



Truck Parking Central Florida Corridor

I-4 Corridor in Volusia County, Florida

Location Hydraulics Report

Eastbound Volusia County Site 1A

FINAL

FDOT Office
District Five

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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 LOCATION HYDRAULICS REPORT

Project: Truck Parking Central Florida Corridor – Eastbound Volusia County Site 1A

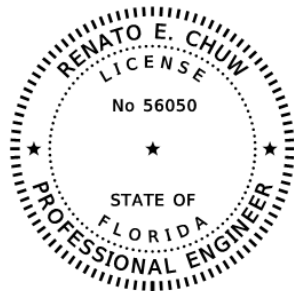
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This Location Hydraulics Report contains engineering information that fulfills the purpose and need for the Truck Parking Central Florida Corridor – Eastbound Volusia County Site in Volusia County, Florida. I acknowledge that the procedures and references 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. 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 within 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 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. 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. As a result of the engineering and environmental analyses completed during the PD&E Study and the comprehensive public engagement plan, five recommended sites are being advanced for project development and are programmed for the final Design phase. These five recommended sites provide a total of approximately 894 truck parking spaces to accommodate existing and future needs. A regional map showing the location of the Eastbound Volusia County recommended site (designated Volusia County Site 1A) is provided in **Figure 1-1**.

The purpose of the Location Hydraulics Report is to address base floodplain encroachments resulting from the roadway improvements evaluated in the *Truck and Freight Alternative Site Analysis PD&E Study* for Volusia County Site 1A. In accordance with Executive Order 11988 “Floodplain Management,” U.S. DOT Order 5650.2 “Floodplain Management Protection,” and Federal-Aid Policy Guide 23 CFR 650A, Floodplains must be protected. The intent of these regulations is to avoid or minimize highway encroachments within the 100-year (base) floodplains and to avoid supporting land use development incompatible with floodplain values.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), the entirety of the project site lies within Zone A of the 100-year floodplain. The Base Flood Elevation (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.

It was concluded that the project will impact approximately 17.48 ac-ft of floodplain based on the proposed truck parking placement. These impacts are minimal compared to the overall extent of the floodplain; therefore, it was determined that the floodplain encroachment is classified as “minimal.” Minimal encroachments on a floodplain occur when there is a floodplain involvement but impacts on

human life, transportation facilities, and natural and beneficial floodplain values are not significant and can be resolved with minimal efforts. Please refer to **Section 4** for additional information.

In conclusion, the following floodplain statement is a slightly modified version of statement Number 4 in the FDOT PD&E Manual (Part 2, Chapter 13 "Floodplains") tailored for this project:

"The proposed structures and stormwater management systems will perform hydraulically in a manner equal to or greater than the existing condition, and backwater surface elevations are not expected to significantly increase. As a result, there will be no significant change in flood risk, and there will not be a significant change in the potential for interruption or termination of emergency service or in emergency evacuation routes. Therefore, it has been determined that this encroachment is not significant."

