NATURAL RESOURCE EVALUATION
of a Multi-Use Trail
SR 15/US 17 from SR 40 to Putnam County Line
Volusia County, Florida
Project Development and Environment (PD&E) Study
FM Number 439876-1

Prepared for:

Florida Department of Transportation
District Five
719 S. Woodland Boulevard
DeLand, Florida 32720

January 2019

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1.0 INTRODUCTION

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study to evaluate a multi-use trail located along State Road 15 (United States Highway 17 [US 17]) from SR 40 to the Putnam County line (FM 439876-1) in Volusia County. This portion of the multi-use trail is a segment of the St. Johns River to Sea (SJR2C) Loop - a 260-mile multi-use trail system that, when complete, will connect Volusia, Putnam, St. Johns, Flagler, and Brevard counties. The purpose and need for this project are to provide pedestrian and bicycle accommodations for local and regional users by providing a multi-use trail that fills a key gap in the planned five-county SJR2C Trail. During the PD&E Study, FDOT evaluated trail alignment alternatives, began preliminary design, and analyzed the impacts of developing the trail.

Early stages of the PD&E study eliminated all alternatives not located along US 17. In addition, preliminary evaluations led to the elimination of alternative alignments on the west side of US 17 south of 4th Avenue and north of Washington Avenue. Between Washington Avenue and Palmetto Avenue, within the extents of this study, a shared use path is under construction on the east side of US 17 to provide a connection to the new Pierson Elementary School. Therefore, current alignment alternatives consist of two on the east side of US 17 (Alternatives A & B) (one generally designed to maximize separation between the roadway and the trail and one with minimum separation to meet FDOT design criteria while potentially minimizing other impacts) and an alignment on the west side between 4th Avenue and Washington Avenue only (Alternatives C & D).

These alignment alternatives are being evaluated on numerous criteria including: meeting of the facility purpose, social impacts, natural/cultural environmental effects, physical effects, safety, and costs. The resulting findings will be considered along with public input gathered throughout the project to develop a locally preferred alternative.

The following Natural Resource Evaluation (NRE) is provided in support of the analysis of design alternatives for the US 17 multi-use trail PD&E. For the purposes of this evaluation, a 20-foot wide trail corridor was assessed from approximately 0.4-mile north of the intersection of State Road 40 (SR 40) and US 17 and will run for approximately 13 miles, primarily along the east side of US 17, and will terminate at the Putnam County Line (**Figure 1**). The information presented here is from both a desktop evaluation and preliminary field assessment.

2.0 METHODS

E Sciences performed a Geographic Information System (GIS) environmental and field evaluation of the project corridor. The GIS review included aerial photography, United States Fish & Wildlife Service's (USFWS, 2014) National Wetlands Inventory (NWI) mapping; USFWS Consultation Area GIS data layers; Florida Fish and Wildlife Conservation Commission's (FWC) Occurrence System (2013) data; FWC Eagles Nest Locations (2016) data; FWC Fish and Wildlife Research Institute Florida Scrub-Jay Locations (1992-1993) data, USFWS Wood Stock Core Foraging Habitat data (2014), United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil data and St. Johns River Water Management District's (SJRWMD) land use data.

The jurisdictional extent of wetland and other surface water systems (OSW) within the study corridor was approximated through the review of aerial photography, National Wetland Inventory (NWI) data, U.S. Geological Survey Topographic Maps, soils maps, land use maps, and ground-truthing activities. The wetland limits were identified in general accordance with the United States Army Corps of Engineers' (USACE) Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (November 2010), the state of Florida's Delineation of the Landward Extent of Wetlands and Surface Waters (Chapter 62-340, Florida Administrative Code) and Part 2, Chapter 9 of the PD&E Manual. In the event wetland boundaries differed between the federal and state methods, the more landward extent was used to define that particular wetland system's boundary. Approximate wetland and OSW locations were identified along the corridor alignments (**Figure 2**). Direct and secondary impacts have been calculated and are shown in Table 2: Summary of Wetlands and UMAM Assessment.

A literature review was conducted to identify those species classified by USFWS and FWC as being endangered, threatened or species of special concern (collectively recognized as "protected species") within the project corridor. In addition to the literature review, species lists were obtained from the USFWS IPaC website and the Florida Natural Areas Inventory (FNAI) website.

Field reconnaissance to assess the potential occurrence of protected species within the study corridor was conducted in February and June 2018. Wildlife observations were conducted by environmental scientists through recognition of tracks, scat, calls and other visual observations. The purpose of the reconnaissance was to evaluate the alternative trail alignments for the presence of flora and fauna listed by USFWS as endangered and/or threatened, and those listed by the FWC as endangered, threatened, or species of special concern. The available habitat, habitat preferences, or critical habitat, if applicable, for these species was also evaluated throughout the study corridor. The protected species analysis was done in general accordance with Part 2, Chapter 16, Protected Species and Habitat of the PD&E Manual.

3.0 LAND USE COMMUNITIES

The information presented on vegetative communities including wetlands and surface waters is based upon the onsite reconnaissance, SJRWMD Florida Land Use, Cover and Forms Classification System (FLUCCS) information, National Wetland Inventory (NWI) data, and examination of current aerial photography (**Figure 2**). Identified land use categories are summarized below.

Residential, Low Density (FLUCCS 110)
This land use category is generally residential lots from 0.5 to 5 acres is size, which have less than two dwellings per acre. These areas are scattered along the entire length of the project corridor.

Improved Pasture (FLUCCS 211)
This land use category is composed of land which has been cleared, tilled and reseeded with specific grass types. These areas are scattered along the entire length of the project corridor.

Row Crops (FLUCCS 214)
Land managed for the cultivation of field and row crops, with the rows remaining well defined after the crops have been harvested. These areas are scattered along the entire length of the project corridor.

Hardwood Conifer Mixed (FLUCCS 434)
This forested community consists of areas in which neither upland conifers nor hardwoods achieve a crown canopy dominance. These areas are the primary forested areas along the length of the project corridor.

Streams and Waterways (FLUCCS 510 & NWI R5UBFx)
This land use category includes rivers, creeks, canals and other linear water bodies, where the water is not impounded by a structure. Vegetated swales are adjacent to and traverse most of the length of the project corridor.

Mixed Wetland Hardwood/Wetland Forested Mixed (FLUCCS 617/630 & NWI PFO6/3C)
These categories have been combined for this project because the vegetation observed in both areas was essentially the same. Portions of this habitat that occur within the proposed trail alternatives were previously cleared for placement of power lines.

Transportation (FLUCCS 810)
Transportation facilities are used for the movement of people and goods. Transportation facilities are adjacent to and traverse the entire length of the project corridor; included are paved and unpaved roads, utility easements and railroads.

4.0 PROTECTED SPECIES

The USFWS, through the Endangered Species Act (ESA) and other regulatory instruments, and the FWC, through Chapter 68 of the Florida Administrative Code (FAC), regulate activities that may affect species listed as threatened or endangered by either agency, or species of special concern by the FWC, or species afforded protection under other federal and state regulations. These species are collectively referred to as protected species. Information regarding the occurrence, or likelihood of occurrence, for protected species was gathered for this project area in order to comply with these regulations.

There is the potential for 23 state and 2 federally listed plant species; and 21 state and 10 federally listed animal species to occur within the project corridor (**Table 1**). This corridor falls within the USFWS consultation area for the red-cockaded woodpecker, Florida scrub-jay, Atlantic saltmarsh snake, piping plover and the Everglades snail kite, however there is no suitable habitat present for these species and no documented occurrences, therefore this project will have no effect on these species. The project corridor is within the 15-mile radii of the Lake Disston and Hontoon Island Core Foraging Areas (CFA) for the wood stork. There is one potentially active bald eagle nest, VO065 that is approximately 0.50 mile west of both trail alternatives (**Figure 3**). The project corridor contains suitable habitat for the Florida burrowing owl*;* the gopher tortoise and commensals including the Eastern indigo snake and Florida pine snake.

