

NATURAL RESOURCES EVALUATION

**Florida Department of Transportation
District One**

**SR 29 Immokalee
Project Development and Environment (PD&E) Study
from Oil Well Road to SR 82
Collier County, Florida**

**Financial Management Number: 417540-1-22-01
ETDM Number: 3752**

July 2018

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated December 14, 2016 and executed by FHWA and FDOT.

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
EXECUTIVE SUMMARY	ES-1
1.0 PROJECT OVERVIEW	1-1
1.1 Project Description.....	1-1
1.1.1 Purpose and Need	1-1
1.1.2 Project Alternatives.....	1-5
1.2 Project Study Area	1-6
1.3 Existing Conditions.....	1-8
1.3.1 Land Use/Vegetative Cover.....	1-9
1.3.2 Soils.....	1-11
1.3.3 Conservation Lands	1-12
2.0 PROTECTED SPECIES AND HABITAT	2-1
2.1 Introduction.....	2-1
2.2 Field Review	2-2
2.3 Species Occurrences and Effect Determinations	2-2
2.3.1 Federally-Listed and State-Listed/Protected Wildlife Species	2-5
2.3.2 Federally-Listed and State- Listed Plant Species.....	2-19
2.3.3 Non-Listed/Protected Species.....	2-21
2.3.4 Candidate Species	2-23
3.0 WETLANDS AND OTHER SURFACE WATERS	3-1
3.1 Introduction.....	3-1
3.2 Methodology.....	3-1
3.3 Individual Wetlands and Other Surface Waters.....	3-2
3.4 Wetland and Other Surface Water Impacts	3-6
3.4.1 Avoidance and Minimization.....	3-7
3.5 UMAM Analysis.....	3-7
3.6 Mitigation Options	3-8
3.7 Agency Coordination.....	3-9
4.0 ANTICIPATED PERMITS	4-1
5.0 CONCLUSIONS	5-1
5.1 Protected Species and Habitats	5-1
5.2 Wetlands Findings	5-2
5.3 Implementation Measures.....	5-3
5.4 Commitments.....	5-4
6.0 REFERENCES.....	6-1

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1-1 Project Location Map.....	1-2
1-2 Project Build Alternatives.....	1-7
1-3 Conservation Lands	1-13
2-1 Existing Scrub Jay Habitat.....	2-7
2-2 Active Wood Stork Colonies	2-9
2-3 Panther Consultation Area and Zones.....	2-14
2-4 Panther Telemetry and Mortality Locations	2-15
2-5 Bald Eagle Nest Location	2-22

LIST OF TABLES

<u>Table</u>	<u>Page</u>
ES-1 Summary of Listed Species and Effect Determinations	ES-2
ES-2 Individual Wetlands and Other Surface Waters.....	ES-4
1-1 Existing Land Use/Vegetative Cover Within the Project Study Area	1-10
1-2 Soil Types and Coverage Within the Project Study Area.....	1-11
2-1 Listed/Protected Wildlife Species, Designation, and Potential for Occurrence	2-3
2-2 Listed/Protected Plant Species, Designation, and Potential for Occurrence	2-4
3-1 Individual Wetlands and Other Surface Waters.....	3-2
3-2 UMAM Functional Loss.....	3-8
5-1 Summary of Listed Species Effect Determinations	5-1

LIST OF APPENDICES

Appendix A	Agency Comments
Appendix B	Conceptual Plans
Appendix C-1	Land Use/Vegetative Cover Maps
Appendix C-2	Land Use Descriptions
Appendix D-1	Soils Maps
Appendix D-2	Soils Descriptions
Appendix E	IPaC Resource List
Appendix F	FNAI Data Report
Appendix G	Standard Protection Measures for the Eastern Indigo Snake
Appendix H-1	Panther Telemetry Data

Appendix H-2	Panther Mortality Data
Appendix H-3	PHU Assessment Summary Table
Appendix I	Wetland Photographs
Appendix J	Wetland and OSW Location Maps
Appendix K-1	Pond and Floodplain Compensation Sites Maps
Appendix K-2	Pond and Floodplain Compensation Sites Discussion
Appendix L	UMAM Data Sheets

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) District One is conducting a Project Development and Environment (PD&E) Study, in accordance with the National Environmental Policy Act (NEPA), to assess the need for capacity and traffic operational improvements along a two-lane undivided section of SR 29 extending 15.6 miles from Oil Well Road (southern terminus) to SR 82 (northern terminus) in unincorporated Collier County, Florida. Presently, the No Build Alternative and two Build Alternatives are being considered as part of the PD&E Study.

This Natural Resources Evaluation (NRE) was prepared to document the natural resources analysis performed to support decisions related to the evaluation of the project alternatives and to summarize potential impacts to wetlands, federal and state protected species, and protected habitats. Measures considered to avoid, minimize, and mitigate for potential impacts are also discussed. This report provides documentation of these processes to supplement the Environmental Document.

The project alternatives were evaluated for potential occurrences of federally-listed and state-listed animal and plant species in accordance with Section 7 of the Endangered Species Act (ESA) of 1973, as amended; the Fish and Wildlife Conservation Act; the Migratory Bird Treaty Act; Part 2, Chapter 16 of the FDOT PD&E Manual; and Chapters 5B-40 and 68A-27 Florida Administrative Code (F.A.C.). Based on this evaluation, a total of 10 federally-listed animal species (plus 1 candidate species), 2 federally-listed plant species, 8 state-listed animal species, and 10 state-listed plant species were identified as potentially occurring within the two Build Alternatives. Additionally, while not state or federally listed under the ESA, the bald eagle (*Haliaeetus leucocephalus*), osprey (*Pandion haliaetus*), and Florida black bear (*Ursus americanus floridanus*) were included in the protected species analysis due to the presence of suitable habitat and regulatory protections associated with these species. **Table ES-1** provides a summary of the federally-listed and state-listed animal and plant species with potential to occur within the two Build Alternatives, along with their corresponding effect determinations.

The project study area was also evaluated for the presence of federally-designated Critical Habitat as defined by Congress in 50 Code of Federal Regulations (C.F.R.) 17. Based on this evaluation, it was determined that no federally-designated Critical Habitat is present within any of the alternatives.

**TABLE ES-1
SUMMARY OF LISTED SPECIES AND EFFECT DETERMINATIONS**

	Scientific Name	Common Name	Effect Determination	Status	
				Federal	State
Federally - Listed Wildlife Species	<i>Alligator mississippiensis</i>	American alligator	“May Affect, Not Likely to Adversely Affect”	T(S/A)	FT(S/A)
	<i>Ammodramus savannarum floridanus</i>	Florida grasshopper sparrow	“No Effect”	E	F,E
	<i>Aphelocoma coerulescens</i>	Florida scrub jay	“May Affect, Likely to Adversely Affect”	T	F,T
	<i>Drymarchon corais couperi</i>	Eastern indigo snake	“May Affect, Not Likely to Adversely Affect”	T	F,T
	<i>Eumops floridanus</i>	Florida bonneted bat	“May Affect, Not Likely to Adversely Affect”	E	F,E
	<i>Mycteria americana</i>	Wood stork	“May Affect, Not Likely to Adversely Affect”	T	F,T
	<i>Picoides borealis</i>	Red-cockaded woodpecker	“No Effect”	E	F,E
	<i>Polyborus plancus audubonii</i>	Audubon’s crested caracara	“May Affect, Not Likely to Adversely Affect”	T	F,T
	<i>Puma concolor coryi</i>	Florida panther	“May Affect, Likely to Adversely Affect”	E	F,E
	<i>Rostrhamus sociabilis plumbeus</i>	Snail kite	“May Affect, Not Likely to Adversely Affect”	E	F,E
	Federally- Listed Plant Species	<i>Dalia carthagensis floridana</i>	Florida prairie-clover	“No Effect”	E
<i>Chamaesyce garberi</i>		Garber’s spurge	“No Effect”	T	NL
State-Listed Wildlife Species	<i>Athene cunicularia floridana</i>	Florida burrowing owl	“No adverse effect anticipated”	NL	T
	<i>Egretta caerulea</i>	Little blue heron	“No adverse effect anticipated”	NL	T
	<i>Egretta tricolor</i>	Tricolored heron	“No adverse effect anticipated”	NL	T
	<i>Falco sparverius paulus</i>	Southeastern American kestrel	“No adverse effect anticipated”	NL	T
	<i>Gopherus polyphemus</i>	Gopher tortoise	“May Affect, Not Likely to Adversely Affect”	C ⁽¹⁾	T
	<i>Grus canadensis pratensis</i>	Florida sandhill crane	“No adverse effect anticipated”	NL	T
	<i>Platalea ajaja</i>	Roseate spoonbill	“No adverse effect anticipated”	NL	T
	<i>Sciurus niger avicennia</i>	Big Cypress fox squirrel	“No adverse effect anticipated”	NL	T
State-Listed Plant Species	<i>Andropogon arctatus</i>	Pine woods bluestem	“No adverse effect anticipated”	NL	T
	<i>Calopogon multiflorus</i>	Many flowered grass pink	“No adverse effect anticipated”	NL	E
	<i>Centrosema arenicola</i>	Sand butterfly pea	“No adverse effect anticipated”	NL	E
	<i>Lechea cernua</i>	Nodding pinweed	“No adverse effect anticipated”	NL	T

TABLE ES-1
SUMMARY OF LISTED SPECIES AND EFFECT DETERMINATIONS (CONTINUED)

	Scientific Name	Common Name	Effect Determination	Status	
				Federal	State
State-Listed Plant Species (continued)	<i>Linum carteri</i> var. <i>smallii</i>	Small's flax	"No adverse effect anticipated"	NL	E
	<i>Matelea floridana</i>	Florida spiny-pod	"No adverse effect anticipated"	NL	E
	<i>Nemastylis floridana</i>	Celestial lily	"No adverse effect anticipated"	NL	E
	<i>Nolina atopocarpa</i>	Florida beargrass	"No adverse effect anticipated"	NL	T
	<i>Platanthera integra</i>	Yellow fringeless orchid	"No adverse effect anticipated"	NL	E
	<i>Tephrosia angustissima</i> var. <i>curtissii</i>	Coastal hoary-pea	"No adverse effect anticipated"	NL	E

F = Federally Listed / E = Endangered / T = Threatened / T(S/A) = Threatened due to similar appearance / NL = Not Listed

Notes:

¹ The gopher tortoise is currently a candidate species for federal protection under the ESA.

In accordance with Presidential Executive Order 11990 entitled "Protection of Wetlands", United States Department of Transportation Order 5660.1A, "Preservation of the Nation's Wetlands" and Part 2, Chapter 9 of the FDOT PD&E Manual, the project alternatives were assessed for the presence of wetlands that may be impacted by proposed project activities. Based on this evaluation, a total of 12 individual wetlands and numerous other surface water (OSW) features were identified within the two Build Alternatives. These wetland and OSW habitats were classified using both the Florida Land Use, Cover, and Forms Classification System (FLUCFCS) (FDOT, 1999) and the United States Fish and Wildlife Service's (FWS) Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al., 1979). **Table ES-2** lists the wetlands and OSWs present within the two Build Alternatives by FLUCFCS and FWS classification, along with their corresponding acreages within each alternative.

Prior coordination with the National Marine Fisheries Service (NMFS) during the Efficient Transportation Decision Making (ETDM) Process indicated that the proposed project does not appear to directly impact any NMFS trust resources (listed/protected marine species or Essential Fish Habitat (EFH)). Therefore, no EFH discussion is included in this NRE. **Appendix A** includes NMFS comments received during the ETDM review.

**TABLE ES-2
INDIVIDUAL WETLANDS AND OTHER SURFACE WATERS**

Wetland / OSW ID	FLUCFCS Description	FLUCFCS Code	FWS Wetland Classification*	Acres in Central Alternative #1 Revised	Acres in Central Alternative #2
Wetlands					
WL-1	Mixed Wetland Hardwoods	617	PFO1/3C	0.83	0.83
WL-2	Wetland Forested Mixed	630	PFO1/2C	1.68	1.68
WL-3	Cypress	621	PFO2C	0.56	0.56
WL-4	Wetland Forested Mixed	630	PFO1/2C	2.55	2.55
WL-5	Freshwater Marshes	641	PEM1C	0.62	0.62
	Mixed Wetland Hardwoods	617	PFO1/3C	0.16	0.16
WL-6	Wetland Forested Mixed	630	PFO1/2C	3.89	3.89
WL-7	Freshwater Marshes	641	PEM1C	0.76	0.76
WL-8	Mixed Wetland Hardwoods	617	PFO1/3C	0.96	0.96
WL-9	Freshwater Marshes	641	PEM1C	0.77	0.77
WL-10	Freshwater Marshes	641	PEM1C	0.44	0.44
WL-11	Freshwater Marshes	641	PEM1C	0.81	0.81
WL-12	Freshwater Marshes	641	PEM1C	0.30	0.30
<i>Total Wetlands</i>				<i>14.33</i>	<i>14.33</i>
Other Surface Waters					
Linear Ditches	Streams and Waterways	510	PUB2F	14.36	14.78
Reservoirs	Reservoirs <10 acres	534	PSS1C / PUB2C	0.63	0.63
<i>Total Other Surface Waters</i>				<i>14.99</i>	<i>15.41</i>
Total				29.32	29.74

* **FWS Wetland Descriptions:**

- PEM1C: Palustrine, Emergent, Persistent, Seasonally Flooded
- PFO1/2 C: Palustrine, Forested, Broad-Leaved Deciduous/Needle-Leaved Deciduous, Seasonally Flooded
- PFO1/3 C: Palustrine, Forested, Broad-Leaved Deciduous/Broad-Leaved Evergreen, Seasonally Flooded
- PSS1C: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded
- PUB2F: Palustrine, Unconsolidated Bottom, Sand, Semi-Permanently Flooded

Section 1.0

PROJECT OVERVIEW

1.1 PROJECT DESCRIPTION

The Florida Department of Transportation (FDOT) District One is conducting a Project Development and Environment (PD&E) Study, in accordance with the National Environmental Policy Act (NEPA), to assess the need for capacity and traffic operational improvements along a two-lane undivided section of SR 29 extending 15.6 miles from Oil Well Road (southern terminus) to SR 82 (northern terminus) in unincorporated Collier County, Florida. The project section of SR 29 specifically traverses the unincorporated community of Immokalee in eastern Collier County. **Figure 1-1** shows the location of the project.

This roadway project includes the potential widening of existing two-lane undivided sections of SR 29 up to four lanes, as well as the addition of a new four-lane roadway bypassing the downtown area of Immokalee. No improvements are currently proposed to existing SR 29 between Immokalee Road and New Market Road North.

The project segment of SR 29 is designated as an Emerging Strategic Intermodal System (SIS) highway corridor. Additionally, SR 29 is classified as a rural principal arterial from Oil Well Road to south of Farm Worker Way and from north of Westclox Road/CR 29A to SR 82; the roadway is also classified as an urban principal arterial from south of Farm Worker Way to north of Westclox Road/CR 29A. SR 29 is a major north-south corridor as it traverses the eastern portion of Collier County and through the unincorporated community of Immokalee. Speed limits of 40 – 60 miles per hour (mph) are posted for the majority of the corridor. However, the speed limit is 35 mph from south of CR 846/Airport Road to west of 9th Street due to frequent activity of commercial and agricultural trucks, as well as daily activity of pedestrians and bicyclists, using this section of SR 29.

The PD&E Study for this project commenced in 2007. An Environmental Assessment with a Finding of No Significant Impact is being pursued.

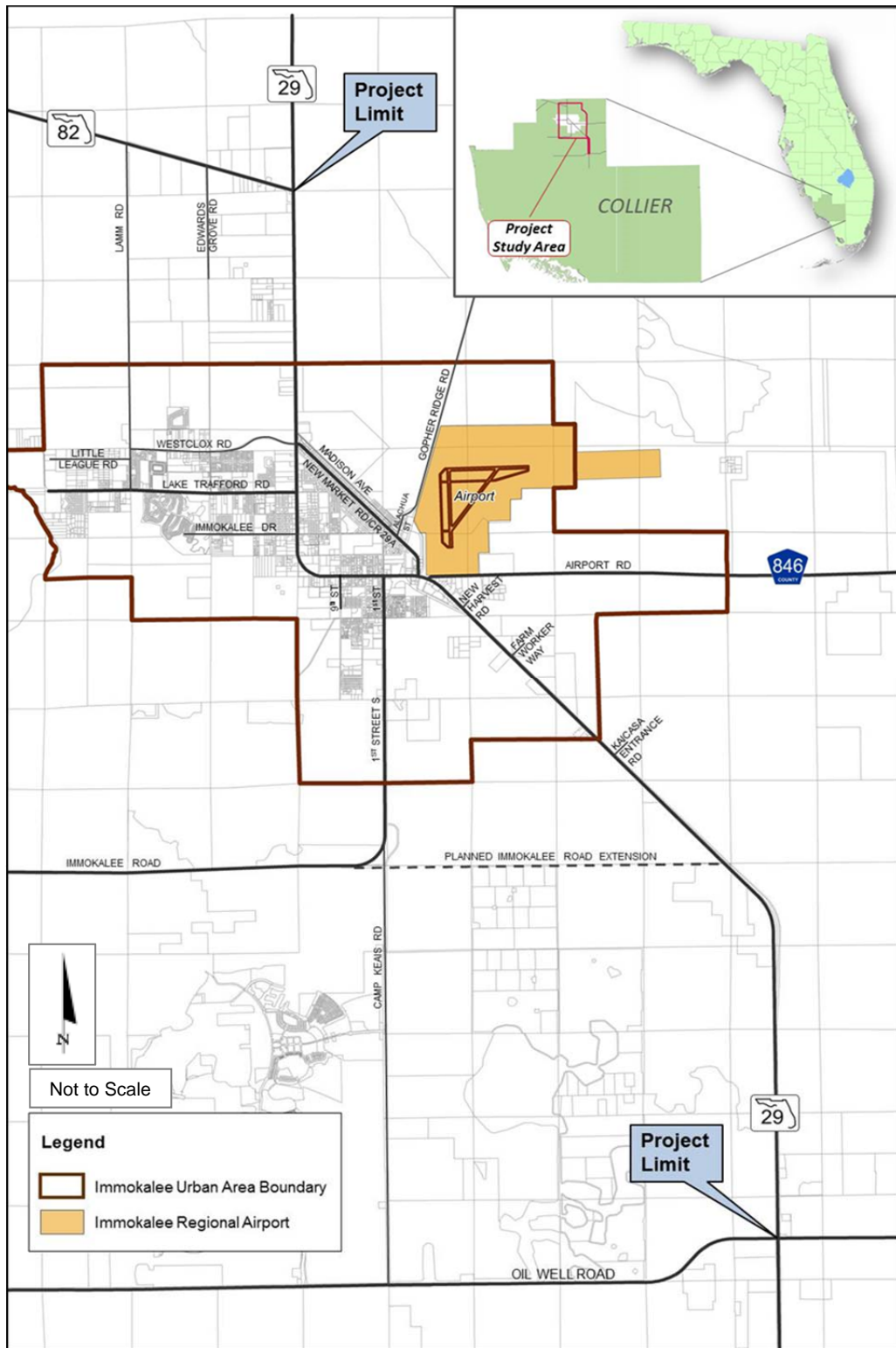
1.1.1 PURPOSE AND NEED

The purpose of this project is to improve traffic operational conditions along the SR 29 corridor between Oil Well Road and SR 82 to meet the following needs:

Enhance Economic Competitiveness

On January 26, 2001, Immokalee was designated by Executive Order 04-250 as a Rural Area of Critical Economic Concern (now titled Rural Area of Opportunity). In addition to the

**FIGURE 1-1
PROJECT LOCATION MAP**



Immokalee area being targeted for growth by Collier County, the area surrounding Collier County Immokalee Regional Airport is defined as a Primary Freight Activity Center as it supports industrial activities and agricultural packing and processing functions. A 60-acre portion of this area is a designated Foreign Trade Zone, a designation used to encourage activity and add value at facilities in competition with foreign alternatives. SR 29 also serves as an Emerging Strategic Intermodal System (SIS) highway corridor carrying high volumes of truck traffic and connecting to other SIS facilities [I-75 and SR 82]. This project will:

- Enhance the economic viability of the area by providing the infrastructure needed to bring additional businesses and employers into the area.
- Improve the circulation of goods as SR 29 serves as a key intrastate freight corridor providing access to local agricultural and ranching operations, as well as to fast growing economic regions located in central Florida and the populated coastal areas.

Improve Mobility and Connectivity within the Regional Transportation Network

SR 29 is a major central Florida interregional highway corridor as it traverses Collier, Hendry, and Glades Counties providing access to US 41 and I-75 to the south and SR 82, SR 80, and US 27 to the north. Through the southern portion of the state, SR 29 primarily runs parallel to other major north-south transportation facilities [I-75 and US 27]. In addition to I-75 and SR 82, SR 29 is part of Florida's SIS network serving fast growing economic regions and a Rural Area of Opportunity. SR 29 is also one of four designated Freight Mobility Corridors in Collier County providing a north-south connection between I-75 and regional freight activity centers. The project improvements proposed along SR 29 are intended to:

- Complement plans to widen other sections of the SR 29 corridor to the north and south thereby 1) providing a continuous four-lane connection from I-75 to US 27 in Glades County, 2) alleviating a potential traffic bottleneck that could occur if no improvements take place on SR 29 from Oil Well Road to SR 82, and 3) improving the viability of SR 29 to serve as a parallel north-south alternative to north-south portions of I-75 and US 27.
- Enhance the circulation and movement of goods between existing and emerging freight facilities in south-central Florida. The SR 29 project improvements are an essential component of a unified approach that addresses the critical freight needs of the overall SR 29 corridor.
- Enhance access to major north-south facilities [I-75 and US 27] and connections to major east-west transportation corridors [SR 82], as well as residential and employment centers throughout Collier County.

Correct Current Design Deficiencies

The design of existing SR 29 is deficient given the present use of the roadway and current FDOT standards. The deficiencies include excessive access points, substandard curves limiting sight

distances and design speeds, and locations with substandard shoulders and turn lanes. The proposed improvements will:

- Update the roadway to current design standards, increasing overall safety by reducing the potential exposure to conflict points associated with deficient existing design and access issues.
- Increase sight distances along the roadway.
- Provide sidewalks and bicycle lanes where none currently exist.

Reduce Truck Traffic in Downtown Immokalee

Truck traffic currently represents 16.0% of the total volume of daily traffic along the SR 29 project segment. The Design Hour Truck is 8.0%; this is the percentage of trucks expected to use a highway segment during the 30th highest hour of the design year [2045]. Truck traffic in the corridor is projected to increase as a result of growth in the area. The project improvement will:

- Provide an alternative route for regional truck traffic trips.
- Enhance the livability of downtown Immokalee by reducing the conflicts between pedestrians/bicyclists and trucks, creating a more pedestrian friendly environment.
- Enhance the economic viability of downtown Immokalee.

Accommodate Future Growth

Significant growth is anticipated to take place within the greater Immokalee area as indicated by the presence of the Town of Ave Maria Development of Regional Impact and number of Planned Unit Developments. Based on 2010 U.S. Census Bureau data and projections developed for Collier County as part of the Collier Metropolitan Planning Organization's (MPO) 2040 Long Range Transportation Plan (LRTP), population within Collier County is projected to grow from 316,739 in 2010 to 497,702 in 2040 (57.1% increase). Likewise, Collier County employment is projected to grow from 170,862 in 2010 to 241,111 in 2040 (41.1% increase). According to the 2018 Design Traffic Technical Memorandum prepared for the project, the majority of the SR 29 corridor operates at or above the FDOT Levels of Service (LOS) C and D adopted for the roadway; only a small segment of the project corridor [from New Market Road to SR 82] operates below the adopted standard. However, if no improvements occur to the roadway, the majority of the SR 29 corridor is anticipated to operate under deficient conditions [with most segments operating at LOS F] by the 2045 design year. The improvement will:

- Enhance traffic operations and preserve operational capacity to accommodate projected travel demand spurred by increased growth as well as freight and commuter traffic [specifically truck traffic].

- Enhance the projected 2045 LOS for the corridor [with the exception of one segment that is anticipated to remain deficient].

Improve Emergency Evacuation Capabilities

SR 29 is designated as a hurricane evacuation route by the Florida Division of Emergency Management. This facility is critical in evacuating residents of the eastern portion of Collier County. The project improvement will:

- Increase the capacity of traffic that can be evacuated during an emergency event.
- Enhance emergency response times.
- Enhance connections to other major arterials designated on the state evacuation route network, including SR 82 and north to US 27.

1.1.2 PROJECT ALTERNATIVES

Presently, two Build Alternatives and the No Build Alternative are being considered as part of the PD&E Study.

The two Build Alternatives (Central Alternative #1 Revised and Central Alternative #2) are the same for much of their alignments, only diverging for approximately 1.3 miles on the east side of Immokalee by Immokalee Regional Airport. From the start of the project at Oil Well Road to north of Seminole Crossing Trail and from north of Westclox Street to the end of the project south of SR 82, both alternatives follow the existing SR 29 corridor. The Build Alternatives differ in the following ways:

- **Central Alternative #1 Revised:** From Seminole Crossing Trail, Central Alternative #1 Revised remains on existing SR 29 to New Market Road. At New Market Road, this alternative follows the eastern portion of New Market Road and provides direct access to the agribusiness/commercial areas of Immokalee and State Farmers Market. This alternative continues just past Flagler Street, then turns northward on new alignment to avoid a residential neighborhood. It then parallels Madison Avenue and New Market Road. At this point, the two Build Alternatives are on the same alignment, traveling along the east side of Collier Health Services Medical Center and the Florida State University College of Medicine, before reconnecting to SR 29 north of Westclox Street. A roundabout is currently being evaluated at SR 29 at Westclox Street/New Market Road as an optional intersection treatment.
- **Central Alternative #2:** From Seminole Crossing Trail, Central Alternative #2 travels north from SR 29 on new alignment along the west side of the Immokalee Regional Airport to avoid the commercial/industrial areas of Immokalee and the State Farmers Market to the west. This alternative then turns to the northwest just past Gopher Ridge Road to parallel Madison Avenue and New Market Road. At this point, the two Build Alternatives are on the same alignment, traveling along the east side of Collier Health

Services Medical Center and the Florida State University College of Medicine, before reconnecting to SR 29 north of Westclox Street. A roundabout is currently being evaluated at SR 29 at Westclox Street/New Market Road as an optional intersection treatment.

The No Build Alternative assumes that no lanes will be added to SR 29 from Oil Well Road to SR 82 through the 2045 design year. In other words, it assumes that future traffic volumes will continue to increase but no capacity or operational improvements will be made to SR 29. While the No Build alternative does not meet purpose and need for this project as described in **Section 1.1.1** of this report, it requires no capital outlay for construction, causes no substantial increase in operation and maintenance of the existing roadway, and results in minimal environmental impacts. As such, the No Build Alternative will remain a viable alternative throughout the study process.

Figure 1-2 shows the location of the two project Build Alternatives (Central Alternative #1 Revised and Central Alternative #2). Conceptual roadway plans are included in **Appendix B**.

1.2 PROJECT STUDY AREA

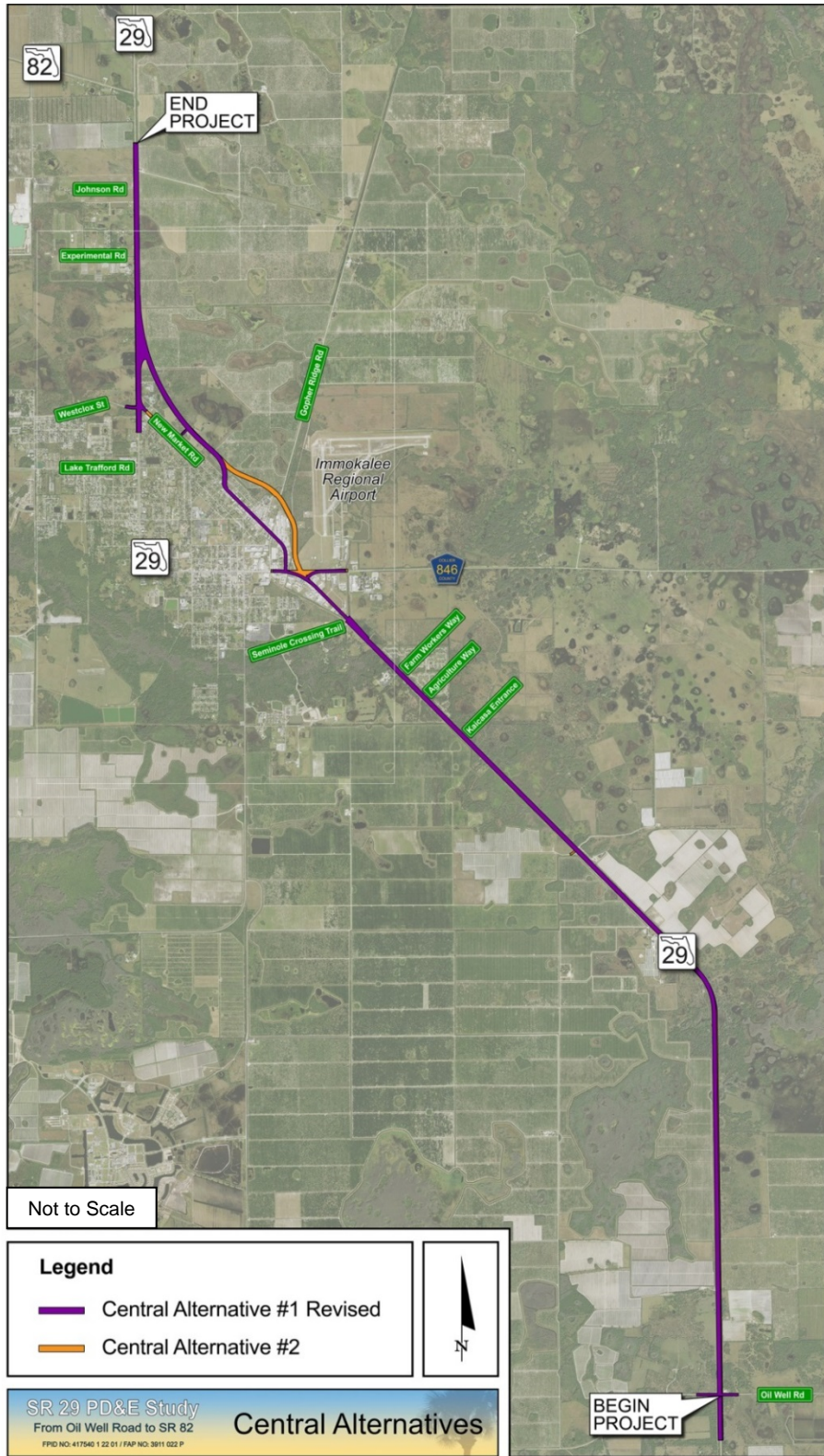
The project study area consists of the existing and proposed right-of-way (ROW) limits for both Build Alternatives and the No Build Alternative, including potential pond and floodplain compensation sites. The study area also includes natural habitats potentially impacted by direct and indirect effects (such as fragmentation, severed travel pathways, land management changes, etc.). The study area is of sufficient size to identify potential direct and indirect effects of both Build Alternatives on habitats and wildlife species that may occur within or adjacent to the project corridor.

This NRE was prepared to document the natural resources analysis performed to support decisions related to the evaluation of the project alternatives and to summarize potential impacts to federal and state protected species, wetlands, and protected habitats. Measures considered to avoid, minimize, and mitigate for potential impacts are also discussed. This report provides documentation of these processes to supplement the Environmental Document.

This NRE will be submitted to each regulatory resource agency with involvement in the project for review and comment (and/or concurrence) regarding the findings. Additional coordination may be necessary to confirm that all agency comments are sufficiently addressed.

Prior coordination with the National Marine Fisheries Service (NMFS) during the ETDM Process (**Appendix A**) indicated that the proposed project does not appear to directly impact any NMFS trust resources [(listed/protected marine species) or Essential Fish Habitat (EFH)]. Therefore, no EFH discussion is included in this NRE.

**FIGURE 1-2
PROJECT BUILD ALTERNATIVES**



1.3 EXISTING CONDITIONS

The project is located within a rural area of northern Collier County and traverses the northeast region of Immokalee. Along the existing SR 29 corridor to the north and south of Immokalee, adjacent lands are characterized by agricultural activities (such as citrus groves, pastures, and mixed rangeland). Within the community of Immokalee itself, residential subdivisions, individual residences, schools, commercial developments, and industrial complexes are the prominent land use types along the project corridor. It should be noted that segments of both Build Alternatives bypass downtown Immokalee. The bypass segments run on new alignment and traverse pine flatwoods, upland scrub/shrub habitat, improved and unimproved pastures, and active citrus groves. Both Build Alternatives cross several ditches and streams, which occur primarily south of Immokalee along the existing SR 29 corridor.

Prior to field reviews, literature and database searches were conducted to assess existing land uses/vegetative cover, soils, and the potential for occurrences of federally-listed and state-listed plant and animal species within the project alternatives. The project study area was also evaluated for the presence of existing conservation lands.

The following data sources were reviewed as part of this evaluation:

- Aerial photographs (high-resolution, 1 inch = 200 feet) (2009 and 2014);
- FDOT, Florida Land Use, Cover and Forms Classification System (FLUCFCS), Third edition (1999);
- Florida Association of Environmental Soil Scientists, Hydric Soils of Florida Handbook (Hurt 2007);
- Florida Fish and Wildlife Conservation Commission (FWC), Telemetry (2014) and Mortality (2017) data sets;
- FWC, Eagle Nest Locator website (<http://myfwc.com/eagle/eaglenests/nestlocator.aspx>);
- FWC, Florida's Endangered and Threatened Species (updated May 2017);
- Florida Natural Areas Inventory (FNAI) database, reviewed April 2018, www.FNAI.org;
- South Florida Water Management District, GIS Land Use Database (2004);
- United States Department of Agriculture, Natural Resources Conservation Service (NRCS), Soil Survey of Collier County Area, Florida, 1998;
- FWS, Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al., 1979);
- FWS, National Wetlands Inventory, Wetlands Online Mapper, reviewed April 2018 (<http://www.fws.gov/wetlands/Data/Mapper.html>);

- FWS, Threatened and Endangered Species' Critical Habitat Online Mapping Application (<http://crithab.fws.gov/>); and
- FWS, Endangered Species Database (<http://www.fws.gov/endangered/>).

Environmental scientists familiar with Florida's natural communities conducted field reviews for verification of existing habitats on the following dates:

- April 7-10, 2010;
- October 5-7, 2010;
- January 25-26, 2012;
- August 25, 2017; and
- March 12, 2018.

Field evaluations were performed along pedestrian transects traversing all natural and altered habitat types located within the project study area. Attention was given to identifying dominant plant species within each habitat. Exotic plant infestations; shifts in historical plant communities; and other disturbances (such as soil subsidence, clearing, canals, power lines, etc.) were noted. Attention was also given to identifying signs of wildlife utilization (i.e., vocalizations, tracks, scat, burrows, etc.) at each upland and wetland community within the project study area.

During the field inspections, preliminary habitat boundaries and classification codes established through in-office literature reviews and aerial photograph interpretation were verified. Approximate wetland and OSW boundaries were field-verified in accordance with the *State of Florida Wetlands Delineation Manual* (Chapter 62-340, F.A.C.) and the guidelines found within the Regional Supplement to the *United States Army Corps of Engineers (USACE) Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region (2010)*.

Based on site-specific data searches and field reviews, a total of 26 land use/vegetative cover classifications and 18 mapped soil units were identified within the project study area. Upland habitats were classified using FLUCFCS while wetland and other surface water habitats were classified using both FLUCFCS and the FWS's *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, et al., 1979).

1.3.1 LAND USE/VEGETATIVE COVER

The project is located within a rural area of northern Collier County and traverses the northeast region of the community of Immokalee. Along the existing SR 29 corridor to the north and south of Immokalee, adjacent lands are characterized by agricultural activities (such as citrus groves, pastures, and mixed rangeland). Within Immokalee itself, residential subdivisions, individual residences, schools, commercial developments, and industrial complexes are the

prominent land use types along the project corridor. It should be noted that segments of both Build Alternatives bypass the City of the Immokalee. The bypass segments run on new alignment and traverse pine flatwoods, upland scrub/shrub habitat, improved and unimproved pastures, and active citrus groves. Both Build Alternatives cross several ditches and streams, which occur primarily south of Immokalee along the existing SR 29 corridor.

A total of 26 land use classifications, comprised of 20 upland and 6 wetland community types, were identified within the project study area. **Table 1-1** lists the acreage and percentage of each land use type within the project study area. Aerial maps depicting the boundaries of existing land uses and vegetative cover within the two Build Alternatives and descriptions of each land use category are provided in **Appendices C-1** and **C-2**, respectively.

**TABLE 1-1
EXISTING LAND USE/VEGETATIVE COVER WITHIN THE PROJECT STUDY AREA**

FLUCFCS Classification ⁽¹⁾	FWS Classification ⁽²⁾	Description	Central Alternative #1 Revised		Central Alternative #2		
			Acres	Percent	Acres	Percent	
Uplands							
Urban Lands (100)	111	N/A	Residential, Low Density- Fixed Single Family Units	1.64	0.44	1.64	0.43
	121	N/A	Residential, Medium Density- Fixed Single Family Units	0.32	0.09	0.02	0.01
	140	N/A	Commercial and Services	7.86	2.13	0.89	0.23
	155	N/A	Other Light Industrial	1.26	0.34	3.55	0.93
	171	N/A	Educational Facilities	0.68	0.18	0.68	0.18
	185	N/A	Parks and Zoos	---	---	0.41	0.11
Agriculture (200)	211	N/A	Improved Pasture	27.81	7.54	27.78	7.27
	212	N/A	Unimproved Pasture	7.30	1.98	8.08	2.11
	213	N/A	Woodland Pasture	8.21	2.23	8.21	2.15
	221	N/A	Citrus Groves	7.52	2.04	18.76	4.90
	251	N/A	Horse Farms	0.07	0.02	0.07	0.02
Rangeland (300)	310	N/A	Herbaceous (Dry Prairie)	0.32	0.09	0.33	0.09
	320	N/A	Shrub and Brushland	35.03	9.50	42.27	11.06
	330	N/A	Mixed Rangeland	0.57	0.15	0.57	0.15
Upland Forest (400)	411	N/A	Pine Flatwoods	20.63	5.60	20.63	5.40
	434	N/A	Hardwood – Conifer Mixed	1.05	0.28	1.05	0.27
	437	N/A	Australian Pine	0.20	0.06	0.20	0.05
Transportation (800)	811	N/A	Utilities	---	---	4.60	1.20
	814	N/A	Roads and Highways	218.58	59.31	212.55	55.60
	832	N/A	Electrical Power Transmission Lines	0.23	0.06	0.23	0.06
Total Uplands			339.28	92.04%	352.52	92.22%	
Wetlands and Other Surface Waters							
Other Surface Waters (500)	510	PUB2F	Streams and Waterways	14.36	3.89	14.78	3.85
	534	PSS1 / PUB2C	Reservoir less than 10 Acres	0.63	0.17	0.63	0.16
Freshwater Wetlands (600)	617	PFO1C	Mixed Wetland Hardwoods	1.95	0.54	1.95	0.52
	621	PFO2C	Cypress Swamp	0.56	0.15	0.56	0.15
	630	PFO1/2C	Wetland Forested Mixed	8.12	1.99	8.12	1.93
	641	PEM1C	Freshwater Marshes	3.70	1.22	3.70	1.16
Total Other Surface Waters/Wetlands			29.32	7.96%	29.74	7.78%	
Total Land Use/Vegetative Cover			368.60	100%	382.26	100%	

¹ FDOT, FLUCFCS (Third edition), 1999.

² FWS, Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al), 1979.

1.3.2 SOILS

Based on the Soil Survey of Collier County, Florida (NRCS, 1998), the project study area is comprised of 18 mapped soil units (soil maps and descriptions are provided in **Appendices D-1** and **D-2**, respectively). According to the Hydric Soils of Florida Handbook (Hurt, 2007), 10 of the 18 soil types identified within the project study area are classified as hydric; the remaining 8 types are not hydric. **Table 1-2** lists the acreage and percentage of each mapped soil type within the two Build Alternatives.

**TABLE 1-2
SOIL TYPES AND COVERAGE WITHIN THE PROJECT STUDY AREA**

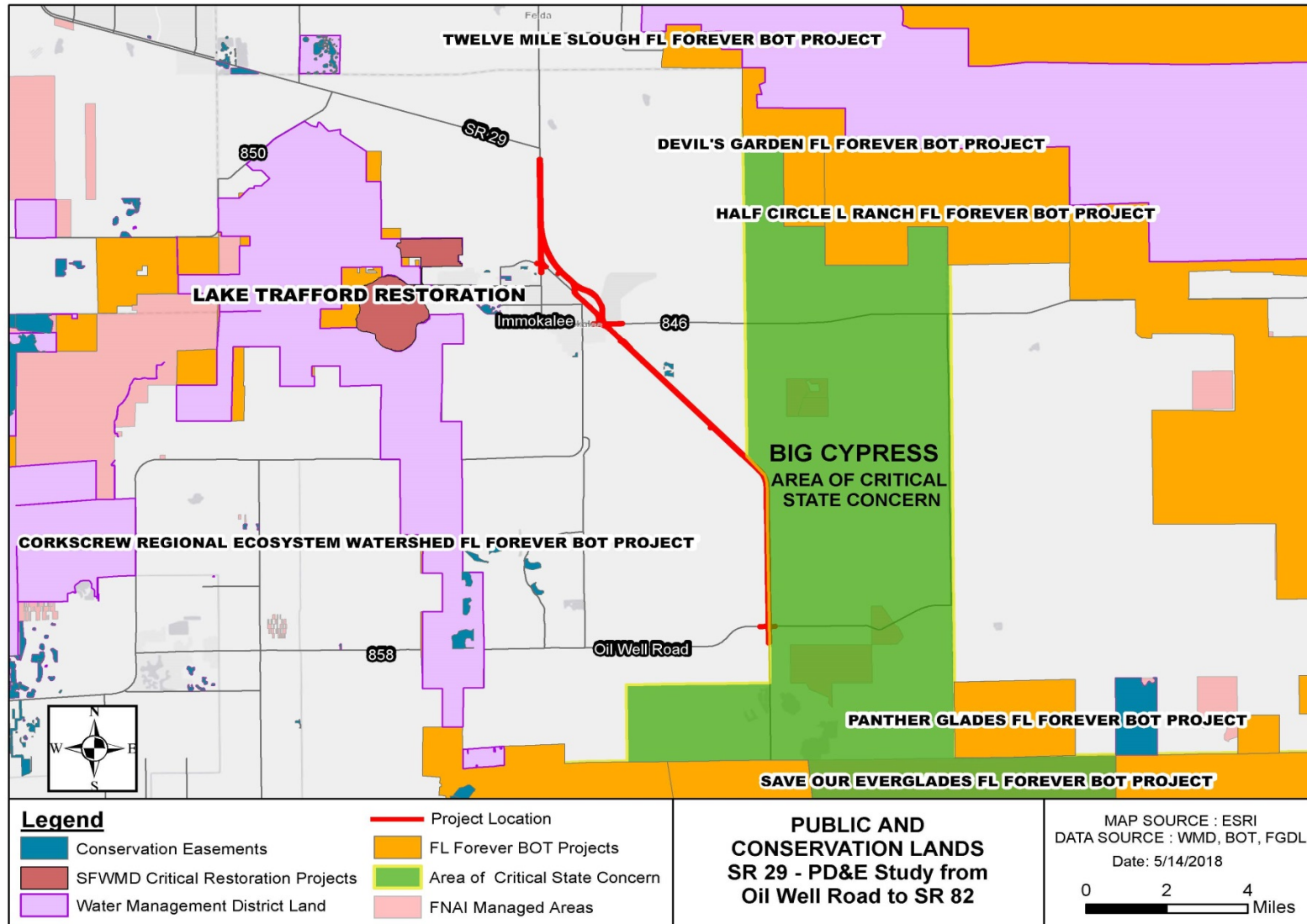
Soil Type	Hydric Y/N	Central Alternative #1 Revised		Central Alternative #2	
		Area (acres)	% of Total	Area (acres)	% of Total
3 – Malabar fine sand, 0 to 2 percent slopes	Y	4.22	1.14	4.31	1.13
7 - Immokalee fine sand, 0 to 2 percent slopes	N	69.20	18.78	75.41	19.73
8 - Myakka fine sand, 0 to 2 percent slopes	N	14.11	3.83	15.38	4.02
10 - Oldsmar fine sand, limestone substratum	N	4.71	1.31	4.71	1.23
15 - Pomello fine sand, 0 to 2 percent slopes	N	16.33	4.42	16.42	4.30
16 - Oldsmar fine sand, 0 to 2 percent slopes	N	74.12	20.1	74.42	19.47
17 - Basinger fine sand, 0 to 2 percent slopes	Y	30.10	8.17	30.10	7.87
20 - Fort Drum, and Malabar, high fine sands	N	11.01	3.01	11.01	2.89
21- Boca fine sand, 0 to 2 percent slopes	Y	14.22	3.81	14.37	3.75
22- Chobee, Winder, and Gator soils, depressional	Y	6.11	1.69	6.31	1.64
23- Holopaw and Okeelanta soils, depressional	Y	0.30	0.1	0.30	0.08
25 - Boca, Riviera, limestone substratum and Copeland fine sands, depressional	Y	1.36	0.37	1.62	0.43
27- Holopaw fine sand, 0 to 2 percent slopes	Y	21.19	5.67	31.27	8.18
28 - Pineda and Riviera fine sands	Y	16.51	4.52	16.70	4.37
29 - Wabasso fine sands, 0 to 2 percent slopes	N	19.12	5.23	19.12	5.01
34 - Urban land -Immokalee-Oldsmar , limestone substratum complex	*	31.66	8.58	26.34	6.89
37 -Tusawilla fine sand	Y	12.71	3.4	12.76	3.33
43 -Winder, Riviera, limestone substratum and Chobee soils, depressional	Y	21.65	5.87	21.71	5.68
Total		368.60	100%	382.26	100%

* unranked

1.3.3 CONSERVATION LANDS

As shown in **Figure 1-3**, there are several publicly-owned lands and conservation areas located within an approximate five-mile radius of the project corridor. The Big Cypress Area of Critical State Concern borders the existing SR 29 corridor to the east. Lake Trafford Restoration Area (a South Florida Water Management District Critical Restoration Project) occurs approximately five miles east of the project study area. Additionally, several Florida Forever Board of Trustees land acquisition projects are located within an approximate five-mile radius along both sides of the project study area.

**FIGURE 1-3
CONSERVATION LANDS**



Section 2.0

PROTECTED SPECIES AND HABITAT

2.1 INTRODUCTION

The project study area was evaluated for potential occurrences of federally-listed and state-listed plant and animal species in accordance with Section 7 of the ESA of 1973, as amended; the Fish and Wildlife Conservation Act; the Migratory Bird Treaty Act; Part 2, Chapter 16 of the FDOT PD&E Manual; and Chapters 5B-40 and 68A-27, F.A.C. It is important to note that all federally-listed species are also considered state-listed species. The project study area was also evaluated for the occurrence of federally-designated Critical Habitat as defined by Congress in 50 C.F.R. 17. Based on this evaluation, it was determined that no federally-designated Critical Habitat is present within either proposed Build Alternative.