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SECTION 1 INTRODUCTION

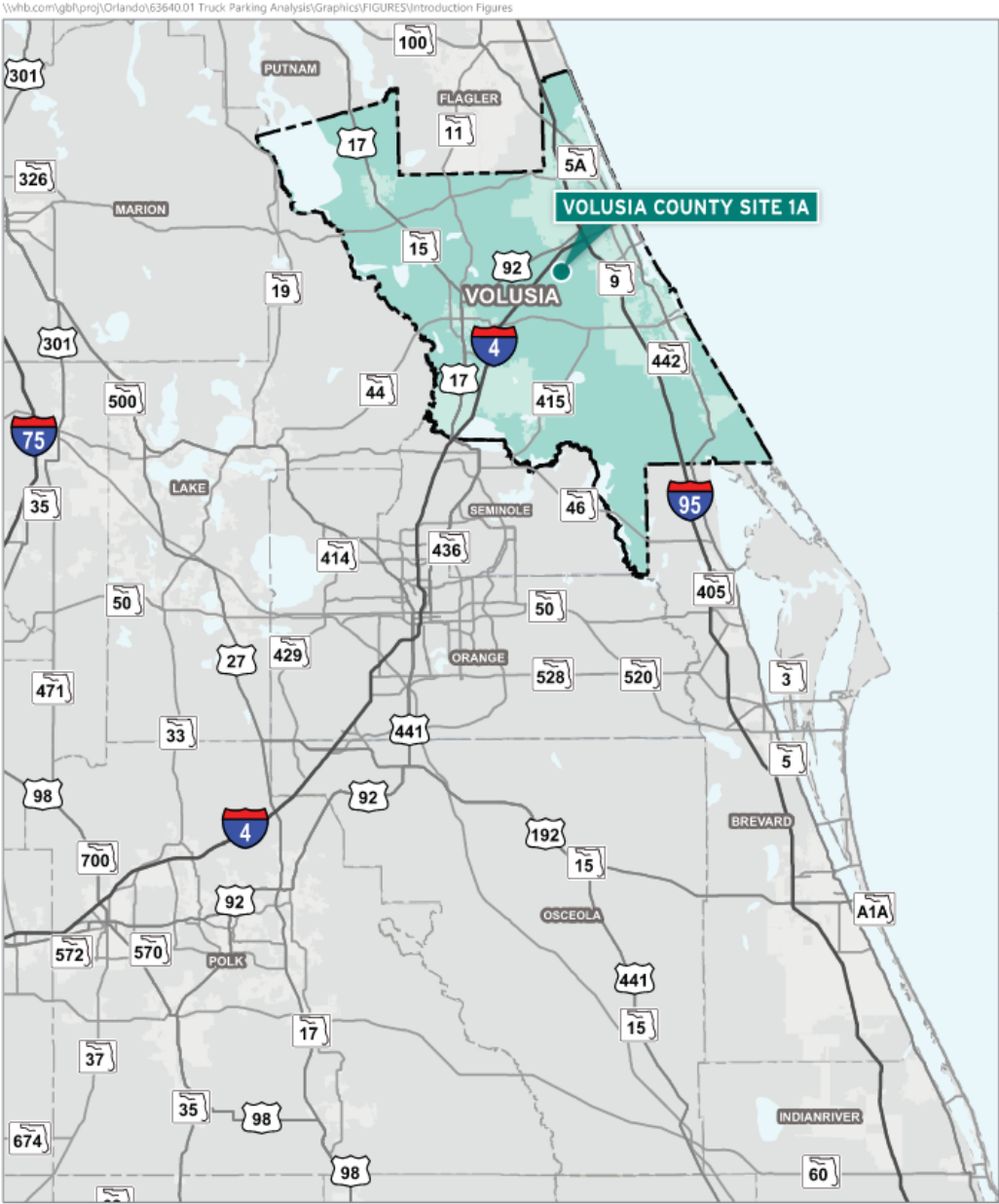
1.1 PROJECT DESCRIPTION

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 within 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 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. 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. As a result of the engineering and environmental analyses completed during the PD&E Study and the comprehensive public engagement plan, five recommended sites are being advanced for project development and are programmed for the final Design phase. These five recommended sites provide a total of approximately 894 truck parking spaces to accommodate existing and future needs. A regional map showing the location of the Eastbound Volusia County recommended site (designated Volusia County Site 1A) is provided in **Figure 1-1**.

A preliminary concept for Volusia County Site 1A was developed to establish site boundaries and is provided in the *Truck and Freight Alternative Site Analysis PD&E Study Preliminary Engineering Report (PER)*, under separate cover. The study area for the site included the proposed Right-of-Way (ROW), I-4 access ramps, and land for wildlife conservation. The recommended site is located adjacent to I-4. 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



FDOT Figure 1-1
**Recommended Truck Parking
 Site Location Map**
 Volusia County Site 1A

1.2 PROJECT PURPOSE AND NEED

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. Volusia County Site 1A is one of five recommended truck parking sites identified by the *Truck and Freight Alternative Site Analysis PD&E Study* to address the truck parking demand along or near the I-4 corridor in Osceola, Orange, Seminole and Volusia Counties. The Recommended Alternative to serve freight demand for I-4 Eastbound in Volusia County is designated Volusia County Site 1A.

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 the Truck and Freight Alternative Site Analysis 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 four-county area 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 based on 2016 conditions.

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 within Osceola, Orange, Seminole and Volusia Counties. 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. There are no truck or freight parking facilities maintained exclusively for parking and non-retail public use in Volusia County. Volusia County Site 1A will provide needed truck parking capacity of 275 spaces to serve the existing and future parking demand.

1.3 ALTERNATIVES ANALYSIS SUMMARY

As part of the *Truck and Freight Alternative Site Analysis 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, two potential sites in Volusia County were identified for further review, analysis, and refinement. An alternatives analysis was conducted for the two Volusia County sites and the No-Action Alternative. Volusia County Site 1A was identified as the recommended site to serve I-4 Eastbound. The other Volusia County site was also identified as a recommended site, to serve I-4 Westbound. A detailed description of the alternatives and the results of the alternatives analysis are documented in the PER, under separate cover. Volusia County Site 1A is the Recommended Alternative for the proposed truck parking site in Volusia County for I-4 Eastbound and is being programmed for further project development.

1.4 DESCRIPTION OF RECOMMENDED ALTERNATIVE

Volusia County Site 1A (**Figure 1-2**) is located along I-4 approximately 4.5 miles west of the I-95 interchange. The recommended site, partially located on 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.

SECTION 1 INTRODUCTION

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.

SECTION 2 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) 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 Resources Conservation Service (NRCS) Soils Survey of Volusia County, Florida, 2021
- Existing Permit Databases, St. Johns River Water Management District (SJRWMD)
- 1-ft LiDAR Data Source: National Oceanic and Atmospheric Administration (NOAA) Office for Coastal Management, Volusia County, 2006.

SECTION 3 EXISTING DRAINAGE CONDITIONS

3.1 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 Map in Appendix B** for elevation data. The site discharges to the Tomoka River Outstanding Florida Water (OFW). It is within Waterbody Identification (WBID) Number 2634 Tomoka River and 2675 Sand Creek, both of which are not impaired for nutrients. Please refer to the **WBID Map, Figure 6-5 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 Esri's Geographic Information System (GIS) ArcMap. The soil survey map for the project vicinity is illustrated in **Figure 6-3 in Appendix A**.

Table 3-1: 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 3-1: 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.

3.1.1 Floodplains/Floodways

According to FEMA, the relevant 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 6-4 in Appendix A for the FEMA Floodplains Map.**

General comments relating to floodplains include the fact that any development within the 100-year floodplain has the potential for placing citizens and property at risk of flooding and producing changes in floodplain elevations and plan view extent. Development (such as roadways, housing developments, strip malls, and other commercial facilities) within floodplains increases the potential for flooding by limiting flood storage capacity and exposing people and property and flood hazards. Development also reduces vegetated buffers that protect water quality and destroys important habitats for fish and wildlife.

SECTION 4 PROPOSED DRAINAGE CONDITIONS

The proposed site for the Volusia County Site 1A is 73.3 acres and will include one (1) wet detention stormwater pond. Additional information regarding the proposed stormwater management is included in the Conceptual Drainage Report, under separate cover.

