Preliminary Engineering Report

FINAL

March 2010

With August 2010 Revisions

East Central Regional Rail Trail PD&E Study

SR 415 (Osteen) to Canaveral Ave. (Titusville)
Maytown to Dale St. (Edgewater)
FPID Nos. 415434-3, 415434-4, 424040-1

Prepared for:

Volusia County
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TYPE 1 AND PROGRAMMATIC CATEGORICAL EXCLUSION CHECKLIST

Financial Project ID. 415434-4-3-28-01, 415434-4-28-01, 424040-1-28-01 FAP No. _____

Project Description: East Central Regional Rail Trail - Conversion of an abandoned FEC Railway corridor to a multi-use trail in Volusia and Brevard counties, Florida.

	YES	NO
Will the project cause significant adverse impacts to local traffic patterns, property access, or community cohesiveness, or planned community growth or land use patterns?		✓
Will the project cause significant adverse impacts to air, noise and water?		✓
Will the project cause significant adverse impacts to wetlands?		✓
Will the project cause significant adverse impacts to navigation?		✓
Will the project cause significant impacts to floodplains in accordance with Part 2, Chapter 24?		✓
Will the project cause significant impacts to endangered and threatened species or their critical habitats?		✓
Will the project require acquisition of significant amount of right of way?		✓
Will the project require relocation of a significant number of residents or businesses?		✓
Are there any properties protected under Section 4(f) of the U.S. Department of Transportation Act within the project limits that will require a Section 4(f) Evaluation in accordance with Part 2, Chapter 13?		✓
Are there any properties protected under Section 106 of the National Historic Preservation Act within the project limits, and if there are, will the project have A significant impact any of those properties? Projects that may involve historic Properties must meet the requirements for consultation with the SHPO (or THPO as appropriate) as outlined in Part 2, Chapter 12 of this manual.		✓
Will the project have a significant involvement with contamination?		✓
Will the project require a public hearing or an opportunity for a public hearing?		✓

IMPORTANT If the answer to any of these questions is **Yes**, then a Type 1 or Programmatic Categorical exclusion does not apply, and additional coordination with the FHWA Transportation Engineer is required to determine the necessary level of environmental documentation.

FIGURE 2.2 Type 1 and Programmatic Categorical Exclusion Checklist (continued)

Financial Project No. 415434-4-3-28-01, 415434-4-28-01, 424040-1-28-01 No.

Project Description: East Central Regional Rail Trail - Conversion of an abandoned FEC Railway corridor to a multi-use trail in Volusia and Brevard counties, Florida.

FINDING:
This project has been evaluated and has been determined to meet the conditions as set forth in the PD&E Manual, Part 1, Chapter 2; therefore:

___ This project is a Type 1 Categorical Exclusion under (23 CFR 771.117(c)) effective November 27, 1987.

___ This project is a Programmatic Categorical Exclusion per FHWA, FTA, and FDOT Agency Operating Agreement executed on January 15, 2003

Reviewer: _____ Date: _____

The following is a list of any supporting reports or technical studies that were prepared and are included in the project file that were necessary to support the conclusions reached on the checklist. This documentation is required only for unusual circumstance since the projects covered by Type 1 and Programmatic CE determinations do not typically, based on past experience, cause significant impacts.

- Preliminary Engineering Report
- Cultural Resource Assessment Survey
- Phase I and Phase II Environmental Site Assessments (for corridor purchase by FDEP/O.G.T.)
- Comments and Coordination Report
- East Central Regional Rail Trail Management Plan (Volusia and Brevard counties)

(NOTE: This is a sample checklist for District use. This Checklist may be modified to meet individual District needs.)

FIGURE 2.2 Type 1 and Programmatic Categorical Exclusion Checklist (concluded)

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Tables and Figures

Executive Summary

This PD&E Study has been conducted for Volusia and Brevard Counties and for the Florida Department of Transportation to identify the social and environmental issues associated with the proposed action to convert an abandoned rail corridor into a multi-use paved trail. The 46-mile East Central Regional Rail Trail (ECRRT) corridor under evaluation begins at Canaveral Avenue in Titusville, traverses into Volusia County terminating at SR 415 in Osteen. An additional segment starts in Maytown in Volusia County, terminating at Dale Street in Edgewater. This PD&E Study did not address the ECRRT segment from Providence Boulevard in Deltona to SR 415 in Osteen, as this segment has been designed as of the date of this Study.

The Office of Greenways and Trails purchased the former FEC Railway corridor in December 2006. The majority of the right-of-way is 100 feet in width, with small sections ranging from 30 feet to over 200 feet in width. The proposed alignment of the 12-foot wide paved multi-use trail will be within the purchased right-of-way. The ownership of limited portions of the corridor could not be adequately ascertained during the purchase, and were thus excluded from the acquisition. The total distance of right-of-way that was not acquired is approximately 6,900 feet (1.32 miles) and is located along Osteen-Maytown Road. Alternative alignments have been developed and evaluated to identify potential impacts on privately-owned parcels, and to identify a recommended alignment.

The recommended 12-foot wide paved trail incorporates a 2-foot wide horizontal clear zone on both sides, then a slope as required to tie into existing grade. The trail bed thus requires a 16-foot width. In appropriate sections as identified by the local agencies, an 8-foot wide unpaved equestrian trail can parallel the paved trail, separated by a 10-foot wide buffer.

Trail amenities developed and analyzed within this Study include trailheads and “pocket pavilions”. A trailhead will allow access to the trail, and may include a shelter or building with or without restrooms, a paved or unpaved parking lot, trail information, and other related amenities. A trailhead may be within or outside of the trail right-of-way. Pocket pavilions are shelters that may or may not have restrooms, and are located within the trail right-of-way. Located in the middle of the paved trail, the trail splits into two paved sections thus going on either side of the pavilion. Amenities at the pavilions may include a shelter, bike rack, restroom facilities, and trail information. Concept plans and site locations for the 10 trailheads and the 8 pavilions have been developed. The following table summarizes this information.

Table ES-1: Trailheads and Pavilions

Location Description	Station # (Location)
Trailheads	
Osteen	405+00
Gobbler's Lodge Rd.	726+30
Maytown	1096+30
Brevard EELs	1366+86
Aurantia Rd.	1462+10
Burkholm Rd.	1515+00
Chain of Lakes Park	N/A
Draa Rd. Park	1921+20
MagLev Site	2610+65
Old Mission Rd.	2775+04
Pocket Pavilions	
1.3 miles west of Gobbler's Lodge Rd.	658+35
1.5 miles east of Maytown Trailhead	1174+40
3.0 miles south of Aurantia Rd.	1618+65
1.7 miles north of Chain of Lakes Park	1742+35
1.1 miles north of Maytown Trailhead	2170+54
3.5 miles north of Maytown Trailhead	2297+35
3.7 miles south of MagLev Trailhead	2414+45
1 mile north of MagLev Trailhead	2660+35

A primary issue associated with the ECRRT is the potential linkage with other existing or proposed trails. Trail connectivity affords greater usage and enhances the capability of trail systems to offer a viable alternative to vehicular travel. This study has reviewed the trail plans of Volusia and Brevard County, including local sidewalk and trail enhancement plans of Titusville and the Mims community. There exists numerous opportunities to link the ECRRT with local bicycle and pedestrian network connections as proposed within the Titusville Community Redevelopment Agency plans for the renovation of their downtown area. The Mims Action Plan similarly supports the extension of existing connections and the construction of new bicycle/pedestrian facilities that would link into the ECRRT.

Public involvement and agency coordination efforts conducted during the Study revealed several issues associated with the proposed implementation of the ECRRT. Several of these issues are specific to this trail, and others are frequently expressed for proposed projects similar

to the ECRRT (namely the conversion of a formerly abandoned rail corridor to a paved multi-use trail). The primary issues and the recommended resolution of each are provided below.

Table ES-2: Primary Public and Local Agency Issues

Issue	Resolution or Mitigation
Trail traverses through active hunting grounds	Educate both hunters and trail users about the location of the trail and appropriate safety measures; mark the trail and adjacent hunting lands with appropriate signage.
Safety of trail users, especially in rural areas	Educate trail users to avoid being alone on trail; coordinate with local stakeholders to voluntarily patrol the trail; coordinate with the County sheriff's offices on trail patrols.
Security of property owners adjacent to the trail	Coordinate with property owners to identify security measures that they may take; educate property owners on the actual security experience of property owners along trails; coordinate with local stakeholders and with the County sheriff's offices to patrol the trail.
Off-road vehicle (ATV) usage throughout the area	Coordinate with the County sheriff's offices to identify illegal ATV activities and enforce existing ordinances; coordinate with local stakeholders to voluntarily patrol the trail; provide information at each trailhead and pavilion on how to report illegal ATV activities.

Cost estimates have been prepared for each of the nine trail segments as identified in the ECRRT Trail Management Plan. These estimates are to be considered opinions of probable cost based upon the data and analysis available within this PD&E Study. As the trail requires 17 bridges to cross environmentally sensitive areas, the estimates include bridge costs as appropriate for each segment. The following table summarizes the cost estimates.

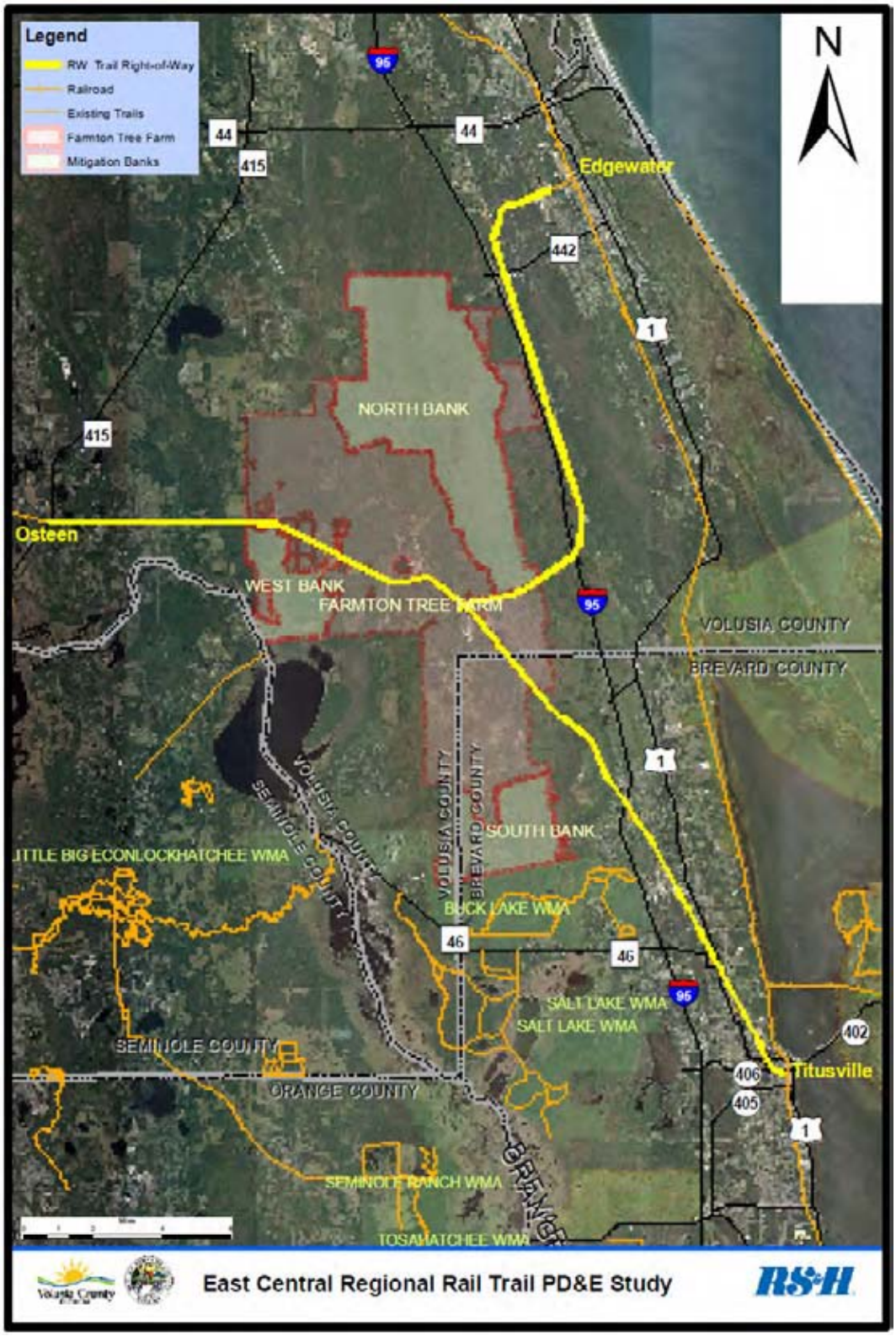
Table ES-3: Cost Estimates

Seg. #	Length (Miles)	Description	Trail Est.	Bridge(s) Est.	Total Est.
1	2.7	SR415-Guise	$636,200	$1,130,519	$1,766,719
2	3.5	Guise-Gobblers Lodge	$693,489	$1,258,460	$1,951,949
3	7.0	Gobblers Lodge-Maytown	$1,582,216	$3,071,390	$4,653,606
4	1.3	Maytown-Countyline	$392,280	$0	$392,280
5	5.6	Countyline-Aurantia	$1,297,410	$442,330	$1,739,740
6	7.2	Aurantia-Kingman	$1,487,886	$186,900	$1,674,786
7	2.0	Kingman-Canaveral	$455,436	$0	$455,436
8	8.6	Maytown-Volco	$2,148,293	$348,880	$2,497,173
9	7.0	Volco-Park	$1,534,963	$398,720	$1,933,683

1.0 Project Description

Volusia County, in conjunction with Brevard County and the Florida Department of Transportation (FDOT), is conducting a PD&E Study for the proposed multi-use trail known as the East Central Regional Rail Trail (ECRRT). The study will develop and evaluate preliminary design alternatives within the previous railroad corridor. Trail amenities including trailheads, an equestrian path, information kiosks, and potential linkage to other existing and planned multi-use trails will be developed and evaluated. The project is generally oriented west to southeast, and south to northeast, with the western terminus at SR 415 in Volusia County, the southeastern end in Titusville, and the northeastern end in Edgewater (see Figure 1.1). The project will include extensive interagency coordination with both Volusia and Brevard Counties, as well as coordination with the municipalities and communities of Osteen, Titusville and Edgewater.

Figure 1.1 Study Area Map



2.0 Purpose and Need for Action

2.1 Trail/Multi-Modal System Continuity

The proposed action is the conversion of an existing inactive rail corridor to a multi-use trail in Volusia and Brevard Counties. This is an enhancement project that is intended to increase the use of alternative modes of travel and thereby assist the metropolitan planning organizations (MPOs) and local governments in meeting air quality and other quality of life goals and objectives. The Office of Greenways & Trails (OGT) purchased the railroad right-of-way for the ultimate design and construction of a multi-use trail. OGT will then lease the right-of-way to a public entity under a lease agreement to build and maintain the facility, further ensuring that the trail remains in the public ownership and is kept up to a defined standard.

2.2 Trail Demand

The projected demand for usage on the ECRRT is expected to vary depending on the trail segment, as well as on the adjacent land uses and connections to local trails or sidewalk systems. Research on other Central Florida multi-use paved trails reveal usage from 70,000 persons per year (Van Fleet Trail) to almost 1 million persons (West Orange Trail). The Cross Seminole Trail system sees usage averaging 50,000 to over 300,000 persons per month. This is a similar trail system for comparison purposes, as portions of the 70-mile system are located in suburban areas and portions are in more rural settings.

The construction of the western-most segment (from Providence Boulevard to SR 415, which is outside of the limits of this PD&E study) is anticipated to create demand for the segment from SR 415 eastward toward Gobblers Lodge Road. The Titusville segment is anticipated to generate the greatest use, as the trail would provide access to the historic section of the city, as well as provide linkage to existing and proposed sidewalks and local trails. This includes the Chain of Lakes Regional Park, which will have an on-site trailhead, and the proposed Draa Road Park, which will similarly have a trailhead.

3.0 EXISTING CONDITIONS

3.1 Existing Trails and Parks

3.1.1 Existing Trails

Volusia and Brevard Counties are committed to the development and creation of comprehensive park and trail networks. There are several parks and trails in each county that are located near the trail corridor. The proposed project may provide an opportunity to link existing and proposed trails and parks. Additionally, park and trail connections are valuable resources for neighborhood, municipal and regional

connectivity. The following section provides an in-depth description of the trails and parks in close proximity to the trail corridor.

In Volusia County, the World's Most Famous Beach Trail and the Lake Monroe Conservation Trails are located near the trail corridor. The World's Most Famous Beach Trail sits to the east of the trail corridor near the Edgewater Branch along the shoreline; it is a multi-use trail that provides a firm, sandy surface for walking and bicycling.

The Lake Monroe Conservation Area consists of approximately 7,487 acres and is located south of the trail corridor and abuts the southern portion of Osteen at Lemon Bluff Road. It is comprised of two tracts. The Kratzert Tract is located west of SR 415, and the Brickyard Slough Tract is located east of SR 415. There are multi-use trails on both tracts, and four access points to the conservation area. The access points to the conservation area near the trail corridor include: (1) SR 415 on the Brickyard Slough Tract; (2) a gated entrance located at the Kratzert Tract off of SR 415; and (3) a walk-in entrance located off of Lemon Bluff Road. It is important to note that there are plans to improve SR 415, which include adding five-foot paved shoulders along both sides of the road from south of the St. Johns River Bridge to Reed Ellis Road and four-foot, on-road bicycle lanes along both sides of the roadway north from Reed Ellis Road to north of Acorn Lake Road. This transportation enhancement along with the proposed action could provide greater connectivity in the area and give potential trail users a multitude of recreation attractions to enjoy in close proximity to one another.

Brevard County has several multi-use trails that can be enjoyed by citizens and tourists. The trail located near the corridor in Brevard is the Chain of Lakes Trail, which sits near Brevard Community College and the Indian River. The trail is part of the 92.14-acre regional park that features wetlands and lakes with walking bridges connected to three miles of paved walking trails.

There are also various other trails in surrounding counties in close proximity that could potentially link to the proposed project. Some of these trails are located within conservation areas. In Seminole County, which sits to the south of Volusia County and to the west of Brevard County, there are several existing unpaved multi-use trails. These trails include the Flagler Trail and trails located within the Seminole Ranch Conservation Area, Chuluota Wilderness Area, and the Little Big Econ State Forest. Additionally, the Buck Lake Conservation Area has unpaved multi-use trails and is located within Brevard County.

The Flagler Trail is an unpaved multi-use trail that is located south of the trail corridor near Lake Harney. There is a south and a north section of the trail. Flagler

Trail South runs from the Orange County Line to the Econlockhatchee River and from the Econlockhatchee River to Geneva Wilderness Area. The Flagler Trail North runs from SR 46 in Geneva to the St. Johns River. Currently, the South and North portions of the trail are open, and they total 12 miles. A survey of the area to determine alternate pathways to connect the southern portion at CR 426 to the section north of S.R. 46 was conducted; however, a feasible alignment was not determined. Additionally, there were plans to extend the Flagler Trail North across the Econlockhatchee River to connect with the trail corridor in Maytown. During the research process for this PD&E Study, the study team contacted Volusia and Seminole Counties, and the Counties expressed that they are not pursuing the development of this trail due to economic and environmental constraints.

Seminole Ranch Conservation Area

The Seminole Ranch Conservation Area consists of approximately 29,145 acres of land and covers parts of Orange, Brevard, and Seminole Counties. There are unpaved trails in the Seminole Ranch Conservation Area that sit to the west of the trail corridor. These trails include several miles of the Florida Trail, which closely follow the St. Johns River.

Chuluota Wilderness Area

The Chuluota Wilderness Area is located south of the corridor at the Seminole County line, and the trail system consists of two unpaved main loop trails traveling east and west. The west loop is located closest to the entrance and is approximately 2.6 miles round-trip, and the east loop travels along the east boundary of the property and is approximately 2.7 miles long.

Little Big Econ State Forest

The Little Big Econ State Forest is comprised of approximately 5,787 acres of land. It sits to the south of the corridor, and the Ecolockhatchee River Canoe Trail runs through the property. Within the forest, there are unpaved hiking trails, one of which is the Kolokee Trail that is approximately 4.7 miles long. In addition, the Econlockatchee River Canoe Trail flows through this area. It is a blueway that provides canoe and kayak access and is 19 miles long through Seminole County.

Buck Lake Conservation Area

The Buck Lake Conservation Area is located in Brevard County and sits to the west of the trail corridor near the Titusville area. It has approximately 15 miles of marked unpaved trails following mostly old dirt roads through open pine flatlands and marshlands. The area includes 9,638 acres of woodlands and wetlands historically used for timber production and cattle ranching. The Environmentally Endangered Lands Program (EEL) manages about 300 acres of upland scrubby flatwoods and oak hammock in a partnership with the St. Johns River Water Management District (SJRWMD).

A map displaying these trails is provided in Figure 3.1.1. Each trail is important in creating a regional system of greenways and trails. The proposed project could aid in improving this system.

Table 3.1.1 Existing Trail System

Trail Name	Paved/Unpaved	Location
World's Most Famous Beach Trail	Unpaved	Volusia County
Lake Monroe Conservation Trails	Unpaved	Volusia County
Chain of Lakes Trail	Paved	Brevard County
Flagler Trail	Unpaved	Seminole County
Seminole Ranch Conservation Area	Unpaved	Seminole County
Chuluota Wilderness Area	Unpaved	Seminole County
Little Big Econ State Forest	Unpaved	Seminole County
Buck Lake Conservation Area	Unpaved	Brevard County

Source: Volusia County Parks Recreation and Culture Department, Brevard County Parks and Recreation Department, and Seminole County Leisure Services

Figure 3.1.1 Existing Parks and Trails Map

3.1.2 Existing Parks

Volusia County's Park, Recreation and Culture Department has over 54 parks with various amenities that add to the quality of life of their citizens and tourists from across the country. In viewing a comprehensive parks map that includes county and city park facilities, there are several parks located in close proximity to the corridor. These parks include Deltona Festival Park, Lake Butler Recreation Complex, Beck Ranch, Sugar Mill Ruins, and the Rotary Park.

The Deltona Festival Park is located north of the trail corridor near Osteen west of SR 415 in the city of Deltona. It is situated on the Lake Butler Chain of Lakes on 115 acres. The park contains several amenities including a large covered pavilion, picnic areas, a playground, grills, restrooms, and a boardwalk that leads to the lake.

Lake Butler Recreation Complex is located south of Deltona Festival Park, and also sits north of the trail corridor near Osteen west of SR 415 in the city of Deltona. It is a skate park with 15,350 square feet of cement that also contains a basketball court, pavilion, and restrooms.

Beck Ranch is a 270-acre recreational park in the Lake Monroe Conservation Area. As previously expressed, the conservation area consists of two tracts, and Beck Ranch sits on the eastside of SR 415 in the Brickyard Slough Tract. The park abuts the southern portion of Osteen and sits south of the trail corridor.

The Sugar Mill Ruins is a historic state park that was built in the early 19th Century and contains the ruins of a once highly functional sugar mill. The park is located near the northeastern end of the trail corridor near Edgewater and offers nature trails and onsite camping areas.

In addition, the Rotary Park is located near the trail corridor in the city of Edgewater. It is located on West Park Avenue and Carol Ann Drive. The facilities within the park include a gazebo, a pavilion, restrooms, playground equipment and a full basketball court. The park is being considered by the study team as potential trailhead as a starting point for the Edgewater Branch of the proposed project.

Brevard County has more than 100 parks managed by their Parks and Recreation Department and many are located in close proximity to the various water bodies in the county. Four are located near the trail corridor on the southern end of the Titusville Branch: Chain of Lakes, Marina Park, Sand Point and Space View Park.

The Chain of Lakes Park is a 92.14-acre regional park that features wetlands and lakes with walking bridges connected to paved walking trails. The park has numerous other amenities including a bird watching tower, eight lighted soccer fields, three lighted youth softball fields, four lighted adult softball fields, restrooms and parking. The Chain of Lakes Park is planning to construct a trailhead that will allow access to the regional trail.

Marina Park is located north of the Titusville Marina and is 20.35-acre community riverfront park that has a 2-lane boat ramp and dock, three lighted softball fields, concession stand, playground and restrooms. In addition, shoreline fishing along the Indian River is permitted. The park is located east of US 1 and south of Buffalo Road.

Brevard County's Sand Point Park is a 29.88-acre community river park on the Indian River that has a .66-mile exercise trail, which meanders through the open and shaded areas of the park. The park is east of the trail corridor and US 1 and near Indian River Avenue. It offers several facilities and amenities including picnic tables, small to mid-sized pavilions, barbeque grills, a playground, and restrooms. In addition, the park has a large pavilion with a kitchen located near the shoreline with seating up to 250. Sand Point Park and Space View Park are in close proximity to the trail corridor and may be considered by local entities as potential community trailheads.

Space View Park is a major attraction for Brevard County and the Titusville community; it sits 15 miles directly across from Kennedy Space Center shuttle launch pads. The park features an Astronaut Walk of Fame that honors America's astronauts and those who work behind the scenes in space exploration. The park features live audio feeds directly from NASA's control room, and visitors can sit on the river's edge and listen to the launch process from the park. It sits to the east of the trail corridor near the east side of US 1. As stated previously, this park may be considered by local entities as a community trailhead.

Table 3.1.2 Existing Parks

Park Name	County	Maintenance Responsibility
Deltona Festival Park	Volusia County	City of Deltona
Lake Butler Recreation Complex	Volusia County	City of Deltona
Beck Ranch	Volusia County	Volusia County
Sugar Mill Ruins	Volusia County	Volusia County
Rotary Park	Volusia County	City of Edgewater
Chain of Lakes	Brevard County	City of Titusville
Marina Park	Brevard County	City of Titusville
Sand Point	Brevard County	City of Titusville
Space View Park	Brevard County	City of Titusville

Source: City of Deltona, Volusia County Parks Recreation and Culture Department, City of Edgewater, City of Titusville, Volusia and Brevard County GIS

3.2 Roadway and Traffic Characteristics

The major roadways that transverse the Osteen to Titusville section of the corridor include SR 415, Osteen Maytown Road, Interstate 95 (I-95), SR 46, US 1, and Dairy Road. Along the Edgewater to Maytown section, the major roadways include Maytown Road, I-95, SR 442, Old Mission Road and West Park Avenue.

SR 415 – The starting point for this PD&E Study is at SR 415 in Volusia County. Currently, it is a two-lane roadway with a posted speed limit of 45; however, there are proposed improvements to SR 415 between SR 46 and Acorn Lake Road. These improvements involve reconstructing the existing two-lane roadway into a four-lane divided roadway. The section of SR 415 that crosses rail corridor will have 12-foot travel lanes and four-foot on-road bicycle lanes along both sides of the roadway, and the speed limit would be 45 mph. In addition, curb and gutter will direct stormwater runoff from the roadway into underground pipes and then to off-site stormwater retention ponds. The segment of SR 415 from Doyle Road to Enterprise Osteen Road has an adopted Level of Service C and operates at Level Service E, with an annual average daily traffic count of 19,300. The increased capacity should improve the current operating Level of Service.

Osteen-Maytown Road (CR 4164) – The trail corridor closely parallels Osteen-Maytown Road from the west and northeast sections of the corridor. It is a two-lane rural minor collector roadway that goes through the southern portion of Volusia County and the Farmton Wildlife Management Area. It has a posted speed limit between 45 and 50 near the trail corridor. Extensive portions of this roadway are heavily forested with limited rural development. It is approximately 22 miles long from Osteen to Oak Hill and is maintained by Volusia County. The adopted Level of Service for this roadway is C and all segments are operating at acceptable levels of service. There are no planned or programmed improvements scheduled for this roadway.

Interstate 95 (I-95) – This roadway is a rural principal arterial interstate with a posted speed limit of 70 mph. The trail corridor crosses under I-95 at Aurantia Road in Brevard County and then parallels southward to Downtown Titusville. Because the corridor travels under I-95, it does not cause an encumbrance to the development of the future trail. At this time, I-95 is a four-lane divided highway; however, there are plans to widen the road to six lanes from the Brevard County line to Interstate 4 (I-4). The average daily traffic volumes on I-95 from Garden Street (SR 406) to the Volusia County Line are between 47,000 and 52,000, and the adopted Level of Service for these segments of the roadway are C.

SR 46 (Main Street) – This is a two-lane urban principal arterial that runs through the City of Titusville with a posted speed limit of 45 mph. The trail corridor crosses SR 46 east of Singleton Avenue and west of US 1. The adopted Level of Service for this roadway is D from I-95 to US 1. It is maintained by FDOT and has an average daily traffic volume of 9,840. Sidewalks are located on the south side of the roadway where the trail corridor crosses.

West Park Avenue – This is a two-lane urban collector with a posted speed limit of 45 mph. The trail corridor parallels West Park Avenue in Edgewater. The annual average daily traffic volume from Old Mission Road to Air Park Road is 4,320, with an allowable Level of service of E. This segment of the roadway does not have sidewalks on either side. At present, there are no scheduled improvements for this roadway.

Old Mission Road – This is a two-lane rural minor collector roadway with a posted speed limit of 40 mph and an adopted Level of Service E. The annual average daily traffic volume is between 738 and 800 from Mission Road to SR 44. The trail corridor intersects with Old Mission Road as it transverses east paralleling West Park Avenue. There are no scheduled improvements for this roadway, and this segment does not have sidewalks on either side.

Cow Creek Road – This is a two-lane rural paved roadway that tightly parallels the trail corridor on the west side of the road until it ends in the Edgewater community.

Old Blue Ridge Road – This is a rural unpaved two-lane roadway that provides access to local properties. As the road travels northward toward Edgewater, it turns into Cow Creek Road. The trail corridor parallels Old Blue Ridge Road to the west.

Dairy Road – This is a two-lane urban collector roadway with a posted speed limit of 30 mph and an adopted Level of Service E. The average daily traffic volume is between 6,180 and 6,930 from Singleton Avenue to US 1. The rail corridor crosses Dairy Road just west of US 1. There is a sidewalk along the north side of the roadway from Singleton Avenue to Old Dixie Highway, and through conducting aerial photography research; it is evident that the right-of-way on the north side of the road is used as a path. While there are no scheduled improvements for this roadway west of US 1, Brevard County is planning to extend Dairy Road east of US 1 to provide access to Chain of Lakes Park.

US 1 – This is a four-lane divided urban principal arterial with a posted speed limit of 45 mph and an adopted Level of Service D. The average daily traffic volume from SR 46 to Garden Street (SR 406) is between 18,040 and 23,370. The trail corridor parallels US 1 from Aurantia Road to Draa Road in Titusville. The roadway does not have sidewalks on the north or south side, and presently, there are no scheduled improvements for this roadway.

Table 3.2.1 Volusia County Characteristics and Traffic

Volusia County									
Road Names	**Limits (From-To)**	**No. of Lanes**	**Posted Speed**	**2007 AADT**	**Adopted LOS**	**LOS Capacity**	**2007 LOS**	**Functional Class**	**Maintenance Responsibility**
SR 415	Doyle Road to Enterprise-Osteen Road	2	45	19,300	C	14,900	E	Urban - Minor Arterial	FDOT
Old Mission Road	SR 44 to Old Mission Road/Mission Road	2	40	738	E	12,600	C	Urban Collector	Volusia County
Old Mission Road	E. of Mission Road/Old Mission Road	2	40	800	E	12,600	C	Rural Minor Collector	Volusia County
SR 442-Indian River Boulevard	I-95 to Old Mission Road	4	55	9,647	C	32,800	B	Urban Collector	FDOT
Air Park Road	Park Ave. to Iowa Drive	2	40	920	E	10,080	C		Volusia County
Maytown Road	New Smyrna Blvd. to Dixon Lake Road	2	50	3,370	C	10,160	B	Rural Minor Collector	Volusia County
Maytown Road	Dixon Lake Road to Pell Road	2	50	1,240	C	6,320	A	Rural Minor Collector	Volusia County
Maytown Road	Pell Road to Clinton Ranch Road	2	45	720	C	6,320	A	Rural Minor Collector	Volusia County
Maytown Road	Clinton Ranch Road to Beacon Light Road	2	45	450	C	6,320	A	Rural Minor Collector	Volusia County
West Park Avenue	Old Mission Road. to Air Park Road	2	45	4,320	E	12,600	C	Urban Collector	Volusia County

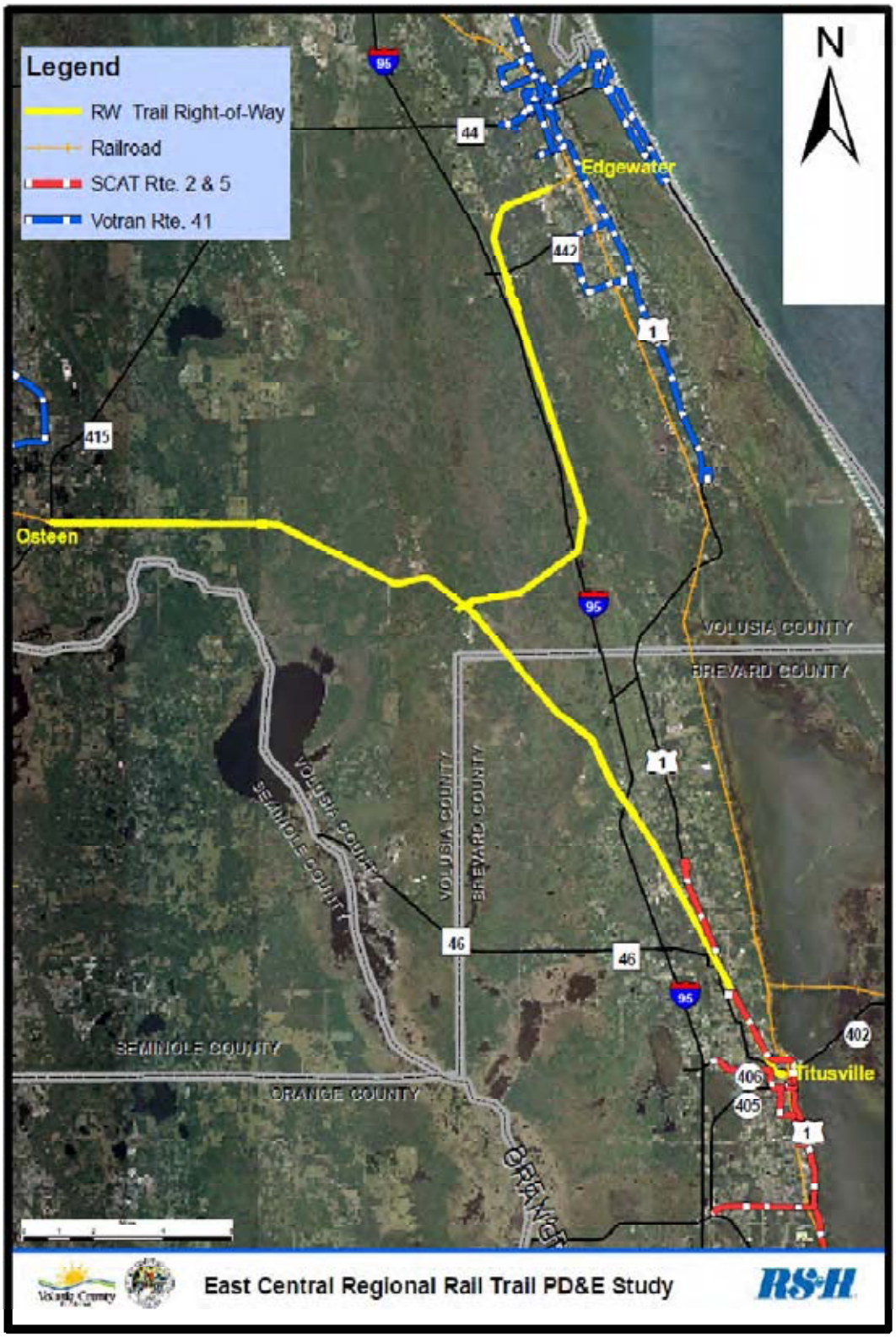
Source: FDOT Traffic CD, 2008, & Volusia County Government Traffic Engineering, 2009

Table 3.2.2 Brevard County Roadway Characteristics and Traffic

Brevard County							
Road Names	**Limits (From-To)**	**No. of Lanes**	**Posted Speed**	**2007 ADT**	**Adopted LOS**	**Functional Classification**	**Maintenance Responsibility**
SR 406 (Garden Street)	I-95- US 1	4	40	14,260	E	Urban Principal Arterial	FDOT
SR 406 (Garden Street)	Singleton Avenue – Park Avenue	4	40	17,810	E	Urban Principal Arterial	FDOT
SR 406 (Garden Street)	Park Avenue – Hopkins Avenue	4	40	13,780	E	Urban Principal Arterial	FDOT
SR 406 (Garden Street)	Hopkins Avenue – Washington Avenue	4	40	10,680	E	Urban Principal Arterial	FDOT
Dairy Road	Singleton Avenue - Old Dixie Highway	2	30	6,930	E	Urban Collector	Brevard County
Dairy Road	Old Dixie Highway -US 1	2	30	6,180	E	Urban Collector	Brevard County
Parrish Road	Singleton Avenue- US 1	2	30	1,380	E	Urban Collector	Brevard County
SR 46	I-95- US 1	2	45	9,840	E	Urban Principal Arterial	FDOT
I-95	Garden (SR 406) to SR 46	4	70	52,000	C	Rural Principal Arterial-Interstate	FDOT
I-95	SR 46 to Stuck Way Road	4	70	47,900	C	Rural Principal Arterial-Interstate	FDOT
I-95	Stuck Way Road Volusia- County Line	4	70	47,900	C	Rural Principal Arterial-Interstate	FDOT
US 1	Dairy Road- SR 46	2	45	18,040	D	Urban Principal Arterial	FDOT
US 1	Garden Street- Dairy Road	2	45	23,370	D	Urban Principal Arterial	FDOT
US 1 Northbound-Washington Avenue							
US 1	South Street - Julia Street	2 lanes (one way)	40	13,210	E	Urban Minor Arterial	FDOT
US 1	Julia Street - Main Street	2 lanes (one way)	40	12,960	E	Urban Principal Arterial	FDOT
US 1	Main Street - Garden Street	2 lanes (one way)	30	12,330	E	Urban Principal Arterial	FDOT
US 1 Southbound - Hopkins Avenue							
US 1	Garden Street - Main Street	2 lanes (one way)	40	12,360	E	Urban Principal Arterial	FDOT
US 1	Main Street - Julia Street	2 lanes (one way)	40	12,880	E	Urban Principal Arterial	FDOT
US 1	Julia Street - South Street	2 lanes (one way)	45	12,780	E	Urban Principal Arterial	FDOT

Source: FODT Traffic CD, 2008, Space Coast TIP, Brevard County Planning & Zoning Office, 2009

Figure 3.2 Transportation System Map



3.3 Right-of-Way

The right-of-way is owned by FDEP, Office of Greenways and Trails, and was purchased from the FEC Railway Corporation in December 2006. The right-of-way width varies throughout the corridor from 33 feet to almost 500 feet. The majority of the corridor has a right-of-way width of 100 feet. The following table summarizes this information.

Table 3.3.1 Right-of-Way Summary

R/W Width	Total Distance (Feet)	Total Distance (Miles)	Percent
66' or less	26,053	4.93	10.90%
67' to 99'	5,812	1.1	2.40%
100'	168,699	31.95	70.60%
101' to 199'	10,671	2.02	4.50%
200' or more	27,650	5.24	11.60%

Source: GCY Survey Data, 2007

Ownership of limited portions of the corridor could not be adequately ascertained during the FDEP purchase, and were thus excluded from the acquisition. The property parcels associated with these portions are exhibited in Figures 3.3.1A and B. Comprised of two sets of adjacent parcels south of Osteen-Maytown Road, the total distance of right-of-way that was not acquired is approximately 6,900 feet (1.32 miles).