The project was screened through the ETDM Process (ETDM Project #3752) from 2006–2008. During this time, the FWS and FWC commented on potential effects of the project to wildlife and habitat resources. Both agencies expressed primary concern regarding impacts to suitable habitat for the Florida panther (*Puma concolor coryi*). To minimize potential impacts to panther habitat, the FWS recommended utilization of the existing SR 29 corridor to the greatest extent practicable and incorporation of wildlife crossings into the roadway design. The FWS indicated that the following federally listed species may occur within or adjacent to the project study area: eastern indigo snake (*Drymarchon corais couperi*), Florida scrub-jay (*Aphelocoma coerulescens*), Florida panther, and wood stork (*Mycteria americana*); FWS also identified a documented bald eagle (*Haliaeetus leucocephalus*) nest near the existing roadway corridor. The FWC commented that the project study area contains suitable habitat for several state-protected species, including: American alligator (*Alligator mississippiensis*), gopher tortoise (*Gopherus polyphemus*), Florida black bear (*Ursus americanus floridanus*), little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), Southeastern American kestrel (*Falco sparverius paulus*), Florida sandhill crane (*Grus canadensis pratensis*), and Florida burrowing owl (*Athene cunicularia floridana*).

The FDOT initiated coordination with various regulatory resource agencies through issuance of the Advance Notification (AN) on August 9, 2007. A second AN was published on July 11, 2008 due to a revision of the project study area. Comments received from the responding agencies were recorded in FDOT's Efficient Transportation Decision Making (ETDM) Environmental Screening Tool. The FDOT held an Alternatives Scoping Meeting with state and federal commenting agencies on February 18, 2010 and provided a subsequent technical memorandum to the agencies on June 15, 2010. Both the FWS and FWC provided comments on July 22, 2010 in response to the alternatives presented during the meeting and within the technical memorandum (see **Appendix A** for agency comments). In addition, the FDOT has had

numerous informal meetings with the FWS, FWC, and various other non-government organizations (NGOs) regarding potential impacts to listed species and their habitats.

2.2 FIELD REVIEW

Field survey methods for specific habitat types and target species were developed based on the results of database searches, preliminary field reviews, review of aerial photography, and soil surveys. Environmental concerns expressed by ETAT members during the ETDM Process were considered when identifying target species and developing survey methods. Limited pedestrian surveys were conducted within suitable gopher tortoise habitats identified within both Build Alternatives to assess the presence of burrows. Wetland and OSW habitats were visually scanned for the presence of protected wading bird species, and areas with dense or scattered canopy were examined for utilization by other avian species. General pedestrian surveys were also conducted within appropriate habitats to assess the presence of listed/protected plant species within the project study area.

2.3 SPECIES OCCURRENCES AND EFFECT DETERMINATIONS

Table 2-1 presents the state-listed and federally-listed wildlife species that occur within Collier County based on the databases and documents previously referenced in **Section 1.3**. Coastal and marine species known to occur in Collier County were excluded from the list as the project is not located within a coastal area and does not provide suitable habitat for such species. Each species was assigned a potential for occurrence within the project study area based on data reviews, field observations, presence and quality of suitable habitat, and the species' known ranges. Each species was assigned a none, low, moderate, or high likelihood for occurrence within the project study area based on the following:

None – The project is outside of the species' known range or the project is within the species' range; however, no suitable habitat for or previous documentation of this species occurs within or adjacent to the project study area, and it was not observed during the field reviews.

Low – The project is within the species' range, and minimal or marginal quality habitat exists within or adjacent to the project study area; however, there are no documented occurrences of the species in the vicinity of the project, and it was not observed during the field reviews.

Moderate – The project is within the species' range and suitable habitat exists within or adjacent to the project study area; however, there are no documented occurrences of the species, and it was not observed during the field reviews.

High – The project is within the species' range, suitable habitat exists within or adjacent to the project study area, there is at least one documented occurrence of the species within the project study area, and/or the species was observed during the field reviews.

**TABLE 2-1
LISTED/PROTECTED WILDLIFE SPECIES, DESIGNATION, AND POTENTIAL FOR OCCURRENCE**

Species	Common Name	Federal Status	State Status	Habitat	Potential Occurrence
Reptiles					
<i>Alligator mississippiensis</i>	American alligator	T(S/A)	FT(S/A)	Freshwater forested and herbaceous wetlands, canals, rivers, lakes and ponds	High
<i>Drymarchon corais couperi</i>	Eastern indigo snake	T	F,T	Various types of upland and wetland habitats, gopher tortoise burrows	Moderate
<i>Gopherus polyphemus</i>	Gopher tortoise	C	T	Xeric habitats	High
Birds					
<i>Ammodramus savannarum floridanus</i>	Florida grasshopper sparrow	E	F,E	Frequently burned dry prairie habitat and pasture lands	Low
<i>Aphelocoma coerulescens</i>	Florida scrub jay	T	F,T	Inhabits fire dominated, low-growing, oak scrub habitat	High
<i>Athene cunicularia floridana</i>	Florida burrowing owl	NL	T	Dry prairies, open grassland	Low
<i>Egretta caerulea</i>	Little blue heron	NL	T	Coastal marshes, freshwater marshes, wet prairies, mangroves, open water, sand, and mud flats	High
<i>Egretta tricolor</i>	Tricolored heron	NL	T	Coastal marshes, freshwater marshes, wet prairies, mangroves, open water, sand, and mud flats	High
<i>Falco sparverius paulus</i>	Southeastern American kestrel	NL	T	Open habitats, dry prairies, pine flatwoods	High
<i>Grus canadensis pratensis</i>	Florida sandhill crane	NL	T	Dry prairies, freshwater marshes, and wet prairies	High
<i>Haliaeetus leucocephalus</i>	Bald eagle	NL(1)	NL	Large bodies of open water with an abundant food supply	High
<i>Mycteria americana</i>	Wood stork	T	F,T	Coastal marshes, freshwater marshes, wet prairies, cypress swamps, hardwood swamps, and mangrove swamps	High
<i>Pandion haliaetus</i>	Osprey	NL	NL	Lakes, rivers, forested wetlands with open water and shorelines. Requires high visibility for nesting.	Medium
<i>Picoides borealis</i>	Red-cockaded woodpecker	E	F,E	Fire-maintained pine flatwoods with an open understory	None
<i>Platalea ajaja</i>	Roseate spoonbill	NL	T	Ditches, canals, freshwater marshes, shallow ponds, and forested wetlands	High
<i>Polyborus plancus audubonii</i>	Audubon's crested caracara	T	F,T	Open country, including dry prairie and pasture lands with cabbage palm, cabbage palm/live oak hammocks, and shallow ponds and sloughs	High
<i>Rostrhamus sociabilis plumbeus</i>	Snail kite	E	F,E	Large open freshwater marshes and lakes with shallow water	High

**TABLE 2-1
LISTED/PROTECTED WILDLIFE SPECIES, DESIGNATION, AND POTENTIAL FOR OCCURRENCE
(CONTINUED)**

Species	Common Name	Federal Status	State Status	Habitat	Potential Occurrence
Mammals					
<i>Eumops floridanus</i>	Florida bonneted bat	E	F,E	Various upland and wetland habitat types	Moderate
<i>Puma concolor coryi</i>	Florida panther	E	F,E	Large wetlands, forested communities, improved areas	High
<i>Sciurus niger avicennia</i>	Big Cypress fox squirrel	NL	T	Pine flatwoods, cypress swamps, and hardwood hammocks	Moderate
<i>Ursus americanus floridanus</i>	Florida black bear	NL(2)	NL	A wide variety of forested communities	High

F = Federally Listed / E = Endangered / T = Threatened / T(S/A) = Threatened due to similar appearance / NL = Not Listed

(1) The bald eagle is neither state-listed nor federally-listed; however, this species is federally protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. The bald eagle is also managed in Florida by the FWC's bald eagle rule (68A-16.002, F.A.C.).

(2) The Florida black bear is neither state-listed nor federally-listed; however, this species is protected by the Florida Black Bear Conservation Rule (68A-4.009, F.A.C.).

Table 2-2 below provides the occurrence probability for federally-listed and state-listed/protected plant species. Although neither of the federally-listed plant species provided below have a potential to occur in the project area due to lack of suitable habitat, they are included because they are mentioned in the FWS' IPaC resource list (FWS 2018) generated for this project (**Appendix E**). The state-listed plant species were identified based on the FNAI Standard Data Report prepared for the project (**Appendix F**).

**TABLE 2-2
LISTED/PROTECTED PLANT SPECIES, DESIGNATION, AND POTENTIAL FOR OCCURRENCE**

Species	Common Name	Federal Status	State Status	Habitat	Potential Occurrence
<i>Chamaesyce garberi</i>	Garber's spurge	E	NL	Pine rocklands, coastal flats, coastal grasslands, and beach ridges	None
<i>Dalia carthagensis floridana</i>	Florida prairie-clover	E	NL	Pine rockland, marl prairie, coastal berm, and rockland hammock habitats	None
<i>Andropogon arctatus</i>	Pine woods bluestem	NL	T	Wet pine flatwoods that are frequently burned	None
<i>Calopogon multiflorus</i>	Many flowered grass pink	NL	E	Forested and herbaceous wetlands frequently disturbed by fire	Low
<i>Centrosema arenicola</i>	Sand butterfly pea	NL	E	Sandhill, scrubby flatwoods, dry upland woods	Moderate
<i>Lechea cernua</i>	Nodding pinweed	NL	T	Deep sands, usually ancient dunes, on which the most common forest is a mixture of evergreen scrub oaks	None
<i>Linum carteri var. smallii</i>	Small's flax	NL	E	Pine rockland, pine flatwoods, adjacent disturbed areas	Moderate

**TABLE 2-2
LISTED/PROTECTED PLANT SPECIES, DESIGNATION, AND POTENTIAL FOR OCCURRENCE
(CONTINUED)**

Species	Common Name	Federal Status	State Status	Habitat	Potential Occurrence
<i>Matelea floridana</i>	Florida spiny-pod	NL	E	Sunny openings in upland mixed hardwood forests.	Moderate
<i>Nemastylis floridana</i>	Celestial lily	NL	E	Forested and herbaceous wetlands frequently disturbed by fire	Low
<i>Nolina atopocarpa</i>	Florida beargrass	NL	T	Hydric pine flatwoods	None
<i>Platanthera integra</i>	Yellow fringeless orchid	NL	E	Hydric pine flatwoods, wet prairies, scrub-shrub wetlands, and low pine barrens, fire-dependent	Low
<i>Tephrosia angustissima</i> var. <i>curtissii</i>	Coastal hoary-pea	NL	E	Pine rocklands, coastal flats, coastal grasslands, and beach ridges	None

E = Endangered / T = Threatened / NL = Not Listed.

2.3.1 FEDERALLY-LISTED AND STATE-LISTED/PROTECTED WILDLIFE SPECIES

Federally-Listed Species

Reptiles

American alligator (*Alligator mississippiensis*): The American alligator is federally-listed as threatened due to its similar appearance to the American crocodile (*Crocodylus acutus*). American alligators reside in a wide variety of wetland habitats including streams, ponds, lakes, freshwater marshes, ditches, and canals as well as brackish waters. Both Build Alternatives contain suitable habitat for this species, and several adult and juvenile alligators were observed during field reviews. For these reasons, this species was assigned a ‘high’ probability of occurrence within the project study area. Any unavoidable adverse wetland impacts will be fully mitigated pursuant to Section 373.4137, Florida Statutes (F.S.) to satisfy all mitigation requirements of Part IV of Chapter 373, F.S. and 33 United States Code (U.S.C.) §1344 to prevent a net loss of functions and values to wetlands and other surface waters that may provide suitable habitat for this species. Compensatory mitigation for this project will be completed through the purchase of credits from mitigation banks and any other mitigation options that satisfy state and federal requirements. Based on the provision of compensatory mitigation to offset wetland and surface water habitat impacts, the FDOT has determined that the proposed project, regardless of the selected Build Alternative, “**May Affect, Not Likely to Adversely Affect**” the American alligator.

Eastern Indigo Snake (*Drymarchon corais couperi*): The eastern indigo snake is listed as threatened by the FWS due to extensive habitat loss and population declines. This species utilizes a variety of habitats including swamps, wet prairies, and pinelands and may also seek shelter in gopher tortoise burrows to escape hot or cold ambient temperatures within its range.

While suitable habitat is present within the undeveloped upland and wetland habitats of the project study area, this species has not been documented within or adjacent to either Build Alternative. No eastern indigo snakes were additionally observed during the field reviews. For these reasons, this species was assigned a ‘moderate’ probability of occurrence within the project study area.

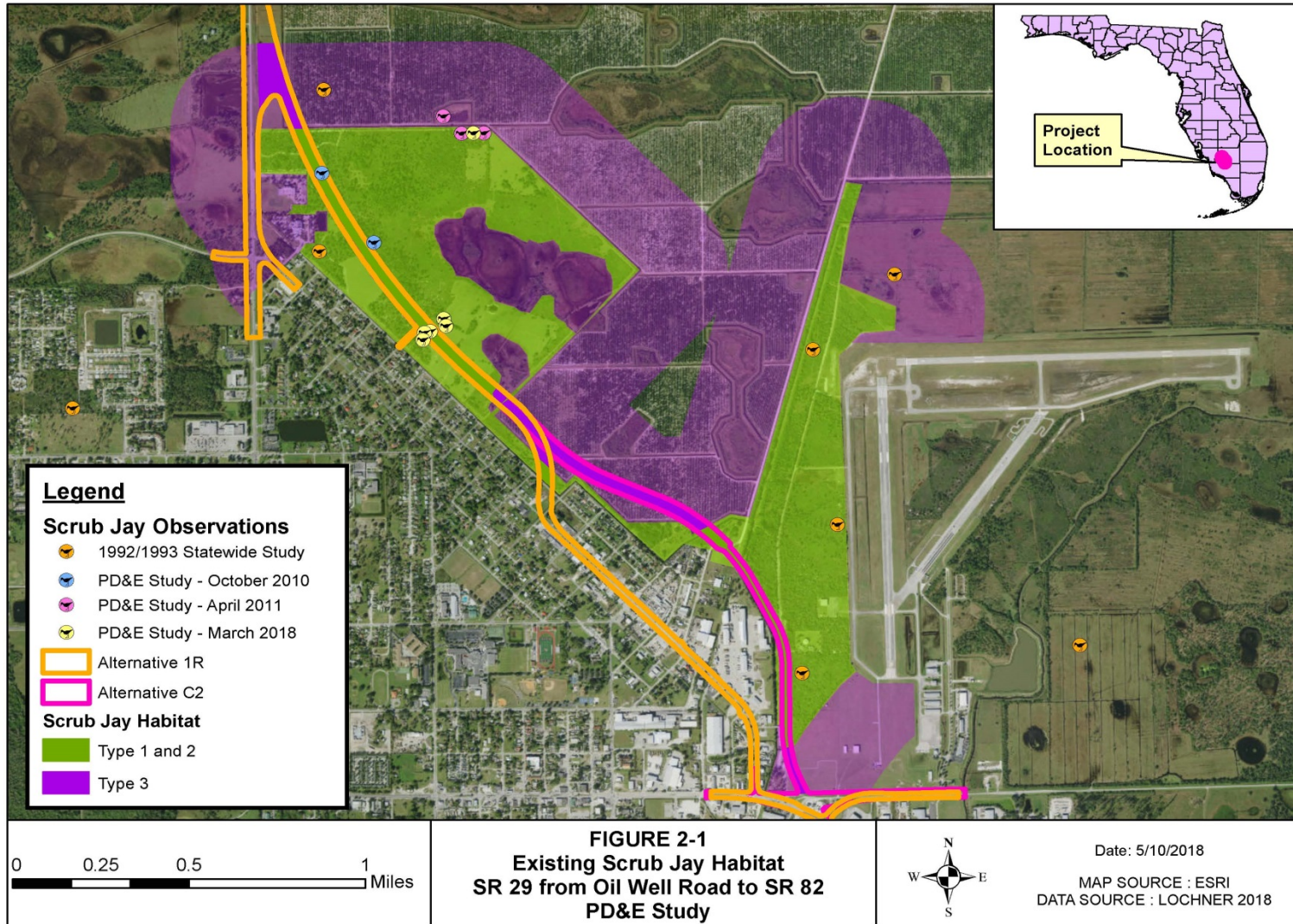
To increase protection of this species during construction, the FDOT will adhere to the most current version of the *Standard Protection Measures for the Eastern Indigo Snake* (included in **Appendix G**). As such, when applying the project specifics to the *Eastern Indigo Snake Programmatic Effect Determination Key – Revised July 2017* (FWS 2017), the FDOT has determined that implementation of either Build Alternative “*May Affect, Not Likely to Adversely Affect*” the eastern indigo snake.

Birds

Florida Grasshopper Sparrow (*Ammodramus savannarum floridanus*): The Florida grasshopper sparrow is listed as endangered by the FWS due to its small population and restricted distribution, as well as degradation and loss of suitable nesting and foraging habitat. According to data obtained from FWS, this species has only seven known breeding locations in Florida with a total estimated population of fewer than 1,000 birds. The Florida grasshopper sparrow requires large areas of frequently burned dry prairie habitat with patchy open areas sufficient for foraging and may also persist in open pasturelands with scattered clumps of vegetation. It forages for insects opportunistically along the ground in low, grassy areas. While marginal quality suitable habitat is present within both Build Alternatives, no Florida grasshopper sparrows have been previously documented within or adjacent to either Build Alternative, and none were observed during the field reviews. Based on this information, this species was assigned a ‘low’ probability of occurrence within the project study area, and the FDOT has determined that implementation of either Build Alternative will have “*No Effect*” on the Florida grasshopper sparrow.

Florida Scrub Jay (*Aphelocoma coerulescens*): The Florida scrub jay is federally-listed as threatened primarily due to habitat loss and degradation. This species is typically found in early successional stages of xeric oak communities that are occasionally burned. Its preferred habitat consists of scrub oaks that are less than 10 feet tall with open sand and grass patches. Limited pedestrian surveys of suitable habitat located within and immediately adjacent to both Build Alternatives were conducted by project biologists in October 2010, April 2011, and March 2018. During these surveys, recorded territorial vocalizations were broadcast along the transects; several scrub jays were observed within suitable habitat located north of Immokalee and east of SR 29 (see **Figure 2-1** for specific locations of scrub jay observations). In addition, scrub jays have been documented in the Upland Management Area (UMA) of the Immokalee Regional Airport. The UMA is managed to benefit the scrub jay present in accordance with FWS Biological Opinion FWS Log No. 4-1-97-F-556). Further, this species has been previously documented in the project vicinity as part of a 1992-1993 FWS statewide study (Fitzpatrick

**FIGURE 2-1
EXISTING SCRUB JAY HABITAT**



1994). For these reasons, the Florida scrub jay has been assigned a ‘high’ probability to occur within both Build Alternatives.

Implementation of either proposed Build Alternative would impact Type I, II, and III suitable scrub jay habitat as defined in the *Species Conservation Guidelines for the Florida Scrub-Jay* (FWS 2004). The three suitable habitat types are defined in these guidelines as follows:

Type I – any upland plant community in which percent cover of the substrate by scrub oak species is 15 percent or more.

Type II – any plant community, not meeting the definition of type I habitat, in which one or more scrub oak species is represented.

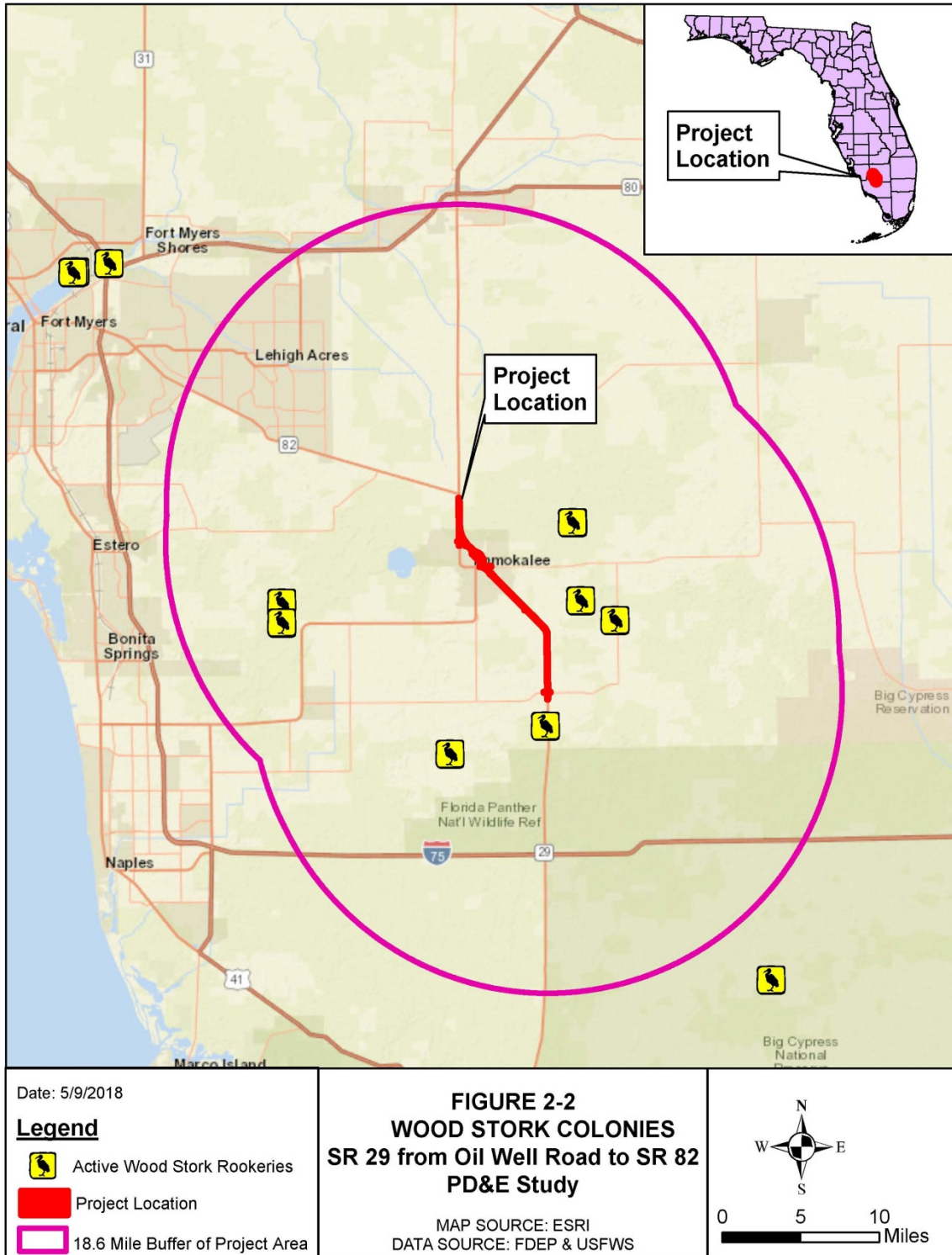
Type III – any upland or seasonally dry wetland within 400 m (0.25 mi) of any area designated as Type I or II habitats.

Central Alternative #1 Revised would impact a total of 41.78 acres of suitable habitat (25.52 acres of Type I/II and 16.26 acres of Type III), and Central Alternative #2 would impact a total of 64.25 acres of suitable habitat (34.77 acres of Type I/II and 29.48 acres of Type III). Per coordination with the FWS on March 20, 2018 (see **Appendix A**), Section 7 consultation with the FWS will be reinitiated during the project’s design and permitting phase. At this time, seasonal field surveys will be conducted within the selected Build Alternative. Based on previous observations of this species within the project study area and the potential for unavoidable impact to existing scrub-jay habitat, FDOT has determined that either Build Alternative “*May Affect, Likely to Adversely Affect*” the Florida scrub jay.

Wood Stork (*Mycteria americana*): The wood stork is federally listed as threatened due to a sharp decline in breeding populations. This opportunistic wading bird utilizes various open hydric pine- cypress habitats, herbaceous marshes, and man-made wetlands and canals. A specialized method of feeding (commonly referred to as groping) limits its foraging ability to shallow waters with dense concentrations of small fish. Wood storks use freshwater and estuarine habitats for nesting, foraging, and roosting. They are typically colonial nesters and construct their nests in medium to tall trees located within wetlands or on islands.

The FWS has defined an area with a radius of 18.6 miles (30 kilometers) from nesting wood stork colonies as the Core Foraging Area (CFA) for those colonies. The project falls within the CFA of four active nesting wood stork colonies (see **Figure 2-2** for wood stork CFA locations). As defined by the FWS, suitable wood stork foraging habitat includes wetlands and surface waters with relatively calm water, uncluttered by dense thickets of aquatic vegetation, and have permanent or seasonal water depths between 2 and 15 inches. Suitable foraging habitat is present within both Build Alternatives, and this species was observed within the project study area during field reviews. Therefore, the wood stork was assigned a ‘high’ probability of occurrence within the project study area.

**FIGURE 2-2
ACTIVE WOOD STORK COLONIES**



Both Build Alternatives would result in wetland and OSW impacts that may be considered suitable wood stork foraging habitat. Central Alternative #1 Revised would result in 29.32 acres of impact, and Central Alternative #2 would result in 29.74 acres of impact. Since greater than 5 acres of suitable foraging habitat would be impacted by either Build Alternative, a prey foraging analysis pursuant to the FWS' *Wood Stork Foraging Habitat Assessment Methodology* (FWS 2012) will be prepared for the selected Build Alternative during the project's design and permitting phase as part of Section 7 consultation with the FWS. In accordance with the FWS *South Florida Programmatic Concurrence* (i.e., Programmatic Wood Stork Key) (FWS 2012), impacts to suitable wood stork foraging habitat will be replaced in-kind or mitigated through the purchase of wetland credits from a "Service-approved" wetland mitigation bank. Based on this information, FDOT has determined that implementation of either Build Alternative "**May Affect, Not Likely to Adversely Affect**" the wood stork.

Red-Cockaded Woodpecker (*Picoides borealis*): The red-cockaded woodpecker inhabits fire-maintained pine flatwoods with an open understory and requires living, mature pine trees for nesting. No fire-maintained pine flatwoods habitat exists within or adjacent to the project study area. There are no documented occurrences of this species within the vicinity of either Build Alternative, and none were observed during field reviews. Therefore, the red-cockaded woodpecker was assigned a probability for occurrence of 'none', and FDOT has determined that implementation of either Build Alternative would have "**No Effect**" on the red-cockaded woodpecker.

Audubon's Crested Caracara (*Polyborus plancus audubonii*): The Audubon's crested caracara is federally listed as threatened due to habitat degradation and loss, primarily from the expansion of cattle ranching, residential developments, and citrus groves throughout central peninsular Florida. This species often inhabits open country (such as dry prairie and pasturelands with scattered cabbage palms, cabbage palm/live oak hammocks, and shallow ponds and sloughs) and requires cabbage palms or live oaks with low-growing surrounding vegetation for nesting. According to FNAI data, a breeding/nesting pair of crested caracara has been documented within one mile of the project study area (north of the intersection of SR 29 and SR 82); however, the last observation of this breeding pair was reported in 1978. Both Build Alternatives contain suitable habitat for the Audubon's crested caracara; this species was observed within both Build Alternatives during field reviews. For these reasons, the Audubon's crested caracara was assigned a 'high' probability to occur within the project study area.

Seasonal nest surveys will be conducted during the project's design and permitting phase as part of Section 7 consultation with the FWS. During this time, potential impacts to this species will be reevaluated. If the selected Build Alternative is later determined to adversely impact an active crested caracara nest, sufficient mitigation and/or protection measures will be provided as deemed necessary. For these reasons, FDOT has determined that implementation of either Build Alternative "**May Affect, Not Likely to Adversely Affect**" the Audubon's crested caracara.

Snail Kite (*Rostrhamus sociabilis plumbeus*): The snail kite is federally listed as endangered due to habitat degradation and loss primarily as a result of development and alteration of shallow freshwater wetlands throughout the south and central regions of Florida. This species prefers large open freshwater marshes and shallow lakes with emergent vegetation and is highly dependent upon apple snails (*Pomacea paludosa*) caught at the surface of the water as its food source. Both Build Alternatives contain suitable habitat for this species, and the snail kite and apple snails were both observed within the project study area during field reviews. Based on this information, the snail kite was determined to have a ‘high’ probability of occurrence within the project study area.

Both Build Alternatives would result in unavoidable impacts to wetlands and surface waters that may provide suitable snail kite foraging habitat. The potential impacts to this species will be reevaluated during design and permitting as part of Section 7 consultation with the FWS. Any adverse wetland impacts will be fully mitigated pursuant to Section 373.4137, F.S. to satisfy all mitigation requirements of Part IV of Chapter 373, F.S. and 33 U.S.C. §1344 and prevent a net loss of functions and values to wetlands and surface waters that may provide suitable foraging habitat for this species. Based on the provision of compensatory mitigation to offset wetland and surface water habitat impacts, FDOT had determined that implementation of either Build Alternative “*May Affect, Not Likely to Adversely Affect*” the snail kite.

Mammals

Florida Bonneted Bat (*Eumops floridanus*): The Florida bonneted bat is federally listed as endangered due to declining populations from habitat loss and degradation. The Florida bonneted bat has historically been documented in a variety of habitat types including mangroves, earth midden hammocks, pine rockland, wet prairie, tropical hardwoods, hardwood hammock, pine flatwoods, lakes, cypress hammock, scrubby flatwoods, and wetland scrub habitat as well as man-made and altered areas (such as residential and urban areas, canals, and developed park land).

Suitable habitat for the Florida bonneted bat occurs within both Build Alternatives. However, this species has not been documented within or adjacent to the project study area; none were observed during the field reviews. Therefore, a ‘moderate’ probability of occurrence has been assigned to the Florida bonneted bat. To minimize adverse impacts to this species, the FDOT will reinitiate Section 7 consultation with the FWS for this species during the project’s design and permitting phase. During this time, seasonal field surveys will be conducted within the selected Build Alternative. Based on this information, and due to the extent of suitable habitat that will remain in adjacent areas for potential utilization by this species, FDOT has determined that implementation of either Build Alternative “*May Affect, Not Likely to Adversely Affect*” the Florida bonneted bat.

Florida panther (*Puma concolor coryi*): The Florida panther is federally listed as endangered primarily due to habitat fragmentation and loss. They are particularly sensitive to habitat fragmentation because of their expansive movements and extensive spatial requirements (Harris

1984). The Panther Focus Area represents regions of South Florida containing suitable panther habitat in which development could adversely affect the panther. The Panther Focus Area covers portions of Charlotte, Glades, Hendry, Lee, Collier, Palm Beach, Broward, Miami-Dade, and Monroe Counties, as well as the southern portion of Highlands County. Developed urban coastal areas in eastern Palm Beach, Broward, and Miami-Dade Counties, and in western Charlotte, Lee, and Collier Counties are excluded from the Panther Focus Area due to limited availability of suitable panther habitat as panthers are unlikely to use such areas (FWS 2015). South of the Caloosahatchee River, the Panther Focus Area is divided into Primary, Secondary, and Dispersal Zones. North of the Caloosahatchee River, the Panther Focus Area consists of the Primary Dispersal/Expansion Area only. Areas outside of the Panther Focus Area, but within the original Panther Consultation Area, are collectively known as the “Other Zone” (FWS 2015). Each zone is further described below.

Primary Zone: consists of lands currently occupied by the Florida panther which support the only known wild breeding population of this species.

Secondary Zone: is comprised of lands that are positioned contiguously with the Primary Zone which are used to a lesser extent by panthers but still may be occupied.

Dispersal Zone: a corridor between the Panther Focus Area south of the Caloosahatchee River and the Panther Focus Area north of the Caloosahatchee River that may facilitate future panther expansion north of the Caloosahatchee River (Kautz et al. 2006).

Primary Dispersal/Expansion Area: lands identified by Thatcher et al. (2006) as potential panther habitat and which have the shortest habitat connection to the Panther Focus Area in south Florida.

The Panther Zones are shown, relative to the two Build Alternatives, on **Figure 2-3**. Recent telemetry (2014) and mortality data (2017) obtained from the FWC identifies 207 documented occurrences of collared Florida panthers within the project’s one mile buffer since 2000 (see **Figure 2-4**). The telemetry data points were tracked from 14 different panthers, of which 2 have since been determined by FWC to be deceased. The remaining 12 panthers are assumed to be alive as of 2017. Additionally, 20 panther fatalities have been reported within one mile of the two Build Alternatives since 2000. Of those fatalities, 19 resulted from vehicular collisions, and one was determined to be caused by pneumonia. Panther telemetry and mortality data are provided in **Appendices H-1** and **H-2**, respectively.

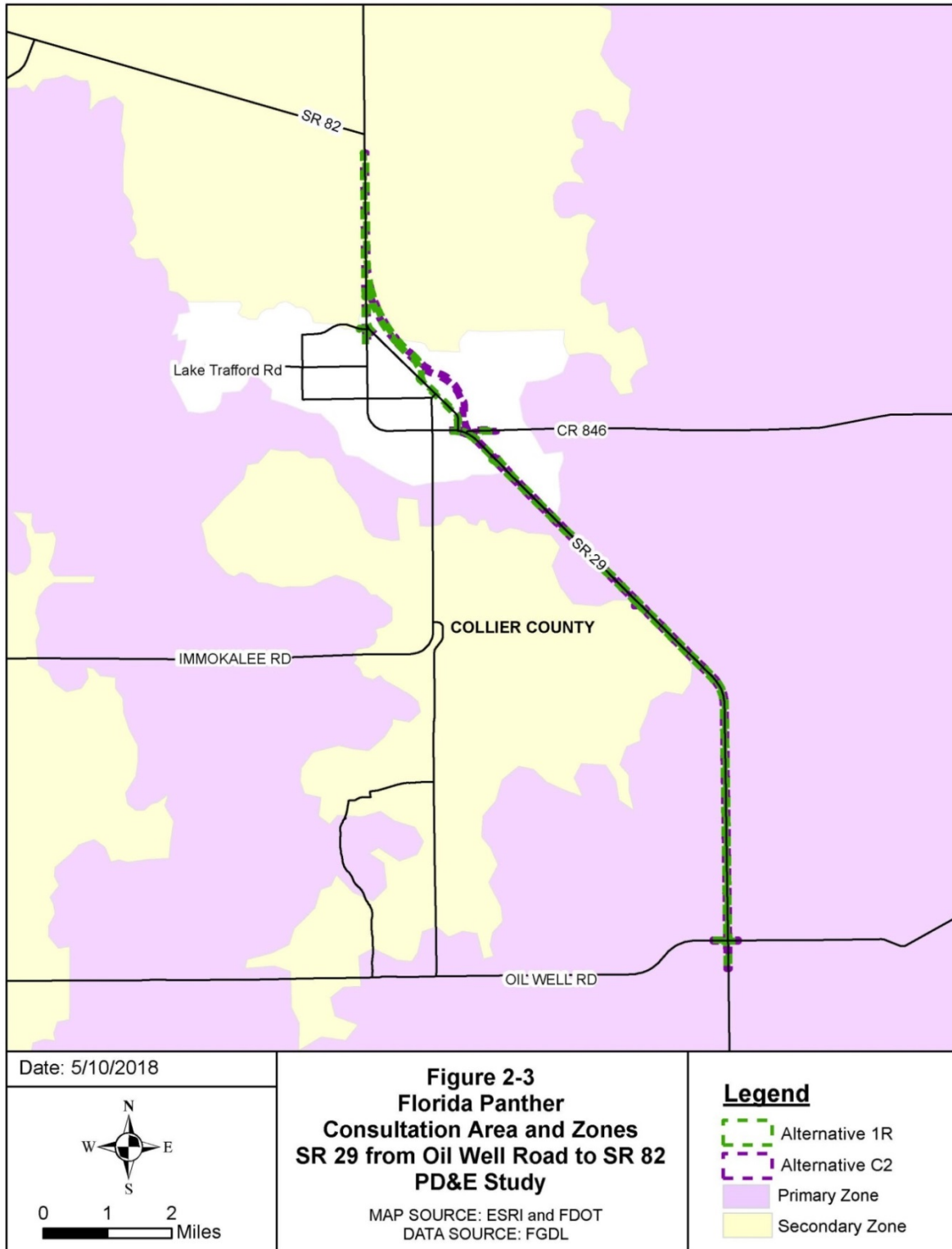
Both Build Alternatives share a common alignment through the designated Panther Zones and occur partially within lands designated by the FWS as “primary” and “secondary” Panther Zones. Additionally, this species has been previously documented by the FWS and FWC throughout the project corridor using the tracking methodologies described above. For these reasons, the Florida panther was determined to have a ‘high’ probability to occur within the project study area.

Two segments of SR 29 are common to both Build Alternatives: from Oil Well Road north to the Owl Hammock curve and the northern project terminus at the intersection of SR 29 and SR 82. Both were identified as key road segments for Florida panther conservation using least-cost pathways (Swanson, et al, 2008). The southern segment of SR 29 from Oil Well Road to the Owl Hammock curve bisects a least-cost pathway (i.e. travel corridor) for panthers traveling between Okaloacoochee Slough State Forest (OKSLOUGH) and the Florida Panther National Wildlife Refuge (FPNWR). This segment crosses through historical landscapes and cover types that are highly suitable for panthers. Mortality data from the FWC indicates that 18 panthers have been killed by vehicle collisions along this segment of SR 29 since 2000. The northern segment near the intersection of SR 29 and SR 82 is considered important for panthers traveling between the OKSLOUGH and the Corkscrew Regional Ecosystem Watershed (CREW), although the available habitats are not as suitable for panthers. According to the FWC mortality data, one panther has been killed by vehicle collision within this segment of SR 29 since 2000.

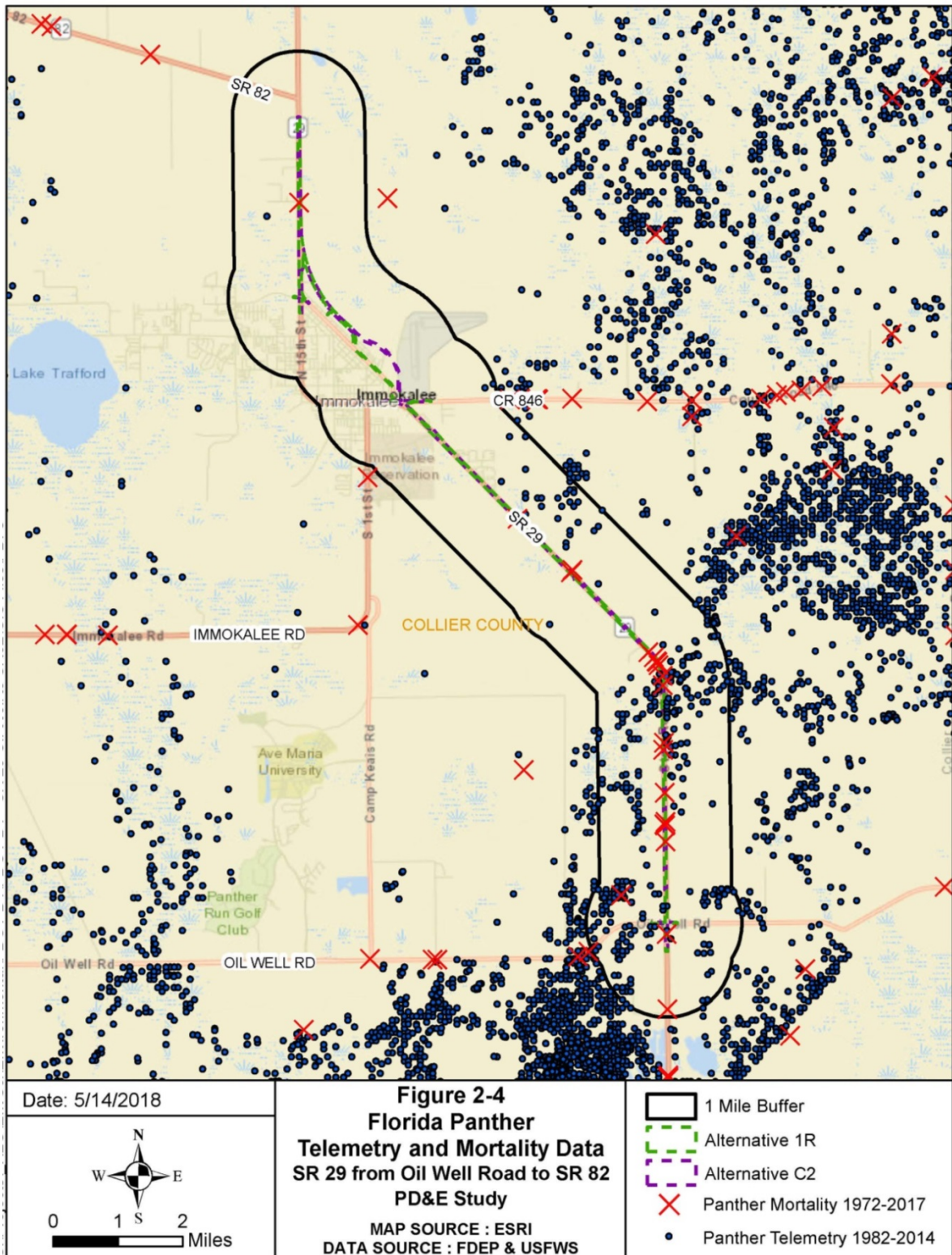
Based on coordination and comments received from FWS and FWC, the FDOT anticipates the installation of a wildlife crossing south of the Owl Hammock curve area of SR 29. Details of this crossing and additional coordination with the FWS would be developed during the design and permitting phase of the selected Build Alternative.

The FWS developed a Panther Habitat Assessment Methodology for evaluating permit applications for projects that could affect panther habitat. This methodology was used to evaluate the potential panther habitat lost due to the proposed action and the panther habitat provided as compensation. The value of impacted habitats to the Florida panther was calculated using the FWS Panther Tool. The Panther Tool assigns a habitat suitability value for each type of panther habitat impacted; assigns a landscape multiplier based on the habitat location in either the Primary Zone/Dispersal Zone, Secondary Zone, or Other Zone; and includes a base ratio multiplier that accounts for estimated panther habitat lost per year, loss of habitat due to development, and increased potential traffic due to proposed development projects in panther habitat. To calculate the Panther Habitat Unit (PHU) impact value, the habitat impact acreage of each individual habitat type was multiplied by its corresponding habitat suitability score (found in Table PM-2 of the FWS' Panther Habitat Assessment Methodology). To determine the amount of PHU mitigation required for the project, the individual PHU impact values were multiplied by 2.5 (the base ratio) and 0.69 (landscape multiplier for mitigating in the Primary Zone). The landscape multipliers are found in Table PM-5 of the Panther Habitat Assessment Methodology. A summary table of the PHU assessment for both Build Alternatives is provided in **Appendix H-3**.

**FIGURE 2-3
PANTHER CONSULTATION AREA AND ZONES**



**FIGURE 2-4
PANTHER TELEMETRY AND MORTALITY LOCATIONS**



Based on the results of the PHU assessment, both Build Alternatives would impact 100.67 acres of suitable panther habitat of which 63.33 acres are located within the Primary Zone, and the remaining 37.34 acres are within Secondary Zone. As shown in **Appendix H-3**, the 63.33 acres of suitable panther habitat within the Primary Zone provide a value of 426.53 PHUs, and the 37.34 acres of suitable habitat located within the Secondary Zone provide a value of 128.49 PHUs. Additionally, 7.80 acres of habitat within Secondary Zone, which provide a value of 55.07 PHUs, would be impacted by fragmentation. Based on the PHU mitigation formula in the Methodology, using the 2.5 base ratio and 0.69 landscape multiplier described above, a total of 1,391.70 PHUs will be required to offset the 613.58 PHUs impacted by either Build Alternative.

The Florida Panther Conservation Bank, Florida Panther Conservation Bank II, Panther Passage Conservation Bank, and Panther Island Mitigation Bank (Expansion) service the project area and have PHU credit availability. Additionally, Big Cypress Mitigation Bank (Phases I-V) offers palustrine wetland credits with a PHU component attached. The Florida Panther Conservation Bank, Panther Island Mitigation Bank (Expansion), and Big Cypress Mitigation Bank (Phases I-V) are located within the Primary Panther Zone (additional PHU credit would be required if mitigating in Secondary or Dispersal Zones).

Per coordination with the FWS on March 20, 2018 (see **Appendix A**), Section 7 consultation with the FWS will be reinitiated during the project's design and permitting phase. During this time, the PHU assessment for the selected Build Alternative will be revisited and updated as appropriate to accommodate for any future design revisions and/or additional ROW acquisition. Additionally, the FDOT anticipates installing a wildlife crossing near the Owl Hammock curve to allow east-west panther movement within a currently-obstructed travel corridor. However, due to the extent of proposed unavoidable impact to suitable panther habitat, FDOT has determined that either Build Alternative "*May Affect, Likely to Adversely Affect*" the Florida panther.

State-Listed Species

Reptiles

Gopher Tortoise (*Gopherus polyphemus*): The gopher tortoise is state-listed as threatened due to habitat degradation and declining number of individuals. Gopher tortoises require well-drained, loose sandy soils for burrowing and low-growing herbs and grasses for food. These conditions can be found in a variety of habitats including dry prairies, pine flatwoods, and disturbed or maintained sites. Suitable habitat for these species is present within both Build Alternatives, and several gopher tortoise burrows were observed within the project study area during field reviews. For these reasons, the gopher tortoise was determined to have a 'high' probability of occurrence within the project study area.

Current FWC regulations require a permit for any ground disturbance activity occurring within 25 feet of a potentially occupied gopher tortoise burrow. Based on current FWC regulations, any gopher tortoises located within 25 feet of the project must be relocated to a permitted recipient

site. The selected Build Alternative will be surveyed for potential gopher tortoise utilization during the design and permitting phase. If gopher tortoises or potentially occupied burrows are found within the project area, the FDOT will coordinate with the FWC to secure all permits needed to relocate the tortoises and, if necessary, any additional listed species found to be utilizing the burrows. Therefore, FDOT has determined that implementation of either Build Alternative will have “*No adverse effect anticipated*” on the gopher tortoise.

Birds

Florida Burrowing Owl (*Athene cunicularia floridana*): The Florida burrowing owl is state-listed as threatened due to ongoing habitat degradation and loss. This species inhabits open native dry prairies and sandhill communities, as well as ruderal areas comprised of short, herbaceous groundcover. Although both Build Alternatives contain marginal quality suitable habitat, there are no documented occurrences of the Florida burrowing owl within or adjacent to the project study area; no individuals or burrows were observed during the field reviews. Based on this information, this species was assigned a ‘low’ probability of occurrence within the project study area, and FDOT has determined that both Build Alternatives will have “*No adverse effect anticipated*” on the Florida burrowing owl.

Little Blue Heron (*Egretta caerulea*) and Tricolored Heron (*Egretta tricolor*): The little blue heron and the tricolored heron, both of which are listed as threatened by the FWC, are discussed collectively since they occupy similar habitats and have similar feeding patterns. Their preferred habitats consist of a variety of natural and man-made wetlands (such as ditches, canals, freshwater marshes, shallow ponds, and forested wetlands). The populations of both species have declined due to destruction of wetlands for development and draining of wetlands for flood control and agriculture. The primary concern for impacts to these wading birds is the loss of foraging habitat (i.e., wetlands). During the field reviews, both species were observed within the wetland and other surface water habitats located throughout both Build Alternatives; therefore, they were determined to have a ‘high’ probability of occurrence within the project study area.