Table 1: Potential Listed Species Occurrence

Scientific Name	Common Name	Federal Status	State Status	Probability of Occurrence
Reptiles & Amphibians				
Alligator mississippiensis	American Alligator	Threatened	Threatened	Low
Drymarchon couperi	Eastern Indigo Snake	Threatened	Threatened	Low
Gopherus polyphemus	Gopher Tortoise	Candidate	Threatened	Moderate
Nerodia clarkii taeniata	Atlantic Salt Marsh Snake	Threatened	Threatened	None
Pituophis melanoleucus	Pine Snake	N/A	Threatened	Low
Birds				
Grus canadensis pratensis	Florida Sandhill Crane	N/A	Threatened	Low
Aphelocoma coerulescens	Florida Scrub-Jay	Threatened	Threatened	None
Charadrius melodus	Piping Plover	Threatened	Threatened	None
Egretta caerulea	Little Blue Heron	N/A	Threatened	Low
Egretta rufescens	Reddish Egret	N/A	Threatened	Low
Egretta tricolor	Tricolored Heron	N/A	Threatened	Low
Falco sparverius paulus	Southeastern American Kestrel	N/A	Threatened	Low
Haematopus palliatus	American Oystercatcher	N/A	Threatened	Low

Mycteria americana	Wood Stork	Threatened	Threatened	Moderate
Pandion haliaetus	Osprey	N/A	Special Concern	Low
Picoides borealis	Red-Cockaded Woodpecker	Endangered	Endangered	None
Platalea ajaja	Roseate Spoonbill	N/A	Threatened	Low
Rostrhamus sociabilis plumbeus	Everglades snail kite	Endangered	Endangered	None
Rynchops niger	Black Skimmer	N/A	Threatened	No
Sternula antillarum	Least Tern	N/A	Threatened	No
Mammals				
Sciurus niger shermani	Sherman's Fox Squirrel	N/A	Special Concern	Low
Plants				
Acrostichum aureum	Golden Leather Fern	N/A	Threatened	Low
Asplenium dentatum	American Toothed Spleenwort	N/A	Endangered	Low
Asplenium erosum	Auricled Speenwort	N/A	Endangered	Low
Chamaesyce cumulicola	Sand-Dune Spurge	N/A	Endangered	None
Conradina grandiflora	Large-flowered Rosemary	N/A	Threatened	Low
Cucurbita okeechobeensis	Okeechobee Gourd	Endangered	Endangered	None
Deeringothamnus rugelii	Rugel's Pawpaw	Endangered	Endangered	Low
Glandularia maritima	Coastal Vervain	N/A	Endangered	Low
Helianthus carnosus	Lake-side Sunflower	N/A	Endangered	Low
Illicium parviflorum	Star Anise	N/A	Endangered	Low
Lantana depressa var. floridana	Atlantic Coast Florida Lantana	N/A	Endangered	Low
Lechea cernua	Nodding Pinweed	N/A	Threatened	Low
Nemastylis floridana	Celestial Lily	N/A	Endangered	Low
Nolina atopocarpa	Florida Beargrass	N/A	Threatened	Low
Ophioglossum palmatum	Hand Fern	N/A	Endangered	Low
Pecluma plumula	Plume polypody	N/A	Endangered	Low
Pecluma ptilota var. bourgeauana	Comb polypody	N/A	Endangered	Low
Pteroglossaspis ecristata	Giant Orchid	N/A	Threatened	Low
Sideroxylon lycioides	Buckthorn	N/A	Endangered	Low
Spigelia loganioides	Pinkroot	N/A	Endangered	Low
Tephrosia angustissima var. curtissii	Coastal Hoary-pea	N/A	Endangered	None
Zephyranthes simpsonii	Redmargin Zephyrlily	N/A	Threatened	Low

4.1 Florida Scrub-Jay

This small, blue and gray, gregarious bird is listed by both the USFWS and FWC as threatened. They can be found in low-growing, oak scrub habitat with well drained soils as well as fallow orange groves. They are year-round residents in Florida but are most likely to be spotted between March and October. No appropriate habitat occurs within the project area and no individuals were noted during field survey; therefore, this project will have no effect on the species.

4.2 Wood Stork

This long-legged wader is a large bodied white bird with black on the wings and tail. Wood storks' nest in colonies in a variety of inundated forested wetlands such as cypress swamps, sloughs or mangroves. Foraging habitat includes shallow fresh water marshes, ponds, ditches or pastures. The USFWS and the FWC both list the wood stork as threatened. No wood storks were observed within the project footprint or within the shallow marshes and ponds adjacent to the project corridor.

Although wetland and OSW impacts to potential Suitable Foraging Habitat (SFH) appear to exceed half an acre for each alternative, there are upland areas between the alternatives in which the alignment could be shifted during design to avoid most of the potential impacts. It is also likely based on preliminary drainage evaluations that additional ditch/swale areas will need to be created for this project. These new ditch areas could be designed to match the hydroperiod and function of the impacted SFH, offsetting any proposed impacts within the same CFA.

Based on the USFWS' Determination Key, a not likely to adversely affect (NLAA) determination is appropriate for this species, if "the project provides SFH compensation in accordance with the Clean Water Act (CWA) section 404(b)(1) guidelines and is not contrary to the Habitat Management Guidelines (HMG); habitat compensation is within the appropriate CFA or within the service area of a Service-approved mitigation bank; and habitat compensation replaces foraging value, consisting of wetland enhancement or restoration matching the hydroperiod of the wetlands affected, and provides foraging value similar to, or higher than, that of impacted wetlands."

4.3 Red-Cockaded Woodpecker

This small woodpecker is distinguished by its barred, black and white back and wings and large white cheek patches. This species is known to occur in open, mature pine woodlands throughout the state. Populations are restricted to areas of old growth pine forest. The red-cockaded woodpecker is listed by the USFWS and FWC as endangered. No documented occurrence of red-cockaded woodpeckers and no habitat for this species occur within the project corridor. Therefore, this project will have no effect on this species.

4.4 Eastern Indigo Snake

This snake is listed by both the USFWS and FWC as threatened. The large, stout-bodied, shiny black snake can reach 8 feet in length and will utilize a wide range of habitats from scrub and sandhills to wetlands throughout Florida. Eastern indigo snakes require large tracts of natural land to survive, typically foraging in more hydric habitats. A review of available literature and online data revealed no occurrences of Eastern indigo snakes in the project area. No Eastern indigo snakes were observed during the field review of the corridor, no gopher tortoise burrows were identified, and there is less than 25 acres of xeric habitat present along the project corridor. The USACE Permit will be conditioned for use of the USFWS Standard Protection Measures for The Eastern Indigo Snake during site preparation and project construction therefore, based on the USFWS' Determination Key, a NLAA determination has been made for this species.

4.5 Florida Burrowing Owl

This pint-sized bird resides in open, treeless areas where it spends most of its time on the ground. Its sandy brown plumage offers camouflage from predators from its ground-level perch. Throughout the state its distribution is considered localized and spotty. They often inhabit native prairies, golf courses, airports and vacant lots. Burrows are used year-round that are dug on their own, however, they can also utilize gopher tortoise or armadillo burrows. They are listed as threatened by the FWC. Appropriate habitat exists within the project corridor, but no burrowing owls or their burrows have been observed during the field review, therefore the project is anticipated to have no adverse effect on this species.

4.6 Gopher Tortoise

This medium sized turtle is fully adapted for life on land. The forelimbs are greatly expanded for excavating deep burrows to escape predators, weather or fire. Gopher tortoises are found in dry habitats such as sandhills, xeric oak habitats, and dry pine flatwoods. More than 300 other species of animals have been recorded sharing gopher tortoise burrows. Gopher tortoises are listed by the FWC as threatened and are a candidate species for listing by the USFWS. Appropriate habitat exists within the project corridor, but no gopher tortoises or their burrows have been observed during the field review, therefore the project is anticipated to have no adverse effect on this species. Gopher tortoise surveys will be conducted prior to the commencement of construction and if necessary, a permit will be obtained from the FWC.

4.7 Florida Sandhill Crane

This tall, long-necked, long-legged bird range throughout the Florida peninsula from Okefenokee Swamp to the Everglades. These birds spend much of the year foraging within a variety of habitats including improved pasture, open pine forests, agricultural cropland, and freshwater marshes. In Central Florida, the Florida sandhill crane typically nests in shallow freshwater marshes and forages on agricultural lands. They are listed as threatened by FWC. Appropriate habitat exists within the project corridor, but no sandhill cranes have been observed during field reviews. The 2016 FWC Sandhill Crane Species Guidelines will be implemented throughout the

design, permitting and construction phases of this project. Therefore, the project is anticipated to have no adverse effect on this species.

4.8 Bald Eagle

The USFWS has delisted the bald eagle from the list of threatened and endangered species because the bald eagle population has recovered in the lower 48 states, threats to the species have been reduced or eliminated, and reproductive success has significantly increased. The bald eagle will continue to be managed and protected by the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act. In addition, the bald eagle is protected in Florida through F.A.C. 68A-16.002. As of February 2016, the FWC bald eagle nesting database does not indicate any active or inactive bald eagle nests within 660 feet of either alternative. The nearest nest, VO065, occurs approximately 0.5 mile to the west of the project corridor. Bald eagle protection guidelines require that a buffer of at least 660 feet be maintained between the activity and the nest (including active and alternate nests), or as close as existing tolerated activity of similar scope, i.e. maintain a buffer at least as far from the nest as the existing tolerated activity. Therefore, the project is anticipated to have no effect on this species.

