional engineer, or other appropriate individual as authorized by law, or under his or her direct supervision) or review of as-built drawings for the purpose of determining if the work was completed in compliance with approved plans and specifications. As-built drawings shall be the permitted drawings revised to reflect any changes made during construction. Both the original and any revised specifications must be clearly shown. The plans must be clearly labeled as "as-built" or "record" drawing. All surveyed dimensions and elevations shall be certified by a registered surveyor. The following information, at a minimum, shall be verified on the as-built drawings: 1. Dimensions and elevations of all discharge structures including all weirs, slots, gates, pumps, pipes, and oil and grease skimmers; 2. Locations, dimensions, and elevations of all filter, exfiltration, or underdrain systems including cleanouts, pipes, connections to control structures, and points of discharge to the receiving waters; 3. Dimensions, elevations, contours, or cross-sections of all treatment storage areas sufficient to determine state-storage relationships of the storage area and the permanent pool depth and volume below the control elevation for normally wet systems, when appropriate; 4. Dimensions, elevations, contours, final grades, or cross-sections of the system to determine flow directions and conveyance of runoff to the treatment system; 5. Dimensions, elevations, contours, final grades, or cross-sections of all conveyance systems utilized to convey off-site runoff around the system; 6. Existing water elevation(s) and the date determined; and Elevation and location of benchmark(s) for the survey.

11. The operation phase of this permit shall not become effective until the permittee has submitted the appropriate As-Built Certification Form, the District determines the system to be in compliance with the permitted plans, and the entity approved by the District in accordance with subsections 7.1.1 through 7.1.4 of the Applicant's Handbook: Management and Storage of Surface Waters, accepts responsibility for operation and maintenance of the system. The permit may not be transferred to such an approved operation and maintenance entity 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 approved operation and maintenance entity, if different from the permittee. Until the permit is transferred pursuant to section 7.1 of the Applicant's Handbook: Management and Storage of Surface Waters, the permittee shall be liable for compliance with the terms of the permit.

12. Should any other regulatory agency require changes to the permitted system, the permittee shall provide written notification to the District of the changes prior implementation so that a determination can be made whether a permit modification is required.

13. This permit does not eliminate the necessity to obtain any required federal, state, local and special district authorizations prior to the start of any activity approved by this permit. 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 40C-4 or chapter 40C-40, F.A.C.

14. 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.

15. 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 specifically approved unless a specific condition of this permit or a formal determination under rule 40C-1.1006, F.A.C., provides otherwise.

16. 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 40C-1.612, 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.

17. 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 the plans and specifications approved by the permit.

18. If historical or archaeological artifacts are discovered at any time on the project site, the permittee shall immediately notify the District.

19. The permittee shall immediately notify the District in writing of any previously submitted information that is later discovered to be inaccurate.

20. This permit for construction will expire five years from the date of issuance.

21. At a minimum, all retention and detention storage areas must be excavated to rough grade prior to building construction or placement of impervious surface within the area to be served by those facilities. To prevent reduction in storage volume and percolation rates, all accumulated sediment must be removed from the storage area prior to final grading and stabilization.

22. All wetland areas or water bodies that are outside the specific limits of construction authorized by this permit must be protected from erosion, siltation, scouring or excess turbidity, and dewatering.

23. Prior to construction, the permittee must clearly designate the limits of construction on-site. The permittee must advise the contractor that any work outside the limits of construction, including clearing, may be a violation of this permit.

24. The operation and maintenance entity shall inspect the stormwater or surface water management system once within two years after the completion of construction and every two years thereafter to determine if the system is functioning as designed and permitted. The operation and maintenance entity must maintain a record of each required inspection, including the date of the inspection, the name, address, and telephone number of the inspector, and whether the system was functioning as designed and permitted, and make such record available for inspection upon request by the District during normal business hours. If at any time the system is not functioning as designed and permitted, then within 14 days the entity shall submit an Exceptions Report to the District, on form number 40C-42.900(6), Exceptions Report for Stormwater Management Systems Out of Compliance.

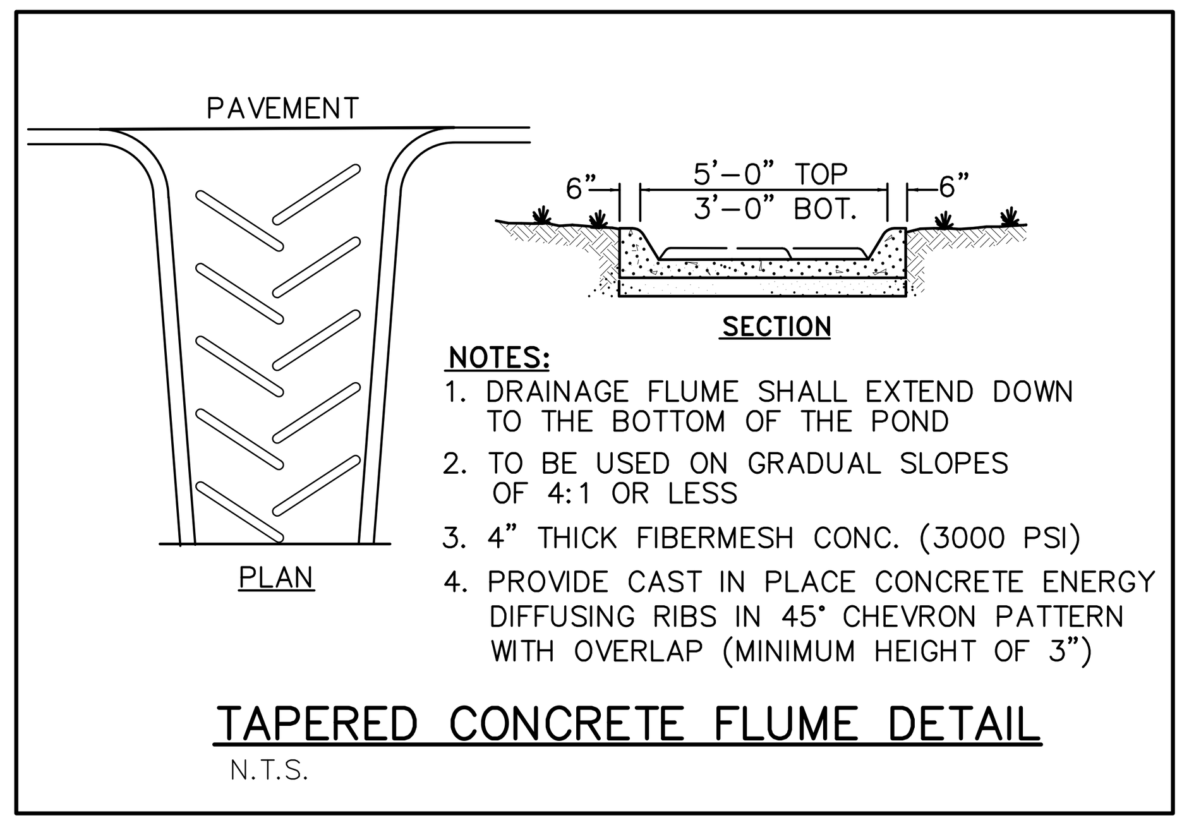
25. The proposed surface water management system shall be constructed and operated in accordance with the plans received by the District on May 20, 2011, by plan sheet Exhibit 1 received by the District on June 3, 2011, and as amended by plan sheet C-5, received by the District on June 10, 2011.

26. This permit authorizes 5.95 acres of impacts to wetlands and other surface waters.

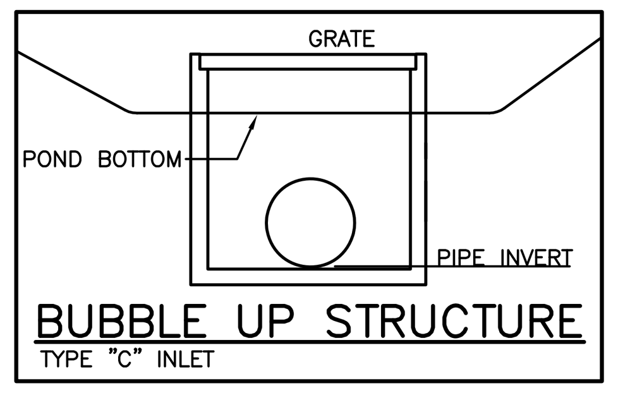
27. Prior to initiating any construction, the permittee must provide the District with documentation from the Colbert-Cameron Mitigation Bank demonstrating that the purchase of 10.5 General Wetlands mitigation credits has been completed.

    In the event that the permittee does not successfully complete the transaction to obtain 10.5 General Wetlands mitigation credits from Colbert-Cameron Mitigation Bank, the permittee must obtain a permit modification to provide alternative mitigation.

28. If prehistoric or historic artifacts, such as pottery or ceramics, stone tools or metal implements, 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 permitted project should cease all activities involving subsurface disturbance in the immediate vicinity of such discoveries. The permittee, or other designee, should contact the Florida Department of State, Division of Historical Resources, Review and Compliance Section at (850)245-6333 or (800)847-7278, as well as the appropriate permitting agency office. Project activities should not resume without verbal and/or written authorization from the Division of Historical Resources. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05, *Florida Statutes*.



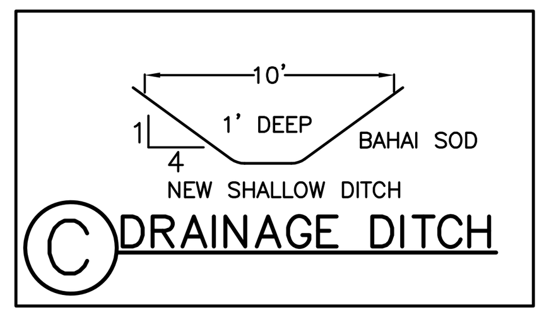
TAPERED CONCRETE FLUME DETAIL
N.T.S.



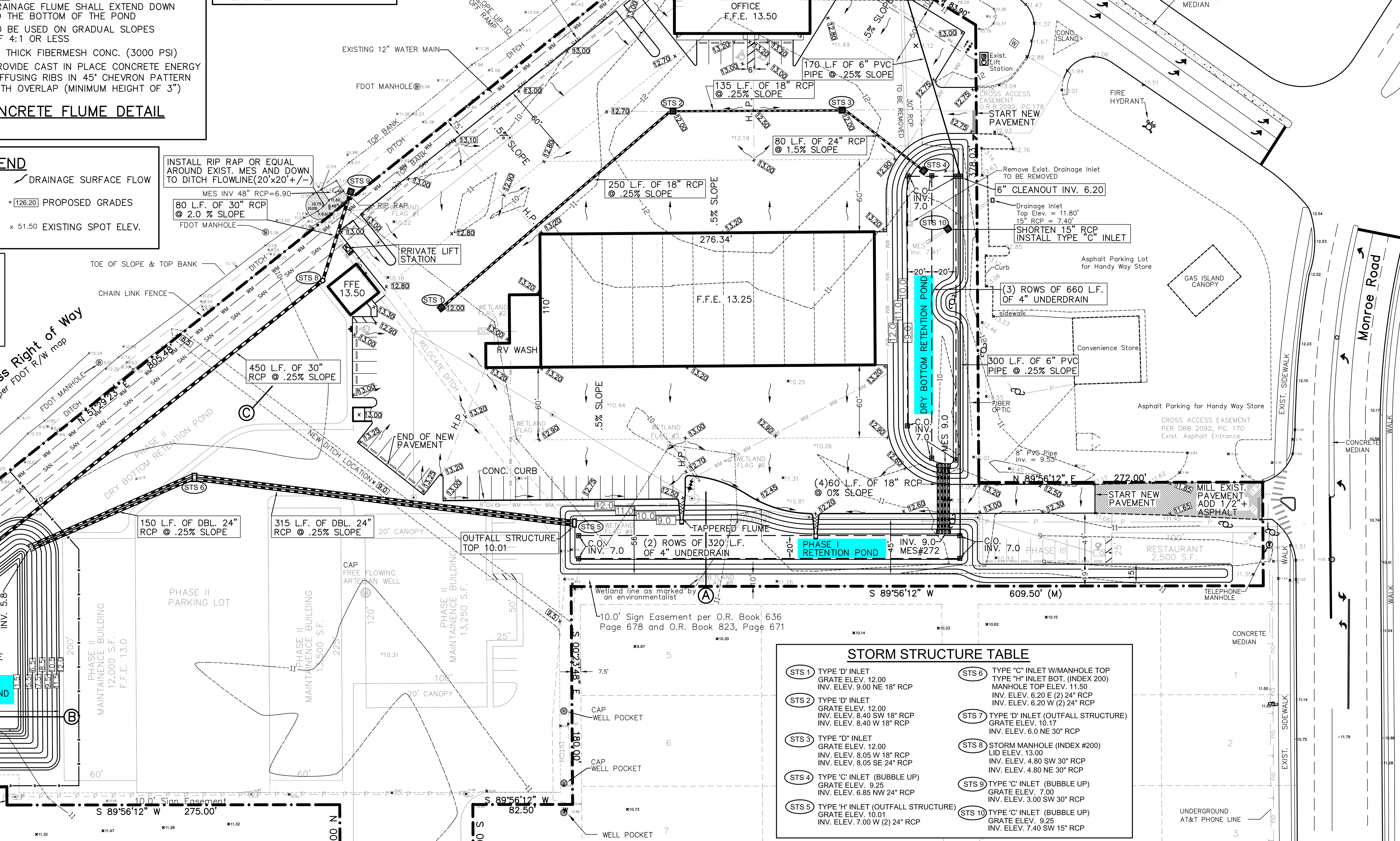
BUBBLE UP STRUCTURE
TYPE "C" INLET

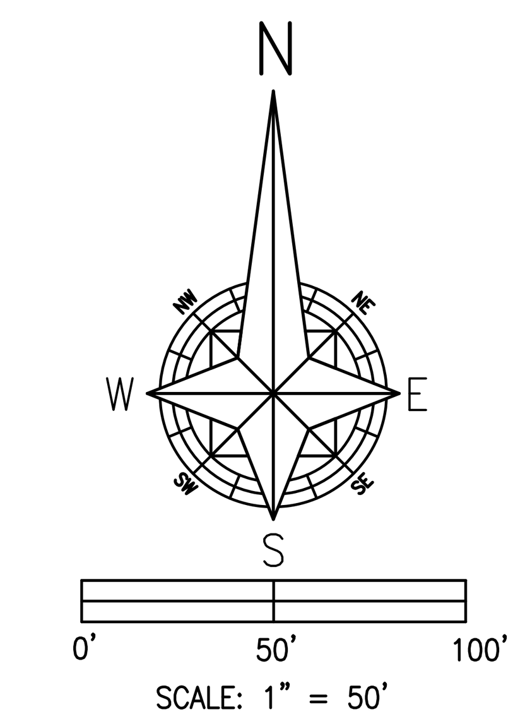
LEGEND

- (STS 11) STORM STRUCTURE I.D.
- DRAINAGE SURFACE FLOW
- MITERED END SECTION W/ ENERGY DISSIPATER
- × 126.20 PROPOSED GRADES
- STORM CATCH BASIN
- × 51.50 EXISTING SPOT ELEV.



(C) DRAINAGE DITCH





PAVING AND DRAINAGE NOTES

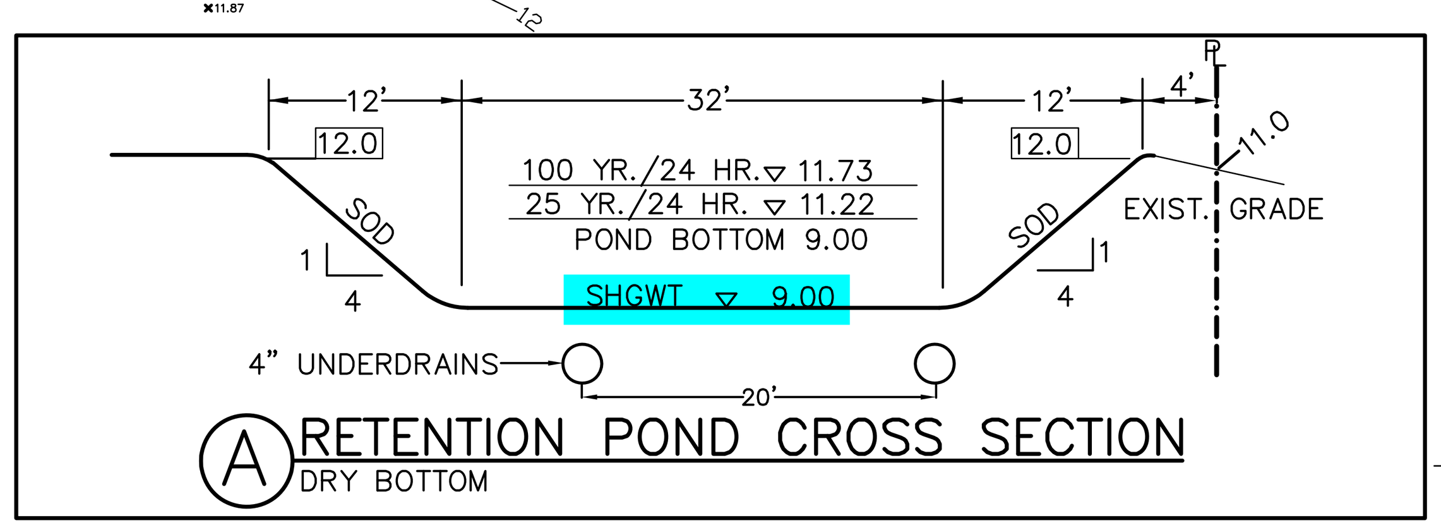
1. THE ENTITY THAT WILL OWN, OPERATE, AND MAINTAIN THE STORM WATER SYSTEM SHOWN ON THESE PLANS IS THE MYERS RV CENTER. THE CONTRACTOR SHALL BE EXPECTED TO MEET ALL THE REQUIREMENTS OF THE PERMITS OBTAINED.
2. THE CONTRACTOR SHALL PERFORM HIS OWN INVESTIGATIONS AND CALCULATIONS AS NECESSARY TO ASSURE HIMSELF OF EARTHWORK QUANTITIES. THERE IS NO IMPLICATION THAT EARTHWORK BALANCES AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY IMPORT FILL NEEDED, OR FOR REMOVAL AND DISPOSAL OF EXCESS MATERIALS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY TESTING TO ASSURE THAT THE PROPER COMPACTION HAS BEEN ACHIEVED ON THE SUBGRADE, BASE, AND ALL OTHER PERTINENT AREAS THAT HAVE BEEN COMPLETED. THE CONTRACTOR SHALL BEAR ALL COSTS ASSOCIATED WITH TESTING AND SHALL PROVIDE THE OWNER AND THE ENGINEER WITH COPIES OF THE CERTIFICATION OF COMPACTION FROM THE TESTING COMPANY.
4. PRIOR TO BID PREPARATION, THE CONTRACTOR MUST BECOME FAMILIAR WITH THE OVERALL SITE CONDITIONS AND PERFORM ADDITIONAL INVESTIGATIONS AS DETERMINED NECESSARY TO UNDERSTAND THE LIMIT AND DEPTH OF EXPECTED ORGANIC SILT PEAT AREAS, ADEQUACY OF EXISTING MATERIALS AS FILL, DEWATERING REQUIREMENTS, CLEAN FILL REQUIRED FROM OFF-SITE AND MATERIALS TO BE DISPOSED OF OFF-SITE, ALL OF WHICH WILL AFFECT HIS PRICING. ANY DELAY OR EXPENSE CAUSED TO THE CONTRACTOR DUE TO INADEQUATE INVESTIGATION OF EXISTING CONDITIONS SHALL BE INCIDENTAL TO THE CONTRACT, AND NO EXTRA COMPENSATION WILL BE ALLOWED. THE MATERIALS ANTICIPATED TO BE ENCOUNTERED DURING CONSTRUCTION MAY REQUIRE DRYING PRIOR TO USE BACKFILL, AND THE CONTRACTOR MAY HAVE TO IMPORT MATERIALS, AT NO EXTRA COST, FROM OFF-SITE TO MEET THE REQUIREMENTS FOR COMPACTION AND PROPER FILL.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE EXISTING SITE CONDITIONS OF SOIL PRIOR TO N.T.P. TO DETERMINE IF ANY OFF-SITE MATERIALS WILL NEED TO BE IMPORTED TO ACHIEVE THE GRADES SPECIFIED ON THE PLANS.
6. THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER WHEN ALL WORK IS LAID OUT (SURVEY STAKED), SO THAT A DETERMINATION MAY BE MADE OF SPECIFIC TREES TO BE REMOVED. A ARBOR PERMIT IS REQUIRED TO BE OBTAINED BY THE CONTRACTOR.
7. ALL FILL MATERIALS SHALL BE FREE OF MUCK, STUMPS, ROOTS, BRUSH, VEGETATIVE MATTER, RUBBISH, OR OTHER UNSUITABLE MATTER.
8. ALL MATERIALS EXCAVATED SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE STOCKPILED AT ON-SITE LOCATIONS AS SPECIFIED BY THE OWNER. MATERILS SHALL BE STOCKPILED SEPARATELY AS TO USEABLE (NON-ORGANIC) FILL STOCKPILES AND ORGANIC (MUCK) STOCKPILES IF MUCK IS ENCOUNTERED. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL UNSUITABLE FILL MATERIALS FROM THE SITE.
9. FILL MATERIALS PLACED UNDER ROADWAYS SHALL BE COMPACTED TO AT LEAST 98% MAX. DENSITY AS SPECIFIED IN AASHTO T-180. ALL OTHER AREAS ARE TO BE COMPACTED TO AT LEAST 95% MAX. DENSITY AS SPECIFIED IN AASHTO T-180. FILL MATERIALS SHALL BE PLACED AND COMPACTED IN A MAX. OF 12" LIFTS. REFER TO SOILS REPORT FOR ADDITIONAL INFORMATION. THE CONTRACTOR SHALL PROVIDE THE ENGINEER AND THE OWNER WITH ALL (PASSING AND FAILING) TESTING RESULTS. RESULTS SHALL BE PROVIDED ON A TIMELY AND REGULAR BASIS PRIOR TO CONTRACTOR'S PAY REQUEST SUBMITTAL.
10. GRADING SHOWN ON THESE PLANS IS PROVIDED TO THE CONTRACTOR TO EXPRESS THE GENERAL GRADING INTENT OF THE PROJECT. THE CONTRACTOR SHALL GRADE THE ENTIRE SITE TO PROVIDE POSITIVE DRAINAGE IN ALL AREAS. SMOOTH TRANSITIONS SHALL BE PROVIDED BETWEEN CONTOURS OR SPOT ELEVATIONS AS SHOWN ON THE PLANS TO ACCOMPLISH THE GRADING INTENT. ALL SLOPES SHALL BE STABILIZED IMMEDIATELY AFTER FINAL GRADING HAS BEEN COMPLETED. CONTRACTOR SHALL NOTIFY OWNER AND ENGINEER A MIN. OF 48 HOURS PRIOR TO DEMOBILIZATION OF GRADING EQUIPMENT TO DETERMINE THAT THE GRADING INTENT HAS BEEN ACHIEVED.
11. REINFORCED CONCRETE PIPE (RCP) SHALL BE CLASS III WITH RUBBER GASKET JOINTS. RCP SHALL CONFORM TO FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST ED.) SECTION 941. RUBBER GASKETS SHALL CONFORM TO SECTION 942.
12. ALL OTHER RELATED ITEMS REQUIRED FOR THE CONSTRUCTION OF THE STORM SEWER (OUTFALL PROTECTION, POLLUTION CONTROL, ETC.) ARE TO BE IN ACCORDANCE WITH DETAILS SHOWN ON THE CONSTRUCTION PLANS, FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS, AND FDOT STANDARD SPECS. FOR ROADWAY AND BRIDGE CONSTRUCTION (LATEST EDITION).
13. ALL PIPE CALL OUTS ARE MEASURED CENTERLINE TO CENTERLINE FOR MANHOLES AND INLETS.
14. ALL ON-SITE AREAS DISTURBED BY THE CONSTRUCTION SHALL BE STABILIZED WITH SEED AND MULCH MIXTURE UNLESS OTHERWISE NOTED.
15. ALL OFF-SITE AREAS DISTURBED BY CONSTRUCTION SHALL BE SODDED WITH BAHIA.
16. NO HARD WOOD TREES MAY BE PLANTED OVER OR WITHIN 5' OF UTILITY LINES OR STORM PIPES. ONLY SOD OR SOFT WOOD SHRUBS MAY BE PLANTED OVER UTILITY LINES.
17. ALL PIPE JOINTS SHALL BE WRAPPED WITH FILTER FABRIC. THE FILTER FABRIC SHALL BE IN ACCORDANCE WITH FDOT INDEX 199, TYPE D-3, A.O.S. 70-100. INSTALL PER FDOT INDEX 280. PROVIDE A MIN. OF 12" OF OVERLAP.