Floodplain Compensation

According to the FEMA FIRMs, the majority 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 SHW table elevation for the site was estimated at elevation 36.00 feet North American Vertical Datum of 1988 (NAVD) using NRCS Soils information. The Volusia County Site 1A 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 ac-ft. Please refer to the **Floodplain Impact & Compensation Calculations** located in **Appendix F** of the Conceptual Drainage Report, under 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 constriction. The resulting potential rise in the flood stage was found to be 0.0037 ft. Please refer to **Figure 6-6 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.

SECTION 4 PROPOSED DRAINAGE CONDITIONS

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.

4.1 LONGITUDINAL & TRANSVERSE FLOODPLAIN IMPACTS

The impacts to the 100-year floodplain can be categorized as transverse impacts – impacts resulting from filling the floodplain areas within the project site limits to construct the freight parking site, including floodplains associated with wetland systems and depressional areas.

The transverse impacts cannot be avoided since the proposed freight parking site location lies within the floodplain extent. The floodplain impact area was quantified based on the FEMA FIRMS and established 100-year base flood elevation, and the existing ground elevations were established from 1-foot LiDAR contours. The SHW elevations were estimated using permit data and NRCS soils data. To be conservative, it was assumed that any fill from the proposed freight parking site would extend higher than the base flood elevation.

4.2 PROJECT CLASSIFICATION

The encroachment areas for this site is classified as “minimal.” Minimal encroachments on a floodplain occur when there is a floodplain involvement but the impacts on human life, transportation facilities, and natural and beneficial floodplain values are not significant and can be resolved with minimal efforts. Normally, these minimal efforts to address the impacts will consist of applying the Department’s drainage design standards and following the Water Management District’s procedures to achieve results that will not increase or significantly change the flood elevations and/or limits.

4.3 RISK EVALUATION

There is no change in flood “risk” associated with this project. The encroachments will not have a significant potential for interruption or termination of transportation facilities needed for emergency vehicles or used as an evacuation route. In addition, no significant adverse impacts on natural and beneficial floodplain values are anticipated and no significant impacts to highway users are expected.

4.4 PD&E MANUAL REQUIREMENTS WITH MINIMAL ENCROACHMENT

Chapter 13 Floodplains of the FDOT’s PD&E Manual, Part 2, defines four categories of encroachments as they pertain to base floodplain involvement: significant, minimal, none, and no involvement; and also lists the report criteria corresponding to these encroachment categories. The FDOT has different requirements based on the category of encroachment. The proposed freight parking project was determined to have minimal encroachments and, as a result, the requirements for this category are listed as follows:

SECTION 4 PROPOSED DRAINAGE CONDITIONS

General description of the project, including location, length, existing and proposed typical sections, drainage basins, and cross drains.

*Refer to **Section 1** of this report for general project information and **Sections 3 and 4** of this report for existing and proposed drainage basin descriptions. There are two existing cross drains under I-4 (Single 42" RCP at Station 1212+80 and a triple 42" RCP at Station 1222+50, all from the existing Baseline of I-4 from Permit 64105-12). These cross drains will require extensions due to the proposed ramps to the truck parking site and provide offsite drainage connectivity and maintain existing drainage patterns.*

Determination of whether the proposed action is in the base floodplain.

The Volusia County Site 1A will encroach on the Zone A 100-year floodplain as established by the most recent FEMA maps dated 2/19/2014.

The history of flooding of the existing facilities and/or measures to minimize any impacts due to the proposed project improvements.

Although the floodplains in the Volusia County site are associated with wetlands having SHW elevations above existing ground, no overtopping of I-4 has been reported in these areas. Floodplain compensation areas will be constructed in the Volusia County site within the infield areas to mitigate loss of storage in the floodplain due to the project construction. In addition, stormwater treatment ponds are proposed to attenuate runoff and provide floodplain compensation volume. The project will have no adverse impact on the existing condition.

Determination of whether the encroachment is longitudinal or transverse, and if it is a longitudinal encroachment an evaluation and discussion of practicable avoidance alternatives.

The transverse floodplain impacts from the project occur due to filling floodplain areas to construct the freight parking site. Impacts will be minimized by utilizing the maximum allowable embankment slopes during construction. The proposed site location is constrained to occupy land within the floodplain. There are no economically feasible avoidance alternatives.

The practicability of avoidance alternatives and/or measures to minimize impacts.

The project will take every effort to minimize floodplain impacts resulting from the fill during construction of the freight parking site. The maximum allowable site embankment slope will be used within the floodplain area to minimize the floodplain impacts.

Impact of the project on emergency services and evacuation.

The cross drains nearby the freight parking site will perform hydraulically in a manner equal to or greater than the existing condition, and backwater elevations are not expected to increase. As a result, there will be no significant change in flood risk, and there will not be a significant change in the potential for interruption or termination of emergency service or in emergency evacuation routes.

Impacts of the project on the base flood, likelihood of flood risk, overtopping, location of overtopping, backwater.

The cross drains nearby the freight parking site will perform hydraulically in a manner equal to or greater than the existing condition. As a result, there will be no significant change in flood risk or overtopping.

Determination of the impact of the proposed improvements on regulatory floodways, if any, and documentation of coordination with FEMA and local agencies to determine the project's consistency with the regulatory floodway.

There is no involvement with regulatory floodways on this project.

The impacts on natural and beneficial floodplain values, and measures to restore and preserve these values (this information may also be addressed as part of the wetland impact evaluation and recommendations).

Addressed as part of the Natural Resource Evaluation Report. The proposed site will not have adverse impacts to floodplain areas as compensation is intended to be provided within the permitted stormwater ponds, proposed floodplain compensation areas and performing a floodplain model. The area within the truck parking site designed as a wildlife conservation will not have adverse impacts to existing floodplains.