Figure 3.3.1A Un-Purchased Right-of-Way Map (Sta. 464-492)

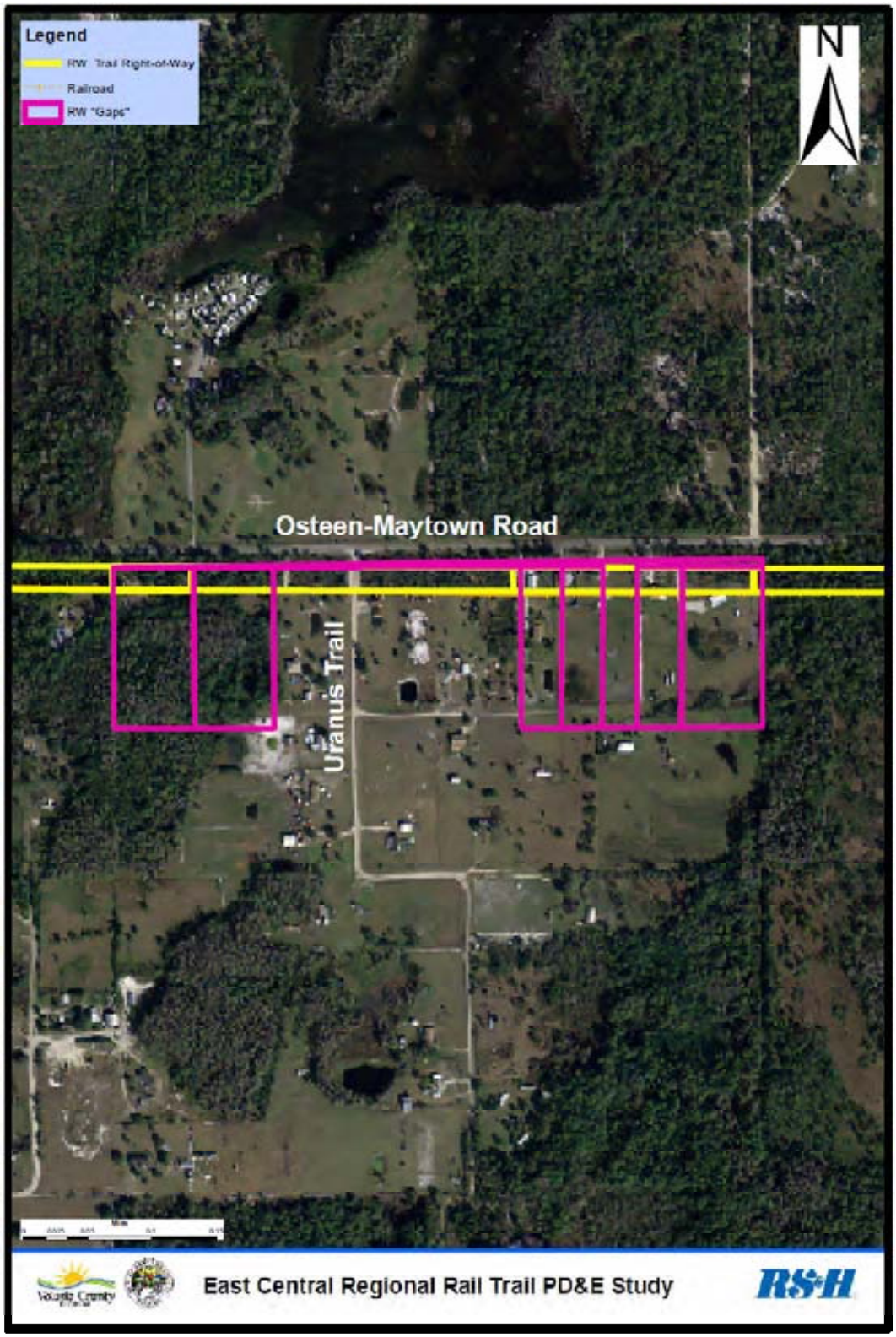
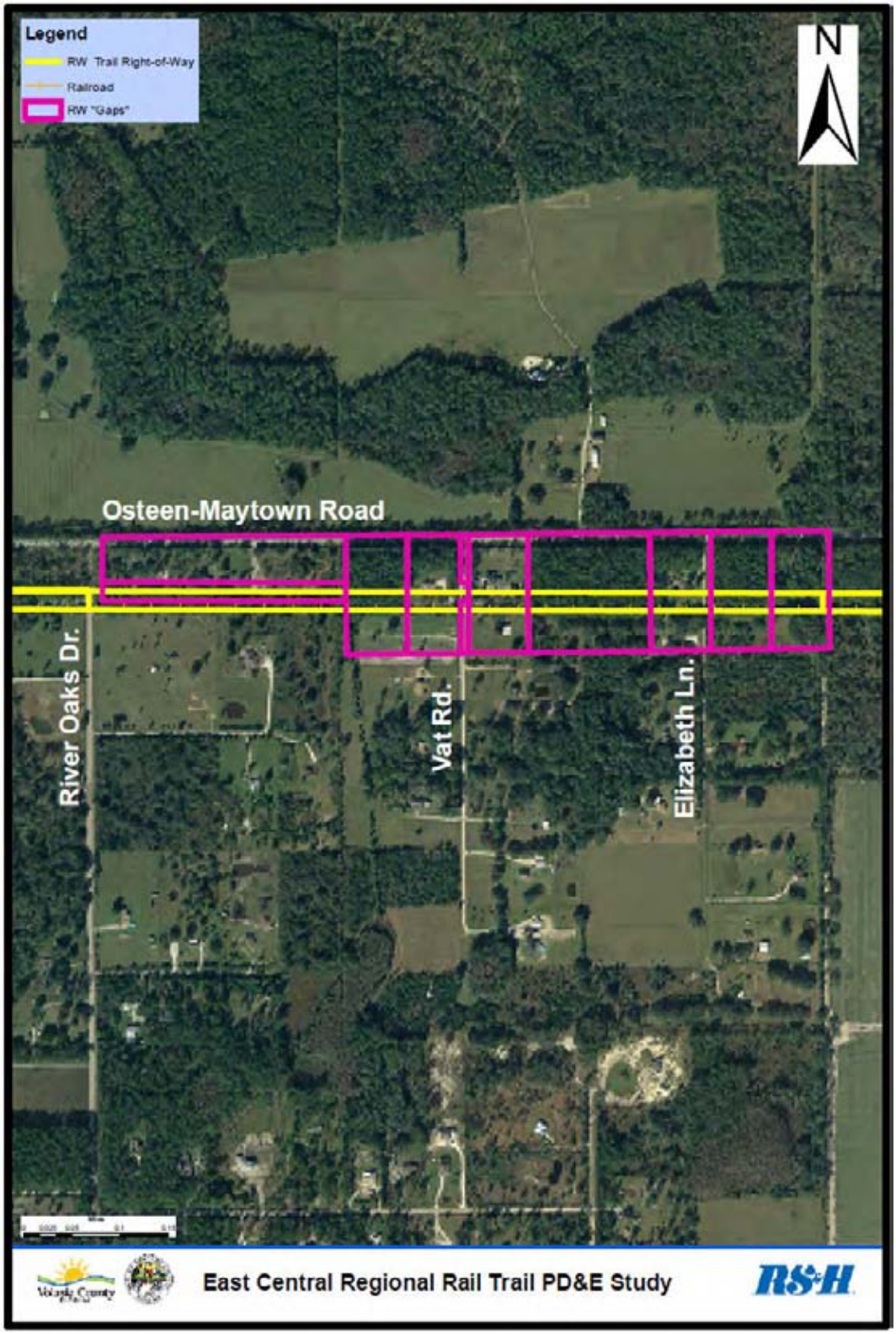


Figure 3.4.1B Un-Purchased Right-of-Way Map (Sta. 610-652)



3.4 Current Corridor Access

There are numerous access points to the trail corridor by means of public and private roads along both the Titusville and Edgewater Branches. Most of these access points are rural roads that cross the corridor while providing access to local residents. Table 3.4.1 provides a summary of the identified roadway crossings.

Table 3.4.1 Roadway Access/Crossings

Roadway	Station No.	Paved or Unpaved (P or U)
Volusia County (Osteen – Brevard County line)		
SR 415	401+50	P
New Smyrna Blvd	404+15	P
Oak Street	410+80	P
Uranus Trail	474+55	U
Guise Rd	544+19	U
Smith Rd	584+04	P
River Oaks Dr	610+18	U
Vat Rd	630+48	U
Elizabeth Lane	643+69	U
Gobblers Lodge Rd	729+24	U
Lake Harney Rd	937+85	U
Brevard County		
Aurantia Rd	1466+95	P
Burkholm Rd	1514+18	P
McCullough Rd	1565+20	U
Glenn Rd	1657+60	P
Kelly Rd	1694+82	P
Broadway Ave	1716+27	P
SR 46 / Main St	1731+80	P
Jefferson St	1738+62	P
Richard St	1745+40	P
Parker St	1745+58	P
Parrish Rd	1784+41	P
Nichols Rd	1802+83	P
Jay Jay Rd	1814+31	P
Dairy Rd	1832+54	P
LaGrange Rd	1847+24	P
Silver Star Rd	1886+90	P
Buffalo Rd	1897+73	P
Malinda Lane	1905+09	P
Draa Rd	1923+66	P
SR 406 / Garden St	1935+09	P
Brown Ave	1939+58	P
DeLeon Ave	1944+27	P

Volusia County (Maytown – Edgewater)		
Maytown Spur Rd	2019+21	P
Biritz-Stratton Rd	2274+54	U
Maytown Rd	2321+90	P
Volco Rd	2467+20	U
SR 442	2654+40	P
Old Mission Rd	2770+49	P
Air Park Rd	2816+12	P

Source: Field Reviews; GCY Survey Data, 2007

Corridor access is also obtained through the numerous private driveways that cross the corridor. As with the street crossings, the majority of the driveways are rural and unpaved, and are allowed through existing easements (see Section 3.5).

The Miami Tract Hunt Club, which leases property from the Miami Corporation in the Farmton area, currently uses the unpaved corridor as an access road to gain entry to various hunting grounds. While the entire Miami Tract Hunt Club lands are fenced in to prevent unlawful hunting, access to the corridor is unlimited within the entire tract. Additional information about the hunt club is provided in Section 3.11.5.

3.5 Easements and Encroachments

3.5.1 Easements

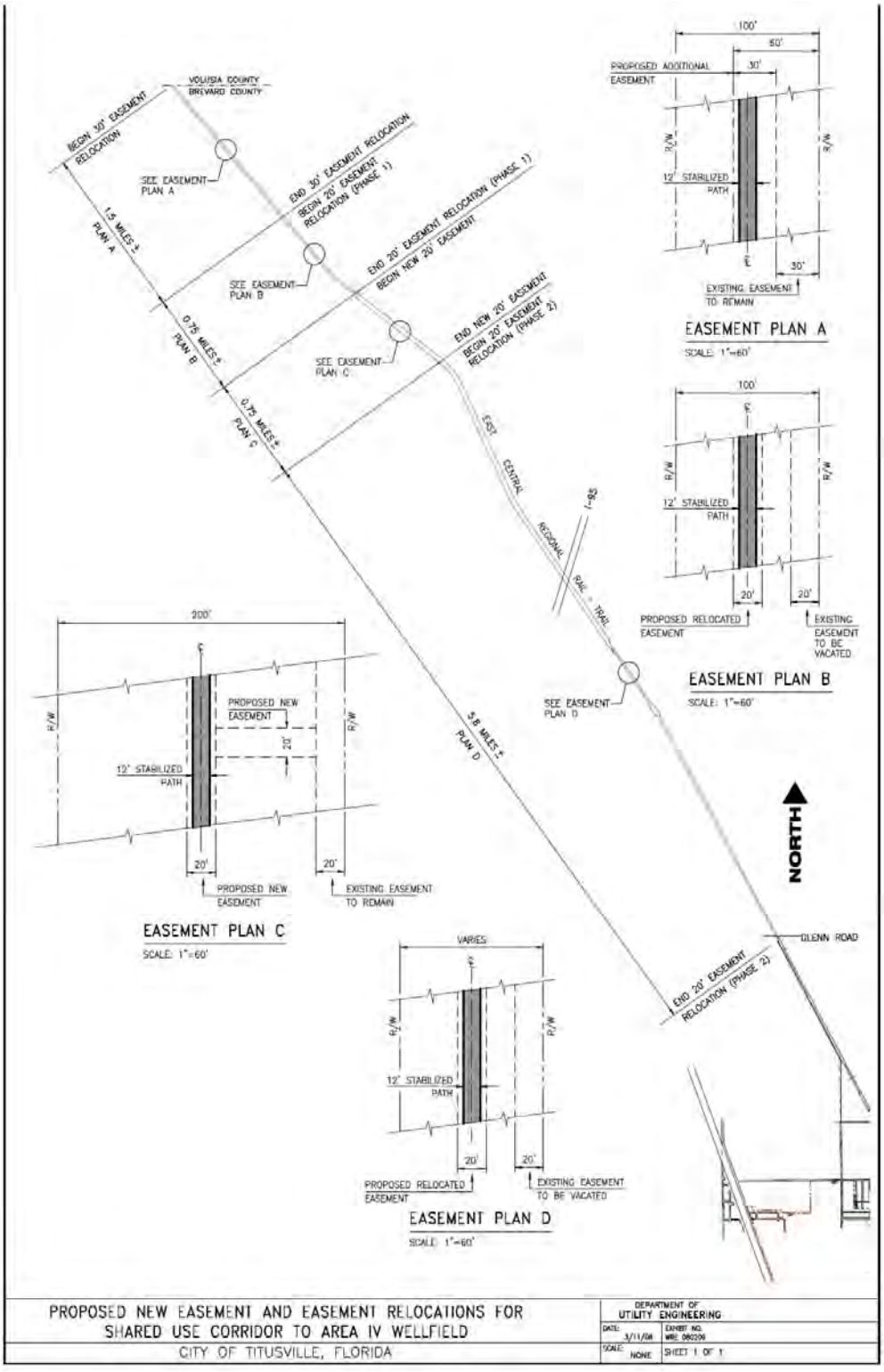
Along the trail corridor, easements have been issued to property owners and respective entities. These easements are for property access (mainly driveway crossings) and utilities. Some of the easements issued for property access were issued on a temporary basis and are discussed below. The utility easements are for overhead power transmission lines and are located in two points along the Titusville Branch of the trail corridor, east of Osteen near Guise Road, and east of Lake Harney Road in Maytown.

Temporary easements were issued by the Florida East Coast Railway (FEC) to various property owners lying adjacent to the rail corridor in Brevard and Volusia Counties. Some of these property owners have property on the east and west side of the corridor, which means the rail corridor bifurcates their property. Twelve easements were issued in Brevard County and thirteen were issued in Volusia County. These easements allowed the property owner use of the corridor in the manner they were using it at the time of the agreement, without an allowance to make any improvements to the corridor. In addition, the agreement noted that FEC was contemplating selling the land to the State of Florida for use as a recreational trail, and that permission to use the corridor would end when construction of the recreational trail began.

In Volusia County, these properties are located along Cow Creek Road east and west of Volco Road, and along Clinton Ranch Road just north of where Maytown Road transverses to the east toward Oak Hill. In Brevard County, these properties are located along the corridor from south of LaGrange Road to south of Glenn Road.

In addition, there is a proposed City of Titusville waterline easement that starts at the Brevard County line and ends at Glenn Road in Titusville. Easements were obtained by Titusville to locate the waterline and well points within the trail corridor. The easement width varies from 20 to 30 feet, and is generally along the centerline of the corridor. Easements for the 14 raw water supply wells are located in the northern two miles of the corridor, starting at the Volusia-Brevard county line heading southward. These easements are located on the eastern edge of the trail corridor and are 30 feet in width. Figure 3.5.1 illustrates the limits of this waterline project.

Figure 3.5.1 Titusville Waterline Extension



3.5.2 Encroachments

Although title to the corridor itself remained in the hands of the FEC Railway after the removal of the railroad tracks, which was over 50 years ago, in many places, several private structures have encroached on the rail corridor right-of-way. Encroachments identified by the 2007 GCY survey include dwelling structures, sheds, ancillary outbuildings, fences, paved driveways, and vehicle garages. The recommended trail alignment attempts to avoid these encroachments.

The issue of fences was discussed with numerous members of the public at the study workshops. The purpose of the fencing varies from livestock areas to residential properties to property security. During the workshop discussions, it was stated that the approach toward addressing existing fencing that encroaches on the trail corridor will be conducted on a case-by-case basis during final design.

3.6 Utilities and Railroads

The majority of the trail corridor is located in rural portions of Volusia and Brevard counties, where there are no central water or sewer systems. In Edgewater, where the corridor parallels Park east of Old Mission Road, there are adjacent water and sewer lines. Similarly, in the Titusville portion, central water and sewer systems are present. In addition, CATV fiber optic cable, underground telcom cable, natural gas lines, and overhead or underground power distribution lines intersect with the corridor. Table 3.6.1 summarizes the power and phone cable utility crossings, noting the utility type and the station number. Table 3.6.2 summarizes the other utility crossings. Station numbers 400 through 1999 represent the Osteen to Titusville section, while station numbers 2000 and greater are for the Maytown to Edgewater section.

Table 3.6.1 Utility Crossings – Power and Phone Cable

FP&L (OH)		Bellsouth (SG)	
401+04	1694+91	400+98	1731+89
411+56	1727+39	405+43	1748+73
458+88	1731+89	479+65	1768+73
479+64	1738+73	544+25	1784+38
542+53	1784+83	584+14	1814+13
544+25	1799+19	610+43	1832+54
556+80	1814+05	729+23	1847+01
568+68	1837+18	729+39	1847+33
584+14	1847+15	1098+83	1847+38
610+30	1859+20	1104+83	1858+91
623+72	1867+01	1466+95	1897+70
729+03	1887+51	1467+05	1923+60
893+05	1897+70	1513+77	1935+63
938+12	1923+76	1542+52	1939+83
1019+66	1934+40	1570+47	1944+63
1094+21	1944+46	1570+87	
1097+12		1657+53	2626+51
1467+19	2303+81	1690+78	2652+83
1513+77	2321+78	1694+42	2816+40
1521+25	2466+91	1716+33	
1542+52	2653+28		
1564+68	2708+44		
1664+37	2782+87		
1694+42			

Source: GCY Survey, 2007

Table 3.6.2 Utility Crossings – Fiber Optics, CATV, Water, Sewer, Gas

Fiber Optics (SG)	CATV (SG)	County Water	County Sewer	City Water	City Sewer	Gas Line
401+04	401+04	1638+12	1721+83	1847+03	1831+97	1847+33
1944+63	411+56	1665+55	1732+43	1923+71	1935+37	1939+83
	1467+23	1694+87	1879+07	1934+78	1944+21	1943+03
	1513+77	1714+91	1939+36	1944+36		
	1657+53	1716+24			2707+09	2816+04
	1694+42	1718+43		2653+54	2791+25	
	1700+53	1724+23		2654+32		
	1874+61	1737+96		2769+91		
	1944+63	1879+47		2791+25		
		1940+49				
	2770+14	1944+61				
	2816+40					

Source: GCY Survey, 2007

Two sets of high intensity high voltage power transmission lines run along a north-south route approximately 1500 feet west of Smith Road in the Osteen section of the corridor.

An active FEC Railway line still operates in Titusville east of the trail corridor. This line runs north-south along and east of the US 1 corridor. No crossings of this rail line are required for the regional rail trail.

3.7 Bridges

Through initial field reviews and analysis of survey information, eight sites along the former FEC railway were shown to have bridge crossings of various geographical barriers, such as wetlands, canals, and creeks. Upon additional field reviews and environmental assessments, the Study Team discovered 17 sites that require the crossing of natural features. Most of these sites had pilings in place; however, many pilings had been removed or cut down to level grade subsequent to the removal of the rails.

Table 3.7.1 and Figure 3.7.1 on the following pages provide information on the location and characteristics of the proposed 17 bridge crossings of the natural features. The photos below document some of the existing conditions at the proposed bridge locations.

Lake Ashby Canal R.R. trestle pilings, Miami Corp Property

R.R. rail and ties over creek, north of SR 442 and south of Maytown Road

Cow Creek R.R. trestle pilings, adjacent to Cow Creek Road

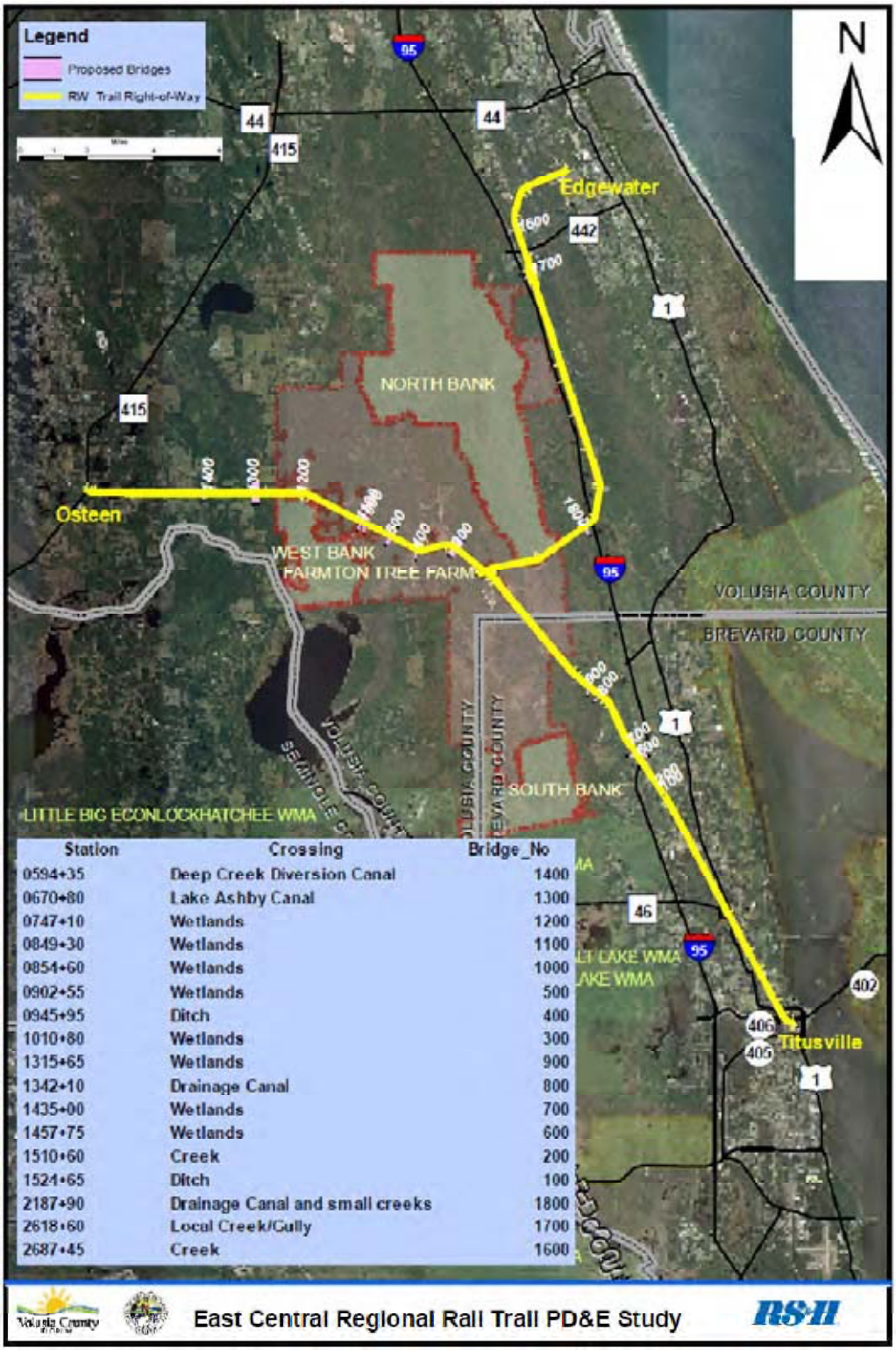
Low cut R.R. trestle pilings in wetlands area, adjacent to Maytown Road

Table 3.7.1 Former Bridge Structures

Station ID (Center)	Bridge ID	Crossing Type	Approx. Length	Condition/Comments
597+35	1400	Deep Creek Diversion Canal	388 ft.	Concrete abutments; pilings in fair condition
670+80	1300	Lake Ashby Canal	1470 ft.	Pilings in poor condition near water
747+10	1200	Wetlands	75 ft.	Rail bed is approx. 20 feet N of dirt road; but road avoids trees.
849+30	1100	Wetlands	310 ft.	28 sets of pilings; rail bed is elevated 5 ft above surrounding low grade
854+60	1000	Wetlands	240 ft.	17 sets of pilings; rail bed is approx. 17 ft. wide between deep swales
902+55	500	Wetlands	510 ft.	Berm on west and east side; significant drop-off
945+95	400	Ditch	58 ft.	Upland cut ditch in need of a culvert
1010+80	300	Wetlands	800 ft.	Wetland area that does not contain elevated rail bed, west of FP&L easement
1315+65	900	Wetlands	50 ft.	3 sets of pilings
1342+10	800	Drainage Canal	220 ft.	Pilings in poor condition, cut low or removed
1435+00	700	Wetlands	35 ft.	4 sets of pilings; poor condition
1457+75	600	Wetlands	50 ft.	6 sets of pilings; poor condition
1510+60	200	Creek	100 ft.	Large existing structure over a creek
1524+65	100	Ditch	40 ft.	Small existing structure over a ditch
2187+90	1800	Drainage Canal 2 Small Creeks	280 ft.	Pilings cut off at 2 ft. above grade; low area
2618+60	1700	Local Creek/Gully, wetlands	1484 ft.	Pilings in fair to good condition
2687+45	1600	Creek	50 ft.	Wooden abutment; cross ties and rail still in place; pilings in fair condition

Source: GCY Survey Data, Study Team Field Reviews

Figure 3.7.1 Proposed Bridges



Station	Crossing	Bridge_No
0594+35	Deep Creek Diversion Canal	1400
0670+80	Lake Ashby Canal	1300
0747+10	Wetlands	1200
0849+30	Wetlands	1100
0854+60	Wetlands	1000
0902+55	Wetlands	500
0945+95	Ditch	400
1010+80	Wetlands	300
1315+65	Wetlands	900
1342+10	Drainage Canal	800
1435+00	Wetlands	700
1457+75	Wetlands	600
1510+60	Creek	200
1524+65	Ditch	100
2187+90	Drainage Canal and small creeks	1800
2618+60	Local Creek/Gully	1700
2687+45	Creek	1600

3.8 Soils and Topography

3.8.1 Area Physiography

Brevard County is located on the coastal lowlands of Florida. The primary features are the St. Johns River Valley, the Atlantic Coastal Ridge, and the Barrier Islands. The St. Johns River Valley is made up of marsh, sandy prairie, and flatwoods. The Subject Property is located in the pine and palmetto flatwoods of the St. Johns River Valley. The pine and palmetto flatwoods lie between the prairie and the Atlantic Coastal Ridge. The flatwoods are nearly level and poorly drained. There are numerous scattered intermittent ponds, lakes, swamps, and sloughs (Soil Survey of Brevard County, Florida, Soil Conservation Survey [SCS], 1974). The altitude east of the St. Johns River ranges from a few feet above mean sea level (AMSL) along the border of the marsh to about 35 feet (AMSL). The vegetation consists primarily of assorted pines, saw palmettos, and various kinds of groundcover.

Volusia County is subdivided into ten physiographic regions. The regions are the Atlantic Beach Ridges, Atlantic Coastal Lagoons, Silver Bluff Terrace, Atlantic Coastal Ridge, Pamlico Terrace, Rima Ridge, Talbot Terrace, DeLand Ridge, Cresent City Ridge, and the St. Johns River Valley. The Subject Property is located within the DeLand Ridge physiographic region of the county. Talbot Terrace is located to the east of the DeLand Ridge and the St. Johns River Valley is located to the west of the Subject Property. The DeLand and Crescent City Ridges, karst ridges, are older marine terraces. The surface has been altered by erosion and the collapse of solution caverns in the underlying limestone. Of the approximately 120 lakes of more than 5 acres in the county, 90 percent are within these karst ridges. Local relief is greater than in any of the other physiographic regions. A few areas on the DeLand Ridge are slightly more than 100 feet above mean sea level (AMSL), others are less than 25 feet AMSL.

3.8.2 Soil Survey Review

Eight soil map units were identified at the Subject Property based on a review of the Soil Surveys of Brevard and Volusia Counties. The soils underlying the Subject Property are characterized as follows:

Candler – Candler soils consist of nearly level to sloping, excessively drained, sandy soils that formed in thick beds of unconsolidated sandy marine, eolion, or fluvial sediments. These soils are in the upland, sandhill areas of the county. The water table is below a depth of 80 inches throughout the year. Slopes are smooth to concave and range from 0 to 8 percent.

Felda – The Felda series consists of very deep, poorly drained, moderately permeable soils in drainageways, sloughs and depressions, and on flood plains and

low flats. They formed in stratified, unconsolidated marine sands and clays. Slopes range from 0 to 1 percent.

Paola – Soils of the Paola series are excessively drained, very rapidly permeable soils that formed in thick beds of marine or eolian sand on high dunelike broad ridges and in undulating areas. The soil from this series has a water table of below a depth of 80 inches. The slope of this series ranges from 0 to 8 percent.

Pomona – This is a nearly level, poorly drained soil that is primarily found in areas with pine and palmetto flatwoods that are interspersed with cypress ponds, swamps, and grassy, small, wet depressions. Typically, the surface layer is very dark gray sand. The subsurface layer is gray and light gray sand. Between depths of 26 to 39 inches is dark, colored, weakly cemented sand. The slopes of this soil range from 0 to 2 percent. The water table is within 10 inches of the surface for two to six months during most years.

Smyrna – The Smyrna series consists of nearly level, poorly drained and very poorly drained sandy soils. These soils formed in thick deposits of sandy marine material. The water table is at a depth of less than 10 inches for 1 to 4 months and 10 to 40 inches for more 6 months during most years. During the rainy seasons the water table rises above the surface briefly. The slopes of these soils range from 0 to 2 percent.

Tavares – The Tavares series consists of moderately well drained, nearly level to gently sloping soils that formed in sandy marine sediments. These soils are found on narrow to broad ridges and knolls in the flatwood areas and slopes adjacent to drainageways. The water table is between depths of 40 to 80 inches for more than 6 months in most years, but recedes to a depth greater than 80 inches during droughts. The slopes of these soils range from 0 to 5 percent.

Terra Ceia – The Terra Ceia series consists of very deep, very poorly drained organic soils that formed from nonwoody fibrous hydrophytic plant remains. They occur mostly in nearly level fresh water marshes and occasionally on river flood plains and in tidal swamps or flats.

Wabasso – This poorly drained, nearly level soil occurs in the flatwoods. The slope of this soil is generally less than 2%. The surface layer consists of very dark gray sand about 6 inches thick. The subsoil consists of light gray sand to a depth of 25 inches. Permeability is rapid and available water capacity is low.

Table 3.8.2 summarizes the presence of these soil types within the corridor. The WRS Soil Type exhibits are provided in Figures 3.8.2 A through C.

Table 3.8 Soil Types

Soil Classification	Percentage
Candler	1.06%
Felda	0.86%
Paola	28.98%
Pomona	13.82%
Smyrna	48.53%
Tavares	2.86%
Terra Ceia	1.06%
Wabasso	2.83%

Source: WRS, Inc. Phase 1 ESA, Dec. 2006

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Figure 3.8.2 A – WRS Soils Map (1 of 3)

Figure 3.8.2 B – WRS Soils Map (2 of 3)

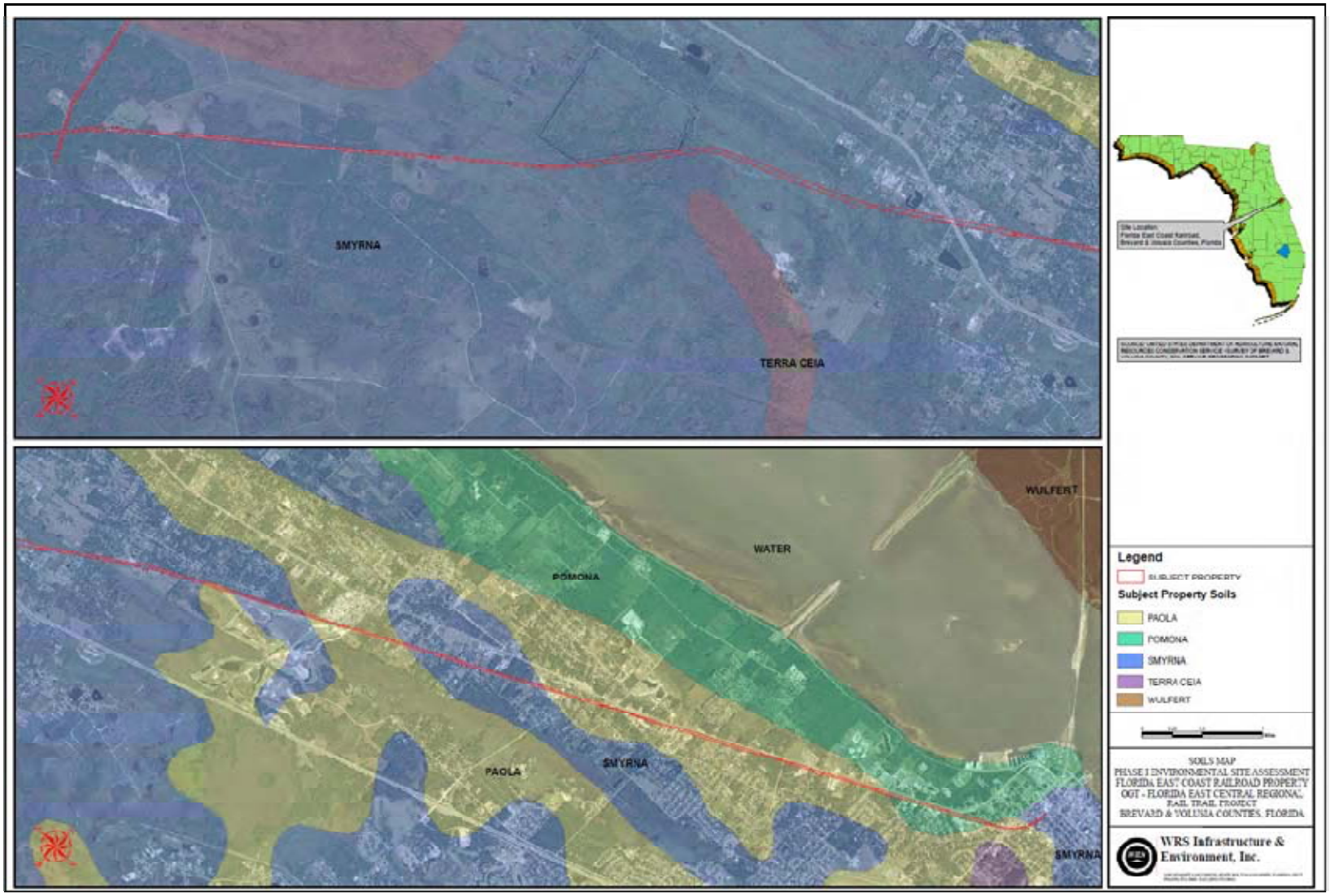
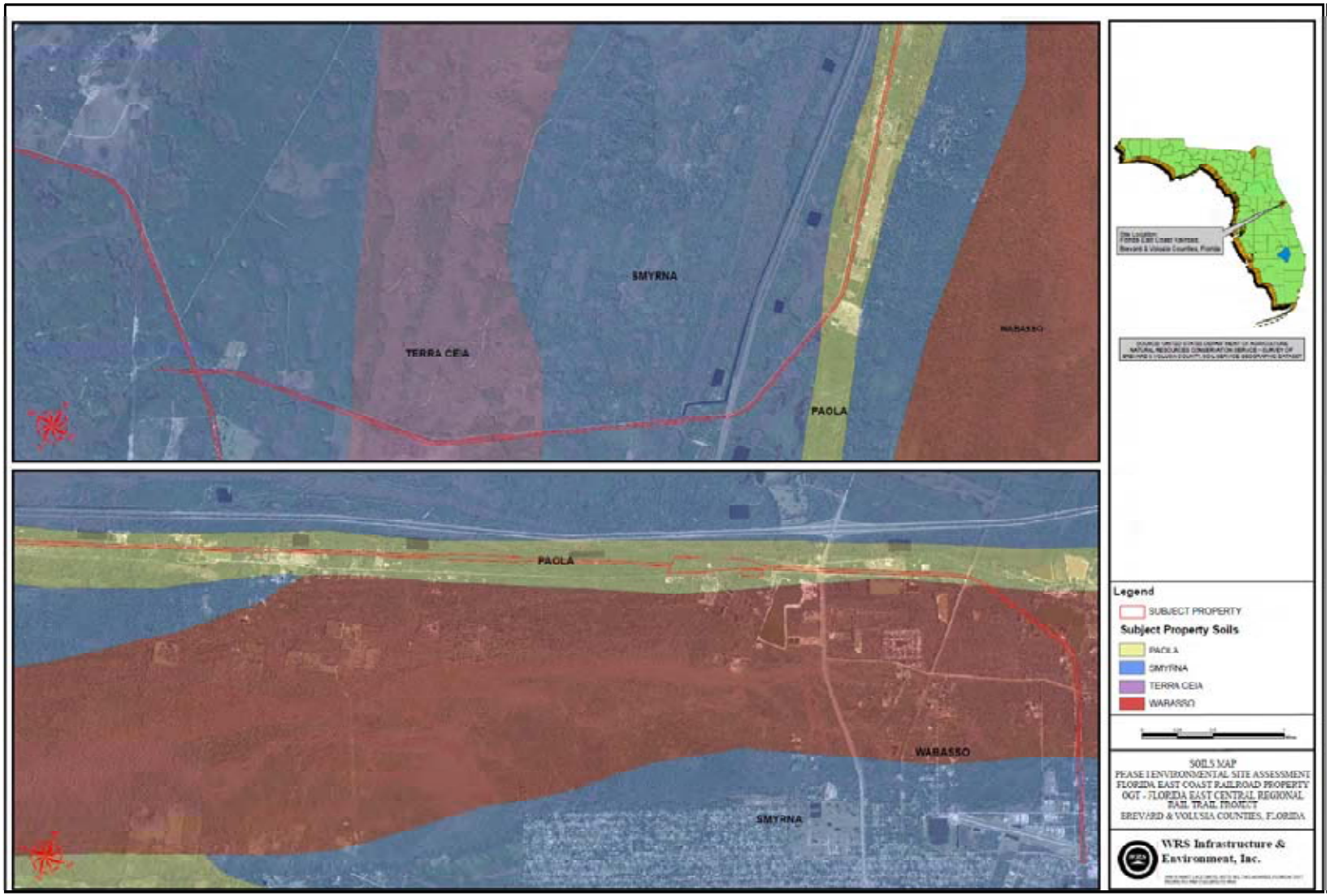


Figure 3.8.2 C – WRS Soils Map (3 of 3)


SMYRNA
TERRA CEIA
PAOLA
WABASSO
PAOLA
WABASSO
SMYRNA
Legend
SUBJECT PROPERTY
Subject Property Soils
PAOLA
SMYRNA
TERRA CEIA
WABASSO
SOILS MAP
PEASE I ENVIRONMENTAL SITE ASSESSMENT
FLORIDA EAST COAST RAILROAD PROPERTY
OGT - FLORIDA EAST CENTRAL REGIONAL
RAIL TRAIL PROJECT
BREVARD & VOLUSIA COUNTIES, FLORIDA
WRS Infrastructure & Environment, Inc.

3.9 Contamination

The Florida Department of Environmental Protection (FDEP) had a Phase 1 and Phase 2 Environmental Site Assessment conducted for the Florida East Coast Railway properties in Brevard and Volusia Counties. The purpose of the Phase 1 assessment was to collect and analyze sufficient data to identify recognized environmental conditions and provide a basis for further investigation. The assessment emphasis was on the existence of storage tanks, evidence of hazardous materials dumping, surface water conditions, stressed vegetation, and other environmental concerns. A records search of the historical use of the property is conducted, as well as a review of regulatory agencies' enforcement and permitting records and field reviews.

The Phase 1 assessment was conducted in the fall of 2006. Any railroad corridor is typically considered a recognized environmental condition due to the historical use of arsenic based herbicides. To assess this potential, WRS and the FDEP's Office of Greenways and Trails coordinated with the FDEP Bureau of Waste Cleanup to establish a soils sampling plan, which was the subject of the Phase 2 Environmental Assessment.

Results of the Phase 1 assessment included the following findings:

- An unregistered shooting range, with associated debris of targets and empty shell casings
- Several 55-gallon storage drums throughout portions of the corridor
- Several 5-gallon storage drums
- A 6,000-gallon above-ground storage tank at the former MagLev site
- A septic tank at the former MagLev site
- Several vehicle batteries
- Several areas of miscellaneous trash/debris (construction debris, tires, etc.)

It is recognized that the above-ground debris identified during the Phase 1 assessment has subsequently been removed from the corridor and properly disposed of.

The soil sampling plan was conducted in the Phase 2 Environmental Assessment in early 2007. Soil samples were to be collected at intervals of 1,000 feet in rural and non-residential areas, and at intervals of 500 feet in areas with adjacent residential development. The sampling depths were six inches and one foot below the surface. Additional soil samples were also taken at the unauthorized shooting range, in the vicinity of the abandoned storage drums, and at the former MagLev site. In all, over 4,000 soil samples were taken.

The sampling indicated that arsenic, a leaching metal compound, was present along the former railway corridor. The FDEP Recreational Soil Cleanup Target Level (SCTL) is 5.50 mg/kg. The following results, reported by corridor tract, indicated the percentage of soil samples taken that exceeded the above stated SCTL:

- Tract 1: 40.03 %
- Tract 2: 42.28%
- Tract 3: 75.37%.

Additional soil sampling of depths was conducted in February and March 2009 from two feet to four feet below level surface. These additional 2,183 samples were taken and analyzed. In addition, 17 monitoring wells were installed to a depth of approximately 15 feet below level surface. Twenty surface water samples from 10 water bodies that intersect the corridor were taken both upstream and downstream.

The laboratory results indicated the following percentage of soil samples that exceeded the 5.50 mg/kg SCTL at a depth of 2 feet and 4 feet, respectively.

- Tract 1: 2 ft. – 19.14%; 4 ft. – 8.9%
- Tract 2: 2 ft. – 24.09%; 4 ft. – 24.27%
- Tract 3: 2 ft. – 23.39%; 4 ft. – 11.41%

Note: The number of samples taken at a 4-foot depth was less than the number taken at a 2-foot depth. As a result, the percentage of samples that exceed the SCTL at a 4-foot depth could exceed the percentage at a 2-foot depth.

The results indicate that the potential for arsenic leaching within the corridor is minimal. Two of the 17 monitoring wells exhibited arsenic levels slightly above the Groundwater Cleanup Target Level of 0.01 mg/L. The surface water results exhibited concentrations of arsenic below the Surface Water Quality Classification level of 0.05 mg/L.

In August 2009, further sampling was requested by FDEP, including sampling to a depth of 6 feet in high arsenic concentration areas, sampling near the former fruit processing plan north of SR 46 (Main Street) in Mims, sampling at major power transmission line crossings of the trail, and additional areas. This sampling is currently being conducted as of the writing of this document (November 2009) and the results will be reported to Volusia and Brevard Counties.

Mitigation strategies and further coordination efforts recommended by the consultant include the following:

- Conduct a meeting between FDEP Division of State Lands staff, Office of Greenways and Trails staff, and FDEP Bureau of Waste Cleanup staff to discuss the environmental assessments and agree upon the necessary mitigation actions.
- Integrate engineering controls to nullify the impacted soils.
- Conduct an excavation from areas exceeding the FDEP recreational SCTL of 5.50 mg/kg, and backfill with clean material compacted to the existing land surface.

Engineering controls include encapsulation, such as paving over the impacted soils with a non-pervious material, such as the asphalt trail. This approach is well suited to the majority of the corridor where potential contact between persons and the impacted soils is anticipated to be minimal. In areas where there may potentially be some contact with the impacted soils, such as near trailheads and pavilions, the mitigation strategy should be assessed on a site by site basis.

3.10 Archaeological and Historic Resources

A report providing the findings of the Cultural Resources Assessment (CRAS) for the East Central Regional Rail Trail was conducted and is provided in Appendix A. The research design for the CRAS included a background investigation, a historical document search, and a field survey. The background investigation was an examination of relevant archaeological literature, and the investigation produced a summary of previous archaeological work in the region and a discussion of previous survey work undertaken near the project area. The historical document search involved a review of both primary and secondary historic sources. The original township plat maps and relevant secondary historical sources were checked for information pertaining to the existence of historic structures, sites of historic events, and historically occupied or noted aboriginal settlements within the project limits. The study team completed a field reconnaissance survey during March 2009 along the 82-foot wide corridor that extends along the south and west sides of Maytown Road in Volusia County, Florida. Fieldwork included pedestrian inspection and the excavation of seven shovel tests along this portion of the project corridor. The shovel tests measured approximately 20 inches in diameter and were excavated to a minimum depth of 39 inches below surface unless spodic soils of the water table were encountered.

The Cultural Resources Assessment (CRAS) report based on the research conducted found: (1) no new locations within the study area that had not been previously recorded with the National Register of Historic Places that displayed sufficient integrity to meet the minimum criteria for listing in the National Register; (2) identified no archaeological sites or occurrences as a result of subsurface and pedestrian survey testing; and (3) of the 11 bridges identified in the windshield survey of the railway corridors, none displayed sufficient

integrity to meet the minimum criteria for listing in the National Register. However, the Florida East Coast Railroad Corridor is in itself a historical/cultural feature for Brevard and Volusia Counties.

The Florida East Coast Railroad Corridor was constructed in 1885 as the Indian River Railway. The line originally was used to transport citrus from the famous Indian River groves located in Brevard County to Enterprise, a community located on the northern shore of Lake Monroe on the St. Johns River. Lake Monroe was the "end of the line" for St. Johns River steamship traffic, and the large dock at Enterprise was outfitted with rails to accommodate the transfer of fruit from rail to steamer transport. The fruit was then shipped by steamship to Jacksonville and distributed to cities along the eastern seaboard. When Henry Plant began construction in 1887 of the Jacksonville, Tampa and Key West railroad, the local line was extended two miles to the west to a railhead referred to as Enterprise Junction in what is now the city of DeBary. This connection integrated the local line into the larger statewide rail network and eventually became a part of Florida East Coast railroad holdings. Within Volusia County, the corridor passes through the small, historic communities of Enterprise, Osteen and Maytown. A few privately-owned buildings in these settlements constructed between 1870 and 1940 remain adjacent to, or accessible from the corridor, though some are vacant and in a state of demolition by neglect. As previously stated, some buildings have associations with historic agricultural practices and settlement patterns, but are in dilapidated conditions and lack architectural integrity and historical significance to meet the criteria for listing on the National Register.