4.9 Plants

Habitats within the project corridor consist of maintained roadside uplands, wetlands and surface waters. As a result, there is little suitable habitat within the project corridor for protected plants (See Table 1). There are two federally listed species with the potential to occur in this part of Volusia County, Okeechobee Gourd (*Cucurbita okeechobeensis okeechobeensis*) and Rugel's pawpaw (*Deeringothamnus rugelii*). There is no suitable habitat present for the Okechobee gourd. Rugel’s pawpaw has an affinity for Immokalee soil and there is only one small area of Immokalee soil located just south of Pierson. This area is partially developed, and the soils disturbed. During the field reviews, no protected plant species were observed within the project corridor. Areas to be impacted by this project will be re-evaluated for the presence of protected plant species during permitting in the design phase of the project. Therefore, no adverse effects are anticipated to any protected plant species.

5.0 ESSENTIAL FISH HABITAT

There is no Essential Fish Habitat (EFH) within the project corridor, therefore the project will have no effect on EFH.

6.0 WETLANDS

There is a total of 3.77 acres of wetland impacts within Alternative A and 0.64 acre of wetland impact within Alternative B. A single wetland community type, partially cleared Mixed Wetland Hardwoods (FLUCCS 617/630 and NWI PFO6/3C), exists within the project limits. Dominant vegetation within this wetland community is composed of cattail (*Typha spp.)*, saw grass (*Cladium jamaicense)* and sphagnum moss (*Sphagnum spp.)* with the canopy consisting of red maple (*Acer rubrum)*, black gum (*Nyssa sylvatica)*, bald cypress (*Taxodium distichum)* and loblolly bay (*Gordonia lasianthus)*. Wetland functions have been impacted due to proximity to the road and roadside surface waters, and modification of the canopy from construction and maintenance of the powerlines.

Ditches and swales (FLUCCS 510 and NWI R5UBFx) classified by the state as OSW are also present within the project corridor, primarily as vegetated ditches/swales. There are 5.75 acres of jurisdictional OSW impacts associated with Alternative A and 10.49 acres of OSW impact with Alternative B. The dominant vegetation in this herbaceous community consists of pickerelweed (*Pontederia cordata)*, yellow canna (*Canna indica)*, arrowhead (*Sagittaria lancifolia)* and pennywort (*Hydrocotyle umbellata)* with some larger Carolina willow (*Salix caroliniana).* These jurisdictional surface waters are part of the roadside drainage system and their proximity to the road and continued disturbance through road maintenance activities limits their functional wetland value.

Avoidance and minimization of the jurisdictional wetland and OSW impacts will be addressed through shifts in the proposed alternatives. Much of the area between the two alternatives is upland and a shift of either alternative to this upland area through where jurisdictional areas are located should reduce impacts significantly. Since both alternatives are located within previously cleared road or powerline corridors, wetland impacts associated with the construction of this project should result in minimal secondary impacts to remaining wetlands within and outside the right of way. During design, potential secondary wetland impacts will be discussed with both the SJRWMD and the USACE to determine if any mitigation will be required for these impacts.

Mitigation for the estimated wetland impacts was determined using the Unified Mitigation Assessment Method (UMAM), which is the standard wetland functional assessment tool required by the state for assessing the functions provided by wetlands and other surface waters, the amount that those functions are reduced by a proposed impact, and the amount of mitigation necessary to offset that loss. The summary of wetland impacts and associated functional loss are shown in Table 2.

Table 2: Summary of Wetlands and UMAM Assessment

Wetland/Corridor ID	FLUCCS	Impact (acres)	Impact Delta	Functional Loss
Alternative A	OSW	5.75	0.23	1.32
Alternative A	617/630	3.77	0.57	2.15
Alternative B	OSW	10.49	0.23	2.41
Alternative B	617/630	0.64	0.57	0.36

Further avoidance and minimization of jurisdictional wetland/OSW impacts will be developed during both the Design Phases to ensure that there are no practicable alternatives to the proposed impacts. Based on that, identifying appropriate mitigation as the next step in the process, meets state and federal requirements. Most of the project is within the St. Johns River (Wekiva to Welaka) Regulatory Basin (14) and a small northern section of the project is within the Crescent Lake Regulatory Basin (16). This project falls within the service area for both Barberville Mitigation Bank and Blackwater Creek Mitigation Bank, both of which are located within Basin 14. However, without further avoidance and minimization measures, only Blackwater Creek has enough available forested and herbaceous mitigation credits for the potential Basin 14 impacts to be fully mitigated. For Basin 16 impacts, both Brick Road Mitigation Bank and Fish Tail Swamp Mitigation Bank are located within Basin 16 and both have available freshwater forested credits to offset potential impacts in this basin. Therefore, mitigation for this project can be implemented entirely within the impact basins and pursuant to state (Section 10.2.8, ERP A.H. Volume I) regulations no unacceptable cumulative impacts will result. Based on the low functional value of the jurisdictional wetlands and surface waters to be impacted and the availability of mitigation within the same basin as the proposed impacts, the proposed jurisdictional impacts would not be considered significant.

7.0 ANTICIPATED PERMITS

Based on expected avoidance and minimization measures, the proposed project is anticipated to require the following permits:

- St. Johns River Water Management District – General Permit or Individual Environmental Resource Permit
- U.S. Army Corps of Engineers – Nationwide 14 or SAJ 92
- U. S. Environmental Protection Agency – National Pollutant Discharge Elimination System Permit

8.0 CONCLUSIONS

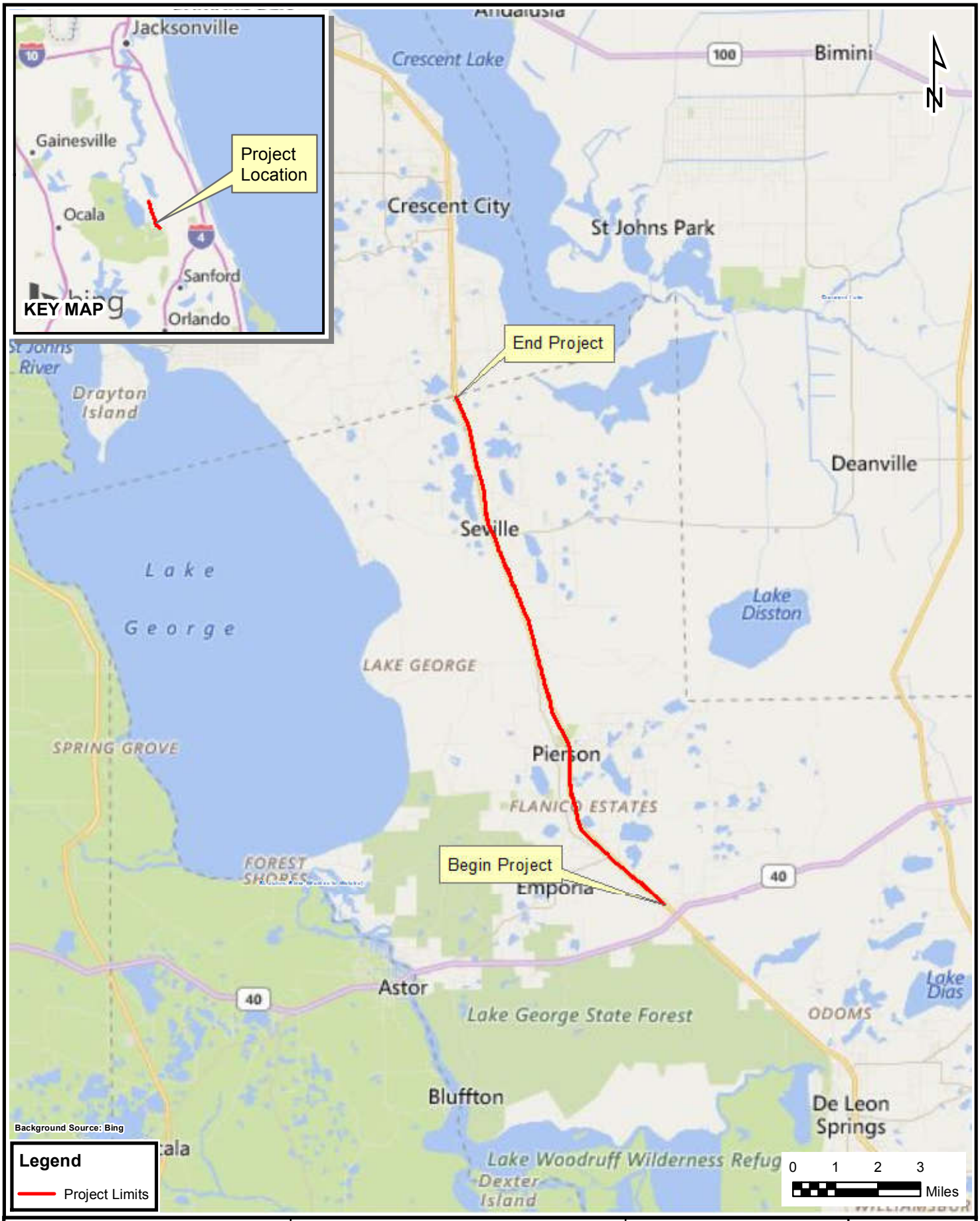
Wetland impacts associated with the construction of this project can be mitigated pursuant to Section 373.4137 Florida Statutes (F.S.) to satisfy all mitigation requirements of Part IV, Chapter 373, F.S. and 33 U.S.C.s. 1344. Under Section 373.4137 F.S., mitigation of wetland impacts will be implemented by the purchase of mitigation bank credits from a SJRWMD-approved mitigation bank. Potential wetland and OSW impacts for Alternative A are 3.77 acres and 5.75 acres, respectively and potential wetland and OSW impacts for Alternative B are 0.64 acre and 10.49 acres, respectively. The total potential wetland and OSW impacts associated with the proposed alternatives along the US 17 trail corridor are 9.52 acres for Alternative A and 11.13 acres for Alternative B. Adverse impacts to individual species or regional populations of federal or state protected species or their habitat are not anticipated because of the construction of this project.