STORM STRUCTURE TABLE

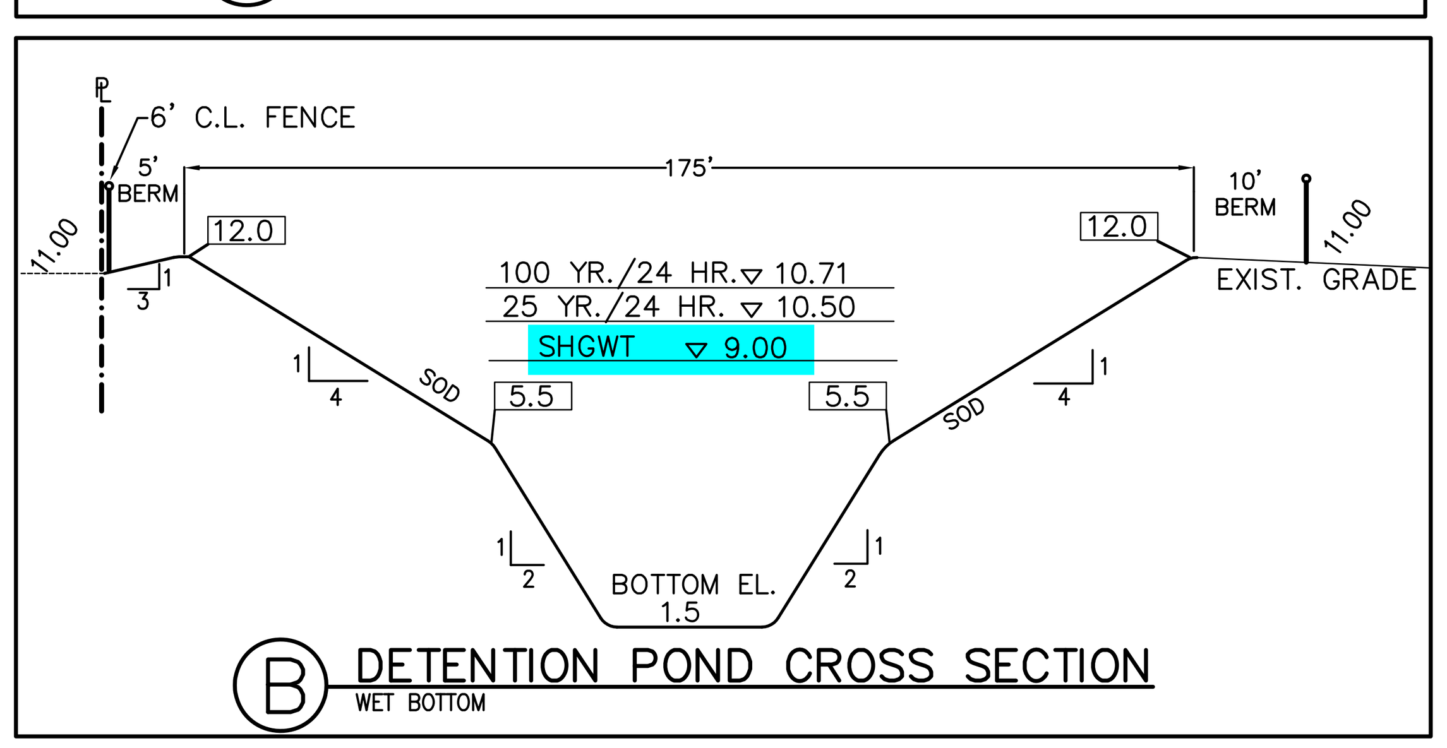
- STS 1: TYPE 'D' INLET; GRATE ELEV. 12.00; INV. ELEV. 9.00 NE 18" RCP
- STS 2: TYPE 'D' INLET; GRATE ELEV. 12.00; INV. ELEV. 8.40 SW 18" RCP; INV. ELEV. 8.40 W 18" RCP
- STS 3: TYPE "D" INLET; GRATE ELEV. 12.00; INV. ELEV. 8.05 W 18" RCP; INV. ELEV. 8.05 SE 24" RCP
- STS 4: TYPE 'C' INLET (BUBBLE UP); GRATE ELEV. 9.25; INV. ELEV. 6.85 NW 24" RCP
- STS 5: TYPE 'H' INLET (OUTFALL STRUCTURE); GRATE ELEV. 10.01; INV. ELEV. 7.00 W (2) 24" RCP
- STS 6: TYPE "C" INLET W/MANHOLE TOP; TYPE "H" INLET BOT. (INDEX 200); MANHOLE TOP ELEV. 11.50; INV. ELEV. 6.20 E (2) 24" RCP; INV. ELEV. 6.20 W (2) 24" RCP
- STS 7: TYPE 'D' INLET (OUTFALL STRUCTURE); GRATE ELEV. 10.17; INV. ELEV. 6.0 NE 30" RCP
- STS 8: STORM MANHOLE (INDEX #200); LID ELEV. 13.00; INV. ELEV. 4.80 SW 30" RCP; INV. ELEV. 4.80 NE 30" RCP
- STS 9: TYPE 'C' INLET (BUBBLE UP); GRATE ELEV. 7.00; INV. ELEV. 3.00 SW 30" RCP
- STS 10: TYPE 'C' INLET (BUBBLE UP); GRATE ELEV. 9.25; INV. ELEV. 7.40 SW 15" RCP

SITE STATISTICAL DATA (PHASE I)

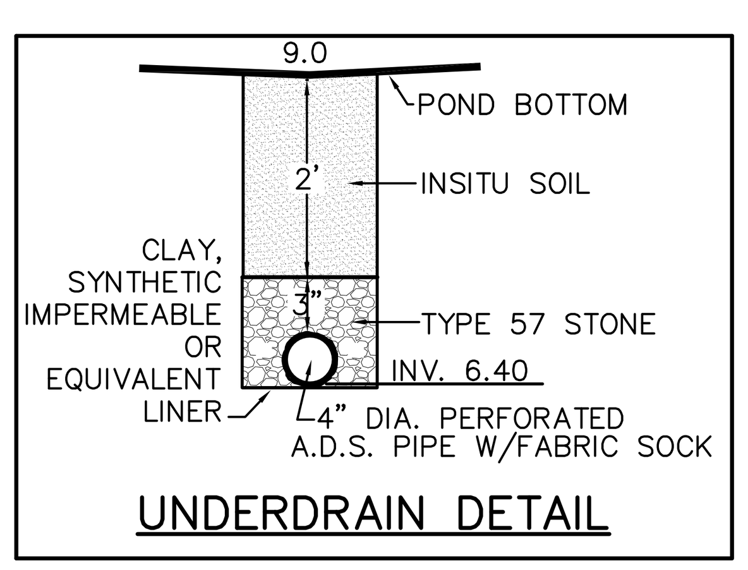
DESCRIPTION	SQ. FT.	ACRES	% OF SITE
SITE AREA	266,536	6.11	100.00%
(4) PROP. BUILDINGS	38,452	0.88	8.53%
PROP. PAVEMENT AREA	138,350	3.17	30.68%
IMPERVIOUS AREA	176,802	4.05	66.33%
OPEN SPACE	89,734	2.06	33.67%



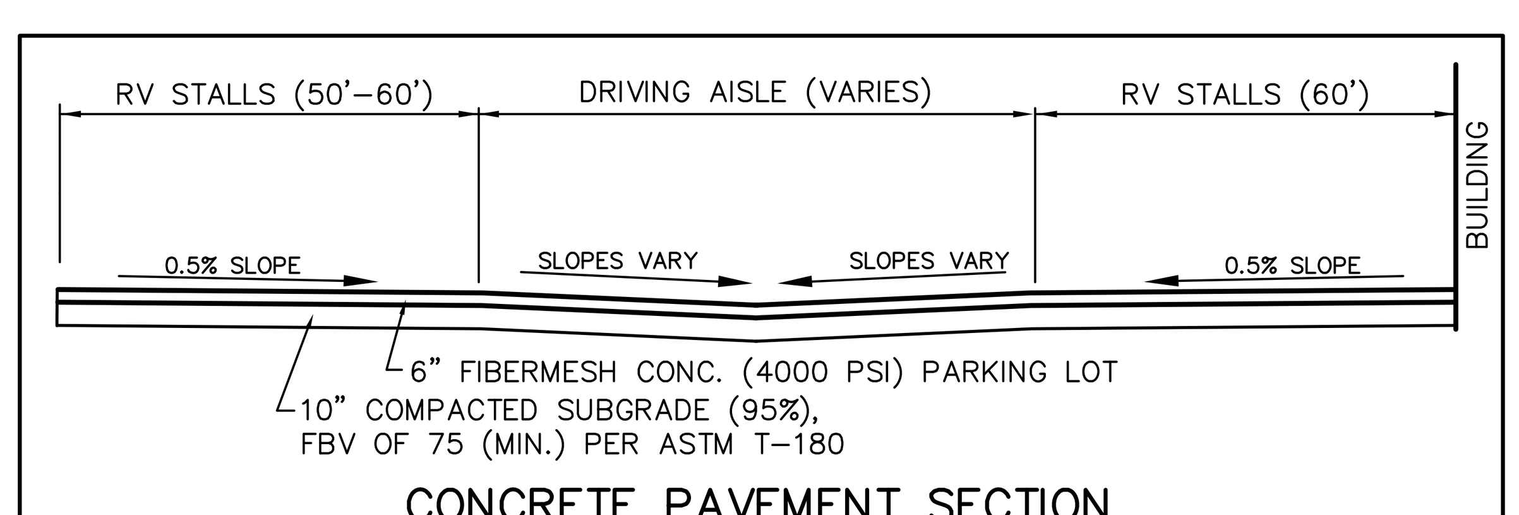
(A) RETENTION POND CROSS SECTION
DRY BOTTOM



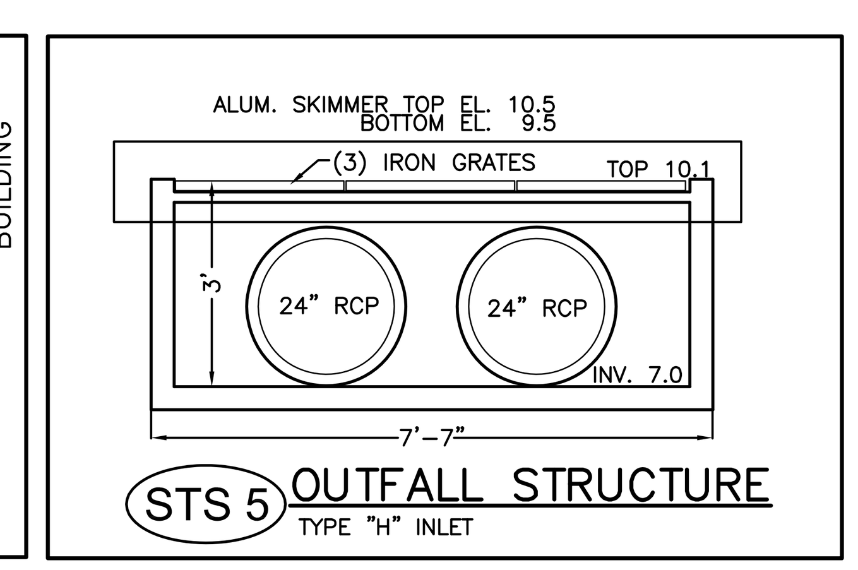
(B) DETENTION POND CROSS SECTION
WET BOTTOM



UNDERDRAIN DETAIL



CONCRETE PAVEMENT SECTION



STS 5 OUTFALL STRUCTURE
TYPE "H" INLET

Seminole County
Approved for construction

This approval is subject to specific conformance to the Seminole County Land Development Code and any special requirements of the Board of County Commissioners. It shall be the responsibility of the developer to correct any defects in the plans or the facility as constructed which results in a failure to meet applicable code requirements. Administrative acceptance of the developer's plans does not constitute a waiver of any code requirements nor does it relieve the developer of responsibility to meet those requirements. This specific approval is valid for a period of one year from the date below.

Approved.
Seminole County Development Review Department
Date

REV.	DATE	BY	COMMENTS
1			
2			
3			
4			
5			
6			

DRAINAGE PLAN

DONNIE MYERS RECREATIONAL VEHICLE SALES AND CUSTOMIZATION
SW CORNER OF MONROE ROAD & ORANGE BLVD.
SANFORD, FLORIDA

TANNATH DESIGN, INC.
2494 ROSE SPRING DRIVE
ORLANDO, FLORIDA 32825
(407) 982-9878
(407) 208-1425 fax
www.tannathdesign.com
FL. CERT. OF AUTH. #27199

BRYAN R. POTTS, P.E.
FL. REG. #59461

DATE

PROJECT #:
DATE: 3/20/10
SCALE: 1" = 50'
DRAWN: JHR
APPROVED: BRP
SHEET NAME:
C-5
SHEET: 5 OF 14

CURVE NUMBER CALCULATIONS

used to calculate pre-development curve number for freight parking site

Donnie Myers RV

Pre-Development

RaceTrac	County:	Orange						
Hydrologic Group	**Soil Symbol**	**Soil Type**	**Cover Description**	**CN**	**Area (sf)**	**Area (acres)**	**Area (%)**	**Product of CN & Area**
C/D	25	Pineda	Wooded	80	266,125	6.11	81.78	65.43
			Existing Handy Way	95.76	59,273	1.36	18.22	17.44
						7.47		
				Basin CN =	**82.87**			

Post-Development

RaceTrac	County:	Orange						
Hydrologic Group	**Soil Symbol**	**Soil Type**	**Cover Description**	**CN**	**Area (sf)**	**Area (acres)**	**Area (%)**	**Product of CN & Area**
			Impervious	98	176,295	4.05	54.18	53.09
C/D	25	Pineda	Open Space (Good)	80	89,830	2.06	27.61	22.08
			Existing Handy Way	95.76	59,273	1.36	18.22	17.44
						7.47		
				Basin CN =	**92.62**			

Seminole County

SJRWMD

Permit No. 48756-6

Donnie Myers RV Phase 2

St. Johns River
Water Management District
Hans G. Tanzler III, Executive Director

4049 Reid Street • P.O. Box 1429 • Palatka, FL 32178-1429 • (386) 329-4500
On the Internet at floridaswater.com.

July 24, 2012

Southern Pride LLC
4240 Church St # 1156
Sanford, FL 32771

SUBJECT: Permit Number 40-117-48756-6
Donnie Myers RV, Phase 2

Dear Sir/Madam:

Enclosed is your permit issued by the St. Johns River Water Management District on July 24, 2012. This permit is a legal document and should be kept with your other important documents. Permit issuance does not relieve you from the responsibility of obtaining any necessary permits from any federal, state, or local agencies for your project.

Technical Staff Report:
If you wish to review a copy of the Technical Staff Report (TSR) that provides the District's staff analysis of your permit application, you may view the TSR by going to the Permitting section of the District's website at floridaswater.com/permitting. Using the "search applications and permits" feature, you can use your permit number or project name to find information about the permit. When you see the results of your search, click on the permit number.

Noticing Your Permit:
For noticing instructions, please refer to the noticing materials in this package regarding closing the point of entry for someone to challenge the issuance of your permit. Please note that if a timely petition for administrative hearing is filed, your permit will become nonfinal and any activities that you choose to undertake pursuant to your permit will be at your own risk.

Compliance with Permit Conditions:
To submit your required permit compliance information, go to the District's website at floridaswater.com/permitting. Under the "Apply for a permit or submit compliance data" section, click to sign-in to your existing account or to create a new account. Select the "Compliance Submittal" tab, enter your permit number, and select "No Specific Date" for the Compliance Due Date Range. You will then be able to view all the compliance submittal requirements for your project. Select the compliance item that you are ready to submit and then attach the appropriate information or form.

The forms to comply with your permit conditions are available at floridaswater.com/permitting under the section "Handbooks, forms, fees, final orders". Click on forms to view all permit compliance forms, then scroll to the ERP application forms section and select the applicable compliance forms. Alternatively, if you have difficulty finding forms or need copies of the appropriate forms, please contact the Bureau of Regulatory Support at (386) 329-4570.

Transferring Your Permit:
As required by a condition of your permit, you must notify the District in writing within 30 days of any sale, conveyance or other transfer of a permitted system or facility, or within 30 days of any transfer of ownership or control of the real property where the permitted system or facility is located. You will need to provide the District with the information specified in District rule 40C-1.612, Florida Administrative Code (name and address of the transferee and a copy of the instrument effectuating the transfer). Please note that a permittee remains liable for any corrective actions that may be required as a result of any permit violations that occur before the sale, conveyance, or other transfer of the system or facility, so it is recommended that you request a permit transfer in advance.

Thank you and please let us know if you have additional questions. For general questions contact e-permit@sjrwmd.com or (386) 329-4570.

Sincerely,

Victor Castro, Division Director
Bureau of Regulatory Support
St. Johns River Water Management District
4049 Reid Street
Palatka, FL 32177

Enclosures: Permit with As-built Certification Form
Notice of Rights
List of Newspapers for Publication

cc: District Permit File

Consultant: Bryan Potts
Tannath Design Inc
2494 Rose Spring Dr
Orlando, FL 32825

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
Post Office Box 1429
Palatka, Florida 32178-1429

PERMIT NO. 40-117-48756-6 **DATE ISSUED:** July 24, 2012
PROJECT NAME: Donnie Myers RV, Phase 2

A PERMIT AUTHORIZING:

Construction of a Surface Water Management System with stormwater treatment by Dry Detention with Underdrain, and Wet Detention for Donnie Myers RV, Phase 2, a 5.07 - acre project to be constructed and operated as per plans received by the District on June 25, 2012, and amended by Sheet C-5 received by the District on July 10, 2012, and Sheets C-7 and C-9 received by the District on July 19, 2012.

LOCATION:

Section(s): 16, 39 Township(s): 19S Range(s): 30E

Seminole County

ISSUED TO:

Southern Pride LLC
4240 Church St # 1156
Sanford, FL 32771

Permittee agrees to hold and save the St. Johns River Water Management District and its successors harmless from any and all damages, claims, or liabilities which may arise from permit issuance. Said application, including all plans and specifications attached thereto, is by reference made a part hereof.