3.11 Community Impact Assessment

A Community Impact Assessment is the process of evaluating the effects of a transportation action on a community and its quality of life. The legislation requiring attention to community impacts was the National Environmental Policy Act of 1969 (NEPA). The Act requires analysis of the social, economic and environmental impacts of projects using federal funds. This law was reinforced by the Federal Aid Highway Act of 1970, which defines specific impacts that must be considered in developing any project on any Federal-aid system, including social and economic impacts to communities.

Generally, community impacts are associated with large and complex projects. The construction of bicycle and pedestrian lanes, paths, and facilities are considered Categorical Exclusion type projects, which is a project that, based upon past experience with similar actions, does not individually or cumulatively have a significant environmental effect. These actions are not considered to be major transportation improvements, and as the proposed action is the conversion of an abandoned rail corridor into a multi-use trail, no significant impacts to the community are anticipated. Thus, the Community Impact Assessment provided below serves as an inventory of community features and resources adjacent to the rail corridor.

3.11.1 Communities

As previously stated, the rail corridor begins in Volusia County in Osteen and travels through Osteen and into Brevard County through the Mims community and terminates in the city of Titusville. The Edgewater Branch begins at the Osteen terminus in Maytown and progresses north to the city of Edgewater. The following is a description of the communities through which the corridor transects.

Volusia County

Volusia County is located in east central Florida and is bounded on the east by the Atlantic Ocean, on the north by Flagler and Putnam Counties, and on the south by Brevard and Seminole Counties. Volusia County is 1,103 square miles with a population of 510,750 people (BEBR 2008). The County consists of 16 cities and various unincorporated areas. The majority of the county's population is concentrated along the east coast in Daytona Beach, Ormond Beach, Port Orange, New Smyrna Beach and Edgewater. Near the St. Johns River corridor, Deltona, DeLand and DeBary are also heavily populated. Yet, the central portion of the county is sparsely populated and much of the land is comprised of designated conservation lands.

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Table 3.11.1 Volusia County Population Data

Municipalities	2008 Population
Daytona Beach	64,927
Daytona Beach Shoes	5,461
DeBary	18,913
DeLand	27,326
Deltona	85,921
Edgewater	21,618
Holly Hill	12,944
Lake Helen	2,871
New Smyrna Beach	23,716
Oak Hill	1,978
Orange City	9,556
Ormond Beach	40,920
Pierson	2,657
Ponce Inlet	3,299
Port Orange	57,218
South Daytona	13,765
Unincorporated	117,584
Volusia County Total	510,750

Source: BEBR 2008

Osteen

Osteen, in Volusia County, is the starting point for this PD&E study, and it is an unincorporated community in the County. The majority of the community sits west of SR 415 to Azalea Lane on the east and Lemon Bluff Road to the south. According to Volusia County Planning Department Staff, Osteen's population is approximately 3,500. It is a historic rural community that was established in the 1800s, and the rail corridor travels through Osteen along Osteen Maytown Road.

Brevard County

Brevard County is located in the east central Florida region and is bounded on the east by the Atlantic Ocean, on the north by Volusia and Orange Counties, and on the south by Indian River County. It is the home of Kennedy Space Center, which is the only facility in the world that launches the Space Shuttle. Brevard County stretches approximately 72 miles along Florida's Space Coast and has a population of 556,213 (BEBR 2008). Because of its length, unique communities are found within the County's borders. Fifteen municipalities are located within the County and most of

the County's population is located in the cities of Melbourne, Palm Bay, Rockledge and Titusville. There are also several unincorporated areas that consist of urban, newer suburban neighborhoods, older platted subdivisions, beachside areas, and communities that are related to historical development patterns, such as the Mims community.

Table 3.11.2 Brevard County Population Data

Municipalities	2008 Population
Cape Canaveral	10,635
Cocoa	16,971
Cocoa Beach	12,800
Grant-Valkaria	3,985
Indialantic	2,992
Indian Harbour Beach	8,733
Malabar	2,859
Melbourne	78,308
Melbourne Beach	3,309
Melbourne Village	729
Palm Bay	102,519
Palm Shores	968
Rockledge	25,698
Satellite Beach	10,848
Titusville	45,664
West Melbourne	16,703
Unincorporated	212,492
Brevard County Total	556,213

Source: BEBR 2008

Mims

The rail corridor parallels the Mims community to the east which is a small rural community located in the north mainland portion of Brevard County. There are approximately 9,147 residents in Mims according to the 2000 Census. The Census identifies Mims as a Census Designated Place (CDP); CDPs are delineated to provide data for densely populated areas that are identifiable by name but are an unincorporated area. According to the Census, the Mims CDP boundary consists of land east of I-95 and south of Aurantia Road, to the city of Titusville boundary (as of April 2000). The Mims community is surrounded by thousands of acres of citrus groves, and the citrus industry is prevalent in the area with packing plants and

distribution facilities. It is home to the Harry T. Moore Memorial Park and Cultural Center, which honors civil rights leaders Harry T. and Harriette V. Moore.

In October 2006, the Board of County Commissioners requested a Small Area Study (SAS), for the Mims community in order to assess the area's growth capabilities, the community's wishes, and recommend strategies and tactics for managing growth. The recommendations that resulted from the study included the importance of recreational activities to the Mims community, particularly acquiring better access to trails for walkers, bicyclists, and horses. In addition, the community wanted to preserve agriculture, both working farmland and the agricultural landscape. It was most important to the Mims community members to preserve Mims as a special place, rural, and small-town in nature, with a history and a future (Small Area Study: Mims Area).

As previously stated, the rail corridor parallels the Mims community, and it is important to note that trails and greenways help preserve and protect open recreational space from development. They help protect the habitats of important wildlife and wetland ecosystems, which is an expressed goal of the Mims community. Additionally, it is apparent that the goals and desires of the Mims community support the conversion of the rail corridor into a multiuse trail, as trails are a desired amenity of the community.

Titusville

The city of Titusville sits on the Indian River in the northern half of Brevard County with a population of 45,664 (BEBR 2008). Though Titusville is a small transitioning community that is 21 square miles, there are several attractions within the city for the local community to enjoy, as well as tourists from across the world. It is the home of the Kennedy Space Center, Cape Canaveral Seashore, U.S. Space Walk of Fame, and Space View Park. The city also has various other important cultural and natural resources. Titusville was featured in the May 2008 issue of Southern Living in an article titled "Best Exits Off I-95" (Exits 220 and 215). Exit 220 (SR 406) was noted for Titusville's famous seafood eatery, Dixie Crossroads, and Exit 215 (SR 50) was highlighted for the Blue Heron Water Reclamation Plant and Wetlands as a popular site for bird watching located in the southern portion of Titusville on Deep Marsh Road.

The rail corridor parallels US 1 and transverse into the city of Titusville terminating at Canaveral Avenue just south of Garden Street (SR 406). The intersection of US 1 and Garden Street is one of the major entrances into Downtown Titusville; this area also functions as the town center or downtown core. As previously discussed, there are several parks located in this area that are important community recreational

facilities. The conversion of the rail corridor to a multi-use trail could aid in connecting community parks, and enhancing the "Downtown Titusville experience." Further, Titusville's downtown was added to the U.S. National Register of Historic Places in 1990 and includes the area bounded by Julia Street, Hopkins Avenue, Main Street, and Indian River Avenue, encompasses approximately 60 acres, and contains 21 historic buildings. This area is slightly south of where the rail corridor terminates, and the addition of a multi-use trail could provide better pedestrian access. In addition, the city has a Community Redevelopment Area (CRA) located in the downtown and recently prepared a Downtown Titusville Community Redevelopment Area (CRA) Plan Update. The plan is discussed in Section 3.16 of this report, and it expresses the City's strategic vision for quality redevelopment. The goals and objectives laid forth in the plan could be realized with the addition of the East Central Regional Rail Trail.

Edgewater

The city of Edgewater lies just south of New Smyrna Beach along the Indian River, two miles west of the Atlantic Ocean. It is an Intracoastal waterfront community with a population of 21,618 (BEBR 2008). The city has over 20 recreational parks on over 140 acres of parkland. Within Edgewater, there is the Hawks Park Recreation Complex, with a heated pool, lighted baseball filed and soccer fields, conservation area, outdoor amphitheater, and a museum. The city also has a historical museum that features artwork and historical items that were donated to the city. These are both valued community resources.

The northeastern end of the rail corridor is located in the city of Edgewater and travels from Maytown along Cow Creek Road through the newly developed Coral Trace community. The area that the rail corridor travels through in Edgewater is an industrial corridor leading toward the Indian River waterfront. Though Edgewater is a small community, there are proposed developments in the area near the rail corridor. These developments include Restoration Development of Regional Impact DRI, which is discussed in Section 3.16 of this report, and Reflections, a small scale development located south of the I-95 interchange to the west of I-95. If constructed, the rail corridor could provide future and current Edgewater residents connectivity to local and regional attractions, as well as provide a pristine recreational experience.

The existing cultural features and community services near the corridor enhance the nature of these communities and create a sense of place for each community. These features include religious institutions, historical features, and other community services. Community services include facilities that provide public services such as government buildings and health care facilities. Because the proposed project is of regional significance, a three-mile diameter was implemented

to identify these attributes. The major cultural features and community services present within three miles of the proposed project are described below.

3.11.2 Religious Institutions

There are a multitude of religious institutions that exist near the rail corridor, and they are vital to the community and serve the various stakeholders of East Regional Rail Trail. These institutions are clustered in the more populated areas. The majority are located north of the Edgewater Branch and along the southern section of the Titusville Branch. Others are located adjacent to the corridor in Mims; however, there are fewer institutions in this area and they are smaller edifices than those located in the cities of Edgewater and Titusville.

Figure **3.11.1 Religious Institutions**

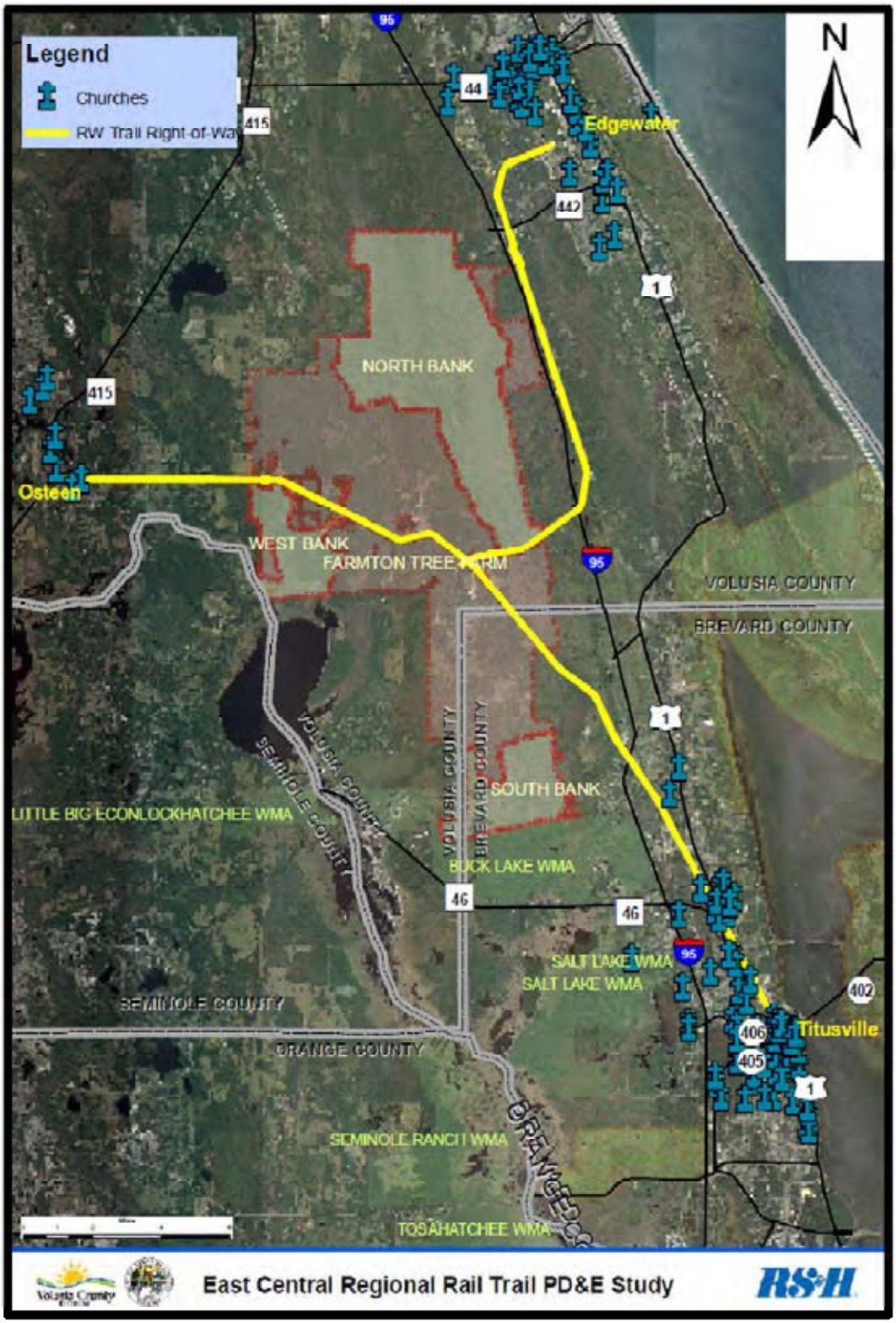

Table 3.11.3 Religious Institutions

NAME	ADDRESS	CITY
IGLESIA DE DIOS MB EL SANTUARIO	75 COURTLAND BOULEVARD	DELTONA
FELLOWSHIP BAPTIST CHURCH	114 COURTLAND BOULEVARD	DELTONA
FORT SMITH BLVD BAPTIST CHURCH	229 FORT SMITH BOULEVARD	DELTONA
CALVARY CHAPEL DELTONA	2740 DOYLE ROAD	DELTONA
GOOD SHEPHERD EVANGELICAL CHURCH	750 HOWLAND BOULEVARD	DELTONA
PINE RIDGE FELLOWSHIP	935 HOWLAND BOULEVARD	DELTONA
EDGEWATER FIRST BAPTIST CHURCH	130 E PARK AVE	EDGEWATER
NEW LIFE APOSTOLIC CHURCH	3030 ROYAL PALM DRIVE	EDGEWATER
JUMP MINISTRIES INTERNATIONAL CHURCH	2920 INDIA PALM DRIVE	EDGEWATER
FRIENDSHIP BAPTIST CHURCH	2108 HIBISCUS DRIVE	EDGEWATER
BEREAN BIBLE CHURCH	1818 DATE PALM DRIVE	EDGEWATER
SERVANTS QUARTERS FELLOWSHIP INCORPORATED	1429 SABAL PALM DR	EDGEWATER
INDIAN RIVER BAPTIST CHURCH	1708 S RIDGEWOOD AVENUE	EDGEWATER
EDGEWATER ALLIANCE CHURCH	310 NORTH RIDGEWOOD AVENUE	EDGEWATER
JUMP MINISTRIES	322 CANAL RD	EDGEWATER
RELIGIOUS SCIENCE CHURCH FOR TODAY	612 NORTH RIDGEWOOD AVENUE	EDGEWATER
DUDLEY FUNERAL HOMES	433 N RIDGEWOOD AVE	EDGEWATER
CHRIST CHURCH UNITY	2102 S RIDGEWOOD AVENUE	EDGEWATER
EDGEWATER UNION CHURCH	500 S RIDGEWOOD AVENUE	EDGEWATER
EDGEWATER UNITED METHODIST CHURCH	211 N RIDGEWOOD AVENUE	EDGEWATER
CHURCH OF LATTER DAY SAINTS	5010 PANTHER LN	MIMS
MIMS UNITED METHODIST CHURCH	3302 GREEN STREET	MIMS
FIRST BAPTIST CHURCH OF AURANTIA	3953 FAIRFAX DRIVE	MIMS
HOLY SPIRIT CATHOLIC CHURCH	2309 HOLDER ROAD	MIMS
FIRST BAPTIST MIMS	2395 KENTUCKY AVENUE	MIMS
ST MARY MISSIONARY BAPTIST CHURCH	2970 JEFFERSON STREET	MIMS
GREATER ST JAMES BAPTIST CHURCH	2396 HARRY T MOORE AVENUE	MIMS
HOSANNA MIMS CHURCH OF GOD	2320 RAILROAD AVENUE	MIMS
TABERNACLE BAPTIST CHURCH	3575 KELLY ROAD	MIMS
ST MARY BAPTIST CHURCH	3102 WILEY AVENUE	MIMS
ST JOHN PRIMITIVE BAPTIST CHURCH	2684 HARRY T MOORE AVENUE	MIMS
GREATER WORKS CHRISTIAN CENTER	2617 BETHUNE AVENUE	MIMS
MOUNT CALVARY CHURCH OF GOD IN CHRIST	2813 ASH TERRACE	MIMS
HOUSE OF PRAYER	4510 US HIGHWAY 1	MIMS
ALTAR CHURCH	2561 USHWY 1	MIMS
SHILOH	2519 HARRY T. MOORE AVENUE	MIMS
CHRISTIAN LIFE CENTER	770 OLD MISSION ROAD	NSB
CHURCH OF CHRIST	303 MAGNOLIA STREET	NSB
FIRST BAPTIST CHURCH	214 SAMS AVENUE	NSB
ALLEN CHAPEL AFRICAN METHODIST EPISCOPAL CHURCH	344 SHELDON STREET	NSB

NAME	ADDRESS	CITY
GLENCOE BAPTIST CHURCH	196 N GLENCOE ROAD	NSB
CENTRAL CHURCH OF CHRIST	2119 STATE ROAD 44	NSB
LIGHTHOUSE WORSHIP CENTER	190 WALLACE ROAD	NSB
NEW SMYRNA BEACH CHRISTIAN CHURCH	1851 STATE ROAD 44	NSB
MT CALVARY MISSIONARY BAPT CHURCH	569 WASHINGTON STREET	NSB
MT OLIVE PRIMITIVE BAPTIST CHURCH	406 N MYRTLE AVENUE	NSB
PLEASANT GROVE MB CHURCH	214 N MYRTLE AVENUE	NSB
TEMPLE OF PRAISE C O G I C	710 ENTERPRISE AVENUE	NSB
CHRISTIAN SCIENCE READING ROOM	327 CANAL STREET	NSB
FIRST CHURCH OF THE NAZARENE	201 S ORANGE STREET	NSB
FIRST UNITED METHODIST CHURCH	310 DOUGLAS STREET	NSB
FIRST PRESBYTERIAN CHURCH	611 MAGNOLIA STREET	NSB
UNITARIAN UNIVERSALIST COMMUNITY CHURCH	203 WASHINGTON STREET	NSB
LIGHTHOUSE WORSHIP CENTER	651 GLEN CIR	NSB
CHRISTIAN LIFE CENTER	900 OLD MISSION RD	NSB
ST PAUL'S EPISCOPAL CHURCH	1650 LIVE OAK STREET	NSB
ASSEMBLY OF GOD	350 MISSION DRIVE	NSB
CHURCH OF LATTER DAY SAINTS	704 HAMILTON ST	NSB
SEVENTH DAY ADVENTIST CHURCH	1910 PIONEER TRAIL	NSB
NEW HOPE MISSIONARY BAPTIST CHURCH	315 N MYRTLE AVE	NSB
CHURCH OF LATTER DAY SAINTS	203 HICKORY ST	NSB
FIRST JERUSALEM COMM CHURCH	200 ROBERT ST APARTMENT 46	NSB
APOSTOLIC FAITH TEMPLE	300 MILFORD PLACE	NSB
CHRISTIAN LIFE CENTER	424 CANAL STREET	NSB
FAITH RENEWEL CENTER	715 MAGNOLIA STREET	NSB
JUMP MINISTRIES	609 DOWNING ST	NSB
CHURCH OF JESUS CHRIST OF LATTER DAY SAINTS	522 JOSIE ST	NSB
ST PETER THE FISHERMAN CHURCH	4220 SAXON DRIVE	NSB
NEW SMYRNA CHURCH OF GOD	2080 PAIGE AVENUE	NSB
CHRIST COMMUNITY CHURCH	1210 MISSION DRIVE	NSB
GRACE COMMUNITY CHURCH	1100 10TH STREET	NSB
ST. MARY	500 ST. MARY STREET	OSTEEN
GLORIOUS UNITED PENTECOSTAL	541 OSTEEN MAYTOWN ROAD	OSTEEN
ST MARY AME CHURCH	500 MURRAY AVE	OSTEEN
FIRST BAPTIST CHURCH OF OSTEEN	321 NORTH STATE ROAD 415	OSTEEN
MACEDONIA MISSIONARY BAPTIST	534 OSTEEN MAYTOWN ROAD	OSTEEN
ST JAMES MISSIONARY BAPTIST	130 COLLINS ROAD	OSTEEN
CALVARY BAPTIST	725 N STATE ROAD 415	OSTEEN
PARK AVENUE BAPTIST CHURCH	2600 SOUTH PARK AVENUE	TITUSVILLE
FIRST BAPTIST CHURCH OF TITUSVILLE	303 MAIN STREET	TITUSVILLE
CHRIST COMMUNITY CHURCH	4295 GARDEN STREET	TITUSVILLE
SAINT JAMES AME CHURCH	625 DUMMITT AVENUE	TITUSVILLE

Source: GIS Data, FGDL 2009

3.11.3 Schools

Within the geographical boundaries described above, there are several schools: day cares, preschools, elementary schools, middle schools, high schools and a community college, located near the rail corridor. These schools are west of Osteen, throughout the Mims and Titusville area, and along the Edgewater Branch of the corridor. The schools provide community gathering places and support the community fabric, and they include Osteen Elementary, Edgewater Public, Mims Elementary School, Pinewood Elementary School, Oakpark Elementary School, James Madison Middle, and Brevard Community College.

Creating safe bike and pedestrian routes to schools is the goal of both the Volusia MPO and the Space Coast TPO. Through the Safe Routes to School Program (SRTS), which began in August of 2005, Federal-aid highway funds are provided to state Departments of Transportation (DOTs) to make it safer and easier for children in Grades K through 8 to walk or bicycle to and from school. The program is administered through the seven FDOT Districts and overseen by the State Safe Routes to School Coordinator. Volusia County has been procuring these funds for sidewalk connectivity projects to aggressively address sidewalk gaps to schools.

Figure 3.11.3 Schools Map

Table 3.11.4 Schools

NAME	ADDRESS	CITY
SUNRISE ELEMENTARY SCHOOL	3155 PHONETIA DR	DELTONA
PINE RIDGE HIGH SCHOOL	926 HOWLAND BLVD	DELTONA
LITTLE LAMBS PRESCHOOL & CHILD	750 HOWLAND BLVD	DELTONA
EDGEWATER PUBLIC	801 S OLD COUNTY RD	EDGEWATER
INDIAN RIVER ELEMENTARY SCHOOL	650 ROBERTS RD	EDGEWATER
GATEWAY CHRISTIAN ACADEMY	2339 S RIDGEWOOD AVE	EDGEWATER
DISCOVERY DAYS INST. OF LEARNING	227 N RIDGEWOOD AVE	EDGEWATER
DBCC-SOUTH CAMPUS	940 10TH ST	EDGEWATER
KIDS R MY BUSINESS	1824 HIBISCUS DR	EDGEWATER
SUNSHINE HOUSE OF PRESCHOOL	109 E PARK AVE	EDGEWATER
MIDDLE SCHOOL FF	1878 PINEDALE RD	EDGEWATER
MISS PEGGY'S DAY SCHOOL	502 S OLD COUNTY RD	EDGEWATER
PRE-EDUCATION STATION	109 DIXWOOD AVE	EDGEWATER
FRIENDSHIP EXTENDED DAY	2108 HIBISCUS DR	EDGEWATER
YMCA - SOUTHEAST VOLUSIA	148 W TURGOT AVE	EDGEWATER
EDGEWATER UNITED METH CHURCH DAY CAR	204 HUBBELL ST	EDGEWATER
MY SCHOOL PRESCHOOL	411 N RIDGEWOOD AVE	EDGEWATER
LITTLE EXPLORERS CC & PRESCHOOL	410 N RIDGEWOOD AVE	EDGEWATER
MY SCHOOL PRESCHOOL II	409 N RIDGEWOOD AVE	EDGEWATER
STRATFORD INSTITUTE	201 FLAGLER AVE	EDGEWATER
NORTH AREA ABEYANCE AT NORMANDY	2327 HARRY T. MOORE AVE	MIMS
MIMS ELEMENTARY SCHOOL	2582 N. U.S. HIGHWAY 1	MIMS
DEVEREUX CENTER AT NORMANDY SCHOOL	2327 HARRY T. MOORE AVE.	MIMS
PINEWOOD ELEMENTARY SCHOOL	3757 OLD DIXIE HIGHWAY	MIMS
FAITH CHRISTIAN SCHOOL	4510 NORTH U.S. 1	MIMS
FLORIDA CHRISTIAN ACADEMY	2395 KENTUCKY AVENUE	MIMS
READ-PATTILLO ELEMENTARY SCHOOL	400 SIXTH ST	NSB
NEW SMYRNA BEACH MIDDLE SCHOOL	1200 S MYRTLE AVE	NSB
CORONADO BEACH ELEMENTARY SCHOOL	3550 MICHIGAN AVE	NSB
NEW SMYRNA BEACH HIGH SCHOOL	1015 10TH ST	NSB
ELLISON ACRES PRESCHOOL	2020 LAKE DR	NSB
MEADOWWOOD EARLY LEARNING CTR	900 MEADOW WOOD ST	NSB
ST PAULS EPISCOPAL PRE-SCHOOL	1650 LIVE OAK ST	NSB
ST PAULS EPISCOPAL PRE-SCHOOL	1650 LIVE OAK ST	NSB
BATES PRE-KINDERGARTEN CENTER	1897 CARLSON ST	NSB
A QUEST FOR KNOWLEDGE DAY CARE	829 CANAL ST	NSB
GLENCO LEARNING CENTER	196 N GLENCOE RD	NSB

NAME	ADDRESS	CITY
FRANK SGANGA CHARTER SCHOOL	310 DOUGLAS ST	NEW SMYRNA BEACH
OSTEEN ELEMENTARY SCHOOL	500 DOYLE RD	OSTEEN
OUTWARD BOUND	3558 SUNSET AVENUE	SCOTTSMOOR
APOLLO ELEMENTARY SCHOOL	3085 KNOX MCRAE DR	TITUSVILLE
ASTRONAUT HIGH SCHOOL	800 WAR EAGLE BLVD	TITUSVILLE
JAMES MADISON MIDDLE SCHOOL	3375 DAIRY RD	TITUSVILLE
OAKPARK ELEMENTARY SCHOOL	3395 DAIRY RD	TITUSVILLE
RIVERVIEW ELEMENTARY MAGNET SCHOOL	3000 JOLLY ST	TITUSVILLE
SOUTH LAKE ELEMENTARY SCHOOL	3755 GARDEN ST	TITUSVILLE
TITUSVILLE HIGH SCHOOL	150 TERRIER TRAIL S.	TITUSVILLE
WHISPERING HILLS OFFSITE ALTERNATE ABEYANCE	800 LANE AVENUE	TITUSVILLE
TEMPLE CHRISTIAN SCHOOL	1400 NORTH U.S. 1	TITUSVILLE
SAINT TERESA CATHOLIC SCHOOL	207 OJIBWAY AVENUE	TITUSVILLE
LAKE FERN MONTESSORI ACADEMY	257 AGUINALDO AVE.	TITUSVILLE
PARK AVENUE BAPTIST SCHOOL	2600 S. PARK AVENUE	TITUSVILLE
TITUSVILLE LEARNING CENTER	3155 SOUTH STREET	TITUSVILLE
WESTCOAST SCHOOL TITUSVILLE	712 BRIDGE STREET	TITUSVILLE
KID'S KINGDOM (LEARNING CENTER)	KNOX MCRAE DR	TITUSVILLE

Source: GIS Data, FGDL 2009

3.11.4 Governmental and Institutional Facilities

The governmental and institutional facilities near the rail corridor are primarily located at the end points and along the Titusville Branch in Mims. These facilities provide public services, contribute to the cultural aesthetic of the community, and aid in creating a healthy and safe environment. They include fire stations, police stations, health care facilities, and government offices.

Figure 3.11.3 Governmental and Institutional Facilities Map

Table 3.11.5 Governmental and Institutional Facilities

NAME	ADDRESS	CITY
NEW SMYRNA BEACH CITY HALL	210 SAMS AVE	NSB
EDGEWATER CITY HALL	104 N RIVERSIDE DR	EDGEWATER
DISTRICT 5/CIVIL N.S.B.	101 E CANAL ST	NSB
COURT SERVICES UNIT, N.S.B. COURTHOUSE ANNEX	124 N RIVERSIDE DR	NSB
ADMINISTRATION CENTER	113 CANAL ST	NSB
EDGEWATER PUBLIC LIBRARY	103 INDIAN RIVER BLVD	EDGEWATER
NEW SMYRNA BEACH REGIONAL LIBRARY	1001 SOUTH DIXIE FREEWAY	NSB
HEALTH DEPT	717 CANAL ST	NSB
CITY HALL	555 S WASHINGTON AV	TITUSVILLE
HARRY T. MOORE SOICAL SERICES CENTER	725 S DELEON AV	TITUSVILLE
ECONOMIC DEVELOPMENT/CHAMBER of COMMERCE	2000 S. WASHINGTON AVE	TITUSVILLE
DELTONA 64	236 FORT SMITH BLVD	DELTONA
NEW SMYRNA BEACH 50	103 FAULKNER ST	NSB
TURNBULL FIRE STATION	1850 PIONEER TR	NSB
OSTEEN FIRE STATION	180 N SR 415	OSTEEN
EDGEWATER FIRE STATION 57	2628 HIBISCUS DR	EDGEWATER
EDGEWATER FIRE STATION 55	106 RHODE ISLAND ST	EDGEWATER
BREVARD COUNTY FIRE STATION 28	4780 N US HIGHWAY 1	MIMS
TITUSVILLE FIRE STATION 12	2150 S PARK AVE	TITUSVILLE
BREVARD COUNTY FIRE STATION 21	4940 US HIGHWAY 1	MIMS
BREVARD COUNTY FIRE STATION 20	3724 MAGOON AVE	SCOTTSMOOR
BREVARD COUNTY FIRE STATION 23	418 PINE St	TITUSVILLE
TITUSVILLE FIRE STATION 10	617 N SINGLETON Ave	TITUSVILLE
TITUSVILLE FIRE AND EMERGENCY SERVICES	550 S WASHINGTON AVE	TITUSVILLE
MIMS VOLUNTEER FIRE DEPARTMENT	2476 TAYLOR ST	MIMS

Source: City of Titusville GIS, Volusia County GIS, FGDL 2009

Table 3.11.6 Heath Care Facilities

NAME	ADDRESS	CITY
ADULT FAMILY CARE HOME	2555 GLENCOE FARMS RD	NEW SMYRNA BEACH
ADULT FAMILY CARE HOME	2608 WILLOW OAK DRIVE	EDGEWATER
ADULT FAMILY CARE HOME	1289 MAYTOWN ROAD	OAK HILL
ADULT FAMILY CARE HOME	3048 TAMARIND DRIVE	EDGEWATER
CHRISTIAN LIFE CENTER	350 MISSION DR	NEW SMYRNA BEACH
GREEN ACRES RETIREMENT HOME	902 W CANAL ST	NEW SMYRNA BEACH
TIFFANY ON THE RIVER	402 N RIVERSIDE DR	NEW SMYRNA BEACH
BERT FISH MEDICAL CENTER	401 PALMETTO ST	NEW SMYRNA BEACH
NSB AMBULATORY CARE CTR	612 PALMETTO ST	NEW SMYRNA BEACH
SMYRNA WEST ALF	300 MILFORD PL	NEW SMYRNA BEACH
FLORIDA SHORES ELDERLY CARE	1229 MANGO TREE DR	EDGEWATER
REGENCY ELDERLY CARE	1511 MANGO TREE DR	EDGEWATER
VICTORIA'S PLACE	2708 LIGHTWOOD ST	DELTONA
JERAM CHAPLA MD	1027 GARDEN STREET	TITUSVILLE
TITUSVILLE TOTAL HEALTHCARE	2205 GARDEN STREET	TITUSVILLE
SPACE COAST MEDICAL ASSOCIATES LLP	850 CENTURY MEDICAL DR	TITUSVILLE
DIALYSIS & KIDNEY CENTER OF NORTH	830 CENTURY MEDICAL DR	TITUSVILLE
BREVARD SKIN & CANCER CENTERS	825 CENTURY MEDICAL DR	TITUSVILLE
TITUSVILLE DIALYSIS & KIDNEY CENTER	801 GARDEN ST	TITUSVILLE
PARRISH MEDICAL CENTER FOUNDATION	338 S WASHINGTON AVE	TITUSVILLE
PARRISH MEDICAL CENTER SAME DAY	1151 N WASHINGTON AVE	TITUSVILLE
PARRISH MEDICAL CENTER	951 N WASHINGTON	TITUSVILLE
JESS PARRISH MEMORIAL HOSPITAL	951 N WASHINGTON	TITUSVILLE
MEDICAL COMPLEX	1903 GARDEN STREET	TITUSVILLE
LAUREL PLACE PROFESSIONAL BLDG.	1401 S WASHINGTON AVE	TITUSVILLE
BREVARD PAIN MANAGEMENT	1832 GARDEN STREET	TITUSVILLE
MEDICAL PLAZA	1777 GARDEN STREET	TITUSVILLE
MEDICAL PLAZA	1705 GARDEN STREET	TITUSVILLE
TITUSVILLE MEDICAL PLAZA	500 N WASHINGTON AVE	TITUSVILLE
PARRISH MEDICAL OFFICES	494 N WASHINGTON AVE	TITUSVILLE
INDIAN RIVER MEDICAL OFFICE	1901 JESS PARRISH CT	TITUSVILLE
PARRISH MEDICAL CENTER NORTH	213 BROAD ST	TITUSVILLE
NORTH BREVARD CHILDRENS MEDICAL	1653 JESS PARRISH CT	TITUSVILLE

Source: Space Coast TPO,2009

3.11.5 Hunting Grounds

The central portion of the study area from Gobblers Lodge eastward through Maytown and continuing south and north accommodates several private hunt clubs. The largest of these is the Miami Tract Hunt Club, which leases 52,000 acres on the Miami Corporation property and has 261 members. The lease is divided into three units: Crane Swamp (28,000 acres), Buck Lake (17,000 acres), and Blue Cypress (7,000 acres). The 261 members must follow a strict set of rules that are enforced stringently as a condition of the lease agreement. Membership is by invitation only, and currently includes 12 local law enforcement personnel.

The primary game is deer, although alligators and wild hog have also been harvested. A recent estimate by the hunt club indicates that approximately 1000 to 1200 deer are on site. Based on detailed statistics maintained by the club, approximately 25% of the deer herd is harvested annually. Some of the club rules of interest to this PD&E Study include the following:

- Hunting by the use of dogs is allowed on Thursday through Sunday, on holidays, the days between Christmas and New Years, and the first nine days of hunting season.
- Persons participating in a dog hunt must wear a fluorescent hat or vest.
- Hunting on Wednesday between the hours of 8:00 am and 4:00 pm are prohibited.
- Fire Protection – Fires shall be limited to campfires at designated campsites only.
- Littering is prohibited. Members are to pick up trash and keep the area clean.
- Members are allowed to use the property from September 1st through April 30th.

3.12 Natural System Resources

An analysis was performed which identified the location and extent of any potential impacts to wetlands and surface waters and listed species. The analysis included an extensive literature search, field visits, consulting standard Florida references on soils, conservations, endangered species, and a review of existing GIS data. The occurrence of wildlife species was documented through direct visual or aural observation of individual animals, or through observation of distinctive signs, such as tracks, scat, burrows, nests, or food remains.

3.12.1 Uplands Forest

This category of natural habitat is reserved for those upland areas which support a tree canopy closure of 10 percent or more. Upland forests include both xeric (dry) and mesic (moist) communities. Wetland or hydric forested areas fall under the broad wetland category. The project corridor contains a large area of timber harvesting known as the Farmton Tree Farm, containing large tracts of various pines in differing stages of maturity. Other upland forested habitats observed include pine flatwoods (411) and mixed hardwoods (438). Due to the rural nature of the majority of the project corridor, the probability of wildlife occurrence within upland forests is high. Impacts to protected species are anticipated to be minimal, due to the existing rail corridor, short time frame for trail construction and passive recreational use of the corridor.

3.12.2 Wetlands

Wetlands are those areas where the water table is at, near, or above the land surface for a significant portion of most years. Wetlands are typically associated with topographic low lying areas. Wetlands found within the project corridor include cypress (621), hardwood forest (611), mixed hardwood wetlands (617), hydric pine flatwoods (625), and freshwater marshes (641). The probability of wildlife occurrence in and around wetlands is high. Impacts to these resources will be minimized by utilizing the existing rail bed and elevated crosswalks where suitable. Impacts to protected species are anticipated to be minimal, due to the existing rail corridor, short time frame for trail construction and passive recreational use of the corridor.

3.12.3 Flood Zones

According to data provided by Volusia and Brevard Counties, portions of the rail corridor are within the 100-year floodplain. These designed areas are in Zones A and AE. Zone A is defined as base flood plain elevations that are mapped by approximate methods and Zone AE is defined as a 100-year floodplain where base

flood elevations have been determined. Figure 3.12.1 displays the boundaries of the 100-year Floodplain within the project limits.

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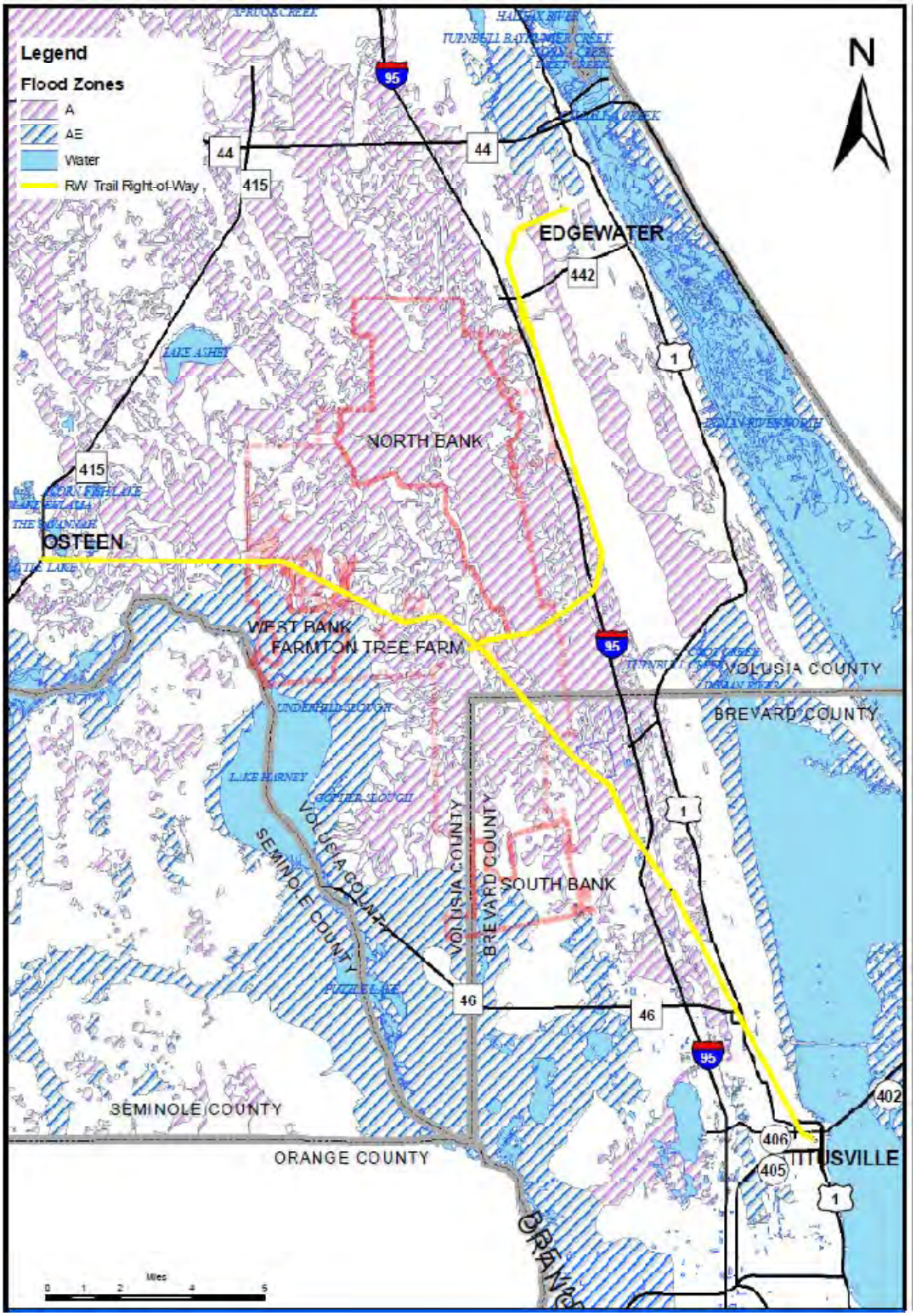
Table 3.12.1 Floodplain Map



3.12.4 Water Quality

The trail corridor crosses two significant tributaries/wetland systems associated with the St. Johns River. The easternmost of these is Cow Creek, which drains much of the southeastern quadrant of the county west of the Atlantic Ridge into St. Johns River. The other watercourse is Deep Creek diversion canal. This system is the main drainageway for the south-central portion of Volusia County.

Groundwater information obtained from the St. Johns River Water Management District indicates that most of Volusia County is underlain by a three-aquifer system. The primary source of water is a limestone artesian aquifer of Eocene age known as the Floridan aquifer, which is divided into an upper and lower part. It is overlain by a water-table aquifer that is composed of sand beds of Pleistocene and Recent age and the uppermost sand and shell beds of Miocene and Pliocene age.

3.12.5 Wildlife and Habitat

A comprehensive assessment of the wildlife and habitat types per land use was conducted for the study corridor. Following is a summary of this assessment. The FLUCFCS land use maps are provided in Appendix A.

Residential (110-139)

Residential land uses range from high-density urban housing developments to low-density rural areas characterized by a relatively small number of homes per acre. In Osteen, residential usage consists mainly of larger parcels many of which incorporate small operation farming or raising of livestock. Edgewater and Titusville contain a broad mix of housing density along the project corridor. These land use type will typically offer little to no value for wildlife utilization and the probability of occurrence would be limited to individuals of a given species foraging for limited times. Wetlands located within these areas would have a low to medium value dependent on adjacent residential density and connection to larger wetland systems.

Commercial and Industrial (140-159)

Commercial and Industrial areas are associated with the manufacturing and distribution of products and/or services. These categories are composed of a large number of individual types of uses which often occur in complex mixtures. These land use types will typically offer little to no value for wildlife utilization and the probability of occurrence would be limited to individuals of a given species foraging for limited times. Wetlands located within these areas would have a low to medium value dependent on development intensity and connection to larger wetland systems.

Institutional (170-179)

Typical components of this category include educational, religious, health and military facilities. Within the project corridor, these land uses provide little to no value for wildlife utilization and the probability of occurrence is low. Wetlands located within these areas would have a low to medium value dependent on parcel size and connection to larger wetland systems.