Table 3 below summarizes the proposed wetland/OSW impacts and potential wildlife impacts for each segment of the alternative alignments.

Table 3: Alternatives Matrix

Segment Stationing	Wetland and OSW Impacts (Acres)			Potential Wildlife Occurrence		
	A	B	A/B	A	B	AB
36 to 106	1.67	3.17	N/A	Low	Low	N/A
106 to 131	N/A	N/A	0.14	N/A	N/A	Low
131 to 173	1.50	1.47	N/A	Low	Low	N/A
173 to 225	N/A	N/A	2.38	N/A	N/A	Low
225 to 232	0	0	N/A	Low	Low	N/A
232 to 280	0	0	N/A	Low	Low	N/A
339 to 518	3.37	3.51	N/A	Low	Low	N/A
518 to 739	N/A	N/A	0.46	N/A	N/A	Low

FIGURES



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FDOT	**SR 15 (US 17) Trail PD&E** **FROM SR 40** **TO PUTNAM COUNTY LINE** Volusia County, FL	**Location Map**	FIGURE **1**
PROJECT NUMBER: 8-0225-001		SCALE: 1 "=3 miles DATE: 11/15/2018	

G:\Projects\8-0225-P01\GIS\2 Land Use Key Wetlands & Alternatives_R3.mxd

Legend

Alternatives

- ALT A
- ALT B

Impact Areas

- ALT A - OSW Impact
- ALT A - Wetland Impact
- ALT B - OSW Impact
- ALT B - Wetland Impact
- ALT A & ALTB - Co-located OSW Impact
- ALT A & ALT B - Co-located Wetland Impact
- Land Use

110 - RESIDENTIAL, LOW DENSITY (LESS THAN TWO DWELLING UNITS PER ACRE)

118 - RURAL RESIDENTIAL

120 - RESIDENTIAL, MEDIUM DENSITY (TWO-FIVE DWELLING UNITS PER ACRE)

130 - RESIDENTIAL, HIGH DENSITY (SIX OR MORE DWELLING UNITS PER ACRE)

140 - COMMERCIAL AND

148 - CEMETERIES

151 - FOOD PROCESSING

170 - INSTITUTIONAL

186 - COMMUNITY RECREATIONAL FACILITIES

211 - IMPROVED PASTURES

212 - UNIMPROVED PASTURES

213 - WOODLAND PASTURES

215 - FIELD CROPS

221 - CITRUS GROVES

241 - TREE NURSERIES

243 - ORNAMENTALS

251 - HORSE FARMS

260 - OTHER OPEN LANDS (RURAL)

320 - SHRUB AND

330 - MIXED RANGELAND

411 - PINE FLATWOODS

434 - HARDWOOD - CONIFEROUS MIXED

441 - CONIFEROUS PLANTATIONS

443 - FOREST REGENERATION

520 - LAKES

530 - RESERVOIRS

611 - BAY SWAMPS

617 - MIXED WETLAND HARDWOODS

621 - CYPRESS

625 - HYDRIC PINE FLATWOODS

630 - WETLAND FORESTED MIXED

641 - FRESHWATER MARSHES

643 - WET PRAIRIES

644 - EMERGENT AQUATIC

646 - TREELESS HYDRIC SAVANNA

832 - ELECTRICAL POWER TRANSMISSION

833 - WATER SUPPLY PLANTS

FDOT

DRAWN BY: LG	CHECKED BY:	PROJECT NUMBER: 8-0225-001

SR 15 (US 17) Trail PD&E
FROM SR 40 TO PUTNAM COUNTY LINE

Volusia County, FL

Wetland/OSW Impact Map and Land Use Legend

SCALE: NTS	DATE: 11/15/2018

FIGURE 2

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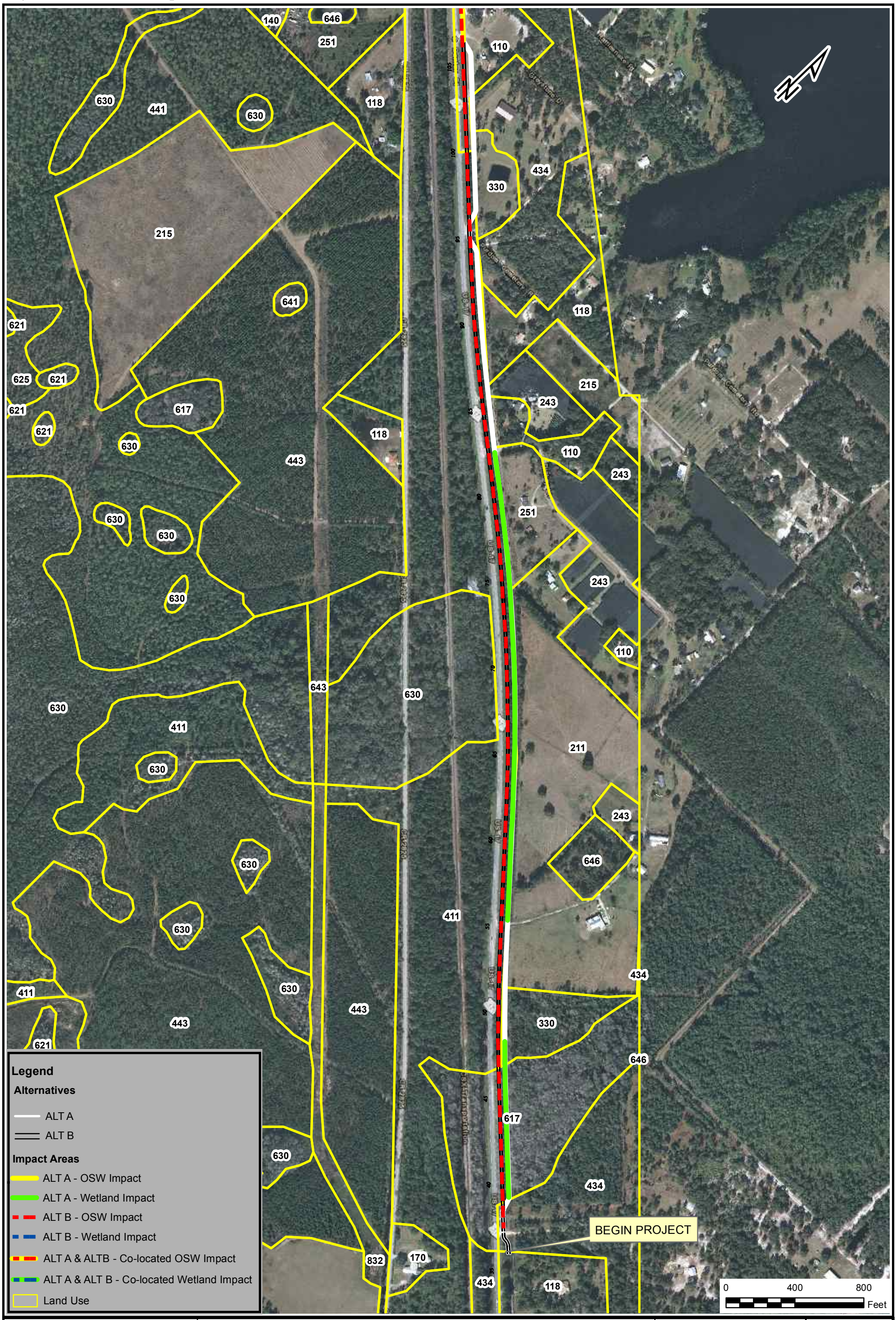

FDOT	**SR 15 (US 17) Trail PD&E FROM SR 40 TO PUTNAM COUNTY LINE**	Wetland/OSW Impact Map	FIGURE 2A
DRAWN BY: LG / CHECKED BY: / PROJECT NUMBER: 8-0225-001	Volusia County, FL	SCALE: 1 "=500 feet / DATE: 11/15/2018	