This permit does not convey to permittee any property rights nor any rights or privileges other than those specified herein, nor relieve the permittee from complying with any law, regulation or requirement affecting the rights of other bodies or agencies. All structures and works installed by permittee hereunder shall remain the property of the permittee.

This permit may be revoked, modified or transferred at any time pursuant to the appropriate provisions of Chapter 373, Florida Statutes:

PERMIT IS CONDITIONED UPON:

See conditions on attached "Exhibit A", dated July 24, 2012

AUTHORIZED BY: St. Johns River Water Management District
Division of Regulatory Services

By: David Dewey

David Dewey
Service Center Director

"EXHIBIT A"
CONDITIONS FOR ISSUANCE OF PERMIT NUMBER 40-117-48756-6
Southern Pride LLC
DATED JULY 24, 2012

1. All activities shall be implemented as set forth in the plans, specifications and performance criteria as approved by this permit. Any deviation from the permitted activity and the conditions for undertaking that activity shall constitute a violation of this permit.

2. This permit or a copy thereof, complete with all conditions, attachments, exhibits, and modifications, shall be kept at the work site of the permitted activity. The complete permit shall be available for review at the work site upon request by District staff. The permittee shall require the contractor to review the complete permit prior to commencement of the activity authorized by this permit.

3. Activities approved by this permit shall be conducted in a manner which do not cause violations of state water quality standards.

4. Prior to and during construction, the permittee shall implement and maintain all erosion and sediment control measures (best management practices) required to retain sediment on-site and to prevent violations of state water quality standards. All practices must be in accordance with the guidelines and specifications in chapter 6 of the Florida Land Development Manual: A Guide to Sound Land and Water Management (Florida Department of Environmental Regulation 1988), which are incorporated by reference, unless a project specific erosion and sediment control plan is approved as part of the permit, in which case the practices must be in accordance with the plan. If site specific conditions require additional measures during any phase of construction or operation to prevent erosion or control sediment, beyond those specified in the erosion and sediment control plan, the permittee shall implement additional best management practices as necessary, in accordance with the specifications in chapter 6 of the Florida Land Development Manual: A Guide to Sound Land and Water Management (Florida Department of Environmental Regulation 1988). The permittee shall correct any erosion or shoaling that causes adverse impacts to the water resources.

5. 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.

6. At least 48 hours prior to commencement of activity authorized by this permit, the permittee shall submit to the District a Construction Commencement Notice Form No. 40C-4.900(3) indicating the actual start date and the expected completion date.

7. When the duration of construction will exceed one year, the permittee shall submit construction status reports to the District on an annual basis utilizing an Annual Status Report Form No. 40C-4.900(4). These forms shall be submitted during June of each year.

8. For those systems which will be operated or maintained by an entity which will require an easement or deed restriction in order to provide that entity with the authority necessary to operate or maintain the system, such easement or deed restriction, together with any other final operation or maintenance documents as are required by subsections 7.1.1 through 7.1.4 of the Applicant's Handbook: Management and Storage of Surface Waters, must be submitted to the District for approval. Documents meeting the requirements set forth in these subsections of the Applicant's Handbook will be approved. Deed restrictions, easements and other operation and maintenance

documents which require recordation either with the Secretary of State or the Clerk of the Circuit Court must be so recorded prior to lot or unit sales within the project served by the system, or upon completion of construction of the system, whichever occurs first. For those systems which are proposed to be maintained by county or municipal entities, final operation and maintenance documents must be received by the District when maintenance and operation of the system is accepted by the local governmental entity. Failure to submit the appropriate final documents referenced in this paragraph will result in the permittee remaining liable for carrying out maintenance and operation of the permitted system.

9. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the initiation of the permitted use of site infrastructure located within the area served by the 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 local government or other responsible entity.

10. Within 30 days after completion of construction of the permitted system, or independent portion of the system, 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 As Built Certification Form 40C-1.181(13) or 40C-1.181(14) supplied with this permit. When the completed system differs substantially from the permitted plans, any substantial deviations shall be noted and explained and two copies of as-built drawings submitted to the District. Submittal of the completed form shall serve to notify the District that the system is ready for inspection. The statement of completion and certification shall be based on on-site observation of construction (conducted by the registered professional engineer, or other appropriate individual as authorized by law, or under his or her direct supervision) or review of as-built drawings for the purpose of determining if the work was completed in compliance with approved plans and specifications. As-built drawings shall be the permitted drawings revised to reflect any changes made during construction. Both the original and any revised specifications must be clearly shown. The plans must be clearly labeled as "as-built" or "record" drawing. All surveyed dimensions and elevations shall be certified by a registered surveyor. The following information, at a minimum, shall be verified on the as-built drawings: 1. Dimensions and elevations of all discharge structures including all weirs, slots, gates, pumps, pipes, and oil and grease skimmers; 2. Locations, dimensions, and elevations of all filter, exfiltration, or underdrain systems including cleanouts, pipes, connections to control structures, and points of discharge to the receiving waters; 3. Dimensions, elevations, contours, or cross-sections of all treatment storage areas sufficient to determine state-storage relationships of the storage area and the permanent pool depth and volume below the control elevation for normally wet systems, when appropriate; 4. Dimensions, elevations, contours, final grades, or cross-sections of the system to determine flow directions and conveyance of runoff to the treatment system; 5. Dimensions, elevations, contours, final grades, or cross-sections of all conveyance systems utilized to convey off-site runoff around the system; 6. Existing water elevation(s) and the date determined; and Elevation and location of benchmark(s) for the survey.

11. The operation phase of this permit shall not become effective until the permittee has submitted the appropriate As-Built Certification Form, the District determines the system to be in compliance with the permitted plans, and the entity approved by the District in accordance with subsections 7.1.1 through 7.1.4 of the Applicant's Handbook: Management and Storage of Surface Waters, accepts responsibility for operation and maintenance of the system. The permit may not be transferred to such an approved operation and maintenance entity 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 approved operation and maintenance entity, if different from the permittee. Until the permit is transferred pursuant to section 7.1 of the Applicant's Handbook: Management and Storage of Surface Waters, the permittee shall be liable for compliance with the terms of the permit.

12. Should any other regulatory agency require changes to the permitted system, the permittee shall provide written notification to the District of the changes prior implementation so that a determination can be made whether a permit modification is required.

13. This permit does not eliminate the necessity to obtain any required federal, state, local and special district authorizations prior to the start of any activity approved by this permit. 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 40C-4 or chapter 40C-40, F.A.C.

14. 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.

15. 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 specifically approved unless a specific condition of this permit or a formal determination under rule 40C-1.1006, F.A.C., provides otherwise.

16. 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 40C-1.612, 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.

17. 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 the plans and specifications approved by the permit.

18. If historical or archaeological artifacts are discovered at any time on the project site, the permittee shall immediately notify the District.

19. The permittee shall immediately notify the District in writing of any previously submitted information that is later discovered to be inaccurate.

20. This permit for construction will expire five years from the date of issuance.

21. At a minimum, all retention and detention storage areas must be excavated to rough grade prior to building construction or placement of impervious surface within the area to be served by those facilities. To prevent reduction in storage volume and percolation rates, all accumulated sediment must be removed from the storage area prior to final grading and stabilization.

22. All wetland areas or water bodies that are outside the specific limits of construction authorized by this permit must be protected from erosion, siltation, scouring or excess turbidity, and dewatering.

23. Prior to construction, the permittee must clearly designate the limits of construction on-site. The permittee must advise the contractor that any work outside the limits of construction, including clearing, may be a violation of this permit.

24. The operation and maintenance entity shall inspect the stormwater or surface water management system once within two years after the completion of construction and every two years thereafter to determine if the system is functioning as designed and permitted. The operation and maintenance entity must maintain a record of each required inspection, including the date of the inspection, the name, address, and telephone number of the inspector, and whether the system was functioning as designed and permitted, and make such record available for inspection upon request by the District during normal business hours. If at any time the system is not functioning as designed and permitted, then within 14 days the entity shall submit an Exceptions Report to the District, on form number 40C-42.900(6), Exceptions Report for Stormwater Management Systems Out of Compliance.

25. The proposed surface water management system shall be constructed and operated in accordance with the plans received by the District on June 25, 2012, and amended by Sheet C-5 received by the District on July 10, 2012, and Sheets C-7 and C-9 recieved by the District on July 19, 2012.

26. This permit does not authorize any impacts to wetlands or other surface waters.

Notice Of Rights

1. A person whose substantial interests are or may be affected has the right to request an administrative hearing by filing a written petition with the St. Johns River Water Management District (District). Pursuant to Chapter 28-106 and Rule 40C-1.1007, Florida Administrative Code, the petition must be filed (received) either by delivery at the office of the District Clerk at District Headquarters, P. O. Box 1429, Palatka Florida 32178-1429 (4049 Reid St., Palatka, FL 32177) or by e-mail with the District Clerk at Clerk@sjrwmd.com, within twenty-six (26) days of the District depositing the notice of District decision in the mail (for those persons to whom the District mails actual notice), within twenty-one (21) days of the District emailing the notice of District decision (for those persons to whom the District emails actual notice), or within twenty-one (21) days of newspaper publication of the notice of District decision (for those persons to whom the District does not mail or email actual notice). A petition must comply with Sections 120.54(5)(b)4. and 120.569(2)(c), Florida Statutes, and Chapter 28-106, Florida Administrative Code. The District will not accept a petition sent by facsimile (fax), as explained in paragraph no. 4 below.

2. Please be advised that if you wish to dispute this District decision, mediation may be available and that choosing mediation does not affect your right to an administrative hearing. If you wish to request mediation, you must do so in a timely-filed petition. If all parties, including the District, agree to the details of the mediation procedure, in writing, within 10 days after the time period stated in the announcement for election of an administrative remedy under Sections 120.569 and 120.57, Florida Statutes, the time limitations imposed by Sections 120.569 and 120.57, Florida Statutes, shall be tolled to allow mediation of the disputed District decision. The mediation must be concluded within 60 days of the date of the parties' written agreement, or such other timeframe agreed to by the parties in writing. Any mediation agreement must include provisions for selecting a mediator, a statement that each party shall be responsible for paying its pro-rata share of the costs and fees associated with mediation, and the mediating parties' understanding regarding the confidentiality of discussions and documents introduced during mediation. If mediation results in settlement of the administrative dispute, the District will enter a final order consistent with the settlement agreement. If mediation terminates without settlement of the dispute, the District will notify all the parties in writing that the administrative hearing process under Sections 120.569 and 120.57, Florida Statutes, is resumed. Even if a party chooses not to engage in formal mediation, or if formal mediation does not result in a settlement agreement, the District will remain willing to engage in informal settlement discussions.

3. A person whose substantial interests are or may be affected has the right to an informal administrative hearing pursuant to Sections 120.569 and 120.57(2), Florida Statutes, where no material facts are in dispute. A petition for an informal hearing must also comply with the requirements set forth in Rule 28-106.301, Florida Administrative Code.

4. A petition for an administrative hearing is deemed filed upon receipt of the complete petition by the District Clerk at the District Headquarters in Palatka, Florida during the District's regular business hours. The District's regular business hours are 8:00 a.m. – 5:00 p.m., excluding weekends and District holidays. Petitions received by the District Clerk after the District's regular business hours shall be deemed filed as of 8:00 a.m. on the District's next regular business day. The District's acceptance of petitions filed by e-mail is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation (issued pursuant to Rule 28-101.001, Florida Administrative Code), which is available for viewing at floridaswater.com. These conditions include, but are not limited to, the petition being in the form of a PDF or TIFF file and being capable

of being stored and printed by the District. Further, pursuant to the District's Statement of Agency Organization and Operation, attempting to file a petition by facsimile is prohibited and shall not constitute filing.

5. Failure to file a petition for an administrative hearing within the requisite timeframe shall constitute a waiver of the right to an administrative hearing. (Rule 28-106.111, Florida Administrative Code).

6. The right to an administrative hearing and the relevant procedures to be followed are governed by Chapter 120, Florida Statutes, Chapter 28-106, Florida Administrative Code, and Rule 40C-1.1007, Florida Administrative Code. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means the District's final action may be different from the position taken by it in this notice. A person whose substantial interests are or may be affected by the District's final action has the right to become a party to the proceeding, in accordance with the requirements set forth above.

7. Pursuant to Section 120.68, Florida Statutes, a party to the proceeding before the District who is adversely affected by final District action may seek review of the action in the District Court of Appeal by filing a notice of appeal pursuant to Rules 9.110 and 9.190, Florida Rules of Appellate Procedure, within 30 days of the rendering of the final District action.

8. A District action is considered rendered, as referred to in paragraph no. 7 above, after it is signed on behalf of the District and filed by the District Clerk.

9. Failure to observe the relevant timeframes for filing a petition for judicial review as described in paragraph no. 7 above will result in waiver of that right to review.

Notice Of Rights

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Notice of Rights has been sent to the permittee:

Southern Pride LLC
4240 Church St # 1156
Sanford, FL 32771

This 24th day of July, 2012.

_____

Victor Castro, Director
Bureau of Regulatory Support
St. Johns River Water Management District
4049 Reid Street
Palatka, FL 32177
(386) 329-4570
Permit Number: 40-117-48756-6

NOTICING INFORMATION

Dear Permittee:

Please be advised that the St. Johns River Water Management District has not published a notice in the newspaper advising the public that it has issued a permit for this project.

Newspaper publication, using the District's form, notifies members of the public of their right to challenge the issuance of the permit. If proper notice is given by newspaper publication, then there is a 21-day time limit to file a petition challenging the issuance of the permit.

To close the point of entry for filing a petition, you may publish (at your own expense) a one-time notice of the District's decision in a newspaper of general circulation within the affected area as defined in Section 50.011 of the Florida Statutes. If you do not publish a newspaper notice, the time to challenge the issuance of your permit will not expire.

A copy of the notice and a partial list of newspapers of general circulation are attached for your convenience. However, you are not limited to those listed newspapers. If you choose to close the point of entry and the notice is published, the newspaper will return to you an affidavit as proof of publication. Please submit this original affidavit of publication to:

Victor Castro, Director
Bureau of Regulatory Support
4049 Reid Street
Palatka, FL 32177

If you have any questions, please contact the Bureau of Regulatory Support at (386) 329-4570.

Sincerely,

Victor Castro, Director
Bureau of Regulatory Support

NOTICE OF AGENCY ACTION TAKEN BY THE
ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

Notice is given that the following permit was issued on _____:

(Name and address of applicant)_____
permit#_____. The project is located in _____County, Section _____, Township _____ South, Range _____ East. The permit authorizes a surface water management system on _____ acres for _____ known as _____. The receiving water body is _____.

A person whose substantial interests are or may be affected has the right to request an administrative hearing by filing a written petition with the St. Johns River Water Management District (District). Pursuant to Chapter 28-106 and Rule 40C-1.1007, Florida Administrative Code (F.A.C.), the petition must be filed (received) either by delivery at the office of the District Clerk at District Headquarters, P.O. Box 1429, Palatka FL 32178-1429 (4049 Reid St, Palatka, FL 32177) or by e-mail with the District Clerk at Clerk@sjrwmd.com, within twenty six (26) days of the District depositing the notice of intended District decision in the mail (for those persons to whom the District mails actual notice), within twenty-one (21) days of the District emailing notice of intended District decision (for those persons to whom the District emails actual notice), or within twenty-one (21) days of newspaper publication of the notice of intended District decision (for those persons to whom the District does not mail or email actual notice). A petition must comply with Sections 120.54(5)(b)4. and 120.569(2)(c), Florida Statutes (F.S.), and Chapter 28-106, F.A.C. The District will not accept a petition sent by facsimile (fax). Mediation pursuant to Section 120.573, F.S., is not available.

A petition for an administrative hearing is deemed filed upon receipt of the complete petition by the District Clerk at the District Headquarters in Palatka, Florida during the District's regular business hours. The District's regular business hours are 8 a.m. – 5 p.m., excluding weekends and District holidays. Petitions received by the District Clerk after the District's regular business hours shall be deemed filed as of 8 a.m. on the next regular District business day. The District's acceptance of petitions filed by e-mail is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation (issued pursuant to Rule 28-101.001, Florida Administrative Code), which is available for viewing at floridaswater.com. These conditions include, but are not limited to, the petition being in the form of a PDF or TIFF file and being capable of being stored and printed by the District. Further, pursuant to the District's Statement of Agency Organization and Operation, attempting to file a petition by facsimile (fax) is prohibited and shall not constitute filing.

The right to an administrative hearing and the relevant procedures to be followed are governed by Chapter 120, Florida Statutes, Chapter 28-106, Florida Administrative Code, and Rule 40C-1.1007, Florida Administrative Code. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means the District's final action may be different from the position taken by it in this notice. **Failure to file a petition for an administrative hearing within the requisite time frame shall constitute a waiver of the right to an administrative hearing. (Rule 28-106.111, F.A.C.).**

If you wish to do so, please visit http://floridaswater.com/noticeofrights/ to read the complete Notice of Rights to determine any legal rights you may have concerning the District's intended decision(s) on the permit application(s) described above. You can also request the Notice of Rights by contacting the Director, Bureau of Regulatory Support (RS), 4049 Reid St., Palatka, FL 32177-2529, tele. no. (386)329-4570.

NEWSPAPER ADVERTISING

ALACHUA
The Alachua County Record, Legal Advertising
P. O. Box 806
Gainesville, FL 32602
352-377-2444/ fax 352-338-1986

BAKER
Baker County Press, Legal Advertising
P. O. Box 598
Maclenny, FL 32063
904-259-2400/ fax 904-259-6502

BRAFORD
Bradford County Telegraph, Legal Advertising
P. O. Drawer A
Starke, FL 32901
904-964-6305/ fax 904-964-8628

BREVARD
Florida Today, Legal Advertising
P. O. Box 419000
Melbourne, FL 32941-9000
321-242-3832/ fax 321-242-6618

CLAY
Clay Today, Legal Advertising
1560 Kinsley Ave., Suite 1
Orange Park, FL 32073
904-264-3200/ fax 904-264-3285

DUVAL
Daily Record, Legal Advertising
P. O. Box 1769
Jacksonville, FL 32201
904-356-2466 / fax 904-353-2628

FLAGLER
Flagler Tribune, c/o News Journal
P. O. Box 2831
Daytona Beach, FL 32120-2831
386- 681-2322

INDIAN RIVER
Vero Beach Press Journal, Legal Advertising
P. O. Box 1268
Vero Beach, FL 32961-1268
772-221-4282/ fax 772-978-2340

LAKE
Daily Commercial, Legal Advertising
P. O. Drawer 490007
Leesburg, FL 34749
352-365-8235/fax 352-365-1951

MARION
Ocala Star Banner, Legal Advertising
2121 SW 19th Avenue Road
Ocala, FL 34474
352-867-4010/fax 352-867-4126

NASSAU
News-Leader, Legal Advertising
P. O. Box 766
Fernandina Beach, FL 32035
904-261-3696/fax 904-261-3698

OKEECHOBEE
Okeechobee News, Legal Advertising
P. O. Box 639
Okeechobee, FL 34973-0639
863-763-3134/fax 863-763-5901

ORANGE
Sentinel Communications, Legal Advertising
633 N. Orange Avenue
Orlando, FL 32801
407-420-5160/ fax 407-420-5011

OSCEOLA
Little Sentinel, Legal Advertising
633 N. Orange Avenue
Orlando, FL 32801
407-420-5160/ fax 407-420-5011

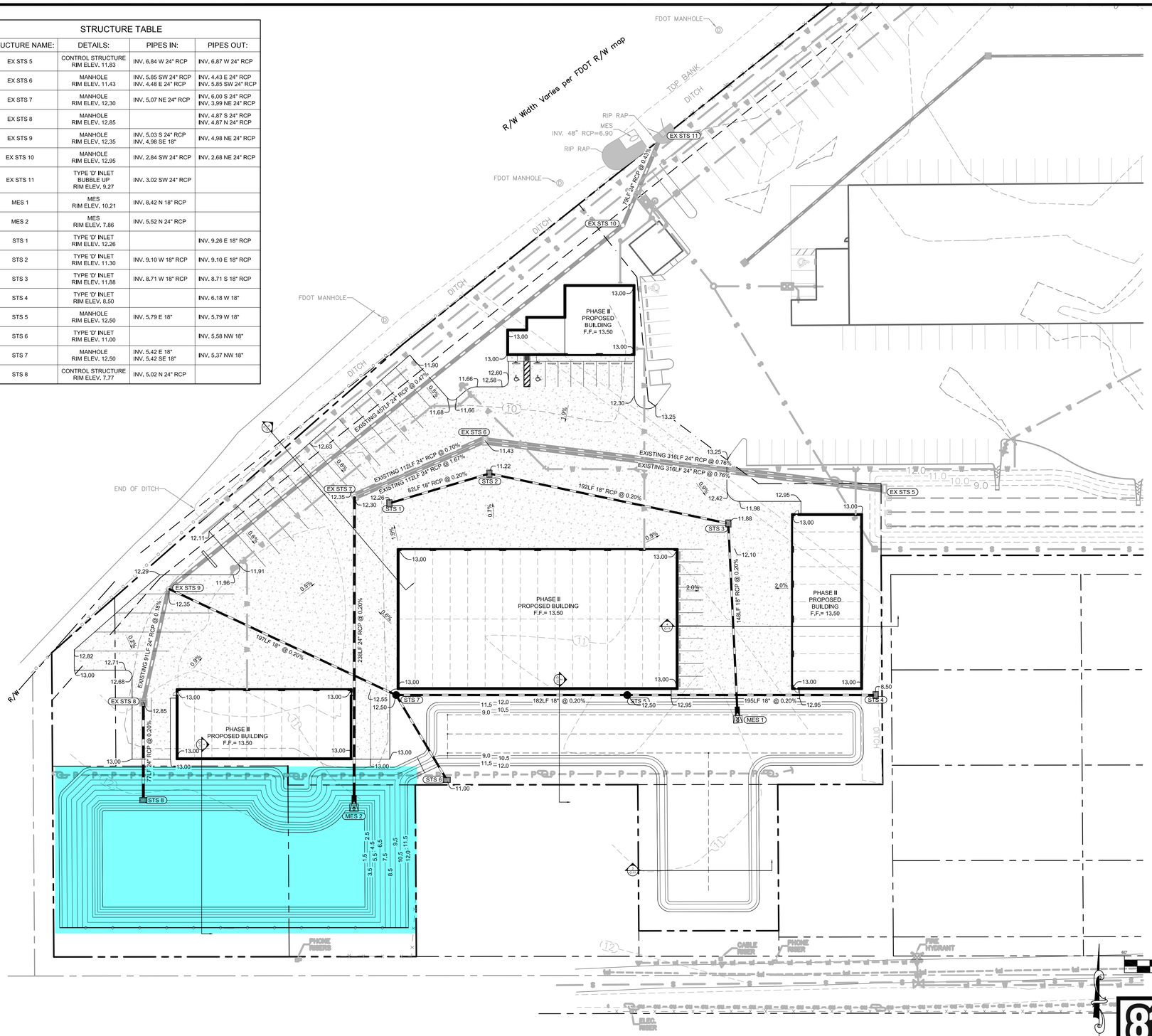
PUTNAM
Palatka Daily News, Legal Advertising
P. O. Box 777
Palatka, FL 32178
386-312-5200/ fax 386-312-5209