Consistency of the project with the local floodplain development plan or the land use elements in the Comprehensive Plan, and the potential impacts of encouraging development within the 100-year base floodplain.

The project will remain consistent with local floodplain development plans. The project will not support base floodplain development that is incompatible with existing floodplain management programs.

SECTION 4 PROPOSED DRAINAGE CONDITIONS

Measures to minimize floodplain impacts associated with the project, and measures to restore and preserve the natural and beneficial floodplain values impacted by the project.

The project will take every effort to minimize floodplain impacts resulting from the fill during construction of the freight parking site. The maximum allowable site embankment slope will be used within the floodplain area to minimize the floodplain impacts, and floodplain compensation will be provided as needed.

A map showing project, location and impacted floodplains. Copies of applicable maps should be included in the appendix.

See Figures 6-1, 6-2, and 6-4 in Appendix A.

Results of any and all project risk assessments performed.

The cross drains nearby the freight parking site will perform hydraulically in a manner equal to or greater than the existing condition. As a result, there will be no significant change in flood risk.

SECTION 5 CONCLUSIONS AND RECOMMENDATIONS

The project will result in an insignificant change in the capacity to carry floodwater. This change will cause minimal increases in flood heights and flood limits. The proposed structures should be hydraulically equivalent to or greater than the existing structures, and backwater surface elevations are not expected to increase. As a result, the project will not affect existing flood heights or floodplain limits. This project will not result in any new or increased adverse environmental impacts. There will be no significant change in the potential for interruption or termination of emergency service or emergency evacuation routes. Therefore, it has been determined that these encroachments are not significant.

Floodplain compensation sites have been conservatively sized for floodplain impact compensation in addition to the proposed stormwater ponds for this project. The remaining floodplain impacts have been shown to have an insignificant rise in the floodplain elevation due to the large extent of the floodplain. In the design phase, a more detailed floodplain analysis should be performed which may include a floodplain model.

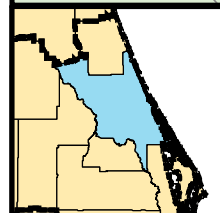
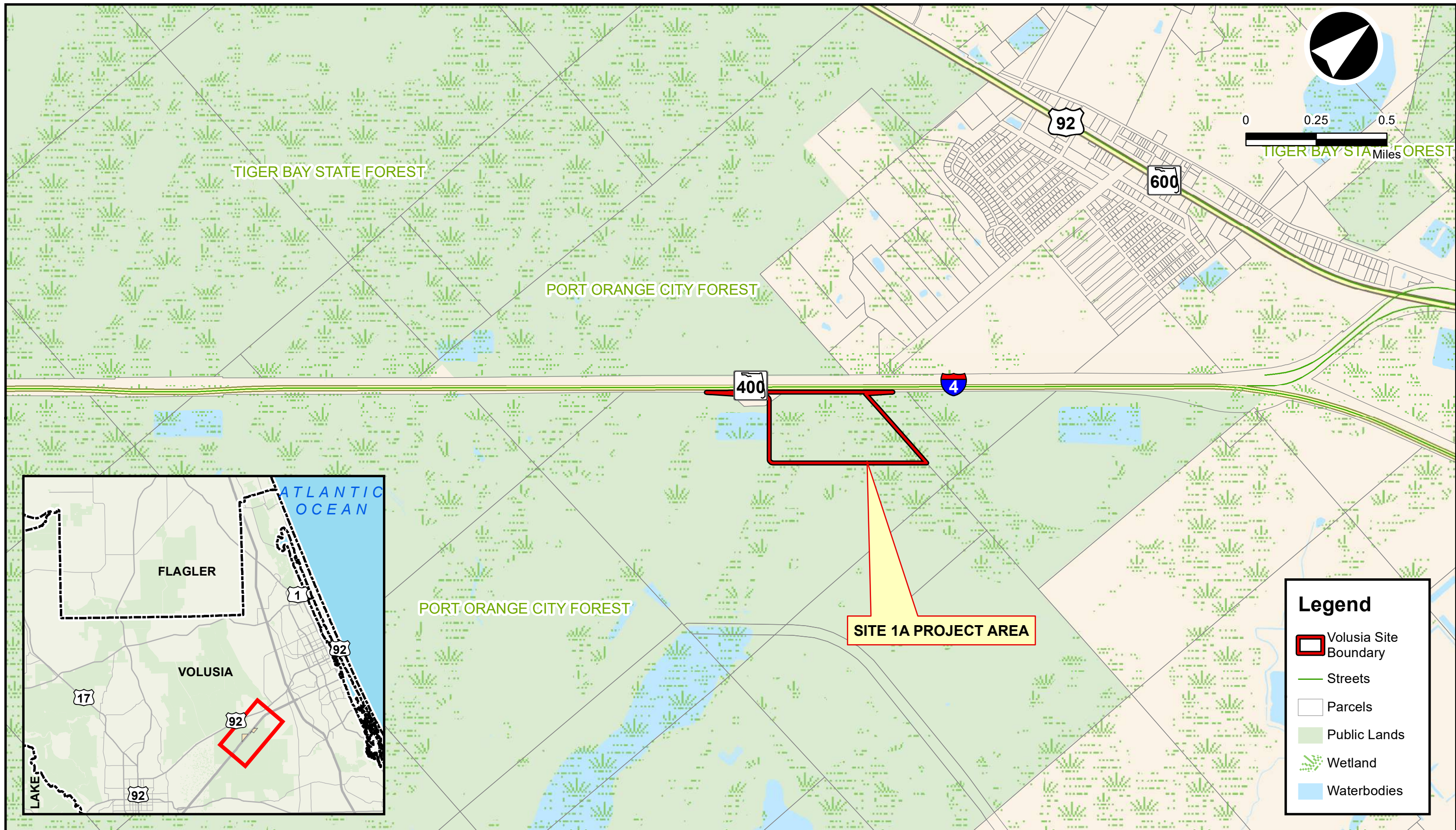
APPENDICES