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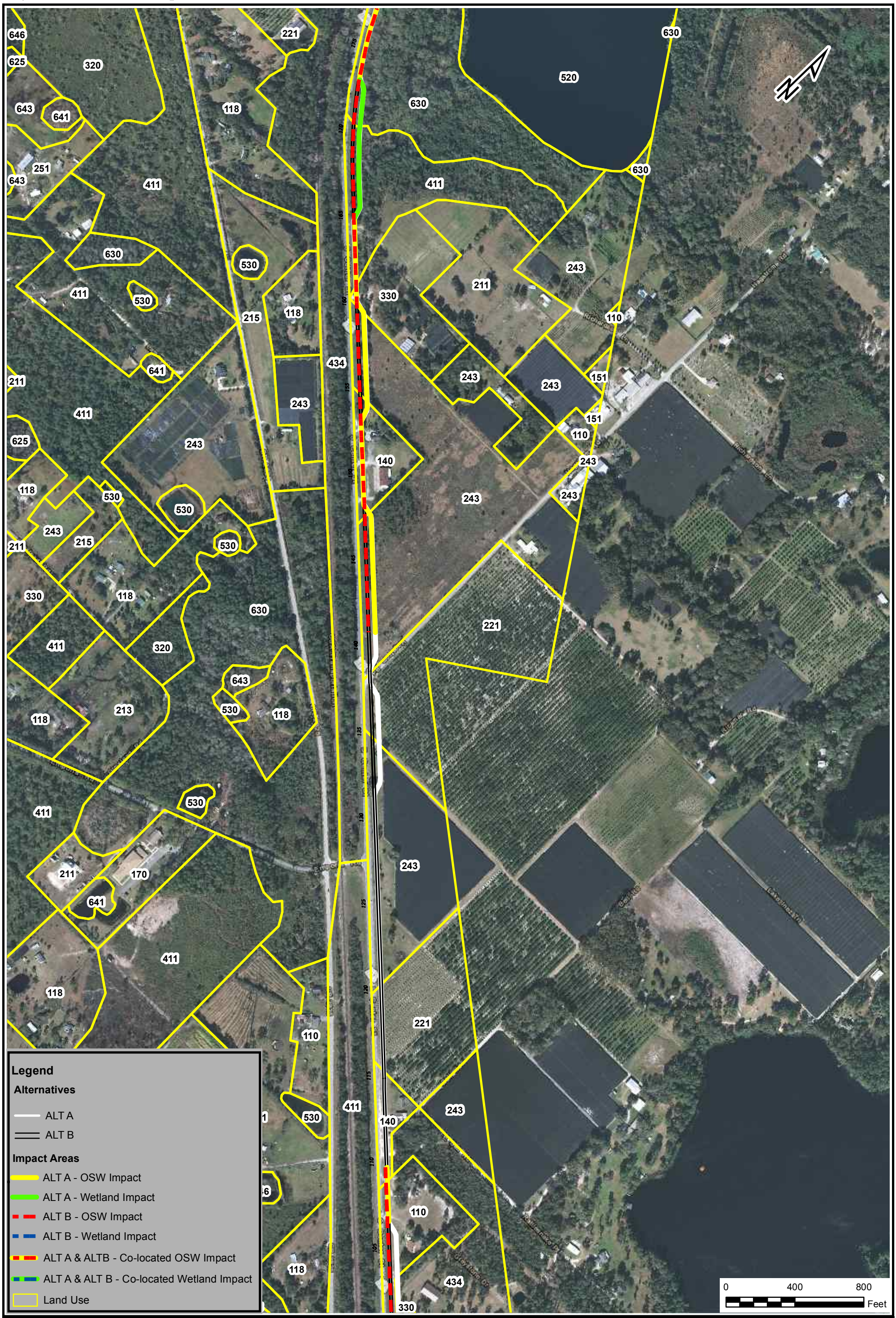

FDOT

SR 15 (US 17) Trail PD&E
FROM SR 40 TO PUTNAM COUNTY LINE

Volusia County, FL

DRAWN BY: LG	CHECKED BY:	PROJECT NUMBER: 8-0225-001

Wetland/OSW Impact Map

SCALE: 1 "=500 feet	DATE: 11/15/2018

FIGURE 2B

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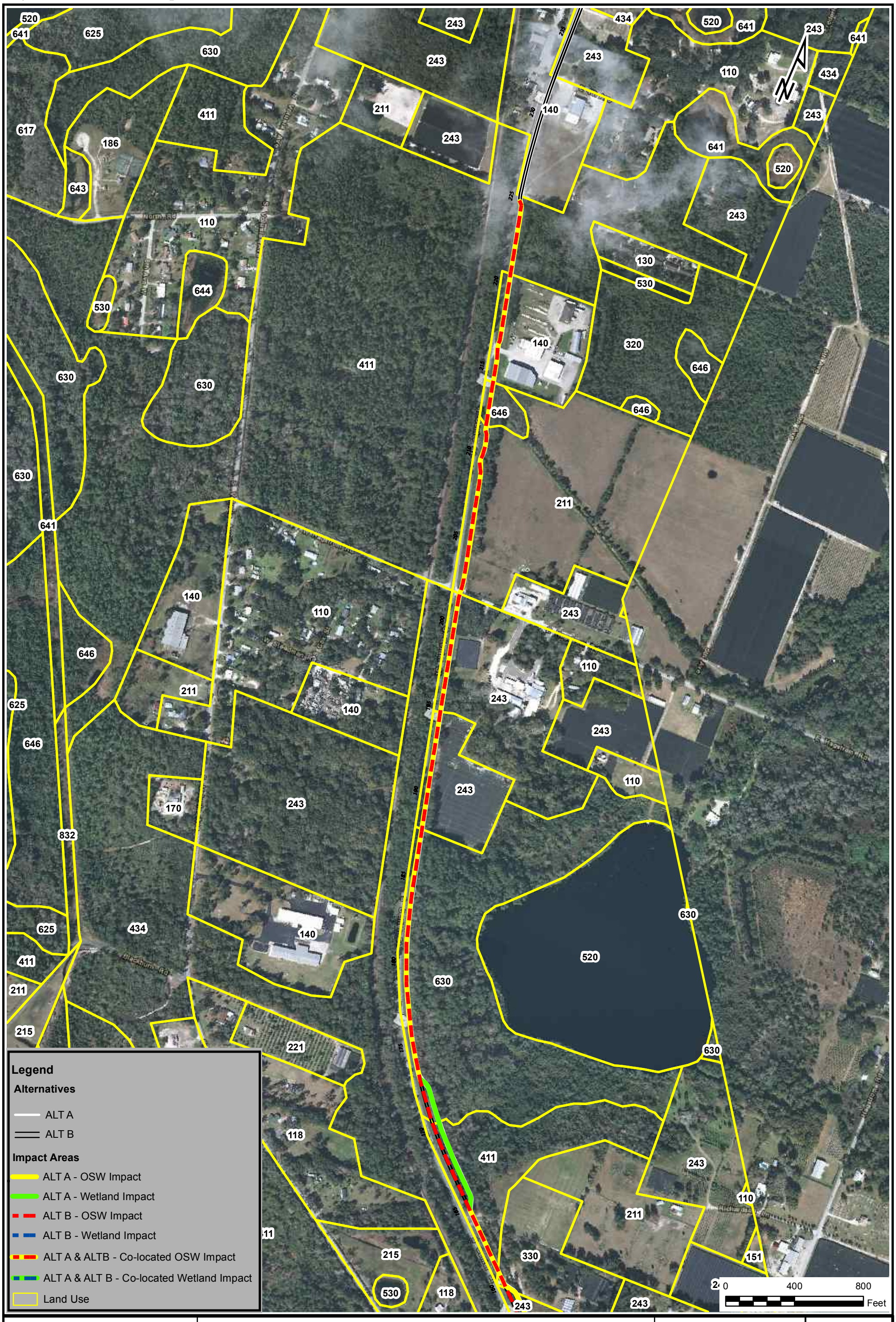

FDOT			**SR 15 (US 17) Trail PD&E FROM SR 40 TO PUTNAM COUNTY LINE**	Wetland/OSW Impact Map	FIGURE 2C
DRAWN BY: LG	CHECKED BY:	PROJECT NUMBER: 8-0225-001	Volusia County, FL	SCALE: 1 "=500 feet	DATE: 11/15/2018