ST. JOHNS
St. Augustine Record, Legal Advertising
P. O. Box 1630
St. Augustine, FL 32085
904-819-3436

SEMINOLE
Seminole Herald, Legal Advertising
300 North French Avenue
Sanford, FL 32771
407-323-9408

VOLUSIA
News Journal Corporation, Legal Advertising
P. O. Box 2831
Daytona Beach, FL 32120-2831
(386) 681-2322

STRUCTURE TABLE			
STRUCTURE NAME:	DETAILS:	PIPES IN:	PIPES OUT:
EX STS 5	CONTROL STRUCTURE RIM ELEV. 11.83	INV, 6.84 W 24" RCP	INV, 6.87 W 24" RCP
EX STS 6	MANHOLE RIM ELEV. 11.43	INV, 5.85 SW 24" RCP INV, 4.48 E 24" RCP	INV, 4.43 E 24" RCP INV, 5.85 SW 24" RCP
EX STS 7	MANHOLE RIM ELEV, 12.30	INV, 5.07 NE 24" RCP	INV, 6.00 S 24" RCP INV, 3.99 NE 24" RCP
EX STS 8	MANHOLE RIM ELEV. 12.85		INV, 4.87 S 24" RCP INV, 4.87 N 24" RCP
EX STS 9	MANHOLE RIM ELEV, 12.35	INV, 5.03 S 24" RCP INV, 4.98 SE 18"	INV, 4.98 NE 24" RCP
EX STS 10	MANHOLE RIM ELEV, 12.95	INV, 2.84 SW 24" RCP	INV, 2.68 NE 24" RCP
EX STS 11	TYPE 'D' INLET BUBBLE UP RIM ELEV, 9.27	INV. 3.02 SW 24" RCP	
MES 1	MES RIM ELEV, 10.21	INV, 8.42 N 18" RCP	
MES 2	MES RIM ELEV, 7.86	INV, 5.52 N 24" RCP	
STS 1	TYPE 'D' INLET RIM ELEV, 12.26		INV, 9.26 E 18" RCP
STS 2	TYPE 'D' INLET RIM ELEV, 11.30	INV, 9.10 W 18" RCP	INV, 9.10 E 18" RCP
STS 3	TYPE 'D' INLET RIM ELEV, 11.88	INV, 8.71 W 18" RCP	INV, 8.71 S 18" RCP
STS 4	TYPE 'D' INLET RIM ELEV, 8.50		INV, 6.18 W 18"
STS 5	MANHOLE RIM ELEV, 12.50	INV, 5.79 E 18"	INV, 5.79 W 18"
STS 6	TYPE 'D' INLET RIM ELEV, 11.00		INV, 5.58 NW 18"
STS 7	MANHOLE RIM ELEV, 12.50	INV, 5.42 E 18" INV, 5.42 SE 18"	INV, 5.37 NW 18"
STS 8	CONTROL STRUCTURE RIM ELEV, 7.77	INV, 5.02 N 24" RCP	



PAVING AND DRAINAGE NOTES

1. THE ENTITY THAT WILL OWN, OPERATE, AND MAINTAIN THE STORM WATER SYSTEM SHOWN ON THESE PLANS IS THE MYERS RV CENTER. THE CONTRACTOR SHALL BE EXPECTED TO MEET ALL THE REQUIREMENTS OF THE PERMITS OBTAINED.
2. THE CONTRACTOR SHALL PERFORM HIS OWN INVESTIGATIONS AND CALCULATIONS AS NECESSARY TO ASSURE HIMSELF OF EARTHWORK QUANTITIES. THERE IS NO IMPLICATION THAT EARTHWORK BALANCES AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY IMPORT FILL NEEDED, OR FOR REMOVAL AND DISPOSAL OF EXCESS MATERIALS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY TESTING TO ASSURE THAT THE PROPER COMPACTION HAS BEEN ACHIEVED ON THE SUBGRADE, BASE, AND ALL OTHER PERTINENT AREAS THAT HAVE BEEN COMPLETED. THE CONTRACTOR SHALL BEAR ALL COSTS ASSOCIATED WITH TESTING AND SHALL PROVIDE THE OWNER AND THE ENGINEER WITH COPIES OF THE CERTIFICATION OF COMPACTION FROM THE TESTING COMPANY.
4. PRIOR TO BID PREPARATION, THE CONTRACTOR MUST BECOME FAMILIAR WITH THE OVERALL SITE CONDITIONS AND PERFORM ADDITIONAL INVESTIGATIONS AS DETERMINED NECESSARY TO UNDERSTAND THE LIMIT AND DEPTH OF EXPECTED ORGANIC SILT PEAT AREAS, ADEQUACY OF EXISTING MATERIALS AS FILL, DEWATERING REQUIREMENTS, CLEAN FILL REQUIRED FROM OFF-SITE AND MATERIALS TO BE DISPOSED OF OFF-SITE, ALL OF WHICH WILL AFFECT HIS PRICING. ANY DELAY OR EXPENSE CAUSED TO THE CONTRACTOR DUE TO INADEQUATE INVESTIGATION OF EXISTING CONDITIONS SHALL BE INCIDENTAL TO THE CONTRACT, AND NO EXTRA COMPENSATION WILL BE ALLOWED. THE MATERIALS ANTICIPATED TO BE ENCOUNTERED DURING CONSTRUCTION MAY REQUIRE DRYING PRIOR TO USE BACKFILL, AND THE CONTRACTOR MAY HAVE TO IMPORT MATERIALS, AT NO EXTRA COST, FROM OFF-SITE TO MEET THE REQUIREMENTS FOR COMPACTION AND PROPER FILL.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE EXISTING SITE CONDITIONS OF SOIL PRIOR TO N.T.P. TO DETERMINE IF ANY OFF-SITE MATERIALS WILL NEED TO BE IMPORTED TO ACHIEVE THE GRADES SPECIFIED ON THE PLANS.
6. THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER WHEN ALL WORK IS LAID OUT (SURVEY STAKED), SO THAT A DETERMINATION MAY BE MADE OF SPECIFIC TREES TO BE REMOVED. A ARBOR PERMIT IS REQUIRED TO BE OBTAINED BY THE CONTRACTOR.
7. ALL FILL MATERIALS SHALL BE FREE OF MUCK, STUMPS, ROOTS, BRUSH, VEGETATIVE MATTER, RUBBISH, OR OTHER UNSUITABLE MATTER.
8. ALL MATERIALS EXCAVATED SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE STOCKPILED AT ON-SITE LOCATIONS AS SPECIFIED BY THE OWNER. MATERIALS SHALL BE STOCKPILED SEPARATELY AS TO USEABLE (NON-ORGANIC) FILL STOCKPILES AND ORGANIC (MUCK) STOCKPILES IF MUCK IS ENCOUNTERED. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL UNSUITABLE FILL MATERIALS FROM THE SITE.
9. FILL MATERIALS PLACED UNDER ROADWAYS SHALL BE COMPACTED TO AT LEAST 98% MAX. DENSITY AS SPECIFIED IN AASHTO T-180. ALL OTHER AREAS ARE TO BE COMPACTED TO AT LEAST 95% MAX. DENSITY AS SPECIFIED IN AASHTO T-180. FILL MATERIALS SHALL BE PLACED AND COMPACTED IN A MAX. OF 12" LIFTS. REFER TO SOILS REPORT FOR ADDITIONAL INFORMATION. THE CONTRACTOR SHALL PROVIDE THE ENGINEER AND THE OWNER WITH ALL (PASSING AND FAILING) TESTING RESULTS. RESULTS SHALL BE PROVIDED ON A TIMELY AND REGULAR BASIS PRIOR TO CONTRACTOR'S PAY REQUEST SUBMITTAL.
10. GRADING SHOWN ON THESE PLANS IS PROVIDED TO THE CONTRACTOR TO EXPRESS THE GENERAL GRADING INTENT OF THE PROJECT. THE CONTRACTOR SHALL GRADE THE ENTIRE SITE TO PROVIDE POSITIVE DRAINAGE IN ALL AREAS. SMOOTH TRANSITIONS SHALL BE PROVIDED BETWEEN CONTOURS OR SPOT ELEVATIONS AS SHOWN ON THE PLANS TO ACCOMPLISH THE GRADING INTENT. ALL SLOPES SHALL BE STABILIZED IMMEDIATELY AFTER FINAL GRADING HAS BEEN COMPLETED. CONTRACTOR SHALL NOTIFY OWNER AND ENGINEER A MIN. OF 48 HOURS PRIOR TO DEMOBILIZATION OF GRADING EQUIPMENT TO DETERMINE THAT THE GRADING INTENT HAS BEEN ACHIEVED.
11. REINFORCED CONCRETE PIPE (RCP) SHALL BE CLASS III WITH RUBBER GASKET JOINTS. RCP SHALL CONFORM TO FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST ED.) SECTION 941. RUBBER GASKETS SHALL CONFORM TO SECTION 942.
12. ALL OTHER RELATED ITEMS REQUIRED FOR THE CONSTRUCTION OF THE STORM SEWER (OUTFALL PROTECTION, POLLUTION CONTROL, ETC.) ARE TO BE IN ACCORDANCE WITH DETAILS SHOWN ON THE CONSTRUCTION PLANS, FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS, AND FDOT STANDARD SPECS. FOR ROADWAY AND BRIDGE CONSTRUCTION (LATEST EDITION).
13. ALL PIPE CALL OUTS ARE MEASURED CENTERLINE TO CENTERLINE FOR MANHOLES AND INLETS.
14. ALL ON-SITE AREAS DISTURBED BY THE CONSTRUCTION SHALL BE STABILIZED WITH SEED AND MULCH MIXTURE UNLESS OTHERWISE NOTED.
15. ALL OFF-SITE AREAS DISTURBED BY CONSTRUCTION SHALL BE SODDED WITH BAHIA.
16. NO HARD WOOD TREES MAY BE PLANTED OVER OR WITHIN 5' OF UTILITY LINES OR STORM PIPES. ONLY SOD OR SOFT WOOD SHRUBS MAY BE PLANTED OVER UTILITY LINES.
17. ALL PIPE JOINTS SHALL BE WRAPPED WITH FILTER FABRIC. THE FILTER FABRIC SHALL BE IN ACCORDANCE WITH FDOT INDEX 199, TYPE D-3, A.O.S. 70-100. INSTALL PER FDOT INDEX 280. PROVIDE A MIN. OF 12" OF OVERLAP.
18. CONTRACTOR WILL NEED TO FIELD FORM THE TOPS OF STRUCTURES THAT DON'T HAVE 2' SPACING TO TOP OF STRUCTURE.
19. CONTRACTOR SHALL FIELD VERIFY VERTICAL LOCATIONS OF EXISTING UTILITIES PRIOR TO INSTALLATION OF NEW UTILITIES. IF CONFLICT EXISTS, CONTACT ENGINEER WITH FIELD DATA SO A REVISION CAN BE DESIGNED.

LEGEND

STS 2	STORM STRUCTURE I.D.		DRAINAGE SURFACE FLOW
	MITERED END SECTION		DRAINAGE FLOWLINE
			DRAINAGE RIDGE
	STORM CATCH BASIN	126.50 / 126.00	PROPOSED GRADES
T.O.W.=77.50 B.O.W.=76.50	TOP OF WALL BOTTOM OF WALL	126.20	EXISTING SPOT ELEV.

GRAPHIC SCALE

60' 0 20' 40' 80'

1"=40'

811 KNOW WHAT'S BELOW ALWAYS CALL 811 BEFORE YOU DIG
It's fast. It's free. It's the law.
www.callsunshine.com

A MINIMUM OF 2-DAYS AND A MAXIMUM OF 5-DAYS PRIOR TO START OF CONSTRUCTION

PROPERTY APPRAISER ID NUMBER 21-19-30-502-0300-0000, 21-19-30-502-0500-0040,16-19-30-5AC-0000-0120

SEMINOLE COUNTY
APPROVED FOR CONSTRUCTION

THIS APPROVAL IS SUBJECT TO SPECIFIC CONFORMANCE TO THE SEMINOLE COUNTY LAND DEVELOPMENT CODE AND ANY SPECIAL REQUIREMENTS OF THE BOARD OF COUNTY COMMISSIONERS. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER TO CORRECT ANY DEFECTS IN THE PLANS OR THE FACILITY AS CONSTRUCTED WHICH RESULTS IN A FAILURE TO MEET APPLICABLE CODE REQUIREMENTS. ADMINISTRATIVE ACCEPTANCE OF THE DEVELOPER'S PLANS DOES NOT CONSTITUTE A WAIVER OF ANY CODE REQUIREMENTS NOR DOES IT RELIEVE THE DEVELOPER OF RESPONSIBILITY TO MEET THOSE REQUIREMENTS. THIS SPECIFIC APPROVAL IS VALID FOR A PERIOD OF ONE YEAR FROM THE DATE BELOW. APPROVED.

SEMINOLE COUNTY DEVELOPMENT REVIEW DEPARTMENT

DATE

REV.	DATE	BY	COMMENTS
0	05/04/12	BRP	ISSUED FOR PERMITTING
1			
2			
3			
4			
5			
6			

PAVING, GRADING AND DRAINAGE PLAN

DONNIE MYERS RECREATIONAL VEHICLE SALES AND CUSTOMIZATION
SW CORNER OF MONROE ROAD & ORANGE BLVD.
SANFORD, FLORIDA

TANNATH DESIGN, INC.
2494 ROSE SPRING DRIVE
ORLANDO, FLORIDA 32825
(407) 982-9878
(407) 208-1425 fax
www.tannathdesign.com
FL. CERT. OF AUTH. #27199

BRYAN R. POTTS, P.E.
FL. REG. #59461

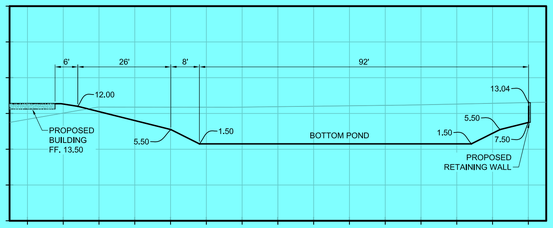
DATE

PROJECT #:	019-006
DATE:	04/04/12
SCALE:	1" = 40'
DRAWN:	SEB
APPROVED:	BRP

SHEET NAME:

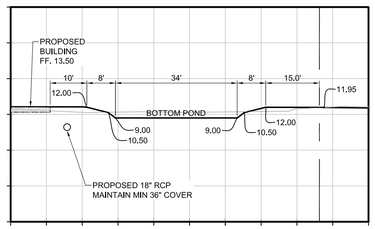
C-5

Wet Pond



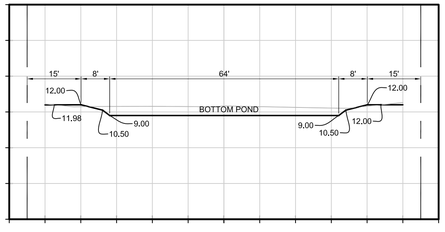
1 NTS PROPOSED SECTION 1

Dry Pond North



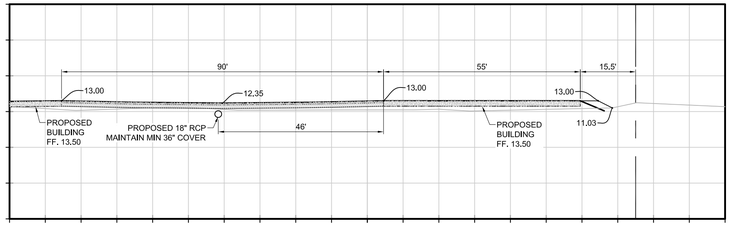
2 NTS PROPOSED SECTION 2

Dry Pond South



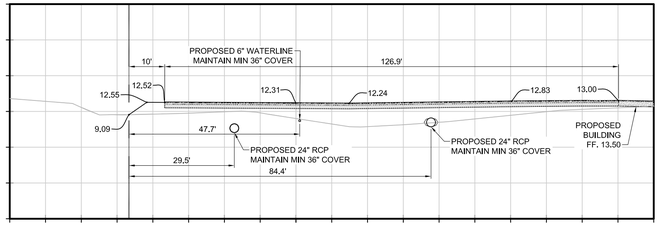
3 NTS PROPOSED SECTION 3

East Property Line



4 NTS PROPOSED SECTION 4

I4 & West Property Line



5 NTS PROPOSED SECTION 5

REV.	DATE	BY	COMMENTS
0	05/04/12	BRP	ISSUED FOR PERMITTING
1			
2			
3			
4			
5			
6			

CROSS SECTIONS

DONNIE MYERS RECREATIONAL VEHICLE SALES AND CUSTOMIZATION
SW CORNER OF MONROE ROAD & ORANGE BLVD.
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TANNATH DESIGN, INC.
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FL. CERT. OF AUTH. #27199

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A MINIMUM OF 2-DAYS AND A MAXIMUM OF 5-DAYS PRIOR TO START OF CONSTRUCTION

PROPERTY APPRAISER ID NUMBER 21-19-30-502-0300-0000, 21-19-30-502-0500-0040, 16-19-30-5AC-0000-0120

SEMINOLE COUNTY
APPROVED FOR CONSTRUCTION

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SEMINOLE COUNTY DEVELOPMENT REVIEW DEPARTMENT

DATE

BRYAN R. POTTS, P.E.
FL. REG. #59461

DATE

PROJECT #:	019-006
DATE:	04/04/12
SCALE:	1" = 40'
DRAWN:	SEB
APPROVED:	BRP

SHEET NAME:

C-11

Stage Storage - Dry Pond (Phase II)

Elevation	Length (LF)	Width (LF)	Area (SF)	Area (AC)	Volume (AC-FT)	Cum. Volume (AC-FT)	Cum. Volume (CF)
9			14,949	0.343		0.000	-
					0.385		
10			18,621	0.427		0.385	16,785
					0.472		
11			22,472	0.516		0.857	37,332
					0.561		
12.00			26,396	0.606		1.418	61,766

P.A.V. =	0.423	AC-FT	Max Stage	12.0	FT
P.A.V. Elevation =	**10.08**	FT	Volume	61,766	CF
1/2 P.A.V. =	0.211	AC-FT			
1/2 P.A.V. Elevation =	9.63	FT			

Stage Storage - Wet Pond

Elevation	Length (LF)	Width (LF)	Area (SF)	Area (AC)	Volume (AC-FT)	Cum. Volume (AC-FT)	Cum. Volume (CF)
NGVD 7.5			24,872	0.571		0.000	-
					0.593		
8.5			26,770	0.615		0.593	25,821
					0.637		
9.5			28,741	0.660		1.230	53,577
					0.684		
10.5			30,819	0.708		1.914	83,357
					0.733		
11.5			33,005	0.758		2.646	115,269
					0.385		
12.0			34,098	0.783		3.031	132,044

P.A.V. =	1.045	AC-FT	Max Stage	12.0	FT
P.A.V. Elevation =	**9.42**	FT	Volume	132,044	CF
1/2 P.A.V. =	0.523	AC-FT			
1/2 P.A.V. Elevation =	8.39	FT			

Seminole County

SJRWMD

Permit No. 22434-15

I-4 BTU Segment 3

St. Johns River
Water Management District
Ann B. Shortelle, Ph.D., Executive Director

4049 Reid Street • P.O. Box 1429 • Palatka, FL 32178-1429 • 386-329-4500
On the internet at www.sjrwmd.com.

March 22, 2018

Casey Lyon
FDOT District Five
719 S Woodland Blvd
Deland, FL 32720-6834

SUBJECT: 22434-15
I-4 BtU Segment 3

Dear Sir/Madam:

Enclosed is your individual permit issued by the St. Johns River Water Management District on March 22, 2018. This permit is a legal document and should be kept with your other important documents. Permit issuance does not relieve you from the responsibility of obtaining any necessary permits from any federal, state, or local agencies for your project.