No heron rookeries are documented or otherwise known in the project vicinity; however, suitable foraging habitat for both the little blue heron and tricolored heron exists within both Build Alternatives. Any unavoidable adverse wetland impacts will be fully mitigated pursuant to Section 373.4137, F.S. to satisfy all mitigation requirements of Part IV of Chapter 373, F.S. and 33 U.S.C. §1344 to prevent a net loss of functions and values to wetlands and other surface waters that may provide suitable habitat for this species. Compensatory mitigation for this project will be completed through the purchase of credits from mitigation banks and any other mitigation options that satisfy state and federal requirements. Based on the provision of compensatory mitigation to offset wetland and surface water habitat impacts, FDOT has determined that the proposed project, regardless of the selected Build Alternative, will have “*No adverse effect anticipated*” on the little blue heron or tricolored heron.

Southeastern American Kestrel (*Falco sparverius paulus*): The Southeastern American kestrel is state-listed as threatened due to population declines. This species typically occupies woodland

edges, dry prairies, and open pine flatwoods; preferring tall, dead trees or utility poles with unobstructed views for nesting. The project study area contains suitable habitat for the Southeastern American kestrel, and this species was observed within the project study area during field reviews; however, no kestrel nests were identified and none will be impacted by the proposed project. While this species was determined to have a ‘high’ probability of occurrence within the project study area, FDOT has determined that implementation of either Build Alternative will have “*No adverse effect anticipated*” on the southeastern American kestrel due to its high mobility and the extent of suitable habitat remaining in adjacent areas.

Florida Sandhill Crane (*Grus canadensis pratensis*): The Florida sandhill crane is state-listed as threatened due to population declines. This species utilizes wet and dry prairies, freshwater marshes, open lawns, and agricultural areas (such as pastures, crop fields, and feedlots). The primary concern for impacts to the Florida sandhill crane is the loss of nesting habitat (i.e., wetlands). Both Build Alternatives contain suitable nesting habitat, and this species was observed during field reviews. For these reasons, the Florida sandhill crane was determined to have a ‘high’ probability of occurrence within the project study area.

Any adverse wetland impacts will be fully mitigated pursuant to Section 373.4137, F.S. to satisfy all mitigation requirements of Part IV of Chapter 373, F.S. and 33 U.S.C. §1344 to prevent a net loss of functions and values to wetlands and other surface waters that may provide suitable habitat for this species. Compensatory mitigation for this project will be completed through the purchase of credits from mitigation banks and any other mitigation options that satisfy state and federal requirements. In accordance with Rule 68A-27.007, F.A.C., project design and construction will take steps, as applicable and feasible, to avoid disturbing active Florida sandhill crane nests and flightless young in the project vicinity (e.g., conduct activities outside of the breeding season or outside of a 400 ft. buffer around active nests when feasible). For these reasons and based on the provision of compensatory mitigation to offset wetland and surface water habitat impacts, FDOT has determined that implementation of the proposed project, regardless of the selected Build Alternative, will have “*No adverse effect anticipated*” on the Florida sandhill crane.

Roseate Spoonbill (*Platalea ajaja*): The roseate spoonbill is state-listed as threatened by the FWC. Its preferred habitat types consist of a variety of natural and man-made wetlands (such as ditches, canals, freshwater marshes, shallow ponds, and forested wetlands). This wading bird primarily forages on minnows and aquatic invertebrates, occasionally feeding on plant material (such as roots and stems). The roseate spoonbill population has declined primarily due to the filling and draining of wetlands for residential and commercial development, flood control, and agricultural activities. The primary concern for impacts to wading bird species is the loss of foraging habitat (i.e., wetlands and other surface waters). No roseate spoonbills have been documented by the FNAI within or adjacent to the project study area; however, suitable habitat exists within both Build Alternatives. This species was observed during field reviews. Therefore, the roseate spoonbill was assigned a ‘high’ probability to occur within the project study area.

Both Build Alternatives would result in impacts to wetlands and surface waters potentially utilized by this species. Any adverse wetland impacts will be fully mitigated pursuant to Section 373.4137, F.S. to satisfy all mitigation requirements of Part IV of Chapter 373, F.S. and 33 U.S.C. §1344 to prevent a net loss of functions and values to wetlands and other surface waters that may provide suitable habitat for this species. Compensatory mitigation for this project will be completed through the purchase of credits from mitigation banks and any other mitigation options that satisfy state and federal requirements. Based on the provision of compensatory mitigation to offset wetland and surface water habitat impacts, FDOT has determined that the proposed project, regardless of the selected Build Alternative, will have “*No adverse effect anticipated*” on the roseate spoonbill.

Mammals

Big Cypress Fox Squirrel (*Sciurus niger avicennia*): The Big Cypress fox squirrel is state-listed as threatened due to loss of suitable habitat and population declines. It resides within a variety of forested habitats with open to moderately dense understory and shrub cover (such as pine flatwoods, cypress swamps, and hardwood hammocks). Although suitable habitat is present within the project study area, this species has not been documented within or adjacent to either Build Alternative; none were observed during field reviews. Therefore, the Big Cypress fox squirrel was assigned a ‘moderate’ probability of occurrence within the project study area. Adverse impacts to forested wetlands potentially utilized by this species will be fully mitigated pursuant to Part IV, Chapter 373, F.S. and 33 C.F.R. Part 332 to prevent a net loss of wetland functions and values. Therefore, FDOT had determined that implementation of either Build Alternative will have “*No adverse effect anticipated*” on the Big Cypress fox squirrel.

2.3.2 *FEDERALLY-LISTED AND STATE- LISTED PLANT SPECIES*

Federally-Listed Species

Garber’s Spurge (*Chamaesyce garberi*) and Florida Prairie-Clover (*Dalia carthagensis floridana*): These two species are identified on the FWS IPaC resource list and are discussed collectively due to similar habitat types; both are federally listed as endangered. Garber’s spurge typically occurs within pine rocklands, coastal flats, coastal grasslands, and beach ridges. Florida prairie clover is found on pine rocklands, marl prairies, coastal berms, and rockland hammock habitats. Since these habitat types do not exist within or adjacent to the project corridor, both species were determined to have an occurrence probability of ‘none’. Therefore, FDOT has determined that implementation of either Build Alternative would have “*No Effect*” on Garber’s spurge or Florida prairie-clover.

State Listed Species

Pine Woods Bluestem (*Andropogon arctatus*), Florida Beargrass (*Nolina atopocarpa*), and Yellow Fringeless Orchid (*Platanthera integra*): These species are discussed collectively due to similarity of suitable habitat types. While the pine woods bluestem and Florida beargrass are

both state-listed as threatened, the yellow fringeless orchid is state-listed as endangered. All three species are found in wet flatwoods that are frequently burned, and the yellow fringeless orchid also occurs within wet prairies, scrub-shrub wetlands, and low pine barrens. Due to the presence of marginal quality suitable habitat, the yellow fringeless orchid was determined to have a ‘low’ probability of occurrence within the project study area. Both the pine woods bluestem and Florida beargrass were determined to have an occurrence probability of ‘none’ due to lack of suitable habitat. Additional vegetative surveys will be undertaken within suitable habitats, coordination with FDACS will occur (as necessary) during the project design and permitting phase, and appropriate mitigation measures will be provided for any adverse impacts to these species. Therefore, FDOT has determined that implementation of either Build Alternative will have “*No adverse effect anticipated*” on pinewoods bluestem, Florida beargrass, or yellow fringeless orchid.

Many Flowered Grass Pink (*Calopogon multiflorus*) and Celestial Lily (*Nemastylis floridana*): These species, both of which are state-listed as endangered, are discussed collectively due to similarity of suitable habitat types. Both occur within forested and herbaceous wetlands that are frequently disturbed by fire. Due to the presence of marginal quality suitable habitat, both species were determined to have a ‘low’ probability of occurrence within the project study area. Additional vegetative surveys will be undertaken within suitable habitats, coordination with FDACS will occur (as necessary) during the project design and permitting phase, and appropriate mitigation measures will be provided for any adverse impacts to these species. Therefore, the FDOT has determined that implementation of either Build Alternative will have “*No adverse effect anticipated*” on either the many flowered grass pink or the celestial lily.

Sand Butterfly Pea (*Centrosema arenicola*): This species is state-listed as endangered and resides in sandhill, scrubby flatwoods, and dry upland forested habitats. Due to the presence of suitable habitat, this species was determined to have a ‘moderate’ probability of occurrence within the project study area. Additional vegetative surveys will be undertaken within suitable habitats, coordination with FDACS will occur (as necessary) during the project design and permitting phase, and appropriate mitigation measures will be provided for any adverse impacts to this species. Therefore, the FDOT has determined that implementation of either Build Alternative will have “*No adverse effect anticipated*” on the sand butterfly pea.

Nodding Pinweed (*Lechea cernua*): This species, which is state-listed as threatened, occurs within deep sands (usually ancient dunes) dominated by a mixture of evergreen scrub oaks. No suitable habitat exists within or adjacent to the project study area; therefore, this species was determined to have an occurrence probability of ‘none’. As such, the FDOT has determined that implementation of either Build Alternative will have “*No adverse effect anticipated*” on nodding pinweed.

Small’s Flax (*Linum carteri* var. *smallii*): This species, which is state-listed as endangered, typically occurs within pine rocklands, pine flatwoods, and adjacent disturbed areas. Due to the

presence of suitable habitat, this species was determined to have a ‘moderate’ probability of occurrence within the project study area. Additional vegetative surveys will be undertaken within suitable habitats, coordination with FDACS will occur (as necessary) during the project design and permitting phase, and appropriate mitigation measures will be provided for any adverse impacts to this species. Therefore, the FDOT has determined that implementation of either Build Alternative will have “*No adverse effect anticipated*” on Small’s flax.

Florida Spiny Pod (*Matelea floridana*): This state-listed endangered species resides in sun-lit openings within upland mixed hardwood forests. Due to the presence of suitable habitat, this species was determined to have a ‘moderate’ probability of occurrence within the project study area. Additional vegetative surveys will be undertaken within suitable habitats, coordination with FDACS will occur (as necessary) during the project design and permitting phase, and appropriate mitigation measures will be provided for any adverse impacts to this species. For these reasons, the FDOT has determined that implementation of either Build Alternative will have “*No adverse effect anticipated*” on Florida spiny pod.

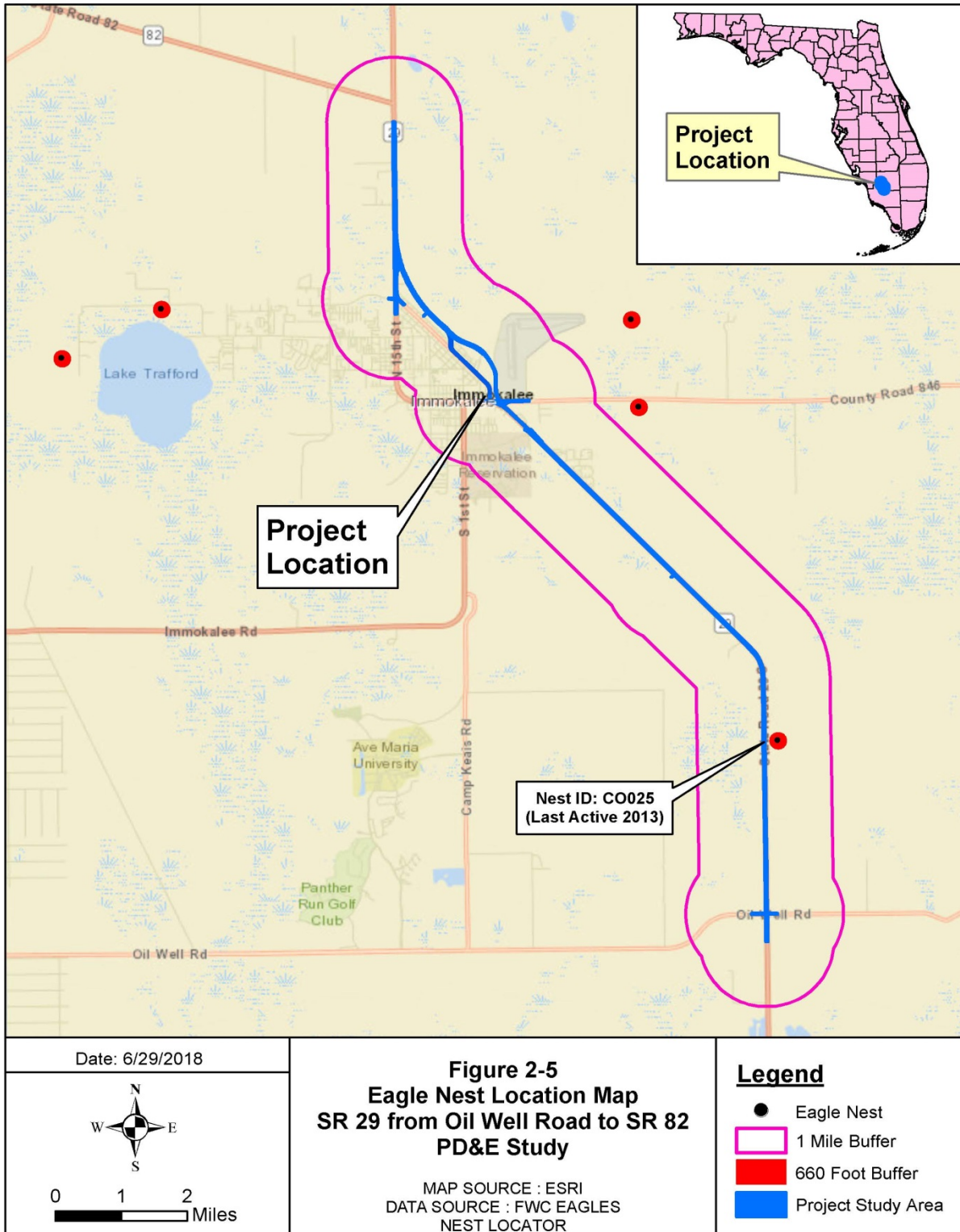
Coastal Hoary-Pea (*Tephrosia angustissima var. curtissii*): This species, which is state-listed as endangered, occurs within pine rocklands, coastal flats, coastal grasslands, and sandy beach ridges. No suitable habitat is present within or adjacent to the project study area; therefore, this species was determined to have an occurrence probability of ‘none’, and the FDOT has determined that implementation of either Build Alternative will have “*No adverse effect anticipated*” on the coastal hoary-pea.

2.3.3 NON-LISTED/PROTECTED SPECIES

Bald Eagle (*Haliaeetus leucocephalus*): The bald eagle is protected under the Migratory Bird Treaty Act, the federal Bald and Golden Eagle Protection Act, and Florida’s bald eagle rule (68A-16.002, F.A.C.). On April 20, 2017, the FWC approved revisions to the state’s bald eagle rule that eliminate the need for applicants to obtain both state and federal permits for activities with the potential to take or disturb bald eagles or their nests. Under the approved revisions, only a federal permit is required. According to the FWC (2017c), the closest documented bald eagle nest is Nest CO025 located approximately 1,000 feet east of the project corridor. However, this nest site, which was previously surveyed in 2015, was last reported active in 2013 (see **Figure 2-5**) and occurs outside of the 660-foot construction buffer zone. Due to the presence of suitable habitat and a documented nest site within 1,000 feet of the project corridor, this species was assigned a ‘high’ probability of occurrence within the project study area. The FDOT will resurvey the project area, including reviewing reported nest locations, during the design and permitting phase of the project and will coordinate with the FWS if any nests may be affected by project construction.

Osprey (*Pandion haliaetus*): Ospreys are afforded protection under the Migratory Bird Treaty Act (16 U.S.C. 703-712) and are state protected by Chapter 68A, F.A.C. Although both active and inactive osprey nests are federally protected, only active nests require federal permits for taking. Under state rules, only inactive osprey nests may be taken as determined by the absence

**FIGURE 2-5
BALD EAGLE NEST LOCATION**



of eggs or flightless young at the nest. Typically, a replacement nesting structure located in the immediate vicinity is required to be erected. Suitable habitat occurs within the project study area, and this species was observed during field reviews. Therefore, the osprey was determined to have a 'high' probability of occurrence within the project study area. The selected Build Alternative will be surveyed for active osprey nests during the design and permitting phase of the project, and permits will be acquired if impacts to active nests during construction are unavoidable.

Florida Black Bear (*Ursus americanus floridanus*): Although the Florida black bear has been removed from the state listing as a threatened species, it is still protected and managed by the FWC pursuant to the Florida Black Bear Conservation Rule 68A-4.009, F.A.C. The Florida black bear can be found in various habitats including mixed hardwoods, pine, cabbage palm hammock, and forested wetlands. This species tends to den alone within tree cavities, riverbanks, logs, or caves. It will also nest on the ground in palmetto thickets, gallberry, fetterbush, and sweet pepperbush. The Florida black bear is omnivorous and feeds on fruits, nuts, roots, twigs, bark, eggs, honey, and carrion. Both Build Alternatives contain suitable habitat and occur within Abundant range for the Big Cypress bear population.

Additionally, six black bear nuisance occurrences are documented along SR 29 within the limits of the study area. For these reasons, the Florida black bear was determined to have a 'high' probability of occurrence within the project study area. While both Build Alternatives will impact suitable Florida black bear habitat, impacts to wetland habitat potentially used by bears will be offset by mitigation as previously discussed, and a large amount of undeveloped uplands will remain in adjacent areas for utilization by this species. The proposed wildlife crossing associated with this project is also anticipated to promote east-west bear movement within the project corridor. Further, the FDOT will follow the FDOT Standard Specification regarding the Florida black bear to minimize human-bear interactions associated with construction sites during construction of the project.

2.3.4 CANDIDATE SPECIES

While the gopher tortoise currently has state designation only, this species has been added to the list of candidate species eligible for federal protection under the ESA.

Section 3.0

WETLANDS AND OTHER SURFACE WATERS

3.1 INTRODUCTION

In accordance with Presidential Executive Order 11990 entitled "Protection of Wetlands" and United States Department of Transportation Order 5660.1A, "Preservation of the Nation's Wetlands" and Part 2, Chapter 9 of the FDOT PD&E Manual, the project study area was reviewed to identify, quantify, and map wetland communities that are located within the proposed project boundaries. In order to protect, preserve, and enhance wetlands to the fullest extent possible, the FDOT has assessed wetlands that may be affected by proposed roadway improvements.

Regulatory agencies that provided comments during the ETDM Process included the Florida Department of Environmental Protection (FDEP), USACE, NMFS, and FWS. The Degree of Effect (DOE) for the Wetlands issue varied by alternative from 3 (Moderate) to 4 (Substantial). The NMFS assigned a 2 (Minimal to None) DOE for the project since it does not affect coastal or marine resources. The wetland permitting agencies indicated that impacts to wetlands should be avoided and minimized to the greatest extent practicable, the design should meet state water quality and quantity standards, and best management practices should be implemented during construction.

3.2 METHODOLOGY

Multiple field reviews were conducted between April 2010 and March 2018. During the field inspections, preliminary habitat boundaries and FLUCFCS/FWS classification codes previously referenced in Section 1.3 were verified. Approximate wetland and other surface water (OSW) boundaries were field-verified in accordance with the State of Florida Wetlands Delineation Manual (Chapter 62-340, F.A.C.) and the guidelines found within the Regional Supplement to the *USACE Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region* (USACE 2010). The Uniform Mitigation Assessment Method (UMAM) (Chapter 62-345, F.A.C.) was utilized for functional assessment of each potentially impacted wetland habitat.

During field investigations, each wetland and OSW habitat within the project study area was visually inspected and photographed (see **Appendix I**). Attention was given to identifying plant species composition for each community. Exotic plant infestations and other disturbances (such as soil subsidence, clearing, canals, power lines, etc.) were noted. Wildlife observations and signs of wildlife usage within each wetland and OSW habitat within the project study area were also documented.

3.3 INDIVIDUAL WETLANDS AND OTHER SURFACE WATERS

The wetland habitats within both Build Alternatives consist of freshwater forested and herbaceous wetlands as well as OSWs, which include a network of agricultural ditches, reservoirs, and linear drainage conveyances associated with SR 29. Based on in-house reviews and field verification, a total of 12 individual wetlands and numerous upland-cut OSW features were identified within the project study area. Central Alternative #1 Revised contains 14.33 acres of wetlands and 14.99 acres of OSWs. Central Alternative #2 also contains 14.33 acres of wetlands but has 15.41 acres of OSWs.

Individual wetland and OSW habitats located within each Build Alternative, by FLUCFCS code and FWS classification, are summarized in **Table 3-1**. Descriptions of each are also provided below. The locations of the individual wetlands and OSWs within the two Build Alternatives are shown on aerial photographs included in **Appendix J**.

**TABLE 3-1
INDIVIDUAL WETLANDS AND OTHER SURFACE WATERS**

Wetland / OSW ID	FLUCFCS Description	FLUCFCS Code	FWS Wetland Classification*	Acres in Central Alternative #1 Revised	Acres in Central Alternative #2
Wetlands					
WL-1	Mixed Wetland Hardwoods	617	PFO1/3C	0.83	0.83
WL-2	Wetland Forested Mixed	630	PFO1/2C	1.68	1.68
WL-3	Cypress	621	PFO2C	0.56	0.56
WL-4	Wetland Forested Mixed	630	PFO1/2C	2.55	2.55
WL-5	Freshwater Marshes	641	PEM1C	0.62	0.62
	Mixed Wetland Hardwoods	617	PFO1/3C	0.16	0.16
WL-6	Wetland Forested Mixed	630	PFO1/2C	3.89	3.89
WL-7	Freshwater Marshes	641	PEM1C	0.76	0.76
WL-8	Mixed Wetland Hardwoods	617	PFO1/3C	0.96	0.96
WL-9	Freshwater Marshes	641	PEM1C	0.77	0.77
WL-10	Freshwater Marshes	641	PEM1C	0.44	0.44
WL-11	Freshwater Marshes	641	PEM1C	0.81	0.81
WL-12	Freshwater Marshes	641	PEM1C	0.30	0.30
<i>Total Wetlands</i>				<i>14.33</i>	<i>14.33</i>
Other Surface Waters					
Linear Ditches	Streams and Waterways	510	PUB2F	14.36	14.78
Reservoirs	Reservoirs <10 acres	534	PSS1C / PUB2C	0.63	0.63
<i>Total Other Surface Waters</i>				<i>14.99</i>	<i>15.41</i>
Total				29.32	29.74

* **FWS Wetland Descriptions:**

PEM1C: Palustrine, Emergent, Persistent, Seasonally Flooded
PFO1/2 C: Palustrine, Forested, Broad-Leaved Deciduous/Needle-Leaved Deciduous, Seasonally Flooded
PFO1/3 C: Palustrine, Forested, Broad-Leaved Deciduous/Broad-Leaved Evergreen, Seasonally Flooded
PSS1C: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded
PUB2F: Palustrine, Unconsolidated Bottom, Sand, Semi-permanently Flooded

Wetland Descriptions

Wetland 1

FLUCFCS: 617 – Mixed Wetland Hardwoods

FWS: PFO1/3C (Palustrine, Forested, Broad-Leaved Deciduous /Broad-Leaved Evergreen, Seasonally Flooded)

Wetland 1 (WL-1) is a forested wetland that abuts the west side SR 29 approximately 1,000 feet north of Oil Well Road and comprises 0.83 acre of each Build Alternative. This wetland occurs entirely over a mapped hydric soil (Map Unit 25 – Boca, Riviera, limestone substratum and Copeland fine sands, depressional) and is both state and federally jurisdictional. Dominant canopy species consist of pop ash (*Fraxinus caroliniana*) and red maple (*Acer rubrum*) with an understory of Carolina willow (*Salix caroliniana*), swamp fern (*Blechnum-serrulatum*), camphorweed (*Pluchia* spp.), buttonbush (*Cephalanthus occidentalis*), and water pennywort (*Hydrocotyle umbellata*).

Wetland 2

FLUCFCS: 630 – Wetland Forested Mixed

FWS: PFO1/2C (Palustrine, Forested, Broad-Leaved Deciduous /Needle-Leaved Deciduous, Seasonally Flooded)

Wetland 2 (WL-2) is a linear fringe of forested wetland located immediately adjacent to the west side of SR 29, approximately 1 mile north of WL-1, and comprises 1.68 acre of each Build Alternative. This wetland is located almost entirely over a mapped hydric soil (Map Unit 17 – Basinger fine sand, 0 to 2 percent slopes) and is both state and federally jurisdictional. Dominant canopy species within WL-2 consist of red maple, cabbage palm (*Sabal palmetto*), and pond cypress (*Taxodium ascendens*) with an understory of Carolina willow, poison ivy (*Toxicodendron radicans*), false nettle (*Boehmeria cylindrical*), and maidencane (*Panicum hemitomom*).

Wetland 3

FLUCFCS: 621 – Cypress

FWS: PFO2C (Palustrine, Forested, Needle-Leaved Deciduous, Seasonally Flooded)

Wetland 3 (WL-3) consists of a 0.56-acre fragmented cypress wetland that encroaches into the existing ROW along the west side of SR 29, approximately 1.5 miles north of WL-2, and occurs entirely over a mapped hydric soil (Map Unit 22 – Chobee, Winder, and Gator Soils, depressional). This wetland is both state and federally jurisdictional. The canopy is dominated by pond cypress and bald cypress (*Taxodium distichum*). Mid-story vegetation within this wetland consists of Carolina willow, red maple, and Brazilian pepper (*Schinus terebinthifolia*). Groundcover is comprised of maidencane, poison ivy, and water pennywort.

Wetland 4

FLUCFCS: 630 – Wetland Forested Mixed

FWS: PFO1/2C (Palustrine, Forested, Broad-Leaved Deciduous /Needle-Leaved Deciduous, Seasonally Flooded)

Wetland 4 (WL-4) is a disturbed linear forested wetland located immediately adjacent to the west side of SR 29, approximately 0.5 mile north of WL-3, and comprises 2.55 acres of each Build Alternative. WL-4 is located partially over a mapped hydric soil (Map Unit 28 – Pineda and Riviera fine sands) and is both state and federally jurisdictional. Dominant canopy species consist of red maple, cabbage palm, and pond cypress with an understory of Carolina willow, Brazilian pepper, false nettle, poison ivy, flat sedges (*Carex* spp.), and maidencane.

Wetland 5

FLUCFCS: 641 & 617 – Freshwater Marshes & Mixed Wetland Hardwoods

FWS: PEMIC & PFO1/3C (Palustrine, Emergent, Forested, Broad-Leaved Deciduous /Broad-Leaved Evergreen, Seasonally Flooded)

Wetland 5 (WL-5) is a freshwater marsh with a forested fringe that comprises a total of 0.78 acre of each Build Alternative (0.62 acre of freshwater marsh and 0.16 acre of mixed wetland hardwoods). This wetland borders the west side of SR 29, approximately 1,500 feet north of WL-4, and occurs entirely over a mapped hydric soil (Map Unit 21 – Boca fine sand, 0 to 5 percent slopes). This wetland is both state and federally jurisdictional. Dominant species within the freshwater marsh portion consist of maidencane, primrose willow (*Ludwigia peruviana*), Carolina willow, dog fennel (*Eupatorium capillifolium*), flat sedges, and juvenile red maple. The forested portion is dominated by laurel oak, red maple, and cabbage palm.

Wetland 6

FLUCFCS: 630 – Wetland Forested Mixed

FWS: PFO1/2C (Palustrine, Forested, Broad-Leaved Deciduous /Needle-Leaved Deciduous, Seasonally Flooded)

Wetland 6 (WL-6) is a 3.89-acre forested wetland located adjacent to the west side of SR 29, approximately 2 miles northwest of WL-5, and occurs entirely over a mapped hydric soil (Map Unit 28 – Pineda and Riviera fine sands and Map Unit 43 – Winder, Riviera - limestone substratum, and Chobee, depressional). This wetland is both state and federally jurisdictional. Dominant canopy species consist of red maple, cabbage palm, laurel oak (*Quercus laurifolia*), pond cypress, and bald cypress with an understory of Carolina willow, false nettle, camphorweed, poison ivy, dog fennel, and maidencane.

Wetland 7

FLUCFCS: 641 – Freshwater Marshes

FWS: PEMIC (Palustrine, Emergent, Persistent, Seasonally Flooded)

Wetland 7 (WL-7) is a 0.76-acre freshwater marsh located adjacent to the west side of SR 29, approximately 1,000 feet northwest of WL-6, and occurs entirely over a mapped hydric soil (Map Unit 43 – Winder, Riviera, limestone substratum and Chobee, depressional). This wetland is both state and federally jurisdictional. Dominant species consist of Carolina willow, dog fennel, thistle (*Cirsium horridulum*), sand cordgrass (*Spartina bakeri*), smartweed (*Polygonum punctatum*), arrowhead (*Sagittaria lancifolia*), juvenile red maple, and maidencane.

Wetland 8

FLUCFCS: 617 – Mixed Wetland Hardwoods

FWS: PFO1/3C (Palustrine, Forested, Broad-Leaved Deciduous/Broad-Leaved Evergreen, Seasonally Flooded)

Wetland 8 (WL-8) is a forested wetland that borders the west side of SR 29 approximately 1,500 feet northwest of WL-7 and comprises 0.96 acre of each Build Alternative. This wetland occurs primarily over a mapped hydric soil (Map Unit 22 – Chobee, Winder, and Gator, depressional) and is both state and federally jurisdictional. Dominant canopy species consist of pop ash and red maple with an understory of Brazilian pepper, Carolina willow, dog fennel, fire flag (*Thalia geniculata*), arrowhead, and salt bush (*Baccharis halimifolia*).

Wetland 9

FLUCFCS: 641 – Freshwater Marshes

FWS: PEM1C (Palustrine, Emergent, Persistent, Seasonally Flooded)

Wetland 9 (WL-9) is a 0.77-acre disturbed freshwater marsh located in the shared segment of new alignment for both Build Alternatives, immediately west of an active citrus grove. This wetland is part of a larger pasture used for cattle grazing and occurs almost entirely over a mapped hydric soil (Map Unit 27 – Holopaw fine sand, 0 to 2 percent slopes); however, the land has been altered due to ongoing agricultural activities. This wetland is both state and federally jurisdictional. Dominant vegetation within WL-9 consists of bahiagrass (*Paspalum notatum*), bermudagrass (*Cynodon dactylon*), maidencane, saw palmetto (*Serenoa repens*), dog fennel, broomsedge (*Andropogon glomeratus*), camphorweed, and various flat sedges. Several scattered live oak (*Quercus virginiana*) trees are present along the outer fringe.

Wetland 10

FLUCFCS: 641 – Freshwater Marshes

FWS: PEM1C (Palustrine, Emergent, Persistent, Seasonally Flooded)

Wetland 10 (WL-10) is a freshwater marsh that abuts the west side of SR 29 approximately 0.5 mile north of Westclox Road. This wetland comprises 0.44 acre within each Build Alternative and occurs entirely over a mapped hydric soil (Map Unit 17 – Basinger fine sand, 0 to 2 percent slopes). This wetland is both state and federally jurisdictional. Dominant vegetation includes Carolina willow, maidencane, primrose willow, dog fennel, various flat sedges, and paragrass.

Wetland 11

FLUCFCS: 641 – Freshwater Marshes

FWS: PEM1C (Palustrine, Emergent, Persistent, Seasonally Flooded)

Wetland 11 (WL-11) borders the west side of SR 29 approximately 2,000 feet north of WL-10. This disturbed freshwater marsh comprises 0.81 acre of each Build Alternative and is located entirely over a mapped hydric soil (Map Unit 17 – Basinger fine sand, 0 to 2 percent slopes). This wetland is both state and federally jurisdictional. Dominant vegetation within WL-11 consists of primrose willow, Carolina willow, maidencane, dog fennel, pickerelweed (*Pontederia cordata*), paragrass, and various flat sedges.

Wetland 12

FLUCFCS: 641 – Freshwater Marshes

FWS: PUB2C (Palustrine, Emergent, Persistent, Seasonally Flooded)

Wetland 12 (WL-12) is a freshwater marsh that abuts the west side of SR 29 and encroaches into the existing ROW approximately 1,500 feet north of WL-11. WL-12 comprises 0.30 acre of each Build Alternative and does not occur on mapped hydric soils. This wetland is dominated by paragrass, maidencane, torpedograss (*Panicum repens*), and dog fennel with scattered Carolina willow and primrose willow also present. WL 12 is both state and federally jurisdictional.

Other Surface Water Descriptions

Linear Ditches

FLUCFCS: 510 – Streams and Waterways

FWS: PUB2F (Palustrine, Unconsolidated Bottom, Sand, Semi-permanently Flooded)

The project study area contains numerous upland-cut ditches, swales, and canals; all are primarily unvegetated with regularly maintained banks. For this reason, they are described collectively. These linear features consist of roadside stormwater drainage conveyances, agricultural irrigation canals, and residential flood-control ditches. Collectively, these OSWs comprise 14.36 acres of Central Alternative #1 Revised and 14.78 acres of Central Alternative #2. These ditches are both state and federally jurisdictional.

Reservoirs

FLUCFCS: 534 – Reservoirs less than 10 acres

FWS: PSS1C / PUB2C (Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded / Palustrine, Unconsolidated Bottom, Sand, Seasonally Flooded)

Two reservoirs are located within the project study area. Both are upland-cut agricultural features and occur near the northern project terminus. One of these features is an unvegetated cattle pond located along the east side of SR 29 approximately 2.5 miles south of SR 82. The other is a Carolina willow, red maple, and Brazilian pepper-dominated other surface water located within an active agricultural field along the west side of SR 29 approximately 0.5 mile south of SR 82. These reservoirs, both of which are state and federally jurisdictional, comprise 0.31 acre and 0.32 acre of the project study area with a combined acreage of 0.63 acre.

3.4 WETLAND AND OTHER SURFACE WATER IMPACTS

It is assumed that all wetlands and OSWs located within both Build Alternatives could be impacted by the project; therefore, all were included in the total proposed impact acreage. No wetland or OSW impacts will result from the No Build Alternative. Both Build Alternatives will result in impacts. Central Alternative #1 Revised will impact 14.33 acres of wetlands and 14.99 acres of OSWs. Central Alternative #2 will impact 14.33 acres of wetlands and 15.41 acres of

OSWs. The existing wetlands and OSWs within the project study area all provide low quality habitat due to their proximity to the existing roadway corridor.

3.4.1 AVOIDANCE AND MINIMIZATION

Avoidance and minimization of impacts were demonstrated through utilization of the existing, previously disturbed SR 29 corridor for the majority of the project. While some ROW acquisition will be necessary to accommodate the proposed roadway widening for the segments north and south of the community of Immokalee, a new alignment or east/west shift in these areas will require significant ROW acquisition. Within the limits of Immokalee, an east bypass alignment is unavoidable to relieve roadway congestion and enhance safety for residents by diverting freight truck traffic away from local roads. The east bypass segments of both Build Alternatives were designed to be within close proximity of Immokalee to minimize potential wetland impacts.

The alternatives selected to move forward for further analysis follow the existing SR 29 corridor to the greatest extent feasible while maintaining a bypass option. Several Build Alternatives were previously evaluated for this study, three of which traversed large tracts of undeveloped lands to the east of Immokalee and were eliminated from further review due partially to the large extent of potential wetland impacts. The bypass segments of the two current Build Alternatives reflect design efforts to minimize wetland impacts by relocating the bypass corridor closer to the community of Immokalee within previously disturbed, primarily upland habitats. The revised bypass design also reduces potential secondary wetland impacts (such as habitat fragmentation and degradation).

It should also be noted that while some of the proposed pond and floodplain compensation (FPC) sites for both Build Alternatives may result in unavoidable wetland impacts, they were positioned outside of wetlands to the greatest extent feasible (see **Appendices K-1** and **K-2** for location maps and a discussion of potential pond and FPC sites). Additionally, all unavoidable wetland and OSW impacts will be minimized to greatest extent practicable during the project's design and permitting phase, and best management practices will be implemented during construction and operation of the project in accordance with FDOT's *Standard Specifications for Road and Bridge Construction* (FDOT 2017).

3.5 UMAM ANALYSIS

The UMAM (Chapter 62-345, F.A.C.) provides a standardized procedure to be used by federal and state regulatory agencies for assessing the functions provided by wetlands and OSWs, the amount that those functions are reduced by a proposed impact, and the amount of mitigation necessary to offset that loss. The wetland function indicators measured by UMAM include the following:

- Location and Landscape Support (L&LS),

- Water Environment (WE), and
- Community Structure: Vegetation and/or Benthic Community (CS).

The UMAM assessment of the proposed impacts as a result of the Build Alternatives is discussed below. The detailed UMAM worksheets are provided in **Appendix L**.

Only wetlands were included in the functional assessment as the affected OSWs consist primarily of upland-cut linear ditches that will be replaced in-kind as part of the proposed roadway design. **Table 3-2** summarizes the UMAM analysis and the resulting functional unit loss calculations. Based on the calculations, Central Alternative #1 Revised and Central Alternative #2 would each result in 9.21 units of functional loss.

**TABLE 3-2
UMAM FUNCTIONAL LOSS**

FLUCFCS Code	FWS Classification	Wetland ID	Delta	Both Build Alternatives	
				Impact Area (Acres)	Functional Loss
617	PFO1/3C	WL-1, WL-5, & WL-8	0.63	1.95	1.23
621	PFO2C	WL-3	0.67	0.56	0.38
630	PFO1/2C	WL-2, WL-4, WL-6,	0.63	8.12	5.12
641	PEM1C	WL-5, WL-7, WL-9, WL-10, WL-11, & WL-12 WL-12	0.67	3.70	2.48
TOTAL				14.33	9.21

It is important to note that these calculations are only estimates and are based on existing conditions at the time of the assessment. The UMAM scores and values presented above are subject to review and change during the state and federal permitting process.

3.6 MITIGATION OPTIONS

Wetland impacts, to result from the construction of this project, will be mitigated pursuant to Section 373.4137, F.S., to satisfy all mitigation requirements of Part IV of Chapter 373, F.S., and 33 U.S.C. §1344. Compensatory mitigation for this project will be completed through the use of mitigation banks and any other mitigation options that satisfy state and federal requirements.

The use of a mitigation bank to offset adverse impacts resulting from a project is the preferred mitigation option. The project must fall within the service area of an approved mitigation bank. The project study area is located entirely within the service areas of several mitigation banks that currently have wetland credit availability: Corkscrew Regional Mitigation Bank, Big Cypress Mitigation Bank, Panther Island Mitigation Bank, and Panther Island Expansion Mitigation Bank.

3.7 AGENCY COORDINATION

The FDOT will coordinate with the USACE and SFWMD to ensure that all mitigation requirements are fully satisfied. The specific type and extent of required mitigation will be finalized during permitting.

An Essential Fish Habitat (EFH) Assessment is not required for this project as the affected surface waters are not tidally influenced and do not contain EFH. The ETDM Programming Screen Summary Report (FDOT 2007) includes a statement from the NMFS that no EFH is present within the project study area.

Section 4.0

ANTICIPATED PERMITS

Both the USACE and SFWMD regulate impacts to wetlands within the project study area. Other resource agencies, including the NMFS, United States Environmental Protection Agency (USEPA), and FWC, review and comment on wetland permit applications. In addition, the FDEP regulates stormwater discharges from construction sites. The complexity of the permitting process will depend greatly on the degree of the impact to jurisdictional areas. It is anticipated that the following permits will be required for this project:

<u>Permit</u>	<u>Issuing Agency</u>
Section 404 Wetland Dredge and Fill Permit	USACE
Environmental Resource Permit (ERP)	SFWMD
National Pollutant Discharge Elimination System (NPDES)	FDEP

It is anticipated that an Individual Permit will be required from the USACE. An Individual Permit will require compliance with the 404(b)(1) guidelines including verification that all impacts have first been avoided to the greatest extent possible; that unavoidable impacts have been minimized to the greatest extent possible; and that unavoidable impacts have been mitigated in the form of wetlands creation, restoration, and/or enhancement.

The SFWMD requires an ERP when construction of any project results in the creation of a new or modification of an existing stormwater management system or results in impacts to waters of the state. As with USACE permits, the complexity associated with the ERP permitting process will depend on the size of the project and/or the extent of wetland impacts. The SFWMD will likely require an Individual ERP for this project.

40 C.F.R. Part 122 prohibits point source discharges of stormwater to waters of the United States without a NPDES permit. Under the State of Florida's delegated authority (from the USEPA) to administer the NPDES program, construction sites that will result in greater than one acre of disturbance must file for and obtain either coverage under an appropriate generic permit contained in Chapter 62- 621, F.A.C. or an individual permit issued pursuant to Chapter 62-620, F.A.C. A major component of the NPDES permit is the development of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP identifies potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the site and identifies specific engineering practices (i.e., best management practices) that will be used to reduce the pollutants from stormwater discharge.

Depending on the types of permits needed from the regulatory agencies, the permitting process typically ranges from 90 to 180 days.

Section 5.0

CONCLUSIONS

5.1 PROTECTED SPECIES AND HABITATS

The project study area was evaluated for the presence of federal and state protected species and their suitable habitats in accordance with Section 7 of the ESA and Part 2, Chapter 16 of the FDOT PD&E Manual. Both Build Alternatives will result in unavoidable impacts to habitats potentially used by federally-listed and state-listed species. **Table 5-1** below presents the respective effect determinations assigned to each federally-listed and state-listed species based on their probability ranking and the implementation measures and/or commitments to be followed to offset potential impacts to the species. Neither Build Alternative will adversely affect any federally-designated critical habitat.

**TABLE 5-1
SUMMARY OF LISTED SPECIES EFFECT DETERMINATIONS**

	Scientific Name	Common Name	Effect Determination	Status	
				Federal	State
Federally - Listed Wildlife Species	<i>Alligator mississippiensis</i>	American alligator	“May Affect, Not Likely to Adversely Affect”	T(S/A)	FT(S/A)
	<i>Ammodramus savannarum floridanus</i>	Florida grasshopper sparrow	“No Effect”	E	FE
	<i>Aphelocoma coerulescens</i>	Florida scrub-jay	“May Affect, Likely to Adversely Affect”	T	FT
	<i>Drymarchon corais couperi</i>	Eastern indigo snake	“May Affect, Not Likely to Adversely Affect”	T	FT
	<i>Eumops floridanus</i>	Florida bonneted bat	“May Affect, Not Likely to Adversely Affect”	E	FE
	<i>Mycteria americana</i>	Wood stork	“May Affect, Not Likely to Adversely Affect”	T	FT
	<i>Picoides borealis</i>	Red-cockaded woodpecker	“No Effect”	E	FE
	<i>Polyborus plancus audubonii</i>	Audubon’s crested caracara	“May Affect, Not Likely to Adversely Affect”	T	FT
	<i>Puma concolor coryi</i>	Florida panther	“May Affect, Likely to Adversely Affect”	E	FE
	<i>Rostrhamus sociabilis plumbeus</i>	Snail kite	“May Affect, Not Likely to Adversely Affect”	E	FE
Federally- Listed Plant Species	<i>Dalia carthagensis floridana</i>	Florida prairie-clover	“No Effect”	E	NL
	<i>Chamaesyce garberi</i>	Garber’s spurge	“No Effect”	T	NL
State-Listed Wildlife Species	<i>Athene cunicularia floridana</i>	Florida burrowing owl	“No adverse effect anticipated”	NL	T
	<i>Egretta caerulea</i>	Little blue heron	“No adverse effect anticipated”	NL	T
	<i>Egretta tricolor</i>	Tricolored heron	“No adverse effect anticipated”	NL	T
	<i>Falco sparverius paulus</i>	Southeastern American kestrel	“No adverse effect anticipated”	NL	T
	<i>Gopherus polyphemus</i>	Gopher tortoise	“No adverse effect anticipated”	C ⁽¹⁾	T

**TABLE 5-1
SUMMARY OF LISTED SPECIES EFFECT DETERMINATIONS (CONTINUED)**

State-Listed Wildlife Species (continued)	Scientific Name	Common Name	Effect Determination	Status	
				Federal	State
	<i>Grus canadensis pratensis</i>	Florida sandhill crane	“No adverse effect anticipated”	NL	T
	<i>Platalea ajaja</i>	Roseate spoonbill	“No adverse effect anticipated”	NL	T
	<i>Sciurus niger avicennia</i>	Big Cypress fox squirrel	“No adverse effect anticipated”	NL	T
State-Listed Plant Species	<i>Andropogon arctatus</i>	Pine woods bluestem	“No adverse effect anticipated”	NL	T
	<i>Calopogon multiflorus</i>	Many flowered grass pink	“No adverse effect anticipated”	NL	E
	<i>Centrosema arenicola</i>	Sand butterfly pea	“No adverse effect anticipated”	NL	E
	<i>Lechea cernua</i>	Nodding pinweed	“No adverse effect anticipated”	NL	T
	<i>Linum carteri var. smallii</i>	Small’s flax	“No adverse effect anticipated”	NL	E
	<i>Matelea floridana</i>	Florida spiny-pod	“No adverse effect anticipated”	NL	E
	<i>Nemastylis floridana</i>	Celestial lily	“No adverse effect anticipated”	NL	E
	<i>Nolina atopocarpa</i>	Florida beargrass	“No adverse effect anticipated”	NL	T
	<i>Platanthera integra</i>	Yellow fringeless orchid	“No adverse effect anticipated”	NL	E
	<i>Tephrosia angustissima var. curtissii</i>	Coastal hoary-pea	“No adverse effect anticipated”	NL	E

F = Federally Listed / E = Endangered / T = Threatened / T(S/A) = Threatened due to similar appearance / NL = Not Listed

Notes:

¹ The gopher tortoise is currently a candidate species for federal protection under the ESA.

5.2 WETLANDS FINDINGS

The two proposed Build Alternatives were evaluated for impacts to wetlands in accordance with Executive Order (EO) 11990. Based on the type and location of project impacts, the FDOT has determined that there is no practicable alternative to the proposed construction in wetlands. The proposed project will have no significant short-term or long-term adverse impacts to wetlands. In accordance with EO 11990, the FDOT has undertaken all actions to avoid and minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency’s responsibilities. Any unavoidable impacts to wetlands will be mitigated to achieve no net loss of wetland function.

Wetland impacts, to result from construction of this project, will be mitigated pursuant to Section 373.4137, F.S. to satisfy all mitigation requirements of Part IV of Chapter 373, F.S. and 33 U.S.C. §1344. Compensatory mitigation for this project will be completed through the use of mitigation banks and any other mitigation options that satisfy state and federal requirements.

Both proposed Build Alternatives will result in a total of 14.33 acres of permanent unavoidable wetland impacts. The final area of wetland impact for the selected alternative will be determined during the design and permitting phase of the project. Secondary impacts will also be assessed at this time. A UMAM analysis was performed to determine an estimate to the functional loss due to wetland impacts from the two Build Alternatives. Based on the calculations, each Build Alternative will result in 9.21 units of functional loss for direct wetland impacts. As mentioned, secondary wetland impacts will be assessed at a later date.