Recreational (180-189)

These land uses allow for active user-oriented recreation and can include parks, golf courses, fairgrounds and zoos. Recreational areas within the corridor will include lands owned and/or maintained by local cities, counties and the state. Some lands within this category have been designated as wildlife refuges or habitat restoration areas that do and will support large populations of a variety of protected species. The probability of wildlife utilization will vary based on specific parcel usage. In general, the more improvements on a parcel, the lower the probability of wildlife occurrence. Wetlands within these areas would have medium to high value dependent on parcel size and connection to larger wetland systems.

Open Land (190-199)

This category includes undeveloped land within urban areas and inactive land with street patterns but without structures. Often, these sites are in a transitional state and ultimately will be developed into a typical urban use. These land use types will typically offer little to no value for wildlife utilization and the probability of occurrence would be limited to individuals of a given specie foraging for limited times. Wetlands located within these areas would have a low to medium value dependent on parcel size and connection to larger wetland systems.

Agriculture (200-261)

Agricultural lands are defined as those lands which are cultivated to produce food crops and livestock. Sub-categories of agricultural lands include cropland, pastureland, groves, nurseries, and confined feeding areas. Typically, agricultural lands have been altered physically: ditched, drained, and/or cleared of vegetation. These land use types will typically offer little value for wildlife utilization and the probability of occurrence would be limited to foraging. Wetlands located within these areas would have a medium to high value dependent on improvements to the property and connection to larger wetland systems.

One noteworthy agricultural use within the corridor is the Farmton Tree Farm. The trail corridor runs through Farmton Tree Farm for approximately 10 miles. Farmton

Tree Farm contains multiple large tracts of land in various states of silviculture activities. Farmton also contains three tracts of land utilized as a mitigation bank to off-set wetland habitat loss for development activities in the surrounding counties. The trail corridor does not cross any of the mitigation bank tracts. Proposed development applications filed by the owner of the Farmton Tree Farm propose cessation of the tree farm operations and the development of urban land uses.

Rangeland (300-330)

This natural habitat consists of a vegetative community that is predominantly composed of grasses, forbs, herbs, and shrubs. Rangeland will include dry prairies (excludes wet prairies), shrub lands, palmetto prairies, and coastal scrub. Coastal scrub will contain woody species such as sand live oak and myrtle oak. These lands can be utilized for the grazing of livestock but do not require cultivation, irrigation or fertilization. The probability of wildlife utilization of these natural areas can be high if livestock are not present or present in low numbers.

Upland Forest (400-445)

This category of natural habitat is reserved for those upland areas which support a tree canopy closure of ten percent or more. Upland forests include both xeric (dry) and mesic (moist) communities. Wetland or hydric forested areas fall under the broad wetland category. The project corridor contains a large area of timber harvesting known as the Farmton Tree Farm, containing large tracts of various pines in differing stages of maturity. Other upland forested habitats observed include pine flatwoods (411) and mixed hardwoods (438). Due to the rural nature of the majority of the project corridor, the probability of wildlife occurrence within upland forests is high. Impacts to protected species are anticipated to be minimal, due to the existing rail corridor, short time frame for trail construction and passive recreational use of the corridor.

Water (500-572)

Water areas are defined as those areas predominantly and persistently covered by water and includes features such as lakes, streams, rivers, sloughs, canals, ditches, and borrow pits. Within coastal areas it includes bays, estuaries, and the ocean. The proposed project will cross several water bodies including Deep Creek Diversion Canal, Lake Ashby Canal, and Cow Creek. The probability of wildlife occurrence in and around water bodies is high. Impacts to these resources will be minimized by utilizing elevated crosswalks to traverse these areas. Impacts to protected species are anticipated to be minimal, due to the existing rail corridor, short time frame for trail construction and passive recreational use of the corridor.

Wetlands (600-654)

Wetlands are those areas where the water table is at, near, or above the land surface for a significant portion of most years. Wetlands are typically associated with topographic low lying areas. Wetlands found within the project corridor include cypress (621), hardwood forest (611), mixed hardwood wetlands (617), hydric pine flatwoods (625), and freshwater marshes (641). The probability of wildlife occurrence in and around wetlands is high. Impacts to these resources will be minimized by utilizing the existing rail bed and elevated crosswalks where suitable. Impacts to protected species are anticipated to be minimal, due to the existing rail corridor, short time frame for trail construction and passive recreational use of the corridor.

Abandoned Railways (746)

The project corridor consists of an abandoned railway that includes a raised rail bed. Much of the project corridor is wide enough to accommodate the construction of the proposed recreational trail without disturbance to adjacent natural habitat. Impacts to protected species are anticipated to be minimal, due to the existing rail corridor, short time frame for trail construction and passive recreational use of the corridor.

Transportation and Utilities (800-839)

These facilities are used for the movement of people, goods, and distribution of utilities such as electricity and water. The proposed corridor runs parallel to and crosses several roadways and utility corridors. The transportation network provides little or no habitat for protected species. Utility corridors have a high probability of utilization by wildlife as movement corridors due to regular maintenance within the easements. Impacts to protected species are anticipated to be minimal, due to the short time frame for trail construction and passive recreational use of the corridor.

During field investigations, wildlife and plant surveys were conducted along the existing rail alignment. At that time, individuals or evidence of seventeen different wildlife species were identified along the project corridor. Numerous other wildlife and plant species, many of which are listed, have the potential to occur in Volusia and Brevard Counties. Although evidence of the occurrence of those species was not documented during field inspections of the project corridor, suitable habitat may exist in the project area.

Listed Species

During field investigations, wildlife and plant surveys were conducted along the existing rail alignment. At that time, individuals or evidence of seventeen different wildlife species were identified along the project corridor. Numerous other wildlife and plant species, many of which are listed, have the potential to occur in Volusia and Brevard Counties. Although evidence of the occurrence of those species was not documented during field inspections of the project corridor, suitable habitat may exist in the project area. Maps of the listed species coverage areas are provided in Appendix B.

Table 3.12.5.1 Listed Species Assessment Summary

Species	Significance for Project
Federally-Listed Faunal Species	
American alligator	Impacts are not anticipated
Wood stork	Impacts are not anticipated
Florida Scrub Jay	Impacts are not anticipated
Red-cockaded woodpecker	Impacts are not anticipated
Eastern Indigo snake	WSFWS Indigo Snake Protection measures should be taken during construction
Audubon's crested caracara	Impacts are not anticipated
Piping plover	Impacts are not anticipated
West Indian manatee	Impacts are not anticipated

State-Listed Faunal Species	
Gopher Frog	Impacts are not anticipated; if gopher tortoise burrows are excavated, gopher frogs will be relocated as well
Gopher tortoise	Impacts will be reduced by relocating all within 25-feet of the trail; relocation to be in accordance with FWC regulations
Florida pine snake	Impacts are not anticipated
Florida burrowing owl	Impacts are not anticipated
Florida sandhill crane	If a nesting site is located within the corridor, construction will be halted during the nesting season
American oystercatcher	Impacts are not anticipated
Brown pelican	Impacts are not anticipated
Snowy egret	Impacts will be minimal, limited to temporary loss of foraging habitat during construction.
Little blue heron	Impacts will be minimal, limited to temporary loss of foraging habitat during construction.
Tri-colored heron	Impacts will be minimal, limited to temporary loss of foraging habitat during construction.
Reddish egret	Impacts will be minimal, limited to temporary loss of foraging habitat during construction.
White ibis	Impacts will be minimal, limited to temporary loss of foraging habitat during construction.
Roseate spoonbill	Impacts will be minimal, limited to temporary loss of foraging habitat during construction.
Limpkin	Impacts will be minimal, limited to temporary loss of foraging habitat during construction.
Black skimmer	Impacts are not anticipated
Least tern	Impacts are not anticipated
Southeastern American kestrel	Impacts are not anticipated

Peregrine falcon	Impacts are not anticipated
Sherman's fox squirrel	Impacts are not anticipated
Florida mouse	Impacts are not anticipated
Florida black bear	Impacts are not anticipated

Source: FGDL, Site Reviews

Listed Floral Species

A review of available information revealed that thirty-two listed plant species have the potential to occur within habitats located within the project area. Due to the previous use of the corridor, years of regular maintenance and the limited impacts proposed by the project, listed plant species will not be adversely impacted by the construction of this project.

Migratory Birds

The Migratory Bird Conservation Commission was established in February 18, 1929, by the passage of the Migratory Bird Conservation Act. It was created and authorized to consider and approve areas of land and/or water recommended by the Secretary of the Interior for purchase or rental by the U.S. Fish and Wildlife Service under the Act. In 1989, the Commission acquired the additional responsibility to approve project funding under the North American Wetland Conservation Act. This Act provides for Federal funding to encourage partnerships to protect, enhance, restore, and manage wetland and other habitats for migratory birds and other fish and wildlife to carry out the North American Waterfowl Management Plan. Waterfowl are the most prominent and economically important group of migratory birds of the North American Continent.

National Migratory Bird Areas in Florida include Arthur R. Marshall, Caloosahatchee, Ceder Keys, Chassahowitzka, Egmont Key, Great White Heron, Hobe Sound, J.N. Ding Darling, Lake Woodruff, Matlacha Pass, Merritt Island, Okeefenokee, Pine Island, Pinellas, St. Marks, and St. Vincent. The Merritt Island (including St. Johns) National Wildlife Refuge is located in Brevard County. However, these properties are greater than one mile from the proposed project corridor.

If the project results in direct impacts to wetland habitat or surface water features that could be utilized by migratory birds, there may be implications regarding these species. While the project crosses several surface waters and impacts to wetlands are anticipated, adverse impacts to migratory birds are not anticipated due to avoidance and minimization and the commitment to compensatory mitigation.

Although the bald eagle (*Haliaeetus leucoephaslus*) has recently been de-listed by the USFWS, it is still protected under a specific State management plan regulated by the FWC. The bald eagle also remains protected under the Bald Eagle and Golden Eagle Protection Act and the Migratory Bird Protection Act.

Essential Fish Habitat (EFH)

Coordination with National Marine Fisheries Service (NMFS) staff was conducted as part of the ETDM screening in 2007. NMFS commented at that time that impacts to EFH was not anticipated, but that restoration of historic flows within freshwater wetlands would benefit downstream habitats that support many marine fish species.

A follow-up phone conversation with Mr. Brandon Howard, NMFS, on October 20, 2009 confirmed that impacts to EFH are not anticipated due to the nature of the project and no direct impacts to estuarine habitats. Further conversation included the possible restoration of historic flows of large freshwater wetland systems throughout the project corridor could be completed to off-set habitat loss from direct and secondary impacts to wetlands. No specific areas were identified as potential restoration projects, just a general statement of the possibility for restoration activities.

Mr. Howard stated that a technical report would not be needed for this project and that NMFS could comment through the US Army Corps permitting process. Further coordination with the NMFS is not anticipated unless there are significant changes to the proposed alignment of the trail.

Non-listed Species

Seventeen non-listed species were observed during the field reviews of the project corridor.

Table 3.12.5.2 Non-Listed Wildlife Species Observed

Common Name	Scientific Name
Mourning Dove	Zenaida macroura
Hairy Woodpecker	Picoides villosus
Osprey	Pandion haliaetus
Sandhill crane	Grus canadensis
Great Egret	Casmerodius albus
Black Vulture	Coragyps atratus
Great Blue Heron	Ardea herodias
Red-shouldered Hawk	Buteo lineatus
Turkey	Melagris gallopavo
Mockingbird	Mimus polyglottos
Gray Catbird	Dumetella carolinensis
Bluejay	Cyanocitta cristata
Blackbird	Euphagus spp.
American crow	Corvus brachyrhynchos
Raccoon	Procyon lotor
White-tailed Deer	Odocoileus virginianus
Wild pig	Sus scrofa

Source: Inwood Field Reviews

3.12.6 Farmlands

The proposed project is a Type I Categorical Exclusion and covered under the Letter of Agreement between FHWA and NRCS, dated January 9th, 1985. In addition, it was noted by USDA-NRCS Soil Scientist that because the construction of a multi-use trail is expected to occur almost exclusively within the footprint of the existing railroad track bed, it is not anticipated that the proposed conversion of the abandoned railroad to a multi-use trail will negatively impact any unique farmlands. Thus, the effects status is none.

3.12.7 Permit Conditions and Drainage

As a paved multi-use trail that would not allow motorized vehicles, the project would be exempt from a permit under St. Johns River Water Management District's (SJRWMD) Rule 40C-42.0225(6) F.A.C. However, based upon past experience and due to the size of the project, it is anticipated that an Environmental Resource Permit (ERP) will be required from SJRWMD. There are many wetlands and floodplains located within the project corridor. During the PD&E process no wetlands or floodplains were impacted, as the existing rail bed and crossings were used. However, if final design changes result in floodplain or wetland impacts, an Individual or Nationwide Permit from the United States Army Corps of Engineers (USACE) may be required under Section 404. Approval from the United States Fish and Wildlife Services (USFWS) and the National Marine Fisheries Services (NMFS) will be coordinated through the USACE. The Efficient Transportation Decision Making (ETDM) for the project indicated that all of the waterways that the proposed trail cross are considered non-navigable by the United States Coast Guard, and therefore a USCG permit will not be required. In addition to the above, a NPDES permit will be required from the Florida Department of Environmental Protection (FDEP).

The project is located within the SJRWMD's Middle and Upper St. Johns River Hydrologic Basins and the Indian River Lagoon Hydrologic Basin. Runoff from the existing rail bed is currently conveyed by existing swales to cross drains located along the project corridor. Because this is a multi-use trail that does not allow motorized vehicles, SJRWMD typically allows relaxed treatment requirements in which the required treatment volume is 1" over the proposed impervious area, or as much treatment volume as possible. By means of best management practices, SJRWMD will require that the final design demonstrates that the runoff characteristics are not significantly changed from pre-development to post-development. This may be accomplished by providing curve number calculations showing comparable curve numbers for pre- versus post-development, attenuating the 25-year, 24-hour event, or other means accepted by SJRWMD. There are several impaired water bodies located within the project limits. Since the

stormwater management facilities discharge to impaired water bodies nutrient removal requirements must be included. The nutrient removal shall be provided in accordance with the proposed Statewide Stormwater Treatment Rule under Chapter 62-347, FAC. The Statewide Stormwater Treatment Rule is currently being developed by the FDEP and Water Management Districts to address growing concerns about over-enrichment of Florida's surface waters, ground waters and springs. In addition, SJRWMD has special basin criteria for the Upper St. Johns River Hydrologic Basin, including a requirement that water may not be diverted from the Upper St. Johns River Hydrologic Basin into a coastal receiving water body. The proposed swale stormwater management systems shall meet all SJRWMD, FDOT and County design requirements.

The proposed trail crosses the Lake Ashby Canal. The canal is not a regulatory floodway, therefore, a FEMA No-Rise Certification is not required. Numerous floodplains exists throughout the project corridor, predominately Zone A, with Zone AE at Lake Ashby Canal. Please refer to Figure 3.12.3 for a floodplain map. If the final design results in any floodplain impact, 100-year floodplain compensation needs to be provided in accordance with SJRWMD rules. Additional drainage concerns include the possible presence of contaminants, of which arsenic is of particular concern. If contaminated soils are found within the project site, any excavation required for the stormwater management systems will need to be properly disposed of, or the contaminated areas shall be capped. In addition, the City of Titusville owns well fields at the County line with an easement for a 16" watermain. Coordination will be needed to ensure that the proposed construction does not impact the watermain.

3.13 Proposed Trails

Volusia and Brevard Counties have taken a comprehensive approach to trail planning and have developed holistic and intergraded trail system plans. In both Counties, the main backbones of their proposed trail system networks are their Showcase Multi-use Trails. These proposed trails will provide connections within each respective County and the Central Florida Region, which is important in creating effective alternative transportation routes, eco-tourism opportunities, and reducing air pollution.

In Volusia County, proposed Showcase Multi-use Trails include the Spring-to-Spring Trail, King's Highway Heritage Trail, Cross Volusia trail and the East Central Regional Rail-Trail (see figure 3.13.1). Of these trails, only the Spring-to-Spring Trail and segments of the East Central Regional Rail Trail corridor, west of the starting point for this PD&E study, are located in close proximity to the proposed project. Though this PD&E study beings east of SR 415, there is a 5.7 mile section of the East Regional Rail Trail corridor west of SR 415 that runs from Providence Boulevard to SR 415. This segment of the rail

corridor is included in the proposed Volusia County Trails Plan and has been approved by the Volusia County Council for design and permitting. It is envisioned that when the Spring-to-Spring Trail is complete, it will connect with the rail corridor via the 5.7 miles west of SR 415 and together the Spring-to-Spring Trail and the East Regional Rail Trail, if constructed, will be a segment in the 260-mile St. Johns River-to-the-Sea Loop Trail.

The St. Johns River-to-the-Sea Loop Trail is a regionally significant five-county 260-mile loop trail that is anticipated to be completed by 2013 to commemorate the 500 year anniversary of Ponce de Leon discovering what he named "La Florida," Land of Flowers. The loop travels through historic places in Florida and the wildflowers found throughout the trail loop are a signature feature. The Florida Wildflower Foundation hopes to establish the route as the state's first wildflower trail in celebration of the 500th anniversary. If all segments are constructed, the loop will be the longest multi-use loop in the southeastern United States. It travels through Putnam, St. Johns, Flagler, Brevard and Volusia counties.

Presently, the St. Johns River-to-the-Sea Loop is a combination of bike trails, bike lanes, and backcountry roads. There has been unprecedented commitment and intergovernmental coordination in support of the development of the loop, and the State's purchase of the rail corridor was a key component. The East Central Regional Rail Trail represents the most extensive rail corridor purchase in the State of Florida, and it will be the longest stand alone multi-use trail segment along the historic and eco-tourist loop, if developed.

Brevard County has several proposed trails that will provide connectivity to local and regional amenities. In the development of their trails master plan, the County identified a network of corridors that would aid in providing opportunities for incorporating greenway and trail connections along with integrating parks and wildlife corridors. The County has four Showcase Trails that are in varying stages of the planning and development process. Each of these Showcase Trails takes advantage of the natural and cultural communities that exist throughout the County. These trails consist of the Mims to Enterprise Trail, St. Johns River Eco-Heritage Corridor Trail, Brevard Zoo Trail, and the South Brevard Linear Trail (see Figure 3.13.2). Of Brevard's Showcase Trails, the Mims to Enterprise Trail and the St. Johns River Eco-Heritage Corridor are located near the rail corridor. In fact, the Mims to Enterprise Trail is actually the section of the rail corridor that runs from the Brevard County line to south of Aurantia Road.

The St. Johns River Eco-Heritage Corridor extends from the City of Jacksonville at the river's mouth to Indian River County. Brevard County is in the upper basin of the Eco-Heritage Corridor. This corridor will include trails and blueways along the St. Johns River with amenities for hikers, joggers, bicyclists, equestrians, naturalists, and paddlers. The

trail will afford users the opportunity to experience the cultural, historical, recreational and natural beauty of the St. Johns and the American Heritage River.

Each of these proposed trails are key elements in creating a comprehensive trails network that provides an effective multimodal transportation system.

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Figure 3.13.1 Volusia County Proposed Trails

Figure 3.13.2 Brevard County Proposed Trails

3.14 Comprehensive Plans

The comprehensive plans of the counties and municipalities in which the rail corridor travels through were examined to assess the project's consistency with these plans. As stated previously, the project is over 50 miles in length and runs through Volusia and Brevard Counties and the Cities of Edgewater and Titusville. Thus, the comprehensive plans of these governmental entities were reviewed.

Volusia County Comprehensive Plan

The policies and objectives laid forth in Volusia County's Comprehensive Plan recognizes the ever pressing need for multi-modal travel throughout the County. Below are policies and objectives from the Volusia County Comprehensive Plan Transportation Element and each demonstrates the County's commitment to non-motorized transportation activities as well as displaying the consistency of the proposed action with the County's Comprehensive Plan.

Policies:

2.1.1.21 Volusia County has established land use and other strategies to promote the use of bicycles and walking.

2.1.1.22 Volusia County has developed and will maintain land use regulations for the safe and efficient movement of pedestrians within all new development proposals.

2.1.1.23 Volusia County shall coordinate with the Volusia County MPO to develop a County-wide Bicycle and Pedestrian Systems Plan.

Objective:

2.1.10 Encourage bicycle use and pedestrian activity throughout Volusia County.

Policies:

2.1.10.1 Volusia County shall use the Volusia Trails Plan, as accepted by the Volusia County Council, as a guide to supplement Volusia County's transportation network with interconnected non-motorized bicycling and walking corridors.

2.1.10.2 Volusia County shall develop pedestrian and bicycle ways to connect public uses such as schools, libraries, parks, and inter-modal transit nodes where feasible.

2.1.10.3 Volusia County shall develop bicycle-compatible design standards in the Land Development Code for all new and reconstructed collector and arterial roads.

2.1.10.4 Volusia County shall include sidewalks alongside all roadways as consistent with the requirements of the Land Development Code.

2.1.10.5 Volusia County shall integrate bicycle (i.e., bicycle racks on buses, secure bicycle storage lockers, and park and ride lots), and pedestrian features into transit planning.

Brevard County Comprehensive Plan

Brevard County's Comprehensive Plan has an expressed goal of reducing reliance upon the automobile and encourages multi-modal transportation alternatives. The plan expresses that bicycle and pedestrian facilities shall be included as a standard component in the planning and development of transportation facilities. The following objective, policy, and criteria are a part of the Brevard County's Comprehensive Plan Transportation Element and display's the proposed action's consistency with the County's goal of creating a multimodal transportation system.

Objective 4

Brevard County shall encourage multi-modal transportation alternatives that accommodate existing and proposed major trip generators and attractors.

Policy 4.1

Brevard County shall emphasize safety and convenience in the location, design and construction of bicycle and pedestrian facilities.

Criteria:

A. The Brevard MPO shall guide and promote a countywide perspective in planning and implementation of facilities to accommodate bicycle and pedestrian needs.

B. Brevard County should continue to designate a portion of local option gas taxes, transportation impact fees and other revenues for bicycle and pedestrian projects.

C. Bicycle and pedestrian facilities shall be included as a standard component in the planning and development of transportation facilities. Bicycle and pedestrian facilities shall be established in conjunction with the construction, reconstruction or other significant change of any major county roadway, provided their establishment would not be contrary to public safety or their cost would not be excessively disproportionate to the need or future use.

D. Brevard County shall continue to maintain consideration for bicycle and pedestrian facilities in the site plan review process and shall periodically (1-3 year intervals) review land development regulations relating to bicycle and pedestrian design standards and land use strategies that accommodate bicycling and walking.

Titusville Comprehensive Plan

The first goal noted in the City of Titusville's Comprehensive Plan is to provide "a safe, convenient and energy efficient transportation system in the City of Titusville that serves the needs of all residents and visitors. The system shall promote multiple modes of transportation for goods and people to encourage stability and an improved quality of life." This goal clearly states the City's commitment to providing multimodal transportation options for its citizens. The following policy and strategies are located within the City's Comprehensive Plan and displays the consistency of the proposed project with the City's comprehensive plan.

Policy 1.2.1. The City shall encourage the use of bicycles and walking through the following strategies: [9J-5.019(4)(c)5]

Strategy 1.2.1.1. Consider bicycle and pedestrian facilities in the development review process.

Strategy 1.2.1.2. Include as part of the EAR process a review of land development regulations relating to bicycle and pedestrian design standards and land use strategies that accommodate bicycling and walking.

Edgewater

The City of Edgewater's Comprehensive Plan Transportation Element recognizes the City's need for establishing facilities that will encourage the use of multiple modes of transportation. It also notes that bicycle and pedestrian facilities are viable mobility alternatives. The policies emphasize that major roadways will incorporate bicycle, pedestrian and transit features to achieve a true multi-modal system.

3.15 Future Land Use

Future Land Use establishes the pattern of land uses and location of urban growth. It represents the growth policy for a County that helps to drive the physical expansion of the urban areas at a rate to support projected population and economic growth. It does so in a pattern that is centered around existing urban areas and in locations that optimize efficiency in public service delivery and conservation of valuable natural resources (Volusia County Comprehensive Plan).

To analyze the compatibility of converting the rail corridor into a multi-use trail with the future land use of Volusia and Brevard Counties and the cities of Titusville and Edgewater, the study team used generalized land use classification, based on data provided by each governmental agency. The classifications were residential, commercial/industrial, agricultural, conservation, and mixed use.

The Osteen community is located west of SR 415, extending east to Azalea Lane. It is a small and sparsely populated rural community. The current future land includes commercial near SR 415 and residential along Osteen Maytown Road to Azalea Lane. However, there is a proposed Osteen Joint Planning Agreement (Agreement) between the City of Deltona and Volusia County that is being reviewed by the Florida Department of Community Affairs (DCA). The Agreement would amend the current future land use map and provide intensities, densities and height limits and design criteria. There are plans to extend Deltona municipal utility services into Osteen. The Agreement places an Osteen Commercial Village near the rail corridor east and west of SR 415, and mixed use

and residential along Osteen Maytown Road to Azalea Lane. If the Agreement is approved by DCA, and development occurs in the area, the proposed trail could aid in providing patrons for the commercial village and provide connectivity for residents to new local developments.

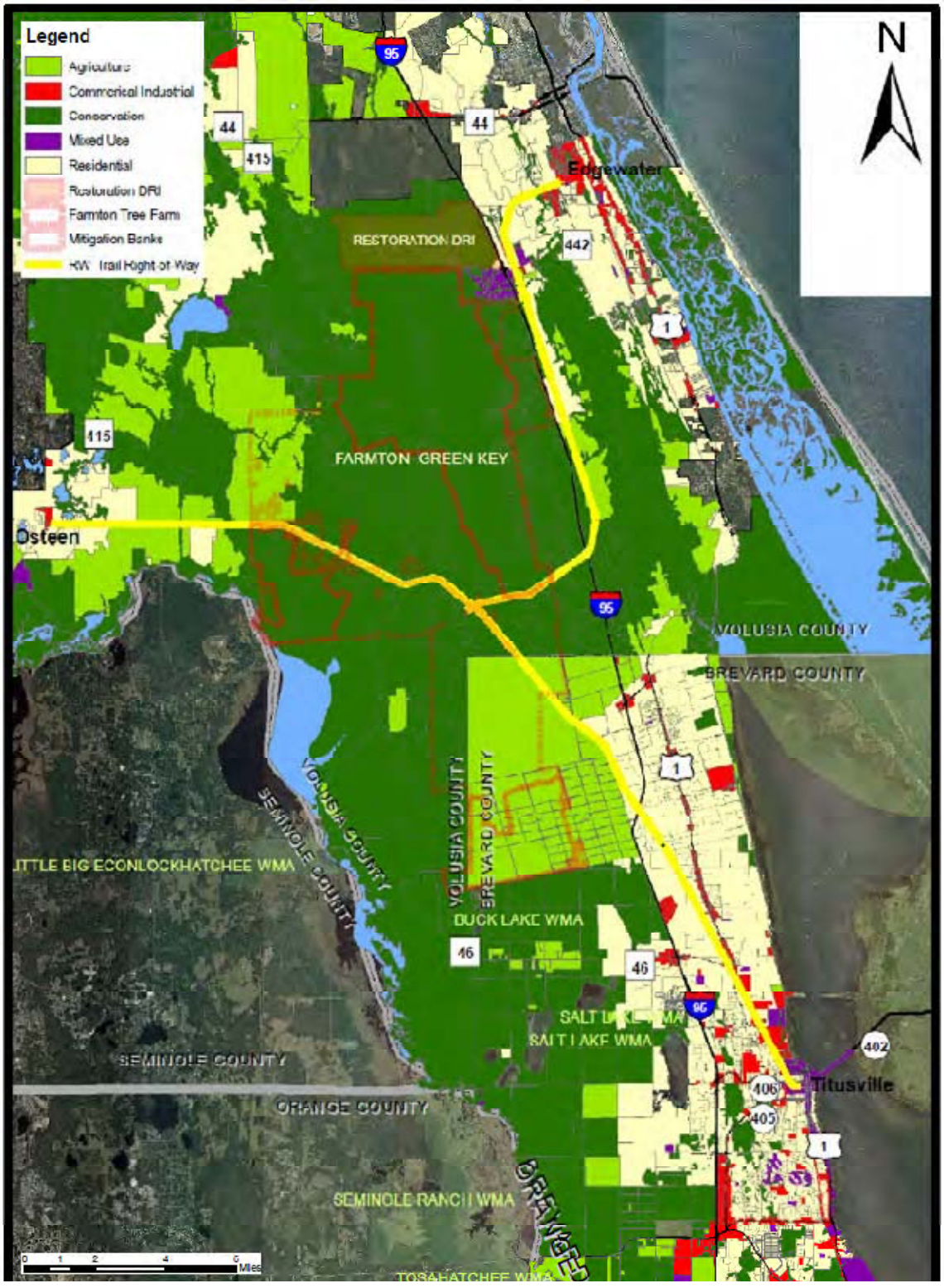
East of Osteen to Maytown, the future land use designation near the rail corridor is mostly agriculture and conservation, with some residential from River Oaks Drive to Shoreline Drive. The Farmton Tree Farm is located within this area and is owned by the Miami Corporation, which has plans to develop the area that encompasses about 59,000 acres north and south of the rail corridor. Miami Corporation has submitted to Volusia and Brevard Counties a comprehensive plan amendment for the Farmton Greekey DRI. If approved, the future land use designation of agriculture and conservation within the Farmton Tree Farm may change.

From Maytown to Titusville, the land use designations near the rail corridor are mainly agricultural, residential, and industrial/commercial uses. As the corridor travels southward into the City of Titusville, the future land use designation is largely residential and commercial.

The trail segment from Maytown to Edgewater is largely classified as conservation and agricultural, with low density residential along Old Blue Ridge Road and Cow Creek Road south of SR 442. At the intersection of Cow Creek Road and SR 442, the future land classifications near the rail corridor are mixed use and industrial/commercial uses. The Restoration DRI is proposed west of I-95 (further discussed in Section 3.18). As the rail corridor traverses into the City of Edgewater along Park Avenue, the land use classifications include residential, industrial and commercial areas.

Converting the former rail corridor into a multi-use trail is compatible with each of the land use designations within the study area. Rail corridors generally pass through rural areas, and industrial/heavy commercial areas, providing regional freight rail service. Thus, rail-to-trail projects typically introduce recreational and alternative transportation trails into non-urban settings. The East Central Regional Rail Trail corridor is no exception. In conclusion, no major land use conflicts exist for this project.

Figure 3.15 Future Land Use Map



3.16 Transportation Plans

The Long-Range Transportation Plans (LRTPs) and Transportation Improvement Programs (TIPs) of the Volusia County MPO and the Space Coast TPO along with the Capital Improvement Plans (CIPs) of Volusia County, Brevard County, and the Cities of Edgewater and Titusville were reviewed. The following table displays planned and programmed roadway improvements near the rail corridor. Programmed improvements are those that have committed funding dedicated either by federal, state, or local sources and planned improvements are eligible for federal and state funding through the MPO's Priority Process, but funding has not yet been committed.

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Table 3.16.1 Planned and Programmed Roadway Improvements

Volusia County Programmed Improvements					
Name of Roadway	From	To	Improvements	Phase	Responsible Agency
SR 415	SR 46	South of the St. Johns River Bridge	Reconstructing the existing two-lane roadway to a four-lane divided roadway. There will also be 4' on-road bike lanes in each direction and an 8' sidewalk on the west side and a 7' sidewalk on the east side.	**(Segment 1)** Design Complete	FDOT
SR 415	South of the St. John River Bridge	Reed Ellis Road	The improvements planned for this section include both roadway and bridge work. The proposed structural improvements will consist of construction of a new two-	**(Segment 2)** Design Complete	FDOT
SR 415	Reed Ellis Road	North of Acorn Lake Road	The planned roadway improvements will consist of a four-lane divided urban typical section. The travel lanes will be 12-feet in width and four-foot on-road bicycle lanes will be provided along both sides.	**(Segment 3)** Design Complete	FDOT
Volusia Planned Improvements					
Name of Roadway	From	To	Improvements	Phase	Responsible Agency
I-95	I-4	Brevard Co. Line	Widen to 6L	Design Underway	FDOT
Brevard County Programmed Improvements					
Name of Roadway	From	To	Improvements	Phase	Responsible Agency
I-95	Volusia County Line	SR 46	Widen to 6L	Design Underway	FDOT
I-95	SR 46	SR 50	Widen to 6L	Design Underway	FDOT
Park Ave	Barna	Draa Road	Adding a bi-directional left turn lane	Construction Underway	City of Titusville
US 1	Garden Street (SR 406)	Grace Street	construct/repair sidewalk	Design Complete	FDOT
Truman Scarborough Way	US 1	Chain of Lakes Park	New Road	Design Underway	Brevard County

Source: Volusia County MPO LRTP 2025, Space Coast TPO LRTP 2025, Space Coast TPO TIP 08-12, Volusia County MPO TIP 08-13, Volusia County CIP, Brevard County CIP 06-11, City of Titusville CIP 08-13, City of Edgewater CIP 08-13

Transportation Improvement Locations

The roadways listed above are located at various points throughout the rail corridor, and the planned and programmed improvements to these roadways could aid in providing enhanced access to the trail, if constructed, as well as existing recreational facilities. Below is a description of locations of each roadway improvement in relation to the rail corridor.

- The starting point of the rail corridor for this PD&E Study is east of SR 415 along the Segment 2 improvements described.
- I-95 travels through both Volusia and Brevard Counties, and the rail corridor travels under I-95 at Aurantia Road in Brevard County and Maytown Road in Volusia County. It also parallels I-95 in Volusia County along the Edgewater Branch. The planned and programmed improvements proposed for I-95 are for the entire length of the roadway located north of the Edgewater Branch and south of the Titusville Branch of the rail corridor. The planned widening to the inside at Aurantia Road will impact the trail corridor, and requires modification to the planned trail crossing of Aurantia Road.
- The corridor parallels Park Avenue in Titusville from Draa Road to Garden Street (SR 406), and the programmed improvements for Park Avenue are located within that segment.
- The programmed improvements for US 1 are from Grace Street north to Graden Street (SR 406) and will not impact the trail.
- Truman Scarborough Way will be a new road extending Dairy Road east from US 1 leading into the Chain of Lakes Park.

Trail Connections to Transit: Volusia and Brevard Counties

Votran is Volusia County's public transportation system. It has four major service areas providing transit services to Volusia County citizens. The south east service area is located near the rail corridor, and it includes route 41 that runs along US 1 and crosses the rail corridor at the intersection of Park Avenue and US 1 in Edgewater. This is important to note because making connections between transit and multi-use trails enhances the accessibility of both systems.

Space Coast Area Transit or (SCAT) is Brevard County's public transportation system. It operates throughout the County and has designated stops within incorporated and unincorporated areas. SCAT has eighteen routes providing transit services to Brevard County citizens. Two of these routes are located near the rail corridor, routes 2 and 5. Route 2 circulates within the City of Titusville along SR 405 to the west and US 1 to the east, and Route 5 travels through Titusville via US 1 and exits Titusville headed south via US 1. Again, this is significant because connecting transit and bike/pedestrian facilities

enhances the accessibility of both systems and creates a comprehensive transportation network.

3.17 Local Plans

Envision Edgewater

The Envision Edgewater project was conducted as a community visioning process with the goal of creating a vision for the future development of Edgewater, with the horizon year of 2028. Edgewater citizens participated in a one day, eight hour visioning process that involved several sessions, which allowed the community stakeholders to discuss what makes a great quality of life and what direction they thought the City should take as growth and development occurred. The sessions included a variety of topics including economic development, open space and preservation, housing and neighborhoods, transportation, and community facilities and services.

During the sessions, community members expressed that there were limited alternative transportation options and a lack of sidewalks and bicycle trails. They also thought that in order to enhance their quality of life, the City should make better use of the waterfront, increase City events and programs, have more bicycle and pedestrian facilities, along with creating a definitive City Center that has a sense of place. In addition, participants thought that the natural environment of Edgewater should be capitalized on through the development of nature trails and parks. In prioritizing the five key issues identified by participants as the most important for Edgewater's future, the number two issue was creating a parks and recreation master plan.

Based on the expressed desires of the citizens of Edgewater, the proposed project could aid in fulfilling the vision Edgewater citizens would like to see in 2028. The trail could provide an alternative transportation option, increase eco-tourism opportunities, and give greater pedestrian access to waterfront recreational activities.

East Mims Neighborhood Action Plan

The rail corridor travels through the East Mims community and in 2004 the community created the East Mims Neighborhood Action Plan. The plan was created as a blueprint for the future vision of the Mims community. The top priorities of the plan were centered around (1) facilitating partnerships and funding sources to improve opportunities and facilities for all neighborhood youth and senior citizens,(2) improved street and traffic safety infrastructure, (3) enhancing community special events, (4) and facilitating economic development in the neighborhood and northern Brevard County. The plan is important to the potential trail because it incorporates trail connections to the proposed trail and demonstrates the community's goal of improving the quality of life for residents.

Downtown Titusville Community Redevelopment Area (CRA) Plan Update

The Downtown Titusville CRA Plan was developed to aid in coordinating growth in the Downtown CRA area through a series of strategic initiatives that could be realized over the next fifteen to twenty years. The Plan identifies both private and public sector investments that are aimed at preserving and protecting the rich history of the Titusville Downtown community, while creating a vibrant mixed-use town center environment. The Plan's expressed long range vision embodies creating a series of clearly defined centers, new mixed-use buildings on infill lots, open space, enhanced streetscape design and new public facilities including parking structures and stormwater ponds. Ideally, the combination of these features along with the implementation of smart growth practices, the City of Titusville can realize a downtown area that will attract and sustain private sector investment and create a unique sense of place. The plan also notes that creating a safe and welcoming environment for pedestrians is a priority.

The development of the East Central Regional Rail corridor into a multi-use trail promulgates the vision of the Downtown Titusville CRA Plan, and it has the potential to be a catalyst in the redevelopment process. The East Central Regional Rail corridor travels along US 1 through downtown Titusville and could provide pedestrian access to the area. Trails are popular amenities that draw millions of users a year and they have aided in the revitalization of downtown areas and are becoming a key amenity in new developments. Before the conversion of rail corridor into the West Orange Trail in Winter Garden, Florida, the downtown area was considered blighted with empty storefronts. Since completion of the trail, the downtown area is revitalized and nearly 100% of the storefronts are occupied. In Dunedin, Florida, the downtown occupancy of storefronts was 35% before the Pinellas Trail, and since the trail arrived in the early 1990s, downtown occupancy is 100%. Thus, the proposed action could aid in bringing the established vision for the Downtown Titusville CRA to fruition.

3.18 Proposed Developments of Regional Impact

3.18.1 The Farmton-GreenKey DRI

The Farmton Tract, consisting of approximately 59,000 acres in southeast Volusia and northern Brevard Counties, has been under single ownership of Miami Corporation and its affiliates for more than 80 years. The Farmton Tract extends from the SR 442 interchange to south of the SR 5A interchange of Interstate 95. Over the last several decades, Farmton has been a "tree farm," producing timber for pulp and wood products as well as range for cattle. Farmton also operates a wetlands mitigation bank under permit from St. Johns River Water Management District (SJRWMD) and Army Corps of Engineers. Much of Farmton is also leased for hunting and for many years was a Wildlife Management Area. Approximately

11,000 acres of Farmton is designated by Volusia County as Environmental Core Overlay.

Miami Corporation is currently proposing to develop the Farmton Tract as a large scale mixed use development, Farmton-GreenKey. The conceptual plan for Farmton-GreenKey includes village centers, a multi-modal center, town centers, work space, and bike trails. The plan emphasizes the identification and preservation of environmentally significant natural areas, open space, and agricultural areas. The Miami Corporation seeks to create compact, walkable, mixed use communities that incorporate residential, office, commercial, recreational, and governmental uses that all work together. A large portion of Titusville Branch of the rail corridor (east of Osteen and south of Maytown Spur Drive) travels through the southern portion of the proposed development. Both Volusia and Brevard counties have adopted comprehensive plan amendments to support this development project.

3.18.2 Restoration DRI

Restoration is a proposed development located in Volusia County within the City of Edgewater on the west side of Interstate 95 (I-95). The development consists of approximately 5,181 acres that will be transformed into approximately 8,500 residential dwelling units and 3,215,163 square feet of nonresidential uses. The design is a traditional transit-oriented neighborhood with a grid street pattern, urban density, and a mixture of uses. The proposed uses are a mixed use town center, a work place, a transit-ready corridor, and a conservation area. The Restoration DRI is envisioned to be a master planned community with several trails, paths, and bikeway routes planned throughout. The development sits to the west of the northern section of Segment 3 of rail corridor. The proposed trail could provide future Restoration residents with an easily accessible alternative mode of travel and a recreation facility. However, as of the end of 2009, this DRI application's approval status is on hold as it has been found in non-compliance by the Department of Community Affairs.

Figure 3.18 Proposed Developments of Regional Impact

4.0 ALTERNATIVES DEVELOPMENT AND EVALUATION

This section provides an evaluation of the proposed multi-use trail design attributes including the alignment, typical sections, trailhead and pavilion concepts, bridge design concepts, and access management. In addition, cost estimates are presented and a recommended phasing plan is provided. To be consistent with the Trail Management Plan prepared by Volusia and Brevard counties, cost and phasing information will be provided by the segments defined in the management plan.

4.1 Trail Alignment

The trail alignment has been defined and predicated by the December 2007 purchase of the former FEC Railway right-of-way by the Florida Department of Environmental Protection, Office of Greenways and Trails. Generally 100 feet in width, the purchased trail corridor will easily accommodate allow the construction of the 12-foot wide paved trail.

As previously noted in this document, several sections of the former FEC Railway corridor were not purchased due to various title and ownership issues (a total length of approximately 6,900 feet). Within these sections, which occur in the Osteen segment west of the Lake Ashby canal, alignment alternatives outside of the former FEC corridor were developed and evaluated. Figures 4.1.1 through 4.1.5 illustrate these alignment alternatives. The reader is directed to review the plan sheets associated with this PD&E Study to view the alignment in greater detail.

The western-most alternatives area, hereinafter referred to as the Uranus Trail Area, recognizes that two areas of “non-purchase” exist. The eastern-most alternative area, hereinafter referred to as the Vat Road Area, as one continuous alternatives evaluation area. The alternative alignments evaluate the potential for a south alignment - proceeding behind properties or structures, and a north alignment – adjacent to Osteen-Maytown Road. Table 4.1.1 summarizes the right-of-way acquisitions required for each of the two alignment alternatives.