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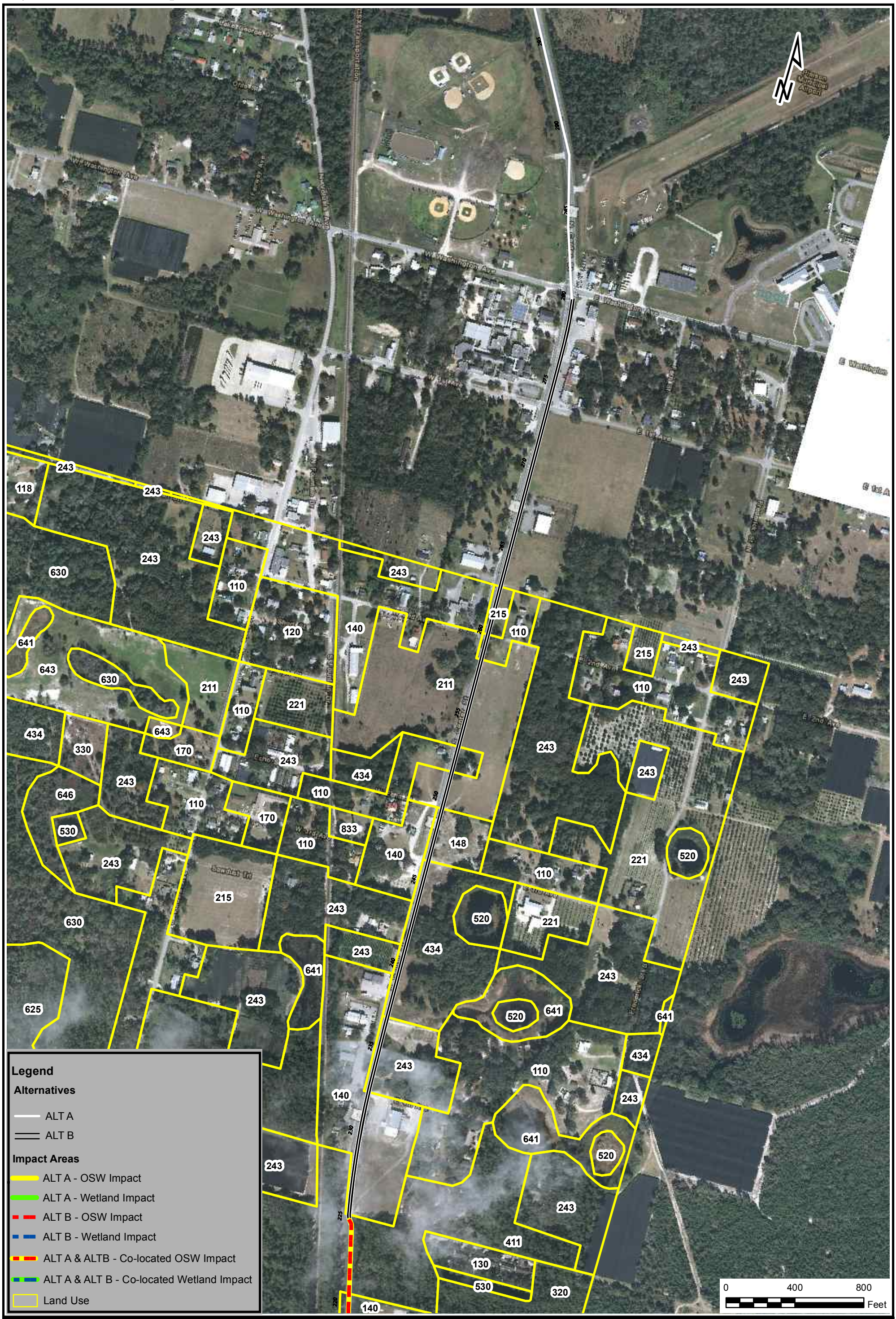

FDOT

SR 15 (US 17) Trail PD&E
FROM SR 40 TO PUTNAM COUNTY LINE

Volusia County, FL

Wetland/OSW Impact Map

FIGURE 2D

DRAWN BY:	CHECKED BY:	PROJECT NUMBER:	SCALE:	DATE:
LG		8-0225-001	1 "=500 feet	11/15/2018

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Legend

Alternatives

- ALT A
- ALT B

Impact Areas

- ALT A - OSW Impact
- ALT A - Wetland Impact
- ALT B - OSW Impact
- ALT B - Wetland Impact
- ALT A & ALTB - Co-located OSW Impact
- ALT A & ALT B - Co-located Wetland Impact
- Land Use

FDOT

SR 15 (US 17) Trail PD&E
FROM SR 40 TO PUTNAM COUNTY LINE

Volusia County, FL

Wetland/OSW Impact Map

FIGURE 2E

DRAWN BY:	CHECKED BY:	PROJECT NUMBER:	SCALE:	DATE:
LG		8-0225-001	1 "=500 feet	11/15/2018

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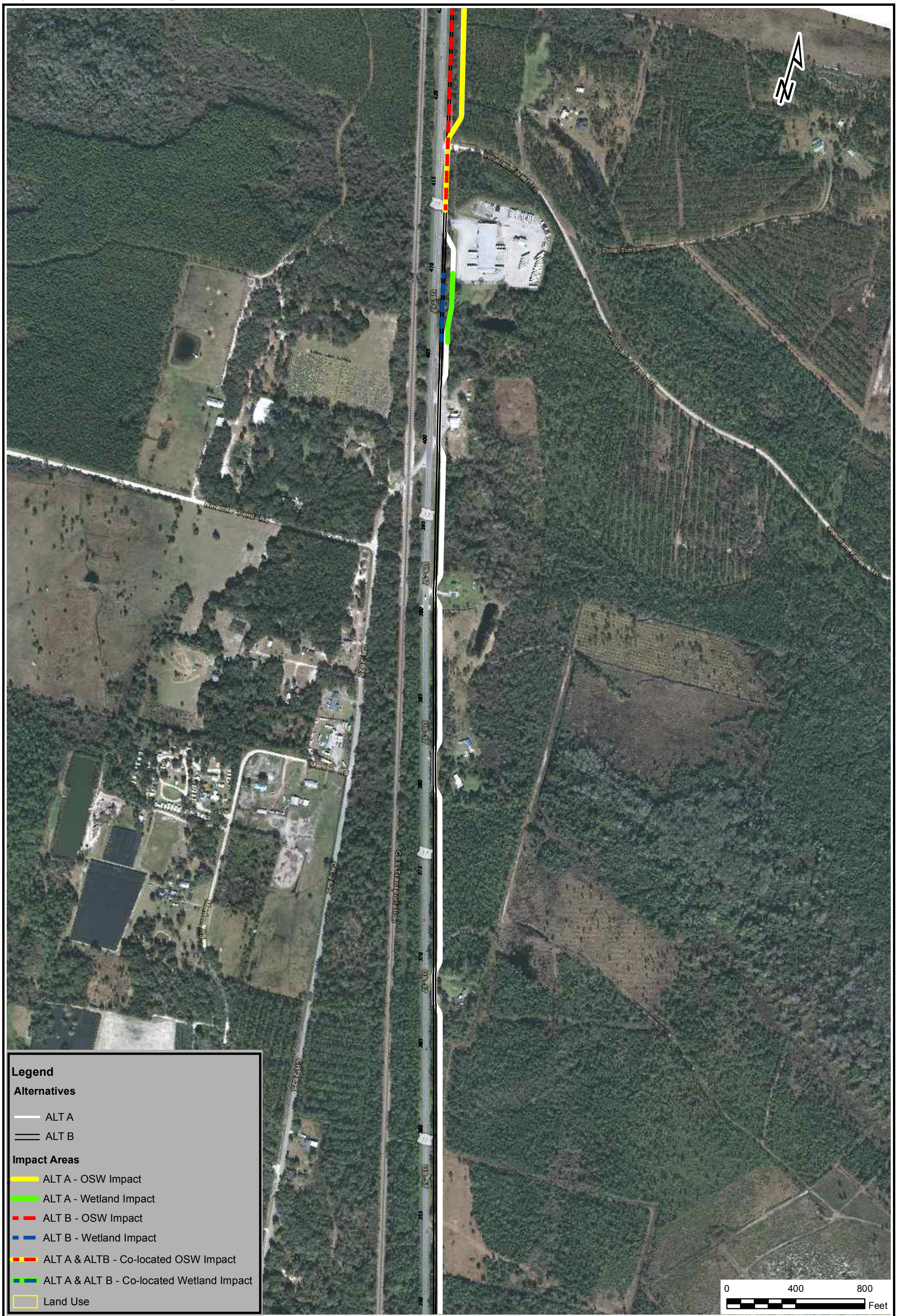