5.3 IMPLEMENTATION MEASURES

Based on the field and literature reviews outlined in this report, federally-listed or state-listed protected species have the potential to occur within the project study area. In order to assure that the proposed project will not adversely impact these species, the FDOT will adhere to the following measures:

The FDOT will perform updated wildlife surveys for the species discussed in this report and other wildlife species during the project design phase to ascertain the involvement, if any, of listed/protected species.

The FDOT will coordinate further with the FWC during the project design phase for impacts associated with state-listed wildlife species.

Impacts to suitable foraging habitat for the federally-listed wood stork will be mitigated through the purchase of credits from a FWS-approved mitigation bank pursuant to Section 373.4137, F.S. or as otherwise agreed to by the FDOT and the FWS.

Impacts to suitable habitat for the federally-listed Florida panther will be offset through the purchase of PHU credit as necessary from a FWS-approved conservation bank.

Should protected plant species be identified within the project impact area during the design and permitting phase, coordination will be initiated with the FDACS or other appropriate agencies to allow for relocation to adjacent habitat or other suitable protected lands prior to construction.

Should gopher tortoise burrows be identified within the project area, the FDOT will avoid burrows in accordance with FWC regulations. For burrows that cannot be avoided during construction, the FDOT will apply for a gopher tortoise relocation permit from the FWC.

The FDOT will resurvey the project limits for the presence of bald eagle nests prior to construction commencement. If a bald eagle nest is identified within the 660-foot construction buffer zone of the project area, the FDOT will coordinate with the FWS (as applicable) to secure all necessary approvals regarding this species prior to project construction.

The FDOT will resurvey the project area for migratory bird nests during the design phase. If active nests are observed, the FDOT will coordinate as necessary with the FWS and FWC to secure applicable permits concerning these species.

The FDOT will resurvey the project limits for the presence of active osprey nests prior to construction commencement. If an active osprey nest is identified within the project area, the FDOT will coordinate with the FWC (as applicable) to secure all necessary approvals regarding this species prior to project construction.

The FDOT will follow the FDOT Supplemental Standard Specification 7-1.4.1 *Additional Requirements for the Florida Black Bear* to minimize human-bear interactions associated with construction sites during project construction.

Wetland impacts resulting from construction of this project will be mitigated pursuant to Section 373.4137, F.S. to satisfy all mitigation requirements of Part IV of Chapter 373, F.S. and 33 U.S.C. §1344. Compensatory mitigation for this project will be completed through the use of mitigation banks and any other mitigation options that satisfy state and federal requirements.

During the construction phase of this project, the FDOT will implement the *Standard Specifications for Road and Bridge Construction* and other best management practices to avoid, where possible, and otherwise minimize adverse impacts to wetlands and water quality within the project limits to the maximum extent practicable.

5.4 COMMITMENTS

To minimize the potential for adverse effects to species as a result of the proposed project, the FDOT will make the following commitments:

The most recent version of the FWS' *Standard Protection Measures for the Eastern Indigo Snake* will be adhered to during the construction of the proposed project.

A wildlife crossing will be incorporated into the proposed roadway design. Currently FDOT anticipates a crossing near the Owl Hammock curve based upon prior coordination with the FWS. Details of this crossing will be developed as part of Section 7 consultation with FWS during the design and permitting phase of the project.

Based on coordination with the FWS, to comply with Section 7 of the Endangered Species Act of 1973, as amended, the FDOT will reinitiate consultation with the FWS for the Florida scrub jay and Florida panther during the design and permitting phase of the project. At this time, the FDOT will provide additional information, as needed, that will allow the FWS to complete their analysis of the project's effects on these species and complete consultation on the project.

Section 6.0

REFERENCES

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APPENDIX A
Agency Comments

Agency Comments - Project Effects

#3752 SR 29 Immokalee

District: District 1

County: Collier

Planning Organization: FDOT District 1

Plan ID: Not Available

Federal Involvement: Federal Action

Phase: Programming Screen

From: Oil Well Road

To: SR 82

Financial Management No.: 417540-1

Contact Information: Gwen G. Pipkin (863) 519-2375 x2375 gwen.pipkin@dot.state.fl.us

Project Web Site: <http://www.sr29collier.com/>

Snapshot Data From: Current Draft Data

Alternative #1

Project Effects Overview for Alternative #1

Issue	Degree of Effect	Organization	Date Reviewed
Natural			
Wildlife and Habitat	4 Substantial	FL Fish and Wildlife Conservation Commission	08/05/2005

ETAT Reviews and Coordinator Summary: Natural Wildlife and Habitat

Project Effects

Coordinator Summary Degree of Effect: **4** *Substantial* assigned 03/20/2007 by FDOT District 1

Comments:

FFWCC. The FFWCC noted that the project is located between regionally significant tracts of public lands which include the Corkscrew Regional Ecosystem Watershed to the west, the Okaloacoochee Slough State Forest to the east, and the Big Cypress National Preserve and Florida Panther National Wildlife Refuge immediately to the south. The FFWCC Wildlife and Habitat GIS database shows that habitats adjacent to the proposed alignment support several state-listed wildlife species and provide potential habitat for the alligator (SSC), gopher tortoise (SSC), Florida black bear (T), Florida panther (E), little blue heron (SSC), tricolored heron (SSC), white ibis (SSC), wood stork (E), bald eagle (T), crested caracara (T), southeastern kestrel (T), Florida sandhill crane (T), Florida burrowing owl (SSC), eastern indigo snake (T), and Florida scrub jay (T). FFWCC GIS data also shows that the proposed project is located within the core foraging area of four wood stork rookeries and that a bald eagle nest (FWC# CO-25) is located near the project area. (The FFWCC online eagle database indicates this nest is approximately 1500 to 1600 feet outside of the existing SR 29 ROW). Lands within one-mile of the proposed alignment have been ranked as moderate to high habitat quality by FFWCC's Integrated Wildlife Habitat Ranking System. FFWCC Strategic Habitat Conservation Areas have been designated for the Florida black bear (111.4 acres), Florida panther (78.5 acres), mottled duck (18.6 acres), and wading birds (2.0 acres) within the project's 100-foot buffer. Additionally, 196.5 acres of designated primary panther habitat and 66.4 acres of designated secondary panther habitat occur within the project's 100-foot buffer. The FFWCC has documented 21 panther roadkills on existing SR 29 from 1972 through 2005. The FFWCC made the following recommendations for the Project Development and Environment Study (PD&E):

- A vegetative cover map and accounting by acreage for each community type for the affected project area.
- Surveys for listed species within and adjacent to the ROW and proposed sites for the Drainage Retention Areas.
- Compensatory replacement for both upland and wetland habitat loss.

The FFWCC expressed their desire to continue their past cooperative relationship with FDOT District 1 to evaluate impact avoidance, minimization, and mitigation measures that are consistent with their agency's goals and programs. They recommend the formation of a Task Group composed of FFWCC, FDOT, USFWS, USACOE, SFWMD, National Park Service (NPS), conservation groups including the Florida Wildlife Federation, and possibly other parties. The purpose of this Task Group would be to address and gain consensus on measures which could involve unique road design features and a major directed land acquisition initiative based on critical landscape habitat linkage needs in the region.

FHWA. The FHWA stated that the project is located within the primary and secondary panther zones and requested that the FDOT coordinate with the appropriate agencies concerning potential impacts to the panther and other wildlife species.

USFWS. The USFWS reports that the proposed project is within the core foraging area of four active wood stork nesting colonies and that a bald eagle nest (FWC# CO-25) is located near the project site. The proposed alignment is located within the USFWS's panther consultation area and occurs within both the primary and secondary panther habitat zones. The USFWS has records of panther mortalities resulting from vehicle collisions on existing SR 29 and believes that the project would further adversely impact the panther due to loss of habitat within the construction footprint and an increase in the likelihood of vehicle collisions. Additionally, the USFWS believes the project would result in indirect affects to the panther by promoting additional development of panther habitat in the project area that would not go forward without the presence of an efficient transportation infrastructure. Consequently, the USFWS will require that panther/wildlife crossings be installed within the corridor. The USFWS will work with the FDOT, FFWCC, and Collier County to determine the number and locations of crossings and the amount of fencing necessary within the project corridor. To further protect the panther, the USFWS recommends that the FDOT purchase panther habitat and/or conservation easements within the lands adjacent to the crossings if they are not already protected. The USFWS also recommends that the FDOT prepare a Biological Assessment Report during the project's PD&E process.

As a result of these agencies' concerns and presence of state and federal listed species along the project alignment, a Wildlife and Habitat DOE of Substantial is recommended for this alternative.

Commitments and Responses: An Endangered Species Biological Assessment will be included as a scoping recommendation for this project.

Degree of Effect: **4** *Substantial* assigned 08/05/2005 by Scott Sanders, FL Fish and Wildlife Conservation Commission

Coordination Document: *The "Coordination Document" option was not available at the time of the review.*

Direct Effects

Identified Resources and Level of Importance:

The Habitat Conservation Scientific Services Section of the Florida Fish and Wildlife Conservation Commission (FWC) has coordinated a review of the above-referenced project and provides the following comments related to potential impacts to fish and wildlife resources.

This Collier County MPO Programming Phase project involves three proposed Alternatives for expanding US 29 to four lanes between Oil Well Road and US 82 in the area of Immokalee in Collier County. The previous Alternatives which were proposed for review in March 2005 included: (1) adding two lanes to the existing two-lane SR 29 between Oil Well Road and SR 82, and (2) adding two lanes to SR 29 between Oil Well Road and SR 82, bypassing downtown Immokalee via New Market Road. A new third Alternative has now been proposed which involves constructing a new four-lane alignment bypassing the City of Immokalee that includes adding one lane in each direction to a 4.75-mile section of SR 29 north of Oil Well Road. The stated purpose and need for the project is to improve the capacity of SR 29 to accommodate future development. Except for the small town of Immokalee, the proposed project is in a rural area where agricultural land uses are predominant. On a landscape level, the project area is situated between regionally significant tracts of public lands which include the Corkscrew Regional Ecosystem Watershed to the west, the Okaloacoochee Slough State Forest to the east, and the Big Cypress National Preserve and Florida Panther National Wildlife Refuge immediately to the

south.

Information provided by FWC's Wildlife and Habitat GIS database shows that wetland habitat types within 500 feet of the roadway include open water, cypress swamp, shrub swamp, and freshwater marsh and wet prairie, while uplands include pinelands, dry prairie, hardwood hammocks, and mixed hardwood-pine forests. These communities support a number of wildlife species listed by our agency, and potentially provide important habitat for the American alligator (SSC), gopher tortoise (SSC), Florida black bear (T), Florida panther (E), little blue heron (SSC), tricolored heron (SSC), white ibis (SSC), wood stork (E), bald eagle (T), crested caracara (T), Southeastern kestrel (T), Florida sandhill crane (T), Florida burrowing owl (SSC), eastern indigo snake (T), and Florida scrub jay (T). FWC GIS data also show that four wood stork rookeries are located within 6.7 to 11.4 miles east, west, and southwest of the proposed project areas. In addition, a bald eagle nest (FWC# CO-25) is located near the project area in Section 32, Township 47 South, and Range 30 East.

Moderate to high habitat quality is confirmed by FWC's Integrated Wildlife Habitat Ranking System data for lands within 1 mile of all proposed alignment alternatives, as values range between 6 to 8 (scale 1 = low, 10 = high). Habitat within 500 feet of the Right-of-Way (ROW) is also ranked high in terms of FWC Biodiversity Hotspots, as a majority of the habitat types within all alignment alternatives potentially support 7 or more focal species. In addition, the FWC Priority Wetlands Map for wetland-dependent listed species ranks areas within 500 feet of all three alignment alternatives as capable of supporting 1 to 3 listed species in uplands, and 7 to 9 focal species in wetland areas. FWC Strategic Habitat Conservation Areas (SHCAs) have been designated for the Florida black bear, Florida panther, mottled duck, and wading birds within 100 feet of Alignment Alternative 1 and 2, while SHCAs found immediately adjacent to Alignment Alternative 3 also includes potential habitat for the American swallow-tailed kite. As designated by FWC, Strategic Habitat Conservation Areas, while not in public ownership, have been determined to be important for the long-term protection and support of populations of specific listed and rare wildlife species (Cox et al., 1994).

Importantly, all of the three road alignments occur within both the primary and secondary habitat zones of the Florida Panther (Kautz et al., In Review). Southwest Florida serves as the last remaining stronghold for the Florida panther in the state. Protection, conservation, and proper management of these occupied habitat systems in this region are essential for the long-term survival, recovery, and future expansion of the population. Radio telemetry data recorded by our agency clearly demonstrates that the panther has been recorded utilizing habitats within and adjacent to all proposed alignment alternatives. In addition, our agency has documented 21 panther roadkills on SR 29 from 1972 through 2005, and 5 of those are recent records within the proposed project area. One animal was a young female, killed approximately 1.5 miles north of Oil Well Road on May 25, 2003, while a juvenile male was struck and killed on June 3, 2003, about 2.0 miles north of Oil Well Road. A two-year-old female was killed 2.5 miles north of Oil Well Road on October 25, 2004, while just to the north at Owl Hammock curve, a 1-year-old female and a 2-year-old male were killed on December 1, 2004, and June 19, 2005, respectively.

Comments on Effects to Resources:

The proposed roadway expansion may result in direct, secondary, and cumulative impacts on a wide variety of fish and wildlife resources, resulting in the loss of diverse upland and wetland habitat types and impacts to listed species. Habitat loss from secondary and cumulative impacts from residential and commercial development could be substantial due to the current rural nature and existing agricultural land uses within this remote portion of Collier County.

Of paramount importance, potential impacts will occur within both the primary and secondary habitat zones of the Florida panther. In addition, expanding the road to four lanes, together with increased traffic levels and vehicle speed on the improved roadway, will create a formidable barrier to panther movement across the road and limit the ability of these animals to adequately access regional habitat resources, resulting in reduced regional habitat connectivity. Roadkills will potentially increase in the project area, where a roadkill problem currently exists.

Impacts to wildlife and habitat resources from direct, secondary, and cumulative impacts will potentially be substantial with all Alignment Alternatives. The current Alignment Alternatives as presently designed for adding lanes to SR 29 do not adequately address avoidance, minimization, or mitigation for impacts to the Florida panther and other important regional fish and wildlife habitat resources. Furthermore, Alignment Alternative 3 would result in a new highway segment through an undeveloped rural landscape that would further encourage and facilitate growth, and could result in increased impacts compared to either Alignment Alternatives 1 or 2.

At the present time, our agency is participating on the Florida Panther Recovery Team which is in the process of updating the Florida Panther Recovery Plan, and a top issue in this effort is to address the impacts of new and improved roads on the panther. Therefore, our agency would like to continue our past cooperative relationship with the Florida Department of Transportation and proposes to work with District 1 to evaluate whether appropriate impact avoidance, minimization, and mitigation measures can be formulated that would ensure that the result of the final highway design is consistent with our agency goals and programs, as it relates to protection of the Florida panther and its habitat as well as other state-listed species. To assist in accomplishing this task, we recommend the formation of a Task Group composed of FWC, FDOT, U.S. Fish and Wildlife Service, U. S. Army Corps of Engineers, Southwest Florida Water Management District, National Park Service, conservation groups including the Florida Wildlife Federation, and possibly other parties. The Task Group should address and gain consensus on measures which could necessarily involve unique road design features, including wildlife underpasses, bridge extensions over streams and wetlands, along with customized fencing, and a major directed land acquisition initiative based on critical landscape habitat linkage needs in this region. To quickly initiate this process, we would like to schedule a meeting with FDOT District 1 personnel to provide an update of our research efforts, and discuss current agency goals and objectives as they relate to protection and conservation of the Florida panther in this region.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

Please consider the following recommendations in designing the Project Development and Development (PD&E) study to address overall concerns for avoidance, minimization, and mitigation measures for fish and wildlife resources and habitat:

1. A vegetative cover map and an accounting by acreage for each community type should be made for the affected project area during the future PD&E phase. Compensatory mitigation for all upland and wetland habitat loss should be required. If wetlands are mitigated under the provisions of Senate Bill 1986, the proposed mitigation sites should be located within the immediate or same regional area that supports the existing wood stork rookeries and be functionally equivalent, and as productive as the wetlands impacted by the road expansion.
2. Surveys for listed species should be accomplished within and adjacent to the Right-of-Way (ROW) during the PD&E. The methodology for these surveys should be coordinated with the FWC and follow appropriate survey techniques or guidelines to determine presence, absence or probability of occurrence of various listed species, and to assess habitat quality. Sites proposed for the location of Drainage Retention Areas (DRA) should also be surveyed for listed species.
3. Based on the results of the surveys, a plan should be developed to addresses avoidance, minimization and mitigation measures for all impacts to fish and wildlife and habitat resources including listed species. Compensatory replacement should be addressed for both upland and wetland habitat loss. Land acquisition and restoration of appropriate tracts adjacent to existing public lands that serve as regional core habitat areas are worthy of consideration.

4. In addition, habitat impacts in both uplands and wetlands may be avoided where possible by interchangeably designing the road expansion along those ROW areas where less habitat resources occur. In addition, using the median and roadside swales for treating roadside runoff would reduce the need for some offsite Drainage Retention Area Structures.

5. Construction equipment staging areas; storage of oils, greases, and fuel; fill or roadbed material; and vehicle maintenance activities should be located in a previously disturbed area far removed from streams, wetlands or surface water bodies.

We appreciate the opportunity to provide input on the conservation of fish and wildlife resources and habitat as it relates to highway planning and design. Please contact Mr. Darrell Land (239) 643-4220, and Mr. Joe Walsh (772) 778-5094 for further coordination on this project.

Literature Cited

Cox, J., R. Kautz, M. MacLaughlin, and T. Gilbert. 1994. Closing the Gaps in Florida's Wildlife Habitat Conservation System. Office of Environmental Services, Florida Game and Freshwater Fish Commission.

Kautz, R., R. Kawula, T. Hctor, J. Comiskey, D. Jansen, D. Jennings, J. Kasbohm, F. Mazzotti, R. McBride, L. Richardson, and K. Root. In Review. How Much Is Enough? Landscape-scale Conservation for the Florida Panther. Biological Conservation.

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

The following organization(s) were expected to but did not submit a review of the Wildlife and Habitat issue for this alternative: FL Department of Agriculture and Consumer Services

Agency Comments - Project Effects

#3752 SR 29 Immokalee

District: District 1

County: Collier

Planning Organization: FDOT District 1

Plan ID: Not Available

Federal Involvement: Federal Action

Phase: Programming Screen

From: Oil Well Road

To: SR 82

Financial Management No.: 417540-1

Contact Information: Gwen G. Pipkin (863) 519-2375 x2375 gwen.pipkin@dot.state.fl.us

Project Web Site: <http://www.sr29collier.com/>

Snapshot Data From: Current Draft Data

Alternative #2

Project Effects Overview for Alternative #2

Issue	Degree of Effect	Organization	Date Reviewed
Natural			
Wildlife and Habitat	4 Substantial	FL Fish and Wildlife Conservation Commission	08/05/2005

ETAT Reviews and Coordinator Summary: Natural Wildlife and Habitat

Project Effects

Coordinator Summary Degree of Effect: **4** *Substantial* assigned 03/20/2007 by FDOT District 1

Comments:

The FFWCC was the only ETAT member that provided comments on the wildlife and habitat issue for this alternative. The FFWCC noted that the project is located between regionally significant tracts of public lands which include the Corkscrew Regional Ecosystem Watershed to the west, the Okaloacoochee Slough State Forest to the east, and the Big Cypress National Preserve and Florida Panther National Wildlife Refuge immediately to the south. The FFWCC Wildlife and Habitat GIS database shows that habitats adjacent to the proposed alignment support several state-listed wildlife species and provide potential habitat for the alligator (SSC), gopher tortoise (SSC), Florida black bear (T), Florida panther (E), little blue heron (SSC), tricolored heron (SSC), white ibis (SSC), wood stork (E), bald eagle (T), crested caracara (T), southeastern kestrel (T), Florida sandhill crane (T), Florida burrowing owl (SSC), eastern indigo snake (T), and Florida scrub jay (T). FFWCC GIS data also shows that the proposed project is located within the core foraging area of four wood stork rookeries and that a bald eagle nest (FWC# CO-25) is located near the project area. (The FFWCC online eagle database indicates this nest is approximately 1500 to 1600 feet outside of the existing SR 29 ROW).

Lands within one-mile of the proposed alignment have been ranked as moderate to high habitat quality by FFWCC's Integrated Wildlife Habitat Ranking System. FFWCC Strategic Habitat Conservation Areas have been designated for the Florida black bear (113.8 acres), Florida panther (82.7 acres), mottled duck (17.6 acres), and wading birds (2.1 acres) within the project's 100-foot buffer. Additionally, 197.1 acres of designated primary panther habitat and 66.3 acres of designated secondary panther habitat occur within the project's 100-foot buffer. The FFWCC has documented 21 panther roadkills on existing SR 29 from 1972 through 2005. The FFWCC has made the following recommendations for the Project Development and Environment Study (PD&E):

- A vegetative cover map and accounting by acreage for each community type for the affected project area.
- Surveys for listed species within and adjacent to the ROW and proposed sites for the Drainage Retention Areas.
- Compensatory replacement for both upland and wetland habitat loss.

The FFWCC expressed their desire to continue their past cooperative relationship with FDOT District 1 to evaluate impact avoidance, minimization, and mitigation measures that are consistent with their agency's goals and programs. They recommend the formation of a Task Group composed of FFWCC, FDOT, USFWS, USACOE, SFWMD, National Park Service (NPS), conservation groups including the Florida Wildlife Federation, and possibly other parties. The purpose of this Task Group would be to address and gain consensus on measures which could involve unique road design features and a major directed land acquisition initiative based on critical landscape habitat linkage needs in the region.

Because of the existing habitats and potential presence of listed species along the proposed project as discussed above, a Wildlife and Habitat DOE of Substantial is recommended for this alternative.

Commitments and Responses: An Endangered Species Biological Assessment will be included in the scoping recommendations for this project.

Degree of Effect: **4** *Substantial* assigned 08/05/2005 by Scott Sanders, FL Fish and Wildlife Conservation Commission

Coordination Document: *The "Coordination Document" option was not available at the time of the review.*

Direct Effects

Identified Resources and Level of Importance:

The Habitat Conservation Scientific Services Section of the Florida Fish and Wildlife Conservation Commission (FWC) has coordinated a review of the above-referenced project and provides the following comments related to potential impacts to fish and wildlife resources.

This Collier County MPO Programming Phase project involves three proposed Alternatives for expanding US 29 to four lanes between Oil Well Road and US 82 in the area of Immokalee in Collier County. The previous Alternatives which were proposed for review in March 2005 included: (1) adding two lanes to the existing two-lane SR 29 between Oil Well Road and SR 82, and (2) adding two lanes to SR 29 between Oil Well Road and SR 82, bypassing downtown Immokalee via New Market Road. A new third Alternative has now been proposed which involves constructing a new four-lane alignment bypassing the City of Immokalee that includes adding one lane in each direction to a 4.75-mile section of SR 29 north of Oil Well Road. The stated purpose and need for the project is to improve the capacity of SR 29 to accommodate future development. Except for the small town of Immokalee, the proposed project is in a rural area where agricultural land uses are predominant. On a landscape level, the project area is situated between regionally significant tracts of public lands which include the Corkscrew Regional Ecosystem Watershed to the west, the Okaloacoochee Slough State Forest to the east, and the Big Cypress National Preserve and Florida Panther National Wildlife Refuge immediately to the south.

Information provided by FWC's Wildlife and Habitat GIS database shows that wetland habitat types within 500 feet of the roadway include open water, cypress swamp, shrub swamp, and freshwater marsh and wet prairie, while uplands include pinelands, dry prairie, hardwood hammocks, and mixed hardwood-pine forests. These communities support a number of wildlife species listed by our agency, and potentially provide important habitat for the American alligator (SSC), gopher tortoise (SSC), Florida black bear (T), Florida panther (E), little blue heron (SSC), tricolored heron (SSC), white ibis (SSC), wood stork (E), bald eagle (T), crested caracara (T), Southeastern kestrel (T), Florida sandhill crane (T), Florida burrowing owl (SSC), eastern indigo snake (T), and Florida scrub jay (T). FWC GIS data also show that four wood stork rookeries are located within 6.7 to 11.4 miles east, west, and southwest of the proposed project areas. In addition, a bald eagle nest (FWC# CO-25) is located near the project area in Section 32, Township 47 South, and Range 30 East.

Moderate to high habitat quality is confirmed by FWC's Integrated Wildlife Habitat Ranking System data for lands within 1 mile of all proposed alignment alternatives, as values range between 6 to 8 (scale 1 = low, 10 = high). Habitat within 500 feet of the Right-of-Way (ROW) is also ranked high in terms of FWC Biodiversity Hotspots, as a majority of the habitat types within all alignment

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alternatives potentially support 7 or more focal species. In addition, the FWC Priority Wetlands Map for wetland-dependent listed species ranks areas within 500 feet of all three alignment alternatives as capable of supporting 1 to 3 listed species in uplands, and 7 to 9 focal species in wetland areas. FWC Strategic Habitat Conservation Areas (SHCAs) have been designated for the Florida black bear, Florida panther, mottled duck, and wading birds within 100 feet of Alignment Alternative 1 and 2, while SHCAs found immediately adjacent to Alignment Alternative 3 also includes potential habitat for the American swallow-tailed kite. As designated by FWC, Strategic Habitat Conservation Areas, while not in public ownership, have been determined to be important for the long-term protection and support of populations of specific listed and rare wildlife species (Cox et al., 1994).

Importantly, all of the three road alignments occur within both the primary and secondary habitat zones of the Florida Panther (Kautz et al., In Review). Southwest Florida serves as the last remaining stronghold for the Florida panther in the state. Protection, conservation, and proper management of these occupied habitat systems in this region are essential for the long-term survival, recovery, and future expansion of the population. Radio telemetry data recorded by our agency clearly demonstrates that the panther has been recorded utilizing habitats within and adjacent to all proposed alignment alternatives. In addition, our agency has documented 21 panther roadkills on SR 29 from 1972 through 2005, and 5 of those are recent records within the proposed project area. One animal was a young female, killed approximately 1.5 miles north of Oil Well Road on May 25, 2003, while a juvenile male was struck and killed on June 3, 2003, about 2.0 miles north of Oil Well Road. A two-year-old female was killed 2.5 miles north of Oil Well Road on October 25, 2004, while just to the north at Owl Hammock curve, a 1-year-old female and a 2-year-old male were killed on December 1, 2004, and June 19, 2005, respectively.

Comments on Effects to Resources:

The proposed roadway expansion may result in direct, secondary, and cumulative impacts on a wide variety of fish and wildlife resources, resulting in the loss of diverse upland and wetland habitat types and impacts to listed species. Habitat loss from secondary and cumulative impacts from residential and commercial development could be substantial due to the current rural nature and existing agricultural land uses within this remote portion of Collier County.

Of paramount importance, potential impacts will occur within both the primary and secondary habitat zones of the Florida panther. In addition, expanding the road to four lanes, together with increased traffic levels and vehicle speed on the improved roadway, will create a formidable barrier to panther movement across the road and limit the ability of these animals to adequately access regional habitat resources, resulting in reduced regional habitat connectivity. Roadkills will potentially increase in the project area, where a roadkill problem currently exists.

Impacts to wildlife and habitat resources from direct, secondary, and cumulative impacts will potentially be substantial with all Alignment Alternatives. The current Alignment Alternatives as presently designed for adding lanes to SR 29 do not adequately address avoidance, minimization, or mitigation for impacts to the Florida panther and other important regional fish and wildlife habitat resources. Furthermore, Alignment Alternative 3 would result in a new highway segment through an undeveloped rural landscape that would further encourage and facilitate growth, and could result in increased impacts compared to either Alignment Alternatives 1 or 2.

At the present time, our agency is participating on the Florida Panther Recovery Team which is in the process of updating the Florida Panther Recovery Plan, and a top issue in this effort is to address the impacts of new and improved roads on the panther. Therefore, our agency would like to continue our past cooperative relationship with the Florida Department of Transportation and proposes to work with District 1 to evaluate whether appropriate impact avoidance, minimization, and mitigation measures can be formulated that would ensure that the result of the final highway design is consistent with our agency goals and programs, as it relates to protection of the Florida panther and its habitat as well as other state-listed species. To assist in accomplishing this task, we recommend the formation of a Task Group composed of FWC, FDOT, U.S. Fish and Wildlife Service, U. S. Army Corps of Engineers, Southwest Florida Water Management District, National Park Service, conservation groups including the Florida Wildlife Federation, and possibly other parties. The Task Group should address and gain consensus on measures which could necessarily involve unique road design features, including wildlife underpasses, bridge extensions over streams and wetlands, along with customized fencing, and a major directed land acquisition initiative based on critical landscape habitat linkage needs in this region. To quickly initiate this process, we would like to schedule a meeting with FDOT District 1 personnel to provide an update of our research efforts, and discuss current agency goals and objectives as they relate to protection and conservation of the Florida panther in this region.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

Please consider the following recommendations in designing the Project Development and Development (PD&E) study to address overall concerns for avoidance, minimization, and mitigation measures for fish and wildlife resources and habitat:

1. A vegetative cover map and an accounting by acreage for each community type should be made for the affected project area during the future PD&E phase. Compensatory mitigation for all upland and wetland habitat loss should be required. If wetlands are mitigated under the provisions of Senate Bill 1986, the proposed mitigation sites should be located within the immediate or same regional area that supports the existing wood stork rookeries and be functionally equivalent, and as productive as the wetlands impacted by the road expansion.
2. Surveys for listed species should be accomplished within and adjacent to the Right-of-Way (ROW) during the PD&E. The methodology for these surveys should be coordinated with the FWC and follow appropriate survey techniques or guidelines to determine presence, absence or probability of occurrence of various listed species, and to assess habitat quality. Sites proposed for the location of Drainage Retention Areas (DRA) should also be surveyed for listed species.
3. Based on the results of the surveys, a plan should be developed to addresses avoidance, minimization and mitigation measures for all impacts to fish and wildlife and habitat resources including listed species. Compensatory replacement should be addressed for both upland and wetland habitat loss. Land acquisition and restoration of appropriate tracts adjacent to existing public lands that serve as regional core habitat areas are worthy of consideration.
4. In addition, habitat impacts in both uplands and wetlands may be avoided where possible by interchangeably designing the road expansion along those ROW areas where less habitat resources occur. In addition, using the median and roadside swales for treating roadside runoff would reduce the need for some offsite Drainage Retention Area Structures.
5. Construction equipment staging areas; storage of oils, greases, and fuel; fill or roadbed material; and vehicle maintenance activities should be located in a previously disturbed area far removed from streams, wetlands or surface water bodies.

We appreciate the opportunity to provide input on the conservation of fish and wildlife resources and habitat as it relates to highway planning and design. Please contact Mr. Darrell Land (239) 643-4220, and Mr. Joe Walsh (772) 778-5094 for further coordination on this project.

Literature Cited

Cox, J., R. Kautz, M. MacLaughlin, and T. Gilbert. 1994. Closing the Gaps in Florida's Wildlife Habitat Conservation System. Office of Environmental Services, Florida Game and Freshwater Fish Commission.

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Kautz, R., R. Kawula, T. Hctor, J. Comiskey, D. Jansen, D. Jennings, J. Kasbohm, F. Mazzotti, R. McBride, L. Richardson, and K. Root. In Review. How Much Is Enough? Landscape-scale Conservation for the Florida Panther. Biological Conservation.

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

The following organization(s) were expected to but did not submit a review of the Wildlife and Habitat issue for this alternative: FL Department of Agriculture and Consumer Services, Federal Highway Administration, US Fish and Wildlife Service

Agency Comments - Project Effects

#3752 SR 29 Immokalee

District: District 1

County: Collier

Planning Organization: FDOT District 1

Plan ID: Not Available

Federal Involvement: Federal Action

Phase: Programming Screen

From: Oil Well Road

To: SR 82

Financial Management No.: 417540-1

Contact Information: Gwen G. Pipkin (863) 519-2375 x2375 gwen.pipkin@dot.state.fl.us

Project Web Site: <http://www.sr29collier.com/>

Snapshot Data From: Current Draft Data

Alternative #3

Project Effects Overview for Alternative #3

Issue	Degree of Effect	Organization	Date Reviewed
Natural			
Wildlife and Habitat	4 Substantial	FL Fish and Wildlife Conservation Commission	08/05/2005

ETAT Reviews and Coordinator Summary: Natural

Wildlife and Habitat

Project Effects

Coordinator Summary Degree of Effect: **4** *Substantial* assigned 03/20/2007 by FDOT District 1

Comments:

FFWCC. The FFWCC noted that the proposed project is located between regionally significant tracts of public lands which include the Corkscrew Regional Ecosystem Watershed to the west, the Okaloacoochee Slough State Forest to the east, and the Big Cypress National Preserve and Florida Panther National Wildlife Refuge immediately to the south. The FFWCC Wildlife and Habitat GIS database shows that habitats adjacent to the proposed alignment support several state-listed wildlife species and provide potential habitat for the alligator (SSC), gopher tortoise (SSC), Florida black bear (T), Florida panther (E), little blue heron (SSC), tricolored heron (SSC), white ibis (SSC), wood stork (E), bald eagle (T), crested caracara (T), southeastern kestrel (T), Florida sandhill crane (T), Florida burrowing owl (SSC), eastern indigo snake (T), and Florida scrub jay (T). FFWCC GIS data also shows that the proposed project is located within the core foraging area of four wood stork rookeries and that a bald eagle nest (FWC# CO-25) is located near the project area. (The FFWCC online eagle database indicates this nest is approximately 1500 to 1600 feet outside of the existing SR 29 ROW). Lands within one-mile of the proposed alignment have been ranked as moderate to high habitat quality by FFWCC's Integrated Wildlife Habitat Ranking System. Within the project's 100-foot buffer, FFWCC Strategic Habitat Conservation Areas have been designated for the swallow-tailed kite (2.4 acres), black bear (73.7 acres), Florida panther (131.5 acres), and mottled duck (23.6 acres). The proposed alignment occurs within both the USFWS designated primary and secondary habitat zones for the Florida panther. The FFWCC has documented 21 panther roadkills on existing SR 29 from 1972 through 2005. The FFWCC made the following recommendations for the Project Development and Environment Study (PD&E):

- A vegetative cover map and accounting by acreage for each community type for the affected project area.
- Surveys for listed species within and adjacent to the ROW and proposed sites for the Drainage Retention Areas.
- Compensatory replacement for both upland and wetland habitat loss.

The FFWCC expressed their desire to continue their past cooperative relationship with FDOT District 1 to evaluate impact avoidance, minimization, and mitigation measures that are consistent with their agency's goals and programs. They recommend the formation of a Task Group composed of FFWCC, FDOT, USFWS, USACOE, SFWMD, National Park Service (NPS), conservation groups including the Florida Wildlife Federation, and possibly other parties. The purpose of this Task Group would be to address and gain consensus on measures which could involve unique road design features and a major directed land acquisition initiative based on critical landscape habitat linkage needs in the region.

FHWA. The FHWA had the following concerns regarding potential impacts to wildlife and habitat as a result of construction of this alternative: the proposed project is located in primary and secondary panther habitat zones; the GIS analysis tool indicates black bear road kills in this area of SR 29 (coordination is needed with the wildlife agencies to determine how to minimize wildlife road kills); and the EST identifies priority ecological resource conservation areas within 100 feet of Alternative 3.

USACOE. The USACOE commented that Alternative 3 is located in a largely undeveloped rural area and would appear to bisect existing wetlands that may function as flow-ways. Hydrologic connectivity of the wetlands on and near the project site may be limited if design measures do not take into account current flow patterns.

USFWS. The USFWS reported that the proposed project is within the core foraging area of four active wood stork nesting colonies and that a bald eagle nest (FWC# CO-25) is located near the project site. The proposed alignment is located within the USFWS Panther Consultation Area and occurs within both the primary and secondary panther habitat zones. The USFWS believes that this alternative would result in significant major adverse impacts to the panther, including the likelihood of an increase of vehicle collisions with panthers, and promote additional development within existing panther habitat.

Upon initiation of the dispute resolution process, a Memorandum of Agreement (MOA) was signed between the FDOT, USFWS, FFWCC, Collier County Metropolitan Planning Organization (MPO), and Collier County based on the fact that the project would be re-screened through ETDM using a polygon to represent the project study area (Alternative 4). All references to Alternatives 1-3 are to be removed. The "new" screening will help to locate all potential alignments that have the least impacts to natural and cultural resources, as well as to community features. All potential alternatives will be located within the limits of the polygon visible on the Environmental Screening Tool (EST). As a result of this agreement, the USFWS has consented to change their assigned DOE to Substantial. Accordingly, a Summary Wildlife and Habitat DOE of Substantial is recommended for this alternative.

Commitments and Responses: An Endangered Species Biological Assessment will be included as a scoping recommendation for this project.

Degree of Effect: **4** *Substantial* assigned 08/05/2005 by Scott Sanders, FL Fish and Wildlife Conservation Commission

Coordination Document: *The "Coordination Document" option was not available at the time of the review.*

Direct Effects

Identified Resources and Level of Importance:

The Habitat Conservation Scientific Services Section of the Florida Fish and Wildlife Conservation Commission (FWC) has coordinated a review of the above-referenced project and provides the following comments related to potential impacts to fish and wildlife resources.

This Collier County MPO Programming Phase project involves three proposed Alternatives for expanding US 29 to four lanes between Oil Well Road and US 82 in the area of Immokalee in Collier County. The previous Alternatives which were proposed for review in March 2005 included: (1) adding two lanes to the existing two-lane SR 29 between Oil Well Road and SR 82, and (2) adding two lanes to SR 29 between Oil Well Road and SR 82, bypassing downtown Immokalee via New Market Road. A new third Alternative has now been proposed which involves constructing a new four-lane alignment bypassing the City of Immokalee that includes adding one lane in each direction to a 4.75-mile section of SR 29 north of Oil Well Road. The stated purpose and need for the project is to improve the capacity of SR 29 to accommodate future development. Except for the small town of Immokalee, the proposed project

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is in a rural area where agricultural land uses are predominant. On a landscape level, the project area is situated between regionally significant tracts of public lands which include the Corkscrew Regional Ecosystem Watershed to the west, the Okaloacoochee Slough State Forest to the east, and the Big Cypress National Preserve and Florida Panther National Wildlife Refuge immediately to the south.

Information provided by FWC's Wildlife and Habitat GIS database shows that wetland habitat types within 500 feet of the roadway include open water, cypress swamp, shrub swamp, and freshwater marsh and wet prairie, while uplands include pinelands, dry prairie, hardwood hammocks, and mixed hardwood-pine forests. These communities support a number of wildlife species listed by our agency, and potentially provide important habitat for the American alligator (SSC), gopher tortoise (SSC), Florida black bear (T), Florida panther (E), little blue heron (SSC), tricolored heron (SSC), white ibis (SSC), wood stork (E), bald eagle (T), crested caracara (T), Southeastern kestrel (T), Florida sandhill crane (T), Florida burrowing owl (SSC), eastern indigo snake (T), and Florida scrub jay (T). FWC GIS data also show that four wood stork rookeries are located within 6.7 to 11.4 miles east, west, and southwest of the proposed project areas. In addition, a bald eagle nest (FWC# CO-25) is located near the project area in Section 32, Township 47 South, and Range 30 East.

Moderate to high habitat quality is confirmed by FWC's Integrated Wildlife Habitat Ranking System data for lands within 1 mile of all proposed alignment alternatives, as values range between 6 to 8 (scale 1 = low, 10 = high). Habitat within 500 feet of the Right-of-Way (ROW) is also ranked high in terms of FWC Biodiversity Hotspots, as a majority of the habitat types within all alignment alternatives potentially support 7 or more focal species. In addition, the FWC Priority Wetlands Map for wetland-dependent listed species ranks areas within 500 feet of all three alignment alternatives as capable of supporting 1 to 3 listed species in uplands, and 7 to 9 focal species in wetland areas. FWC Strategic Habitat Conservation Areas (SHCAs) have been designated for the Florida black bear, Florida panther, mottled duck, and wading birds within 100 feet of Alignment Alternative 1 and 2, while SHCAs found immediately adjacent to Alignment Alternative 3 also includes potential habitat for the American swallow-tailed kite. As designated by FWC, Strategic Habitat Conservation Areas, while not in public ownership, have been determined to be important for the long-term protection and support of populations of specific listed and rare wildlife species (Cox et al., 1994).

Importantly, all of the three road alignments occur within both the primary and secondary habitat zones of the Florida Panther (Kautz et al., In Review). Southwest Florida serves as the last remaining stronghold for the Florida panther in the state. Protection, conservation, and proper management of these occupied habitat systems in this region are essential for the long-term survival, recovery, and future expansion of the population. Radio telemetry data recorded by our agency clearly demonstrates that the panther has been recorded utilizing habitats within and adjacent to all proposed alignment alternatives. In addition, our agency has documented 21 panther roadkills on SR 29 from 1972 through 2005, and 5 of those are recent records within the proposed project area. One animal was a young female, killed approximately 1.5 miles north of Oil Well Road on May 25, 2003, while a juvenile male was struck and killed on June 3, 2003, about 2.0 miles north of Oil Well Road. A two-year-old female was killed 2.5 miles north of Oil Well Road on October 25, 2004, while just to the north at Owl Hammock curve, a 1-year-old female and a 2-year-old male were killed on December 1, 2004, and June 19, 2005, respectively.

Comments on Effects to Resources:

The proposed roadway expansion may result in direct, secondary, and cumulative impacts on a wide variety of fish and wildlife resources, resulting in the loss of diverse upland and wetland habitat types and impacts to listed species. Habitat loss from secondary and cumulative impacts from residential and commercial development could be substantial due to the current rural nature and existing agricultural land uses within this remote portion of Collier County.

Of paramount importance, potential impacts will occur within both the primary and secondary habitat zones of the Florida panther. In addition, expanding the road to four lanes, together with increased traffic levels and vehicle speed on the improved roadway, will create a formidable barrier to panther movement across the road and limit the ability of these animals to adequately access regional habitat resources, resulting in reduced regional habitat connectivity. Roadkills will potentially increase in the project area, where a roadkill problem currently exists.

Impacts to wildlife and habitat resources from direct, secondary, and cumulative impacts will potentially be substantial with all Alignment Alternatives. The current Alignment Alternatives as presently designed for adding lanes to SR 29 do not adequately address avoidance, minimization, or mitigation for impacts to the Florida panther and other important regional fish and wildlife habitat resources. Furthermore, Alignment Alternative 3 would result in a new highway segment through an undeveloped rural landscape that would further encourage and facilitate growth, and could result in increased impacts compared to either Alignment Alternatives 1 or 2.

At the present time, our agency is participating on the Florida Panther Recovery Team which is in the process of updating the Florida Panther Recovery Plan, and a top issue in this effort is to address the impacts of new and improved roads on the panther. Therefore, our agency would like to continue our past cooperative relationship with the Florida Department of Transportation and proposes to work with District 1 to evaluate whether appropriate impact avoidance, minimization, and mitigation measures can be formulated that would ensure that the result of the final highway design is consistent with our agency goals and programs, as it relates to protection of the Florida panther and its habitat as well as other state-listed species. To assist in accomplishing this task, we recommend the formation of a Task Group composed of FWC, FDOT, U.S. Fish and Wildlife Service, U. S. Army Corps of Engineers, Southwest Florida Water Management District, National Park Service, conservation groups including the Florida Wildlife Federation, and possibly other parties. The Task Group should address and gain consensus on measures which could necessarily involve unique road design features, including wildlife underpasses, bridge extensions over streams and wetlands, along with customized fencing, and a major directed land acquisition initiative based on critical landscape habitat linkage needs in this region. To quickly initiate this process, we would like to schedule a meeting with FDOT District 1 personnel to provide an update of our research efforts, and discuss current agency goals and objectives as they relate to protection and conservation of the Florida panther in this region.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

Please consider the following recommendations in designing the Project Development and Development (PD&E) study to address overall concerns for avoidance, minimization, and mitigation measures for fish and wildlife resources and habitat:

1. A vegetative cover map and an accounting by acreage for each community type should be made for the affected project area during the future PD&E phase. Compensatory mitigation for all upland and wetland habitat loss should be required. If wetlands are mitigated under the provisions of Senate Bill 1986, the proposed mitigation sites should be located within the immediate or same regional area that supports the existing wood stork rookeries and be functionally equivalent, and as productive as the wetlands impacted by the road expansion.
2. Surveys for listed species should be accomplished within and adjacent to the Right-of-Way (ROW) during the PD&E. The methodology for these surveys should be coordinated with the FWC and follow appropriate survey techniques or guidelines to determine presence, absence or probability of occurrence of various listed species, and to assess habitat quality. Sites proposed for the location of Drainage Retention Areas (DRA) should also be surveyed for listed species.
3. Based on the results of the surveys, a plan should be developed to addresses avoidance, minimization and mitigation measures for all impacts to fish and wildlife and habitat resources including listed species. Compensatory replacement should be addressed for

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both upland and wetland habitat loss. Land acquisition and restoration of appropriate tracts adjacent to existing public lands that serve as regional core habitat areas are worthy of consideration.

4. In addition, habitat impacts in both uplands and wetlands may be avoided where possible by interchangeably designing the road expansion along those ROW areas where less habitat resources occur. In addition, using the median and roadside swales for treating roadside runoff would reduce the need for some offsite Drainage Retention Area Structures.

5. Construction equipment staging areas; storage of oils, greases, and fuel; fill or roadbed material; and vehicle maintenance activities should be located in a previously disturbed area far removed from streams, wetlands or surface water bodies.

We appreciate the opportunity to provide input on the conservation of fish and wildlife resources and habitat as it relates to highway planning and design. Please contact Mr. Darrell Land (239) 643-4220, and Mr. Joe Walsh (772) 778-5094 for further coordination on this project.

Literature Cited

Cox, J., R. Kautz, M. MacLaughlin, and T. Gilbert. 1994. Closing the Gaps in Florida's Wildlife Habitat Conservation System. Office of Environmental Services, Florida Game and Freshwater Fish Commission.

Kautz, R., R. Kawula, T. Hctor, J. Comiskey, D. Jansen, D. Jennings, J. Kasbohm, F. Mazzotti, R. McBride, L. Richardson, and K. Root. In Review. How Much Is Enough? Landscape-scale Conservation for the Florida Panther. Biological Conservation.

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

The following organization(s) were expected to but did not submit a review of the Wildlife and Habitat issue for this alternative: FL Department of Agriculture and Consumer Services

Agency Comments - Project Effects

#3752 SR 29 Immokalee

District: District 1

County: Collier

Planning Organization: FDOT District 1

Plan ID: Not Available

Federal Involvement: Federal Action

Phase: Programming Screen

From: Oil Well Road

To: SR 82

Financial Management No.: 417540-1

Contact Information: Gwen G. Pipkin (863) 519-2375 x2375 gwen.pipkin@dot.state.fl.us

Project Web Site: <http://www.sr29collier.com/>

Snapshot Data From: Current Draft Data

Alternative #4

Project Effects Overview for Alternative #4

Issue	Degree of Effect	Organization	Date Reviewed
Natural Wildlife and Habitat	4 Substantial	FL Fish and Wildlife Conservation Commission	04/24/2007

ETAT Reviews and Coordinator Summary: Natural Wildlife and Habitat

Project Effects

Coordinator Summary Degree of Effect: **4** *Substantial* assigned 07/09/2007 by FDOT District 1

Comments:

The FFWCC reviewed the EST and reported that input on fish and wildlife resources potentially occurring within the project area was previously provided to the FDOT via the project screening in August 2006, as well as in a letter dated December 20, 2006. FFWCC comments contained within the referenced correspondence remain applicable to the current (revised) ETDM project.