Figure 4.1.1 Alternative Alignment Section Sta 464 to Sta 469
(Uranus Trail West Area)

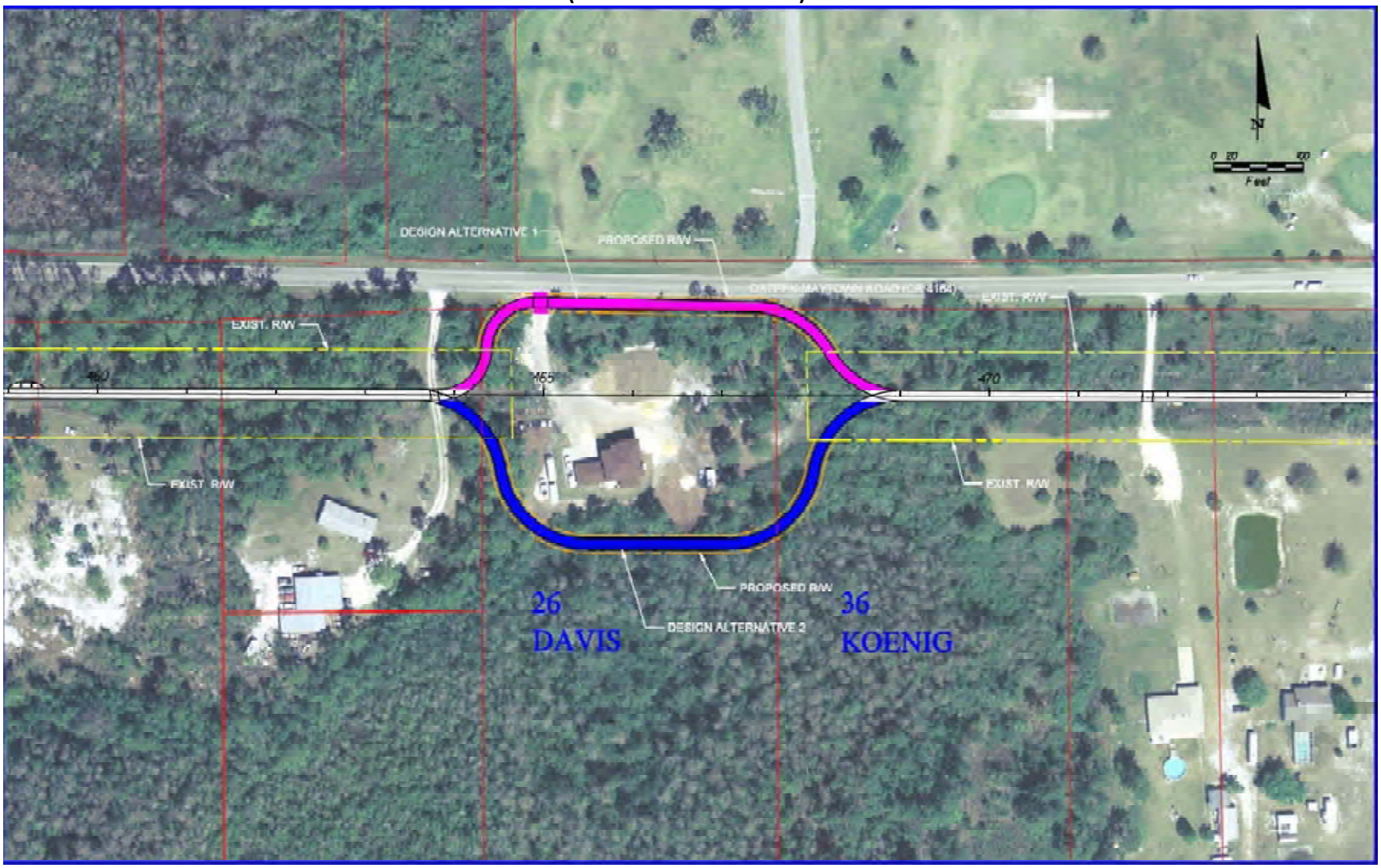


Figure 4.1.2 Alternative Alignment Section Sta 479 to Sta 492
(Uranus Trail East Area)

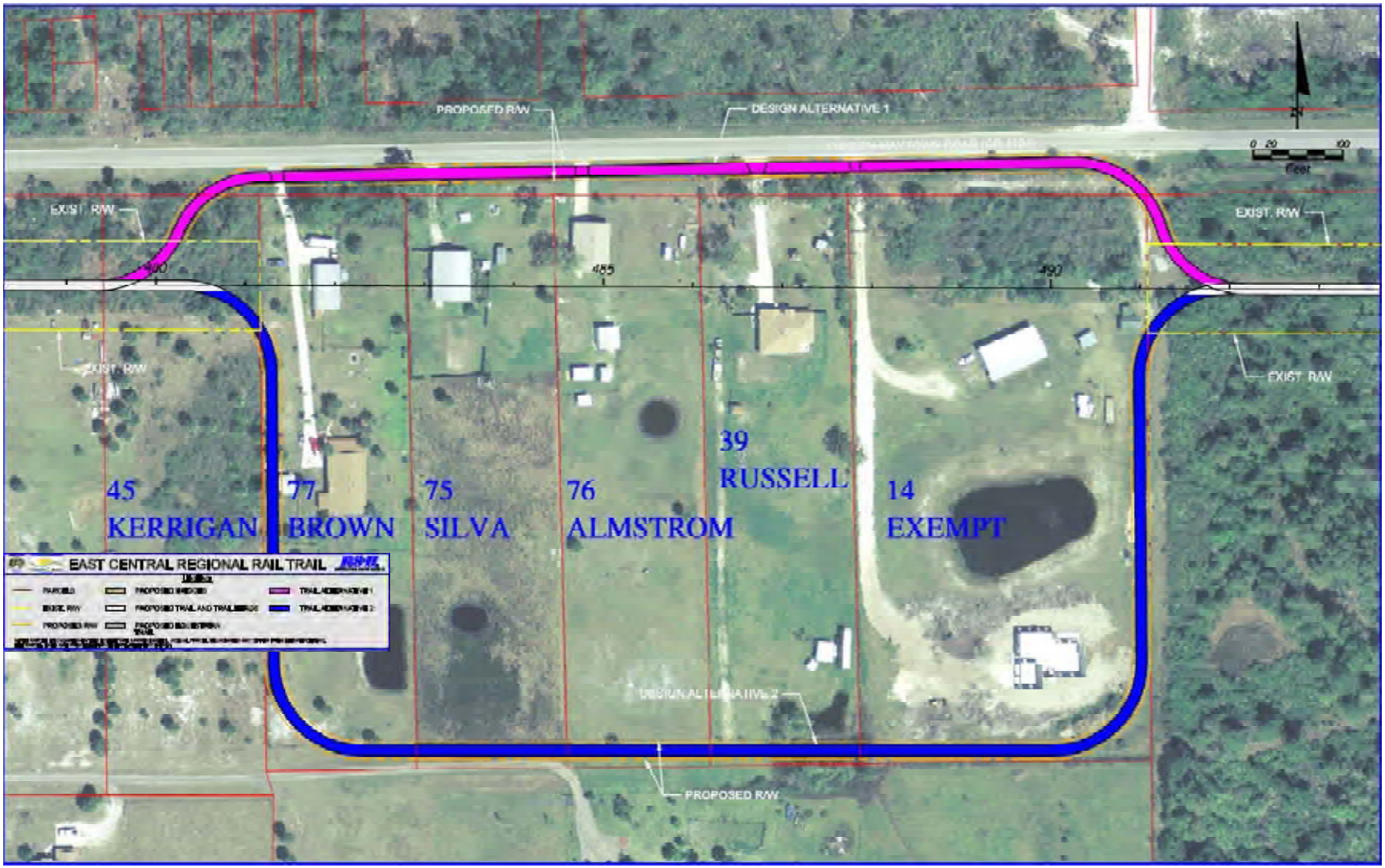


Figure 4.1.3 Alternative Alignment Section Sta 610 to Sta 624
(Vat Road Area – Sheet 1 of 3)

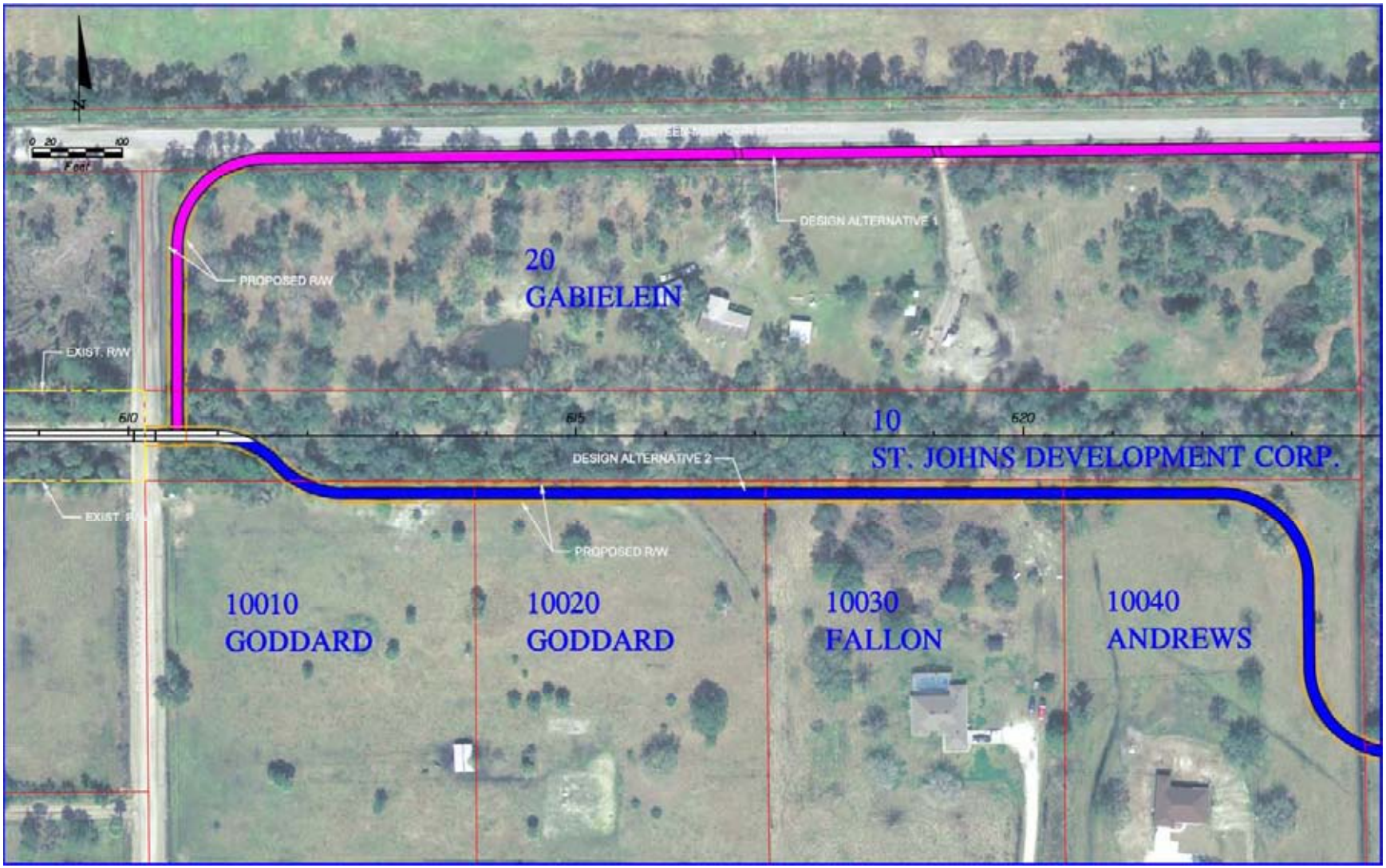


Figure 4.1.4 Alternative Alignment Section Sta 624 to Sta 639
(Vat Road Area – Sheet 2 of 3)

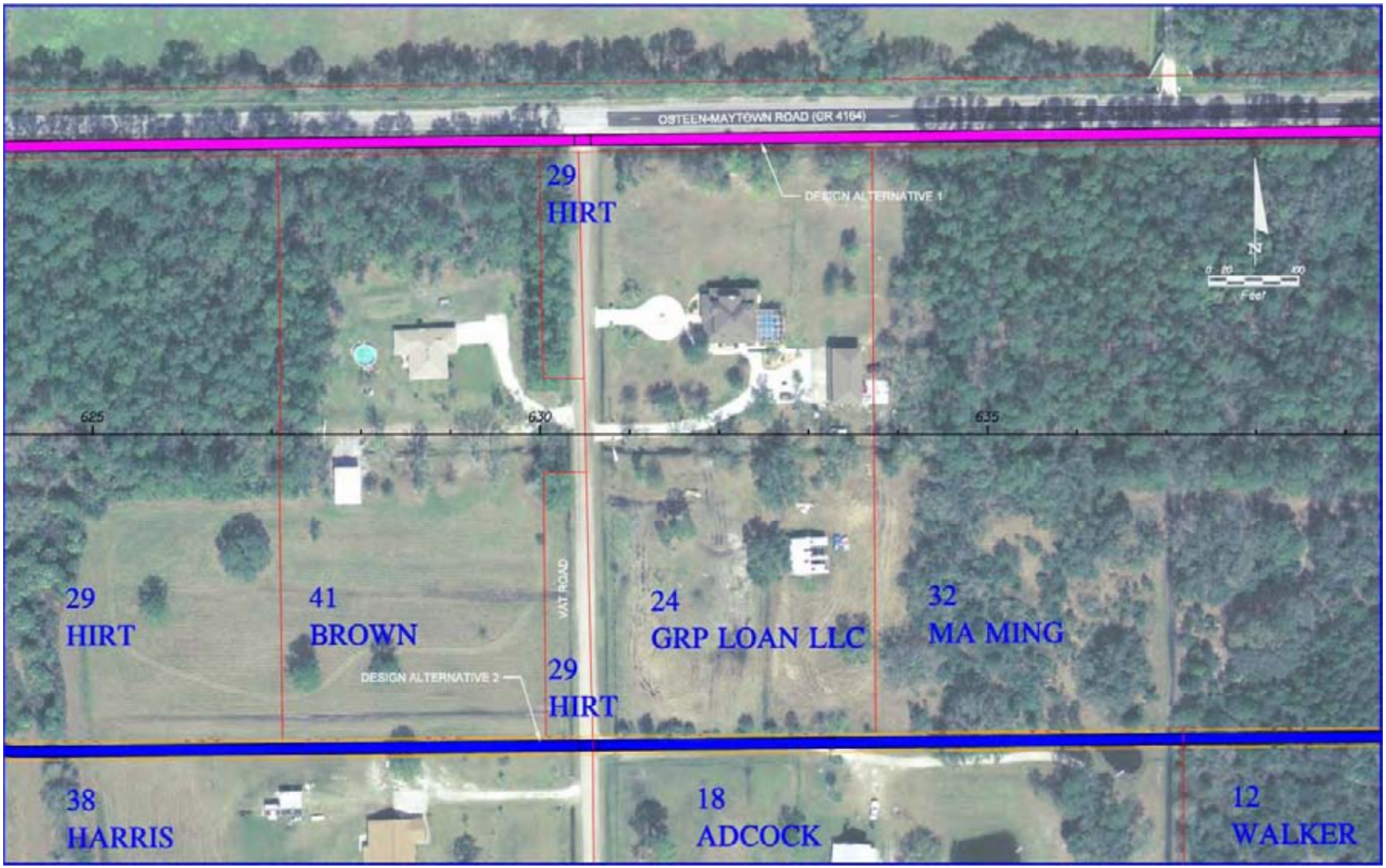
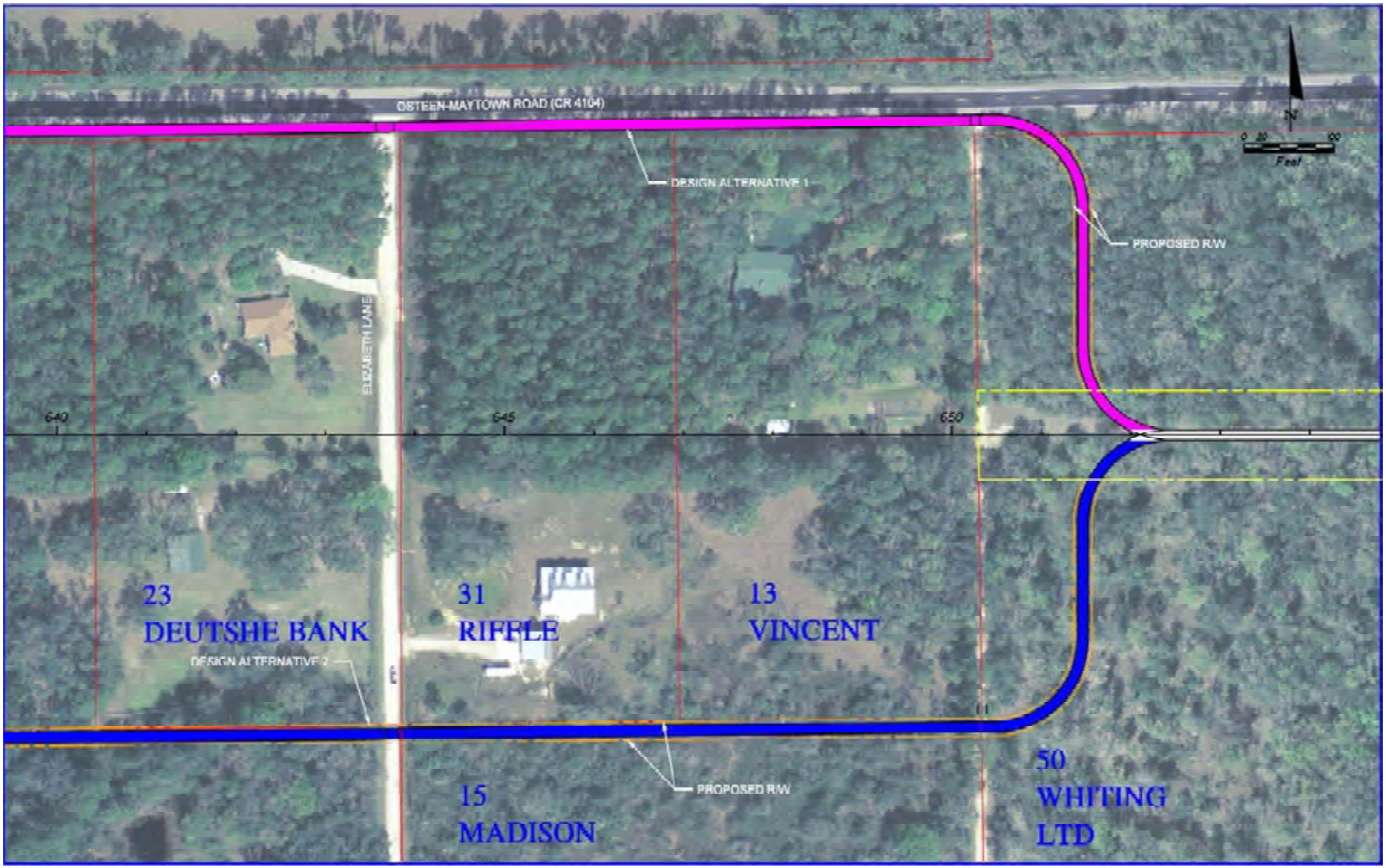


Figure 4.1.4 Alternative Alignment Section Sta 639 to Sta 652
(Vat Road Area – Sheet 3 of 3)



The additional right-of-way requirements for the two alignment alternatives are provided in the following table.

Table 4.1.1
Alternative Alignment Right-of-Way Requirements

	Alternative 1 (North)			Alternative 2 (South)		
	Parcel Code	**Sq. Ft.**	**Acres**	**Parcel Code**	**Sq. Ft.**	**Acres**
Area 1 – Uranus Trail West (Sta. 464 – 469)						
	26	2,730	0.06267	26	7,822	0.17957
	36	1,434	0.03292	36	2,311	0.05305
		4,164	**0.09559**		**10,133**	**0.23262**
Area 2 – Uranus Trail East (Sta. 479 – 492)						
	45	1,278	0.02934	77	11,631	0.26701
	14	1,288	0.02957	75	3,361	0.07716
				76	3,198	0.07342
				39	3,345	0.07679
				14	15,860	0.36410
		2,566	**0.05891**		**37,395**	**0.85848**
Area 3 – Vat Road (Sta. 610 – 652)						
	20	7,111	0.16325	10	3,741	0.08588
	50	6,090	0.13981	10010	3,963	0.09098
				10020	6,490	0.14899
				10030	6,664	0.15298
				10040	10,825	0.24851
				38	13,456	0.30891
				18	13,195	0.30292
				12	12,616	0.28962
				15	12,963	0.29759
				50	6,978	0.16019
		13,201	**0.30306**		**90,891**	**2.08657**

The calculation of the required right-of-way is based on the assumption that according to the Volusia County Property Appraiser information, the proposed alignment would be located within the road R/W for Osteen-Maytown Road, thus impacting fewer parcels**. It is recommended that a prescriptive R/W survey for Osteen-Maytown Road should be conducted by the County for confirmation of this assumption.**

Based on the information available for use within this PD&E Study, we recommend locating the trail along the **north alignment** for the areas where FDEP did not purchase the right-of-way. This alignment would minimize potential right-of-way acquisition costs and utilize to the greatest extent the County's roadway corridor right-of-way.

A design issue associated with the alignment alternative adjacent to Osteen-Maytown Road is the proximity of the existing drainage swale to the potential trail alignment. As the trail could potentially impact the swale, one design alternative considered was the conversion of the existing open ditch drainage system to a closed system. This would require the

installation of a drainage pipe along the length of the alternative alignment (approximately 7,000 feet). A closed drainage system would allow the construction of the trail on top of the drainage system, reducing the need for additional right-of-way acquisition. To accommodate this approach, raised curbing along Osteen-Maytown Road would be required, channeling the stormwater to outfalls and inlets into the closed system. The potential cost for this conversion would exceed other alternatives that retain the existing swale system with potentially minor modifications. An additional factor is the potential modification of the existing drainage patterns, as the ditch and adjacent property currently provides some stormwater treatment and abatement in addition to conveyance.

Drainage canal along the south side of Osteen-Maytown Road

In mid-September 2009, staff from the study Team including Volusia County Engineering staff conducted a construction feasibility review of the segments requiring alignment alternatives. Recommendations for design were developed from that review and from other Study information (property boundaries, roadway R/W, drainage patterns, roadway operating characteristics). It is recognized that a constrained condition may exist where FDEP/OGT did not purchase the FEC Railway right-of-way for the trail. In these areas a 10-foot wide multi-use trail typical section may be necessary to minimize right-of-way acquisition costs, minimize or eliminate modifications to the existing drainage system, yet still adequately accommodate trail users. The recommendations included the following:

- Locate the trail with a 6-foot offset from the Osteen-Maytown Road edge of pavement
- Trail width to be reduced to 10 feet if necessary due to the right-of-way constraints
- The trail is to be located between the roadway and the drainage swale/ditch
- Some alterations to the front face of the swale/ditch may be required.

4.2 Typical Sections

The standard 12-foot wide paved trail should incorporate a 2-foot wide horizontal clear zone on both sides, then a slope as required to tie into existing grade. The trail bed thus requires a 16-feet width. Typical sections developed for the following applications are provided in Figure 4.2.1.

- Where soils are suitable for construction (i.e. acceptable contamination areas)
- Where there exist contamination sensitive soils
- Where the trail is directly adjacent to a roadway (i.e. Osteen-Maytown Road)
- At bridge approaches.

Figure 4.2.1 Trail Typical Sections

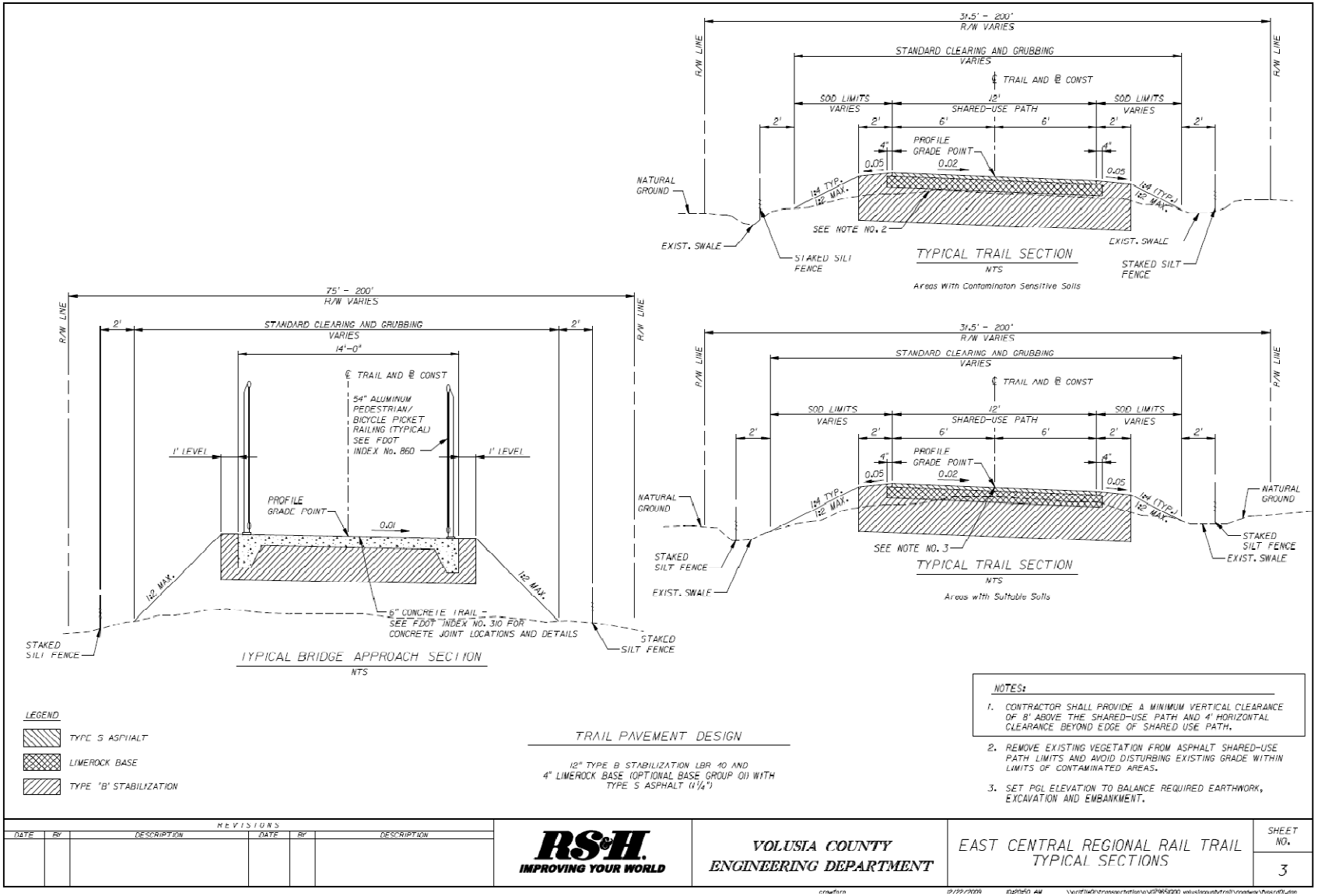


Figure 4.2.2 Equestrian Trail Typical Section

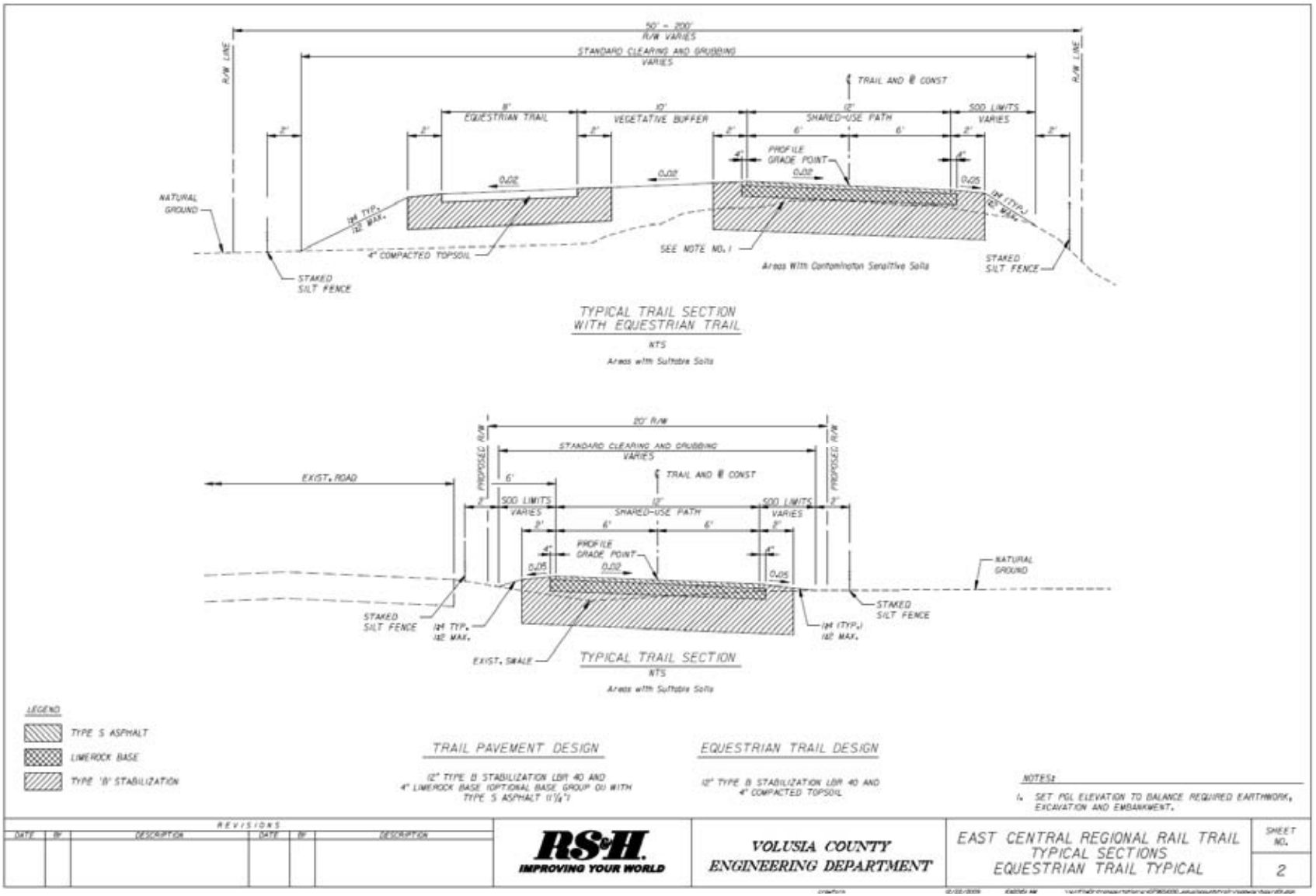
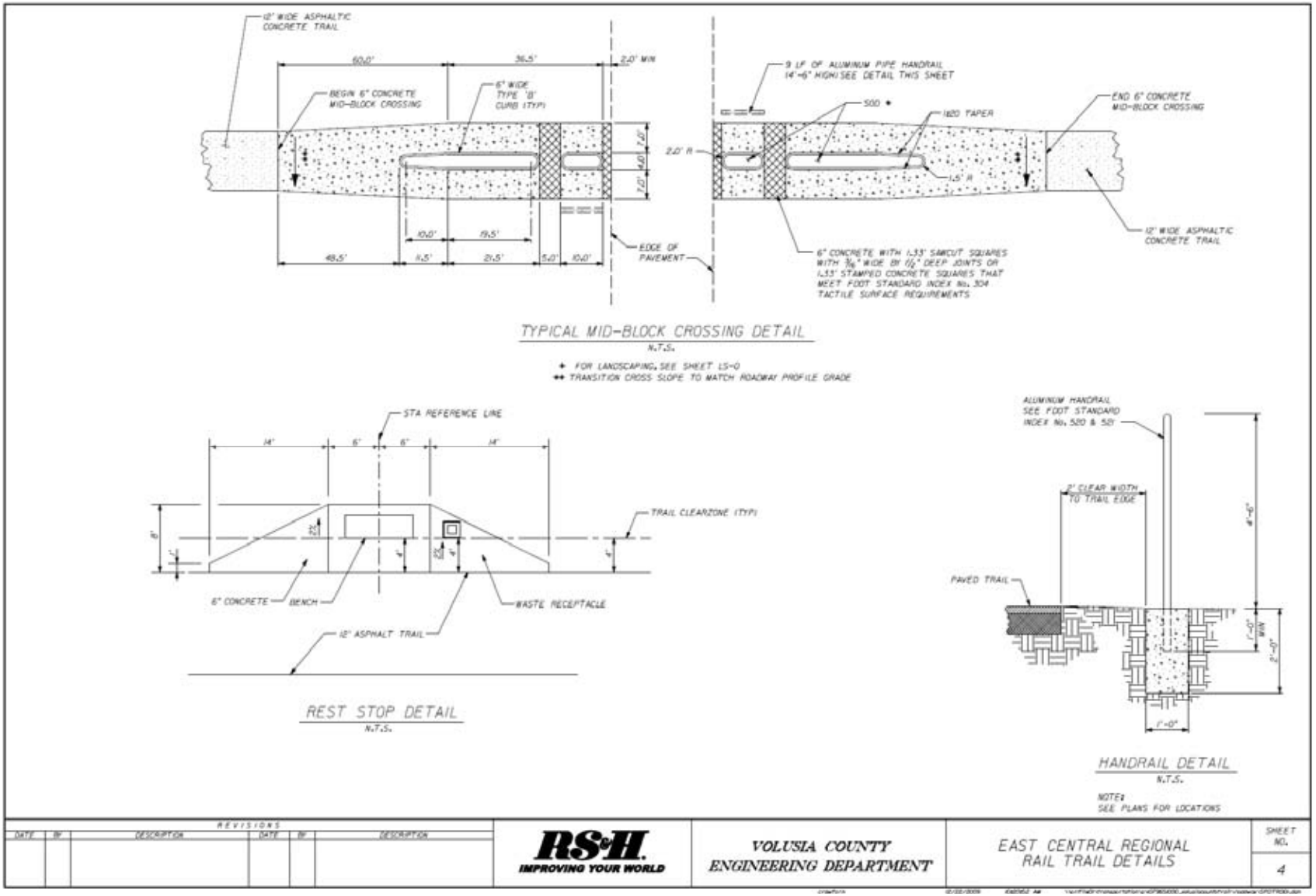


Figure 4.2.3 Trail Details



4.3 Trailheads and Amenities

Several trail amenities have been proposed throughout the regional trail to provide access, trail information, and refuge or rest areas. Eight trailheads have been proposed within the trail's right-of-way, and two are proposed at sites just off the corridor. The following table summarizes these trailheads.

Table 4.3.1 Trailhead Locations

Name	Station # (Location)	Type
Osteen	405+00	Urban
Gobbler's Lodge Rd.	726+30	Rural w/ Equestrian
Maytown	1096+30	Rural w/ Equestrian
Brevard EELs	1366+86	Rural w/ Equestrian
Aurantia Rd.	1462+10	Rural
Burkholm Rd.	1515+00	Rural
Chain of Lakes Park	N/A	County park (Urban)
Draa Rd. Park	1921+20	County park (Urban)
MagLev Site	2610+65	Rural
Old Mission Rd.	2775+04	Rural

Proposed trailheads will accommodate vehicular and bicycle/pedestrian traffic, and are proposed to include restrooms, an open pavilion, and either paved or unpaved parking. Those with equestrian features will also include a small corral pen where horses may be kept during loading into or unloading from trailers. An expanded unpaved parking area will also be provided to accommodate the larger vehicles and trailers.

Figures 4.3.1 through 4.3.9 illustrate the conceptual design layout for each of the identified trailheads. These conceptual designs are for illustrative purposes only. Final design of any trailheads, including the designation of required site acreage, additional right-of-way, and specific access is beyond the scope of this PD&E Study.

Figure 4.3.1 – Osteen Trailhead Concept (Sta 403)

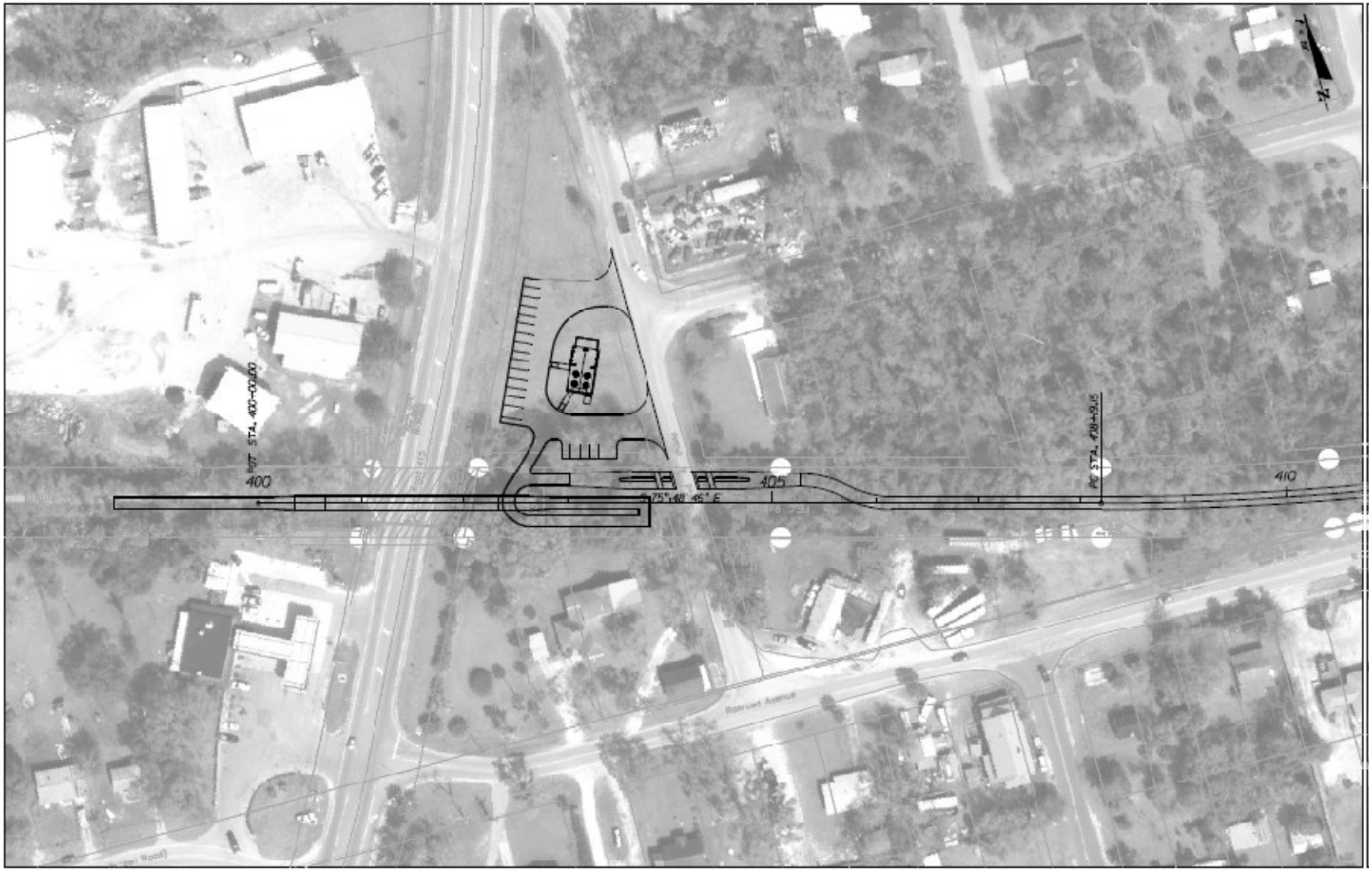


Figure 4.3.2 – Gobblers Lodge Road Trailhead Concept (Sta 726)

Figure 4.3.3 – Maytown Trailhead Concept (Sta 1096)

Figure 4.3.4 – Brevard Environmentally Endangered Lands Trailhead Concept (Sta 1367)

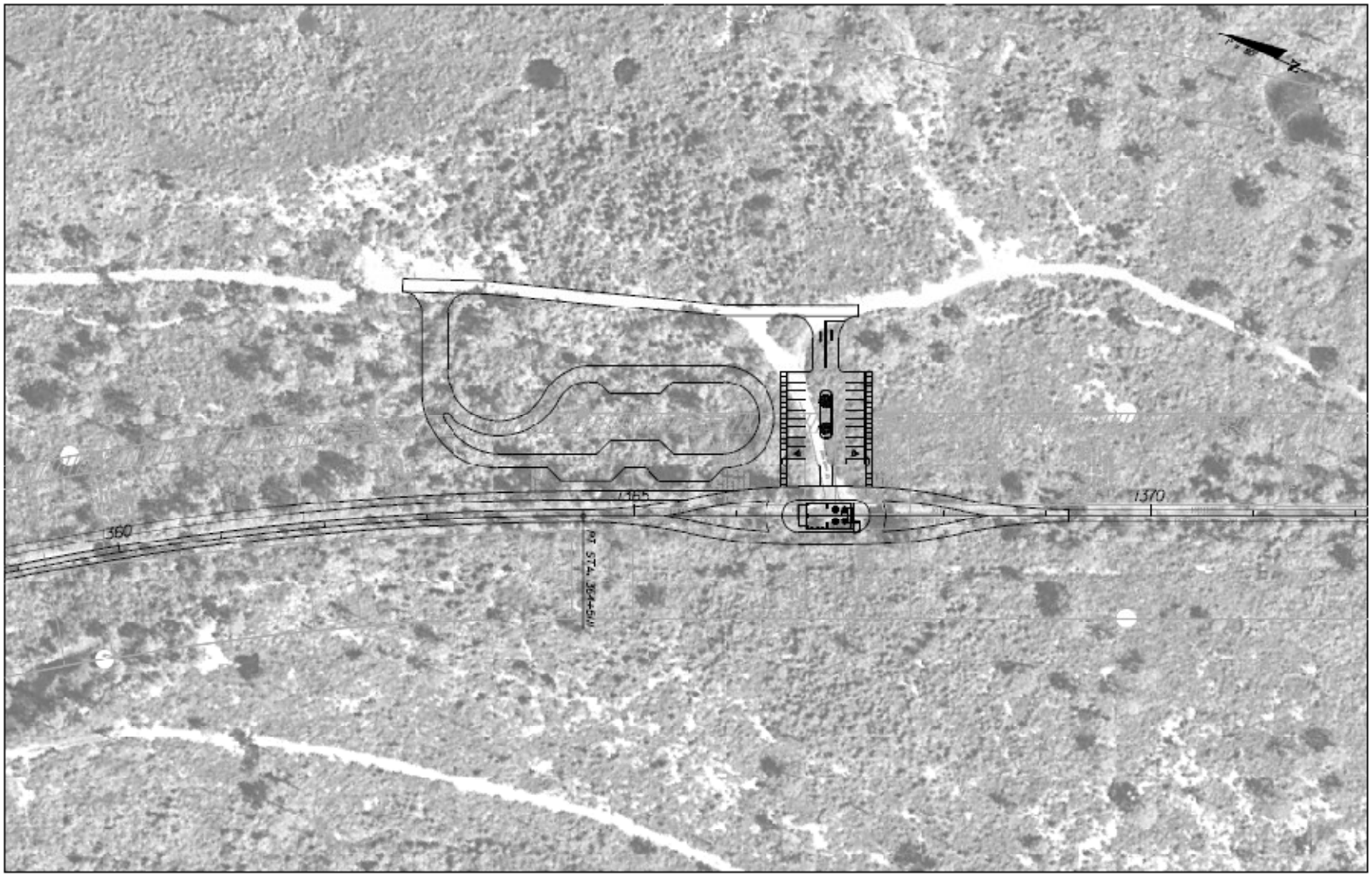


Figure 4.3.5 – Aurantia Road Trailhead Concept (Sta 1367)