Technical Staff Report:
If you wish to review a copy of the Technical Staff Report (TSR) that provides the District's staff analysis of your permit application, you may view the TSR by going to the Permitting section of the District's website at www.sjrwmd.com/permitting. Using the "search applications and permits" feature, you can use your permit number or project name to find information about the permit. When you see the results of your search, click on the permit number and then on the TSR folder.

Noticing Your Permit:
For noticing instructions, please refer to the noticing materials in this package regarding closing the point of entry for someone to challenge the issuance of your permit. Please note that if a timely petition for administrative hearing is filed, your permit will become non-final and any activities that you choose to undertake pursuant to your permit will be at your own risk.

Compliance with Permit Conditions:
To submit your required permit compliance information, go to the District's website at www.sjrwmd.com/permitting. Under the "Apply for a permit or submit compliance data" section, click to sign-in to your existing account or to create a new account. Select the "Compliance Submittal" tab, enter your permit number, and select "No Specific Date" for the Compliance Due Date Range. You will then be able to view all the compliance submittal requirements for your project. Select the compliance item that you are ready to submit and then attach the appropriate information or form. The forms to comply with your permit conditions are available at www.sjrwmd.com/permitting under the section "Handbooks, forms, fees, final orders". Click on forms to view all permit compliance forms, then scroll to the ERP application forms section and select the applicable compliance forms. Alternatively, if you have difficulty finding forms or need

copies of the appropriate forms, please contact the Bureau of Regulatory Support at (386) 329-4570.

Transferring Your Permit:
Your permit requires you to notify the District within 30 days of any change in ownership or control of the project or activity covered by the permit, or within 30 days of any change in ownership or control of the real property on which the permitted project or activity is located or occurs. You will need to provide the District with the information specified in rule 62-330.340, Florida Administrative Code (F.A.C.). Generally, this will require you to complete and submit Form 62-330.340(1), "Request to Transfer Permit," available at http://www.sjrwmd.com/permitting/permitforms.html.

Please note that a permittee is liable for compliance with the permit before the permit is transferred. The District, therefore, recommends that you request a permit transfer in advance in accordance with the applicable rules. You are encouraged to contact District staff for assistance with this process.

Thank you and please let us know if you have additional questions. For general questions contact e-permit@sjrwmd.com or (386) 329-4570.

Sincerely,

Margaret Daniels, Office Director
Office of Business and Administrative Services
St. Johns River Water Management District
4049 Reid Street
Palatka, FL 32177-2529
(386) 329-4570

Enclosures: Permit

cc: District Permit File

Mitch Blanco
WSP
Ste 300
2202 N West Shore Blvd
Tampa, FL 33607-5776

Maurice Pearson
MSE Group
5858 S Semoran Blvd
Orlando, FL 32822-4816

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
Post Office Box 1429
Palatka, Florida 32178-1429

PERMIT NO: 22434-15 **DATE ISSUED:** March 22, 2018

PROJECT NAME: I-4 BtU Segment 3

A PERMIT AUTHORIZING:
Construction of a Stormwater Management System for I-4 BtU Segment 3, a 843.13 - acre project to be constructed and operated as per plans received by the District on January 23, 2018.

LOCATION:

Section(s):	7, 37, 18, 6	Township(s):	20S	Range(s):	30E
	39, 31, 20		19S		30E
	36, 24, 25, 12, 35, 13, 26		20S		29E

Seminole County

Receiving Water Body:

Name	Class
Lake Myrtle	III Fresh
Little Wekiwa River	III Fresh, OFW
Soldier Creek	III Fresh, IW
Lake Monroe	III Fresh, IW

ISSUED TO:
FDOT District Five
719 S Woodland Blvd
Deland, FL 32720-6834

The permittee agrees to hold and save the St. Johns River Water Management District and its successors harmless from any and all damages, claims, or liabilities which may arise from permit issuance. Said application, including all plans and specifications attached thereto, is by reference made a part hereof.

This permit does not convey to the permittee any property rights nor any rights or privileges other than those specified herein, nor relieve the permittee from complying with any law, regulation or requirement affecting the rights of other bodies or agencies. All structures and works installed by permittee hereunder shall remain the property of the permittee.

This permit may be revoked, modified or transferred at any time pursuant to the appropriate provisions of Chapter 373, Florida Statutes.

PERMIT IS CONDITIONED UPON:

See conditions on attached “Exhibit A”, dated March 22, 2018

AUTHORIZED BY: St. Johns River Water Management District
Division of Regulatory Services

By: 

_____
John Juilianna
Regulatory Coordinator

"EXHIBIT A"
CONDITIONS FOR ISSUANCE OF PERMIT NUMBER 22434-15
I-4 BtU Segment 3
DATED March 22, 2018

1. All activities shall be implemented following the plans, specifications and performance criteria approved by this permit. Any deviations must be authorized in a permit modification in accordance with Rule 62-330.315, F.A.C. Any deviations that are not so authorized may subject the permittee to enforcement action and revocation of the permit under Chapter 373, F.S.

2. A complete copy of this permit shall be kept at the work site of the permitted activity during the construction phase, and shall be available for review at the work site upon request by the District staff. The permittee shall require the contractor to review the complete permit prior to beginning construction.

3. Activities shall be conducted in a manner that does not cause or contribute to violations of state water quality standards. Performance-based erosion and sediment control best management practices shall be installed immediately prior to, and be maintained during and after construction as needed, to prevent adverse impacts to the water resources and adjacent lands. Such practices shall be in accordance with the State of Florida Erosion and Sediment Control Designer and Reviewer Manual (Florida Department of Environmental Protection and Florida Department of Transportation June 2007), and the Florida Stormwater Erosion and Sedimentation Control Inspector's Manual (Florida Department of Environmental Protection, Nonpoint Source Management Section, Tallahassee, Florida, July 2008), which are both incorporated by reference in subparagraph 62-330.050(9)(b)5, F.A.C., unless a project-specific erosion and sediment control plan is approved or other water quality control measures are required as part of the permit.

4. At least 48 hours prior to beginning the authorized activities, the permittee shall submit to the District a fully executed Form 62-330.350(1), "Construction Commencement Notice,"[10-1-13], incorporated by reference herein (http://www.flrules.org/Gateway/reference.asp?No=Ref-02505), indicating the expected start and completion dates. A copy of this form may be obtained from the District, as described in subsection 62-330.010(5), F.A.C. If available, a District website that fulfills this notification requirement may be used in lieu of the form.

5. Unless the permit is transferred under Rule 62-330.340, F.A.C., or transferred to an operating entity under Rule 62-330.310, F.A.C., the permittee is liable to comply with the plans, terms and conditions of the permit for the life of the project or activity.

6. Within 30 days after completing construction of the entire project, or any independent portion of the project, the permittee shall provide the following to the Agency, as applicable:

    a. For an individual, private single-family residential dwelling unit, duplex, triplex, or quadruplex — "Construction Completion and Inspection Certification for Activities Associated With a Private Single-Family Dwelling Unit" [Form 62-330.310(3)]; or

    b. For all other activities — "As-Built Certification and Request for Conversion to Operational Phase" [Form 62-330.310(1)].

    c. If available, an Agency website that fulfills this certification requirement may be used in lieu of the form.

7. If the final operation and maintenance entity is a third party:

    a. Prior to sales of any lot or unit served by the activity and within one year of permit issuance, or within 30 days of as-built certification, whichever comes first, the permittee shall submit, as applicable, a copy of the operation and maintenance documents (see sections 12.3 thru 12.3.3 of Volume I) as filed with the Department of State, Division of Corporations and a copy of any easement, plat, or deed restriction needed to operate or maintain the project, as recorded with the Clerk of the Court in the County in which the activity is located.

    b. Within 30 days of submittal of the as- built certification, the permittee shall submit "Request for Transfer of Environmental Resource Permit to the Perpetual Operation Entity" [Form 62-330.310(2)] to transfer the permit to the operation and maintenance entity, along with the documentation requested in the form. If available, an Agency website that fulfills this transfer requirement may be used in lieu of the form.

8. The permittee shall notify the District in writing of changes required by any other regulatory District that require changes to the permitted activity, and any required modification of this permit must be obtained prior to implementing the changes.

9. This permit does not:

    a. Convey to the permittee any property rights or privileges, or any other rights or privileges other than those specified herein or in Chapter 62-330, F.A.C.;

    b. Convey to the permittee or create in the permittee any interest in real property;

    c. Relieve the permittee from the need to obtain and comply with any other required federal, state, and local authorization, law, rule, or ordinance; or

    d. Authorize any entrance upon or work on property that is not owned, held in easement, or controlled by the permittee.

10. Prior to conducting any activities on state-owned submerged lands or other lands of the state, title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund, the permittee must receive all necessary approvals and authorizations under Chapters 253 and 258, F.S. Written authorization that requires formal execution by the Board of Trustees of the Internal Improvement Trust Fund shall not be considered received until it has been fully executed.

11. The permittee shall hold and save the District harmless from any and all damages, claims, or liabilities that may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any project authorized by the permit.

12. The permittee shall notify the District in writing:

    a. Immediately if any previously submitted information is discovered to be inaccurate; and

    b. Within 30 days of any conveyance or division of ownership or control of the property or the system, other than conveyance via a long-term lease, and the new owner shall request transfer of the permit in accordance with Rule 62-330.340, F.A.C. This does not apply to the sale of lots or units in residential or commercial subdivisions or condominiums where the stormwater management system has been completed and converted to the operation phase.

13. Upon reasonable notice to the permittee, District staff with proper identification shall have permission to enter, inspect, sample and test the project or activities to ensure conformity with the plans and specifications authorized in the permit.

14. If any 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, work involving subsurface disturbance in the immediate vicinity of such discoveries shall cease. The permittee or other designee shall contact the Florida Department of State, Division of Historical Resources, Compliance and Review Section, at (850) 245-6333 or (800) 847-7278, as well as the appropriate permitting agency office. Such subsurface work shall not resume without verbal or written authorization from the Division of Historical Resources. If unmarked human remains are encountered, all work shall stop immediately and notification shall be provided in accordance with Section 872.05, F.S.

15. 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 Rule 62-330.201, F.A.C., provides otherwise.

16. The permittee shall provide routine maintenance of all components of the stormwater management system to remove trapped sediments and debris. Removed materials shall be disposed of in a landfill or other uplands in a manner that does not require a permit under Chapter 62-330, F.A.C., or cause violations of state water quality standards.

17. This permit is issued based on the applicant's submitted information that reasonably demonstrates that adverse water resource-related impacts will not be caused by the completed permit activity. If any adverse impacts result, the District will require the permittee to eliminate the cause, obtain any necessary permit modification, and take any necessary corrective actions to resolve the adverse impacts.

18. A Recorded Notice of Environmental Resource Permit may be recorded in the county public records in accordance with Rule 62-330.090(7), F.A.C. Such notice is not an encumbrance upon the property.

19. At a minimum, all retention and detention storage areas must be excavated to rough grade prior to building construction or placement of impervious surface within the area to be served by those facilities. To prevent reduction in storage volume and percolation rates, all accumulated sediment must be removed from the storage area prior to final grading and stabilization.

20. All wetland areas or water bodies that are outside the specific limits of construction authorized by this permit must be protected from erosion, siltation, scouring or excess turbidity, and dewatering.

21. The operation and maintenance entity shall inspect the stormwater or surface water management system once within two years after the completion of construction and every two years thereafter to determine if the system is functioning as designed and permitted. The operation and maintenance entity must maintain a record of each required inspection, including the date of the inspection, the name and contact information of the inspector, and whether the system was functioning as designed and permitted, and make such record available for inspection upon request by the District during normal business hours. If at any time the system is not functioning as designed and permitted, then within 30 days the entity shall submit a report electronically or in writing to the District using Form 62-330.311(1),

"Operation and Maintenance Inspection Certification," describing the remedial actions taken to resolve the failure or deviation.

22. The proposed surface water management system must be constructed and operated according to the plans received by the District on January 23, 2018.

23. Before the start of any construction, the permittee must provide the District with documentation demonstrating that 19.23 ratio-credits have been debited from the Lake Monroe Mitigation Bank ledger. If the permittee does not successfully complete the transaction to obtain the credits from the mitigation bank, the permittee must obtain a permit modification to provide alternative mitigation for the wetland impacts.

24. This permit will expire 10 years from the date of issuance.

Notice Of Rights

1. A person whose substantial interests are or may be affected has the right to request an administrative hearing by filing a written petition with the St. Johns River Water Management District (District). Pursuant to Chapter 28-106 and Rule 40C-1.1007, Florida Administrative Code, the petition must be filed (received) either by delivery at the office of the District Clerk at District Headquarters, P. O. Box 1429, Palatka Florida 32178-1429 (4049 Reid St., Palatka, FL 32177) or by e-mail with the District Clerk at Clerk@sjrwmd.com, within twenty-six (26) days of the District depositing the notice of District decision in the mail (for those persons to whom the District mails actual notice), within twenty-one (21) days of the District emailing the notice of District decision (for those persons to whom the District emails actual notice), or within twenty-one (21) days of newspaper publication of the notice of District decision (for those persons to whom the District does not mail or email actual notice). A petition must comply with Sections 120.54(5)(b)4. and 120.569(2)(c), Florida Statutes, and Chapter 28-106, Florida Administrative Code. The District will not accept a petition sent by facsimile (fax), as explained in paragraph no. 4 below.

2. Please be advised that if you wish to dispute this District decision, mediation may be available and that choosing mediation does not affect your right to an administrative hearing. If you wish to request mediation, you must do so in a timely-filed petition. If all parties, including the District, agree to the details of the mediation procedure, in writing, within 10 days after the time period stated in the announcement for election of an administrative remedy under Sections 120.569 and 120.57, Florida Statutes, the time limitations imposed by Sections 120.569 and 120.57, Florida Statutes, shall be tolled to allow mediation of the disputed District decision. The mediation must be concluded within 60 days of the date of the parties' written agreement, or such other timeframe agreed to by the parties in writing. Any mediation agreement must include provisions for selecting a mediator, a statement that each party shall be responsible for paying its pro-rata share of the costs and fees associated with mediation, and the mediating parties' understanding regarding the confidentiality of discussions and documents introduced during mediation. If mediation results in settlement of the administrative dispute, the District will enter a final order consistent with the settlement agreement. If mediation terminates without settlement of the dispute, the District will notify all the parties in writing that the administrative hearing process under Sections 120.569 and 120.57, Florida Statutes, is resumed. Even if a party chooses not to engage in formal mediation, or if formal mediation does not result in a settlement agreement, the District will remain willing to engage in informal settlement discussions.

3. A person whose substantial interests are or may be affected has the right to an informal administrative hearing pursuant to Sections 120.569 and 120.57(2), Florida Statutes, where no material facts are in dispute. A petition for an informal hearing must also comply with the requirements set forth in Rule 28-106.301, Florida Administrative Code.

Notice Of Rights

4. A petition for an administrative hearing is deemed filed upon receipt of the complete petition by the District Clerk at the District Headquarters in Palatka, Florida during the District's regular business hours. The District's regular business hours are 8:00 a.m. – 5:00 p.m., excluding weekends and District holidays. Petitions received by the District Clerk after the District's regular business hours shall be deemed filed as of 8:00 a.m. on the District's next regular business day. The District's acceptance of petitions filed by e-mail is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation (issued pursuant to Rule 28-101.001, Florida Administrative Code), which is available for viewing at *sjrwmd.com*. These conditions include, but are not limited to, the petition being in the form of a PDF or TIFF file and being capable of being stored and printed by the District. Further, pursuant to the District's Statement of Agency Organization and Operation, attempting to file a petition by facsimile is prohibited and shall not constitute filing.

5. Failure to file a petition for an administrative hearing within the requisite timeframe shall constitute a waiver of the right to an administrative hearing. (Rule 28-106.111, Florida Administrative Code).

6. The right to an administrative hearing and the relevant procedures to be followed are governed by Chapter 120, Florida Statutes, Chapter 28-106, Florida Administrative Code, and Rule 40C-1.1007, Florida Administrative Code. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means the District's final action may be different from the position taken by it in this notice. A person whose substantial interests are or may be affected by the District's final action has the right to become a party to the proceeding, in accordance with the requirements set forth above.

7. Pursuant to Section 120.68, Florida Statutes, a party to the proceeding before the District who is adversely affected by final District action may seek review of the action in the District Court of Appeal by filing a notice of appeal pursuant to Rules 9.110 and 9.190, Florida Rules of Appellate Procedure, within 30 days of the rendering of the final District action.

8. A District action is considered rendered, as referred to in paragraph no. 7 above, after it is signed on behalf of the District and filed by the District Clerk.

9. Failure to observe the relevant timeframes for filing a petition for judicial review as described in paragraph no. 7 above will result in waiver of that right to review.

Notice Of Rights

Certificate of Service

I HEREBY CERTIFY that a copy of the foregoing Notice of Rights has been sent to the permittee:

Casey Lyon
FDOT District Five
719 S Woodland Blvd
Deland, FL 32720-6834

This 22nd day of March, 2018.

M. Daniels

Margaret Daniels, Office Director
Office of Business and Administrative Services
St. Johns River Water Management District
4049 Reid Street
Palatka, FL 32177-2529
(386) 329-4570

Permit Number: 22434-15

NOTICING INFORMATION

Dear Permittee:

Please be advised that the St. Johns River Water Management District will not publish a notice in the newspaper advising the public that it has issued a permit for this project.

Newspaper publication, using the District's notice form, notifies members of the public of their right to challenge the issuance of the permit. If proper notice is given by newspaper publication, then there is a 21-day time limit for someone to file a petition for an administrative hearing to challenge the issuance of the permit.

To close the point of entry for filing a petition, you may publish (at your own expense) a one-time notice of the District's decision in a newspaper of general circulation within the affected area as defined in Section 50.011 of the Florida Statutes. If you do not publish a newspaper notice to close the point of entry, the time to challenge the issuance of your permit will not expire and someone could file a petition even after your project is constructed.

A copy of the notice form and a partial list of newspapers of general circulation are attached for your convenience. However, you are not limited to those listed newspapers. If you choose to close the point of entry and the notice is published, the newspaper will return to you an affidavit of publication. In that event, it is important that you either submit a scanned copy of the affidavit by emailing it to *compliancesupport@sjrwmd.com* (preferred method) **or** send a copy of the original affidavit to:

Margaret Daniels, Office Director
Office of Business and Administrative Services
4049 Reid Street
Palatka, FL 32177

If you have any questions, please contact the Office of Business and Administrative Services at (386) 329-4570.

Sincerely,

M. Daniels

Margaret Daniels, Office Director
Office of Business and Administrative Services

NOTICE OF AGENCY ACTION TAKEN BY THE
ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

Notice is given that the following permit was issued on _____:

(Name and address of applicant)_____
permit#_____. The project is located in _____County, Section _____, Township _____ South, Range _____ East. The permit authorizes a surface water management system on _____ acres for _____ known as _____. The receiving water body is _____.

A person whose substantial interests are or may be affected has the right to request an administrative hearing by filing a written petition with the St. Johns River Water Management District (District). Pursuant to Chapter 28-106 and Rule 40C-1.1007, Florida Administrative Code (F.A.C.), the petition must be filed (received) either by delivery at the office of the District Clerk at District Headquarters, P.O. Box 1429, Palatka FL 32178-1429 (4049 Reid St, Palatka, FL 32177) or by e-mail with the District Clerk at Clerk@sjrwmd.com, within twenty-one (21) days of newspaper publication of the notice of District decision (for those persons to whom the District does not mail or email actual notice). A petition must comply with Sections 120.54(5)(b)4. and 120.569(2)(c), Florida Statutes (F.S.), and Chapter 28-106, F.A.C. The District will not accept a petition sent by facsimile (fax). Mediation pursuant to Section 120.573, F.S., may be available and choosing mediation does not affect your right to an administrative hearing.

A petition for an administrative hearing is deemed filed upon receipt of the complete petition by the District Clerk at the District Headquarters in Palatka, Florida during the District's regular business hours. The District's regular business hours are 8 a.m. – 5 p.m., excluding weekends and District holidays. Petitions received by the District Clerk after the District's regular business hours shall be deemed filed as of 8 a.m. on the District's next regular business day. The District's acceptance of petitions filed by e-mail is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation (issued pursuant to Rule 28-101.001, Florida Administrative Code), which is available for viewing at www.sjrwmd.com. These conditions include, but are not limited to, the petition being in the form of a PDF or TIFF file and being capable of being stored and printed by the District. Further, pursuant to the District's Statement of Agency Organization and Operation, attempting to file a petition by facsimile (fax) is prohibited and shall not constitute filing.

The right to an administrative hearing and the relevant procedures to be followed are governed by Chapter 120, Florida Statutes, Chapter 28-106, Florida Administrative Code, and Rule 40C-1.1007, Florida Administrative Code. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means the District's final action may be different from the position taken by it in this notice. **Failure to file a petition for an administrative hearing within the requisite time frame shall constitute a waiver of the right to an administrative hearing. (Rule 28-106.111, F.A.C.).**

If you wish to do so, please visit http://www.sjrwmd.com/nor_dec/ to read the complete Notice of Rights to determine any legal rights you may have concerning the District's decision(s) on the permit application(s) described above. You can also request the Notice of Rights by contacting the Director of Regulatory Support, 4049 Reid St., Palatka, FL 32177-2529, tele. no. (386)329-4570.