The USFWS reviewed its GIS database for recorded locations of federally listed threatened and endangered species on or adjacent to the project study area. Based on the data review, the Service believes the following federally listed species have the potential to occur in or near the project site: Wood stork (*Mycteria americana*), Bald eagle (*Haliaeetus leucocephalus*), Florida panther (*Puma concolor coryi*), Florida scrub-jay (*Aphelocoma coerulescens*), and Eastern indigo snake (*Drymarchon corais couperi*). The USFWS reported that the project is located: 1) in the core foraging area (CFA) of five active nesting colonies of the endangered wood stork and 2) near the nest of the threatened bald eagle. Also, a large proportion of the project corridor and proposed project study area is located in the Service's focus area for the endangered Florida panther and the primary and secondary habitat zones for the Florida panther as defined by Kautz et al. (2006).

The EST GIS analysis reported a black bear road kill occurrence within the project study area's 100-foot buffer (SR 29, 4.1 miles north of CR 858). In addition, the project study area's 100-foot buffer contains consultation areas for the crested caracara, the Florida scrub-jay, and the Florida panther; two ecosystem management areas (Caloosahatchee to Lee Coast EMA and Southwest Coast EMA); and primary and secondary habitat zones for the Florida panther. For these reasons and based on agency comments, a Wildlife and Habitat DOE of Substantial is recommended for this project.

Commitments and Responses: Preparation of an Endangered Species Biological Assessment will be included as a scoping recommendation for this project.

Degree of Effect: **4** *Substantial* assigned 04/24/2007 by Scott Sanders, FL Fish and Wildlife Conservation Commission

Coordination Document: No Selection

Coordination Document Comments: We appreciate the opportunity to provide input on highway design and the conservation of fish and wildlife resources. Please contact Mr. Terry Gilbert at (850) 402-6311 or email at terry_gilbert@urscorp.com to initiate further coordination on this project.

Direct Effects

Identified Resources and Level of Importance:

The Habitat Conservation Scientific Services Section of the Florida Fish and Wildlife Conservation Commission (FWC) has coordinated an agency review of ETDM #3752 (Revised) in Collier County, and provides the following comments related to potential impacts to fish and wildlife resources on this Programming Phase project.

This project involves expanding SR-29 from two to four lanes from Oil Well Road north to SR-82 in Collier County. The PD&E study will include the preparation of an Environmental Impact Statement (EIS) which will consider widening the two-lane highway along the existing alignment through Immokalee, as well as a study of an Alternative route that bypasses the downtown area of the city. The new Project Description emphasizes that this project was previously screened through the ETDM process, and all references to Alternatives 1, 2, and 3 have now been removed from the project map and replaced by a defined study area as agreed upon during the Conflict Resolution process. Furthermore, the Project Description relates that the study area boundary will assist in locating all potential Alignments that have the least impacts to natural and cultural resources as well as community features.

Input related to the diverse types and quality of fish and wildlife and habitat resources potentially occurring within the project area

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was provided to the Florida Department of Transportation (FDOT) via the Environmental Screening Tool (EST) on or about 1 August 2006, and in a 20 December 2006 letter from FWC's Mary Ann Poole to Ms. Gwen Pipkin of FDOT District 1. Our comments contained in these two pieces of correspondence remain applicable on this current revised ETDM project.

Comments on Effects to Resources:

Input related to impacts to fish, wildlife, and habitat resources on this project were provided to the Florida Department of Transportation (FDOT) via the Environmental Screening Tool (EST) on or about 1 August 2006, and in a 20 December 2006 letter from FWC's Mary Ann Poole to Ms. Gwen Pipkin of FDOT District 1. Our comments contained in these two pieces of correspondence remain applicable on this current revised ETDM project.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

We appreciate the opportunity to provide input on highway design and the conservation of fish and wildlife resources. Please contact Mr. Terry Gilbert at (850) 402-6311 or email at terry_gilbert@urscorp.com to initiate further coordination on this project.

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

The following organization(s) were expected to but did not submit a review of the Wildlife and Habitat issue for this alternative: FL Department of Agriculture and Consumer Services, Federal Highway Administration

Agency Comments - Project Effects

#3752 SR 29 Immokalee

District: District 1

County: Collier

Planning Organization: FDOT District 1

Plan ID: Not Available

Federal Involvement: Federal Action

Phase: Programming Screen

From: Oil Well Road

To: SR 82

Financial Management No.: 417540-1

Contact Information: Gwen G. Pipkin (863) 519-2375 x2375 gwen.pipkin@dot.state.fl.us

Project Web Site: <http://www.sr29collier.com/>

Snapshot Data From: Current Draft Data

Alternative #5

Project Effects Overview for Alternative #5

Issue	Degree of Effect	Organization	Date Reviewed
Natural			
Wildlife and Habitat	4 Substantial	FL Fish and Wildlife Conservation Commission	02/11/2008

ETAT Reviews and Coordinator Summary: Natural Wildlife and Habitat

Project Effects

Coordinator Summary Degree of Effect: 4 *Substantial* assigned 04/18/2008 by FDOT District 1

Comments:

The FFWCC reported that the previous letters provided to the FDOT on August 1, 2005; December 20, 2006; and April 20, 2007 were thoroughly reviewed and the previous comments regarding the project remain applicable. The referenced letters detail the fish, wildlife, and habitat resources located within the project area and the potential adverse effects that may impact these resources. In the referenced letters, the FFWCC stated that the project area is situated between regionally significant tracts of public land which include the Corkscrew Regional Ecosystem Watershed to the west, the Okaloacoochee Slough State Forest to the east, and the Big Cypress National Preserve and Florida Panther National Wildlife Refuge to the south. The FFWCC also noted that natural communities within the project study area potentially provide habitat for a number of listed species. The FFWCC commented that (of paramount importance) potential impacts will occur within primary and secondary Florida panther habitat zones.

The FFWCC stated that it would like to coordinate with the FDOT to form appropriate impact avoidance, minimization, and mitigation measures in order to ensure that the result of the final highway design is consistent with FFWCC goals and programs regarding the protection of the Florida panther and its habitat, as well as other state-listed species. The FFWCC recommended that a Task Group be formed consisting of representatives from FFWCC, FDOT, USFWS, USACOE, SWFWMD, NPS, conservation groups (including the Florida Wildlife Federation), and possibly other parties. Coordination Document: To Be Determined: Further Coordination Required.

The FHWA commented that the GIS analysis results indicate that the project study area is located within primary and secondary panther habitat zones. In addition, the results report black bear road kill occurrences in the project vicinity. The FHWA stated that alternatives proposed in areas currently undeveloped (i.e. new roadways) will have more impacts on panther habitat than would alternatives following existing roadway alignments. Use of existing alignments may allow for the placement of new wildlife crossings (where they do not exist today) in areas where there is need to provide safe connections for wildlife. The FHWA recommended that the FDOT coordinate with the appropriate agencies to address potential impacts to the panther and other wildlife species (including how to minimize wildlife road kills), as well as to determine the use, location, and design of wildlife crossings. Coordination Document: PD&E Support Document As Per PD&E Manual.

The USFWS reviewed its GIS database for recorded locations of federally listed threatened and endangered species on or adjacent to the project study area. Based on the data review, the USFWS believes that the following federally listed species have the potential to occur in or near the project site: Florida panther, Florida scrub-jay, wood stork, and Eastern indigo snake. The USFWS reported that the project is located within the core foraging area (CFA) of active wood stork nesting colonies. To minimize adverse effects to the wood stork, the USFWS recommended that any lost foraging habitat resulting from the project be replaced within the CFA of the affected nesting colony. In addition, a large portion of the expanded study area is located in the USFWS's focus area for the Florida panther, as well as within designated primary and secondary panther habitat zones. To minimize impacts to the panther, the USFWS suggested that the FDOT widen existing roadways as opposed to constructing a new roadway. The USFWS recommended that the FDOT prepare a Biological Assessment for the project during the Project Development and Environment (PD&E) phase in order to minimize impacts to valuable fish and wildlife habitat to the greatest extent practicable. Coordination Document: To Be Determined: Further Coordination Required.

The EST GIS analysis results indicate that the project study area is located within 1) consultation areas for the crested caracara, the Florida panther, the Florida scrub-jay, and the snail kite; 2) two ecosystem management areas (Caloosahatchee to Lee Coast EMA and Southwest Coast EMA); and 3) designated primary and secondary Florida panther habitat zones. For these reasons and based on agency concerns, a Summary DOE of Substantial has been assigned to the Wildlife and Habitat issue.

Commitments and Responses: Preparation of an Endangered Species Biological Assessment will be included in the scoping recommendations for this project.

Degree of Effect: 4 *Substantial* assigned 02/11/2008 by Scott Sanders, FL Fish and Wildlife Conservation Commission

Coordination Document: To Be Determined: Further Coordination Required

Coordination Document Comments: We appreciate the opportunity to provide input on highway design and the conservation of fish and wildlife resources. We remain committed to working with FDOT and other state and federal agencies in an effort to avoid, minimize, or mitigate the adverse effects of this project on regional habitat systems and fish and wildlife resources. Please contact Terry Gilbert at (850) 402-6311 or email terry_gilbert@urscorp.com to initiate the overall process for additional agency coordination on this project. For issues related to the Florida panther, please contact Darrell Land at (239) 643-4220, or via e-mail at darrell.land@MyFWC.com, for further coordination.

Direct Effects

Identified Resources and Level of Importance:

The Habitat Conservation Scientific Services Section of the Florida Fish and Wildlife Conservation Commission (FWC) has coordinated an agency review of ETDM #3752, Collier County, and provides the following comments related to potential effects to fish and wildlife resources on this Programming Phase project.

The Project Description Summary states that this project consists of expanding SR-29 from Oil Well Road north to SR-82. The PD&E Study will include the preparation of an Environmental Impact Statement which will consider the widening of the two-lane highway along the existing alignment through Immokalee, as well as a study of alternative routes that bypasses the downtown area of the city.

Comments on Effects to Resources:

According to the Florida Department of Transportation (FDOT), this current project modification submitted for review was required due to the expansion of the existing Study Area polygon to the west of Immokalee. We have thoroughly reviewed our previous agency letters which detail fish, wildlife and habitat resources in the project area, and assess adverse effects. These letters were provided to FDOT on August 1, 2005, December 20, 2006, and April 20, 2007, and we find that these previous comments remain applicable.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

We appreciate the opportunity to provide input on highway design and the conservation of fish and wildlife resources. We remain committed to working with FDOT and other state and federal agencies in an effort to avoid, minimize, or mitigate the adverse effects of this project on regional habitat systems and fish and wildlife resources. Please contact Terry Gilbert at (850) 402-6311 or email terry_gilbert@urscorp.com to initiate the overall process for additional agency coordination on this project. For issues related to the Florida panther, please contact Darrell Land at (239) 643-4220, or via e-mail at darrell.land@MyFWC.com, for further coordination.

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

The following organization(s) were expected to but did not submit a review of the Wildlife and Habitat issue for this alternative: FL Department of Agriculture and Consumer Services

Agency Comments - Project Effects

#3752 SR 29 Immokalee

District: District 1

County: Collier

Planning Organization: FDOT District 1

Plan ID: Not Available

Federal Involvement: Federal Action

Phase: Programming Screen

From: Oil Well Road

To: SR 82

Financial Management No.: 417540-1

Contact Information: Gwen G. Pipkin (863) 519-2375 x2375 gwen.pipkin@dot.state.fl.us

Project Web Site: <http://www.sr29collier.com/>

Snapshot Data From: Current Draft Data

Alternative #1

Project Effects Overview for Alternative #1

Issue	Degree of Effect	Organization	Date Reviewed
Natural			
Wetlands	3 Moderate	US Fish and Wildlife Service	03/07/2005
Wildlife and Habitat	4 Substantial	US Fish and Wildlife Service	03/07/2005
Secondary and Cumulative			

ETAT Reviews and Coordinator Summary: Natural Wetlands

Project Effects

Coordinator Summary Degree of Effect: **3** *Moderate* assigned 03/19/2007 by FDOT District 1

Comments:

The FDEP provided no comments with their Wetlands recommended DOE of Minimal to None. The FHWA stated that there are wetlands, particularly in the southern half of the proposed project that could be impacted. The NMFS stated that there are no natural resources for which NMFS Habitat Conservation Division is responsible. Therefore, the NMFS has no comment to provide regarding the project's impacts. The USACOE commented that the proposed project would likely impact wetlands and other waters of the U.S. and that hydrologic connectivity of the wetlands on and near the project site may be limited if design measures do not take into account current flow patterns. The USEPA noted that "It seems that the project will have an impact on wetlands." The USFWS commented that the ETDM database indicates that wetlands may be recorded within the project area and that, where necessary, the FDOT should investigate the need for the installation of wildlife underpasses or large box culverts along the corridor to maintain or improve wildlife movement and hydrologic flow in the area. The ETDM GIS Analysis reports that the project's 100-foot buffer contains approximately 108 acres of hydric soils, 42 acres of palustrine wetlands, and 44,950 linear feet of riverine systems. Due to these results and the agencies' concerns for wetland impacts, a Wetlands DOE of Moderate is recommended for this alternative.

Commitments and Responses: Preparation of a Wetlands Evaluation Report will be included as a scoping recommendation for this project.

Degree of Effect: **3** *Moderate* assigned 03/07/2005 by John Wrublik, US Fish and Wildlife Service

Coordination Document: *The "Coordination Document" option was not available at the time of the review.*

Direct Effects

Identified Resources and Level of Importance:

wetlands

Comments on Effects to Resources:

The Environmental Screening Tool's database indicates that wetlands may be recorded within the project area. Accordingly, we recommend that wetland resources be avoided to the greatest extent practicable. If impacts to wetlands are unavoidable, we recommend that the FDOT provides mitigation that fully compensates for the loss of wetland resources. Where necessary, the FDOT should also investigate the need for the installation of wildlife under passes, large box culverts or other such structures along the corridor to maintain or improve wildlife movement and hydrological flow in the area.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

The following organization(s) were expected to but did not submit a review of the Wetlands issue for this alternative: South Florida Water Management District

Wildlife and Habitat

Project Effects

Coordinator Summary Degree of Effect: **4** *Substantial* assigned 03/20/2007 by FDOT District 1

Comments:

FFWCC. The FFWCC noted that the project is located between regionally significant tracts of public lands which include the Corkscrew Regional Ecosystem Watershed to the west, the Okaloacoochee Slough State Forest to the east, and the Big Cypress National Preserve and Florida Panther National Wildlife Refuge immediately to the south. The FFWCC Wildlife and Habitat GIS database shows that habitats adjacent to the proposed alignment support several state-listed wildlife species and provide potential habitat for the alligator (SSC), gopher tortoise (SSC), Florida black bear (T), Florida panther (E), little blue heron (SSC), tricolored heron (SSC), white ibis (SSC), wood stork (E), bald eagle (T), crested caracara (T), southeastern kestrel (T), Florida sandhill crane (T), Florida burrowing owl (SSC), eastern indigo snake (T), and Florida scrub jay (T). FFWCC GIS data also shows that the proposed

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project is located within the core foraging area of four wood stork rookeries and that a bald eagle nest (FWC# CO-25) is located near the project area. (The FFWCC online eagle database indicates this nest is approximately 1500 to 1600 feet outside of the existing SR 29 ROW). Lands within one-mile of the proposed alignment have been ranked as moderate to high habitat quality by FFWCC's Integrated Wildlife Habitat Ranking System. FFWCC Strategic Habitat Conservation Areas have been designated for the Florida black bear (111.4 acres), Florida panther (78.5 acres), mottled duck (18.6 acres), and wading birds (2.0 acres) within the project's 100-foot buffer. Additionally, 196.5 acres of designated primary panther habitat and 66.4 acres of designated secondary panther habitat occur within the project's 100-foot buffer. The FFWCC has documented 21 panther roadkills on existing SR 29 from 1972 through 2005. The FFWCC made the following recommendations for the Project Development and Environment Study (PD&E):

- A vegetative cover map and accounting by acreage for each community type for the affected project area.
- Surveys for listed species within and adjacent to the ROW and proposed sites for the Drainage Retention Areas.
- Compensatory replacement for both upland and wetland habitat loss.

The FFWCC expressed their desire to continue their past cooperative relationship with FDOT District 1 to evaluate impact avoidance, minimization, and mitigation measures that are consistent with their agency's goals and programs. They recommend the formation of a Task Group composed of FFWCC, FDOT, USFWS, USACOE, SFWMD, National Park Service (NPS), conservation groups including the Florida Wildlife Federation, and possibly other parties. The purpose of this Task Group would be to address and gain consensus on measures which could involve unique road design features and a major directed land acquisition initiative based on critical landscape habitat linkage needs in the region.

FHWA. The FHWA stated that the project is located within the primary and secondary panther zones and requested that the FDOT coordinate with the appropriate agencies concerning potential impacts to the panther and other wildlife species.

USFWS. The USFWS reports that the proposed project is within the core foraging area of four active wood stork nesting colonies and that a bald eagle nest (FWC# CO-25) is located near the project site. The proposed alignment is located within the USFWS's panther consultation area and occurs within both the primary and secondary panther habitat zones. The USFWS has records of panther mortalities resulting from vehicle collisions on existing SR 29 and believes that the project would further adversely impact the panther due to loss of habitat within the construction footprint and an increase in the likelihood of vehicle collisions. Additionally, the USFWS believes the project would result in indirect effects to the panther by promoting additional development of panther habitat in the project area that would not go forward without the presence of an efficient transportation infrastructure. Consequently, the USFWS will require that panther/wildlife crossings be installed within the corridor. The USFWS will work with the FDOT, FFWCC, and Collier County to determine the number and locations of crossings and the amount of fencing necessary within the project corridor. To further protect the panther, the USFWS recommends that the FDOT purchase panther habitat and/or conservation easements within the lands adjacent to the crossings if they are not already protected. The USFWS also recommends that the FDOT prepare a Biological Assessment Report during the project's PD&E process.

As a result of these agencies' concerns and presence of state and federal listed species along the project alignment, a Wildlife and Habitat DOE of Substantial is recommended for this alternative.

Commitments and Responses: An Endangered Species Biological Assessment will be included as a scoping recommendation for this project.

Degree of Effect: **4** *Substantial* assigned 03/07/2005 by John Wrublik, US Fish and Wildlife Service

Coordination Document: *The "Coordination Document" option was not available at the time of the review.*

Direct Effects

Identified Resources and Level of Importance:

federally listed species and fish and wildlife resources

Comments on Effects to Resources:

The Service has reviewed our Geographic Information Systems (GIS) database for recorded locations of federally listed threatened and endangered species on or adjacent to the project study area. The GIS database is a compilation of data received from several sources. Active nesting colonies of the endangered wood stork (*Mycteria americana*) are located approximately 6.9 miles east, 11.2 miles and 11.4 miles west, and 6.7 miles southwest of the project corridor. Consequently, the project falls within the Core Foraging Area ((CFA) i.e., within 18.6 miles) of these nesting colonies.

The Service believes that the loss of wetlands within a CFA due to an action could result in the loss of foraging habitat for the wood stork. To minimize adverse effects to the wood stork, we recommend that any lost foraging habitat resulting from the project be replaced within the CFA of the affected nesting colony. Moreover, wetlands provided as mitigation should adequately replace the wetland functions lost as a result of the action. In some cases, the Service accepts wetlands compensation located outside the CFA of the affected wood stork nesting colony. Specifically, wetland credits purchased from a "Service Approved" mitigation bank located outside of the CFA would be acceptable to the Service, provided that the impacted wetlands occur within the permitted service area of the bank.

A nest of the threatened bald eagle (*Haliaeetus leucocephalus*), Fish and Wildlife Conservation Commission number CO-25, is located near the project site in Section 32, Township 47 South, and Range 30 East. If the project corridor occurs within 1,500 feet of a bald eagle nest than the FDOT should follow our Bald Eagle Habitat Management Guidelines listed at <http://northflorida.fws.gov/BaldEagles/Documents/eagle-habitat.pdf>

The project is located within the Service's consultation area for the endangered Florida Panther (*Puma concolor coryi*). The project also occurs within the primary and secondary habitat zones for the Florida panther as defined by Kautz et al. (In Review). Lands within the primary secondary zone are considered important to Florida panther conservation in south Florida. Telemetry data provided by the Florida Fish and Wildlife Conservation Commission indicates that the panther has been documented adjacent to the project footprint. Therefore, we believe that this project may adversely impact the panther. The adverse effects of the project would consist of direct and indirect effects to the panther and its habitat. Direct effects would include the loss of panther habitat in the construction footprint and an increase in the likelihood of vehicle collisions with panthers due to increased capacity of the roadway. The project would result in indirect effects to the panther by promoting additional development of panther habitat in the project area that would not go forward without the presence of an efficient transportation infrastructure. For projects that result in adverse impacts to the panther, the Service requests that habitat compensation be provided to minimize the adverse impacts of the project.

The Service has records of two panther mortalities resulting from vehicle collisions on State Road 29 in the project corridor. A 2 to 3 year old female panther was killed approximately 1.5 miles north of Oil Well Road on May 25, 2003. A male juvenile panther was killed approximately 2.0 miles north of Oil Well Road on June 3, 2003. Consequently, the Service will require that panther/wildlife crossings be installed within the corridor. The Service recommends that a bridge design be used for the panther/wildlife crossings. Ideally, the bridge crossings should be 120 feet long with a 12-foot clearance in the center and at least an 8-foot clearance at the edge of each bridge footing. In addition, fencing should be installed along both sides of the roadway consisting of 10-foot-tall chain-link with a 2-foot-wide section on angled barbed wire at the top. The Service will work with the FDOT, the Florida Fish and Wildlife Conservation Commission, and Collier County to determine the number and locations of crossings and the amount of fencing

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necessary within the project corridor. We note that the Collier County Transportation Department is currently working with Drs. Reed Noss and Dan Smith to contract a study of optimum wildlife corridor locations for Collier County. The study is intended to review existing roadways and identify locations where wildlife crossing are needed.

To further protect the panther, we recommend that the FDOT purchase panther habitat and/or conservation easements within the lands adjacent to the crossings (if they are not already protected). The Service also recommends that the project be designed to minimize impacts to lands within the Caloosahatchee Ecoscape to the greatest extent possible. We believe that this could be accomplished by eliminating or reducing the width of the center median usually constructed for a project of this type and designating a speed limit of 55 miles per hour in this area.

No other federally listed species were identified on your project site. The Service has not conducted a site inspection to verify species occurrence or validate the GIS results. However, we assume that listed species occur in suitable ecological communities and recommend site surveys to determine the presence or absence of listed species. Ecological communities suitable for listed species can be found in the species accounts in the South Florida Multi-Species Recovery Plan (1999). This document is available on the internet at http://verobeach.fws.gov/Programs/Recovery/esvb_recovery.html.

The Service believes that the following federally listed species have the potential to occur in or near the project site: Florida panther, Bald eagle, Florida scrub-jay (*Aphelocoma coerulescens*), Wood stork and, Eastern indigo snake (*Drymarchon corais couperi*). Accordingly, the Service recommends that the Florida Department of Transportation (FDOT) prepare a Biological Assessment for the project (as required by 50 CFR 402.12) during the FDOT's Project Development and Environment process.

Literature Cited

Kautz, R., R. Kawula, T. Hctor, J. Comiskey, D. Jansen, D. Jennings, J. Kasbohm, F. Mazzotti, R. McBride, L. Richardson, and K. Root. In Review. How Much Is Enough? Landscape-scale Conservation for the Florida Panther. Biological Conservation.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

**Indirect Effects
Identified Resources and Level of Importance:**

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

The following organization(s) were expected to but did not submit a review of the Wildlife and Habitat issue for this alternative: FL Department of Agriculture and Consumer Services

ETAT Reviews and Coordinator Summary: Secondary and Cumulative

Agency Comments - Project Effects

#3752 SR 29 Immokalee

District: District 1

County: Collier

Planning Organization: FDOT District 1

Plan ID: Not Available

Federal Involvement: Federal Action

Phase: Programming Screen

From: Oil Well Road

To: SR 82

Financial Management No.: 417540-1

Contact Information: Gwen G. Pipkin (863) 519-2375 x2375 gwen.pipkin@dot.state.fl.us

Project Web Site: <http://www.sr29collier.com/>

Snapshot Data From: Current Draft Data

Alternative #2

Project Effects Overview for Alternative #2

Issue	Degree of Effect	Organization	Date Reviewed
Natural Secondary and Cumulative			

ETAT Reviews and Coordinator Summary: Natural

ETAT Reviews and Coordinator Summary: Secondary and Cumulative

Agency Comments - Project Effects

#3752 SR 29 Immokalee

District: District 1

County: Collier

Planning Organization: FDOT District 1

Plan ID: Not Available

Federal Involvement: Federal Action

Phase: Programming Screen

From: Oil Well Road

To: SR 82

Financial Management No.: 417540-1

Contact Information: Gwen G. Pipkin (863) 519-2375 x2375 gwen.pipkin@dot.state.fl.us

Project Web Site: <http://www.sr29collier.com/>

Snapshot Data From: Current Draft Data

Alternative #3

Project Effects Overview for Alternative #3

Issue	Degree of Effect	Organization	Date Reviewed
Natural Wildlife and Habitat	5 Dispute Resolution	US Fish and Wildlife Service	06/14/2005
Secondary and Cumulative Secondary and Cumulative Effects	5 Dispute Resolution	US Fish and Wildlife Service	06/15/2005

ETAT Reviews and Coordinator Summary: Natural

Wildlife and Habitat

Project Effects

Coordinator Summary Degree of Effect: **4** *Substantial* assigned 03/20/2007 by FDOT District 1

Comments:

FFWCC. The FFWCC noted that the proposed project is located between regionally significant tracts of public lands which include the Corkscrew Regional Ecosystem Watershed to the west, the Okaloacoochee Slough State Forest to the east, and the Big Cypress National Preserve and Florida Panther National Wildlife Refuge immediately to the south. The FFWCC Wildlife and Habitat GIS database shows that habitats adjacent to the proposed alignment support several state-listed wildlife species and provide potential habitat for the alligator (SSC), gopher tortoise (SSC), Florida black bear (T), Florida panther (E), little blue heron (SSC), tricolored heron (SSC), white ibis (SSC), wood stork (E), bald eagle (T), crested caracara (T), southeastern kestrel (T), Florida sandhill crane (T), Florida burrowing owl (SSC), eastern indigo snake (T), and Florida scrub jay (T). FFWCC GIS data also shows that the proposed project is located within the core foraging area of four wood stork rookeries and that a bald eagle nest (FWC# CO-25) is located near the project area. (The FFWCC online eagle database indicates this nest is approximately 1500 to 1600 feet outside of the existing SR 29 ROW). Lands within one-mile of the proposed alignment have been ranked as moderate to high habitat quality by FFWCC's Integrated Wildlife Habitat Ranking System. Within the project's 100-foot buffer, FFWCC Strategic Habitat Conservation Areas have been designated for the swallow-tailed kite (2.4 acres), black bear (73.7 acres), Florida panther (131.5 acres), and mottled duck (23.6 acres). The proposed alignment occurs within both the USFWS designated primary and secondary habitat zones for the Florida panther. The FFWCC has documented 21 panther roadkills on existing SR 29 from 1972 through 2005. The FFWCC made the following recommendations for the Project Development and Environment Study (PD&E):

- A vegetative cover map and accounting by acreage for each community type for the affected project area.
- Surveys for listed species within and adjacent to the ROW and proposed sites for the Drainage Retention Areas.
- Compensatory replacement for both upland and wetland habitat loss.

The FFWCC expressed their desire to continue their past cooperative relationship with FDOT District 1 to evaluate impact avoidance, minimization, and mitigation measures that are consistent with their agency's goals and programs. They recommend the formation of a Task Group composed of FFWCC, FDOT, USFWS, USACOE, SFWMD, National Park Service (NPS), conservation groups including the Florida Wildlife Federation, and possibly other parties. The purpose of this Task Group would be to address and gain consensus on measures which could involve unique road design features and a major directed land acquisition initiative based on critical landscape habitat linkage needs in the region.

FHWA. The FHWA had the following concerns regarding potential impacts to wildlife and habitat as a result of construction of this alternative: the proposed project is located in primary and secondary panther habitat zones; the GIS analysis tool indicates black bear road kills in this area of SR 29 (coordination is needed with the wildlife agencies to determine how to minimize wildlife road kills); and the EST identifies priority ecological resource conservation areas within 100 feet of Alternative 3.

USACOE. The USACOE commented that Alternative 3 is located in a largely undeveloped rural area and would appear to bisect existing wetlands that may function as flow-ways. Hydrologic connectivity of the wetlands on and near the project site may be limited if design measures do not take into account current flow patterns.

USFWS. The USFWS reported that the proposed project is within the core foraging area of four active wood stork nesting colonies and that a bald eagle nest (FWC# CO-25) is located near the project site. The proposed alignment is located within the USFWS Panther Consultation Area and occurs within both the primary and secondary panther habitat zones. The USFWS believes that this alternative would result in significant major adverse impacts to the panther, including the likelihood of an increase of vehicle collisions with panthers, and promote additional development within existing panther habitat.

Upon initiation of the dispute resolution process, a Memorandum of Agreement (MOA) was signed between the FDOT, USFWS, FFWCC, Collier County Metropolitan Planning Organization (MPO), and Collier County based on the fact that the project would be re-screened through ETDM using a polygon to represent the project study area (Alternative 4). All references to Alternatives 1-3 are to be removed. The "new" screening will help to locate all potential alignments that have the least impacts to natural and cultural resources, as well as to community features. All potential alternatives will be located within the limits of the polygon visible on the Environmental Screening Tool (EST). As a result of this agreement, the USFWS has consented to change their assigned DOE to Substantial. Accordingly, a Summary Wildlife and Habitat DOE of Substantial is recommended for this alternative.

Commitments and Responses: An Endangered Species Biological Assessment will be included as a scoping recommendation for this project.

Degree of Effect: **5** *Dispute Resolution* assigned 06/14/2005 by John Wrublik, US Fish and Wildlife Service

Coordination Document: *The "Coordination Document" option was not available at the time of the review.*

Direct Effects

Identified Resources and Level of Importance:
federally listed species and fish and wildlife resources

Comments on Effects to Resources:

The Service has reviewed our Geographic Information Systems (GIS) database for recorded locations of federally listed threatened and endangered species on or adjacent to the project study area. The GIS database is a compilation of data received from several

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sources. Active nesting colonies of the endangered wood stork (*Mycteria americana*) are located approximately 3.0 miles east, 12.2 miles south, and 15.7 miles and 15.8 miles west southwest of the project corridor. Consequently, the project falls within the Core Foraging Area ((CFA) i.e., within 18.6 miles) of these nesting colonies.

The Service believes that the loss of wetlands within a CFA due to an action could result in the loss of foraging habitat for the wood stork. To minimize adverse effects to the wood stork, we recommend that any lost foraging habitat resulting from the project be replaced within the CFA of the affected nesting colony. Moreover, wetlands provided as mitigation should adequately replace the wetland functions lost as a result of the action. In some cases, the Service accepts wetlands compensation located outside the CFA of the affected wood stork nesting colony. Specifically, wetland credits purchased from a "Service Approved" mitigation bank located outside of the CFA would be acceptable to the Service, provided that the impacted wetlands occur within the permitted service area of the bank.

A nest of the threatened bald eagle (*Haliaeetus leucocephalus*), Fish and Wildlife Conservation Commission number CO-25, is located near the project site in Section 32, Township 47 South, and Range 30 East. If the project corridor occurs within 1,500 feet of a bald eagle nest than the FDOT should follow our Bald Eagle Habitat Management Guidelines listed at <http://northflorida.fws.gov/BaldEagles/ Documents/eagle-habitat.pdf>

Alternative 3 is located within the Service's consultation area for the endangered Florida Panther (*Puma concolor coryi*). The project also occurs within the primary and secondary habitat zones for the Florida panther as defined by Kautz et al. (In Review). Lands within the primary secondary zone are considered important to Florida panther conservation in south Florida. Telemetry data provided by the Florida Fish and Wildlife Conservation Commission indicates that the panther has been documented withing and adjacent to the project footprint. The Service believes that this alternative would result in significant major adverse impacts to the Florida panther. The adverse effects of the project would consist of direct and indirect effects to the panther and its habitat. Direct effects would include the loss of panther habitat in the construction footprint and an increase in the likelihood of vehicle collisions with panthers due to the construction of the new roadway. The project would result in indirect affects to the panther by promoting additional development of panther habitat in the project area that would not go forward without the presence of an efficient transportation infrastructure. Due to the extent of the adverse impacts to the panther and panther habitat resulting from the project, the Service cannot support the implementation of this alternative. We strongly urge that either Alternative 1 or Alternative 2 be chosen as the preferred alternative for the project.

Literature Cited

Kautz, R., R. Kawula, T. Hctor, J. Comiskey, D. Jansen, D. Jennings, J. Kasbohm, F. Mazzotti, R. McBride, L. Richardson, and K. Root. In Review. How Much Is Enough? Landscape-scale Conservation for the Florida Panther. Biological Conservation.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

The following organization(s) were expected to but did not submit a review of the Wildlife and Habitat issue for this alternative: FL Department of Agriculture and Consumer Services

ETAT Reviews and Coordinator Summary: Secondary and Cumulative

Secondary and Cumulative Effects

Project Effects

Coordinator Summary Degree of Effect: 4 *Substantial* assigned 03/20/2007 by FDOT District 1

Comments:

The USFWS believes that this alternative would have indirect effects to the Florida panther by promoting additional development of panther habitat in the project area. Due to the extent of adverse impacts to the panther and panther habitat resulting from construction of the proposed project, the USFWS has stated that they cannot support the implementation of this alternative.

Upon initiation of the dispute resolution process, a Memorandum of Agreement (MOA) was signed between the FDOT, USFWS, FFWCC, Collier County Metropolitan Planning Organization (MPO), and Collier County based on the fact that the project would be re-screened through ETDM using a polygon to represent the project study area (Alternative 4). All references to Alternatives 1-3 are to be removed. The "new" screening will help to locate all potential alignments that have the least impacts to natural and cultural resources, as well as to community features. All potential alternatives will be located within the limits of the polygon visible on the Environmental Screening Tool (EST). As a result of this agreement, the USFWS has consented to change their assigned DOE to Substantial. Accordingly, a Summary Secondary and Cumulative Effects DOE of Substantial is recommended for this alternative.

Commitments and Responses: None.

Degree of Effect: 5 *Dispute Resolution* assigned 06/15/2005 by John Wrublik, US Fish and Wildlife Service

Coordination Document: *The "Coordination Document" option was not available at the time of the review.*

At-Risk Resource: Wildlife & Habitat

Comments on Effects: Alternative 3 is located within the Service's consultation area for the endangered Florida Panther (*Puma concolor coryi*). The project also occurs within the primary and secondary habitat zones for the Florida panther as defined by Kautz

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et al. (In Review). Lands within the primary secondary zone are considered important to Florida panther conservation in south Florida. Telemetry data provided by the Florida Fish and Wildlife Conservation Commission indicates that the panther has been documented adjacent to the project footprint. The Service believes that this alternative would result in significant major adverse impacts to the Florida panther. The adverse effects of the project would consist of direct and indirect (secondary) effects to the panther and its habitat. Direct effects would include the loss of panther habitat in the construction footprint and an increase in the likelihood of vehicle collisions with panthers due to the construction of the new roadway. The project would result in indirect affects to the panther by promoting additional development of panther habitat in the project area that would not go forward without the presence of an efficient transportation infrastructure. Due to the extent of the adverse impacts to the panther and panther habitat resulting from the project, the Service cannot support the implementation of this alternative.

Recommended Avoidance, Minimization, and Mitigation Measures: We strongly urge that either Alternative 1 or Alternative 2 be chosen as the preferred alternative for the project.

Recommended Actions to Improve At-Risk Resources: We strongly urge that either Alternative 1 or Alternative 2 be chosen as the preferred alternative for the project.

Agency Comments - Project Effects

#3752 SR 29 Immokalee

District: District 1

County: Collier

Planning Organization: FDOT District 1

Plan ID: Not Available

Federal Involvement: Federal Action

Phase: Programming Screen

From: Oil Well Road

To: SR 82

Financial Management No.: 417540-1

Contact Information: Gwen G. Pipkin (863) 519-2375 x2375 gwen.pipkin@dot.state.fl.us

Project Web Site: <http://www.sr29collier.com/>

Snapshot Data From: Current Draft Data

Alternative #4

Project Effects Overview for Alternative #4

Issue	Degree of Effect	Organization	Date Reviewed
Natural			
Wetlands	4 Substantial	US Fish and Wildlife Service	04/24/2007
Wildlife and Habitat	4 Substantial	US Fish and Wildlife Service	05/01/2007
Secondary and Cumulative			

ETAT Reviews and Coordinator Summary: Natural Wetlands

Project Effects

Coordinator Summary Degree of Effect: 4 *Substantial* assigned 07/09/2007 by FDOT District 1

Comments:

The FDEP commented that there are 2507.73 acres (11.09%) of palustrine wetlands within the 100-foot project buffer zone.

The NMFS conducted a site inspection of the project study area to assess potential concerns to living marine resources and commented that the resources are not ones for which NMFS Habitat Conservation Division is responsible for; therefore, the NMFS has no comment to provide regarding the project's impacts.

The USACOE indicated that the resources and their level of importance depend on their location within the polygon. There are less resources within the more developed portions of the polygon, especially along the existing SR 29 alignment; there are more resources outside of the developed areas. There appear to be more wetlands just west of SR 29, and in the eastern portion of the polygon. The USACOE indicated that alignments are available that would have less wetland impacts than others. The Substantial DOE is an indication of the Corp's concern that the FDOT may not be able to justify an alignment with greater impacts.

The USFWS reported that data provided by the EST indicate that wetlands are abundant in the project area. The Service recommends that the project be designed to avoid and minimize impacts to the greatest extent practicable. If impacts to wetlands are unavoidable, the Service recommends that the FDOT provide mitigation that fully compensates for impacts to wetland resources.

Based on agency comments, a Wetlands DOE of Substantial is recommended for this project.

Commitments and Responses: Preparation of a Wetlands Evaluation Report will be included as a scoping recommendation for this project.

Degree of Effect: 4 *Substantial* assigned 04/24/2007 by John Wrublik, US Fish and Wildlife Service

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

Wetlands

Comments on Effects to Resources:

Data provided by the environmental screening tool indicate that wetlands are abundant in the project area. The Service recommends that the project be designed to avoid and minimize impacts to these valuable natural resources to the greatest extent practicable (please see our comments for the Florida panther. If impacts to wetlands are unavoidable, we recommend that the FDOT provide mitigation that fully compensates for impacts to wetland resources.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

The following organization(s) were expected to but did not submit a review of the Wetlands issue for this alternative: Federal Highway Administration, South Florida Water Management District, US Environmental Protection Agency

Wildlife and Habitat

Project Effects

Coordinator Summary Degree of Effect: 4 *Substantial* assigned 07/09/2007 by FDOT District 1

Comments:

The FFWCC reviewed the EST and reported that input on fish and wildlife resources potentially occurring within the project area was previously provided to the FDOT via the project screening in August 2006, as well as in a letter dated December 20, 2006. FFWCC comments contained within the referenced correspondence remain applicable to the current (revised) ETDM project.

The USFWS reviewed its GIS database for recorded locations of federally listed threatened and endangered species on or adjacent to the project study area. Based on the data review, the Service believes the following federally listed species have the potential to occur in or near the project site: Wood stork (*Mycteria americana*), Bald eagle (*Haliaeetus leucocephalus*), Florida panther (*Puma concolor coryi*), Florida scrub-jay (*Aphelocoma coerulescens*), and Eastern indigo snake (*Drymarchon corais couperi*). The USFWS reported that the project is located: 1) in the core foraging area (CFA) of five active nesting colonies of the endangered wood stork and 2) near the nest of the threatened bald eagle. Also, a large proportion of the project corridor and proposed project study area is located in the Service's focus area for the endangered Florida panther and the primary and secondary habitat zones for the Florida panther as defined by Kautz et al. (2006).

The EST GIS analysis reported a black bear road kill occurrence within the project study area's 100-foot buffer (SR 29, 4.1 miles north of CR 858). In addition, the project study area's 100-foot buffer contains consultation areas for the crested caracara, the Florida scrub-jay, and the Florida panther; two ecosystem management areas (Caloosahatchee to Lee Coast EMA and Southwest Coast EMA); and primary and secondary habitat zones for the Florida panther. For these reasons and based on agency comments, a Wildlife and Habitat DOE of Substantial is recommended for this project.

Commitments and Responses: Preparation of an Endangered Species Biological Assessment will be included as a scoping recommendation for this project.

Degree of Effect: 4 *Substantial* assigned 05/01/2007 by John Wrublik, US Fish and Wildlife Service

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

Federally Listed Species and Fish and Wildlife Resources

Comments on Effects to Resources:

The Service has reviewed our Geographic Information Systems (GIS) database for recorded locations of federally listed threatened and endangered species on or adjacent to the project study area. The GIS database is a compilation of data received from several sources.

Wood Stork - The project is located in the Core Foraging Areas ((CFA) i.e., within 18.6 miles) of five active nesting colonies of the endangered wood stork (*Mycteria americana*). The Service believes that the loss of wetlands within a CFA due to an action could result in the loss of foraging habitat for the wood stork. To minimize adverse effects to the wood stork, we recommend that any lost foraging habitat resulting from the project be replaced within the CFA of the affected nesting colony. Moreover, wetlands provided as mitigation should adequately replace the wetland functions lost as a result of the action. In some cases, the Service accepts wetlands compensation located outside the CFA of the affected wood stork nesting colony. Specifically, wetland credits purchased from a Service Approved mitigation bank located outside of the CFA would be acceptable to the Service, provided that the impacted

wetlands occur within the permitted service area of the bank.

Bald Eagle-The nest of the threatened bald eagle (*Haliaeetus leucocephalus*), Fish and Wildlife Conservation Commission number CO -25, is located near the project site in Section 32, Township 47 South, and Range 30 East. If the project corridor occurs within 660 feet of a bald eagle nest than the FDOT should follow our Bald Eagle Habitat Management Guidelines listed at <http://northflorida.fws.gov/BaldEagles/ Documents/eagle-habitat.pdf>

Florida Panther

A large proportion of the project corridor and proposed study area surrounding the city of Immokalee is located in the Services focus area for the endangered Florida Panther (*Puma concolor coryi*), and the primary and secondary habitat zones for the Florida panther as defined by Kautz et al. (2006). Lands within the primary and secondary zones are considered important to Florida panther conservation in south Florida. Telemetry data provided by the Florida Fish and Wildlife Conservation Commission (FWC) indicates that the panther has been documented within and adjacent to the project corridor. Therefore, we believe that this project may adversely impact the panther. The adverse effects of the project would consist of direct and indirect effects to the panther and its habitat. Direct effects would include the loss of panther habitat in the construction footprint, potential further fragmentation of existing panther habitat, and an increase in the likelihood of vehicle collisions with panthers due to increased capacity of the roadway and the expected increase in vehicle use. The project could also indirectly result in additional habitat loss and fragmentation by promoting additional development of panther habitat in the project area that would not go forward without the presence of an efficient transportation infrastructure.

To minimize the projects impacts to the panther, the Services strongly recommends that the FDOT enlarge existing roadways within, or adjacent to, the State Road 29 corridor to accomplish the project. The most practical roads to be widened would be either the existing State Road 29 corridor through downtown Immokalee, or the widening of New Market Road.

The FDOT has indicated that they will investigate the construction of a bypass road within the study area surrounding the city of Immokalee. The Service notes that a large proportion of this proposed study area contains undeveloped lands that provide valuable habitat for the Florida panther. We believe that the construction of a new bypass roadway within the majority of the proposed study area surrounding the city of Immokalee could result in significant adverse impacts to the Florida panther, and panther habitat (as described above). As such, our preference would be that the FDOT complete the project by widening existing roads as described above. To further minimize the potential of the project to adversely affect the Florida panther, the Service strongly urges that the FDOT reduce the size of the study area surrounding Immokalee by eliminating all lands east of the Immokalee Airport and all lands north of Heritage Boulevard.

The Service believes that the proposed project will increase the potential for panther mortality due to vehicle collisions. We note that panther mortalities due to vehicle collisions have been recorded in the project corridor (A total of 4 panthers were killed by vehicles in the project corridor in 2003 and 2004). Consequently, the Service requests that panther/wildlife crossings be installed within the corridor to minimize the potential for panther mortalities from vehicle collisions. The crossings should be similar in design to the latest crossings installed by the FDOT on State Road 29 south of Oil Well Road, and include similar chain-link exclusion fencing.

The Service believes that four crossings are warranted in the segment of State Road 29 corridor from County Road 846 to Oil Well Road. The locations for these crossing are indicated in Map L-6, Page 140 of Smith et al. (2006). We have based our recommendations concerning the number and location of crossings needed in this area on panther vehicle-related mortality data and panther telemetry collected by the FWC, the Services knowledge of the area, and on studies conducted by Swanson et al. (In Review) and Smith et al. (2006). To maintain connectivity for panthers and other wildlife in the project area, the Service also believes that a wildlife crossing is warranted for this project on County Road 858 (Oil Well Road), just west of its intersection with State Road 29. The Service will work with the FDOT and the FWC to site this crossing.

To further protect the panther, we recommend that the FDOT purchase panther habitat to compensate for impacts to panther habitat resulting from the project. The Services functional panther habitat assessment should be used to determine the habitat value of the lands impacted and the lands provided as compensation in Panther Habitat Units. We recommend that the FDOT consider acquiring and protecting lands adjacent to the panther crossings sites described above to ensure that the crossings will continue to

function adequately in the future.

The Service also recommends that the project be designed to minimize impacts to panther habitat within the project corridor to the greatest extent practicable. We believe that this could be accomplished within areas of panther habitat by eliminating or reducing the width of the center median usually constructed for a project of this type. To address safety concerns, we envision the installation of a guard rail that is designed to prevent automobile collisions and not act as a barrier for wildlife attempting to cross the highway. We also recommend designating a speed limit of no more than 55 miles per hour for rural sections of the highway. We look forward to working with the FDOT to design a project footprint that minimizes impacts to the Florida panther and fish and wildlife.

No other federally listed species were identified on your project site. The Service has not conducted a site inspection to verify species occurrence or validate the GIS results. However, we assume that listed species occur in suitable ecological communities and recommend site surveys to determine the presence or absence of listed species. Ecological communities suitable for listed species can be found in the species accounts in the South Florida Multi-Species Recovery Plan (1999). This document is available on the internet at [http://verobeach.fws.gov/Programs/Recovery/esvb recovery.html](http://verobeach.fws.gov/Programs/Recovery/esvb%20recovery.html).