Appendix A Exhibits

Appendix B Basin Map

APPENDIX A

Exhibits



Truck and Freight Alternative Site Analysis PD&E Study

Volusia County, Florida

Financial Project ID: 447724-1-22-01

PROJECT LOCATION MAP

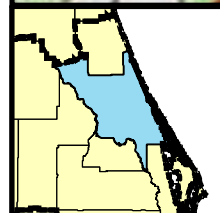
Figure

6-1



Legend
 USGS
 Quadrangle
 Source: USGS
 2018

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Truck and Freight Alternative Site Analysis PD&E Study

Volusia County, Florida

Financial Project ID: 447724-1-22-01

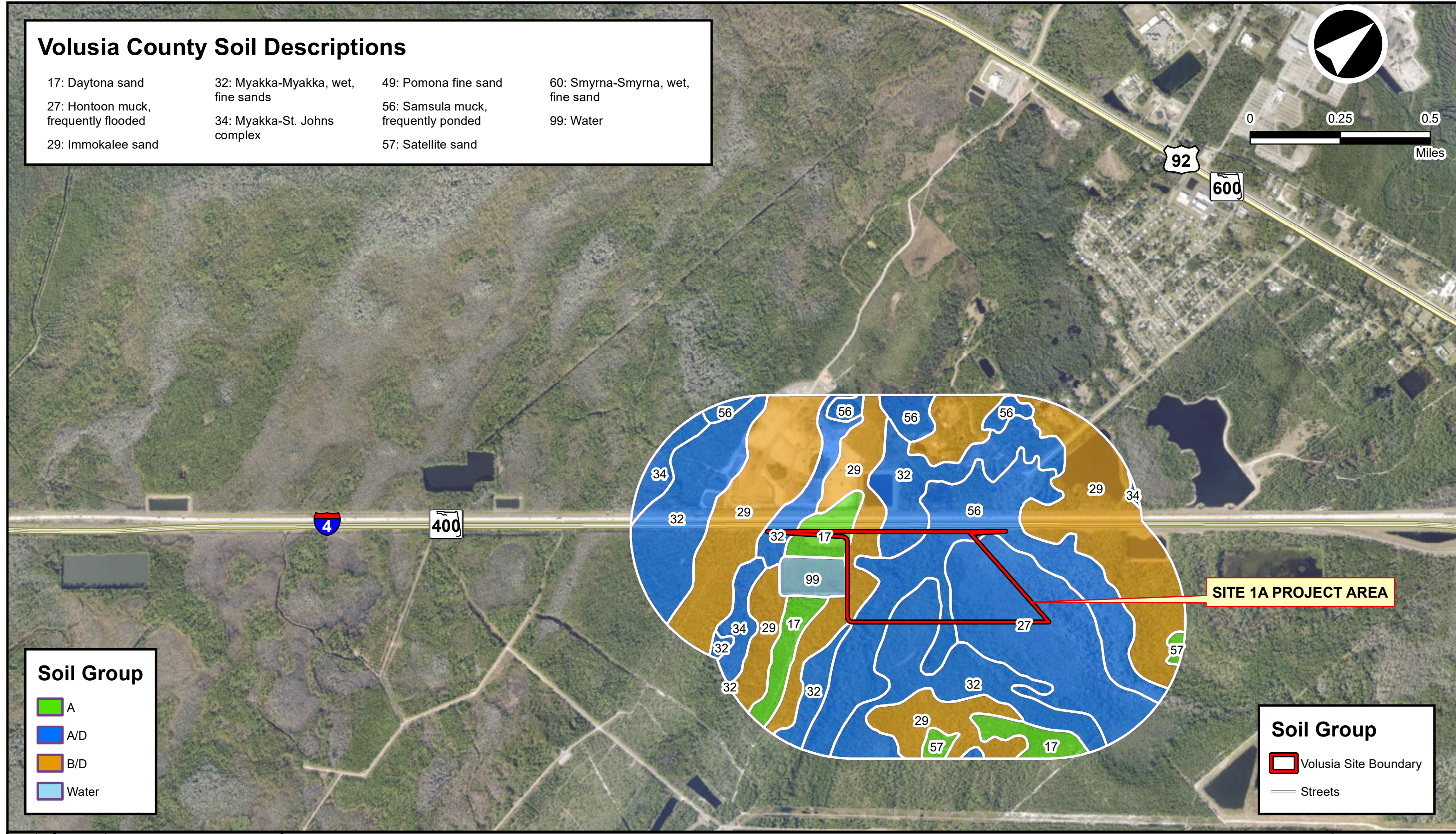
USGS QUADRANGLE MAP

Figure

6-2

Volusia County Soil Descriptions

- | | | | |
|--------------------------------------|------------------------------------|-------------------------------------|-----------------------------------|
| 17: Daytona sand | 32: Myakka-Myakka, wet, fine sands | 49: Pomona fine sand | 60: Smyrna-Smyrna, wet, fine sand |
| 27: Hontoon muck, frequently flooded | 34: Myakka-St. Johns complex | 56: Samsula muck, frequently ponded | 99: Water |
| 29: Immokalee sand | | 57: Satellite sand | |