NEWSPAPER ADVERTISING

ALACHUA
The Alachua County Record, Legal Advertising
P. O. Box 806
Gainesville, FL 32602
352-377-2444/ fax 352-338-1986

BAKER
Baker County Press, Legal Advertising
P. O. Box 598
Maclenny, FL 32063
904-259-2400/ fax 904-259-6502

BRAFORD
Bradford County Telegraph, Legal Advertising
P. O. Drawer A
Starke, FL 32901
904-964-6305/ fax 904-964-8628

BREVARD
Florida Today, Legal Advertising
P. O. Box 419000
Melbourne, FL 32941-9000
321-242-3832/ fax 321-242-6618

CLAY
Clay Today, Legal Advertising
1560 Kinsley Ave., Suite 1
Orange Park, FL 32073
904-264-3200/ fax 904-264-3285

DUVAL
Daily Record, Legal Advertising
P. O. Box 1769
Jacksonville, FL 32201
904-356-2466 / fax 904-353-2628

FLAGLER
Flagler Tribune, c/o News Journal
P. O. Box 2831
Daytona Beach, FL 32120-2831
386- 681-2322

INDIAN RIVER
Vero Beach Press Journal, Legal Advertising
P. O. Box 1268
Vero Beach, FL 32961-1268
772-221-4282/ fax 772-978-2340

LAKE
Daily Commercial, Legal Advertising
P. O. Drawer 490007
Leesburg, FL 34749
352-365-8235/fax 352-365-1951

MARION
Ocala Star Banner, Legal Advertising
2121 SW 19th Avenue Road
Ocala, FL 34474
352-867-4010/fax 352-867-4126

NASSAU
News-Leader, Legal Advertising
P. O. Box 766
Fernandina Beach, FL 32035
904-261-3696/fax 904-261-3698

OKEECHOBEE
Okeechobee News, Legal Advertising
P. O. Box 639
Okeechobee, FL 34973-0639
863-763-3134/fax 863-763-5901

ORANGE
Sentinel Communications, Legal Advertising
633 N. Orange Avenue
Orlando, FL 32801
407-420-5160/ fax 407-420-5011

OSCEOLA
Little Sentinel, Legal Advertising
633 N. Orange Avenue
Orlando, FL 32801
407-420-5160/ fax 407-420-5011

PUTNAM
Palatka Daily News, Legal Advertising
P. O. Box 777
Palatka, FL 32178
386-312-5200/ fax 386-312-5209

ST. JOHNS
St. Augustine Record, Legal Advertising
P. O. Box 1630
St. Augustine, FL 32085
904-819-3436

SEMINOLE
Seminole Herald, Legal Advertising
300 North French Avenue
Sanford, FL 32771
407-323-9408

VOLUSIA
News Journal Corporation, Legal Advertising
P. O. Box 2831
Daytona Beach, FL 32120-2831
(386) 681-2322

NOTE:
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.

FLIGHT DATE: 2015

SEE SHEET DRAINAGE MAP (X-24)

SEE SHEET DRAINAGE MAP (22)

MATCHLINE STA. 689+60.00

MATCHLINE STA. 719+60.00

DUNBAR AVE.

Sec20 T19S R30E
Sec21 T19S R30E

EXIST. POND

EXIST. POND

EXIST. POND

EXIST. POND

EXIST. POND

EXIST. POND 316

10.09 Ac.

EXIST. POND 5 (WET/OPEN)
(PERMIT NO. 22124-2)
POND BOTTOM EL. 7.10
CONTROL EL. 13.10 (SHGWT)
WEIR EL. 13.45
DHW EL. 14.48 (25 YR./24 HR.)
BERM EL. 18.50

SEMINOLE COUNTY PORT AUTHORITY

FLOOD PLAIN

Sec16 T19S R30E
Sec21 T19S R30E

EXIST. R/W LINE

0 50 200
Feet

℄ CONST. US 17/92

FEMA 100-YR.
(ZONE A) 9/28/07

SEMINOLE COUNTY PORT AUTHORITY

EXIST. R/W LINE

EXIST. R/W LINE

US 17/92

4.58 Ac.

2.05 Ac.

4.01 Ac.

EXIST. LA R/W LINE

EXIST. LA R/W LINE

LA MESA RV

ORANGE BLVD.

BEGIN BRIDGE

PROP. LA R/W LINE

1.70 Ac.

℄ RAMP AUS17

RAMP AUS17

1.12 Ac.

BEGIN BRIDGE

END BRIDGE

EXIST. LA R/W LINE

44.10 Ac.

℄ WB I-4

I-4 WB GUL

I-4 WB EXPRESS LANES

I-4 EB EXPRESS LANES

I-4 EB GUL

℄ EB I-4

℄ CONST. I-4

℄ WB I-4

EXIST. LA R/W LINE

EL. 15.0

RAMP BUS17

RAMP BUS17

RAMP BUS17

EXIST. LA R/W LINE

3.71 Ac.

BEGIN BRIDGE

℄ RAMP BUS17

EXIST. LA R/W LINE

EXIST. LA R/W LINE

ELDER RD.

SCHOOL ST.

DONNIE MYERS RV'S

SOUTHERN PRIDE BUSINESS CENTER

EXIST. POND 00-5 (WET/OPEN)
(PERMIT NO. 64105-1)
POND BOTTOM EL. -7.0
CONTROL EL 4.50 (SHWGT)
WEIR EL. 6.0
DHW EL. 8.03 (25 YR./24 HR.)
BERM EL. 8.5

6.69 Ac.

POND 317D

3.71 Ac.

14.54 Ac.

℄ CONST. US 17/92

POND 317C

14.34 Ac.

ELDER DITCH

FLORIDA ROCK INDUSTRIES

S-1620 S-1621 S-1622 S-1623 S-1624 S-1625 S-1626 S-1627 S-1628 S-1629 S-1630 S-1631 S-1632 S-1633 S-1634 S-1635 S-1636 S-1637 S-1638 S-1639 S-1640 S-1641 S-1642 S-1643 S-1644 S-1645 S-1617 S-1618 S-1619 S-0317C S-0317D S-1750 S-1751 S-1746 S-1745 S-1749

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

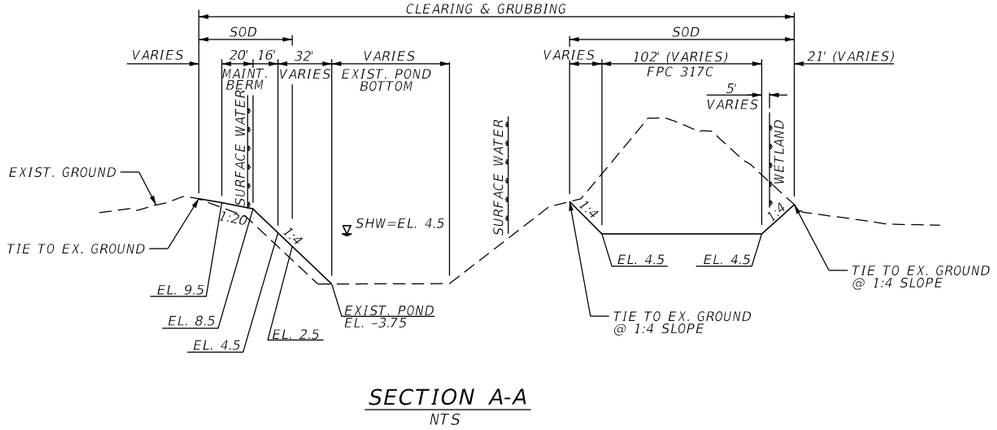
MICHAEL J. QUARTETTI, P.E.
P.E. LICENSE NUMBER 45976
WSP USA Inc.
2202 N WEST SHORE BLVD., SUITE 300
TAMPA, FL 33607
CERTIFICATE OF AUTHORIZATION 00001462

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
400	SEMINOLE	242592-4-52-01

DRAINAGE MAP (21)

SHEET NO. 22



SECTION A-A
NTS

NOTES:

1. CONTROL POINTS FOR POND 317C & FPC 317C ARE REFERENCED FROM ℄ CONST. CR 15 (MONROE RD). CONTROL POINTS FOR POND 317D ARE REFERENCED FROM ℄ ORANGE BLVD.
2. SEE POND X-SECTIONS FOR POND 317C & FPC 317C EARTHWORK.

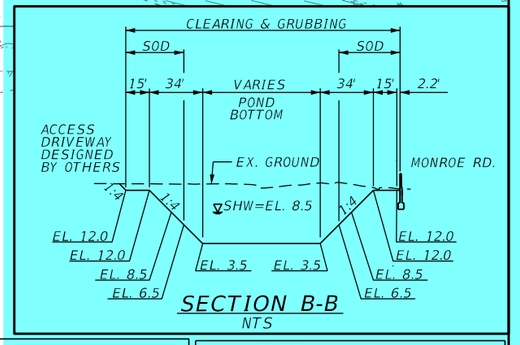
CONTROL POINTS POND 317D			
Number	Station	Offset	Radius
1	149+39.41	255.41' Rt.	5'
2	148+44.72	123.99' Rt.	5'
3	149+21.93	120.96' Rt.	5'
4	149+93.80	216.58' Rt.	5'

POND 317D		
DHW EL. (25yr-24hr SJRWMD)	=	11.0
WEIR EL.	=	9.55
SHW EL.	=	8.5
BOTTOM EL.	=	3.5

POND 317C & FPC 317C		
DHW EL. (25yr-24hr SJRWMD)	=	7.57
WEIR EL.	=	6.0
SHW EL.	=	4.5
BOTTOM EL.	=	-3.5

CONTROL POINTS POND 317C			
Number	Station	Offset	Radius
1	283+70.63	410.43' Lt.	–
2	285+45.14	390.04' Lt.	–
3	283+36.26	414.48' Lt.	–
4	283+02.87	456.72' Lt.	4'
5	283+95.04	514.46' Lt.	9'
6	285+40.24	500.76' Lt.	–

CONTROL POINTS FPC 317C			
Number	Station	Offset	Radius
1	285+86.83	122.10' Lt.	4
2	285+57.10	314.32' Lt.	–
3	285+71.00	386.48' Lt.	–
4	286+39.86	571.44' Lt.	4'
5	288+24.52	552.09' Lt.	4'
6	286+73.88	388.36' Lt.	–
7	286+51.36	341.16' Rt.	–
8	286+46.04	301.91' Lt.	–
9	286+53.84	263.90' Lt.	–
10	286+95.69	184.21' Lt.	–
11	287+36.46	115.37' Lt.	4'



SECTION B-B
NTS

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MICHAEL J. QUARTETTI, P.E.
P.E. LICENSE NUMBER 45976
WSP USA Inc.
2202 N WEST SHORE BLVD., SUITE 300
TAMPA, FL 33607
CERTIFICATE OF AUTHORIZATION 00001462

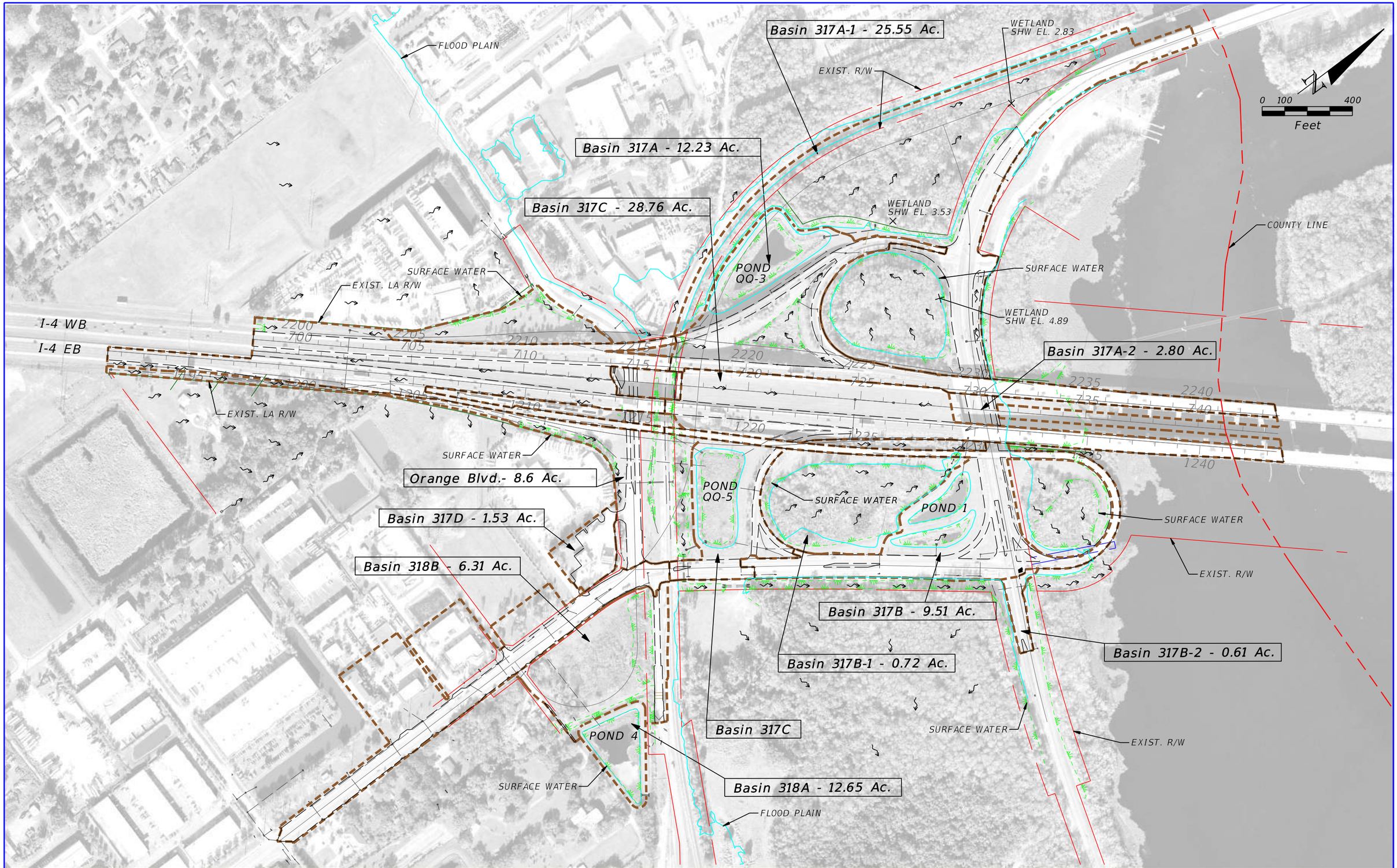
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
400	SEMINOLE	242592-4-52-01

POND DETAIL
POND 317D/317C/FPC 317C

SHEET NO. 378

Drainage Maps



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MICHAEL J. QUARTETTI, P.E.
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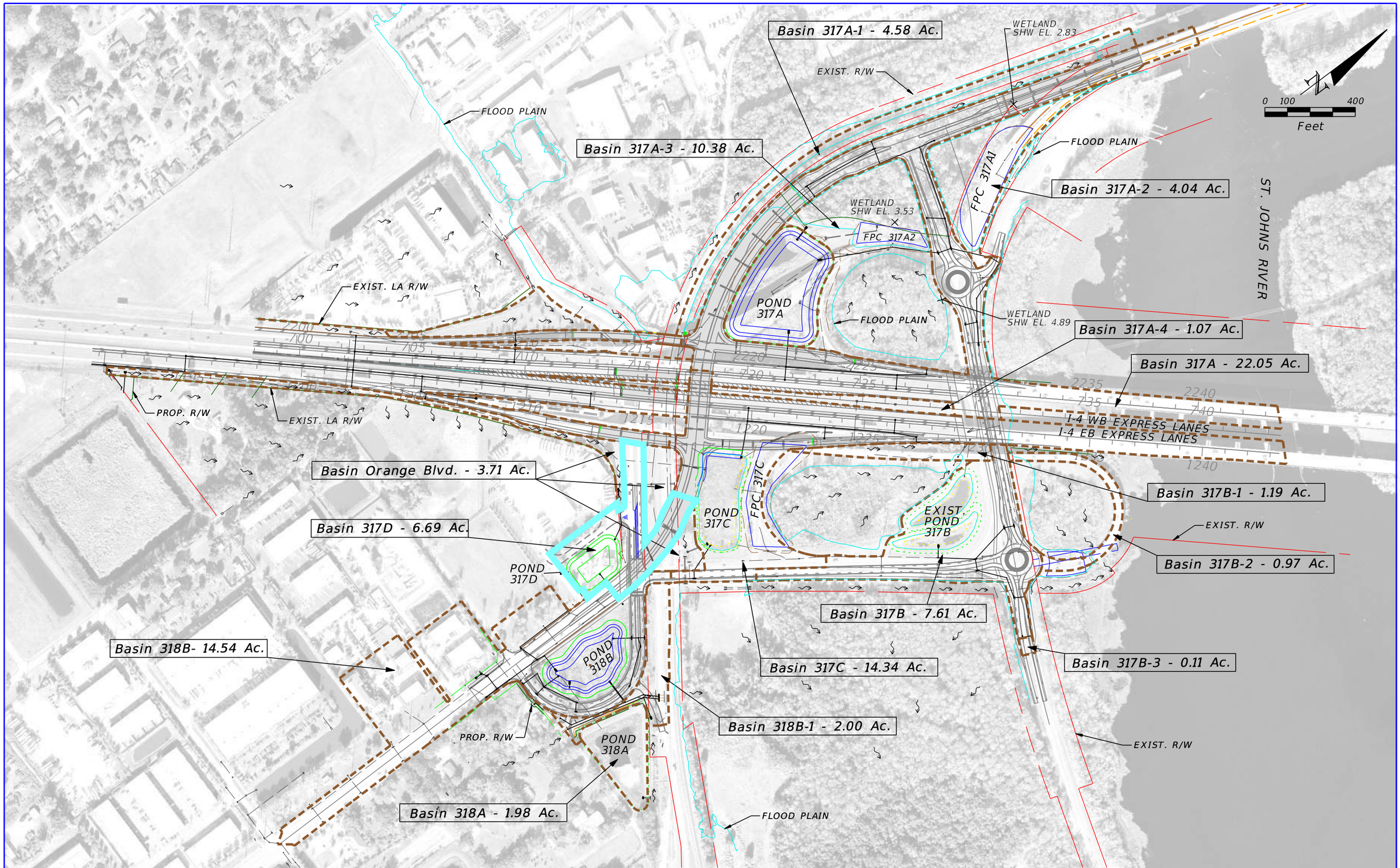
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
400	SEMINOLE	242592-4-52-01

DRAINAGE MAP
EXISTING BASIN 317 & 318

SHEET NO. 1



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

MICHAEL J. QUARTETTI, P.E.
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STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
400	SEMINOLE	242592-4-52-01

DRAINAGE MAP
PROPOSED BASIN 317 & 318

SHEET NO. 2

PROJECT TITLE:	I-4 BtU Segment 3	**DATE:**	May 4, 2017
PROJECT NUMBER:	242592-4-52-01	**MADE BY:**	JLL
BASIN DESIGNATION:	Basin 317D	**CHECKED BY:**	MB

III ***GEOTECHNICAL INFORMATION***

Estimated Seasonal High Water Table (SHWT)	
	Estimated SHWT (Ft)
Boring P317D-1 and P317D-2	8.50
Estimated SHWT	8.50

REQUIRED TREATMENT VOLUME CALCULATION (WET DETENTION)	AC-FT
1.0 inch of Runoff over the Basin Area	0.56
Total Runoff from 2.5 inches over the Impervious Area	0.53

<< CONTROLS>>

V ***PROVIDED TREATMENT & ATTENUATION VOLUME CALCULATIONS***

REQUIRED ATTENUTATION CACULATION

PRE-DEVELOPED CONDITION		**POST-DEVELOPED CONDITION**	
AREA (AC):	1.53	AREA (AC):	6.69
CN:	92.5	CN:	88.3
IMPERVIOUS AREA (AC):	1.06	IMPERVIOUS AREA (AC):	2.54
PERVIOUS AREA (AC):	0.47	PERVIOUS AREA (AC):	4.15
		NEW IMPERVIOUS AREA (AC):	1.48

POND STAGE, AREA & STORAGE

DESCRIPTION	**STAGE (FT)**	**AREA (AC)**	**CUMMULATIVE STORAGE (AC-FT)**
Pond Bottom	3.50	0.26	0.00
SHWT / Orifice Elevation	8.50	0.50	1.90
Weir Crest Elevation	9.55	0.56	2.46
Top of Bank Elevation (Inside)	12.00	0.70	4.00
Top of Berm	12.01	0.95	4.01

PROVIDED TREATMENT VOLUME	AC-FT
Treatment Volume Provided = Volume between Seasonal High and Weir Crest Elevation	0.56

BASIN 317
Proposed Condition Output

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
OUT 317A	BASIN317	SJRWMD	48.00	7.50	8.50	-0.0021	0	12.82	27.46	0.00	0.00
OUT 317B	BASIN317	SJRWMD	12.00	6.00	8.50	0.0028	0	12.10	10.52	0.00	0.00
OUT 317C	BASIN317	SJRWMD	48.00	7.50	8.50	-0.0021	0	12.38	46.78	0.00	0.00
Pond 317A	BASIN317	SJRWMD	12.82	7.57	8.50	0.0047	132152	12.08	112.61	12.82	27.46
Pond 317B	BASIN317	SJRWMD	13.14	7.12	8.50	0.0040	59167	12.07	35.06	13.29	5.04
Pond 317C	BASIN317	SJRWMD	12.81	7.57	8.50	0.0050	72036	12.07	69.36	12.45	22.04
Pond 317D	BASIN317	SJRWMD	12.33	11.00	11.00	0.0050	28006	12.05	34.38	12.33	20.53

peak stage used to estimate provided attenuation

Proposed Discharge Rates:
Basin 317A
Q-SJRWMD (25-yr/24-hr)= 27.46 cfs

Basin 317B
Q-SJRWMD (25-yr/24-hr)= 10.52 cfs

Basin 317 C
Q-SJRWMD (25-yr/24-hr)= 46.78 cfs

FLORIDA DEPARTMENT OF TRANSPORTATION
STORM DRAIN TABULATION FORM

Financial Prj Id: **242592-4** County: **SEMINOLE** Network: **317D** Designed by **LNW** Date: 7/26/2017
Description: **I-4 BTU SEGMENT 3** Organization **WSP USA, Inc.** State Road: **400 (I-4)** Checked by: **MB** Date: 7/26/2017