The Service believes that the following federally listed species have the potential to occur in or near the project site: Florida panther, Bald eagle, Florida scrub-jay (*Aphelocoma coerulescens*), Wood stork and, Eastern indigo snake (*Drymarchon corais couperi*). Accordingly, the Service recommends that the Florida Department of Transportation (FDOT) prepare a Biological Assessment for the project (as required by 50 CFR 402.12) during the FDOTs Project Development and Environment process.

Literature Cited

Kautz, R., R. Kawula, T. Hootor, J. Comiskey, D. Jansen, D. Jennings, J. Kasbohm, F. Mazzotti, R. McBride, L. Richardson, and K. Root. 2006. How Much Is Enough? Landscape-scale Conservation for the Florida Panther. Biological Conservation.

Smith, D.J., R.F. Noss, and M.B. Main. 2006. East Collier County wildlife movement study: SR 29, CR 846, and CR 858 wildlife crossing project. Unpublished report. University of Central Florida, Orlando, FL.

Swanson, K., D. Land, R. Kautz, and R. Kawula. In review. Use of least cost pathways to identify key highway segments for panther conservation. Unpublished report. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida.

Fish and Wildlife Resources

The project has the potential to impact undeveloped uplands and wetlands that provide valuable habitat for a variety of fish and wildlife species. Accordingly, we recommend that the project be designed to minimize impacts to fish and wildlife to the greatest extent practicable (please see our comments the endangered Florida panther).

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

The following organization(s) were expected to but did not submit a review of the Wildlife and Habitat issue for this alternative: FL Department of Agriculture and Consumer Services, Federal Highway Administration

ETAT Reviews and Coordinator Summary: Secondary and Cumulative

Agency Comments - Project Effects

#3752 SR 29 Immokalee

District: District 1

County: Collier

Planning Organization: FDOT District 1

Plan ID: Not Available

Federal Involvement: Federal Action

Phase: Programming Screen

From: Oil Well Road

To: SR 82

Financial Management No.: 417540-1

Contact Information: Gwen G. Pipkin (863) 519-2375 x2375 gwen.pipkin@dot.state.fl.us

Project Web Site: <http://www.sr29collier.com/>

Snapshot Data From: Current Draft Data

Alternative #5

Project Effects Overview for Alternative #5

Issue	Degree of Effect	Organization	Date Reviewed
Natural			
Wetlands	4 Substantial	US Fish and Wildlife Service	02/04/2008
Wildlife and Habitat	4 Substantial	US Fish and Wildlife Service	02/04/2008
Secondary and Cumulative			

ETAT Reviews and Coordinator Summary: Natural

Wetlands

Project Effects

Coordinator Summary Degree of Effect: 4 *Substantial* assigned 04/18/2008 by FDOT District 1

Comments:

The FDEP commented that there are approximately 4,601 acres of palustrine wetlands within the 500-foot project buffer based on National Wetlands Inventory data. The FDEP noted that the project will require an Environmental Resource Permit (ERP) from the South Florida Water Management District; the ERP applicant will be required to eliminate or reduce the proposed project impacts on wetlands to the greatest extent practicable. Coordination Document: Permit Required.

The FHWA reported that wetlands are present within the project study area, particularly in the southern portion. The FHWA stated that coordination should take place with the appropriate environmental agencies regarding potential project impacts on wetlands. The proposed project should be located and designed in a manner to avoid or minimize impacts on wetlands. Coordination Document: PD&E Support Document As Per PD&E Manual.

The NMFS conducted a site inspection of the project study area and determined that there are no natural resources for which the NMFS Habitat Conservation Division is responsible for; therefore, the NMFS has no comments to provide regarding the project's impacts. Coordination Document: No Involvement.

Based on data provided by the EST, the USFWS reported that wetlands are abundant in the project area. The USFWS recommended that the project be designed to avoid or minimize wetland impacts to the greatest extent practicable. If impacts to wetlands are unavoidable, the USFWS recommended that the FDOT provide mitigation that fully compensates for impacts to wetland resources. Coordination Document: To Be Determined: Further Coordination Required.

According to the EST GIS analysis results, there are approximately 4,145 acres (19.7%) of palustrine wetlands located within the project's 100-foot buffer. Due to the abundance of wetlands within the project study area and agency concerns regarding potential wetland impacts, a Summary DOE of Substantial has been assigned to the Wetlands issue.

Commitments and Responses: Preparation of a Wetlands Evaluation Report will be included in the scoping recommendations for this project.

Degree of Effect: 4 *Substantial* assigned 02/04/2008 by John Wrublik, US Fish and Wildlife Service

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:

Wetlands

Comments on Effects to Resources:

Data provided by the environmental screening tool indicate that wetlands are abundant in the project area. The Service recommends that the project be designed to avoid and minimize impacts to these valuable natural resources to the greatest extent practicable (please see our comments for the Florida panther). If impacts to wetlands are unavoidable, we recommend that the FDOT provide mitigation that fully compensates for impacts to wetland resources.

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

Indirect Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

The following organization(s) were expected to but did not submit a review of the Wetlands issue for this alternative: South Florida Water Management District, US Army Corps of Engineers, US Environmental Protection Agency

Wildlife and Habitat

Project Effects

Coordinator Summary Degree of Effect: 4 *Substantial* assigned 04/18/2008 by FDOT District 1

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Comments:

The FFWCC reported that the previous letters provided to the FDOT on August 1, 2005; December 20, 2006; and April 20, 2007 were thoroughly reviewed and the previous comments regarding the project remain applicable. The referenced letters detail the fish, wildlife, and habitat resources located within the project area and the potential adverse effects that may impact these resources. In the referenced letters, the FFWCC stated that the project area is situated between regionally significant tracts of public land which include the Corkscrew Regional Ecosystem Watershed to the west, the Okaloacoochee Slough State Forest to the east, and the Big Cypress National Preserve and Florida Panther National Wildlife Refuge to the south. The FFWCC also noted that natural communities within the project study area potentially provide habitat for a number of listed species. The FFWCC commented that (of paramount importance) potential impacts will occur within primary and secondary Florida panther habitat zones.

The FFWCC stated that it would like to coordinate with the FDOT to form appropriate impact avoidance, minimization, and mitigation measures in order to ensure that the result of the final highway design is consistent with FFWCC goals and programs regarding the protection of the Florida panther and its habitat, as well as other state-listed species. The FFWCC recommended that a Task Group be formed consisting of representatives from FFWCC, FDOT, USFWS, USACOE, SWFWMD, NPS, conservation groups (including the Florida Wildlife Federation), and possibly other parties. Coordination Document: To Be Determined: Further Coordination Required.

The FHWA commented that the GIS analysis results indicate that the project study area is located within primary and secondary panther habitat zones. In addition, the results report black bear road kill occurrences in the project vicinity. The FHWA stated that alternatives proposed in areas currently undeveloped (i.e. new roadways) will have more impacts on panther habitat than would alternatives following existing roadway alignments. Use of existing alignments may allow for the placement of new wildlife crossings (where they do not exist today) in areas where there is need to provide safe connections for wildlife. The FHWA recommended that the FDOT coordinate with the appropriate agencies to address potential impacts to the panther and other wildlife species (including how to minimize wildlife road kills), as well as to determine the use, location, and design of wildlife crossings. Coordination Document: PD&E Support Document As Per PD&E Manual.

The USFWS reviewed its GIS database for recorded locations of federally listed threatened and endangered species on or adjacent to the project study area. Based on the data review, the USFWS believes that the following federally listed species have the potential to occur in or near the project site: Florida panther, Florida scrub-jay, wood stork, and Eastern indigo snake. The USFWS reported that the project is located within the core foraging area (CFA) of active wood stork nesting colonies. To minimize adverse affects to the wood stork, the USFWS recommended that any lost foraging habitat resulting from the project be replaced within the CFA of the affected nesting colony. In addition, a large portion of the expanded study area is located in the USFWS's focus area for the Florida panther, as well as within designated primary and secondary panther habitat zones. To minimize impacts to the panther, the USFWS suggested that the FDOT widen existing roadways as opposed to constructing a new roadway. The USFWS recommended that the FDOT prepare a Biological Assessment for the project during the Project Development and Environment (PD&E) phase in order to minimize impacts to valuable fish and wildlife habitat to the greatest extent practicable. Coordination Document: To Be Determined: Further Coordination Required.

The EST GIS analysis results indicate that the project study area is located within 1) consultation areas for the crested caracara, the Florida panther, the Florida scrub-jay, and the snail kite; 2) two ecosystem management areas (Caloosahatchee to Lee Coast EMA and Southwest Coast EMA); and 3) designated primary and secondary Florida panther habitat zones. For these reasons and based on agency concerns, a Summary DOE of Substantial has been assigned to the Wildlife and Habitat issue.

Commitments and Responses: Preparation of an Endangered Species Biological Assessment will be included in the scoping recommendations for this project.

Degree of Effect: 4 *Substantial* assigned 02/04/2008 by John Wrublik, US Fish and Wildlife Service

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:

Federally-listed species and fish and wildlife resources

Comments on Effects to Resources:

Federally-listed species - The Service has reviewed our Geographic Information Systems (GIS) database for recorded locations of federally listed threatened and endangered species on or adjacent to the project study area. The GIS database is a compilation of data received from several sources.

Wood Stork - The project is located in the Core Foraging Areas ((CFA) i.e., within 18.6 miles) of five active nesting colonies of the endangered wood stork (*Mycteria americana*). The Service believes that the loss of wetlands within a CFA due to an action could result in the loss of foraging habitat for the wood stork. To minimize adverse effects to the wood stork, we recommend that any lost foraging habitat resulting from the project be replaced within the CFA of the affected nesting colony. Moreover, wetlands provided as mitigation should adequately replace the wetland functions lost as a result of the action. In some cases, the Service accepts wetlands compensation located outside the CFA of the affected wood stork nesting colony. Specifically, wetland credits purchased from a Service Approved mitigation bank located outside of the CFA would be acceptable to the Service, provided that the impacted wetlands occur within the permitted service area of the bank.

For projects that impact 5 or more acres of wood stork foraging habitat, the Service requires a functional assessment be conducted using our Wood Stork Foraging Analysis Methodology(Methodology)on the foraging habitat to be impacted and the foraging habitat provided as mitigation. The Methodology can be found in the Services November 9, 2007, Eastern Indigo Snake and Wood Stork Key (Service Federal Activity Code Number 41420-2007-FA-1494) provided to the Corps to guide their effect determinations for these two species. The Methodology is also described in the Services August 28, 2007, Biological Opinion for the Terafina (G.L. Homes) development project (Service Federal Activity Code Number 41420-2007-FA-0653) located at <http://www.fws.gov/filedownloads/ftp%5Fverobeach/BIOLOGICAL%5FOPINIONS/TERAFINA/>.

Florida Panther

A large proportion of the expanded study area located in the Services focus area for the endangered Florida Panther (*Puma concolor coryi*), and the primary and secondary habitat zones for the Florida panther as defined by Kautz et al. (2006). Lands within the primary and secondary zones are considered important to Florida panther conservation in south Florida. Telemetry data provided by the Florida Fish and Wildlife Conservation Commission (FWC) indicates that the panther has been documented within the study area. Therefore, we believe that this project may adversely impact the panther. The adverse effects of the project would consist of direct and indirect effects to the panther and its habitat. Direct effects would include the loss of panther habitat in the construction footprint, potential further fragmentation of existing panther habitat, and an increase in the likelihood of vehicle collisions with panthers due to increased capacity of the roadway and the expected increase in vehicle use. The project could also indirectly result in additional habitat loss and fragmentation by promoting additional development of panther habitat in the project area that would not go forward without the presence of an efficient transportation infrastructure.

To minimize the projects impacts to the panther, the Services continues to recommend that the FDOT enlarge existing roadways within, or adjacent to, the State Road 29 corridor to accomplish the project. This most practical roads to be widened would be either the existing State Road 29 corridor through downtown Immokalee, or the widening of New Market Road.

DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT DRAFT

The FDOT has indicated that they will investigate the construction of a bypass road within the study area surrounding the city of Immokalee. The Service notes that a large proportion of the proposed study area contains undeveloped lands that provide valuable habitat for the Florida panther. We believe that the construction of a new bypass roadway within the majority of the proposed study area surrounding the city of Immokalee could result in significant adverse impacts to the Florida panther, and panther habitat (as described above). As such, our preference would be that the FDOT complete the project by widening existing roads as described above. To further minimize the potential of the project to adversely affect the Florida panther, the Service urges that the FDOT reduce the size of the study area surrounding Immokalee by eliminating all lands east of the Immokalee Airport and all lands north of Heritage Boulevard.

The Service believes that the proposed project will increase the potential for panther mortality due to vehicle collisions. We note that panther mortalities due to vehicle collisions have been recorded in the project corridor (A total of 4 panthers were killed by vehicles in the project corridor in 2003 and 2004). Consequently, the Service requests that panther/wildlife crossings be installed within the corridor to minimize the potential for panther mortalities from vehicle collisions. The crossings should be similar in design to the latest crossings installed by the FDOT on State Road 29 south of Oil Well Road, and include similar chain-link exclusion fencing. The Service believes that four crossings are warranted in the segment of State Road 29 corridor from County Road 846 to Oil Well Road. The locations for these crossing are indicated in Map L-6, Page 140 of Smith et al. (2006). We have based our recommendations concerning the number and location of crossings needed in this area on panther vehicle-related mortality data and panther telemetry collected by the FWC, the Services knowledge of the area, and on studies conducted by Swanson et al. (In Review) and Smith et al. (2006). To maintain connectivity for panthers and other wildlife in the project area, the Service also believes that a wildlife crossing is warranted for this project on County Road 858 (Oil Well Road), just west of its intersection with State Road 29. The Service will work with the FDOT and the FWC to site this crossing.

To further protect the panther, we recommend that the FDOT purchase panther habitat to compensate for impacts to panther habitat resulting from the project. The Services functional panther habitat assessment should be used to determine the habitat value of the lands impacted and the lands provided as compensation in Panther Habitat Units. We recommend that the FDOT consider acquiring and protecting lands adjacent to the panther crossings sites described above to ensure that the crossings will continue to function adequately in the future.

The Service also recommends that the project be designed to minimize impacts to panther habitat within the project corridor to the greatest extent practicable. We believe that this could be accomplished within areas of panther habitat by eliminating or reducing the width of the center median usually constructed for a project of this type. To address safety concerns, we envision the installation of a guard rail that is designed to prevent automobile collisions and not act as a barrier for wildlife attempting to cross the highway. We also recommend designating a speed limit of no more than 55 miles per hour for rural sections of the highway. We look forward to working with the FDOT to design a project footprint that minimizes impacts to the Florida panther and fish and wildlife.

No other federally listed species were identified on your project site. The Service has not conducted a site inspection to verify species occurrence or validate the GIS results. However, we assume that listed species occur in suitable ecological communities and recommend site surveys to determine the presence or absence of listed species. Ecological communities suitable for listed species can be found in the species accounts in the South Florida Multi-Species Recovery Plan (1999). This document is available on the internet at http://verobeach.fws.gov/Programs/Recovery/esvb_recovery.html.

The Service believes that the following federally listed species have the potential to occur in or near the project site: Florida panther, Florida scrub-jay (*Aphelocoma coerulescens*), Wood stork and, Eastern indigo snake (*Drymarchon corais couperi*). Accordingly, the Service recommends that the Florida Department of Transportation (FDOT) prepare a Biological Assessment for the project (as required by 50 CFR 402.12) during the FDOTs Project Development and Environment process.

Fish and Wildlife Resources -

The project has the potential to impact undeveloped uplands and wetlands that provide valuable habitat for a variety of fish and wildlife species. Accordingly, we recommend that the project be designed to minimize impacts to fish and wildlife to the greatest extent practicable (please see our comments pertaining to the endangered Florida panther).

Recommended Avoidance, Minimization, and Mitigation Opportunities:

Additional Comments (optional):

CLC Recommendations:

**Indirect Effects
Identified Resources and Level of Importance:**

Comments on Effects to Resources:

Recommended Avoidance, Minimization, and Mitigation Opportunities:

The following organization(s) were expected to but did not submit a review of the Wildlife and Habitat issue for this alternative: FL Department of Agriculture and Consumer Services

ETAT Reviews and Coordinator Summary: Secondary and Cumulative

From: Howell, Bill
To: Connor, Kevin; Tom_Pride@URSCorp.com
Subject: FW: comments on SR 29 from SR 82 to Oil Well Road Alternatives
Date: 07/22/2010 02:23 PM

fyi

From: Pipkin, Gwen G [mailto:Gwen.Pipkin@dot.state.fl.us]
Sent: Thursday, July 22, 2010 2:17 PM
To: Howell, Bill; Serdynski, Elizabeth; Schulz, Mark; Martin_Peate@URSCorp.com; Ron_Gregory@URSCorp.com; Vickie_Scott@URSCorp.com
Subject: FW: comments on SR 29 from SR 82 to Oil Well Road Alternatives

As expected...

Bill/Vickie: Let's get this added to the SAC powerpoint.

Gwen G. Pipkin
Senior Project Manager &
District One ETDM Coordinator
(office) 863-519-2375
gwen.pipkin@dot.state.fl.us

From: John_Wrublik@fws.gov [mailto:John_Wrublik@fws.gov]
Sent: Thursday, July 22, 2010 2:03 PM
To: Pipkin, Gwen G
Subject: comments on SR 29 from SR 82 to Oil Well Road Alternatives

Gwen,

This email is in response to your email dated June 24, 2010 requesting comments on the June 15, 2010, technical memorandum proposing alternatives for the State Road 29 from State Road 82 to Oil Well Road widening project. I offer the following comments.

Revised East Preliminary Alternative

The proposed Revised East Alternative corridor is located in the Service's Focus area for the endangered Florida Panther (*Puma concolor coryi*), and the primary and secondary habitat zones for the Florida panther as defined by Kautz et al.

(2006). The Focus Area is based on the latest scientific information on panther habitat usage provided in Kautz et al. 2006, and Thatcher et al. 2006, and denotes areas in Florida where development projects could potentially affect the panther. Lands within the primary and secondary zones are considered crucial to Florida panther conservation in south Florida. Telemetry data provided by the Florida Fish and Wildlife Conservation Commission indicates that panthers have been documented within and adjacent to the project corridor. Therefore, the Service finds that this alternative may adversely affect the panther. The adverse effects of the alternative would consist of direct and indirect effects to the panther and its habitat. Direct effects would include the loss of panther habitat in the construction footprint, potential further fragmentation of existing panther habitat, and an increase in the likelihood of vehicle collisions with panthers due to increased capacity of the roadway and the expected increase in vehicle use. Indirectly, the corridor would likely result in substantial additional habitat loss and fragmentation by promoting development of panther habitat in the area that would not go forward without the presence of an efficient transportation infrastructure.

The Service has significant concerns that the Revised East Preliminary Alternative would result in substantial adverse effects to the endangered Florida panther and its habitat. To minimize the project's impacts to the panther, the Service strongly urges the Florida Department of Transportation (FDOT) to adopt the Existing State Road 29 Alternative as the preferred alternative for the project. We further recommend that the Revised East Preliminary Alternative be removed from further consideration and not be carried forward to the Alternatives Public Workshop or to the Environmental Impact Statement process.

Revised Central Preliminary Alternative

As proposed, the Service finds that the Revised Central Preliminary Alternative still results in substantial direct and indirect impacts to Florida panther and panther habitat. We note that information provided in the technical memorandum indicates that this alternative will directly and indirectly result in the loss of at least 666.9 acres of panther habitat. Therefore, the habitat compensation needed to offset this loss would be substantial. To further minimize adverse impacts to the Florida panther, the Service recommends that the Revised Central Preliminary Alternative be relocated farther south out of the Service's Focus Area and panther secondary habitat zone, and as close to the Madison Avenue/New Market Road area as possible. Due to the substantial adverse effects to the Florida panther and its habitat, the Service has significant concerns with the Revised Central Alternative as proposed. To minimize the project's impacts to the panther, the Service's strongly urges the FDOT to adopt the Existing State Road 29 Alternative as the preferred alternative for the project.

Existing State Road 29 Alternative

The Existing State Road 29 Alternative is located fully within the footprint of the existing State Road 29 roadway corridor. As such, the Service finds that it will result in the least adverse effects to the endangered Florida panther of the three build alternatives proposed. The Service fully supports this alternative and strongly urges the FDOT to adopt the Existing State Road 29 Alternative as the preferred alternative for the project

No Build Alternative

The Service does not object to adoption of the No Build alternative.

Thank you for the opportunity to comment.

Sincerely,

John M. Wrublik
U.S. Fish and Wildlife Service
Vero Beach Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960
Phone: 772-562-3909, x-282
Fax: 772-562-4288

LITERATURE CITED

Kautz, R., R. Kawula, T. Hctor, J. Comiskey, D. Jansen, D. Jennings, J. Kasbohm, F. Mazzotti, R. McBride, L. Richardson, and K. Root. 2006. How much is enough? Landscape-scale conservation for the Florida panther. *Biological Conservation* 130:118-133.

Thatcher, C. A., F. T. van Manen, and J. D. Clark. 2006. An assessment of habitat north of the Caloosahatchee River for Florida panthers. Leetown Science Center, Southern Appalachian Research Branch, U.S. Geological survey, Knoxville, Tennessee, USA.



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July 22, 2010

Ms. Gwen Pipkin
Senior Project Manager and
District One ETDM Coordinator
P.O. Box 1249
Bartow, FL 33831-1249

Re: SR 29 Alternatives Scoping Meeting Follow-up, Revised Central and East Preliminary Alternatives Evaluation, ETDM 3752, SR 29 in Immokalee from Oil Well Road To SR 82, FDOT District 1, Collier County

Dear Ms. Pipkin:

In response to the June 24, 2010, e-mail request from the Florida Department of Transportation (FDOT), the Habitat Conservation Scientific Services Section of the Florida Fish and Wildlife Conservation Commission (FWC) has reviewed the revised State Road (SR) 29 alternatives pertaining to the above-referenced roadway project, and offers the following comments related to potential impacts to fish and wildlife resources.

The SR 29 Alternatives Scoping Meeting with state and federal agencies was held on February 18, 2010, to discuss four preliminary alternatives that were being considered by FDOT District 1 for planned improvements to SR 29 in Collier County from Oil Well Road north to SR 82. The alternatives included: (1) the existing SR 29 Alternative on the original or current right-of-way (ROW) alignment; (2) the West Alternative, located west of the City of Immokalee; (3) the Central Alternative, located near the airport and downtown area of Immokalee; and (4) the East Alternative, located east of Immokalee.

FDOT related that in consideration of input and comments provided at the Alternatives Scoping Meeting, they have decided that the Existing SR 29 Alternative on the current ROW and the No-Build Alternative will advance unchanged to the Alternatives Public Workshop. Based on comments received at the meeting, FDOT also determined that the West Preliminary Alternative was found to be "fatally flawed." Removal of the West Alternative was approved by the Federal Highway Administration on June 1, 2010. FDOT has also revised both the Central Alternative and the East Alternative, which are potential bypass alignments for the City of Immokalee, and these revised preliminary alignments will advance to the Alternatives Public Workshop.

The Central Preliminary Alternative was modified by moving the northern portion of the Alignment about 2.3 miles south toward Immokalee, and merging this alignment with SR 29, along with the utilization of ramps for a better connection of SR 29 to SR 82 on the north. According to FDOT's calculation, these changes would reduce the impact to secondary Florida panther habitat by 82 percent, from 2,746 acres to 493.6 acres; reduce the impacts to wetlands and open-water features by 10 percent and 36 percent, respectively; and reduce estimated construction costs by 0.3 percent. We concur with FDOT's determination that the Revised Central Alternative would now result in significantly less wildlife and habitat impact.

The East Alternative was revised by moving two segments of the alignment to the west. According to FDOT, the Revised East Alternative would result in a reduction of impacts to wetlands by 59 percent and a reduction of impacts to primary panther habitat by 47 percent and to secondary panther habitat by 39 percent. Nonetheless, this alignment would still result in impacts to over 5,000 acres of panther habitat, consisting of 1,923 acres of primary panther habitat and 3,299 acres of secondary panther habitat. While we concur with FDOT's impact assessment for the Revised East Alternative, we believe that the mitigation that would be required for the loss of

Florida panther habitat would substantially increase project costs for this alternative based on mitigation required for other recent road projects impacting panther habitat. We would also anticipate a relatively higher incidence of roadkill of the panther, black bear, and other wildlife, as compared to the other proposed alternatives.

The significant amount of mitigation and habitat protection, including possible underpass structures and fencing for the Florida panther that would likely be required in the Oil Well Road and Owl Hammock curve area of SR 29 for all proposed alignments was detailed in our December 20, 2006, letter (enclosed) to FDOT District 1 on the Conflict Resolution Process. Regional upland and wetland habitat loss resulting from increased residential and commercial development would be facilitated by improved access. The magnitude of these indirect habitat losses should be evaluated along the existing SR 29 corridor and the bypass alignments constructed on new ROWs. In addition, we respectfully suggest that mitigation costs be included for all individual alignments in order to provide a better reflection and comparison of the actual total project construction costs under all scenarios.

In summary, we encourage project designs that avoid and minimize impacts to wildlife and habitat resources to the greatest extent practicable as opposed to mitigation for loss or degradation of habitat. Based on our evaluation and comparison of the currently proposed SR 29 alternatives, we believe that the existing SR 29 Alternative on the current ROW would cause the least impacts to fish and wildlife resources and habitat, including the Florida panther, compared to the other proposed "build" alternatives. We also find that the Revised Central Alternative would result in significantly less direct and indirect effects to regionally important habitat systems and wildlife species, including the Florida panther and Florida black bear, listed by the State of Florida, as compared to the Revised East Alternative.

We appreciate the opportunity to provide input on highway design and the conservation of fish and wildlife resources. Please contact Brian Barnett at (850) 528-6316 or email brian_barnett@urscorp.com to initiate further coordination on this project or Darrell Land at (239) 417-6352 or e-mail darrell.land@MyFWC.com on issues directly related to the Florida panther.

Sincerely,



Mary Ann Poole
Commenting Program Administrator

map/tg
SR 29 Alternatives_2957_072010
ENV 1-13-2

Enclosure

cc: Darell Land, FWC, Naples
Jennifer Goff, FWC, West Palm Beach
Walt McCown, FWC, Gainesville
Dave Telesco, FWC, Tallahassee
Scott Sanders, FWC, Tallahassee
James Rodgers, FWC, Gainesville
Chuck Collins, FWC, West Palm Beach
Brad Gruver, FWC, Tallahassee
Brian Barnett, URS, Vero Beach

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December 20, 2006

Ms. Gwen Pipkin
District 1 ETDM Coordinator
Florida Department of Transportation
801 North Broadway Avenue
Bartow, Florida 33830

Re: Collier County, ETDM 3752.
Florida Department of Transportation District 1
Conflict Resolution Process

Dear Ms. Pipkin:

The Division of Habitat and Species Conservation, Habitat Conservation Scientific Services Section, of the Florida Fish and Wildlife Conservation Commission (FWC) has coordinated an agency review of the State Road 29 (SR-29) expansion project as it relates to the Florida Department of Transportation's (FDOT) District 1 ongoing Conflict Resolution Process, and provides the following comments and recommendations related to wildlife and habitat resources.

The FWC has reviewed and previously provided comments on this Collier County Municipal Planning Organization (CCMPO) project (ETDM 3752) in August 2005 (memorandum enclosed). This Programming Phase project involves three proposed alternatives for expanding SR 29 in Collier County between Oil Well Road (County Road 858 [CR-858]) and SR-82 north of the City of Immokalee. Two of these alternatives, which we support, were proposed in March 2005 and include: (1) adding two lanes to SR-29 between Oil Well Road and SR-82 through downtown Immokalee (Alignment 1), and (2) expanding SR-29 from two to four lanes from Oil Well Road to SR-82 via New Market Road through the City of Immokalee (Alignment 2). The northern sections of Alternatives 1 and 2 within the area of the City of Immokalee would have minimal impacts to fish and wildlife resources; however, significant indirect and cumulative impacts resulting in habitat loss from commercial and residential development may occur in the surrounding rural area due to increased capacity and access provided by the improved highway.

Alternative 3, a new two-lane bypass of Immokalee, was proposed approximately five months after Alignments 1 and 2 were reviewed through the initial ETDM review process. This alignment begins at Owl Hammock curve on SR-29 and runs north and east of Immokalee, before it turns westward and terminates at SR-82. This new road segment would bisect a variety of habitat and land use types ranging from pine flatwoods, hardwood forests, freshwater marshes, improved pasture, and cropland, and citrus groves. Alternative 3, which crosses CR-846 about 4.0 miles east of Immokalee, is approximately 4.75-mile in total length.

The three proposed project alternatives are provided in Figure 1. The purpose and need for this project as defined by the CCMPO, is to increase traffic capacity of SR-29 in anticipation of population and employment growth associated with the construction of Ave Maria University, and to improve regional transportation connectivity.

Southern Portion of the SR-29 Project Area

FWC biologists participated in the Conflict Resolution Process meeting on Alignment 3 at the CCMPO offices in Naples on September 28, 2006, and have reviewed the Dispute Resolution information package and maps dated September 11, 2006. Based on this information and long-term research efforts by our agency within this regional area, the southern portion of Alignment 3 bisects lands east and west of SR-29 that are within past and current Florida panther (*Puma concolor coryi* - Endangered [E]) home ranges. Furthermore, four panther roadkills have been documented on this roadway segment within the past four years (Figure 2).

In addition, FWC's analysis of panther movement within preserve lands using Least Cost Pathways Analyses (unpublished manuscript, Swanson et al. 2005) provides further documentation of the important role of these lands in maintaining connectivity between the Florida Panther National Wildlife Refuge to the south, and the Okaloacoochee Slough State Forest/Dinner Island Wildlife Management Area/Spirit-of-the-Wild Wildlife Management Area complex to the north. The anticipated volume of traffic and vehicle speed facilitated by adding lanes to SR-29 will create a formidable barrier to successful movement of panthers between these important and essential habitat systems, possibly resulting in increased roadkills, and may serve as a population sink for the species. This action could jeopardize future panther use of this important regional area.

The Collier County Rural Land Stewardship Plan overlay (Figure 3) identifies areas that have important conservation value either as Habitat Stewardship Areas, Water Retention Areas, and Flow-ways. On this map, Habitat Stewardship Areas are shown as green and blue stippled, while Receiving Areas that can be developed are denoted with gold hatching. Some of the areas utilized by panthers in the southern SR-29 project area are within the Water Retention/Flow-way areas; however, significant portions of some areas that panthers use are also classified as Receiving Areas and may be subject to development that would result in future habitat loss.

In order to prevent the loss of extent and functionality of panther habitat in the southern half of the SR-29 project area, the FWC makes the following recommendations:

- (1) The lands within approximately 1.0 mile east and west of SR-29 in the southern portion of the project area from Oil Well Road through the Owl Hammock Curve should be protected in perpetuity from any future development either through fee simple purchase or conservation easements (Figures 4 and 5). A suitable and biologically appropriate alternative would be that Collier County reclassifies the Receiving Areas adjacent to the southern portion of SR-29 as Habitat Stewardship Areas which would effectively afford permanent protection for these important habitat systems.
- (2) Similarly, the lands surrounding the intersection of SR-29 and Oil Well Road should be protected in perpetuity from any further residential or commercial development.
- (3) Following the establishment of preserved or protected lands east and west of SR-29 in the southern portion of the project area, wildlife underpasses should be constructed when SR-29 is

widened. The exact number, location, and design of these crossing structures should be established in further consultation with the FWC, U.S. Fish and Wildlife Service, and FDOT.

- (4) Mitigation, which may include land acquisition, habitat restoration, and conservation or long-term protection, should be accomplished as close to the SR-29 impact area as practicable after all efforts are exhausted to avoid and minimize impacts.

Northern Portion of the SR-29 Project Area

Alternatives 1 and 2 both involve widening existing roads in the northern portion of the project area, and would not have any significant direct impacts on panthers within or near the City of Immokalee. However, Alternative 3 involves the creation of a new road corridor serving as a bypass of Immokalee located significantly east of the City (Figure 6).

Alternative 3 intersects CR-846 in an area where 7 panther roadkills have occurred since 1993. FWC panther telemetry data also shows extensive and continual use of this proposed corridor by panthers. If Alternative 3 were to be constructed in the location proposed, a decrease in habitat connectivity and an increase in panther mortalities would be expected due to increased traffic volume and speed, and all currently utilized panther habitat between this road alignment west to Immokalee would be functionally lost over time. Importantly, the loss and degradation of habitat in this area due to indirect and cumulative impacts resulting from residential and commercial development in this rural area may also occur due to the improved access provided by the new road. Importantly, other species listed by our agency including the Florida black bear (*Ursus americanus floridanus* - Threatened [T]), eastern indigo snake (*Drymarchon corais couperi* - T), crested caracara (*Polyborus plancus floridana* - T), Southeastern kestrel (*Falco sparverius paulus* - T), Florida sandhill crane (*Grus canadensis pratensis* - T), Florida burrowing owl (*Athene cunicularia floridana* - Species of Special Concern [SSC]), Florida scrub jay (*Aphelocoma coerulescens* - T), and wood stork (*Mycteria americana* - E) along with other wading birds could be adversely impacted due to habitat loss. Significant mitigation, including the construction of wildlife crossings and large-scale habitat land acquisition and preservation efforts would be necessary to offset these losses. In order to avoid and minimize impacts to viable habitat and the existing panther population, FWC recommends that Alternative 3 be removed from further consideration, and a new bypass route (Alignment 4) located further to the west near the City of Immokalee be considered.

A review of existing aerials shows that a potential corridor exists east of the city of Immokalee (Figures 7, 8, and 9) and could begin at a point where SR-29 turns west into town. This corridor runs due north along the western boundary of the Immokalee Airport property. The corridor would parallel what appears to be industrial-type infrastructure for 0.5 miles and then crosses a large area of citrus groves on an unimpeded path to an intersection with SR-82. By substituting this suburban Alternative 4 for the existing Alternative 3, impacts to the Florida panther would be minimized. However, an evaluation would be necessary to determine the need for potential wildlife underpasses and fencing on SR-29 north of Immokalee to maintain a viable long-term connection of the habitat landscape linkage from the Corkscrew Regional Ecosystem Watershed eastward to the Okaloacoochee Watershed.

Summary

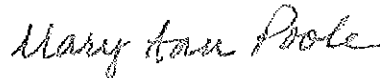
The SR-29 expansion project as now proposed would result in long-term adverse impacts to the Florida panther due to direct, indirect, and cumulative impacts resulting in the loss and fragmentation of habitat from residential and commercial development. The proposed improvements would create a more formidable barrier to panther movements and would likely result in more roadkills due to increased traffic

Ms. Gwen Pipkin
December 20, 2006
Page 4

volumes and speed. We recommend that Alternative 3 be dropped from further consideration, and we offer an Alternative 4 as a possible route that would minimize impacts to panthers and other wildlife. We do note, however, that Alternatives 1 and 2 would have the least impacts to natural resources. In our opinion, significant mitigation for the SR-29 project will be required. Mitigation should be directed to lands adjacent to the SR-29 corridor via land acquisition, conservation easements, or through amendments to the Collier County Rural Lands Stewardship Plan. Construction of strategically placed wildlife underpasses along the southern portion of the SR-29 project area may be necessary, and wildlife crossings on the northern portion may be necessary depending upon which alternative route is selected.

We appreciate the opportunity to provide input on the conservation of fish and wildlife resources and habitat as it relates to highway planning and design. Our biologists are also available to provide input on the upcoming scoping process for the Project Development and Environmental Study (PD&E) on this project. Please contact Darrell Land in our Naples office by phone at (239) 643-4220 or by e-mail at darrell.land@MyFWC.com or Joe Walsh in our Vero Beach office at (772) 778-5094 or joe.walsh@MyFWC.com for further coordination on this project.

Sincerely,



Mary Ann Poole, Director
Office of Policy and Stakeholder Coord.

map/dl/jw
ENV 1-13-2
SR 29_634
Enclosures

cc: Margaret Emblidge, AICP, Collier Enterprises

LITERATURE CITED

Swanson, K., D. Land, R. Kautz, and R. Kawula. 2005. Use of least cost pathways to identify key highway segments for panther conservation. Unpublished manuscript, Fish and Wildlife Research Institute, Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida.

From: [Brooks, Lauren](#)
To: [Gwen Pipkin](#); [Richey, Tobj](#); kconnor@hwlochner.com
Cc: [Bizerra, Marlon](#); [Howell, Bill](#); [Peate, Martin](#); kwarren@rkk.com; [Gregory, Ron](#); [Scott, Vickie](#)
Subject: RE: SR 29 Immokalee
Date: Tuesday, March 20, 2018 10:14:29 AM

Excellent! Thanks, Gwen!

Tobi and Kevin – Please see email below from Gwen regarding John Wrublik’s concurrence on the species surveys and the NRE pertaining to SR 29 Immokalee. Thanks!

Lauren M. Brooks, AICP
Project Manager & Senior Transportation Planner, Surface Transportation
D 1-813-636-2162 C 1-813-313-9913
lauren.brooks@aecom.com

AECOM
7650 West Courtney Campbell Causeway, Suite 700, Tampa, Florida 33607-1462
T 1-813-286-1711 F 1-813-286-6587
www.aecom.com

From: Pipkin, Gwen G [<mailto:Gwen.Pipkin@dot.state.fl.us>]
Sent: Tuesday, March 20, 2018 10:11 AM
To: Bizerra, Marlon; Howell, Bill; Peate, Martin; Brooks, Lauren; kwarren@rkk.com
Subject: FW: SR 29 Immokalee
Importance: High

We have concurrence from John Wrublik (see below) on our plan to do some species surveys as part of design. We will do the NRE as usual and get concurrence on the species we can do now, and include commitments to do during design for the rest. Please forward as needed.

Gwen G. Pipkin
Environmental Manager
Office - 863.519.2375
Cell - 863-280-5850
gwen.pipkin@dot.state.fl.us

From: Wrublik, John [mailto:john_wrublik@fws.gov]
Sent: Tuesday, March 20, 2018 8:26 AM
To: Pipkin, Gwen G <Gwen.Pipkin@dot.state.fl.us>
Subject: Re: SR 29 Immokalee

Gwen,

The proposal that the listed species surveys indicated for this project be conducted during the design phase of the project is acceptable to the Service. I don't have any further comments at this time.

John

John M. Wrublik
U.S. Fish and Wildlife Service
1339 20th Street
Vero Beach, Florida 32960
Office: (772) 469-4282
Fax: (772) 562-4288
email: John_Wrublik@fws.gov

NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.

On Tue, Mar 20, 2018 at 7:30 AM, Pipkin, Gwen G <Gwen.Pipkin@dot.state.fl.us> wrote:

Hi John,

We spoke a while back about completing some of our species surveys during design for this project. I followed up I with an email (see attached). I would like to know if you have had a chance to review that, and if we could get a response back?

I am also including the following additional information for your use.

- Panther: This is the major wildlife issue south of Immokalee, especially considering the number of panther vehicle strikes. A wildlife crossing at Owl Hammock curve is needed. PHUs for lost habitat will also need to be calculated as part of the PD&E.
- Crested caracara: No nests currently known in PD&E study area; surveys will be required during design for those segments that are not right in town.
- Scrub jay: An updated survey will be required during design for the new alignment segment northwest of the airport (a colony is known to exist in this area). There is no suitable habitat south of Immokalee.
- Wood stork: Suitable foraging habitat is present in all segments and at least three colonies are within 18.6 miles. A foraging habitat assessment should be completed during design.

Thanks, John, I look forward to your response!

Gwen G. Pipkin
Environmental Manager
Office - 863.519.2375
Cell - 863-280-5850
gwen.pipkin@dot.state.fl.us

----- Forwarded message -----

From: "Pipkin, Gwen G" <Gwen.Pipkin@dot.state.fl.us>
To: "John Wrublik (john_wrublik@fws.gov)" <john_wrublik@fws.gov>
Cc:

Bcc:

Date: Thu, 8 Mar 2018 17:36:41 +0000

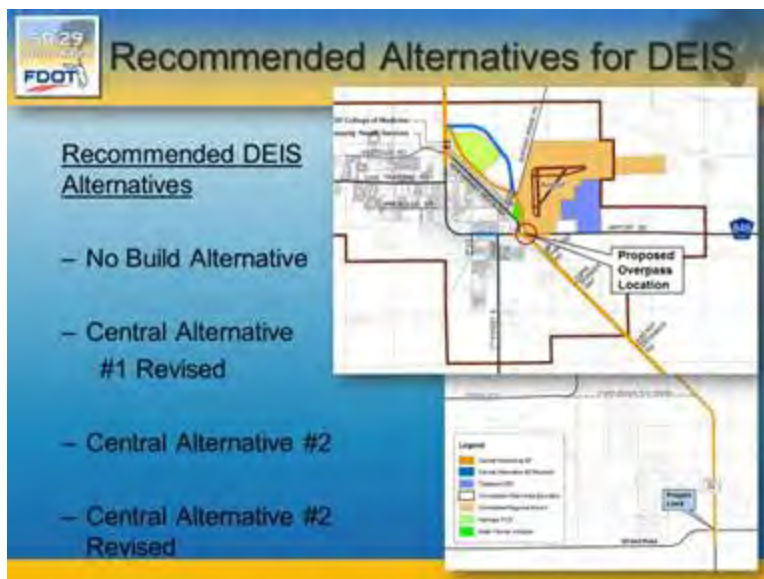
Subject: 417540-1 - SR 29 from Oil Well Rd to SR 82, Immokalee

John,

We spoke last week about the method FDOT would like to use to accomplish the species surveys for this project, and I was going to send you an email with more information so you could reply back. My apologies for taking so long!

Due to time constraints on the project, and the sensitivity of the species issues in the area, we feel it would be more appropriate to complete the NRE with commitments to do the formal surveys and coordination during the design phase, when the plans are more detailed. The species we feel would be best to complete later are snail kite, scrub jay, caracara, bonneted bat, and panther. The forthcoming NRE will address the rest of the species, and contain the commitments for completing the rest during design.

Also, just to update you, we are planning to move forward with only two build alternatives and the no-build alternative. We are in the process of officially eliminating Central Alternative #2 Revised, shown in blue below.