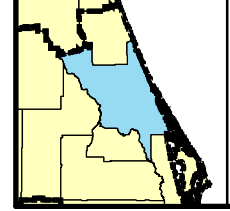


Soil Group

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

Soil Group

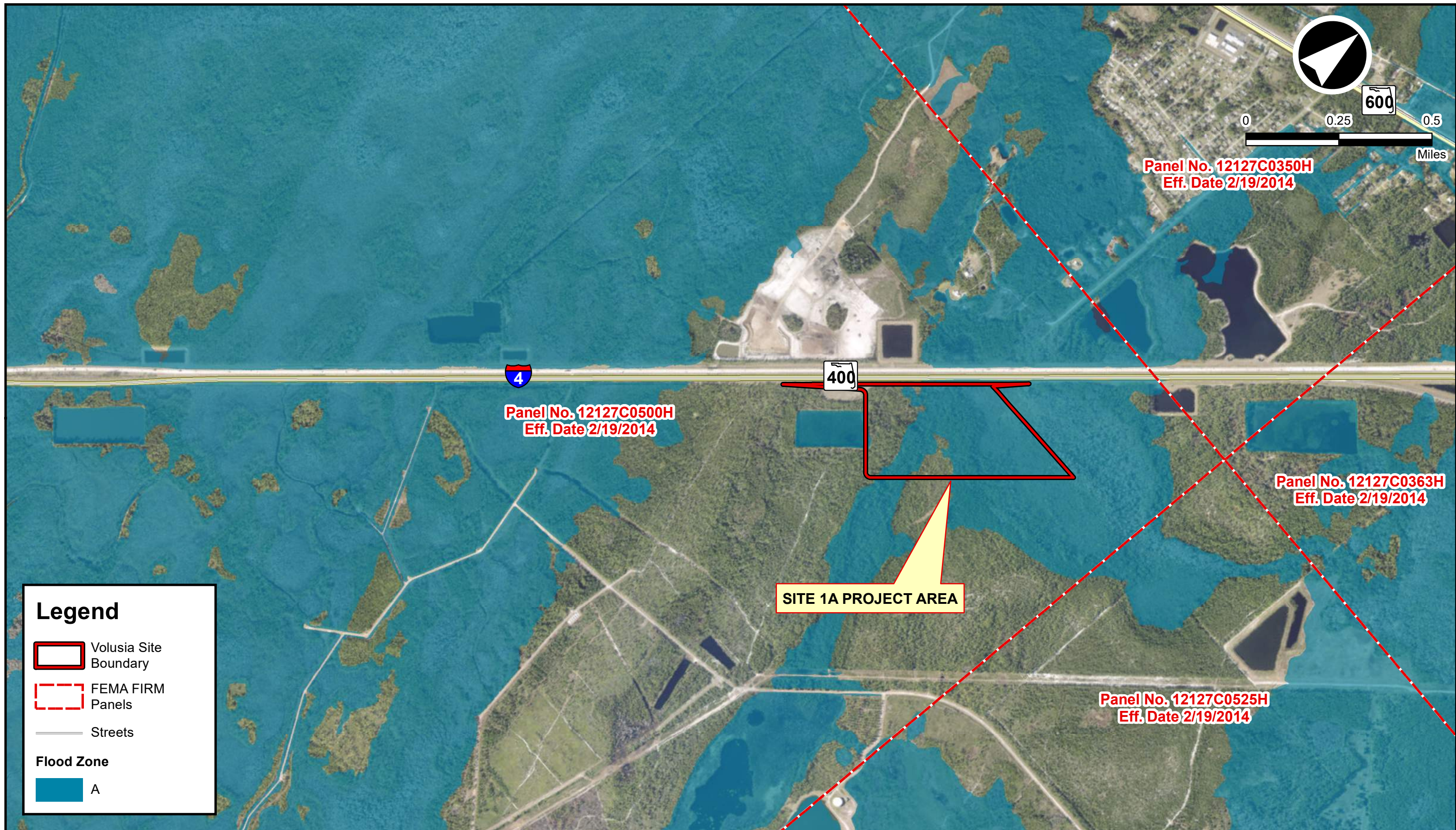
- Volusia Site Boundary
- Streets







Truck and Freight Alternative Site Analysis PD&E Study
 Volusia County, Florida
 Financial Project ID: 447724-1-22-01