SR 15 (US 17) Trail PD&E
FROM SR 40 TO PUTNAM COUNTY LINE

Volusia County, FL

Wetland/OSW Impact Map

FIGURE 2F

DRAWN BY:	CHECKED BY:	PROJECT NUMBER:	SCALE:	DATE:
LG		8-0225-001	1 "=500 feet	11/15/2018

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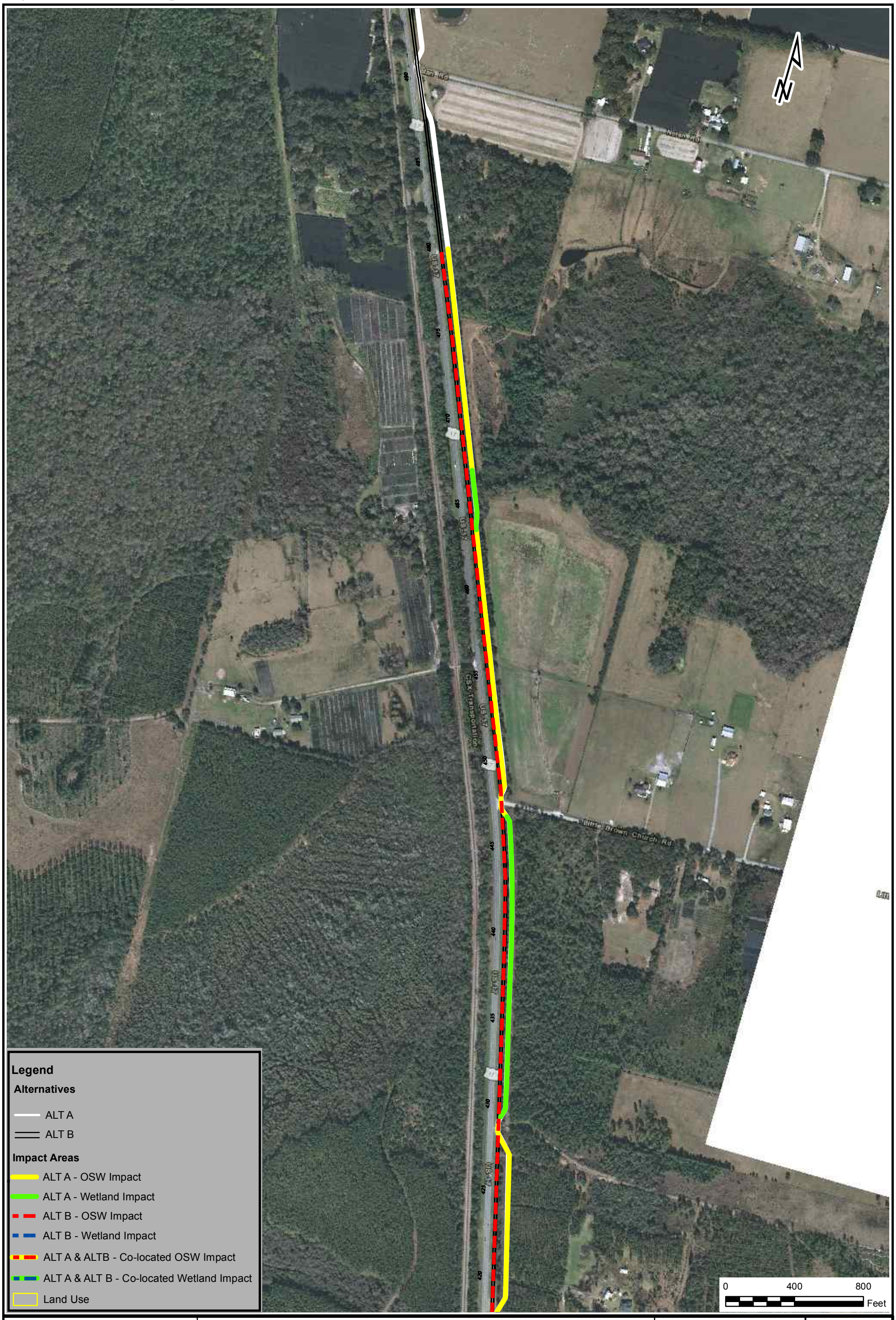

FDOT			SR 15 (US 17) Trail PD&E FROM SR 40 TO PUTNAM COUNTY LINE	Wetland/OSW Impact Map	FIGURE 2G
DRAWN BY: LG	CHECKED BY:	PROJECT NUMBER: 8-0225-001	Volusia County, FL	SCALE: 1 "=500 feet	DATE: 11/15/2018

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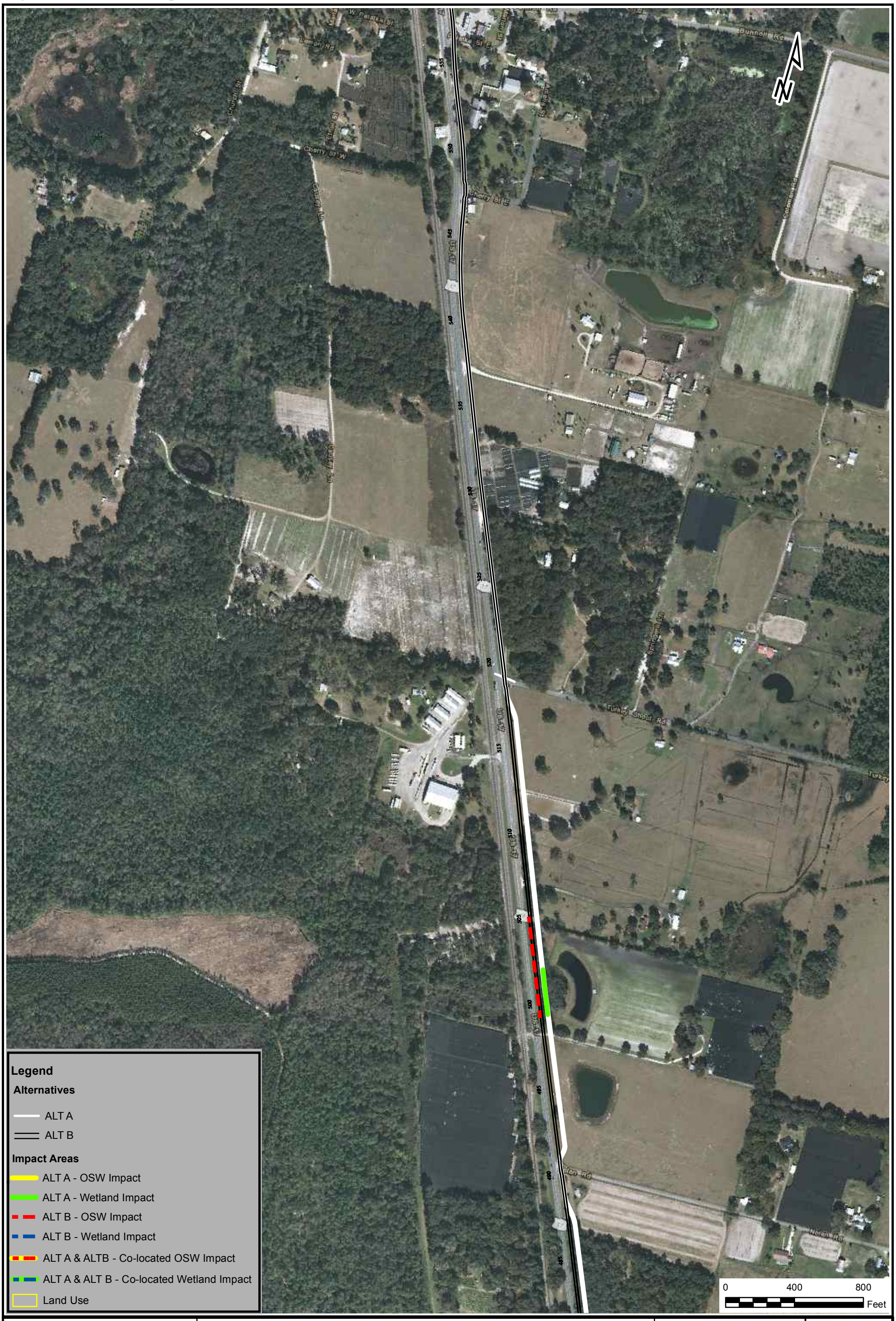

Legend

Alternatives

- ALT A
- ALT B

Impact Areas

- ALT A - OSW Impact
- ALT A - Wetland Impact
- ALT B - OSW Impact
- ALT B - Wetland Impact
- ALT A & ALTB - Co-located OSW Impact
- ALT A & ALT B - Co-located Wetland Impact
- Land Use

FDOT

SR 15 (US 17) Trail PD&E
FROM SR 40 TO PUTNAM COUNTY LINE

Volusia County, FL

Wetland/OSW Impact Map

FIGURE 2H

DRAWN BY:	CHECKED BY:	PROJECT NUMBER:	SCALE:	DATE:
LG		8-0225-001	1 "=500 feet	11/15/2018

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FDOT

SR 15 (US 17) Trail PD&E
FROM SR 40 TO PUTNAM COUNTY LINE

Volusia County, FL

Wetland/OSW Impact Map

FIGURE 2I

DRAWN BY: LG	CHECKED BY:	PROJECT NUMBER: 8-0225-001	SCALE: 1 "=500 feet	DATE: 11/15/2018

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FDOT	**SR 15 (US 17) Trail PD&E FROM SR 40 TO PUTNAM COUNTY LINE**	Wetland/OSW Impact Map	FIGURE 2J
DRAWN BY: LG / CHECKED BY: / PROJECT NUMBER: 8-0225-001	Volusia County, FL	SCALE: 1 "=500 feet / DATE: 11/15/2018	