LOCATION OF UPPER END / ALIGNMENT NAME / STATION	DIST	SD	STR. NO. / UPPER / LOWER	TYPE OF STR.	LEN. (ft.)	AREAS (Ac) C= 0.95 / C= 0.25 / C= 0.20 INC	TOTAL	SUB-TOTAL (C*A)	TIME OF CONC (min)	TIME OF FLOW SECT. (min)	INTEN (in/hr)	TOTAL (C*A)	BASE FLOW SUMM BASE (cfs)	TOTAL FLOW (cfs)	MINOR LOSS (ft.)	INLET ELEV. (ft.)	HGL CLEAR (ft.)	HYDRAULIC GRADE CROWN / FLOWLINE UPPER (ft.)	LOWER (ft.)	FALL (ft.)	# BR / LS	PIPE SIZE (in.) / RISE / SPAN	SLOPE % / HGL / PHYS. MIN.	ACTUAL VEL. / PHYS. VEL. (fps)	FULL FLOW CAP. (cfs)	NOTES & REMARKS
CL17			**S-1747**			0.15	0.15	0.14					0.00					10.57	10.57	0.00		18.00	0.009	0.52		ZONE: 7
				BW 218	30.13	0.00	0.00	0.00	10.00	0.25	6.50	0.14	0.00	**0.91**	0.00	33.79	**23.22**	7.50	7.00		1		1.659		14.66	FREQ. (Yrs): 3
179+47.18	44.87	Rt.	S-1748			0.00	0.00	0.00					0.00					6.00	5.50	0.50		18.00	0.150	8.30		MANNINGS n: 0.0120
CL17			**S-1748**			0.34	0.49	0.33										10.57	10.51	0.06		18.00	0.111	1.70		
				P-5	53.56	0.00	0.00	0.00	10.25	0.45	6.44	0.47	0.00	**3.00**	0.02	34.01	**23.44**	7.00	6.50		1		0.933		10.99	
179+46.89	11.74	Rt.	S-1749			0.00	0.00	0.00					0.00					5.50	5.00	0.50		18.00	0.150	6.22		TAILW EL (ft): 10.25
CL17			**S-1749**			0.42	0.91	0.40										10.51	10.41	0.09		18.00	1.125	3.11		
				BW 218	8.43	0.00	0.00	0.00	10.70	0.05	6.34	0.87	0.00	**5.50**	0.08	32.42	**21.91**	6.50	6.00		1		5.931		27.71	
179+46.40	44.82	Lt.	S-1750			0.00	0.00	0.00					0.00					5.00	4.50	0.50		18.00	0.150	15.68		
CL17			**S-1750**			0.00	0.91	0.00										10.41	10.25	0.16		18.00	0.435	3.10		
				MH-8	36.95	0.00	0.00	0.00	10.74	0.00	6.33	0.87	0.00	**5.49**	0.07	12.00	**1.59**	6.00	5.00		1		2.706		18.72	
179+46.31	56.25	Lt.	OUT317D			0.00	0.00	0.00					0.00					4.50	3.50	1.00		18.00	0.150	10.59		

used to estimate stormsewer attenuation

Units: ENGLISH

HGL method: Standard FDOT (Jump HGL to pipe crown).

Volusia County

SJRWMD

Permit No. 64105-12

I-4 Widening

St. Johns River
Water Management District
Hans G. Tanzler III, Executive Director

4049 Reid Street • P.O. Box 1429 • Palatka, FL 32178-1429 • (386) 329-4500
On the Internet at floridaswater.com.

November 7, 2013

Florida Department of Transportation - District 5
719 S Woodland Blvd
Mail Station 542
DeLand, FL 32720

SUBJECT: Permit Number IND-127-64105-12
I-4 Widening (SR 44 to I-95)

Dear Sir/Madam:

Enclosed is your permit issued by the St. Johns River Water Management District on November 7, 2013. This permit is a legal document and should be kept with your other important documents. Permit issuance does not relieve you from the responsibility of obtaining any necessary permits from any federal, state, or local agencies for your project.

Technical Staff Report:
If you wish to review a copy of the Technical Staff Report (TSR) that provides the District's staff analysis of your permit application, you may view the TSR by going to the Permitting section of the District's website at floridaswater.com/permitting. Using the "search applications and permits" feature, you can use your permit number or project name to find information about the permit. When you see the results of your search, click on the permit number.

Noticing Your Permit:
For noticing instructions, please refer to the noticing materials in this package regarding closing the point of entry for someone to challenge the issuance of your permit. Please note that if a timely petition for administrative hearing is filed, your permit will become nonfinal and any activities that you choose to undertake pursuant to your permit will be at your own risk.

Compliance with Permit Conditions:
To submit your required permit compliance information, go to the District's website at floridaswater.com/permitting. Under the "Apply for a permit or submit compliance data" section, click to sign-in to your existing account or to create a new account. Select the "Compliance Submittal" tab, enter your permit number, and select "No Specific Date" for the Compliance Due Date Range. You will then be able to view all the compliance submittal requirements for your project. Select the compliance item that you are ready to submit and then attach the appropriate information or form.

The forms to comply with your permit conditions are available at floridaswater.com/permitting under the section "Handbooks, forms, fees, final orders". Click on forms to view all permit compliance forms, then scroll to the ERP application forms section and select the applicable compliance forms. Alternatively, if you have difficulty finding forms or need copies of the appropriate forms, please contact the Bureau of Regulatory Support at (386) 329-4570.

Transferring Your Permit:
As required by a condition of your permit, you must notify the District in writing within 30 days of any sale, conveyance or other transfer of a permitted system or facility, or within 30 days of any

transfer of ownership or control of the real property where the permitted system or facility is located. You will need to provide the District with the information specified in District rule 40C-1.612, Florida Administrative Code (name and address of the transferee and a copy of the instrument effectuating the transfer). Please note that a permittee remains liable for any corrective actions that may be required as a result of any permit violations that occur before the sale, conveyance, or other transfer of the system or facility, so it is recommended that you request a permit transfer in advance.

Thank you and please let us know if you have additional questions. For general questions contact e-permit@sjrwmd.com or (386) 329-4570.
Sincerely,

M. Daniels

Margaret Daniels, Bureau Chief

Bureau of Regulatory Support
St. Johns River Water Management District
4049 Reid Street
Palatka, FL 32177-2529
(386) 329-4570

Enclosures: Permit

cc: District Permit File

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
Post Office Box 1429
Palatka, Florida 32178-1429

PERMIT NO. IND-127-64105-12 **DATE ISSUED:** November 7, 2013
PROJECT NAME: I-4 Widening (SR 44 to I-95)

A PERMIT AUTHORIZING:

Construction of a Surface Water Management System with stormwater treatment by Retention, Wet Detention for I-4 Widening (SR 44 to I-95), a 558.55 - acre project to be constructed and operated as per plans received by the District on October 10, 2013.
LOCATION:

SECTION(S):	23,24,26,27,33,34	TOWNSHIP(S):	16S	RANGE(S):	31E
	3,4,8,9,17,18		17S		31E

Volusia County

ISSUED TO:

Florida Department of Transportation - District 5
719 S Woodland Blvd
Mail Station 542
DeLand, FL 32720

Permittee agrees to hold and save the St. Johns River Water Management District and its successors harmless from any and all damages, claims, or liabilities which may arise from permit issuance. Said application, including all plans and specifications attached thereto, is by reference made a part hereof.

This permit does not convey to permittee any property rights nor any rights or privileges other than those specified herein, nor relieve the permittee from complying with any law, regulation or requirement affecting the rights of other bodies or agencies. All structures and works installed by permittee hereunder shall remain the property of the permittee.

This permit may be revoked, modified or transferred at any time pursuant to the appropriate provisions of Chapter 373, Florida Statutes:

PERMIT IS CONDITIONED UPON:

See conditions on attached "Exhibit A", dated November 7, 2013

AUTHORIZED BY: St. Johns River Water Management District

By: David Dewey

David Dewey
Service Center Director

"EXHIBIT A"
CONDITIONS FOR ISSUANCE OF PERMIT NUMBER IND-127-64105-12
Florida Department of Transportation - District 5
DATED November 07, 2013

1. All activities shall be implemented following the plans, specifications and performance criteria approved by this permit. Any deviations must be authorized in a permit modification in accordance with Rule 62-330.315, F.A.C. Any deviations that are not so authorized may subject the permittee to enforcement action and revocation of the permit under Chapter 373, F.S.

2. A complete copy of this permit shall be kept at the work site of the permitted activity during the construction phase, and shall be available for review at the work site upon request by the Agency staff. The permittee shall require the contractor to review the complete permit prior to beginning construction.

3. Activities shall be conducted in a manner that does not cause or contribute to violations of state water quality standards. Performance-based erosion and sediment control best management practices shall be installed immediately prior to, and be maintained during and after construction as needed, to prevent adverse impacts to the water resources and adjacent lands. Such practices shall be in accordance with the State of Florida Erosion and Sediment Control Designer and Reviewer Manual (Florida Department of Environmental Protection and Florida Department of Transportation June 2007), and the Florida Stormwater Erosion and Sedimentation Control Inspector's Manual (Florida Department of Environmental Protection, Nonpoint Source Management Section, Tallahassee, Florida, July 2008), which are both incorporated by reference in subparagraph 62-330.050(9)(b)5., F.A.C., unless a project-specific erosion and sediment control plan is approved or other water quality control measures are required as part of the permit.

4. At least 48 hours prior to beginning the authorized activities, the permittee shall submit to the Agency a fully executed Form 62-330.350(1), "Construction Commencement Notice," [October 1, 2013], incorporated by reference herein (http://www.flrules.org/Gateway/reference.asp?No=Ref-02505), indicating the expected start and completion dates. A copy of this form may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C. If available, an Agency website that fulfills this notification requirement may be used in lieu of the form.

5. Unless the permit is transferred under Rule 62-330.340, F.A.C., or transferred to an operating entity under Rule 62-330.310, F.A.C., the permittee is liable to comply with the plans, terms and conditions of the permit for the life of the project or activity.

6. Within 30 days after completing construction of the entire project, or any independent portion of the project, the permittee shall provide the following to the Agency, as applicable:
   (a) For an individual, private single-family residential dwelling unit, duplex, triplex, or quadruplex - "Construction Completion and Inspection Certification for Activities Associated With a Private Single-Family Dwelling Unit" [Form 62-330.310(3)]; or
   (b) For all other activities - "As-Built Certification and Request for Conversion to Operational Phase" [Form 62-330.310(1)].
   (c) If available, an Agency website that fulfills this certification requirement may be used in lieu of the form.

7. If the final operation and maintenance entity is a third party:
   (a) Prior to sales of any lot or unit served by the activity and within one year of permit issuance, or within 30 days of as- built certification, whichever comes first, the permittee shall submit, as applicable, a copy of the operation and maintenance documents (see

sections 12.3 thru 12.3.3 of Volume I) as filed with the Department of State, Division of Corporations and a copy of any easement, plat, or deed restriction needed to operate or maintain the project, as recorded with the Clerk of the Court in the County in which the activity is located.
(b) Within 30 days of submittal of the as-built certification, the permittee shall submit "Request for Transfer of Environmental Resource Permit to the Perpetual Operation Entity" [Form 62-330.310(2)] to transfer the permit to the operation and maintenance entity, along with the documentation requested in the form. If available, an Agency website that fulfills this transfer requirement may be used in lieu of the form.

8. The permittee shall notify the Agency in writing of changes required by any other regulatory agency that require changes to the permitted activity, and any required modification of this permit must be obtained prior to implementing the changes.

9. This permit does not:
(a) Convey to the permittee any property rights or privileges, or any other rights or privileges other than those specified herein or in Chapter 62-330, F.A.C.;
(b) Convey to the permittee or create in the permittee any interest in real property;
(c) Relieve the permittee from the need to obtain and comply with any other required federal, state, and local authorization, law, rule, or ordinance; or
(d) Authorize any entrance upon or work on property that is not owned, held in easement, or controlled by the permittee.

10. Prior to conducting any activities on state-owned submerged lands or other lands of the state, title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund, the permittee must receive all necessary approvals and authorizations under Chapters 253 and 258, F.S. Written authorization that requires formal execution by the Board of Trustees of the Internal Improvement Trust Fund shall not be considered received until it has been fully executed.

11. The permittee shall hold and save the Agency harmless from any and all damages, claims, or liabilities that may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any project authorized by the permit.

12. The permittee shall notify the Agency in writing:
(a) Immediately if any previously submitted information is discovered to be inaccurate; and
(b) Within 30 days of any conveyance or division of ownership or control of the property or the system, other than conveyance via a long-term lease, and the new owner shall request transfer of the permit in accordance with Rule 62-330.340, F.A.C. This does not apply to the sale of lots or units in residential or commercial subdivisions or condominiums where the stormwater management system has been completed and converted to the operation phase.

13. Upon reasonable notice to the permittee, Agency staff with proper identification shall have permission to enter, inspect, sample and test the project or activities to ensure conformity with the plans and specifications authorized in the permit.

14. If any 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, work involving subsurface disturbance in the immediate vicinity of such discoveries shall cease. The permittee or other designee shall contact the Florida Department of State, Division of Historical Resources, Compliance and Review Section, at (850) 245-6333 or (800) 847-7278, as well as the appropriate permitting agency office. Such subsurface work shall not resume without verbal or written authorization from

the Division of Historical Resources. If unmarked human remains are encountered, all work shall stop immediately and notification shall be provided in accordance with Section 872.05, F.S.

15. 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 Rule 62-330.201, F.A.C., provides otherwise.

16. The permittee shall provide routine maintenance of all components of the stormwater management system to remove trapped sediments and debris. Removed materials shall be disposed of in a landfill or other uplands in a manner that does not require a permit under Chapter 62-330, F.A.C., or cause violations of state water quality standards.

17. This permit is issued based on the applicant's submitted information that reasonably demonstrates that adverse water resource-related impacts will not be caused by the completed permit activity. If any adverse impacts result, the Agency will require the permittee to eliminate the cause, obtain any necessary permit modification, and take any necessary corrective actions to resolve the adverse impacts.

18. A Recorded Notice of Environmental Resource Permit may be recorded in the county public records in accordance with subsection 62-330.090(7), F.A.C. Such notice is not an encumbrance upon the property.

19. At a minimum, all retention and detention storage areas must be excavated to rough grade prior to building construction or placement of impervious surface within the area to be served by those facilities. To prevent reduction in storage volume and percolation rates, all accumulated sediment must be removed from the storage area prior to final grading and stabilization.

20. All wetland areas or water bodies that are outside the specific limits of construction authorized by this permit must be protected from erosion, siltation, scouring or excess turbidity, and dewatering.

21. Prior to construction, the permittee must clearly designate the limits of construction on-site. The permittee must advise the contractor that any work outside the limits of construction, including clearing, may be a violation of this permit.

22. The proposed surface water management system must be constructed and operated as per plans received by the District on October 10, 2013.

23. During the Tomoka River bridge construction activities, the permittee must monitor turbidity upstream (background) and immediately downstream of the turbidity control measures. The background sample must not be taken within any visible plume. It is not necessary to sample during low-water periods (i.e., when the river bed is dry or otherwise when no there is no streamflow or no pools such that the worksite is hydraulically isolated from offsite waters).

    Samples must be collected two times daily with a morning and afternoon sample at least four hours apart during the bridge construction activities.

    Before removal of the turbidity control measures, the turbidity levels within the area surrounded by the turbidity control measures must be sampled to ensure no release of turbid water once the turbidity control measures are removed. The turbidity control measures may not be removed until the sample data indicates levels which do not exceed

the State Water Quality Standards. This sample data must be included within the weekly turbidity data report.

If at any time the downstream turbidity level exceeds the State Water Quality Standards, then all measures required to reduce the turbidity including stopping all bridge construction activities, must be taken. The bridge construction activities must not resume until the turbidity has returned to acceptable levels. Any such violation must be reported immediately to the District's Altamonte Springs Service Center.

All turbidity data must be submitted to the District's Altamonte Springs Service Center weekly. The data must contain the following information: - permit number; - date and time of sampling and analysis; - statement describing collection, handling, storage, and analysis methods; - a map indicating the location of the samples taken; - depth of sample; - antecedent weather conditions; and flow direction.

24. Mitigation to offset the impacts to wetlands and/or other surface waters authorized by this permit was provided through Section 373.4137, F.S. The mitigation plan approved by the District's Governing Board or its designee remains valid for the present permit.

25. This permit for construction will expire five years from the date of issuance.

26. The operation and maintenance entity shall inspect the stormwater or surface water management system once within two years after the completion of construction and every two years thereafter to determine if the system is functioning as designed and permitted. The operation and maintenance entity must maintain a record of each required inspection, including the date of the inspection, the name, address, and telephone number of the inspector, and whether the system was functioning as designed and permitted, and make such record available for inspection upon request by the District during normal business hours. If at any time the system is not functioning as designed and permitted, then within 14 days the entity shall submit an Exceptions Report to the District, on form number 40C-42.900(6), Exceptions Report for Stormwater Management Systems Out of Compliance.

Notice Of Rights

1. A person whose substantial interests are or may be affected has the right to request an administrative hearing by filing a written petition with the St. Johns River Water Management District (District). Pursuant to Chapter 28-106 and Rule 40C-1.1007, Florida Administrative Code, the petition must be filed (received) either by delivery at the office of the District Clerk at District Headquarters, P. O. Box 1429, Palatka Florida 32178-1429 (4049 Reid St., Palatka, FL 32177) or by e-mail with the District Clerk at Clerk@sjrwmd.com, within twenty-six (26) days of the District depositing the notice of District decision in the mail (for those persons to whom the District mails actual notice), within twenty-one (21) days of the District emailing the notice of District decision (for those persons to whom the District emails actual notice), or within twenty-one (21) days of newspaper publication of the notice of District decision (for those persons to whom the District does not mail or email actual notice). A petition must comply with Sections 120.54(5)(b)4. and 120.569(2)(c), Florida Statutes, and Chapter 28-106, Florida Administrative Code. The District will not accept a petition sent by facsimile (fax), as explained in paragraph no. 4 below.

2. Please be advised that if you wish to dispute this District decision, mediation may be available and that choosing mediation does not affect your right to an administrative hearing. If you wish to request mediation, you must do so in a timely-filed petition. If all parties, including the District, agree to the details of the mediation procedure, in writing, within 10 days after the time period stated in the announcement for election of an administrative remedy under Sections 120.569 and 120.57, Florida Statutes, the time limitations imposed by Sections 120.569 and 120.57, Florida Statutes, shall be tolled to allow mediation of the disputed District decision. The mediation must be concluded within 60 days of the date of the parties' written agreement, or such other timeframe agreed to by the parties in writing. Any mediation agreement must include provisions for selecting a mediator, a statement that each party shall be responsible for paying its pro-rata share of the costs and fees associated with mediation, and the mediating parties' understanding regarding the confidentiality of discussions and documents introduced during mediation. If mediation results in settlement of the administrative dispute, the District will enter a final order consistent with the settlement agreement. If mediation terminates without settlement of the dispute, the District will notify all the parties in writing that the administrative hearing process under Sections 120.569 and 120.57, Florida Statutes, is resumed. Even if a party chooses not to engage in formal mediation, or if formal mediation does not result in a settlement agreement, the District will remain willing to engage in informal settlement discussions.

3. A person whose substantial interests are or may be affected has the right to an informal administrative hearing pursuant to Sections 120.569 and 120.57(2), Florida Statutes, where no material facts are in dispute. A petition for an informal hearing must also comply with the requirements set forth in Rule 28-106.301, Florida Administrative Code.

Notice Of Rights

4. A petition for an administrative hearing is deemed filed upon receipt of the complete petition by the District Clerk at the District Headquarters in Palatka, Florida during the District's regular business hours. The District's regular business hours are 8:00 a.m. – 5:00 p.m., excluding weekends and District holidays. Petitions received by the District Clerk after the District's regular business hours shall be deemed filed as of 8:00 a.m. on the District's next regular business day. The District's acceptance of petitions filed by e-mail is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation (issued pursuant to Rule 28-101.001, Florida Administrative Code), which is available for viewing at floridaswater.com. These conditions include, but are not limited to, the petition being in the form of a PDF or TIFF file and being capable of being stored and printed by the District. Further, pursuant to the District's Statement of Agency Organization and Operation, attempting to file a petition by facsimile is prohibited and shall not constitute filing.

5. Failure to file a petition for an administrative hearing within the requisite timeframe shall constitute a waiver of the right to an administrative hearing. (Rule 28-106.111, Florida Administrative Code).

6. The right to an administrative hearing and the relevant procedures to be followed are governed by Chapter 120, Florida Statutes, Chapter 28-106, Florida Administrative Code, and Rule 40C-1.1007, Florida Administrative Code. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means the District's final action may be different from the position taken by it in this notice. A person whose substantial interests are or may be affected by the District's final action has the right to become a party to the proceeding, in accordance with the requirements set forth above.