Thanks,

Gwen G. Pipkin

Environmental Manager

Office - 863.519.2375

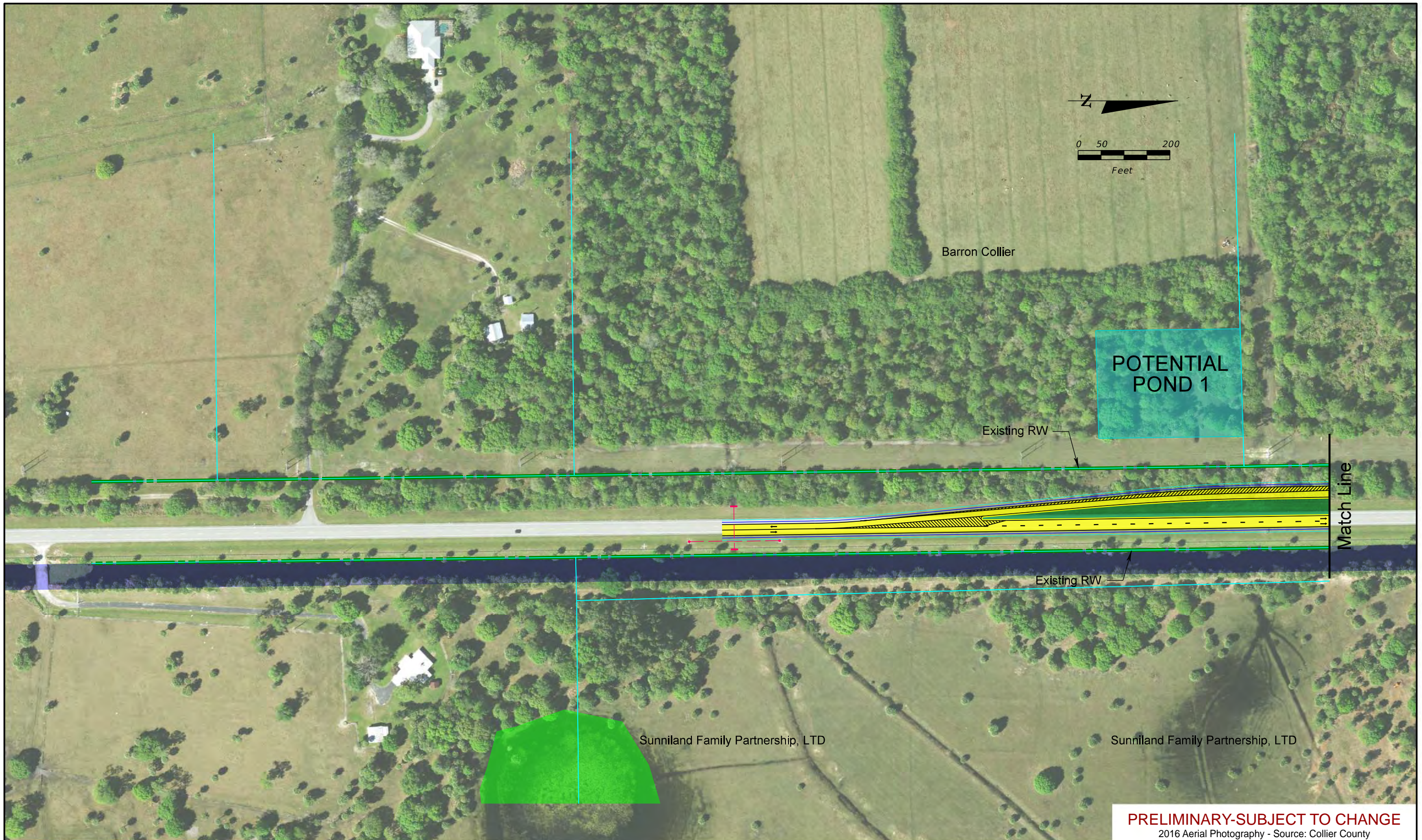
Cell - 863-280-5850

gwen.pipkin@dot.state.fl.us

APPENDIX B
Conceptual Plans

APPENDIX B-1

Conceptual Plans for Central Alternative #1 Revised



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

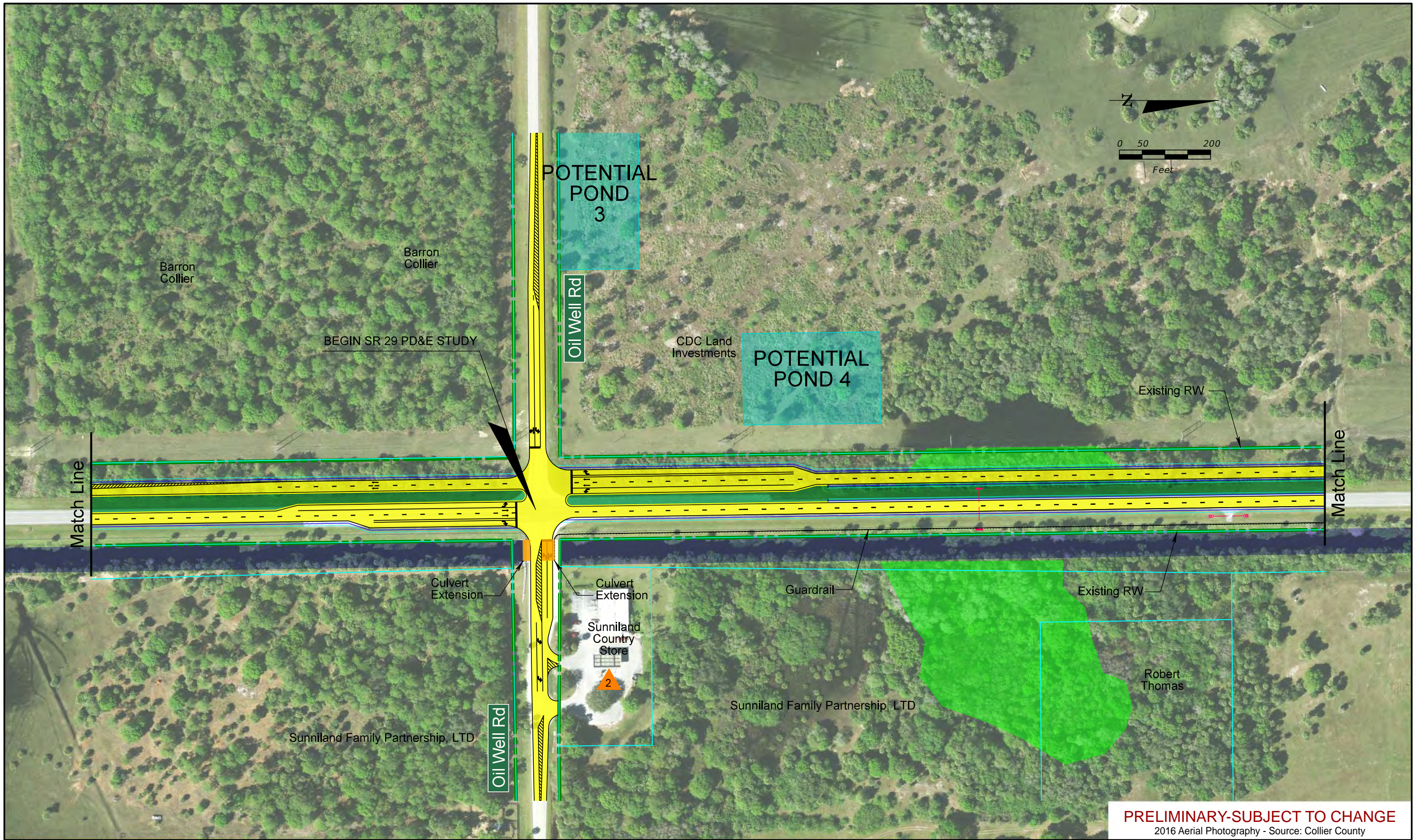
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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 Tampa, Florida 33607
 FBPR Certificate of Auth. #894

Central Alternative
#1 Revised

Sheet No.
1



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

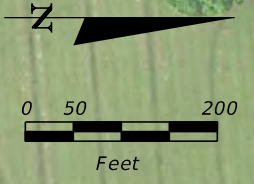
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Sidewalks
	Traffic Signal		Proposed Structure
	Proposed Guardrail		Potential Business Relocation
	Potential Contamination (Low)		Potential Contamination (Medium or High)

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Central Alternative
#1 Revised

Sheet No.
2



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Median/Border
	Traffic Signal		Proposed Sidewalks
			Proposed Structure
			Proposed Guardrail
			Potential Business Relocation
			Potential Contamination (Low)
			Potential Contamination (Medium or High)

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 Tampa, Florida 33607
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Central Alternative
#1 Revised

Sheet No.
3



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

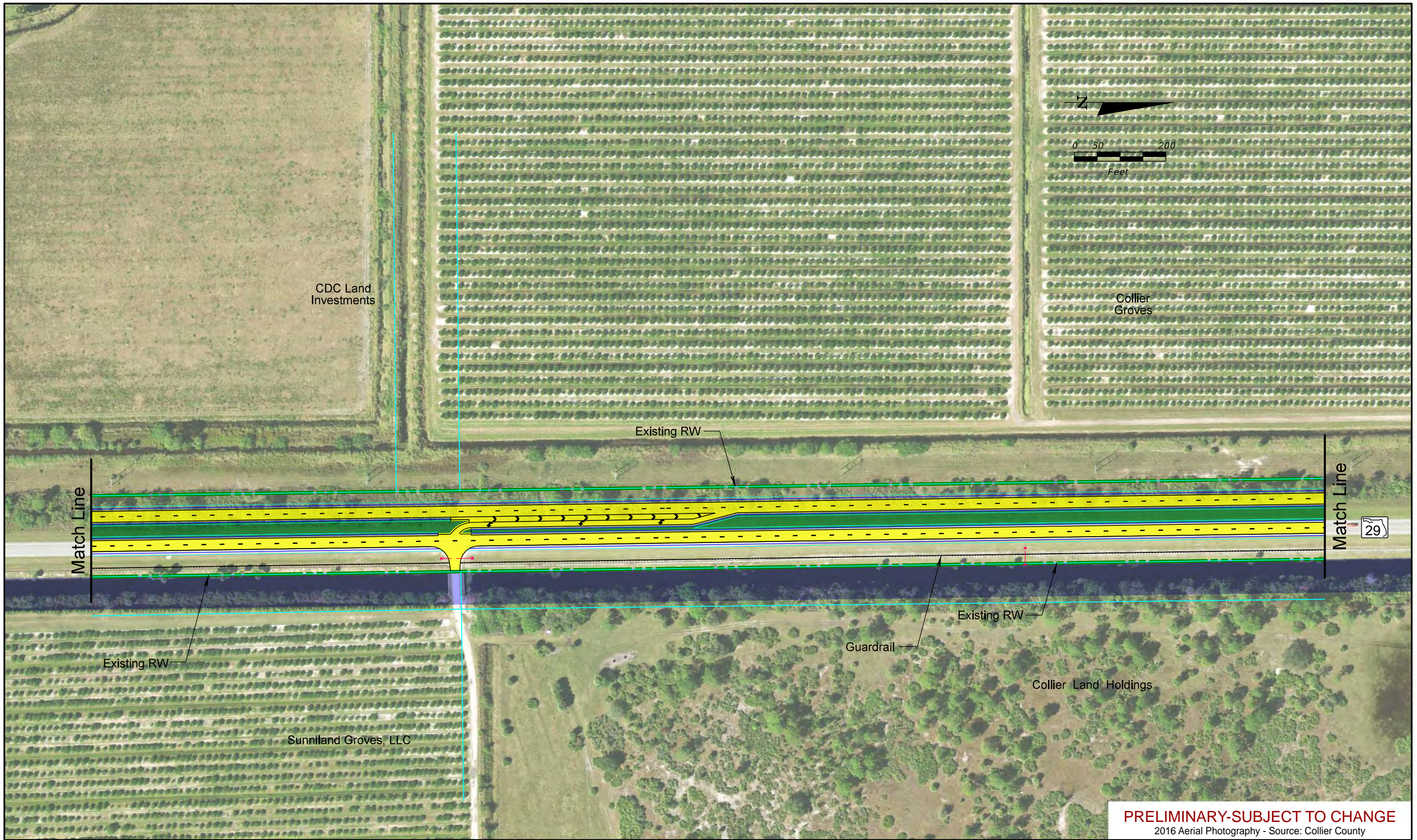
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

- | | | | |
|-----------------------|------------------------------------|------------------------|--|
| Existing Right-of-Way | Wetland | Proposed Pavement | Proposed Guardrail |
| Parcels | Potential Pond | Proposed Median/Border | Potential Business Relocation |
| Proposed Right-of-Way | Potential Flood Plain Compensation | Proposed Sidewalks | Potential Contamination (Low) |
| Water/Canal | Traffic Signal | Proposed Structure | Potential Contamination (Medium or High) |
| Seminole Land | | | |

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Central Alternative
#1 Revised

Sheet No.
4



SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

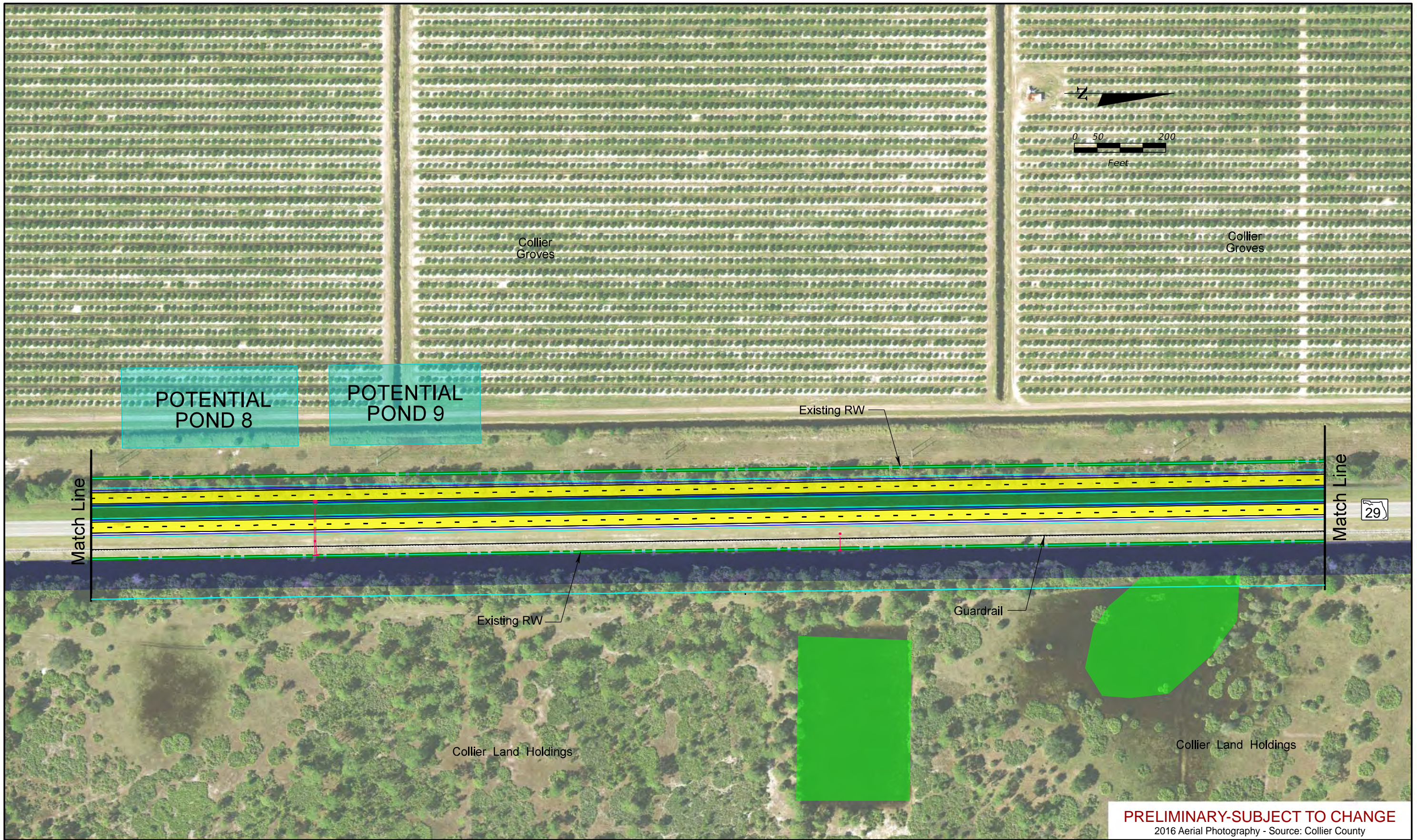
Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

**Central Alternative
 #1 Revised**

Sheet No.
5



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

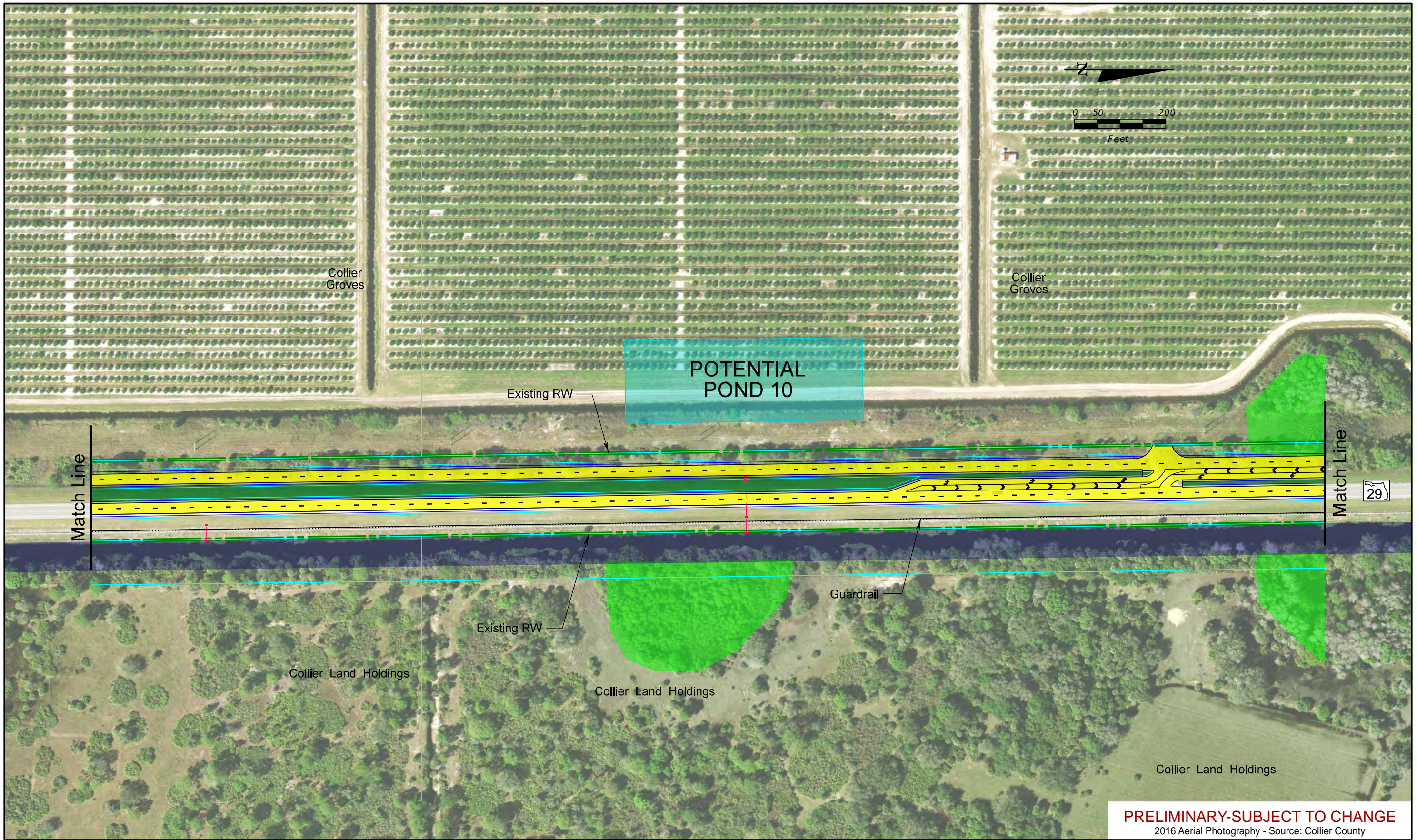
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Potential Pond
	Parcels		Proposed Pavement
	Proposed Right-of-Way		Proposed Median/Border
	Water/Canal		Proposed Sidewalks
	Seminole Land		Proposed Structure
	Wetland		Proposed Guardrail
	Potential Flood		Potential Business Relocation
	Plain Compensation		Potential Contamination (Low)
	Traffic Signal		Potential Contamination (Medium or High)

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Central Alternative
#1 Revised

Sheet No.
6



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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Central Alternative
#1 Revised

Sheet No.
7



SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

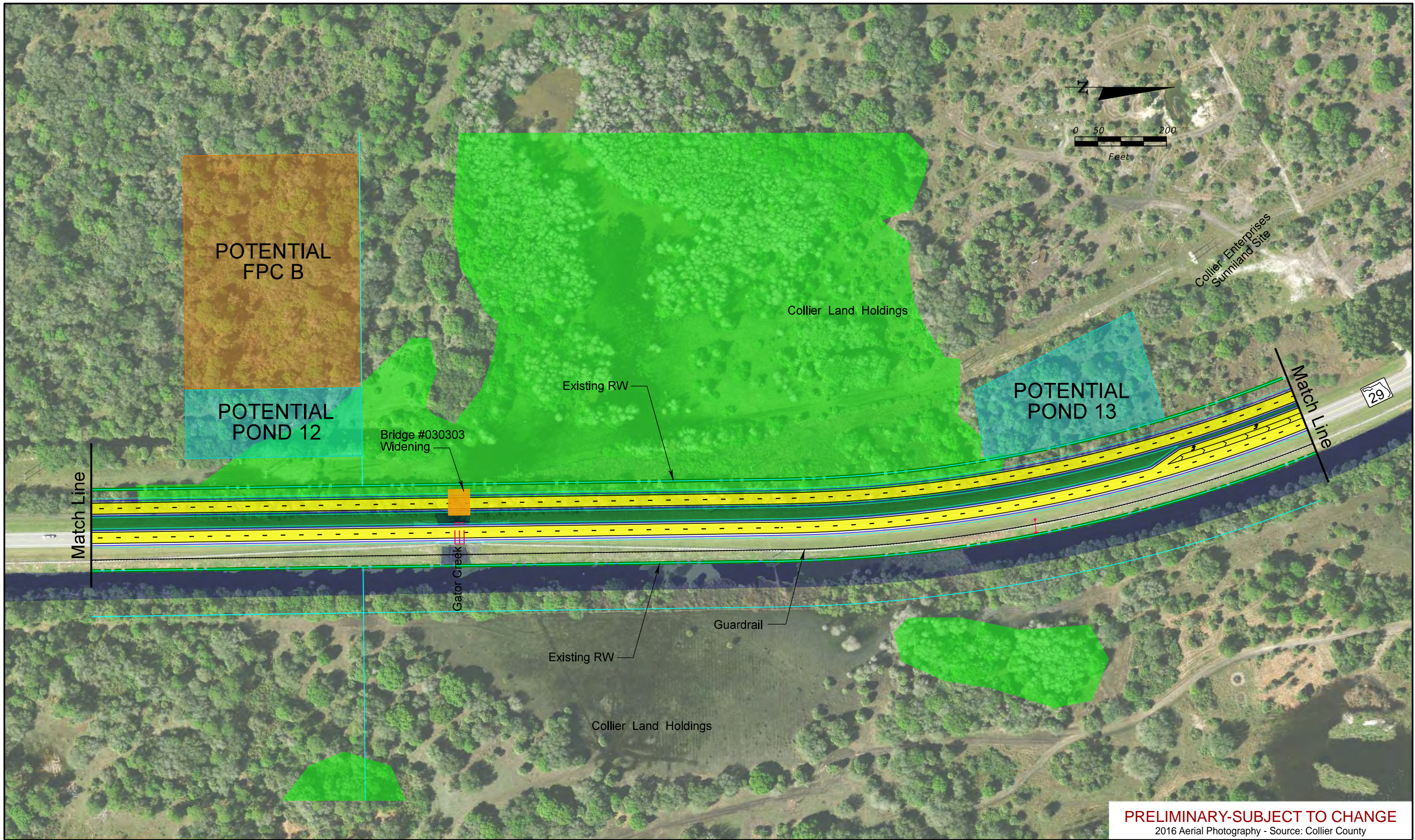
Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Median/Border
	Proposed Structure		Proposed Guardrail
	Proposed Structure		Potential Business Relocation
	Potential Contamination (Low)		Potential Contamination (Low)
	Potential Contamination (Medium or High)		Potential Contamination (Medium or High)

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PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

Central Alternative #1 Revised

Sheet No.
8



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

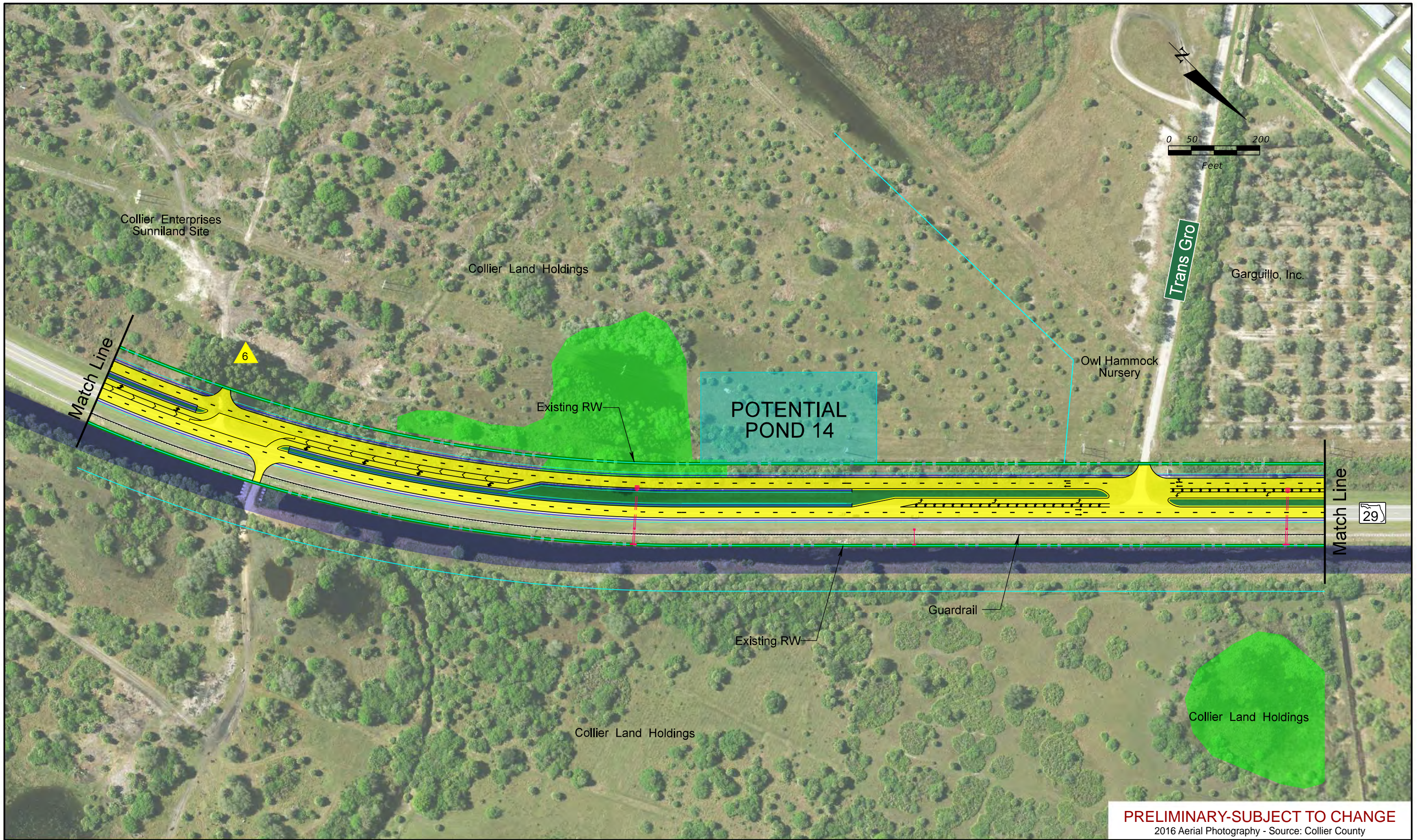
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

- | | | | |
|-----------------------|------------------------------------|------------------------|--|
| Existing Right-of-Way | Wetland | Proposed Pavement | Proposed Guardrail |
| Parcels | Potential Pond | Proposed Median/Border | Potential Business Relocation |
| Proposed Right-of-Way | Potential Flood Plain Compensation | Proposed Sidewalks | Potential Contamination (Low) |
| Water/Canal | Traffic Signal | Proposed Structure | Potential Contamination (Medium or High) |
| Seminole Land | | | |

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Central Alternative
#1 Revised

Sheet No.
9



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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Central Alternative
#1 Revised

Sheet No.
10



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

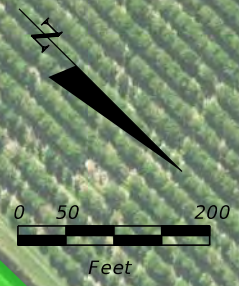
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Median/Border
	Traffic Signal		Proposed Sidewalks
			Proposed Structure
			Potential Business Relocation
			Potential Contamination (Low)
			Potential Contamination (Medium or High)
			Proposed Guardrail

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Central Alternative
#1 Revised

Sheet No.
11



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

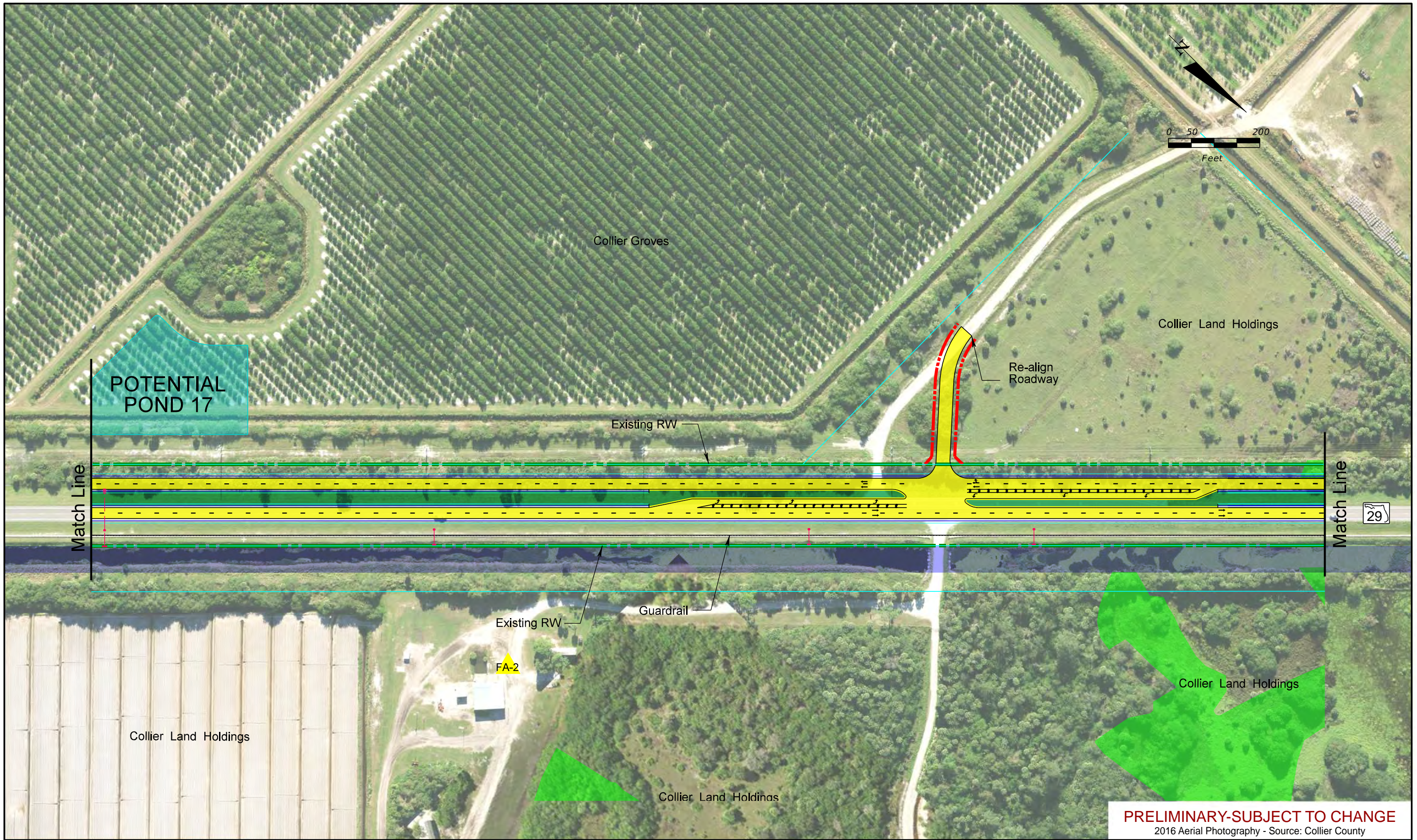
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Traffic Signal
	Seminole Land		Proposed Pavement
	Proposed Median/Border		Proposed Guardrail
	Proposed Sidewalks		Potential Contamination (Low)
	Proposed Structure		Potential Contamination (Medium or High)

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Central Alternative
#1 Revised

Sheet No.
12



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

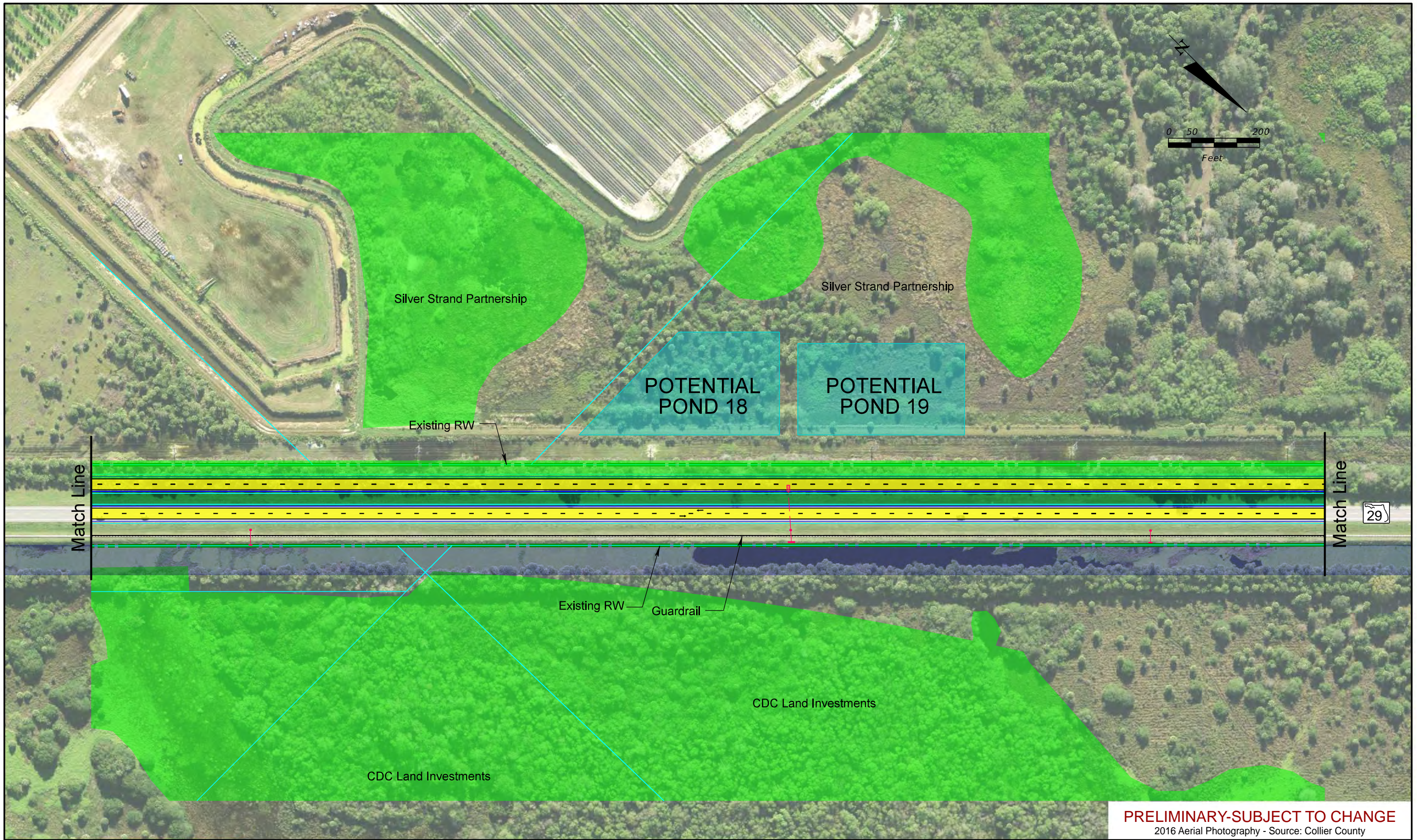
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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 FBPR Certificate of Auth. #894

Central Alternative
 #1 Revised

Sheet No.
13



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

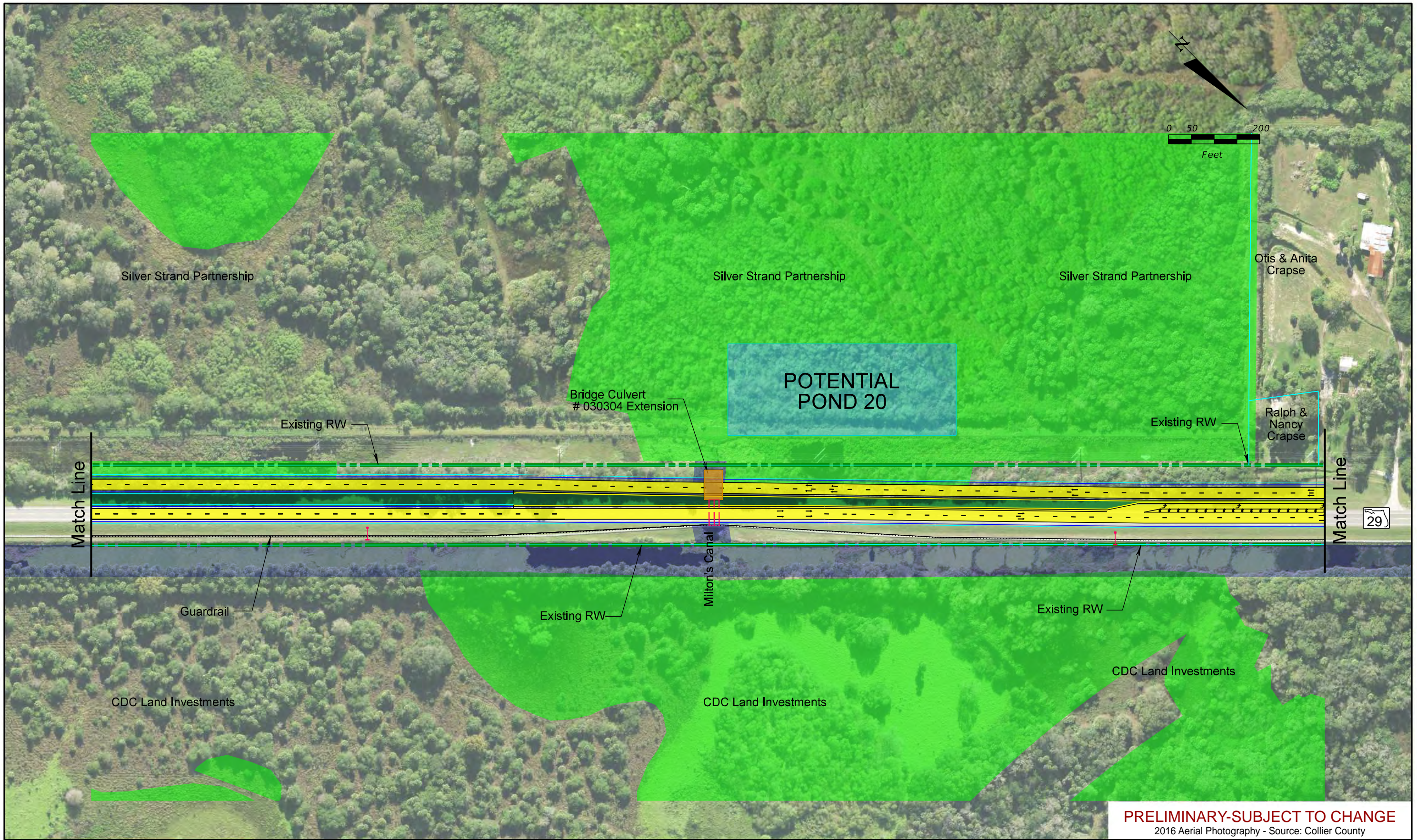
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Median/Border
	Traffic Signal		Proposed Sidewalks
	Proposed Structure		Proposed Guardrail
	Potential Business Relocation		Potential Contamination (Low)
	Potential Contamination (Medium or High)		

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 FBPR Certificate of Auth. #894

Central Alternative
#1 Revised

Sheet No.
14



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

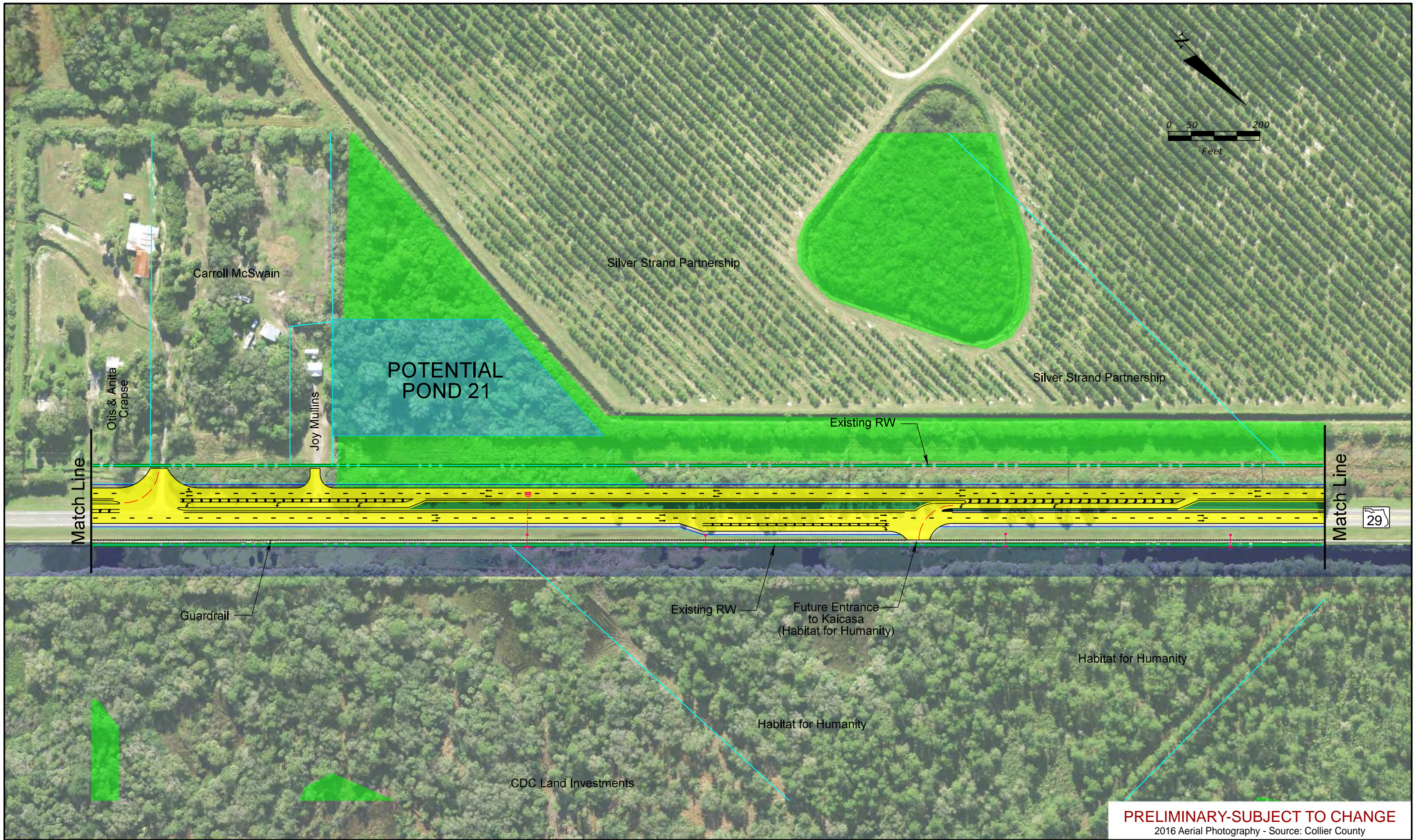
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

- | | | |
|---|--|--|
| <ul style="list-style-type: none"> — Existing Right-of-Way — Parcels — Proposed Right-of-Way — Water/Canal — Seminole Land | <ul style="list-style-type: none"> ■ Wetland ■ Potential Pond ■ Potential Flood Plain Compensation ■ Traffic Signal | <p>Legend</p> <ul style="list-style-type: none"> ■ Proposed Pavement ■ Proposed Median/Border ■ Proposed Sidewalks ■ Proposed Structure ● Proposed Guardrail ● Potential Business Relocation ▲ Potential Contamination (Low) ▲ Potential Contamination (Medium or High) |
|---|--|--|

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 Tampa, Florida 33607
 FBPR Certificate of Auth. #894

Central Alternative
#1 Revised

Sheet No.
15



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

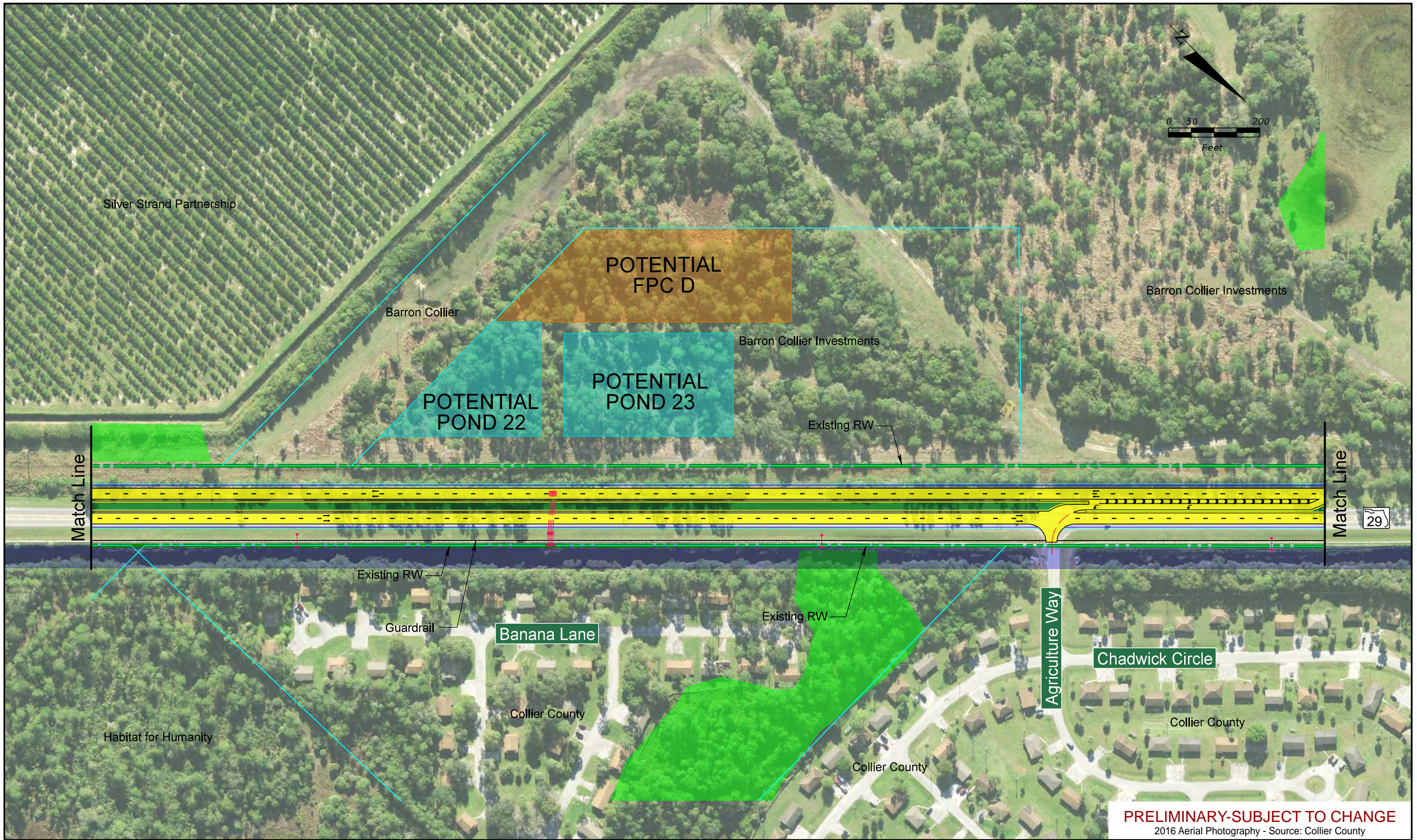
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Potential Business Relocation
	Wetland		Potential Contamination (Low)
	Potential Pond		Potential Contamination (Medium or High)
	Potential Flood Plain Compensation		Proposed Guardrail
	Traffic Signal		

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 FBPR Certificate of Auth. #894

Central Alternative
#1 Revised

Sheet No.
16



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

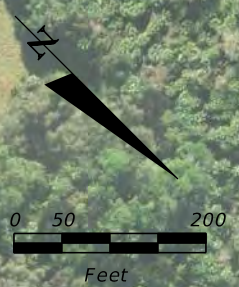
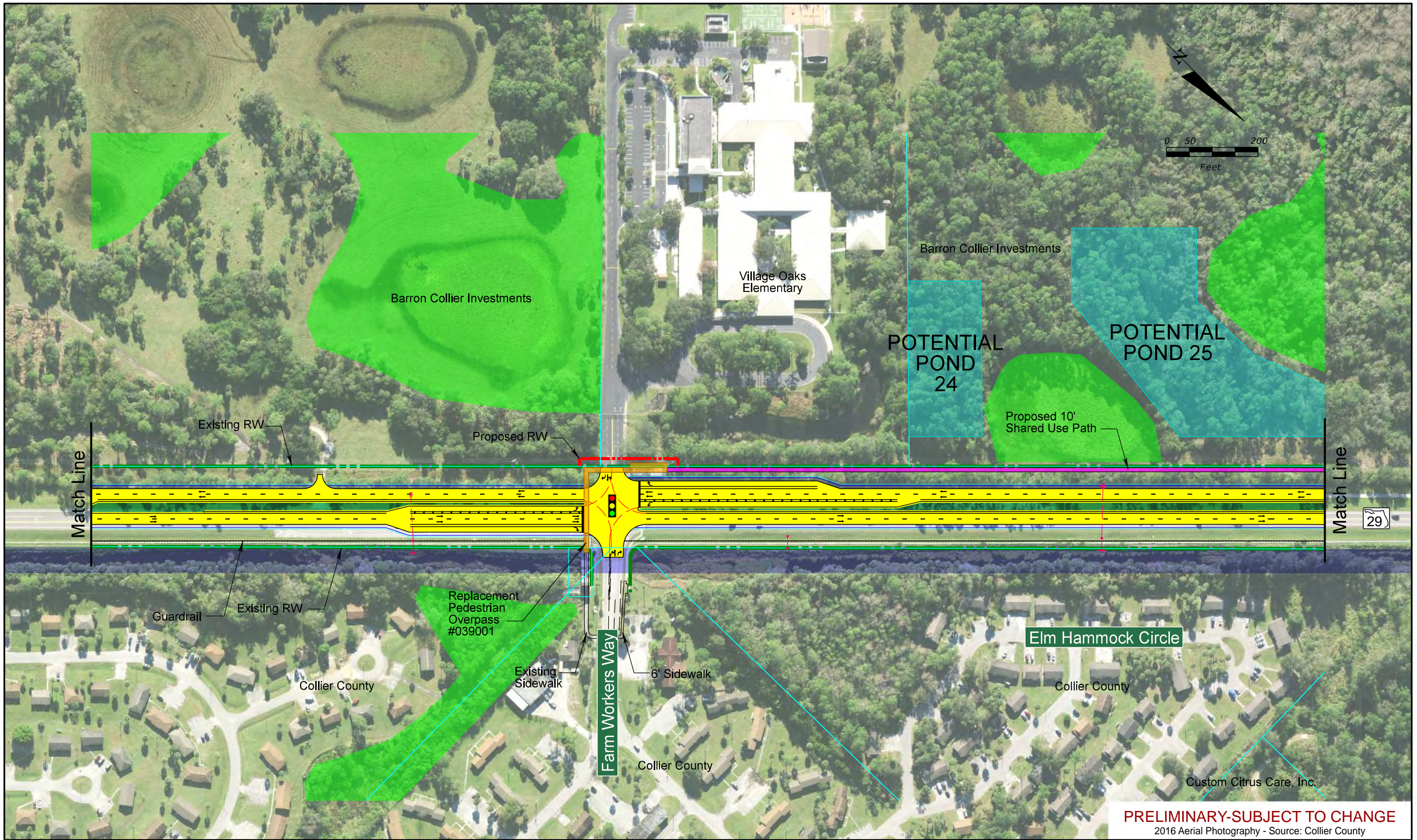
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Sidewalks
	Traffic Signal		Proposed Structure
	Proposed Guardrail		Potential Business Relocation
	Potential Contamination (Low)		Potential Contamination (Medium or High)