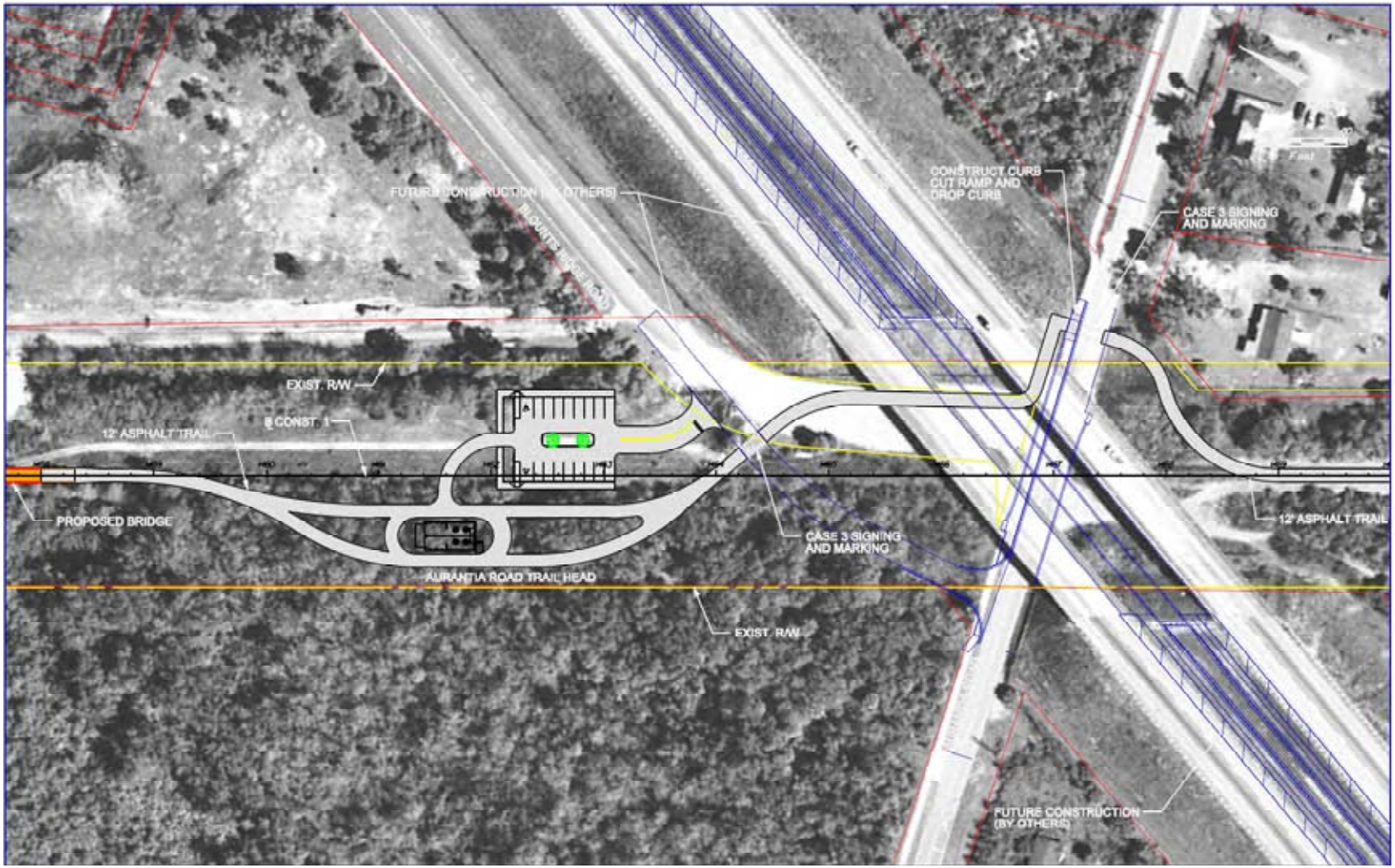


Figure 4.3.6 – Burkholm Road Trailhead Concept (Sta 1921)

Figure 4.3.7 – Draa Road Park Trailhead Concept (Sta 1921)

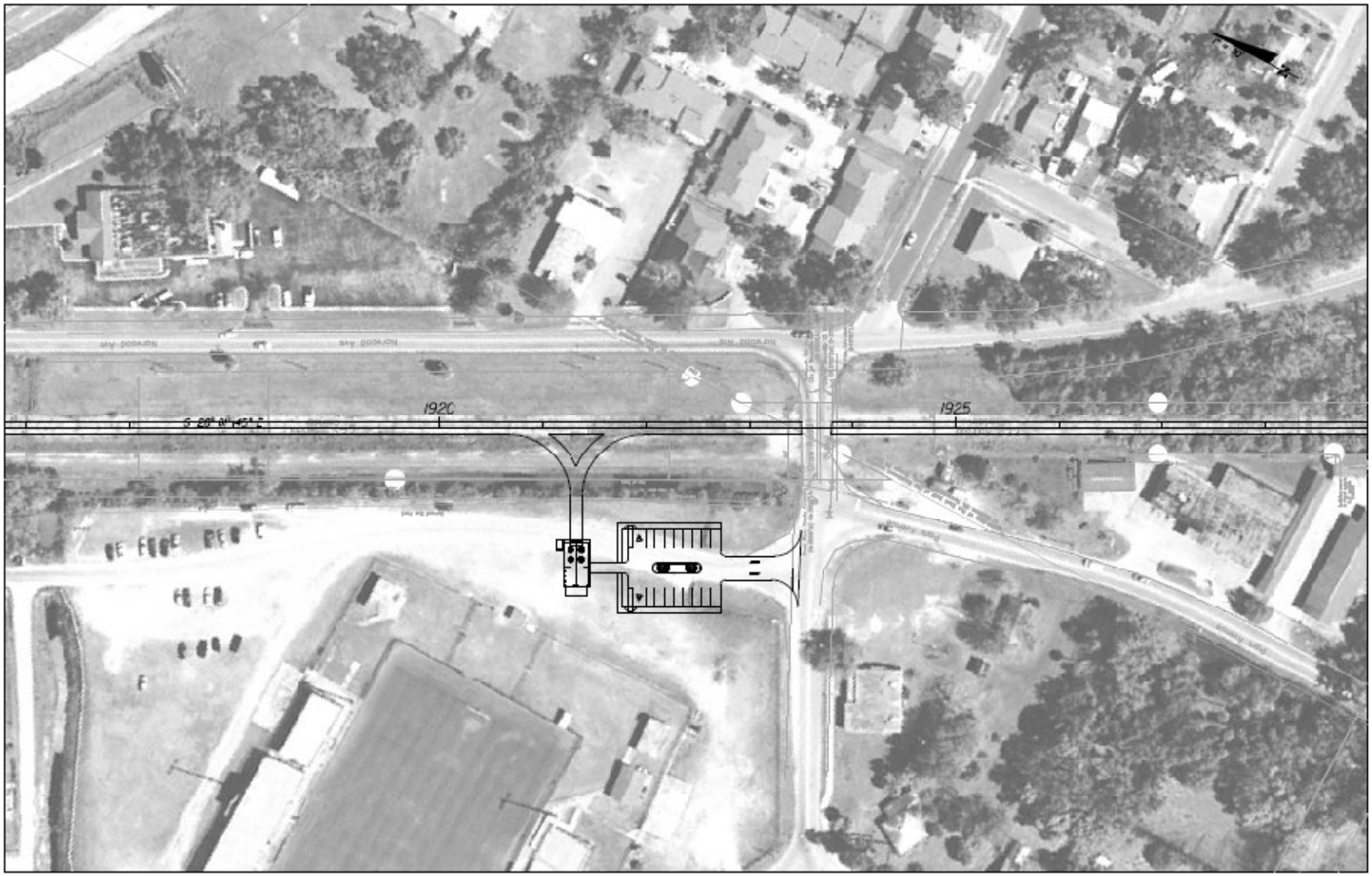


Figure 4.3.8 – MagLev Site Trailhead Concept (Sta 2611)

Figure 4.3.9 – Old Mission Road Trailhead Concept (Sta 2775)

Trailhead Concept

Trailhead with Equestrian Facilities Concept

In addition to the trailheads, a pocket pavilion concept was developed to locate a pavilion in the middle of the trail, completely within the existing corridor right-of-way. The pavilion offers refuge from the weather as well as a resting and scenic overlook, which would also offer trail information via signs or information kiosks. Eight of these pocket pavilions have been proposed throughout the trail, located as per the information in the following table.

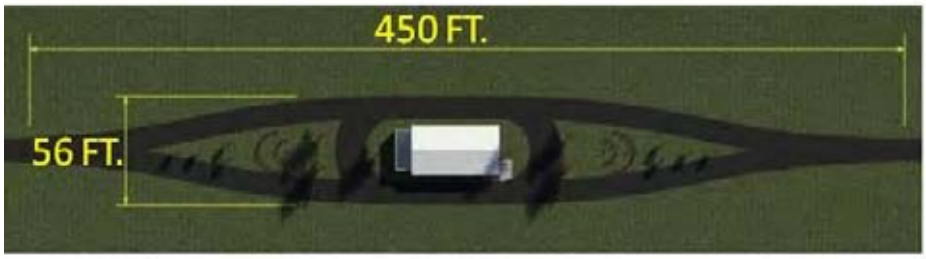
Table 4.3.2 Pocket Pavilion Locations

Location Description	Station # (Location)
1.3 miles west of Gobbler's Lodge Rd.	658+35
1.5 miles east of Maytown Trailhead	1174+40
3.0 miles south of Aurantia Rd.	1618+65
1.7 miles north of Chain of Lakes Park	1742+35
1.1 miles north of Maytown Trailhead	2170+54
3.5 miles north of Maytown Trailhead	2297+35
3.7 miles south of MagLev Trailhead	2414+45
1 mile north of MagLev Trailhead	2660+35

The pocket pavilions will typically consist of a pavilion structure with a picnic table and anchored bicycle racks. It may include a restroom, depending of the availability of water. An option for either the trailheads or the pocket pavilions with restrooms where water is unavailable is a composting toilet. These toilets are odorless, require little or no water depending on the style, and are an economical and environmentally safe alternative when you cannot connect to a central sewer or a septic system.

The following illustrations provide the conceptual renderings of the pocket pavilion. It should be pointed out that the oval pavement around the pavilion is designed to accommodate the turning movement of an emergency response vehicle such as an ambulance or an EMT vehicle.

Pocket Pavilion Concept



Plan View of Trail Around Pavilion

Pocket Pavilion with Restroom Concept

4.4 Access Management

4.4.1 Access Guidelines

To protect the safety of tail users and reduce potential conflicts with vehicles, access management guidelines have been developed for the ECRRT. These guidelines provide direction to Volusia and Brevard counties in planning for the location of future driveways not already identified in this Study documentation and preliminary design plan sets. Access management provisions identified herein should be considered for codification and incorporation into the land development regulations of both counties. The guidelines are not intended to be inconsistent with any existing access management ordinances and standards, and should be considered subordinate until final codification.

The Florida Department of Transportation developed the Trail Intersection Design Handbook in 2007 to assist local governments in addressing vehicular and bicycle/pedestrian conflict points at multi-use trail intersections. This Handbook provides guidance only, and is not intended to serve as a design template for all intersection applications. The Handbook notes "in assigning right-of-way, the comfort and convenience of the trail user, and the unique behavioral characteristics of the trail user and motorist alike must be taken into consideration". The preliminary plan set developed for the ECRRT assigns right-of-way per the following prioritization:

- Mid-Block crossing (Collector or higher classified road) – Trail is stop controlled
- US-1 Parallel Path crossing – Trail is stop controlled
- Minor paved street crossing (Local road) – Trail is stop controlled
- Minor paved driveway crossing – Driveway/Motorist is stop controlled
- Unpaved dirt road or driveway crossing – Motorist is stop controlled

Reducing potential conflict points along the regional trail is a primary objective of both Volusia and Brevard counties. Existing road and driveway crossings have been assigned a crossing type based on the above right-of-way assignments, as documented in the preliminary plans set. To guide and mitigate future safety of trail users and motorists at proposed trail intersections, the following access management guidelines are recommended.

a) All proposed crossings of the trail ***not*** identified with an easement on the Florida Department of Environmental Protection (FDEP) 2006 purchase survey must be approved by the FDEP or its assignee.

b) Approved crossings of unpaved roads or driveways will require a paved apron on each side of the trail crossing, to a minimum of 15 feet from the edge of trail. These paved connections and crossing must be approved by the permitting County and will require County permits.
c) Utility crossings of the trail must be buried. No open cuts of the trail will be allowed. No overhead crossings of utilities will be allowed.
d) One trail crossing will be allowed per individual parcel, unless otherwise identified as a crossing easement on the 2006 purchase survey. If a parcel is split by the trail, that parcel will be allowed one trail crossing. Additional crossings may be permitted by the County for parcels that have trail frontage of 1 mile or greater.
e) Parcels that have been or are subdivided after the FDEP 2006 purchase survey will be allowed one trail crossing consistent with the original parcel. The subdivided lots must include cross-access easements to provide access to the singular trail crossing.

These recommended access management guidelines should be evaluated for codification within the various local governments that will be charged with enforcement. They are not meant to conflict with existing local or state ordinances.

4.4.2 Street and Driveway Crossings

The trail corridor is intersected by 38 side streets, some of which are unpaved roads. In addition, there are another 72 driveway crossings, the majority of which are unpaved. As part of our preliminary plans, we have developed five signage and pavement marking cases that may be applied to these trail crossings. The crossing case types, which are notated on the preliminary plans sheets, are as follows:

- Type 1 – Mid-Block roadway crossing
- Type 2 – Offset roadway crossing (applies to the trail segment that is parallel and adjacent to US 1 in Brevard County – from Parker Street to Malinda Lane)
- Type 3 – Minor street crossing (paved)
- Type 4 – Driveway crossing (paved)
- Type 5 – Unpaved street or driveway crossing

It is recognized that modifications to these standard crossing cases will have to be evaluated for specific intersections and driveways during the final design phases. The crossing case signing and pavement marking plans are provided in Figure 4.4.1.

It is recommended that existing or future local roads with an average daily traffic volume of less than 4,000 would assign the right-of-way to the trail user, and the motorist would be stop controlled.

Figure 4.4.1 Signing and Pavement Marking Details (Sheet 1 of 2)

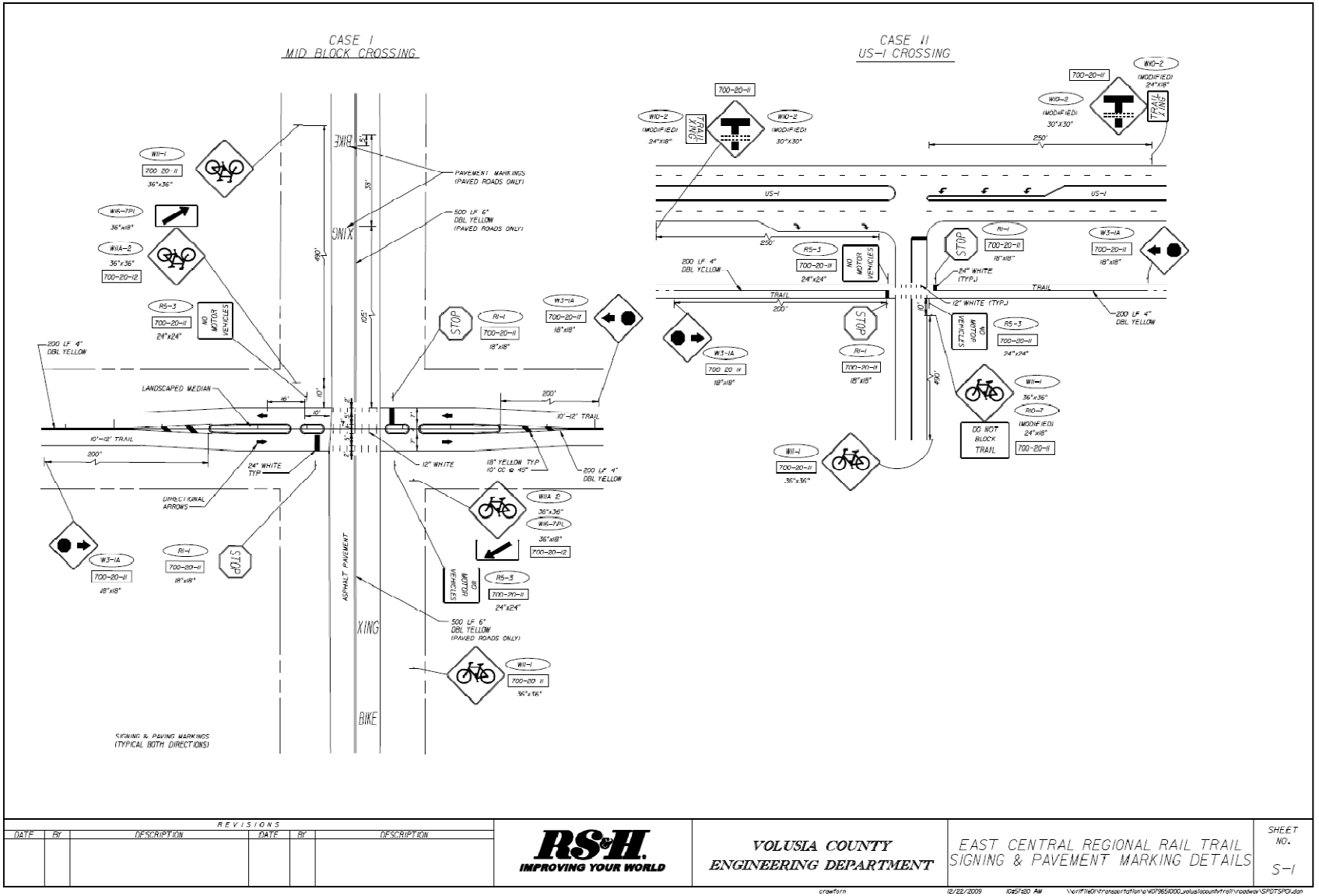
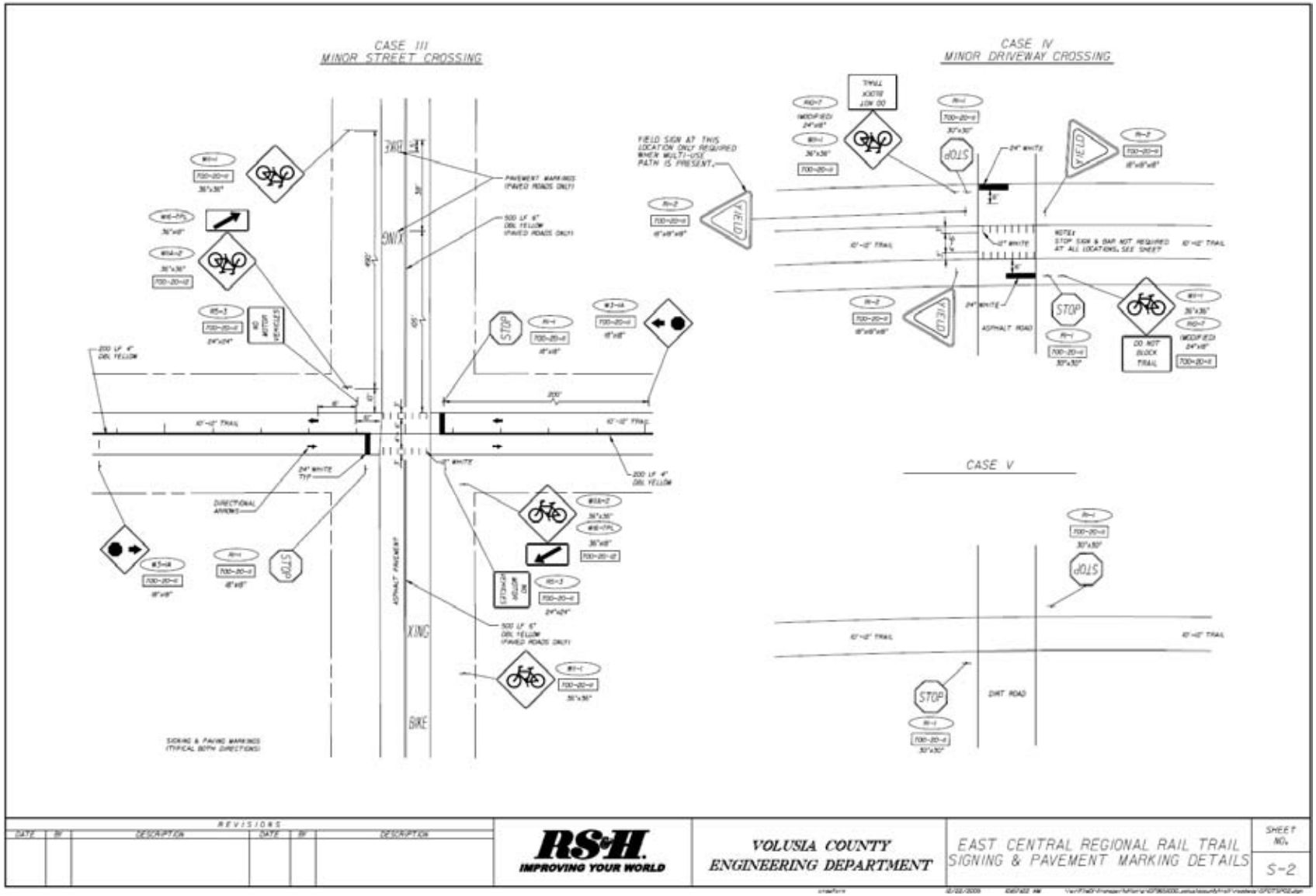


Figure 4.4.1 Signing and Pavement Marking Details (Sheet 2 of 2)



4.4.3 Motor Vehicle Access Prohibition

Portions of the abandoned rail corridor have been used to provide vehicular access for property owners, hunters, and recreational off-highway vehicle users. Public and privately-held lands within the study area have historically been used by all-terrain vehicles (ATVs). The more intensively used areas are accessed at the following locations:

- I-95 and SR 5A interchange (Brevard County)
- Blounts Ridge Road and Aurantia Road (Brevard County)
- Maytown Road west of I-95 (Volusia County).

By their very design, ATVs can access paved trails from practically anywhere along the corridor. Several State laws regarding the use of off-highway vehicles exist and are enforced for the operation, responsibility, and liability of ATV use, including the following:

- Ch. 375.314, F.S. – Damage to public lands;
- Ch. 261.08, F.S. – Repair, maintenance and rehabilitation of areas, trails and lands;
- Ch. 261.10, F.S. – Criteria for recreation areas and trails, limitations on liability;
- Ch. 62S-3002, F.A.C. – Operations, activities and recreation on lands under the management of the Office of Greenways and Trails.

An officer of the Volusia County Sheriff's Office informed the study team that ATV use is occurring on private property, and shares the concern that opening the trail may invite ATV use on the trail. Their office could increase enforcement of the County and State regulations if directed by the County Administrator. It was noted that as the corridor is State owned, officers of the Florida Game and Fish Commission are able to patrol the corridor and issue citations.

Discussions with officers of the Brevard County Sheriff's Office revealed that the area near Blount's Ridge and Aurantia Road are frequented by hunters and ATV users. Their officers currently do not have the proper off-road vehicles to patrol the trail corridor. However, officers are increasing the enforcement of ATV trespassing and violations in select areas of the County and are reviewing the need to enforce near the SR 5A & I-95 interchange area.

Both counties recognize that ATV users have been operating in this area for many years and need someplace to safely continue this recreational activity. Separate

trails and areas designated for ATV use may be investigated by Brevard and Volusia County staff.

4.5 Bridges and Structures

4.5.1 Structures and Design Assumptions for Low Level Crossings

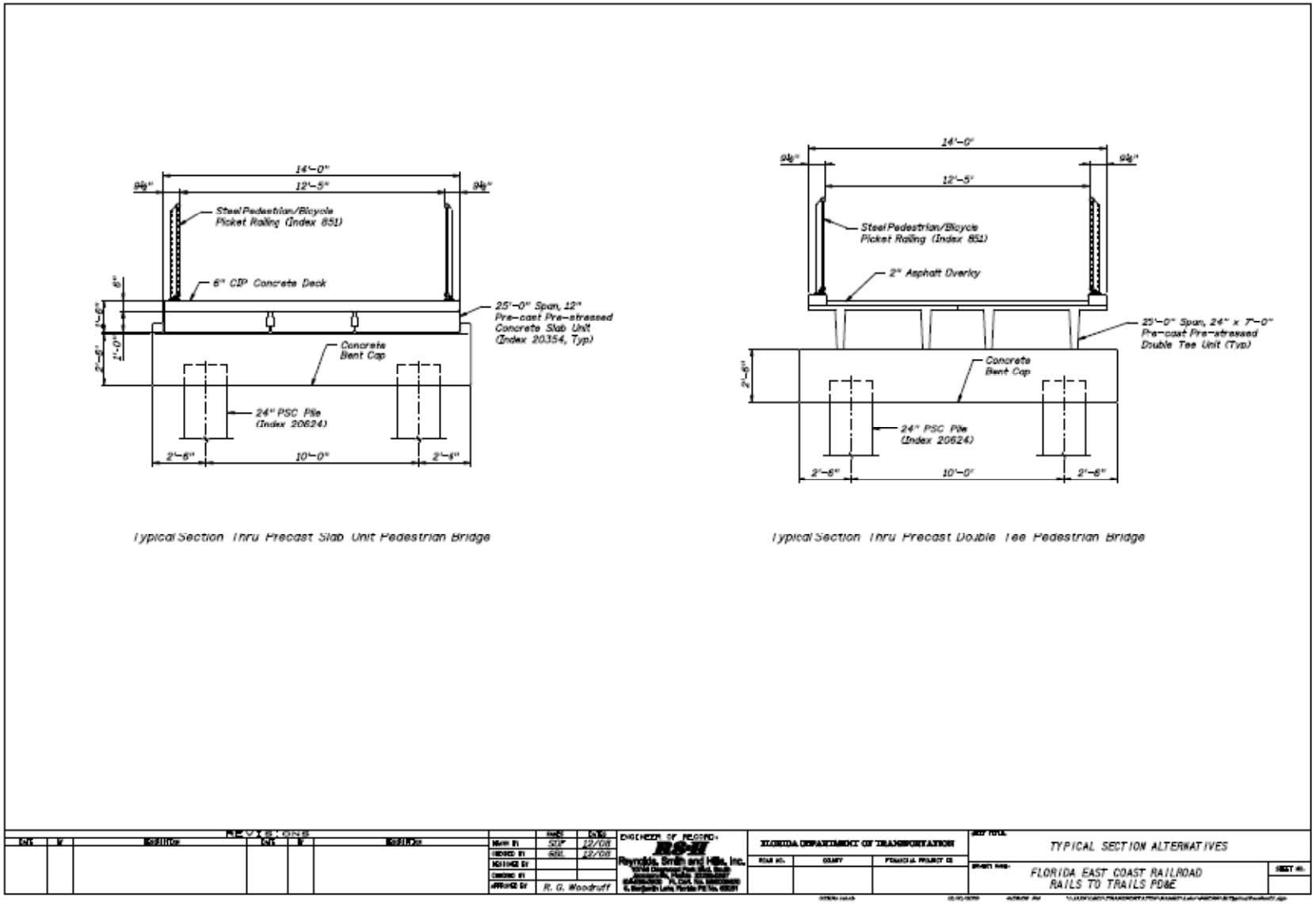
Seventeen sites along the proposed trail require a bridge to cross various geographical barriers, such as wetlands, canals, and creeks. Bridge lengths have been approximated for each site, and each bridge must maintain a minimum 12'-0" clear width. Two crossing alternatives have been developed: a precast, prestressed concrete flat slab structure; and a precast, prestressed double tee structure. Volusia and Brevard County staff stated that they did not want to consider timber structures at this point, as such crossings typically require additional maintenance and repair relative to precast structure options. A cost comparison is provided for each site. The cost estimates are approximate and should not be used to determine the actual cost of a bridge at any location. All costs provided include a 25% contingency to cover mobilization, miscellaneous details, and future cost escalation. Figure 4.5.1 provides a typical section for the two low level crossing bridge concepts.

It is noted that this PD&E Study did not establish design high water elevations for the bridges. The proposed structures will perform hydraulically in a manner equal to or greater than the previously installed structures, and backwater surface elevations are not expected to increase. As a result, there will be no significant adverse impacts on natural and beneficial floodplain values. 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 emergency evacuation routes. Therefore, it has been determined that any floodplain encroachment is not significant.

Alternative one is a precast, prestressed concrete slab unit pedestrian bridge. The bridge will be comprised of precast, prestressed concrete slab units with a 6" cast-in-place concrete topping spanning 25'-0". The spans will be supported by cast-in-place or precast pile bents with two 24" concrete piles per bent. Total superstructure depth is 18". The thin profile will allow the concrete structure to blend in with the surroundings. Additionally, the light weight components associated with this type of concrete bridge are well suited for top-down construction. The FDOT standard 54" steel pedestrian/ bicycle picket railing will be used on both sides of the bridge. Unit cost information for the concrete bridge was developed using the current material unit prices taken from the FDOT 12-month moving cost trend tables. The typical span unit cost is estimated at $141/SF for a concrete slab unit bridge.

Alternative two is a precast, prestressed concrete double tee unit pedestrian bridge. The bridge will be comprised of precast, prestressed concrete double tee units spanning 25'-0" with a 2" asphalt wearing surface. The spans will be supported by cast-in-place or precast pile bents with two 24" concrete piles per bent. Total superstructure depth is 26 1/2". While slightly deeper than the slab unit bridge, this alternative maintains a relatively thin profile and will blend in well with the surroundings. This type of construction is equally well suited for top-down construction. The FDOT standard 48" steel pedestrian/bicycle picket railing will be used in combination with a 6" concrete parapet, resulting in a total height of 54" on both sides of the bridge. Unit cost information for this alternative was developed using the current RS Means construction cost estimating publication. The typical span unit cost is estimated at $89/SF for a concrete double tee bridge.

Figure 4.5.1 – Low Level Crossing Bridge Typical Sections



4.5.2 Structures and Design Assumptions for High Level Crossings

There are three potential grade-separated highway crossings for the trail: SR 415 in Osteen, SR 406/Garden Street in Titusville, and SR 442 in Edgewater. A meeting was conducted with FDOT District 5 Traffic Operations staff on March 5, 2009 to discuss the Department's opinions regarding the trail crossings at these locations. The Department stated that all three crossings should ultimately require grade separated structures for the trail crossing over the existing roadway. Volusia County has already proposed a bridge at S.R. 415; however, specific design plans have not been developed at the time of this report.

The first crossing is over SR 415 in Osteen, FL. This crossing marks the beginning of the project. Concept plans for this crossing were previously developed by Horizon Engineering. The concept is for a prefabricated box truss crossing above SR 415. For purposes of this study, this concept is what was used for this crossing location. The other two crossings are over SR 442 in Edgewater, FL and over SR 406 in Titusville, FL. Both crossings are very similar in total elevated bridge length and main span length requirements. We have estimated the SR 442 crossing to have a main span length of 120 ft and a total length of 550 ft. The SR 406 crossing has been estimated to have a main span length of 100 ft and a total length of 500 ft. Both alternatives maintain a clear trail with of at least 12'-0". Due to the similarity between the two crossings, similar bridge type alternatives have been developed for both locations. At each location, two alternatives were analyzed for the main span over traffic, a prefabricated bow string truss and Florida I-beams with cast-in-place concrete deck. In all cases, the cost estimates assume that the approach spans consist of precast double tee beams founded on column style piers with buried footings. A cost comparison is provided for each site. The cost estimates are approximate and should not be used to determine the actual cost of a bridge at any location. All costs provided include a 25% contingency to cover mobilization, miscellaneous details, and future cost escalation.

Alternative one consists of prestressed, precast double tee beam approach spans and a prefabricated bow string style steel truss with concrete deck for the main span over traffic. The substructure will consist of column style piers with buried footings. The prefabricated truss offers a unique aesthetic to the structure without adding excessive costs. Through use of prefabrication, construction time can be greatly reduced and disruption to the travelling public minimized. Total superstructure depth for the main span unit can be adjusted during final design but should end up around 3'-0" thick. There is no need for additional railing and/or fencing with this option as the through truss provides similar protection for pedestrians. The approach spans will have FDOT standard 42" picket railing on both sides of the trail. Unit costs for the approach spans were derived using the cost data

developed from the low level crossings with a 35% increase for higher elevation and increased aesthetics of column piers with buried footings. The average unit cost for this alternative is $132/sf. All costs provided include a 25% contingency to cover mobilization, miscellaneous details, and future cost escalation.

Alternative two consists of prestressed, precast double tee beam approach spans and Florida I-Beams with a traditional cast-in-place concrete deck for the main span over traffic. The substructure will consist of column-style piers with buried footings. The Florida I-Beam main span does not have the same high level of aesthetics that alternative one has but offers simple, reliable construction and maintenance. Total superstructure depth for the main span unit will be 4'-9". The pedestrian railing will consist of a 2'-3" concrete parapet with vertical vinyl coated chain link fencing on top for the main span over traffic. The approach spans will have FDOT standard 42" picket railing on both sides of the trail.

Unit costs for the approach spans were derived using the cost data developed from the low level crossings with a 35% increase for higher elevation and increased aesthetics of column piers with buried footings. The average unit cost for this alternative is $133/sf. All costs provided include a 25% contingency to cover mobilization, miscellaneous details, and future cost escalation.

4.6 Permitting

4.6.1 Permitting

As a paved multi-use trail that would not allow motorized vehicles, the project would be exempt from a permit under St. Johns River Water Management District's (SJRWMD) Rule 40C-42.0225(6) F.A.C. However, based upon past experience and due to the size of the project, it is anticipated that an Environmental Resource Permit (ERP) will be required from SJRWMD. There are many wetlands and floodplains located within the project corridor. During the PD&E process, no wetlands or floodplains were impacted, as the existing rail bed and crossings were used. However, if final design changes result in floodplain or wetland impacts, an Individual or Nationwide Permit from the United States Army Corps of Engineers (USACE) may be required under Section 404. Approval from the United States Fish and Wildlife Services (USFWS) and the National Marine Fisheries Services (NMFS) will be coordinated through the USACE. The Efficient Transportation Decision Making (ETDM) for the project indicated that all of the waterways that the proposed trail cross are considered non-navigable by the United States Coast Guard, and therefore a USCG permit will not be required. In addition to the above, a NPDES permit will be required from the Florida Department of Environmental Protection (FDEP).

4.6.2 Drainage

The project is located within the SJRWMD's Middle and Upper St. Johns River Hydrologic Basins and the Indian River Lagoon Hydrologic Basin. Runoff from the existing rail bed is currently conveyed by existing swales to cross drains located along the project corridor. Because this is a multi-use trail that does not allow motorized vehicles, SJRWMD typically allows relaxed treatment requirements in which the required treatment volume is 1" over the proposed impervious area, or as much treatment volume as possible. By means of best management practices, SJRWMD will require that the final design demonstrates that the runoff characteristics are not significantly changed from pre-development to post-development. This may be accomplished by providing curve number calculations showing comparable curve numbers for pre- versus post-development, attenuating the 25-year, 24-hour event, or other means accepted by SJRWMD. There are several impaired water bodies located within the project limits. Since the stormwater management facilities discharge to impaired water bodies, nutrient removal requirements must be included. The nutrient removal shall be provided in accordance with the proposed Statewide Stormwater Treatment Rule under Chapter 62-347, FAC. The Statewide Stormwater Treatment Rule is currently being developed by the FDEP and Water Management Districts to address growing concerns about over-enrichment of Florida's surface waters, ground waters and springs. The treatment and nutrient removal described above will be accomplished with proposed treatment swales utilizing ditch blocks. The treatment swales will have a typical bottom width of 2 feet, with 1:4 side slopes. In addition, SJRWMD has special basin criteria for the Upper St. Johns River Hydrologic Basin, including a requirement that water may not be diverted from the Upper St. Johns River Hydrologic Basin into a coastal receiving water body. The proposed swale stormwater management systems shall meet all SJRWMD, FDOT and County design requirements.

The proposed trail crosses the Lake Ashby Canal. The canal is not a regulatory floodway, therefore, a FEMA No-Rise Certification is not required. Numerous floodplains exist throughout the project corridor, predominately Zone A, with Zone AE at Lake Ashby Canal. Please refer to Figure 3.12.3 for a floodplain map. If the final design results in any floodplain impact, 100-year floodplain compensation needs to be provided in accordance with SJRWMD rules. Additional drainage concerns include the possible presence of contaminants, of which arsenic is of particular concern. If contaminated soils are found within the project site, any

excavation required for the stormwater management systems will need to be properly disposed of, or the contaminated areas shall be capped. In addition, the City of Titusville owns well fields at the County line with an easement for a 16" watermain. Coordination will be needed to ensure that the proposed construction does not impact the watermain.

4.6.3 Air, Noise and Section 4(f) Issues

This project consists of the conversion of an abandoned railway corridor into a multi-use trail. Such projects have been determined to be Programmatic Categorical Exclusions by the Federal Highway Authority (FHWA) and the Florida Department of Transportation (FDOT). The proposed paved multi-use trail will accommodate various non-motorized users including pedestrians, joggers, bicyclists, skaters and equestrians (in designated segments). Motorized vehicles will be prohibited from the trail, unless otherwise granted permission by the local corridor management agency. There are projected to be no adverse air or noise impacts resulting from this project.

The former railway corridor has been purchased by the Florida Department of Environmental Protection (FDEP), specifically the Office of Greenways and Trails, for use as a multi-use trail. This corridor does not impact any existing Section 4(f) facilities.

4.7 Opinion of Probable Costs

Cost estimates have been prepared for each of the trail segments as identified in the ECRRT Trail Management Plan. These estimates are to be considered opinions of probable cost based upon the data and analysis available within this PD&E Study. The following table provides the cost estimates summaries. The detailed estimates by segment, including a five-year inflation adjusted total, are provided on the following pages. Cost estimates include allowances for survey, mobilization, maintenance of traffic, engineering and permitting, and a 20% contingency.