7. Pursuant to Section 120.68, Florida Statutes, a party to the proceeding before the District who is adversely affected by final District action may seek review of the action in the District Court of Appeal by filing a notice of appeal pursuant to Rules 9.110 and 9.190, Florida Rules of Appellate Procedure, within 30 days of the rendering of the final District action.

8. A District action is considered rendered, as referred to in paragraph no. 7 above, after it is signed on behalf of the District and filed by the District Clerk.

9. Failure to observe the relevant timeframes for filing a petition for judicial review as described in paragraph no. 7 above will result in waiver of that right to review.

Notice Of Rights

Certificate of Service

I HEREBY CERTIFY that a copy of the foregoing Notice of Rights has been sent to the permittee:

Florida Department of Transportation - District 5
719 S Woodland Blvd
Mail Station 542
DeLand, FL 32720

This 7th day of November, 2013.

Margaret Daniels, Bureau Chief

Bureau of Regulatory Support
St. Johns River Water Management District
4049 Reid Street
Palatka, FL 32177-2529
(386) 329-4570

NOTICING INFORMATION

Dear Permittee:

Please be advised that the St. Johns River Water Management District has not published a notice in the newspaper advising the public that it has issued a permit for this project.

Newspaper publication, using the District's form, notifies members of the public of their right to challenge the issuance of the permit. If proper notice is given by newspaper publication, then there is a 21-day time limit to file a petition challenging the issuance of the permit.

To close the point of entry for filing a petition, you may publish (at your own expense) a one-time notice of the District's decision in a newspaper of general circulation within the affected area as defined in Section 50.011 of the Florida Statutes. If you do not publish a newspaper notice, the time to challenge the issuance of your permit will not expire.

A copy of the notice and a partial list of newspapers of general circulation are attached for your convenience. However, you are not limited to those listed newspapers. If you choose to close the point of entry and the notice is published, the newspaper will return to you an affidavit as proof of publication. Please submit a scanned copy of the affidavit by emailing compliancesupport@sjrwmd.com (preferred method) or send the original affidavit of publication to:

Margaret Daniels, Bureau Chief
Bureau of Regulatory Support
4049 Reid Street
Palatka, FL 32177

If you have any questions, please contact the Bureau of Regulatory Support at (386) 329-4570.

Sincerely,

M. Daniels

Margaret Daniels, Bureau Chief

Bureau of Regulatory Support

NOTICE OF AGENCY ACTION TAKEN BY THE
ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

Notice is given that the following permit was issued on _____:

(Name and address of applicant)_____
permit#_____. The project is located in _____County, Section _____, Township _____ South, Range _____ East. The permit authorizes a surface water management system on _____ acres for _____ known as _____. The receiving water body is _____.

A person whose substantial interests are or may be affected has the right to request an administrative hearing by filing a written petition with the St. Johns River Water Management District (District). Pursuant to Chapter 28-106 and Rule 40C-1.1007, Florida Administrative Code (F.A.C.), the petition must be filed (received) either by delivery at the office of the District Clerk at District Headquarters, P.O. Box 1429, Palatka FL 32178-1429 (4049 Reid St, Palatka, FL 32177) or by e-mail with the District Clerk at Clerk@sjrwmd.com, within twenty six (26) days of the District depositing the notice of intended District decision in the mail (for those persons to whom the District mails actual notice), within twenty-one (21) days of the District emailing notice of intended District decision (for those persons to whom the District emails actual notice), or within twenty-one (21) days of newspaper publication of the notice of intended District decision (for those persons to whom the District does not mail or email actual notice). A petition must comply with Sections 120.54(5)(b)4. and 120.569(2)(c), Florida Statutes (F.S.), and Chapter 28-106, F.A.C. The District will not accept a petition sent by facsimile (fax). Mediation pursuant to Section 120.573, F.S., is not available.

A petition for an administrative hearing is deemed filed upon receipt of the complete petition by the District Clerk at the District Headquarters in Palatka, Florida during the District's regular business hours. The District's regular business hours are 8 a.m. – 5 p.m., excluding weekends and District holidays. Petitions received by the District Clerk after the District's regular business hours shall be deemed filed as of 8 a.m. on the next regular District business day. The District's acceptance of petitions filed by e-mail is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation (issued pursuant to Rule 28-101.001, Florida Administrative Code), which is available for viewing at floridaswater.com. These conditions include, but are not limited to, the petition being in the form of a PDF or TIFF file and being capable of being stored and printed by the District. Further, pursuant to the District's Statement of Agency Organization and Operation, attempting to file a petition by facsimile (fax) is prohibited and shall not constitute filing.

The right to an administrative hearing and the relevant procedures to be followed are governed by Chapter 120, Florida Statutes, Chapter 28-106, Florida Administrative Code, and Rule 40C-1.1007, Florida Administrative Code. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means the District's final action may be different from the position taken by it in this notice. **Failure to file a petition for an administrative hearing within the requisite time frame shall constitute a waiver of the right to an administrative hearing. (Rule 28-106.111, F.A.C.).**

If you wish to do so, please visit http://floridaswater.com/noticeofrights/ to read the complete Notice of Rights to determine any legal rights you may have concerning the District's intended decision(s) on the permit application(s) described above. You can also request the Notice of Rights by contacting the Bureau Chief, Bureau of Regulatory Support (RS), 4049 Reid St., Palatka, FL 32177-2529, tel. no. (386)329-4570.

NEWSPAPER ADVERTISING

ALACHUA
The Alachua County Record, Legal Advertising
P. O. Box 806
Gainesville, FL 32602
352-377-2444/ fax 352-338-1986

BAKER
Baker County Press, Legal Advertising
P. O. Box 598
Maclenny, FL 32063
904-259-2400/ fax 904-259-6502

BRADFORD
Bradford County Telegraph, Legal Advertising
P. O. Drawer A
Starke, FL 32901
904-964-6305/ fax 904-964-8628

BREVARD
Florida Today, Legal Advertising
P. O. Box 419000
Melbourne, FL 32941-9000
321-242-3832/ fax 321-242-6618

CLAY
Clay Today, Legal Advertising
1560 Kinsley Ave., Suite 1
Orange Park, FL 32073
904-264-3200/ fax 904-264-3285

DUVAL
Daily Record, Legal Advertising
P. O. Box 1769
Jacksonville, FL 32201
904-356-2466 / fax 904-353-2628

FLAGLER
Flagler Tribune, c/o News Journal
P. O. Box 2831
Daytona Beach, FL 32120-2831
386- 681-2322

INDIAN RIVER
Vero Beach Press Journal, Legal Advertising
P. O. Box 1268
Vero Beach, FL 32961-1268
772-221-4282/ fax 772-978-2340

LAKE
Daily Commercial, Legal Advertising
P. O. Drawer 490007
Leesburg, FL 34749
352-365-8235/fax 352-365-1951

MARION
Ocala Star Banner, Legal Advertising
2121 SW 19th Avenue Road
Ocala, FL 34474
352-867-4010/fax 352-867-4126

NASSAU
News-Leader, Legal Advertising
P. O. Box 766
Fernandina Beach, FL 32035
904-261-3696/fax 904-261-3698

OKEECHOBEE
Okeechobee News, Legal Advertising
P. O. Box 639
Okeechobee, FL 34973-0639
863-763-3134/fax 863-763-5901

ORANGE
Sentinel Communications, Legal Advertising
633 N. Orange Avenue
Orlando, FL 32801
407-420-5160/ fax 407-420-5011

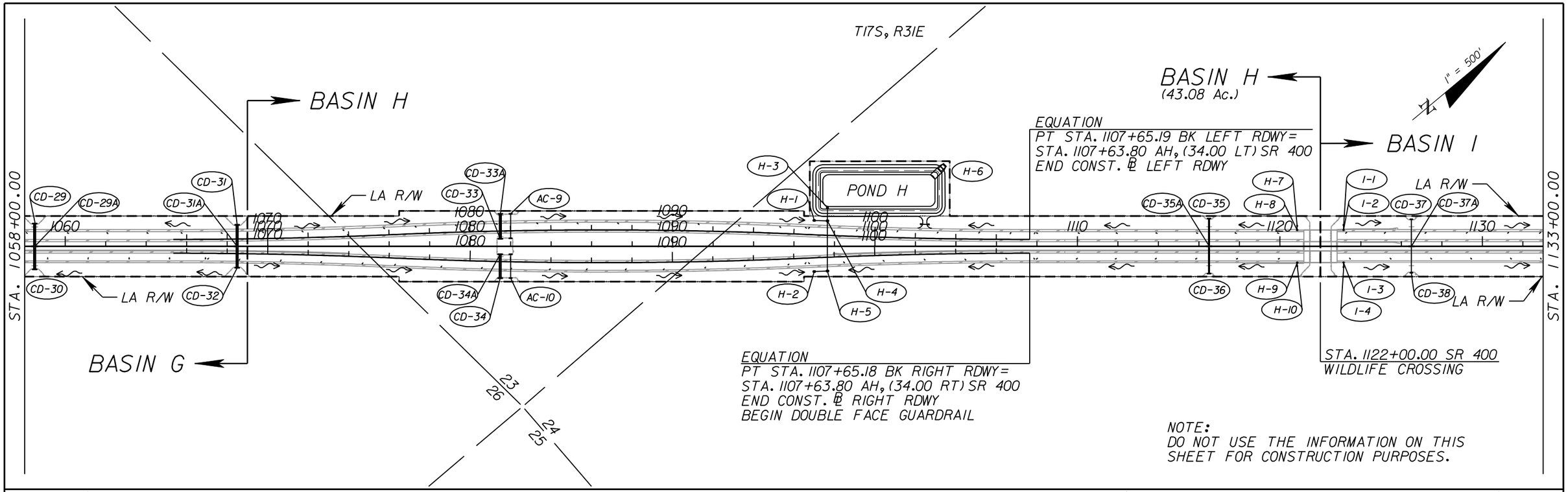
OSCEOLA
Little Sentinel, Legal Advertising
633 N. Orange Avenue
Orlando, FL 32801
407-420-5160/ fax 407-420-5011

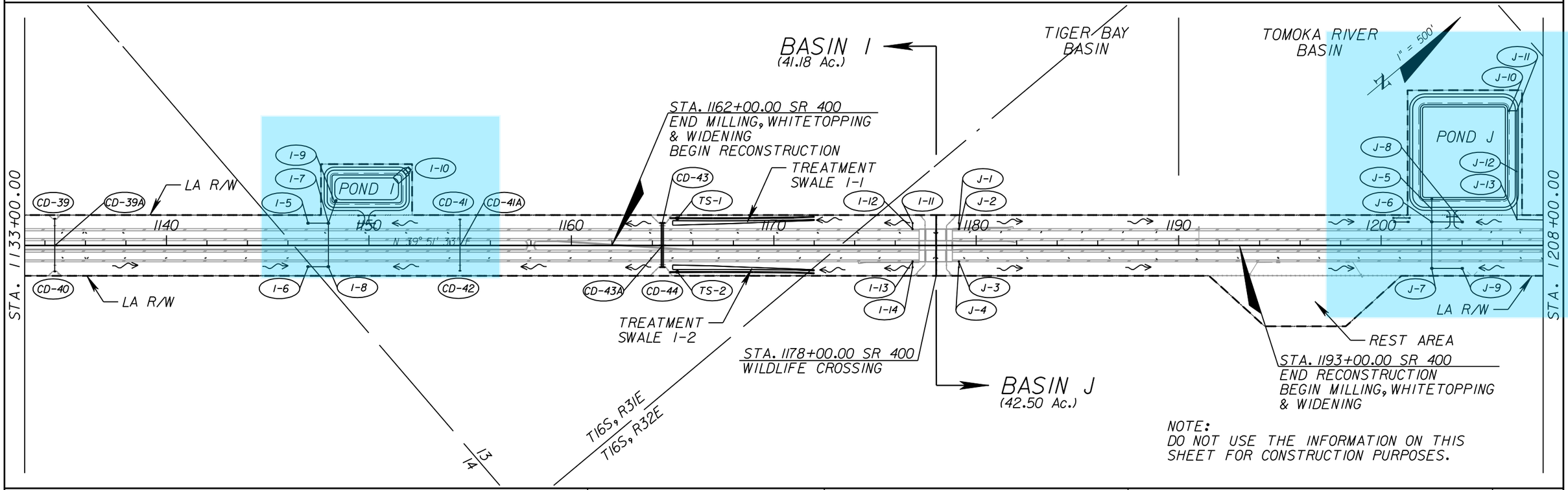
PUTNAM
Palatka Daily News, Legal Advertising
P. O. Box 777
Palatka, FL 32178
386-312-5200/ fax 386-312-5209

ST. JOHNS
St. Augustine Record, Legal Advertising
P. O. Box 1630
St. Augustine, FL 32085
904-819-3436

SEMINOLE
Seminole Herald, Legal Advertising
300 North French Avenue
Sanford, FL 32771
407-323-9408

VOLUSIA
News Journal Corporation, Legal Advertising
P. O. Box 2831
Daytona Beach, FL 32120-2831
(386) 681-2322





REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

engineering

ARIEL MILLAN, P.E.
P.E. License No. 54572
7300 N Kendall Drive, Suite 400
Miami, Florida 33156
Phone: (305) 670-2350
Fax: (305) 670-2351
Certificate of Authorization No. 7184

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
400	VOLUSIA	408464-1-52-01

POST - DEVELOPMENT DRAINAGE MAP

SHEET NO. 3

rsuarez 4/12/2013 5:10:21 PM \\sqlserver\cadd\408464\5201\drainage\DRMPRD3.dgn

FPID 408464-1-52-01
I-4 WIDENING FROM SR 44 TO EAST OF I-95 IN VOLUSIA COUNTY
POST-DEVELOPMENT CONDITIONS
BASIN I
NODE MAXIMUM COMPARISON REPORT

Name	Simulation	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Inflow cfs	Max Outflow cfs
Pond I	005Y240H	40.23	42.50	0.0050	64254	6.81	6.81
Pond I	010Y001H	40.20	42.50	0.0031	64152	34.96	5.18
Pond I	010Y002H	40.31	42.50	0.0035	64591	31.88	13.38
Pond I	010Y004H	40.39	42.50	0.0047	64935	29.01	21.70
Pond I	010Y008H	40.39	42.50	0.0050	64953	30.14	22.15
Pond I	010Y024H	40.27	42.50	0.0050	64441	11.20	10.25
Pond I	010Y072H	40.24	42.50	0.0050	64319	7.95	7.93
Pond I	010Y168H	40.21	42.50	0.0050	64205	6.01	6.00
Pond I	010Y240H	40.25	42.50	0.0050	64334	8.22	8.21
Pond I	025Y001H	40.29	42.50	0.0037	64518	41.95	11.81
Pond I	025Y002H	40.39	42.50	0.0034	64920	38.19	21.29
Pond I	025Y004H	40.45	42.50	0.0050	65201	34.16	29.09
Pond I	025Y008H	40.30	42.50	0.0050	64563	13.00	12.76
Pond I	025Y024H	40.30	42.50	0.0050	64563	13.00	12.76
Pond I	025Y072H	40.26	42.50	0.0050	64407	9.60	9.58
Pond I	025Y168H	40.23	42.50	0.0050	64284	7.32	7.32
Pond I	025Y240H	40.27	42.50	0.0050	64416	9.75	9.75
Pond I	050Y001H	40.34	42.50	0.0041	64709	46.18	16.06
Pond I	050Y002H	40.44	42.50	0.0038	65143	43.54	27.43
Pond I	050Y004H	40.50	42.50	0.0049	65388	38.58	34.79
Pond I	050Y008H	40.51	42.50	0.0050	65454	41.51	36.91
Pond I	050Y024H	40.32	42.50	0.0050	64647	14.80	14.63
Pond I	050Y072H	40.28	42.50	0.0050	64494	11.33	11.31
Pond I	050Y168H	40.25	42.50	0.0050	64332	8.17	8.17
Pond I	050Y240H	40.28	42.50	0.0050	64463	10.69	10.69
Pond I	100Y001H	40.39	42.50	0.0036	64956	51.85	22.24
Pond I	100Y002H	40.49	42.50	0.0042	65346	48.93	33.47
Pond I	100Y004H	40.54	42.50	0.0050	65552	43.03	40.11
Pond I	100Y008H	40.55	42.50	0.0050	65603	45.28	41.80
Pond I	100Y024H	40.34	42.50	0.0050	64725	16.59	16.42
Pond I	100Y072H	40.30	42.50	0.0050	64545	12.40	12.37
Pond I	100Y168H	40.26	42.50	0.0050	64384	9.14	9.14
Pond I	100Y240H	40.29	42.50	0.0050	64522	11.89	11.89
Pond I	SRJ25Y24H	40.59	42.50	0.0050	65779	52.06	47.92
Pond I	SRJMEAN	40.31	42.50	0.0045	64606	28.09	13.69
SWI1	002Y001H	42.24	43.50	0.0050	16089	8.55	0.00
SWI1	002Y002H	42.46	43.50	0.0050	17574	6.97	0.06
SWI1	002Y004H	42.59	43.50	0.0050	18936	3.99	1.01
SWI1	002Y008H	42.60	43.50	0.0050	19122	4.24	1.21
SWI1	002Y024H	42.55	43.50	0.0050	18568	1.17	0.67
SWI1	002Y072H	42.57	43.50	0.0050	18759	0.84	0.84
SWI1	002Y168H	42.55	43.50	0.0050	18545	0.65	0.65
SWI1	002Y240H	42.57	43.50	0.0050	18728	0.81	0.81
SWI1	005Y001H	42.51	43.50	0.0050	18066	11.15	0.31
SWI1	005Y002H	42.62	43.50	0.0050	19306	9.10	1.41
SWI1	005Y004H	42.71	43.50	0.0050	20369	5.31	2.87
SWI1	005Y008H	42.69	43.50	0.0050	20128	5.60	2.50
SWI1	005Y024H	42.60	43.50	0.0050	19094	1.65	1.18
SWI1	005Y072H	42.59	43.50	0.0050	19000	1.08	1.08
SWI1	005Y168H	42.57	43.50	-0.0050	18754	0.84	0.84
SWI1	005Y240H	42.59	43.50	-0.0050	19005	1.08	1.08
SWI1	010Y001H	42.64	43.50	0.0050	19541	13.26	1.69
SWI1	010Y002H	42.69	43.50	0.0050	20145	10.89	2.52
SWI1	010Y004H	42.77	43.50	0.0050	20999	6.30	3.96
SWI1	010Y008H	42.79	43.50	0.0050	21193	6.68	4.32
SWI1	010Y024H	42.65	43.50	0.0050	19635	1.97	1.81
SWI1	010Y072H	42.61	43.50	0.0050	19176	1.27	1.26
SWI1	010Y168H	42.58	43.50	0.0050	18879	0.96	0.96
SWI1	010Y240H	42.61	43.50	0.0050	19215	1.31	1.31
SWI1	025Y001H	42.77	43.50	0.0050	20968	15.91	3.90
SWI1	025Y002H	42.78	43.50	0.0050	21096	13.05	4.14
SWI1	025Y004H	42.83	43.50	0.0050	21695	7.46	5.35
SWI1	025Y008H	42.67	43.50	0.0050	19928	2.29	2.21
SWI1	025Y024H	42.67	43.50	0.0050	19928	2.29	2.21
SWI1	025Y072H	42.63	43.50	0.0050	19406	1.53	1.53

FPID 408464-1-52-01
I-4 Widening from SR 44 to E of I-95 in Volusia
Post-Development Conditions

Prepared by: **J.R.** Date: **04/13/13**
Checked by: **A.R.** Date: **04/13/13**
Approved by: **A.M.** Date: **04/13/13**

Basin I

POND DESIGN INFORMATION

Basin Limits: 1122+00.00 **to** 1164+50.00 **BL Survey & Const. SR 400 (I-4)**

Roadway Basin Area (R/W to R/W):	29.26	Ac
Pond Area (Entire Area Within R/W)	2.61	Ac
Total	**31.87**	Ac

Receiving River Basin: **Tiger Bay**

Top of Berm= 42.50
Inside Edge of Berm= 41.75
Treatment Pool Elevation= 40.10
Permanent Pool Elevation (SHWT)= 37.90

Orifice Size= 5 in
No. of Orifice= 1
Provided Treatment Volume= 130212.93 CF
Provided Permanent Pool Volume= 399534.50 CF
Main Depth= 6.27 FT
Max Depth= 9.40 FT

Elevation	Areas (Ac)	Incr. Vol. (AC-Ft)	Total Vol. (Ac-ft)	Total Volume (cf)	Treatment Volume (cf)	Treatment Volume (CF/Ac)	Remarks
28.50	0.78		**0.00**	**0.00**			
		0.39					
29.00	0.79		0.39	17086.41			
		0.81					
30.00	0.83		1.21	52544.25			
		0.85					
31.00	0.87		2.06	89744.49			
		0.89					
32.00	0.91		2.95	128687.13			
		0.94					
33.00	0.96		3.89	169415.73			
		0.98					
34.00	1.00		4.87	211973.85			
		1.02					
35.00	1.04		5.89	256361.49			
		0.95					
35.90	1.08		6.84	297898.13			
		0.11					
36.00	1.09		6.95	302615.68			
		1.13					
37.00	1.18		8.08	351882.04			
		1.09					
37.90	1.26		9.17	**399534.50**		**9.17**	PPV
		1.44					
39.00	1.36		10.61	462160.71			
		1.55					
40.10	1.46		12.16	529747.43	**130212.93**	**2.99**	Vol. @ Weir EL.
		1.36					
41.00	1.55		13.52	588789.63			
		1.19					
41.75	1.62		13.35	581578.38			
		1.36					
42.50	2.02		14.72	641021.45			