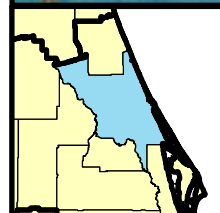
NRCS SOILS MAP

Figure
6-3



Legend

-  Volusia Site Boundary
-  FEMA FIRM Panels
-  Streets
- Flood Zone**
-  A



Truck and Freight Alternative Site Analysis PD&E Study

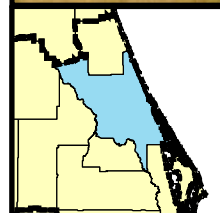
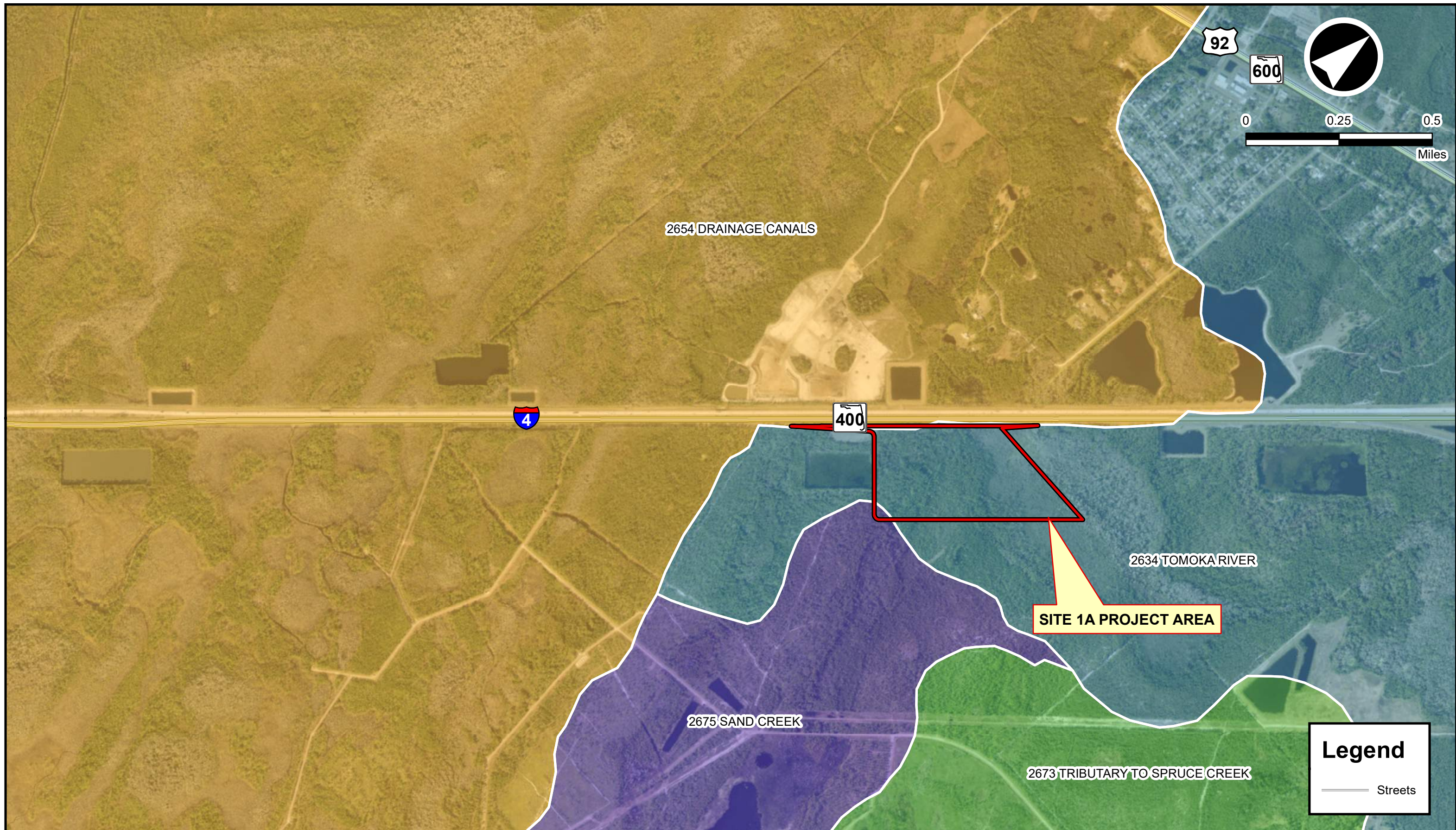
Volusia County, Florida

Financial Project ID: 447724-1-22-01

FEMA FLOODPLAINS MAP

Figure

6-4



Truck and Freight Alternative Site Analysis PD&E Study

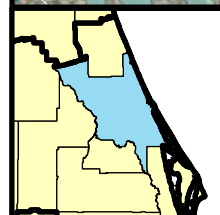
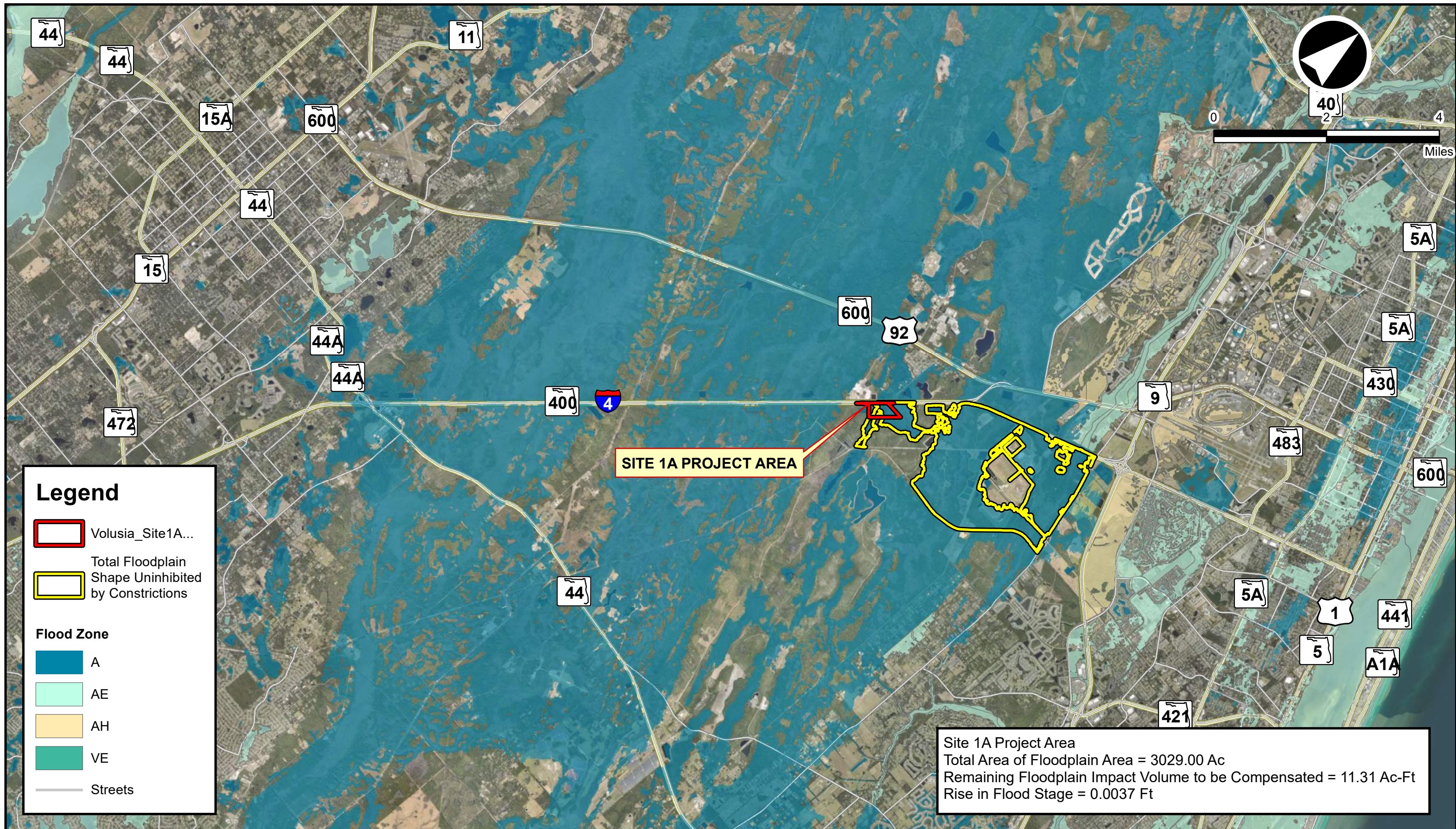
Volusia County, Florida