Table 4.7.1: Cost Estimate Summary by Segment

Seg. #	Length (Miles)	Description	Trail Est.	Bridge(s) Est.	Total Est.
1	2.7	SR415-Guise	$636,200	$1,130,519	$1,766,719
2	3.5	Guise-Gobblers Lodge	$693,489	$1,258,460	$1,951,949
3	7.0	Gobblers Lodge-Maytown	$1,582,216	$3,071,390	$4,653,606
4	1.3	Maytown-Countyline	$392,280	$0	$392,280
5	5.6	Countyline-Aurantia	$1,297,410	$442,330	$1,739,740
6	7.2	Aurantia-Kingman	$1,487,886	$186,900	$1,674,786
7	2.0	Kingman-Canaveral	$455,436	$0	$455,436
8	8.6	Maytown-Volco	$2,148,293	$348,880	$2,497,173
9	7.0	Volco-Park	$1,534,963	$398,720	$1,933,683

Table 4.7.2a: Segment 1 Cost Estimate

Segment 1: SR 415 to Guise Road

PAY ITEM NO.	ITEM DESCRIPTION	UNIT	BASE QTY	BASE UNIT COST	TOTAL COST
	MULTI-USE TRAIL				
104-7	SEDIMENT CONTAINMENT SYSTEM	EA	1	$ 7,463.16	$ 7,463.16
104-13-1	STAKED SILT FENCE	LF	14200	$ 0.77	$ 10,934.00
110-1-1	CLEARING AND GRUBBING	AC	7.03	$ 7,311.77	$ 51,416.37
120-1	REGULAR EXCAVATION	CY	3743.837	$ 2.85	$ 10,669.93
160-4	STABILIZATION, TYPE "B" (12")(MIN LBR 40)	SY	26002.533	$ 2.08	$ 54,085.27
285-704	BASE, OPTIONAL GROUP 4	SY	20585.340	$ 5.81	$ 119,600.82
334-1-12	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	TN	1340.750	$ 67.11	$ 89,977.73
515-2-202	PEDESTRIAN BICYCLE RAILING (54" PICKET)	LF	72.000	$ 121.64	$ 8,758.08
522-2	CONCRETE SIDEWALK, 6" THICK	SY	687	$ 34.04	$ 23,385.48
570-1-2	PERFORMANCE TURF, SOD	SY	914.904	$ 1.80	$ 1,646.83
700-20-11	SIGN, SINGLE POST (LESS THAN 12 SF)	AS	120.000	$ 268.04	$ 32,164.80
710-11-123	PAINTED PAVT MARK, WHITE SOLID, 12"	LF	616.000	$ 0.79	$ 486.64
710-11-170	PAINTED PAVT MARK, WHITE ARROWS	EA	16.000	$ 23.53	$ 376.48
711-11-125	24" WHITE SOLID STRIPE (THERMOPLASTIC)	LF	336.000	$ 4.46	$ 1,498.56
711-11-160	12" WHITE MESSAGE (THERMOPLASTIC)	EA	8.000	$ 125.38	$ 1,003.04
				Subtotal	**$ 413,467.19**
	RIGHT-OF-WAY & ASSOCIATED COSTS	LS			$ 10,000.00
101-1	MOBILIZATION	LS	1	10.00%	$ 41,346.72
102-1	MAINTENANCE OF TRAFFIC	LS	1	5.00%	$ 20,673.36
N/A	ENGINEERING AND DESIGN	LS	1	10.00%	$ 41,346.72
N/A	SURVEY	LS	1	$ 5,000.00	$ 5,000.00
N/A	PERMITTING	LS	1		$ 1,000.00
N/A	CONTINGENCY	LS	1	25.00%	$ 103,366.80
				Subtotal	**$ 636,200.79**
	BRIDGES				
	Low Level Bridges in Trail Segment		*0*		
	Flat Slab Bridge Option Total				$ -
	Double-T Bridge Option Total				$ -
	High Level Bridge				
	SR 415 Pedestrian Overpass	EA		$ 1,130,519.00	**$ 1,130,519.00**
				TOTAL W/ LOWER COST BRIDGE OPTION	**$ 1,766,719.79**

FDOT Inflation-Adjusted Estimate		*Inflation Factor*	*PDC Multiplier*	***Adjusted Cost Estimate***
Year 1 Inflation-adjusted Estimate (2011)		3.3%	1.033	**$ 1,825,021.54**
Year 2 Inflation-adjusted Estimate (2012)		3.3%	1.067	**$ 1,885,090.02**
Year 3 Inflation-adjusted Estimate (2013)		3.3%	1.102	**$ 1,946,925.21**
Year 4 Inflation-adjusted Estimate (2014)		3.3%	1.139	**$ 2,012,293.84**
Year 5 Inflation-adjusted Estimate (2015)		3.3%	1.176	**$ 2,077,662.48**

Table 4.7.2b: Segment 2 Cost Estimate

Segment 2: Guise Road to Gobblers Lodge Road

PAY ITEM NO.	ITEM DESCRIPTION	UNIT	BASE QTY	BASE UNIT COST	TOTAL COST
	MULTI-USE TRAIL				
104-7	SEDIMENT CONTAINMENT SYSTEM	EA	1	$ 7,463.16	$ 7,463.16
104-13-1	STAKED SILT FENCE	LF	18600	$ 0.77	$ 14,322.00
110-1-1	CLEARING AND GRUBBING	AC	8.42	$ 7,311.77	$ 61,535.86
120-1	REGULAR EXCAVATION	CY	4480.678	$ 2.85	$ 12,769.93
160-4	STABILIZATION, TYPE "B" (12")(MIN LBR 40)	SY	31810.317	$ 2.08	$ 66,165.46
285-704	BASE, OPTIONAL GROUP 4	SY	24851.262	$ 5.81	$ 144,385.83
334-1-12	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	TN	1618.580	$ 67.11	$ 108,622.90
515-2-202	PEDESTRIAN BICYCLE RAILING (54" PICKET)	LF	36.000	$ 121.64	$ 4,379.04
522-2	CONCRETE SIDEWALK, 6" THICK	SY	25	$ 34.04	$ 851.00
570-1-2	PERFORMANCE TURF, SOD	SY	1104.501	$ 1.80	$ 1,988.10
700-20-11	SIGN, SINGLE POST (LESS THAN 12 SF)	AS	100.000	$ 268.04	$ 26,804.00
710-11-123	PAINTED PAVT MARK, WHITE SOLID, 12"	LF	504.000	$ 0.79	$ 398.16
710-11-170	PAINTED PAVT MARK, WHITE ARROWS	EA	8.000	$ 23.53	$ 188.24
711-11-125	24" WHITE SOLID STRIPE (THERMOPLASTIC)	LF	288.000	$ 4.46	$ 1,284.48
711-11-160	12" WHITE MESSAGE (THERMOPLASTIC)	EA	4.000	$ 125.38	$ 501.52
				Subtotal	**$ 451,659.69**
	RIGHT-OF-WAY & ASSOCIATED COSTS	LS			$ 10,000.00
101-1	MOBILIZATION	LS	1	10.00%	$ 45,165.97
102-1	MAINTENANCE OF TRAFFIC	LS	1	5.00%	$ 22,582.98
N/A	ENGINEERING AND DESIGN	LS	1	10.00%	$ 45,165.97
N/A	SURVEY	LS	1	$ 5,000.00	$ 5,000.00
N/A	PERMITTING	LS	1		$ 1,000.00
N/A	CONTINGENCY	LS	1	25.00%	$ 112,914.92
				Subtotal	**$ 693,489.53**
	BRIDGES				
	Low Level Bridges in Trail Segment		***2***		
	Flat Slab Bridge Option Total				$ 1,768,191.89
	Double-T Bridge Option Total				$ 1,258,460.00
				TOTAL W/ LOWER COST BRIDGE OPTION	**$ 1,951,949.53**

FDOT Inflation-Adjusted Estimate		*Inflation Factor*	*PDC Multiplier*	***Adjusted Cost Estimate***
Year 1 Inflation-adjusted Estimate (2011)		3.3%	1.033	**$ 2,016,363.86**
Year 2 Inflation-adjusted Estimate (2012)		3.3%	1.067	**$ 2,082,730.15**
Year 3 Inflation-adjusted Estimate (2013)		3.3%	1.102	**$ 2,151,048.38**
Year 4 Inflation-adjusted Estimate (2014)		3.3%	1.139	**$ 2,223,270.51**
Year 5 Inflation-adjusted Estimate (2015)		3.3%	1.176	**$ 2,295,492.65**

Table 4.7.2c: Segment 3 Cost Estimate

Segment 3: Gobblers Lodge Rd to Maytown Spur

PAY ITEM NO.	ITEM DESCRIPTION	UNIT	BASE QTY	BASE UNIT COST	TOTAL COST
	MULTI-USE TRAIL				
104-7	SEDIMENT CONTAINMENT SYSTEM	EA	1	$ 7,463.16	$ 7,463.16
104 13 1	STAKED SILT FENCE	LF	37000	$ 0.77	$ 28,490.00
110-1-1	CLEARING AND GRUBBING	AC	30.14	$ 7,311.77	$ 220,398.68
120-1	REGULAR EXCAVATION	CY	16048.133	$ 2.85	$ 45,737.18
160-4	STABILIZATION, TYPE "B" (12")(MIN LBR 40)	SY	107160.150	$ 2.08	$ 222,893.11
285-704	BASE, OPTIONAL GROUP 4	SY	47027.852	$ 5.81	$ 273,231.82
334-1-12	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	TN	3063.010	$ 67.11	$ 205,558.60
515-2-202	PEDESTRIAN BICYCLE RAILING (54" PICKET)	LF	18.000	$ 121.64	$ 2,189.52
522-2	CONCRETE SIDEWALK, 6" THICK	SY	50	$ 34.04	$ 1,702.00
570-1-2	PERFORMANCE TURF, SOD	SY	2090.127	$ 1.80	$ 3,762.23
700-20-11	SIGN, SINGLE POST (LESS THAN 12 SF)	AS	138.000	$ 268.04	$ 36,989.52
710-11-123	PAINTED PAVT MARK, WHITE SOLID, 12"	LF	714.000	$ 0.79	$ 564.06
710-11-170	PAINTED PAVT MARK, WHITE ARROWS	EA	4.000	$ 23.53	$ 94.12
711-11-125	24" WHITE SOLID STRIPE (THERMOPLASTIC)	LF	408.000	$ 4.46	$ 1,819.68
711-11-160	12" WHITE MESSAGE (THERMOPLASTIC)	EA	2.000	$ 125.38	$ 250.76
				Subtotal	**$ 1,051,144.44**
	RIGHT-OF-WAY & ASSOCIATED COSTS	LS			$ -
101-1	MOBILIZATION	LS	1	10.00%	$ 105,114.44
102-1	MAINTENANCE OF TRAFFIC	LS	1	5.00%	$ 52,557.22
N/A	ENGINEERING AND DESIGN	LS	1	10.00%	$ 105,114.44
N/A	SURVEY	LS	1	$ 5,000.00	$ 5,000.00
N/A	PERMITTING	LS	1		$ 500.00
N/A	CONTINGENCY	LS	1	25.00%	$ 262,786.11
				Subtotal	**$ 1,582,216.67**
	BRIDGES				
	Low Level Bridges in Trail Segment		***6***		
	Flat Slab Bridge Option Total				$ 4,315,438.62
	Double-T Bridge Option Total				$ 3,071,390.00

TOTAL W/ LOWER COST BRIDGE OPTION	**$ 4,653,606.67**

FDOT Inflation-Adjusted Estimate		*Inflation Factor*	*PDC Multiplier*	***Adjusted Cost Estimate***
Year 1 Inflation-adjusted Estimate (2011)		3.3%	1.033	**$ 4,807,175.69**
Year 2 Inflation-adjusted Estimate (2012)		3.3%	1.067	**$ 4,965,398.31**
Year 3 Inflation-adjusted Estimate (2013)		3.3%	1.102	**$ 5,128,274.55**
Year 4 Inflation-adjusted Estimate (2014)		3.3%	1.139	**$ 5,300,457.99**
Year 5 Inflation-adjusted Estimate (2015)		3.3%	1.176	**$ 5,472,641.44**

Table 4.7.2d: Segment 4 Cost Estimate

Segment 4: Maytown Spur to Brevard County Line

PAY ITEM NO.	ITEM DESCRIPTION	UNIT	BASE QTY	BASE UNIT COST	TOTAL COST
	MULTI-USE TRAIL				
104-7	SEDIMENT CONTAINMENT SYSTEM	EA	1	$ 7,463.16	$ 7,463.16
104-13-1	STAKED SILT FENCE	LF	7100	$ 0.77	$ 5,467.00
110-1-1	CLEARING AND GRUBBING	AC	6.87	$ 7,311.77	$ 50,253.80
120-1	REGULAR EXCAVATION	CY	3659.185	$ 2.85	$ 10,428.68
160-4	STABILIZATION, TYPE "B" (12")(MIN LBR 40)	SY	24417.417	$ 2.08	$ 50,788.23
285-704	BASE, OPTIONAL GROUP 4	SY	11670.012	$ 5.81	$ 67,802.77
334 1 12	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	TN	760.080	$ 67.11	$ 51,008.97
515-2-202	PEDESTRIAN BICYCLE RAILING (54" PICKET)	LF	0.000	$ 121.64	$ -
522-2	CONCRETE SIDEWALK, 6" THICK	SY	0	$ 34.04	$ -
570-1-2	PERFORMANCE TURF, SOD	SY	518.667	$ 1.80	$ 933.60
700-20-11	SIGN, SINGLE POST (LESS THAN 12 SF)	AS	48.000	$ 268.04	$ 12,865.92
710-11-123	PAINTED PAVT MARK, WHITE SOLID, 12"	LF	252.000	$ 0.79	$ 199.08
710-11-170	PAINTED PAVT MARK, WHITE ARROWS	EA	0.000	$ 23.53	$ -
711 11 125	24" WHITE SOLID STRIPE (THERMOPLASTIC)	LF	144.000	$ 4.46	$ 642.24
711-11-160	12" WHITE MESSAGE (THERMOPLASTIC)	EA	0.000	$ 125.38	$ -
				Subtotal	**$ 257,853.44**
	RIGHT-OF-WAY & ASSOCIATED COSTS	LS			$ -
101-1	MOBILIZATION	LS	1	10.00%	$ 25,785.34
102-1	MAINTENANCE OF TRAFFIC	LS	1	5.00%	$ 12,892.67
N/A	ENGINEERING AND DESIGN	LS	1	10.00%	$ 25,785.34
N/A	SURVEY	LS	1	$ 5,000.00	$ 5,000.00
N/A	PERMITTING	LS	1		$ 500.00
N/A	CONTINGENCY	LS	1	25.00%	$ 64,463.36
				Subtotal	**$ 392,280.16**
	BRIDGES				
	Low Level Bridges in Trail Segment		***0***		
	Flat Slab Bridge Option Total				$ -
	Double-T Bridge Option Total				$ -
				TOTAL W/ LOWER COST BRIDGE OPTION	**$ 392,280.16**

FDOT Inflation-Adjusted Estimate		*Inflation Factor*	*PDC Multiplier*	***Adjusted Cost Estimate***
Year 1 Inflation-adjusted Estimate (2011)		3.3%	1.033	**$ 405,225.40**
Year 2 Inflation-adjusted Estimate (2012)		3.3%	1.067	**$ 418,562.93**
Year 3 Inflation-adjusted Estimate (2013)		3.3%	1.102	**$ 432,292.73**
Year 4 Inflation-adjusted Estimate (2014)		3.3%	1.139	**$ 446,807.10**
Year 5 Inflation-adjusted Estimate (2015)		3.3%	1.176	**$ 461,321.46**

Table 4.7.2e: Segment 5 Cost Estimate

Segment 5: County Line to Aurantia Road

PAY ITEM NO.	ITEM DESCRIPTION	UNIT	BASE QTY	BASE UNIT COST	TOTAL COST
	MULTI-USE TRAIL				
104-7	SEDIMENT CONTAINMENT SYSTEM	FA	1	$ 7,463.16	$ 7,463.16
104-13-1	STAKED SILT FENCE	LF	29500	$ 0.77	$ 22,715.00
110-1-1	CLEARING AND GRUBBING	AC	22.20	$ 7,311.77	$ 162,306.67
120-1	REGULAR EXCAVATION	CY	11818.215	$ 2.85	$ 33,681.91
160-4	STABILIZATION, TYPE "B" (12")(MIN LBR 40)	SY	80042.067	$ 2.08	$ 166,487.50
285-704	BASE, OPTIONAL GROUP 4	SY	42926.913	$ 5.81	$ 249,405.36
334-1-12	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	TN	2795.870	$ 67.11	$ 187,630.84
515-2-202	PEDESTRIAN BICYCLE RAILING (54" PICKET)	LF	18.000	$ 121.64	$ 2,189.52
522-2	CONCRETE SIDEWALK, 6" THICK	SY	25	$ 34.04	$ 851.00
570-1-2	PERFORMANCE TURF, SOD	SY	1907.863	$ 1.80	$ 3,434.15
700-20-11	SIGN, SINGLE POST (LESS THAN 12 SF)	AS	74.000	$ 268.04	$ 19,834.96
710-11-123	PAINTED PAVT MARK, WHITE SOLID, 12"	LF	378.000	$ 0.79	$ 298.62
710-11-170	PAINTED PAVT MARK, WHITE ARROWS	EA	4.000	$ 23.53	$ 94.12
711-11-125	24" WHITE SOLID STRIPE (THERMOPLASTIC)	LF	216.000	$ 4.46	$ 963.36
711-11-160	12" WHITE MESSAGE (THERMOPLASTIC)	EA	2.000	$ 125.38	$ 250.76
				Subtotal	**$ 857,606.94**
	RIGHT-OF-WAY & ASSOCIATED COSTS	LS			$ 5,000.00
101-1	MOBILIZATION	LS	1	10.00%	$ 85,760.69
102-1	MAINTENANCE OF TRAFFIC	LS	1	5.00%	$ 42,880.35
N/A	ENGINEERING AND DESIGN	LS	1	10.00%	$ 85,760.69
N/A	SURVEY	LS	1	$ 5,000.00	$ 5,000.00
N/A	PERMITTING	LS	1		$ 1,000.00
N/A	CONTINGENCY	LS	1	25.00%	$ 214,401.73
				Subtotal	**$ 1,297,410.40**
	BRIDGES				
	Low Level Bridges in Trail Segment		*4*		
	Flat Slab Bridge Option Total				$ 621,493.19
	Double-T Bridge Option Total				$ 442,330.00
				TOTAL W/ LOWER COST BRIDGE OPTION	**$ 1,739,740.40**

FDOT Inflation-Adjusted Estimate		*Inflation Factor*	*PDC Multiplier*	*Adjusted Cost Estimate*
Year 1 Inflation-adjusted Estimate (2011)		3.3%	1.033	**$ 1,797,151.84**
Year 2 Inflation-adjusted Estimate (2012)		3.3%	1.067	**$ 1,856,303.01**
Year 3 Inflation-adjusted Estimate (2013)		3.3%	1.102	**$ 1,917,193.92**
Year 4 Inflation-adjusted Estimate (2014)		3.3%	1.139	**$ 1,981,564.32**
Year 5 Inflation-adjusted Estimate (2015)		3.3%	1.176	**$ 2,045,934.71**

Table 4.7.2f: Segment 6 Cost Estimate

Segment 6: Aurantia Road to Kingman Road

PAY ITEM NO.	ITEM DESCRIPTION	UNIT	BASE QTY	BASE UNIT COST	TOTAL COST
	MULTI USE TRAIL				
104-7	SEDIMENT CONTAINMENT SYSTEM	EA	1	$ 7,463.16	$ 7,463.16
104-13-1	STAKED SILT FENCE	LF	37900	$ 0.77	$ 29,183.00
110-1-1	CLEARING AND GRUBBING	AC	17.39	$ 7,311.77	$ 127,144.37
120-1	REGULAR EXCAVATION	CY	9257.904	$ 2.85	$ 26,385.03
160-4	STABILIZATION, TYPE "B" (12")(MIN LBR 40)	SY	66589.467	$ 2.08	$ 138,506.09
285-704	BASE, OPTIONAL GROUP 4	SY	52716.663	$ 5.81	$ 306,283.81
334-1-12	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	TN	3433.510	$ 67.11	$ 230,422.86
515-2-202	PEDESTRIAN BICYCLE RAILING (54" PICKET)	LF	216.000	$ 121.64	$ 26,274.24
522-2	CONCRETE SIDEWALK, 6" THICK	SY	1312	$ 34.04	$ 44,660.48
570-1-2	PERFORMANCE TURF, SOD	SY	2342.963	$ 1.80	$ 4,217.33
700-20-11	SIGN, SINGLE POST (LESS THAN 12 SF)	AS	160.000	$ 268.04	$ 42,886.40
710-11-123	PAINTED PAVT MARK, WHITE SOLID, 12"	LF	756.000	$ 0.79	$ 597.24
710-11-170	PAINTED PAVT MARK, WHITE ARROWS	EA	28.000	$ 23.53	$ 658.84
711-11-125	24" WHITE SOLID STRIPE (THERMOPLASTIC)	LF	408.000	$ 4.46	$ 1,819.68
711-11-160	12" WHITE MESSAGE (THERMOPLASTIC)	EA	14.000	$ 125.38	$ 1,755.32
				Subtotal	**$ 988,257.85**
	RIGHT-OF-WAY & ASSOCIATED COSTS	LS			$ -
101-1	MOBILIZATION	LS	1	10.00%	$ 98,825.78
102-1	MAINTENANCE OF TRAFFIC	LS	1	5.00%	$ 49,412.89
N/A	ENGINEERING AND DESIGN	LS	1	10.00%	$ 98,825.78
N/A	SURVEY	LS	1	$ 5,000.00	$ 5,000.00
N/A	PERMITTING	LS	1		$ 500.00
N/A	CONTINGENCY	LS	1	25.00%	$ 247,064.46
				Subtotal	**$ 1,487,886.77**
	BRIDGES				
	Low Level Bridges in Trail Segment		*2*		
	Flat Slab Bridge Option Total				$ 262,602.76
	Double-T Bridge Option Total				$ 186,900.00
				TOTAL W/ LOWER COST BRIDGE OPTION	**$ 1,674,786.77**

FDOT Inflation-Adjusted Estimate		*Inflation Factor*	*PDC Multiplier*	***Adjusted Cost Estimate***
Year 1 Inflation-adjusted Estimate (2011)		3.3%	1.033	**$ 1,730,054.73**
Year 2 Inflation-adjusted Estimate (2012)		3.3%	1.067	**$ 1,786,997.49**
Year 3 Inflation-adjusted Estimate (2013)		3.3%	1.102	**$ 1,845,615.02**
Year 4 Inflation-adjusted Estimate (2014)		3.3%	1.139	**$ 1,907,582.13**
Year 5 Inflation-adjusted Estimate (2015)		3.3%	1.176	**$ 1,969,549.24**

Table 4.7.2g: Segment 7 Cost Estimate

Segment 7: Kingman Road to Canaveral Ave

PAY ITEM NO.	ITEM DESCRIPTION	UNIT	BASE QTY	BASE UNIT COST	TOTAL COST
	MULTI-USE TRAIL				
104-7	SEDIMENT CONTAINMENT SYSTEM	EA	1	$ 7,463.16	$ 7,463.16
104-13-1	STAKED SILT FENCE	LF	10800	$ 0.77	$ 8,316.00
110-1-1	CLEARING AND GRUBBING	AC	4.92	$ 7,311.77	$ 36,003.16
120-1	REGULAR EXCAVATION	CY	2621.538	$ 2.85	$ 7,471.38
160-4	STABILIZATION, TYPE "B" (12")(MIN LBR 40)	SY	18956.933	$ 2.08	$ 39,430.42
285-704	BASE, OPTIONAL GROUP 4	SY	15007.573	$ 5.81	$ 87,194.00
334-1-12	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	TN	977.470	$ 67.11	$ 65,598.01
515-2-202	PEDESTRIAN BICYCLE RAILING (54" PICKET)	LF	144.000	$ 121.64	$ 17,516.16
522-2	CONCRETE SIDEWALK, 6" THICK	SY	114	$ 34.04	$ 3,880.56
570-1-2	PERFORMANCE TURF, SOD	SY	667.003	$ 1.80	$ 1,200.61
700-20-11	SIGN, SINGLE POST (LESS THAN 12 SF)	AS	88.000	$ 268.04	$ 23,587.52
710-11-123	PAINTED PAVT MARK, WHITE SOLID, 12"	LF	378.000	$ 0.79	$ 298.62
710-11-170	PAINTED PAVT MARK, WHITE ARROWS	EA	12.000	$ 23.53	$ 282.36
711-11-125	24" WHITE SOLID STRIPE (THERMOPLASTIC)	LF	216.000	$ 4.46	$ 963.36
711-11-160	12" WHITE MESSAGE (THERMOPLASTIC)	EA	6.000	$ 125.38	$ 752.28
				Subtotal	**$ 299,957.59**
	RIGHT-OF-WAY & ASSOCIATED COSTS	LS			$ -
101-1	MOBILIZATION	LS	1	10.00%	$ 29,995.76
102-1	MAINTENANCE OF TRAFFIC	LS	1	5.00%	$ 14,997.88
N/A	ENGINEERING AND DESIGN	LS	1	10.00%	$ 29,995.76
N/A	SURVEY	LS	1	$ 5,000.00	$ 5,000.00
N/A	PERMITTING	LS	1		$ 500.00
N/A	CONTINGENCY	LS	1	25.00%	$ 74,989.40
				Subtotal	**$ 455,436.39**
	BRIDGES				
	Low Level Bridges in Trail Segment		***0***		
	Flat Slab Bridge Option Total				$
	Double-T Bridge Option Total				$ -
				TOTAL W/ LOWER COST BRIDGE OPTION	**$ 455,436.39**

FDOT Inflation-Adjusted Estimate		*Inflation Factor*	*PDC Multiplier*	***Adjusted Cost Estimate***
Year 1 Inflation-adjusted Estimate (2011)		3.3%	1.033	**$ 470,465.79**
Year 2 Inflation-adjusted Estimate (2012)		3.3%	1.067	**$ 485,950.63**
Year 3 Inflation-adjusted Estimate (2013)		3.3%	1.102	**$ 501,890.90**
Year 4 Inflation-adjusted Estimate (2014)		3.3%	1.139	**$ 518,742.05**
Year 5 Inflation-adjusted Estimate (2015)		3.3%	1.176	**$ 535,593.20**

Table 4.7.2h: Segment 8 Cost Estimate

Segment 8: Maytown Spur to Volco Road

PAY ITEM NO.	ITEM DESCRIPTION	UNIT	BASE QTY	BASE UNIT COST	TOTAL COST
	MULTI-USE TRAIL				
104-7	SEDIMENT CONTAINMENT SYSTEM	EA	1	$ 7,463.16	$ 7,463.16
104-13-1	STAKED SILT FENCE	LF	45600	$ 0.77	$ 35,112.00
110-1-1	CLEARING AND GRUBBING	AC	40.10	$ 7,311.77	$ 293,172.73
120-1	REGULAR EXCAVATION	CY	21347.110	$ 2.85	$ 60,839.26
160-4	STABILIZATION, TYPE "B" (12")(MIN LBR 40)	SY	142220.417	$ 2.08	$ 295,818.47
285-704	BASE, OPTIONAL GROUP 4	SY	64862.097	$ 5.81	$ 376,848.78
334-1-12	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	TN	4224.560	$ 67.11	$ 283,510.22
515-2-202	PEDESTRIAN BICYCLE RAILING (54" PICKET)	LF	54.000	$ 121.64	$ 6,568.56
522-2	CONCRETE SIDEWALK, 6" THICK	SY	393	$ 34.04	$ 13,377.72
570-1-2	PERFORMANCE TURF, SOD	SY	2882.760	$ 1.80	$ 5,188.97
700-20-11	SIGN, SINGLE POST (LESS THAN 12 SF)	AS	174.000	$ 268.04	$ 46,638.96
710-11-123	PAINTED PAVT MARK, WHITE SOLID, 12"	LF	896.000	$ 0.79	$ 707.84
710-11-170	PAINTED PAVT MARK, WHITE ARROWS	EA	12.000	$ 23.53	$ 282.36
711-11-125	24" WHITE SOLID STRIPE (THERMOPLASTIC)	LF	504.000	$ 4.46	$ 2,247.84
711-11-160	12" WHITE MESSAGE (THERMOPLASTIC)	EA	6.000	$ 125.38	$ 752.28
				Subtotal	**$ 1,428,529.16**
	RIGHT OF WAY & ASSOCIATED COSTS	LS			$
101-1	MOBILIZATION	LS	1	10.00%	$ 142,852.92
102-1	MAINTENANCE OF TRAFFIC	LS	1	5.00%	$ 71,426.46
N/A	ENGINEERING AND DESIGN	LS	1	10.00%	$ 142,852.92
N/A	SURVEY	LS	1	$ 5,000.00	$ 5,000.00
N/A	PERMITTING	LS	1		$ 500.00
N/A	CONTINGENCY	LS	1	25.00%	$ 357,132.29
				Subtotal	**$ 2,148,293.73**
	BRIDGES				
	Low Level Bridges in Trail Segment		***1***		
	Flat Slab Bridge Option Total				$ 490,191.81
	Double-T Bridge Option Total				$ 348,880.00
				TOTAL W/ LOWER COST BRIDGE OPTION	**$ 2,497,173.73**

FDOT Inflation-Adjusted Estimate		*Inflation Factor*	*PDC Multiplier*	***Adjusted Cost Estimate***
Year 1 Inflation-adjusted Estimate (2011)		3.3%	1.033	**$ 2,579,580.47**
Year 2 Inflation-adjusted Estimate (2012)		3.3%	1.067	**$ 2,664,484.37**
Year 3 Inflation-adjusted Estimate (2013)		3.3%	1.102	**$ 2,751,885.45**
Year 4 Inflation-adjusted Estimate (2014)		3.3%	1.139	**$ 2,844,280.88**
Year 5 Inflation-adjusted Estimate (2015)		3.3%	1.176	**$ 2,936,676.31**

Table 4.7.2i: Segment 9 Cost Estimate

Segment 9: Volco Road to Dale Street

PAY ITEM NO.	ITEM DESCRIPTION	UNIT	BASE QTY	BASE UNIT COST	TOTAL COST
	MULTI-USE TRAIL				
104-7	SEDIMENT CONTAINMENT SYSTEM	EA	1	$ 7,463.16	$ 7,463.16
104-13-1	STAKED SILT FENCE	LF	36800	$ 0.77	$ 28,336.00
110-1-1	CLEARING AND GRUBBING	AC	23.18	$ 7,311.77	$ 169,508.76
120-1	REGULAR EXCAVATION	CY	12342.629	$ 2.85	$ 35,176.49
160-4	STABILIZATION, TYPE "B" (12")(MIN LBR 40)	SY	84723.467	$ 2.08	$ 176,224.81
285-704	BASE, OPTIONAL GROUP 4	SY	52189.097	$ 5.81	$ 303,218.65
334-1-12	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	TN	3399.130	$ 67.11	$ 228,115.61
515-2-202	PEDESTRIAN BICYCLE RAILING (54" PICKET)	LF	54.000	$ 121.64	$ 6,568.56
522-2	CONCRETE SIDEWALK, 6" THICK	SY	393	$ 34.04	$ 13,377.72
570-1-2	PERFORMANCE TURF, SOD	SY	20875.639	$ 1.80	$ 37,576.15
700-20-11	SIGN, SINGLE POST (LESS THAN 12 SF)	AS	46.000	$ 268.04	$ 12,329.84
710-11-123	PAINTED PAVT MARK, WHITE SOLID, 12"	LF	224.000	$ 0.79	$ 176.96
710-11-170	PAINTED PAVT MARK, WHITE ARROWS	EA	12.000	$ 23.53	$ 282.36
711-11-125	24" WHITE SOLID STRIPE (THERMOPLASTIC)	LF	120.000	$ 4.46	$ 535.20
711-11-160	12" WHITE MESSAGE (THERMOPLASTIC)	EA	6.000	$ 125.38	$ 752.28
				Subtotal	**$ 1,019,642.56**
	RIGHT-OF-WAY & ASSOCIATED COSTS	LS			$ -
101-1	MOBILIZATION	LS	1	10.00%	$ 101,964.26
102-1	MAINTENANCE OF TRAFFIC	LS	1	5.00%	$ 50,982.13
N/A	ENGINEERING AND DESIGN	LS	1	10.00%	$ 101,964.26
N/A	SURVEY	LS	1	$ 5,000.00	$ 5,000.00
N/A	PERMITTING	LS	1		$ 500.00
N/A	CONTINGENCY	LS	1	25.00%	$ 254,910.64
				Subtotal	**$ 1,534,963.84**
	BRIDGES				
	Low Level Bridges in Trail Segment		2		
	Flat Slab Bridge Option Total				$ 560,219.21
	Double-T Bridge Option Total				$ 398,720.00
				TOTAL W/ LOWER COST BRIDGE OPTION	**$ 1,933,683.84**

FDOT Inflation-Adjusted Estimate		*Inflation Factor*	*PDC Multiplier*	***Adjusted Cost Estimate***
Year 1 Inflation-adjusted Estimate (2011)		3.3%	1.033	**$ 1,997,495.41**
Year 2 Inflation-adjusted Estimate (2012)		3.3%	1.067	**$ 2,063,240.66**
Year 3 Inflation-adjusted Estimate (2013)		3.3%	1.102	**$ 2,130,919.60**
Year 4 Inflation-adjusted Estimate (2014)		3.3%	1.139	**$ 2,202,465.90**
Year 5 Inflation-adjusted Estimate (2015)		3.3%	1.176	**$ 2,274,012.20**

4.8 Phasing

The East Central Regional Rail Trail will be developed in phases dependent upon the availability of funding, the anticipated demand for trail usage, and continued input by stakeholder agencies and community representatives. Future funding will be determined through the project prioritization process, which occurs within the Space Coast TPO and the Volusia MPO planning process.

As of December 2009, the following ECRRT design and construction activities have been programmed:

- Providence Blvd. to SR 415 (Volusia) – Design completed 2009; Construction scheduled for 2010.
- SR 415 to Guise Road (Volusia) – Design scheduled for 2010; Construction tentatively scheduled for 2011.

Also as of December 2009, the Florida Department of Transportation tentative 5-Year Work Program includes the following ECRRT funding allocations:

- Brevard County - $1,500,000 Design FY 2011/2012, $3,000,000 Construction 2013/2014.
- Volusia County - $1,600,000 Design FY 2011/2012, $5,024,000 Construction 2014/2015.

This Study has received extensive input from the local public agencies as well as from the general community. This input combined with the amount of available funding as identified in the TPO and MPO planning process will guide the identification and prioritization of future phases. Based on the comments received by the local agencies and the community, the Study recommends the following phasing plan. The actual timing of each phase is dependent upon funding availability and project prioritization.

1. Providence Blvd. to SR 415 (under design as of December 2009)
2. Segment 1 – SR 415 to Guise Road (to be designed in FY 2010/2011)
3. Segment 7 - Kingman Rd. to Canaveral Avenue (supports Titusville CRA projects; supports robust trail use demand; supports improved access to Chain of Lakes Park)
4. Segment 6 – Aurantia Rd. to Kingman Rd. (supports trail use demand; improved access to Chain of Lakes Park)
5. Segment 2 – Guise Rd. to Gobblers Lodge (continuity of trail from the west, access to the Gobblers Lodge trailhead)
6. Segment 9 – Volco Rd. to Park Ave. (section from SR 442 to Park Ave/Dale Street supports trail use demand; section south of SR 442 would be a more rural experience, consider implementation of SR 442 to Dale Street first as a separate segment, to be followed by Volco to SR 442)
7. Segment 5 – County Line to Aurantia Rd. (access to EELs property and trailhead, equestrian access)
8. Segment 8 – Maytown to Volco Rd (part of the St Johns River to the Sea Loop, access to Maytown trailhead)

9. Segment 3 – Gobblers Lodge to Maytown
10. Segment 4 – Maytown to Volco Rd.

The ECRRT is a component of the St. Johns River to the Sea Loop Trail, a 260-mile trail system from Palatka and St. Augustine to Titusville. This trail has been identified as a priority project by numerous local and state agencies, including the Florida Department of Environmental Protection and US Representative, John Mica. In September 2008, delegates from five counties signed a memorandum of understanding calling for the "St. Johns River to the Sea Loop" to be paved and off-road by 2013 (the 500th anniversary celebration of Spain's exploration and settlement in Florida).

Design and construction of the total length of the ECRRT is anticipated to occur beyond the targeted year 2013 schedule. Economic recessionary forces resulting in reduced revenues to federal, state and local governments have hampered the funding of all transportation projects. As of the date of this Study document, it is unrealistic to predict a time schedule for the implementation of each trail segment. Project prioritization will occur at the local agency level, in competition with other transportation needs.

5.0 PUBLIC INVOLEMENT, COMMITMENTS AND RECOMMENDATIONS

5.1 Public Involvement

This study included an extensive public and inter-agency involvement program, which has been thoroughly documented in a separately bound document (Comments & Coordination Report). Throughout the Study, numerous coordination and informational meetings were conducted by the Study Team. Meetings occurred with the following agencies:

- Brevard County Engineering
- Brevard County Sheriff's Office
- City of Edgewater
- City of Titusville
- FDOT Traffic Engineering
- Mims Community
- Space Coast TPO Board
- Space Coast TPO Technical Advisory Committee/Citizen's Advisory Committee
- Space Coast TPO Bicycle and Pedestrian Advisory Committee
- City of Titusville Council
- Volusia County MPO Board

- Volusia County MPO Citizens Advisory Committee
- Volusia County MPO Technical Coordination Committee
- Volusia County MPO Bicycle and Pedestrian Advisory Committee
- Volusia County Sheriff's Office

Two sets of three separate public workshops were conducted in Osteen, Titusville, and Edgewater to reach out to the communities within the study area, provide project information, and obtain public thoughts on the proposal. The first set of workshops occurred in late February and early March, 2009, and presented an overview of the Study's data collection efforts and the PD&E process. In late September 2009, a second set of workshops presented the preliminary alignment alternatives, including the location and conceptual design of trailheads and pavilions. Input from the public and from the stakeholder public agencies was used to modify the proposed preliminary design.

5.2 Class of Action Determination

The class of action is a Type 1 and Programmatic Categorical Exclusion (CE) as described under 23 CFR 771.117(a), (b) and (c). The Type 1 CE applies to minor projects or actions that based on past experience with similar actions have been found not to involve significant environmental impacts. The construction of bicycle and pedestrian lanes, paths, and facilities is specifically determined to be a Type 1 CE. The Programmatic CEs are included in the Agency Operating Agreement between FHWA, FTA and the FDOT, executed on January 15, 2003. The preservation of abandoned railway corridors, including the conversion and use for pedestrian, equestrian or bicycle trials is specifically stated to be a Programmatic CE.

The PD&E Study as documented in this Preliminary Engineering Report has concluded that the proposed project is not anticipated to result in any significant impacts to the built or natural environments. The completed FDOT Type 1 and Programmatic Categorical Exclusion Checklist is provided in the front of this report. The final Checklist will be completed and submitted to FDOT for approval.

5.3 Commitments

The Florida Department of Transportation, in coordination with the Counties of Volusia and Brevard, have programmed over $11.1 million in the tentative 5-Year Work Program for FY 2011/2012 through 2014/2015 for the design and construction of sections of the trail. Volusia County has funded the design and construction of the trail segment west of this PD&E Study's limits (Providence Boulevard to SR 415). The County has also funded through their ECHO program the design and construction of Segment 1 – SR 415 to Guise Road.

Volusia and Brevard Counties have jointly prepared a Trail Management Plan, which was reviewed by the Florida Department of Environmental Protection. The management plan commits each county to specific trail maintenance and environmental protection activities.

5.4 Recommendations

This PD&E Study makes the following recommendations:

- Complete the design and construction of the currently programmed segment from SR 415 to Guise Road through the use of the county's ECHO funds
- Apply the currently identified FDOT programmed funding in Volusia County toward the following segments:
  - Segment 9 (partial) – SR 442 to Dale Street
  - Segment 2 – Guise Road to Gobblers Lodge Road
  - Segment 3 – Gobblers Lodge Road to Maytown
- Apply the currently identified FDOT programmed funding in Brevard County toward the following segments:
  - Segment 7 – Kingman Road to Canaveral Avenue
  - Segment 6 – Aurantia Road to Kingman Road
  - Segment 5 – County Line to Aurantia Road
- Identify potential transportation enhancement funding, parks and recreation funding, and other public capital project funding sources for design and construction of the trailheads and pavilions.
- Identify potential private-public funding strategies for the trailheads, including concessionaire agreements.
- Continue coordination efforts with the project stakeholders including public agencies, the private hunting clubs, property owners along the corridor, and the general public during the design and construction phases.

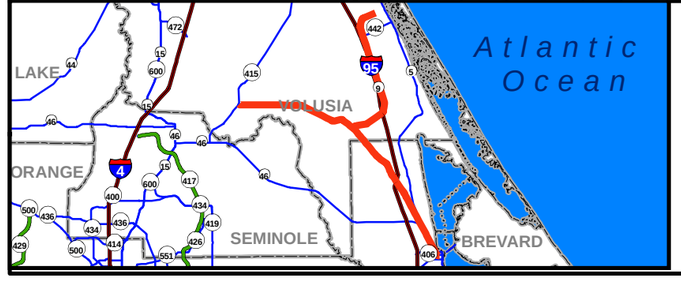
APPENDICES

Appendix A FLUFCS Maps

Appendix B Listed Species Coverage Maps

APPENDIX A

FLUCFCS Maps



Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

USGS 100K Quad:
26 - Orlando 22 - Daytona Beach
25 - Titusville 21 - New Smyrna Beach

N

1 in = 5 miles

0 2.5 5 Miles

Figure 1

Location Map

Filename:	Map Date:	Map Prepared By:
Location_Map .mxd	March 2009	JMH

Date of Photography:

N/A

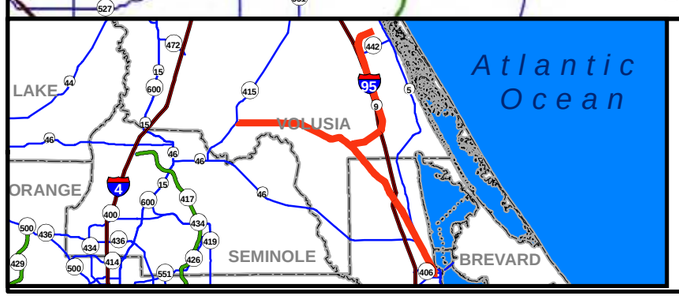
VOLUSIA

SEMINOLE

BREVARD

ORANGE

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15



Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

USGS 100K Quad:
26 - Orlando 22 - Daytona Beach
25 - Titusville 21 - New Smyrna Beach

N

1 in = 3 miles

0 1.5 3 Miles

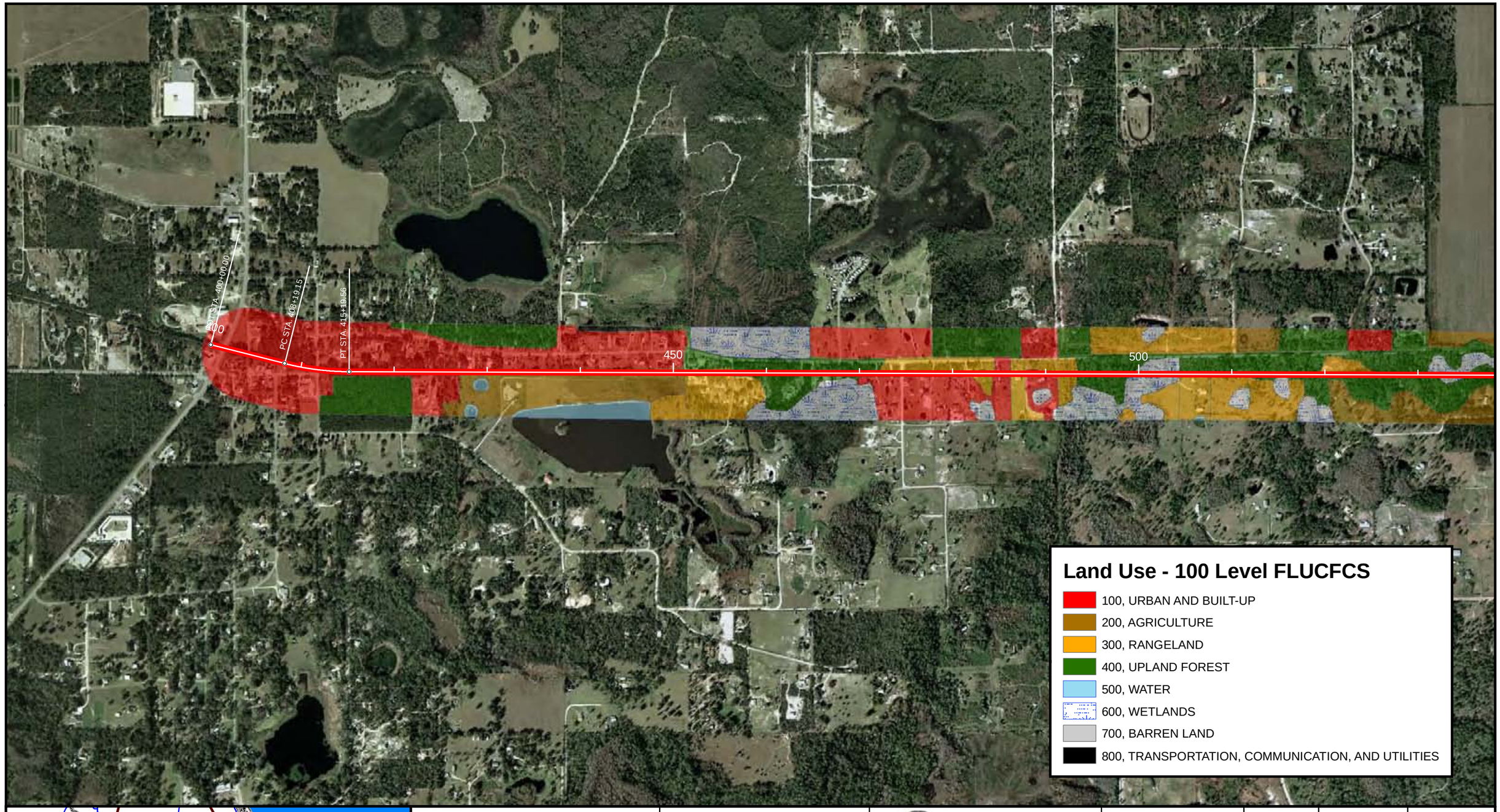
Figure 2

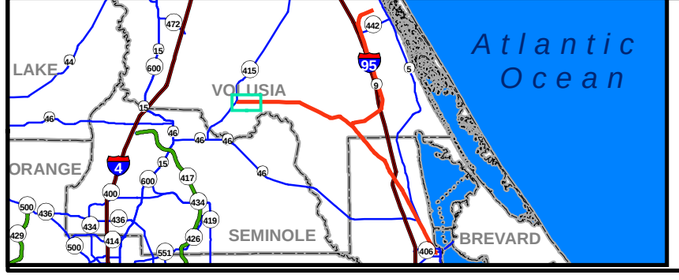
Index Map

Filename:	Map Date:	Map Prepared By:
Figure2_ Index.mxd	March 2009	JMH

Date of Photography:

N/A





Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

Section, Township, Range:
Sec. 07, 08, 09, 16, 17, 18
Twn 19S Rge 32E

N

0 500 1,000 Feet

Figure 2-1

Land Use Map

Filename:	Map Date:	Map Prepared By:
Land_Use_Map10.mxd	March 2009	JMH

Date of Photography:

2008 ESRI

550

600

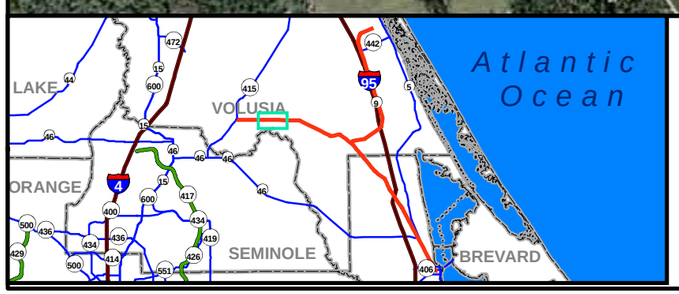
650

DEEP CREEK

LAKE ASHBY CANAL

Land Use - 100 Level FLUCFCS

- 100, URBAN AND BUILT-UP
- 200, AGRICULTURE
- 300, RANGELAND
- 400, UPLAND FOREST
- 500, WATER
- 600, WETLANDS
- 700, BARREN LAND
- 800, TRANSPORTATION, COMMUNICATION, AND UTILITIES



Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

Section, Township, Range:
Sec. 09, 10, 11, 12, 13, 14, 15, 16
Twn 19S Rge 32E

N

0 500 1,000 Feet

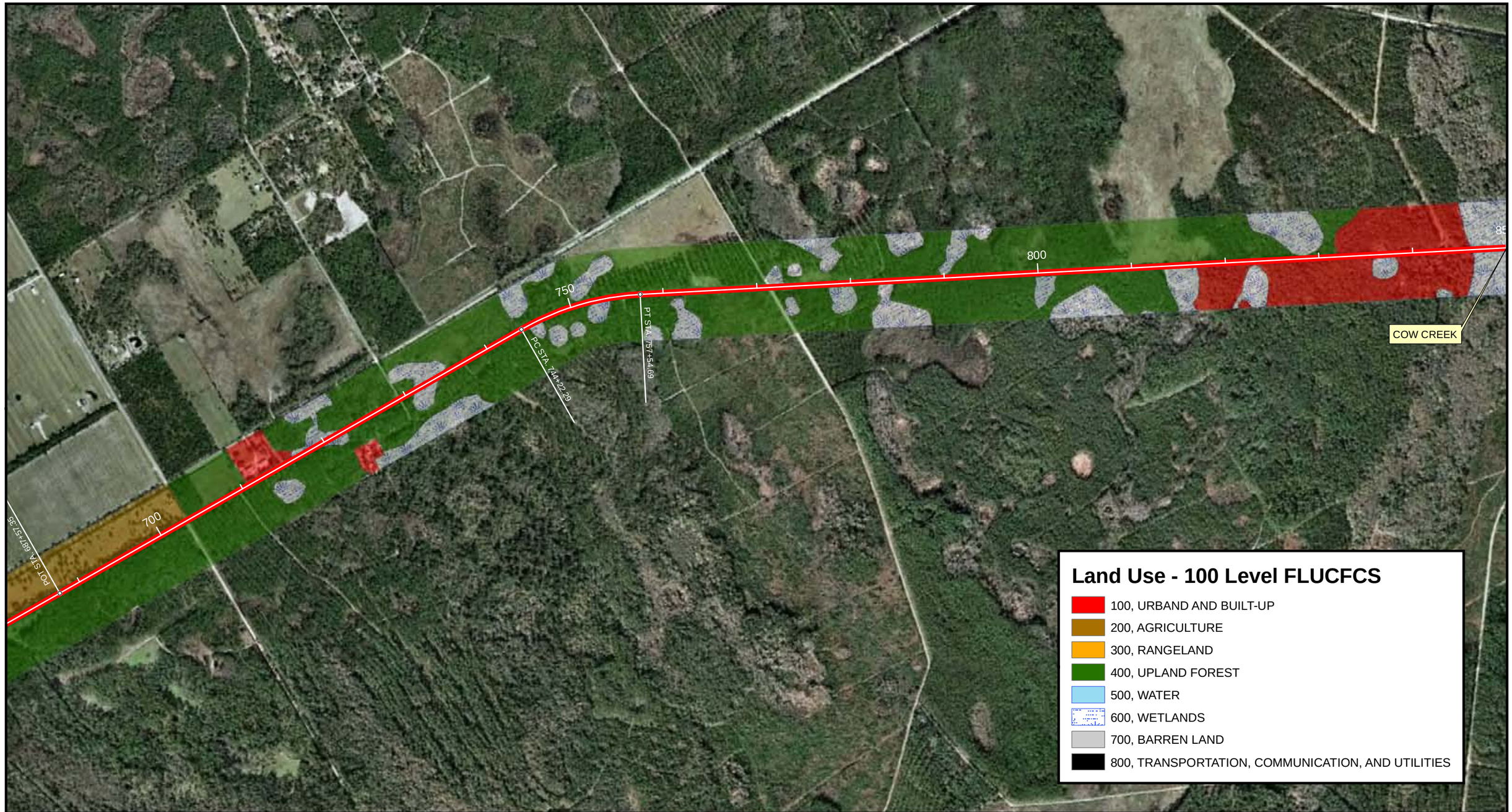
Figure 2-2

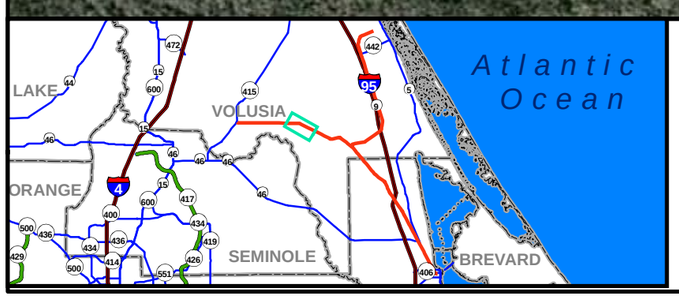
Land Use Map

Filename:	Map Date:	Map Prepared By:
Land_Use_Map9.mxd	March 2009	JMH

Date of Photography:

2008 ESRI





Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

Section, Township, Range:
Sec. 07, 16, 17, 18, 21
Twn 18S Rge 34E
Sec. 12, 13 Twn 19S Rge 32E

N

0 500 1,000 Feet

Volusia County FLORIDA

RS&H

Inwood consulting engineers

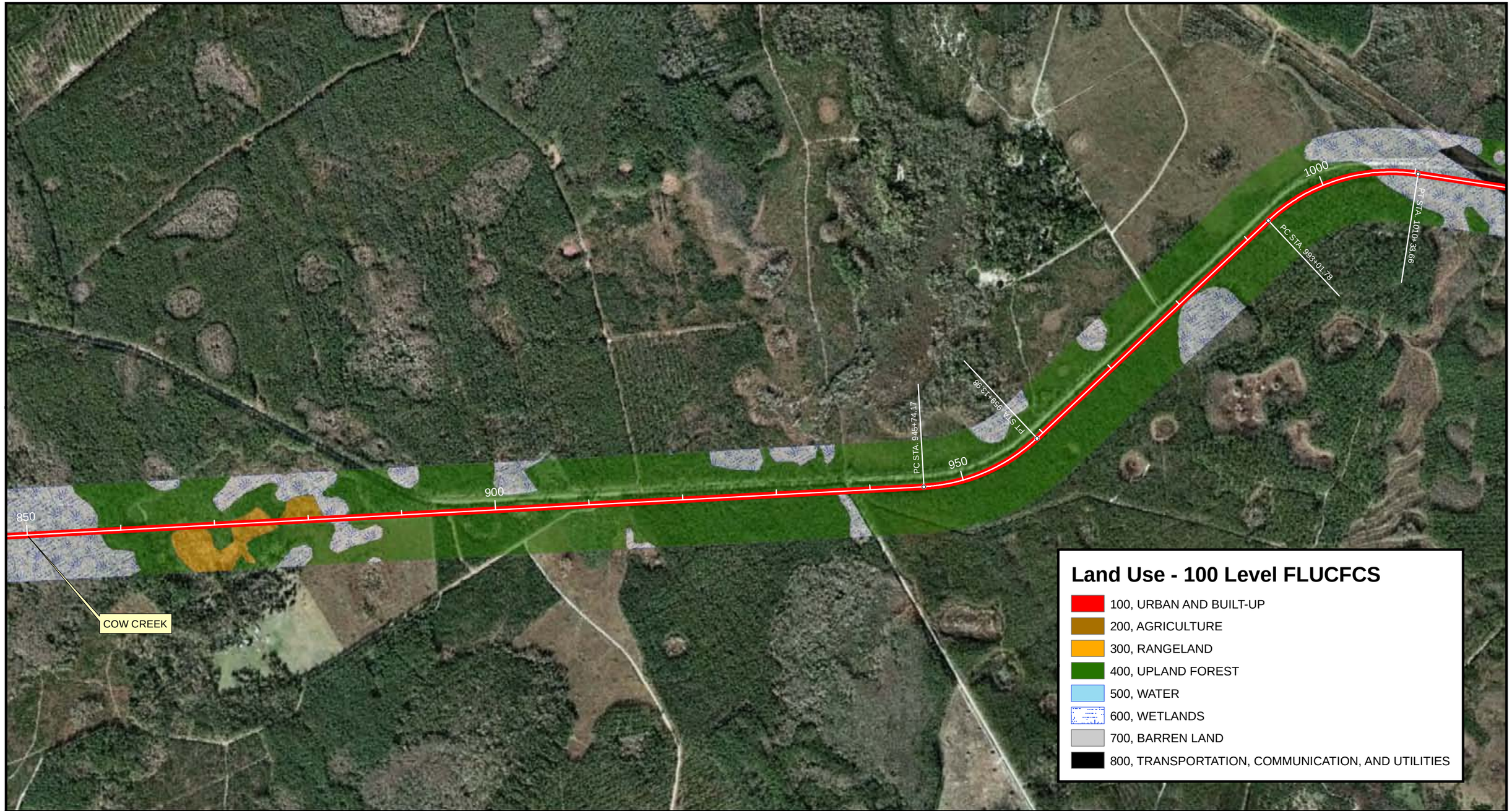
Figure 2-3

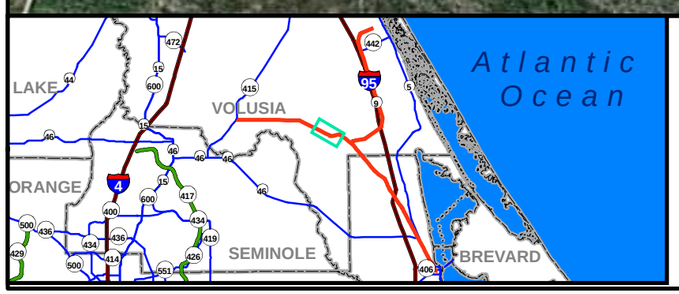
Land Use Map

Filename:	Map Date:	Map Prepared By:
Land_Use_Map8.mxd	March 2009	JMH

Date of Photography:

2008 ESRI





Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

Section, Township, Range:
Sec. 16, 21, 22, 23, 24, 25
Twn 19S Rge 33E

N

0 500 1,000 Feet

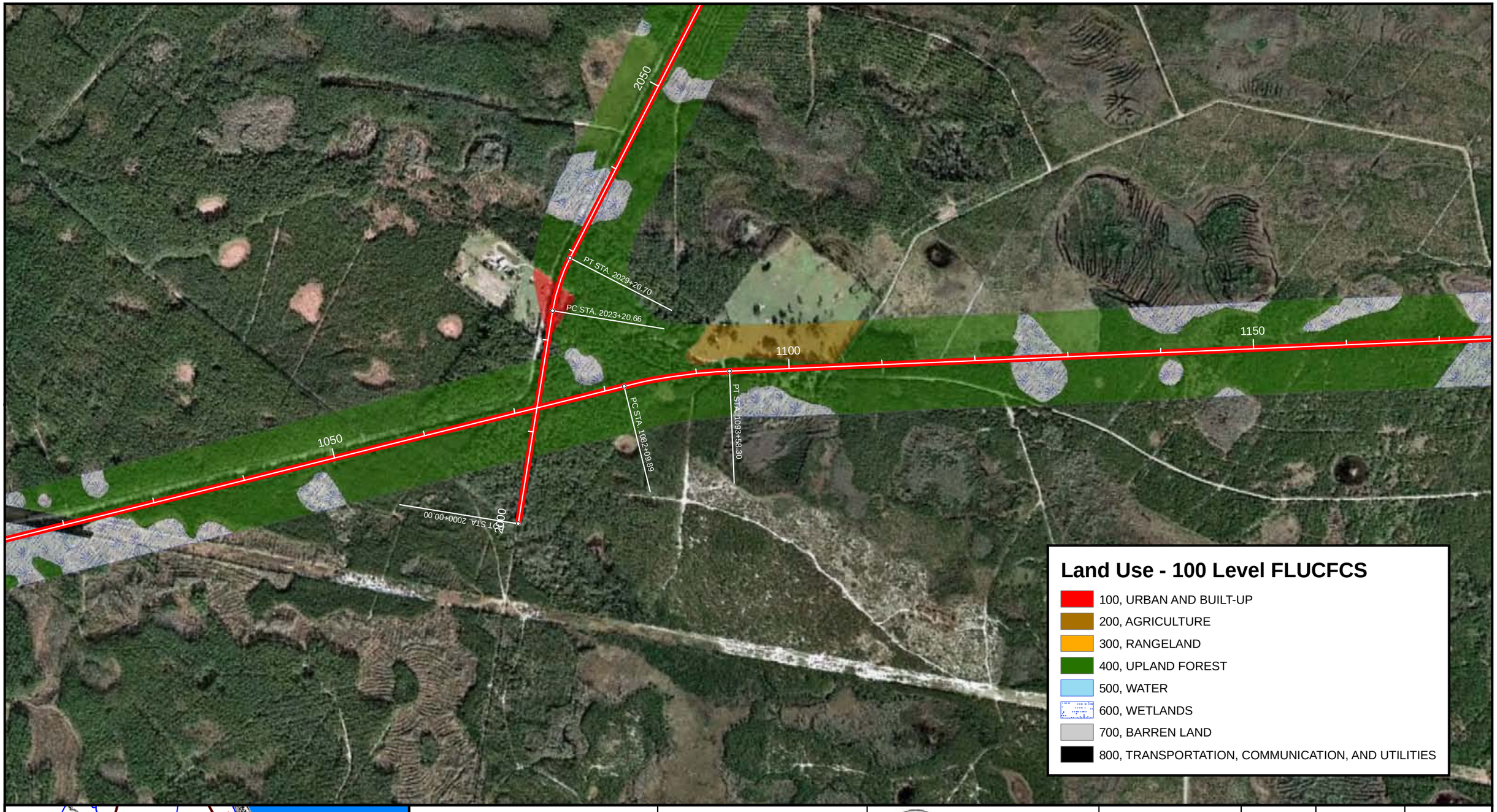
Figure 2-4

Land Use Map

Filename:	Map Date:	Map Prepared By:
Land_Use_Map7.mxd	March 2009	JMH

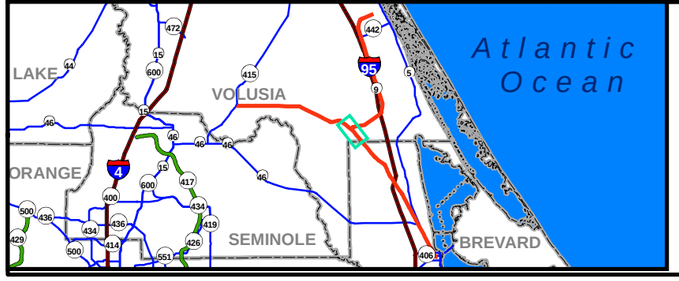
Date of Photography:

2008 ESRI



Land Use - 100 Level FLUCFCS

- 100, URBAN AND BUILT-UP
- 200, AGRICULTURE
- 300, RANGELAND
- 400, UPLAND FOREST
- 500, WATER
- 600, WETLANDS
- 700, BARREN LAND
- 800, TRANSPORTATION, COMMUNICATION, AND UTILITIES



Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

Section, Township, Range:
Sec. 29, 30, 31, 32 Twn 19S Rge 34E
Sec. 24, 25 Twn 19S Rge 33E
Sec. 05, Twn 20S, Rge 34E

N

0 500 1,000 Feet

Volusia County FLORIDA

RS&H

Inwood consulting engineers

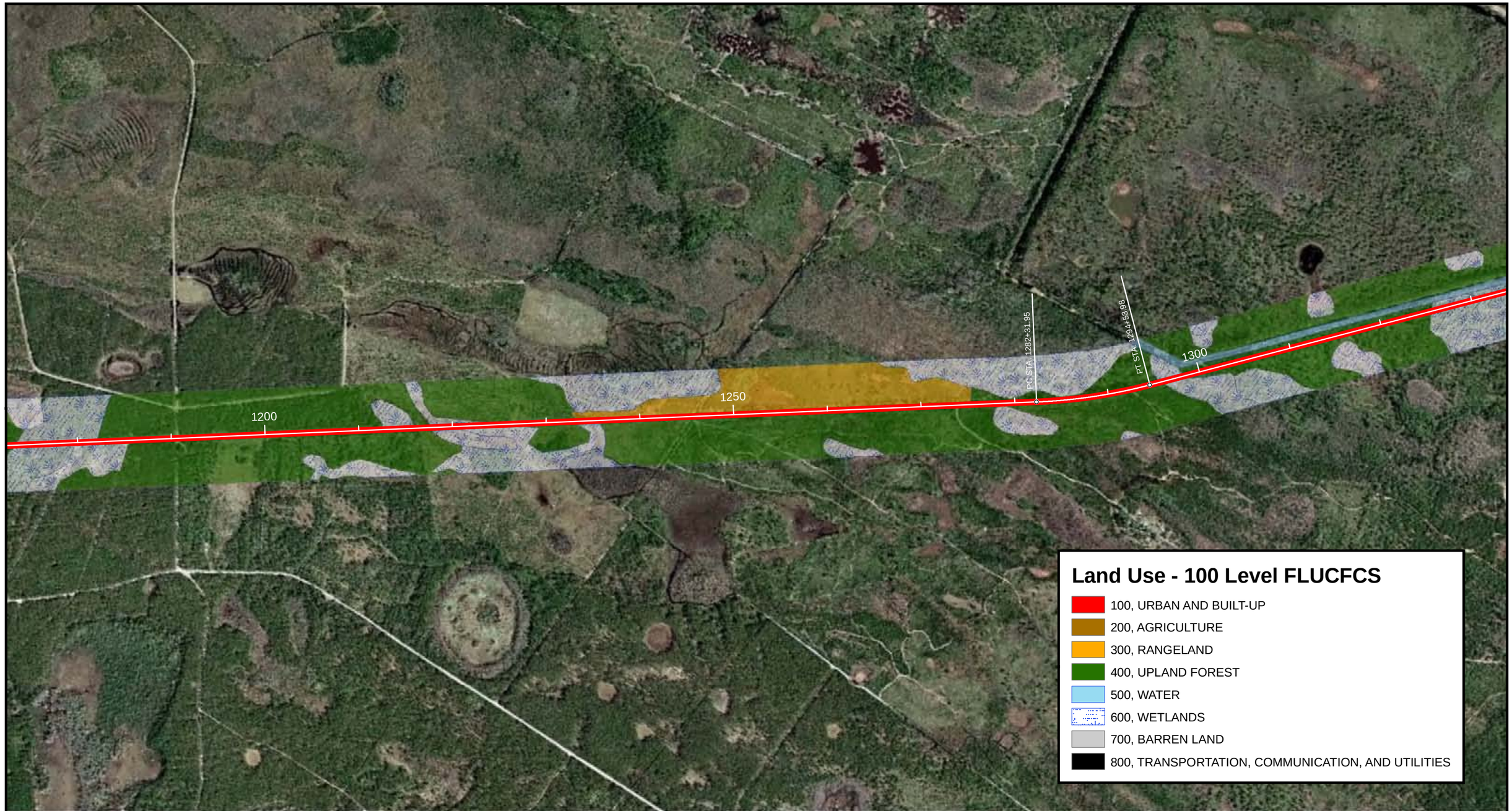
Figure 2-5

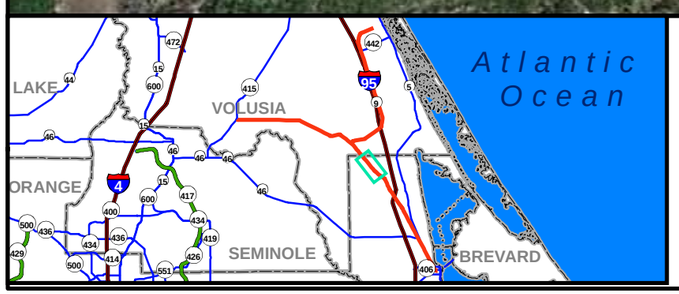
Land Use Map

Filename:	Map Date:	Map Prepared By:
Land_Use_Map6.mxd	March 2009	JMH

Date of Photography:

2008 ESRI





Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

Section, Township, Range:
Sec. 03, 04, 05, 09, 54
Twn 20S Rge 34E

N

0 500 1,000 Feet

Figure 2-6

Land Use Map

Filename:	Map Date:	Map Prepared By:
Land_Use_Map11.mxd	March 2009	JMH

Date of Photography:

2008 ESRI

1350

PC STA: 1350+53.78

PT STA: 1364+51.11

1400

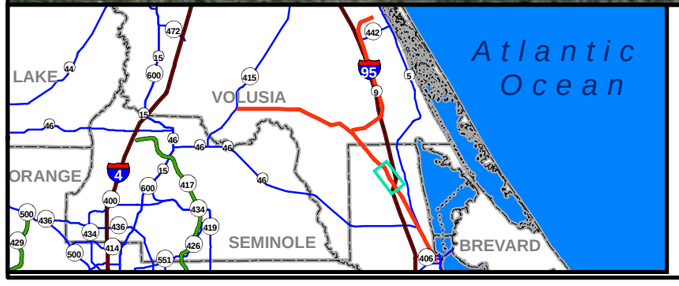
PC STA: 1419+77.23

PT STA: 1429+77.18

1450

Land Use - 100 Level FLUCFCS

- 100, URBAN AND BUILT-UP
- 200, AGRICULTURE
- 300, RANGELAND
- 400, UPLAND FOREST
- 500, WATER
- 600, WETLANDS
- 700, BARREN LAND
- 800, TRANSPORTATION, COMMUNICATION, AND UTILITIES



Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

Section, Township, Range:
Sec. 54, 72 Twn 20S Rge 34E

N

0 500 1,000 Feet

Volusia County FLORIDA

RS&H

Inwood consulting engineers

Figure 2-7

Land Use Map

Filename: Land_Use _Map12 .mxd

Map Date: March 2009

Map Prepared By: JMH

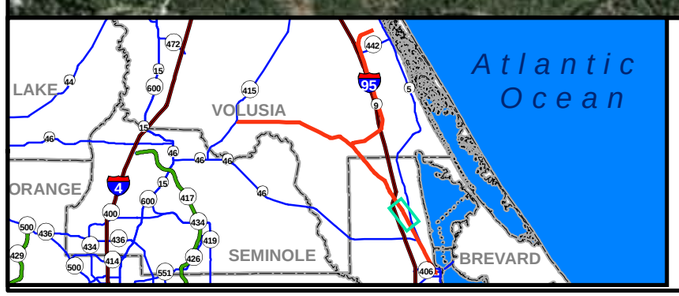
Date of Photography:

2008 ESRI

Land Use - 100 Level FLUCFCS

- 100, URBAN AND BUILT-UP
- 200, AGRICULTURE
- 300, RANGELAND
- 400, UPLAND FOREST
- 500, WATER
- 600, WETLANDS
- 700, BARREN LAND
- 800, TRANSPORTATION, COMMUNICATION, AND UTILITIES

1500
1550
1600
1650
PC STA. 1542+21.24
PT STA. 1548+41.17



Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

Section, Township, Range:
Sec. 72, 36 Twn 20S Rge 34E
Sec. 01, 12 Twn 21S Rge 34E
Sec. 06, 07 Twn 21S Rge 35E

N
0 500 1,000 Feet

Volusia County FLORIDA
RS&H
Inwood consulting engineers

Figure 2-8

Land Use Map

Filename:	Map Date:	Map Prepared By:
Land_Use_Map13.mxd	March 2009	JMH

Date of Photography:

2008 ESRI

50

1700

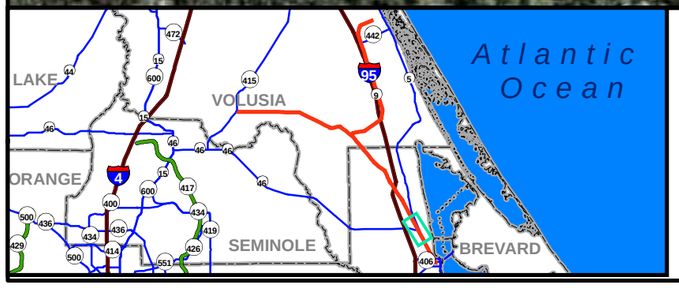
POT STA. 1745+40.15

1750

1800

Land Use - 100 Level FLUCFCS

- 100, URBAN AND BUILT-UP
- 200, AGRICULTURE
- 300, RANGELAND
- 400, UPLAND FOREST
- 500, WATER
- 600, WETLANDS
- 700, BARREN LAND
- 800, TRANSPORTATION, COMMUNICATION, AND UTILITIES



Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

Section, Township, Range:
Sec. 07, 17, 18, 20
Twn 21S Rge 35E

N

0 500 1,000 Feet

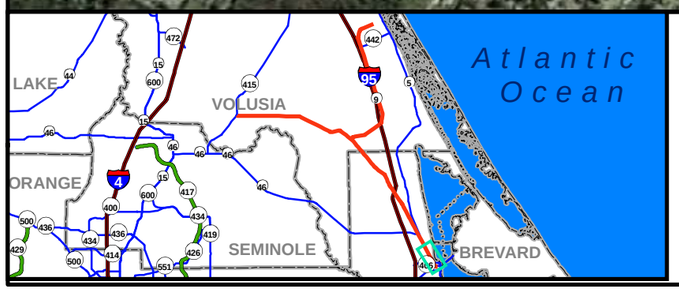
Figure 2-9

Land Use Map

Filename:	Map Date:	Map Prepared By:
Land_Use_Map14.mxd	March 2009	JMH

Date of Photography:

2008 ESRI



Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

Section, Township, Range:
Sec. 20, 28, 29, 32, 33
Twn 21S Rge 35E
Sec. 02 Twn 22S, Rge 35E

N

0 500 1,000 Feet

Figure 2-10

Land Use Map

Filename:	Map Date:	Map Prepared By:
Land_Use_Map15.mxd	March 2009	JMH

Date of Photography:

2008 ESRI

PC STA: 2095+93.27

PT STA: 2104+25.35

2100

2150

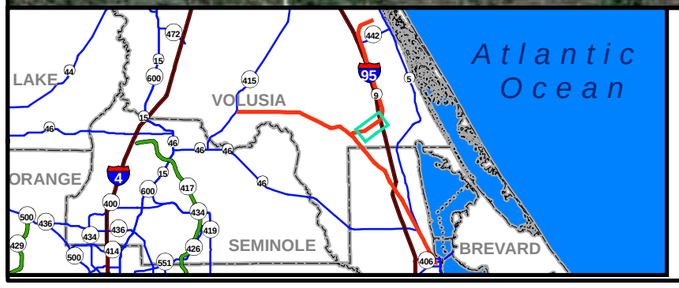
2200

ST STA: 2200+85.11

PT STA: 2215+80.72

Land Use - 100 Level FLUCFCS

- 100, URBAN AND BUILT-UP
- 200, AGRICULTURE
- 300, RANGELAND
- 400, UPLAND FOREST
- 500, WATER
- 600, WETLANDS
- 700, BARREN LAND
- 800, TRANSPORTATION, COMMUNICATION, AND UTILITIES



Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

Section, Township, Range:
Sec.20, 21, 28, 30, 39, 40
Twn 18S Rge 34E

0 500 1,000 Feet

Figure 2-11

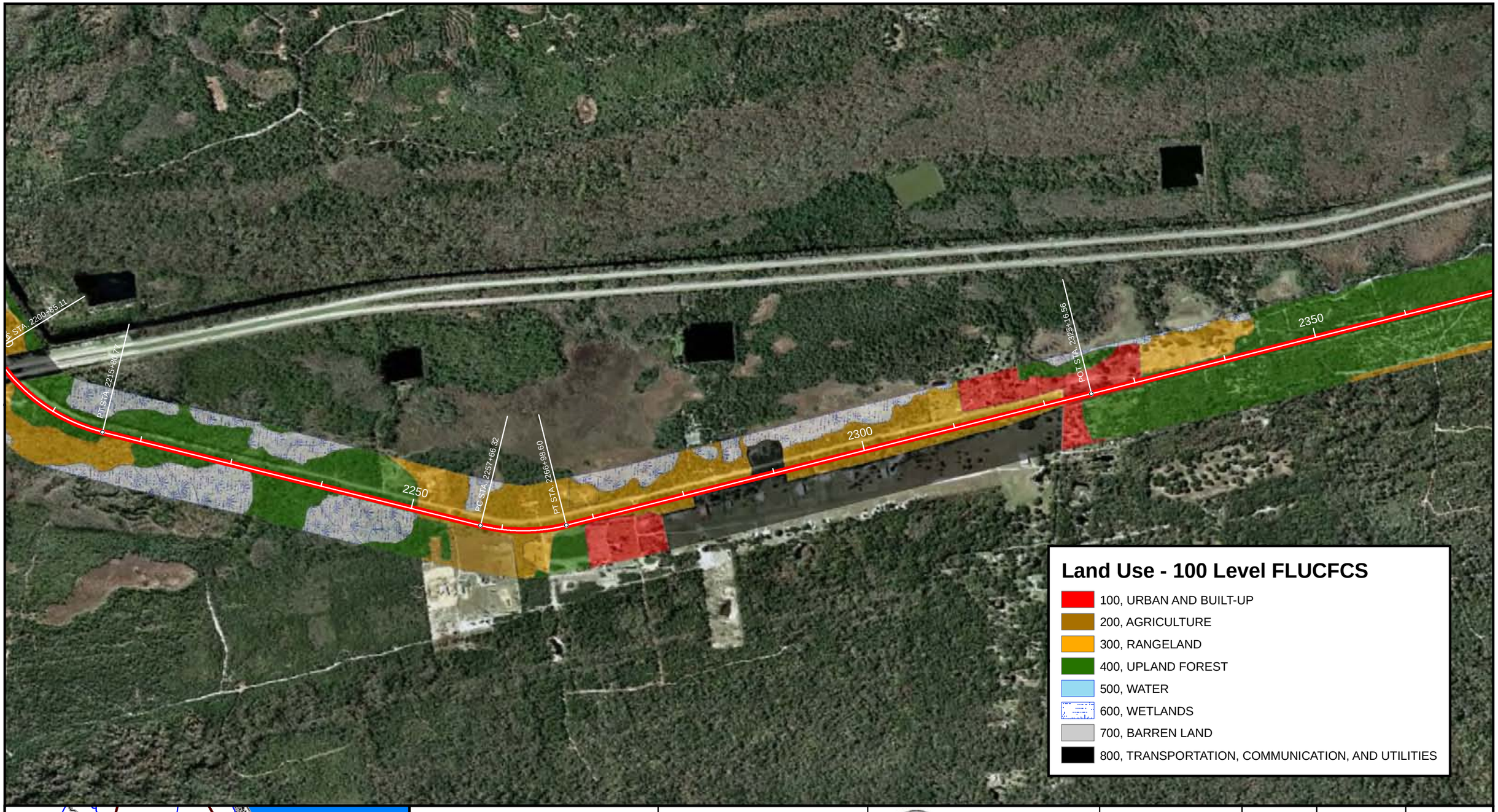
Land Use Map

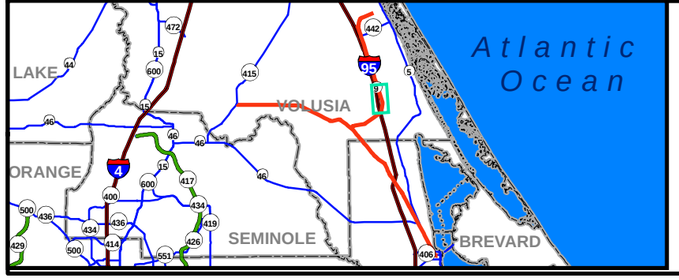
Filename: Land_Use_Map5.mxd

Map Date: March 2009

Map Prepared By: JMH

Date of Photography: 2008 ESRI





Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

Section, Township, Range:
Sec. 34 Twn 19S Rge 34E

N 0 500 1,000 Feet

Figure 2-12

Land Use Map

Filename:	Map Date:	Map Prepared By:
Land_Use_Map4.mxd	March 2009	JMH

Date of Photography:

2008 ESRI

Land Use - 100 Level FLUCFCS

- 100, URBAN AND BUILT-UP
- 200, AGRICULTURE
- 300, RANGELAND
- 400, UPLAND FOREST
- 500, WATER
- 600, WETLANDS
- 700, BARREN LAND
- 800, TRANSPORTATION, COMMUNICATION, AND UTILITIES

POT STA. 2382+93.20

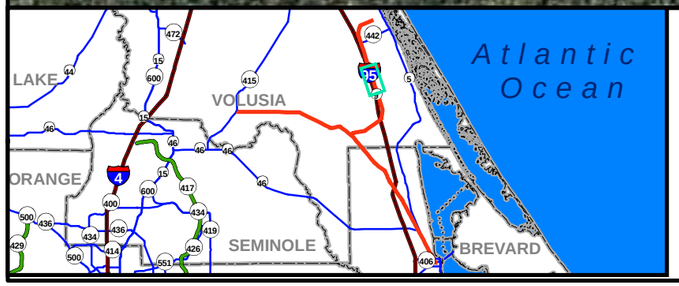
POT STA. 2439+48.94

POT STA. 2467+03.47

2400

2450

2500



Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

Section, Township, Range:
Sec. 02, 04, 47 Twn 18S Rge 34E
Sec. 39 Twn 19S Rge 34E

N

0 500 1,000 Feet

Figure 2-13

Land Use Map

Filename:	Map Date:	Map Prepared By:
Land_Use_Map3.mxd	March 2009	JMH

Date of Photography:

2008 ESRI

Land Use - 100 Level FLUCFCS

- 100, URBAN AND BUILT-UP
- 200, AGRICULTURE
- 300, RANGELAND
- 400, UPLAND FOREST
- 500, WATER
- 600, WETLANDS
- 700, BARREN LAND
- 800, TRANSPORTATION, COMMUNICATION, AND UTILITIES

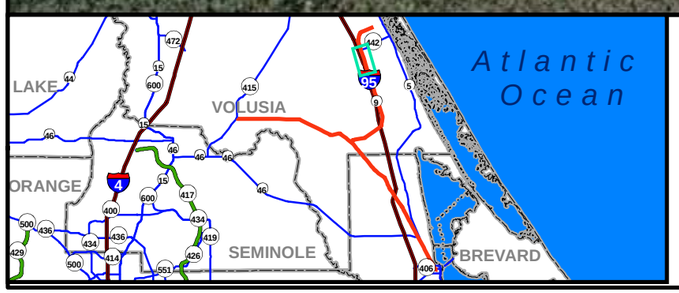
2550

2600

POT STA. 2624+53.93

2650

LITTLE COW CREEK



Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

Section, Township, Range:
Sec. 05, 08, 16, 17, 20, 21
Twn 18S Rge 34E

N

0 500 1,000 Feet

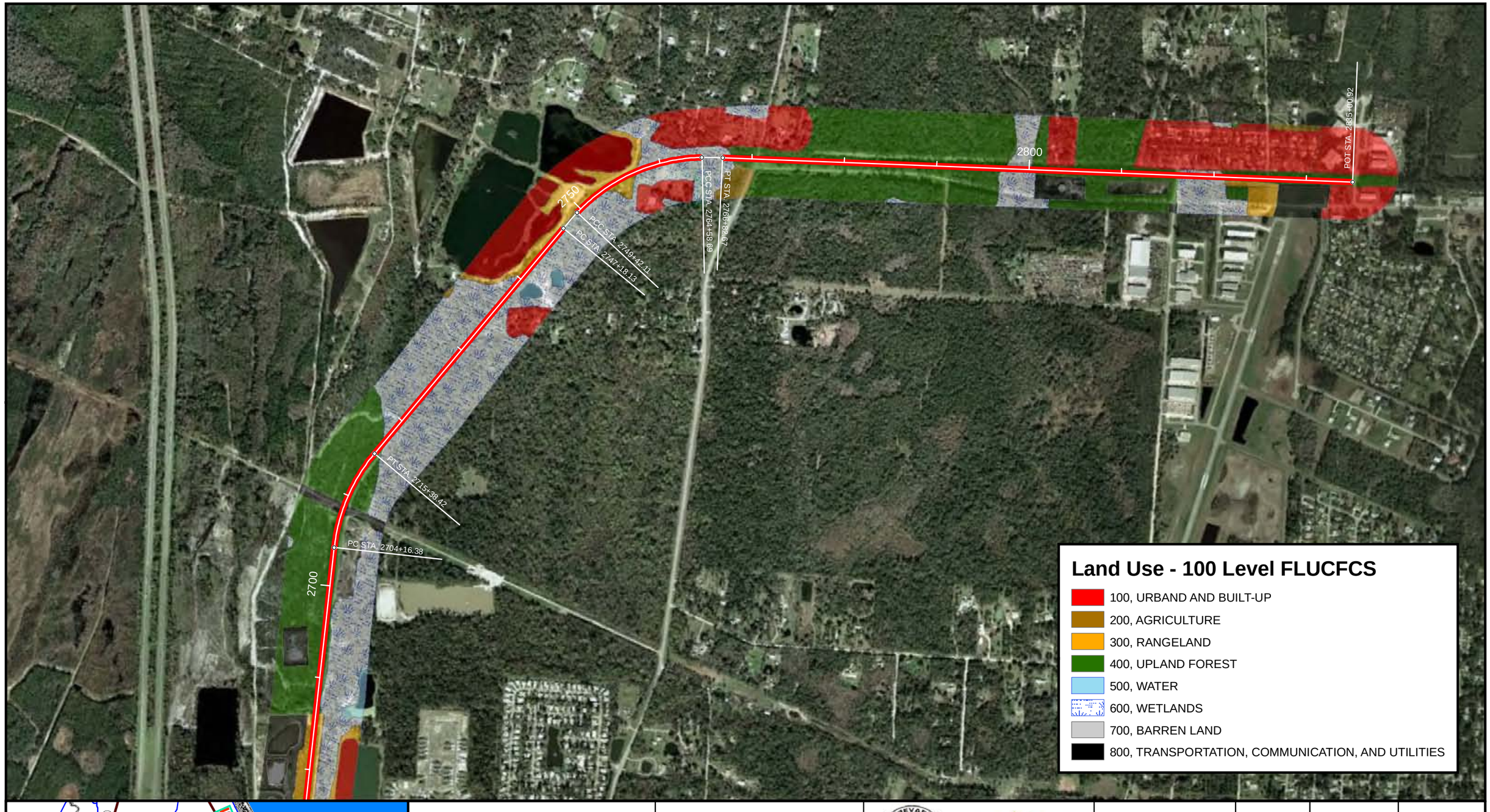
Figure 2-14

Land Use Map

Filename:	Map Date:	Map Prepared By:
Land_Use_Map2.mxd	March 2009	JMH

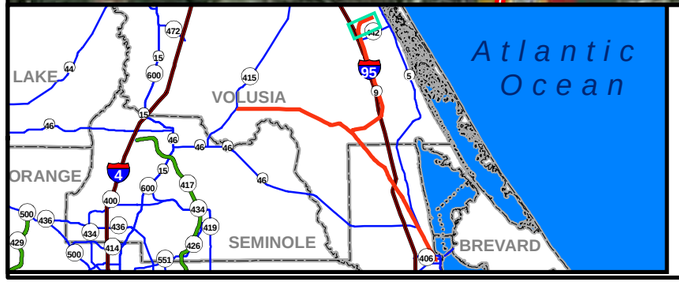
Date of Photography:

2008 ESRI



Land Use - 100 Level FLUCFCS

- 100, URBAND AND BUILT-UP
- 200, AGRICULTURE
- 300, RANGELAND
- 400, UPLAND FOREST
- 500, WATER
- 600, WETLANDS
- 700, BARREN LAND
- 800, TRANSPORTATION, COMMUNICATION, AND UTILITIES



Legend

- Trail Corridor
- county_roads
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

Section, Township, Range:
Sec. 03, 06, 32, 53 Twn 17S Rge 34E
Sec. 05, 06, 36, 38 Twn 18S Rge 34E

N

0 500 1,000 Feet

Volusia County FLORIDA

RS&H

Inwood consulting engineers

Figure 2-15

Land Use Map

Filename:	Map Date:	Map Prepared By:
Land_Use_Map1.mxd	March 2009	JMH

Date of Photography:

2008 ESRI

APPENDIX B

Listed Species Coverage Maps

USFWS Manatee Consultation Area

Consultation Area

LAKE

VOLUSIA

SEMINOLE

ORANGE

BREVARD

Atlantic Ocean

Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

USGS 100K Quad:
26 - Orlando 22 - Daytona Beach
25 - Titusville 21 - New Smyrna Beach

N

1 in = 4 miles

0 2 4 Miles

Figure 3

West Indian Manatee Consultation Area Map

Filename:	Map Date:	Map Prepared By:
Manatee_ Consultation_ Area .mxd	March 2009	JMH

Date of Photography:

N/A

USFWS Caracara Consultation Area

Consultation Area

LAKE

VOLUSIA

SEMINOLE

ORANGE

BREVARD

Atlantic Ocean

Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

USGS 100K Quad:
26 - Orlando
25 - Titusville
22 - Daytona Beach
21 - New Smyrna Beach

N

1 in = 4 miles

0 2 4 Miles

Figure 4

Audubon's Crested Caracara Consultation Area Map

Filename:	Map Date:	Map Prepared By:
Caracara_ Consultation_ Area .mxd	March 2009	JMH

Date of Photography:

N/A

USFWS Piping Plover Consultation Area

Consultation Area

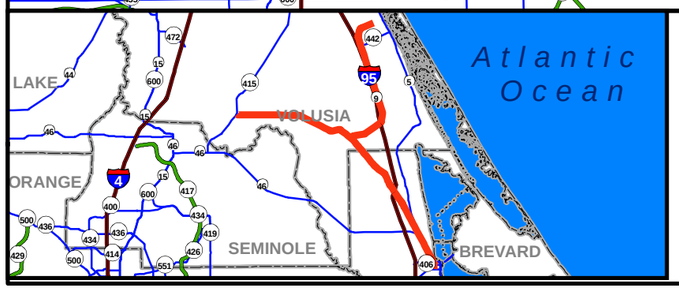
LAKE

VOLUSIA

SEMINOLE

ORANGE

BREVARD



Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

USGS 100K Quad:
26 - Orlando 22 - Daytona Beach
25 - Titusville 21 - New Smyrna Beach

N

1 in = 4 miles

0 2 4 Miles

Figure 5

Piping Plover Consultation Area Map

Filename: Piping_ Plover_ Consultation_ Area .mxd

Map Date: March 2009

Map Prepared By: JMH

Date of Photography: N/A

USFWS Snail Kite Consultation Area

Consultation Area

LAKE

VOLUSIA

SEMINOLE

ORANGE

BREVARD

Atlantic Ocean

Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

USGS 100K Quad:
26 - Orlando 22 - Daytona Beach
25 - Titusville 21 - New Smyrna Beach

N

1 in = 4 miles

0 2 4 Miles

Figure 6

Snail Kite Consultation Area Map

Filename:	Map Date:	Map Prepared By:
Snail_Kite_Consultation_Area.mxd	March 2009	JMH

Date of Photography:

N/A

Scrub Jays

***The entire project area is within the USFWS scrub jay consultaton area.**

STATUS

STATUS

- Documented Birds (Volusia Co.)
- Likely for Birds to Occur (Volusia Co.)
- Documented Birds (Brevard Co.)

LAKE

VOLUSIA

SEMINOLE

ORANGE

BREVARD

Atlantic Ocean

Legend

- Trail Corridor
- Interstate Highways
- Toll Roads
- State Roads
- County Boundary

USGS 100K Quad:
26 - Orlando 22 - Daytona Beach
25 - Titusville 21 - New Smyrna Beach

N

1 in = 4 miles

0 2 4 Miles

Figure 7

Documented Scrub Jay Occurrence Map

Filename:	Map Date:	Map Prepared By:
Scrub_Jay_Map .mxd	March 2009	JMH

Date of Photography:

N/A