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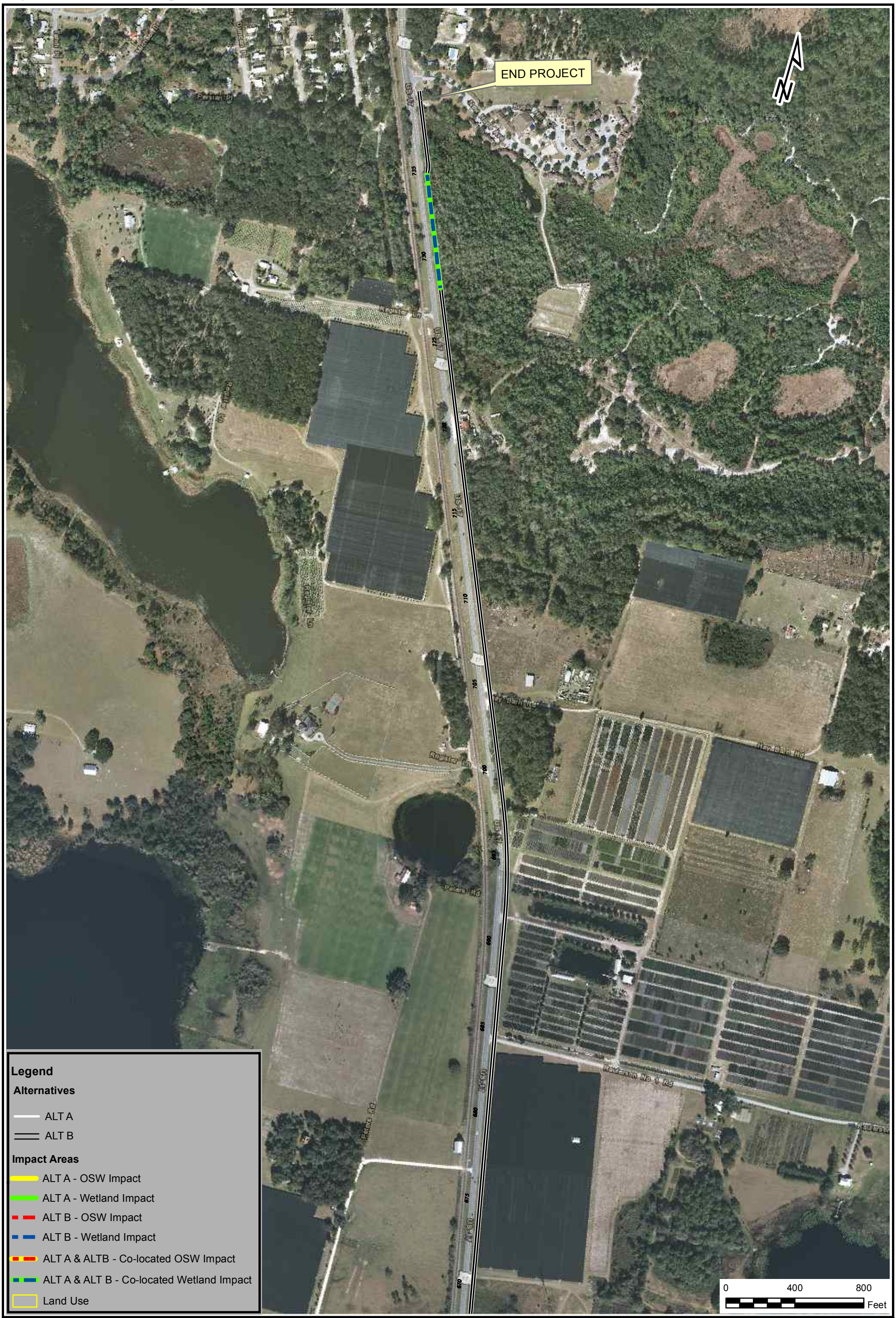

FDOT			**SR 15 (US 17) Trail PD&E FROM SR 40 TO PUTNAM COUNTY LINE**	Wetland/OSW Impact Map	FIGURE 2K
DRAWN BY: LG	CHECKED BY:	PROJECT NUMBER: 8-0225-001	Volusia County, FL	SCALE: 1 "=500 feet	DATE: 11/15/2018

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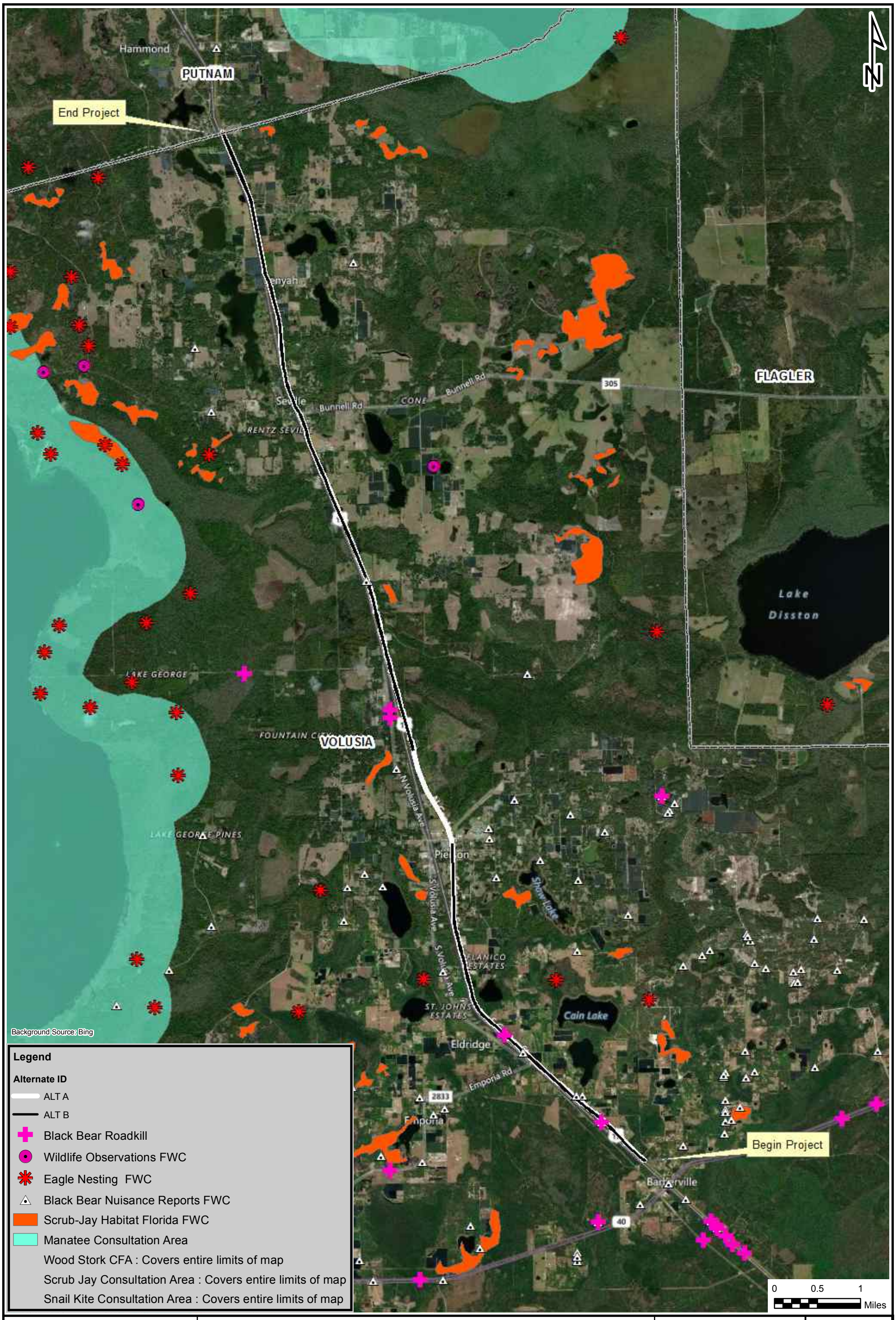

Legend

Alternate ID

- ALT A
- ALT B
- Black Bear Roadkill
- Wildlife Observations FWC
- Eagle Nesting FWC
- Black Bear Nuisance Reports FWC
- Scrub-Jay Habitat Florida FWC
- Manatee Consultation Area
- Wood Stork CFA : Covers entire limits of map
- Scrub Jay Consultation Area : Covers entire limits of map
- Snail Kite Consultation Area : Covers entire limits of map

FDOT

SR 15 (US 17) Trail PD&E
FROM SR 40 TO PUTNAM COUNTY LINE

Volusia County, FL

Protected Species

FIGURE 3

DRAWN BY:	CHECKED BY:	PROJECT NUMBER:	SCALE:	DATE:
LG		8-0225-001	1 "=1 miles	11/15/2018