Financial Project ID: 447724-1-22-01

WBID MAP

Figure

6-5



Freight Parking PD&E Study

Volusia County, Florida

Financial Project ID: 447724-1-22-01

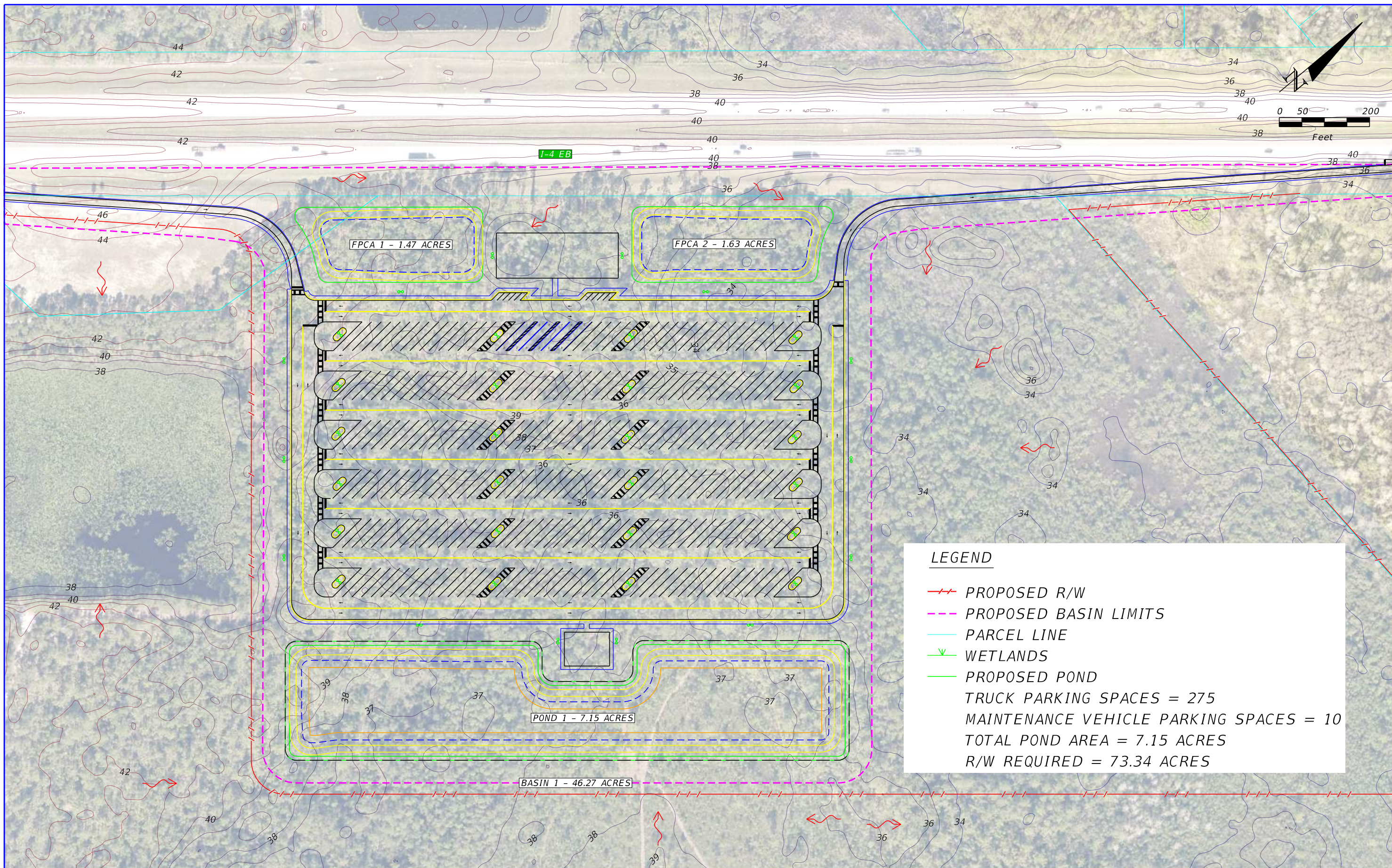
IMPACTED FEMA FLOODPLAIN MAP

Figure

6-6

APPENDIX B

Basin Map



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