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Central Alternative
#1 Revised

Sheet No.
17



SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

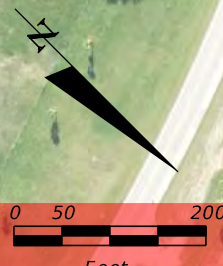
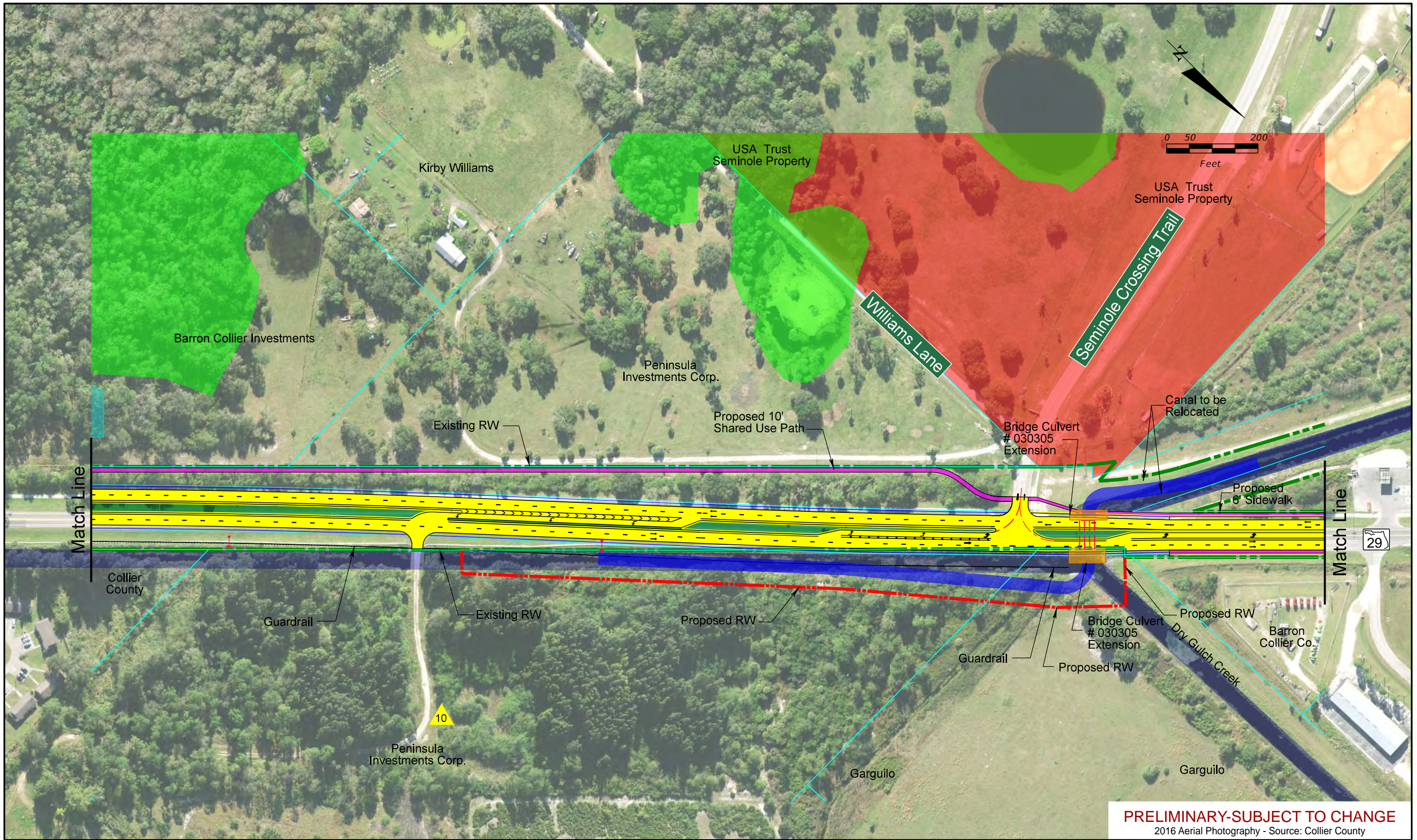
Legend			
Existing Right-of-Way	Wetland	Proposed Pavement	Proposed Guardrail
Parcels	Potential Pond	Proposed Median/Border	Potential Business Relocation
Proposed Right-of-Way	Potential Flood Plain Compensation	Proposed Sidewalks	Potential Contamination (Low)
Water/Canal	Traffic Signal	Proposed Structure	Potential Contamination (Medium or High)
Seminole Land			

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 FBPR Certificate of Auth. #894

PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

Central Alternative #1 Revised

Sheet No.
18



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

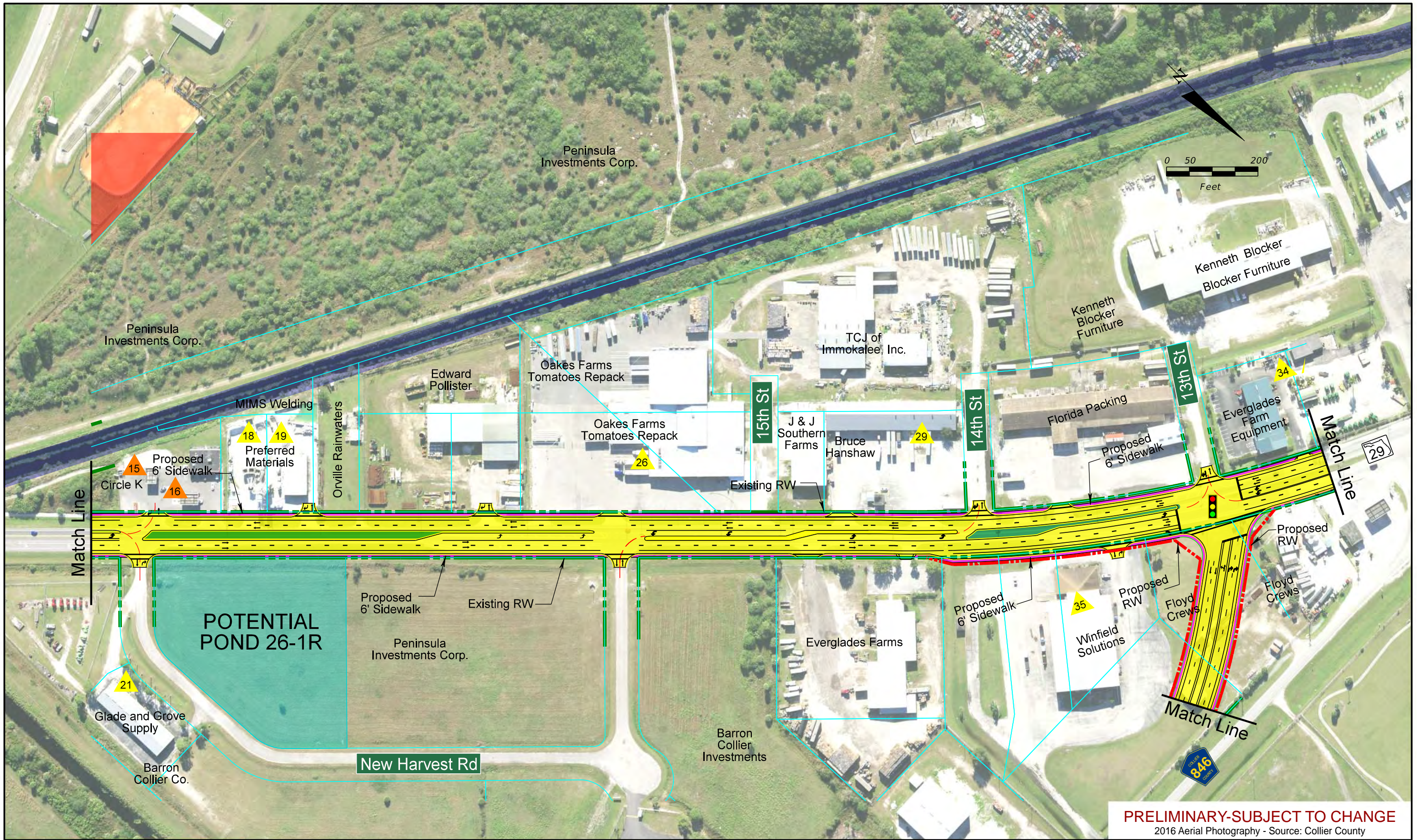
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Median/Border
	Traffic Signal		Proposed Sidewalks
			Proposed Structure
			Potential Business Relocation
			Potential Contamination (Low)
			Potential Contamination (Medium or High)

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Central Alternative
#1 Revised

Sheet No.
19



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

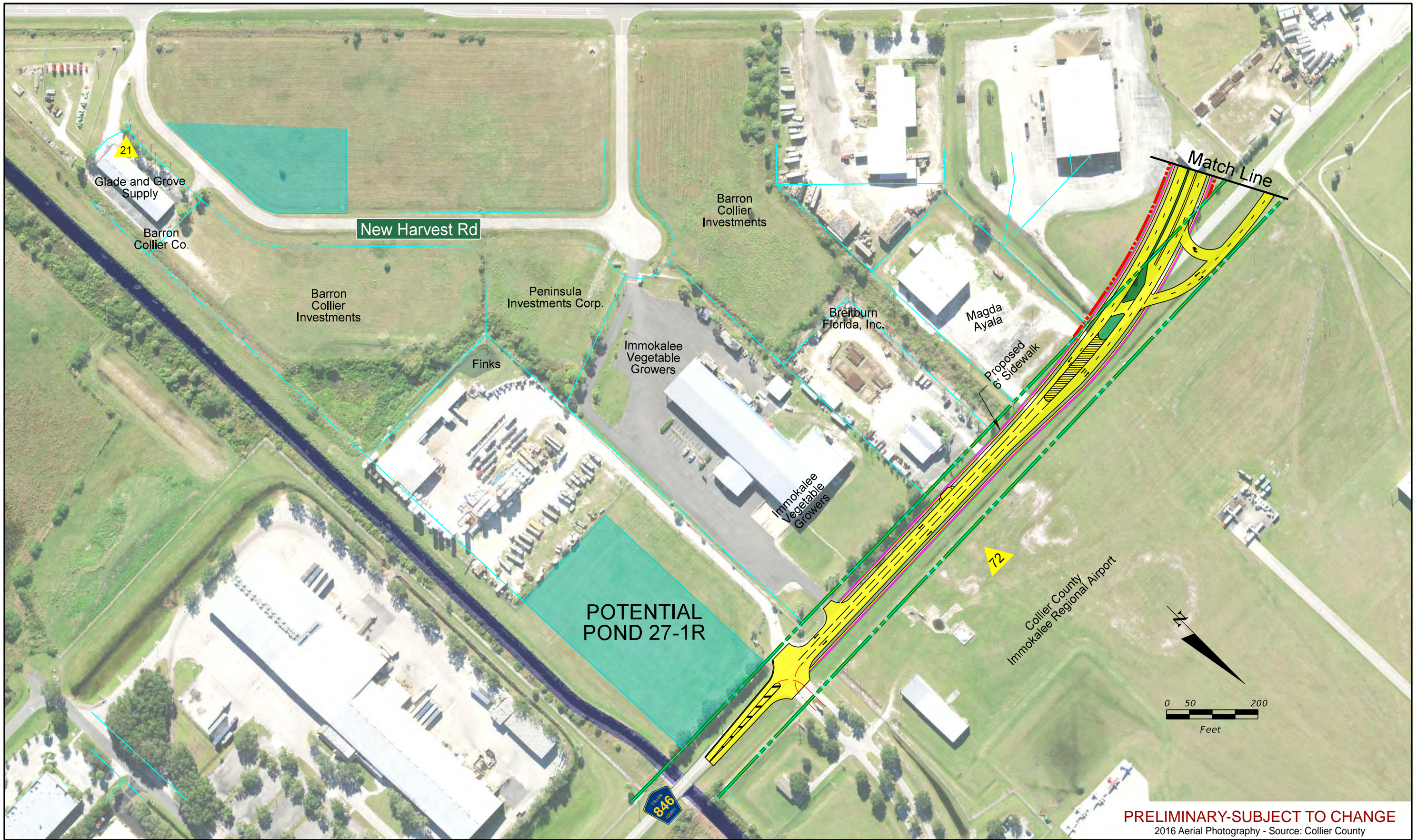
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Potential Business Relocation
	Wetland		Potential Contamination (Low)
	Potential Pond		Potential Contamination (Medium or High)
	Potential Flood Plain Compensation		Proposed Guardrail
	Traffic Signal		

H. W. Lochner, Inc.
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Central Alternative
#1 Revised

Sheet No.
20



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

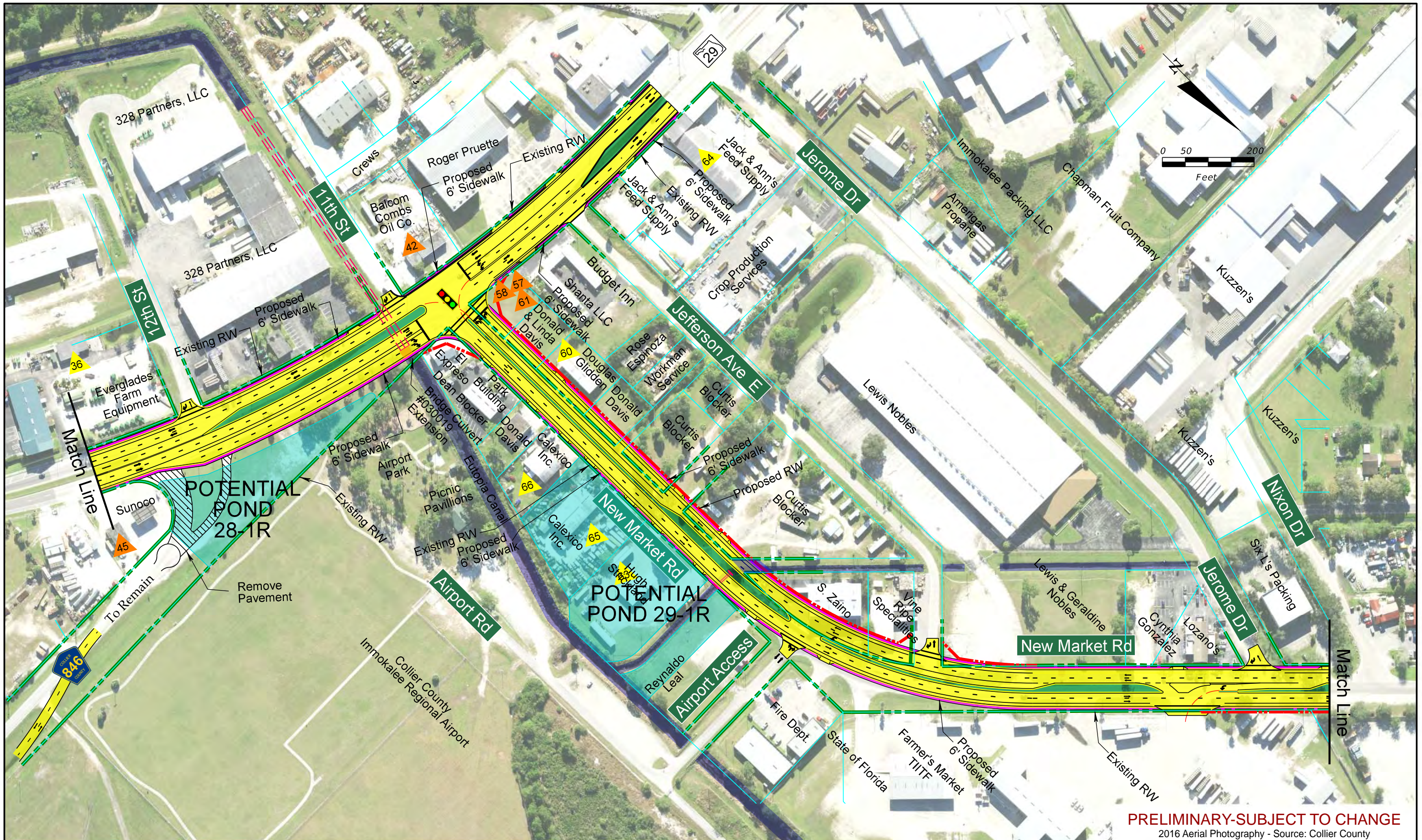
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Median/Border
	Potential Contamination (Low)		Proposed Sidewalks
	Potential Contamination (Medium or High)		Proposed Structure
	Proposed Guardrail		Potential Business Relocation
			Potential Contamination (Low)
			Potential Contamination (Medium or High)
	Traffic Signal		

H. W. Lochner, Inc.
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Central Alternative
#1 Revised

Sheet No.
21



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

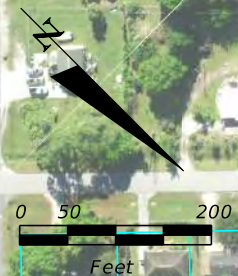
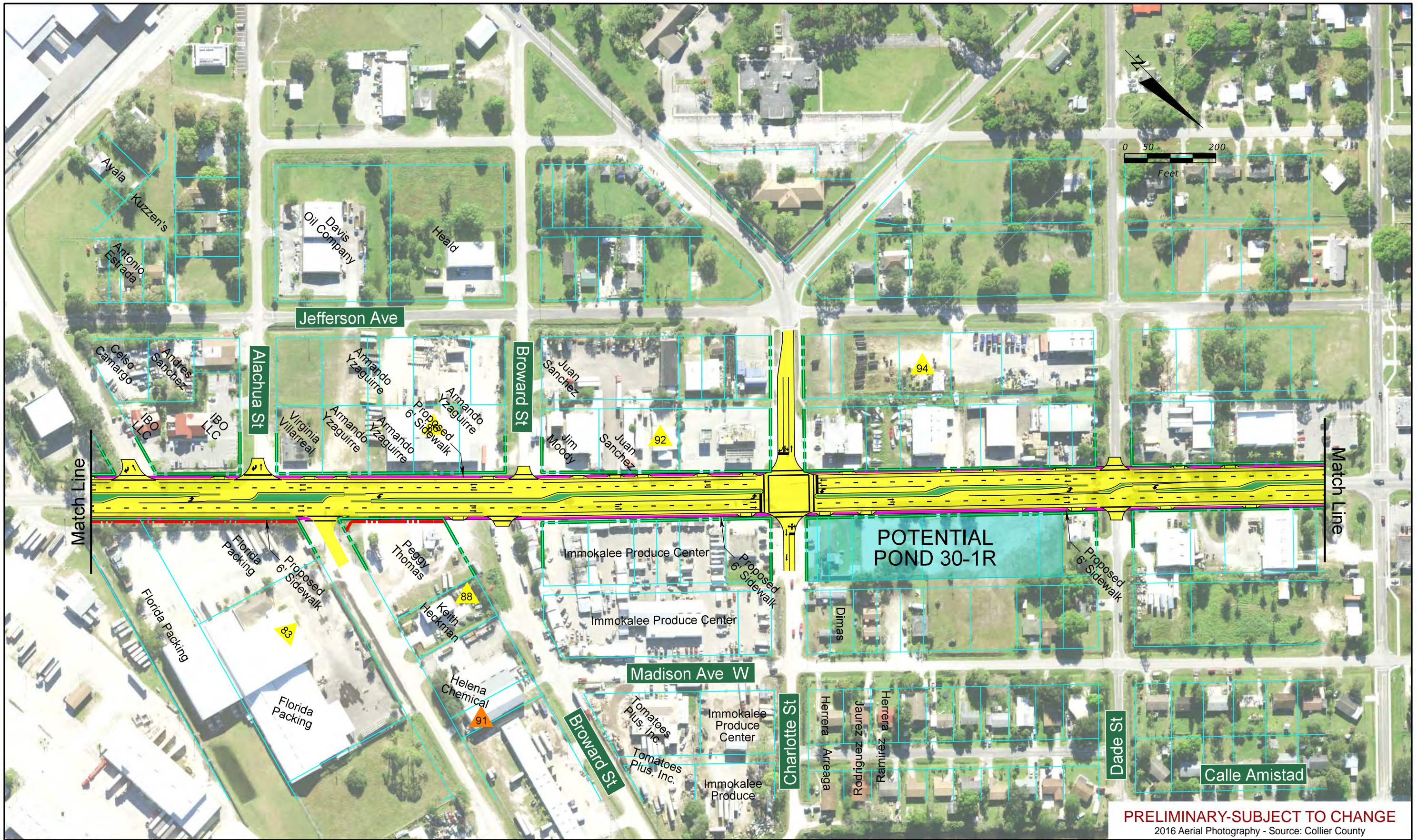
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend	
Existing Right-of-Way	Wetland
Parcels	Potential Pond
Proposed Right-of-Way	Potential Flood Plain Compensation
Water/Canal	Traffic Signal
Seminole Land	Proposed Pavement
	Proposed Median/Border
	Proposed Sidewalks
	Proposed Structure
	Potential Business Relocation
	Potential Contamination (Low)
	Potential Contamination (Medium or High)

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 FBPR Certificate of Auth. #894

Central Alternative
#1 Revised

Sheet No.
22



SR 29 PD&E Study
From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend

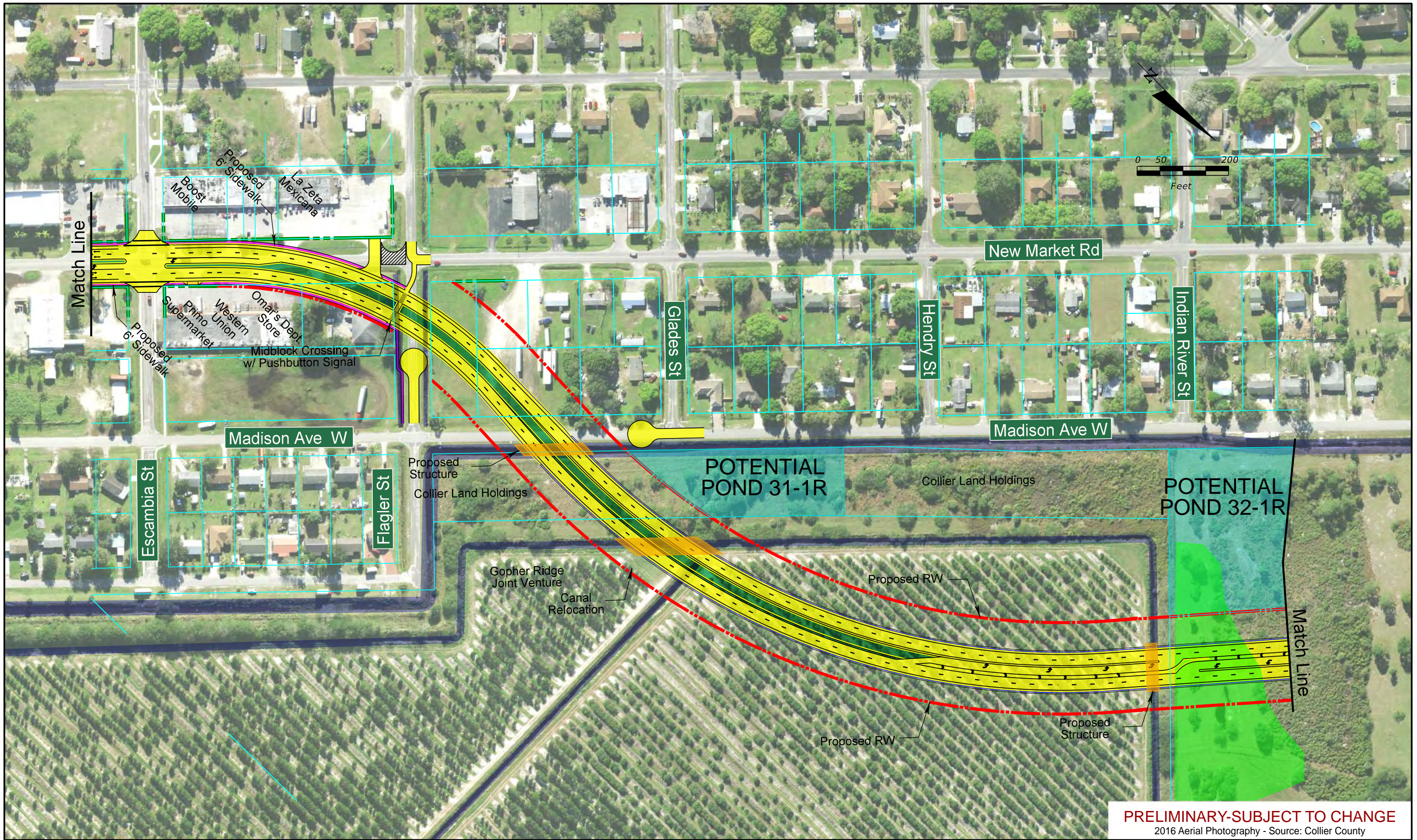
Existing Right-of-Way	Wetland	Proposed Pavement	Proposed Guardrail
Parcels	Potential Pond	Proposed Median/Border	Potential Business Relocation
Proposed Right-of-Way	Potential Flood Plain Compensation	Proposed Sidewalks	Potential Contamination (Low)
Water/Canal	Traffic Signal	Proposed Structure	Potential Contamination (Medium or High)
Seminole Land			

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 FBPR Certificate of Auth. #894

PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

Central Alternative
#1 Revised

Sheet No.
23



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

- Legend**
- Existing Right-of-Way
 Parcels
—— Proposed Right-of-Way
 Water/Canal
 Seminole Land
 - Wetland
 Potential Pond
 Potential Flood Plain Compensation
 Traffic Signal
 - Proposed Pavement
 Proposed Median/Border
 Proposed Sidewalks
 Proposed Structure
 - Proposed Guardrail
● Potential Business Relocation
▲ Potential Contamination (Low)
▲ Potential Contamination (Medium or High)

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 FBPR Certificate of Auth. #894

Central Alternative
#1 Revised

Sheet No.
24



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

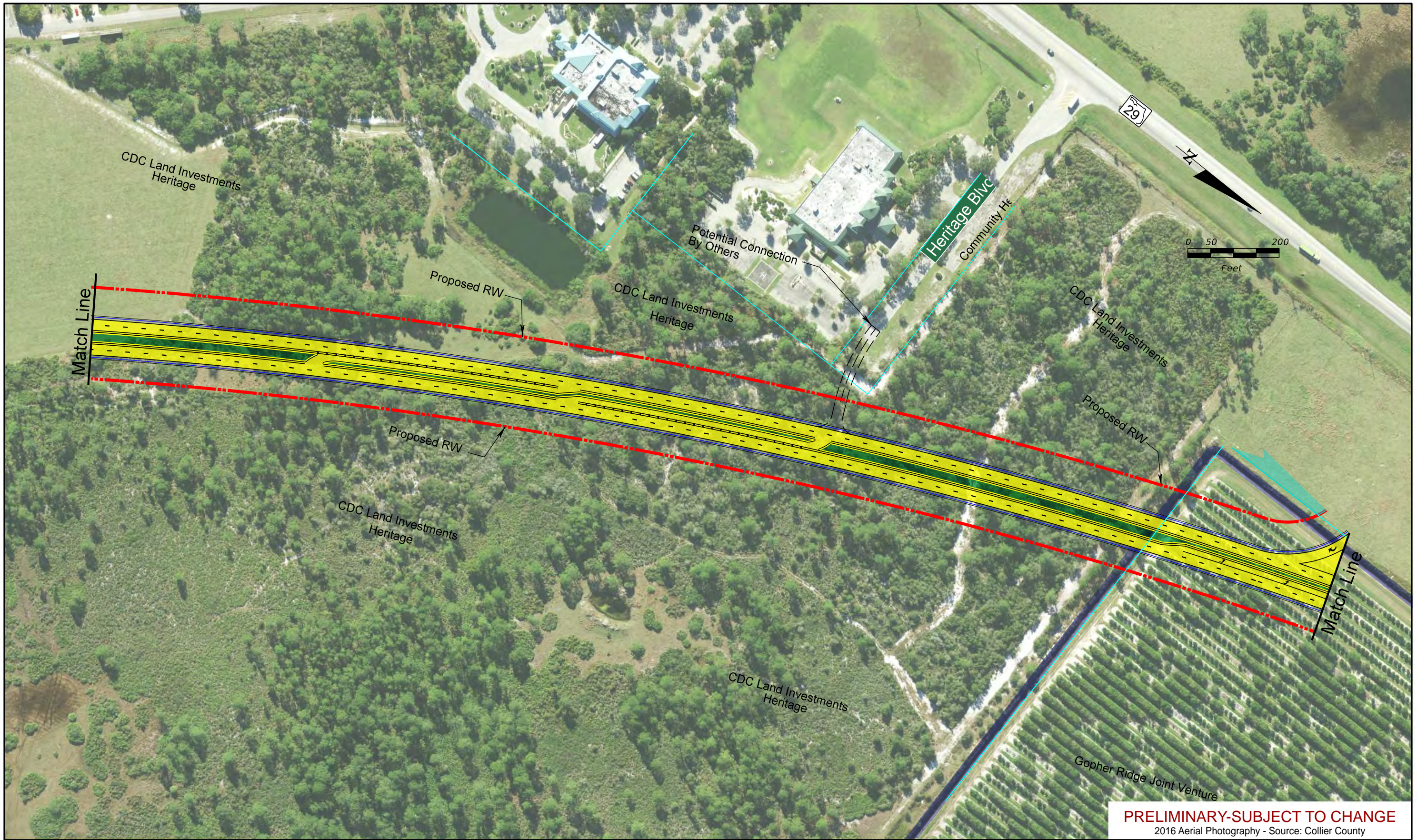
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

H. W. Lochner, Inc.
 4350 W. Cypress St., Suite 800
 Tampa, Florida 33607
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Central Alternative
#1 Revised

Sheet No.
25



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

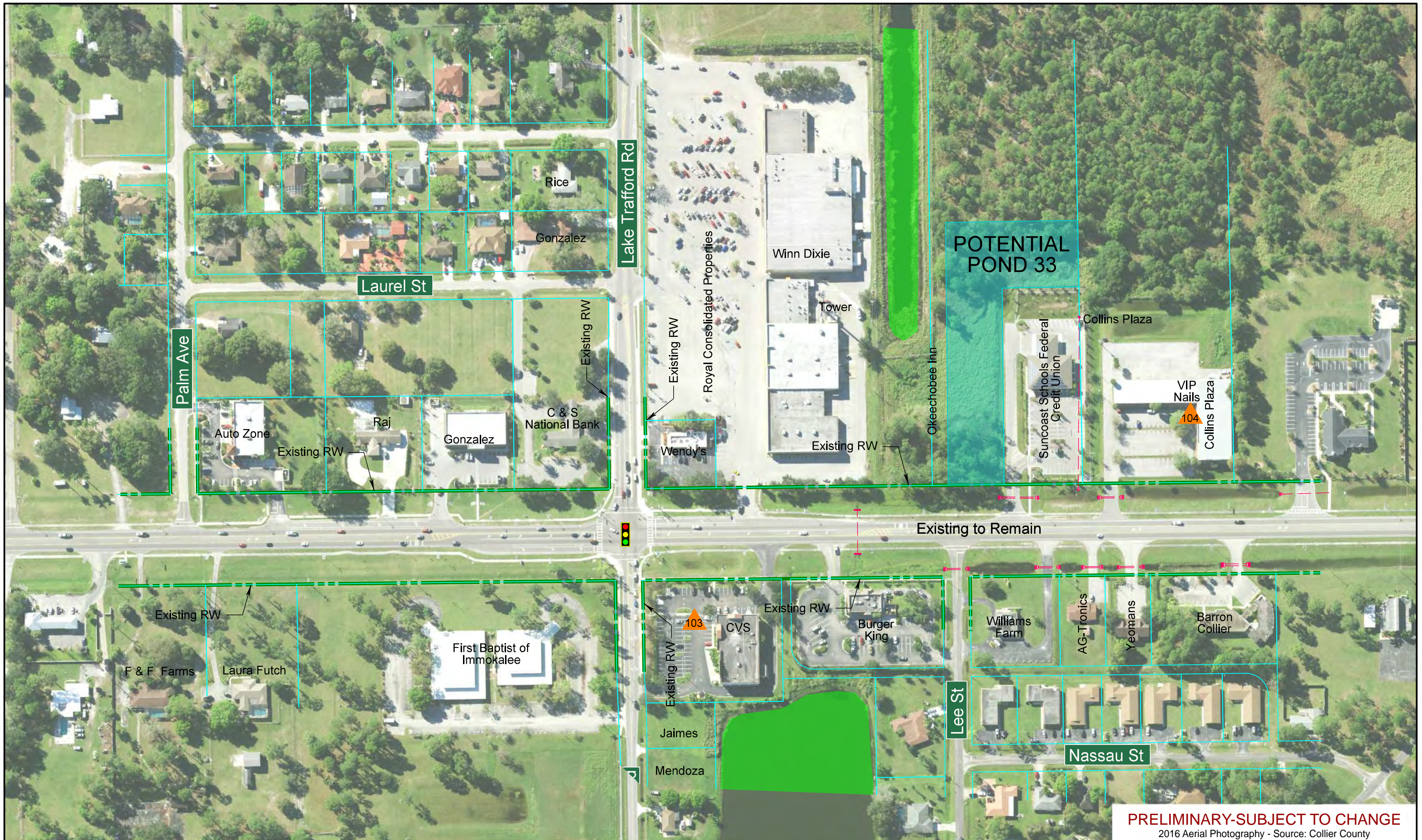
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

H. W. Lochner, Inc.
 4350 W. Cypress St., Suite 800
 Tampa, Florida 33607
 FBPR Certificate of Auth. #894

Central Alternative
#1 Revised

Sheet No.
26



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

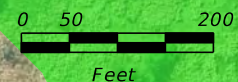
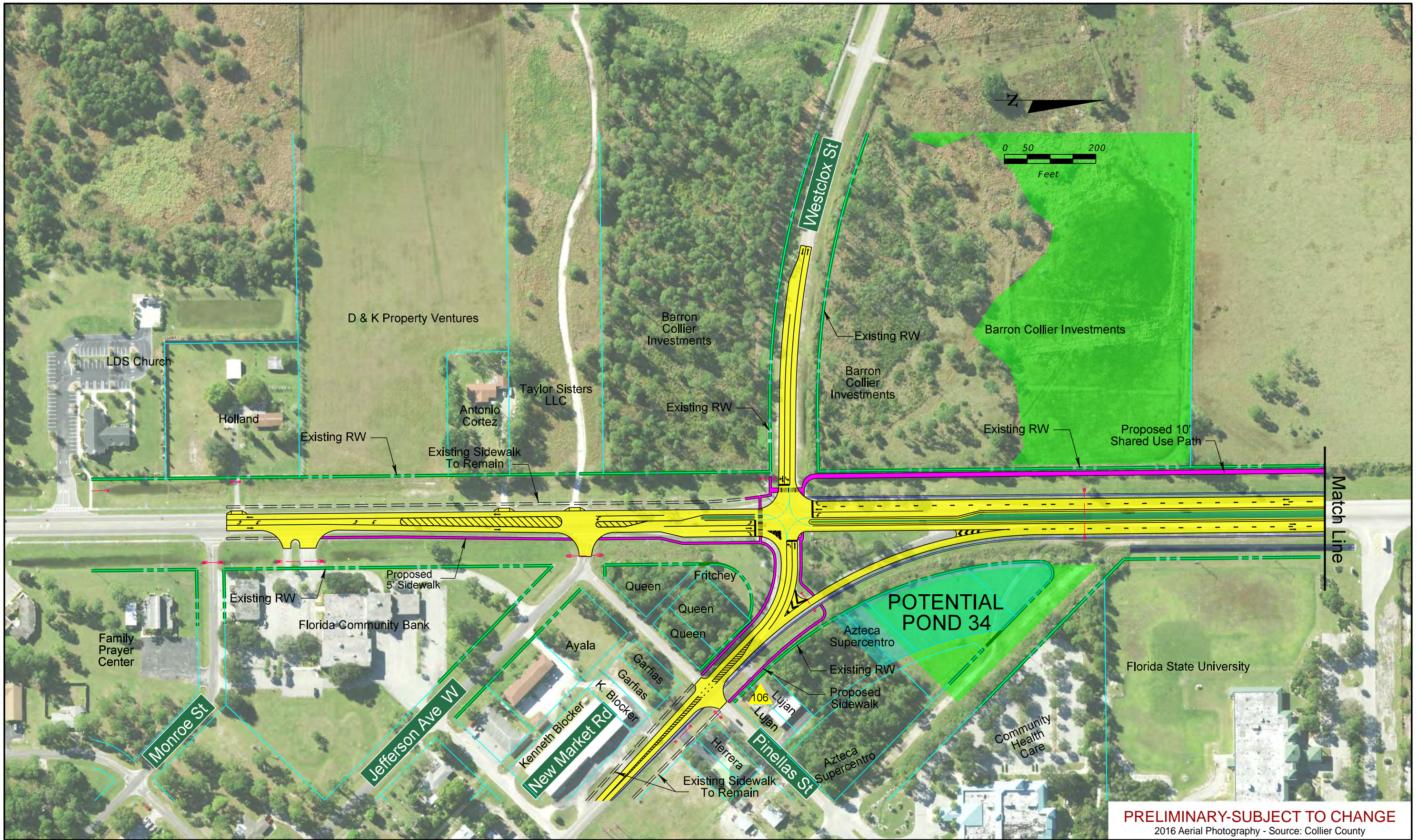
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Sidewalks
	Seminole Land		Proposed Structure
	Traffic Signal		Proposed Guardrail
	Proposed Pavement		Potential Business Relocation
	Proposed Median/Border		Potential Contamination (Low)
	Proposed Structure		Potential Contamination (Medium or High)

H. W. Lochner, Inc.
 4350 W. Cypress St., Suite 800
 Tampa, Florida 33607
 FBPR Certificate of Auth. #894

Central Alternative
#1 Revised

Sheet No.
27



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

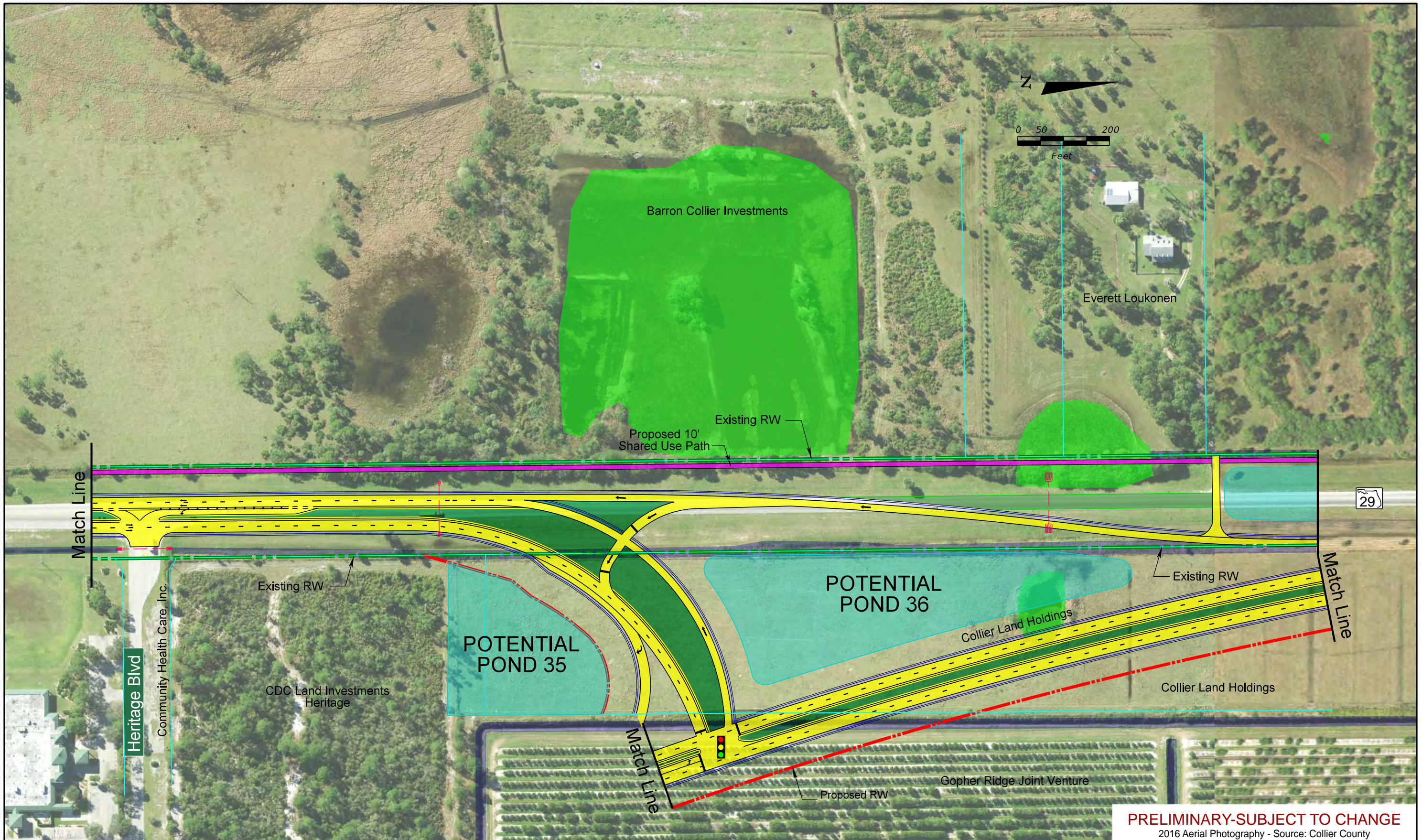
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417546 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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 4350 W. Cypress St., Suite 800
 Tampa, Florida 33607
 FBPR Certificate of Auth. #894

Central Alternative
#1 Revised

Sheet No.
28



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

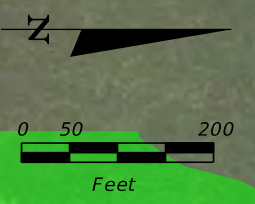
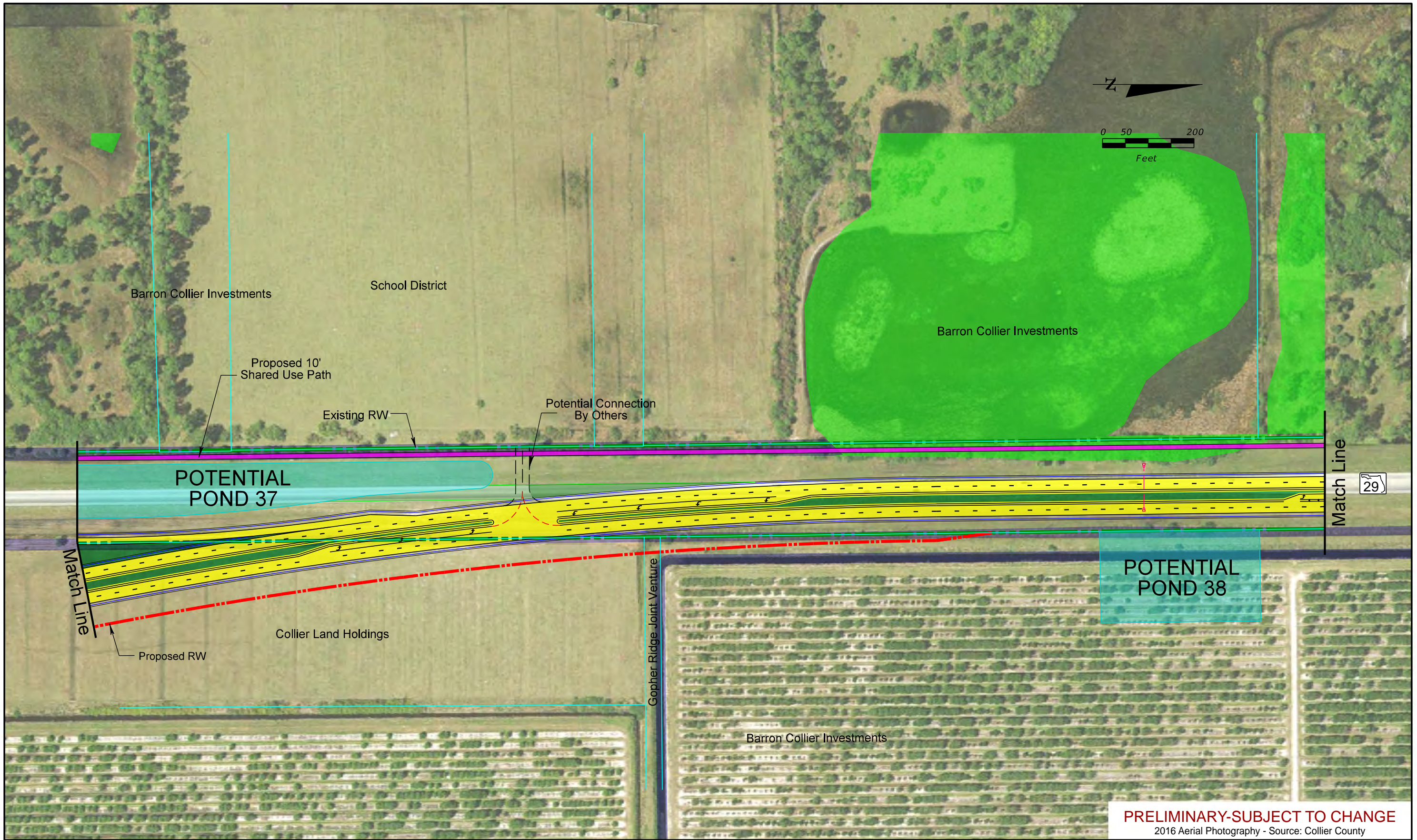
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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Central Alternative
#1 Revised

Sheet No.
29



SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

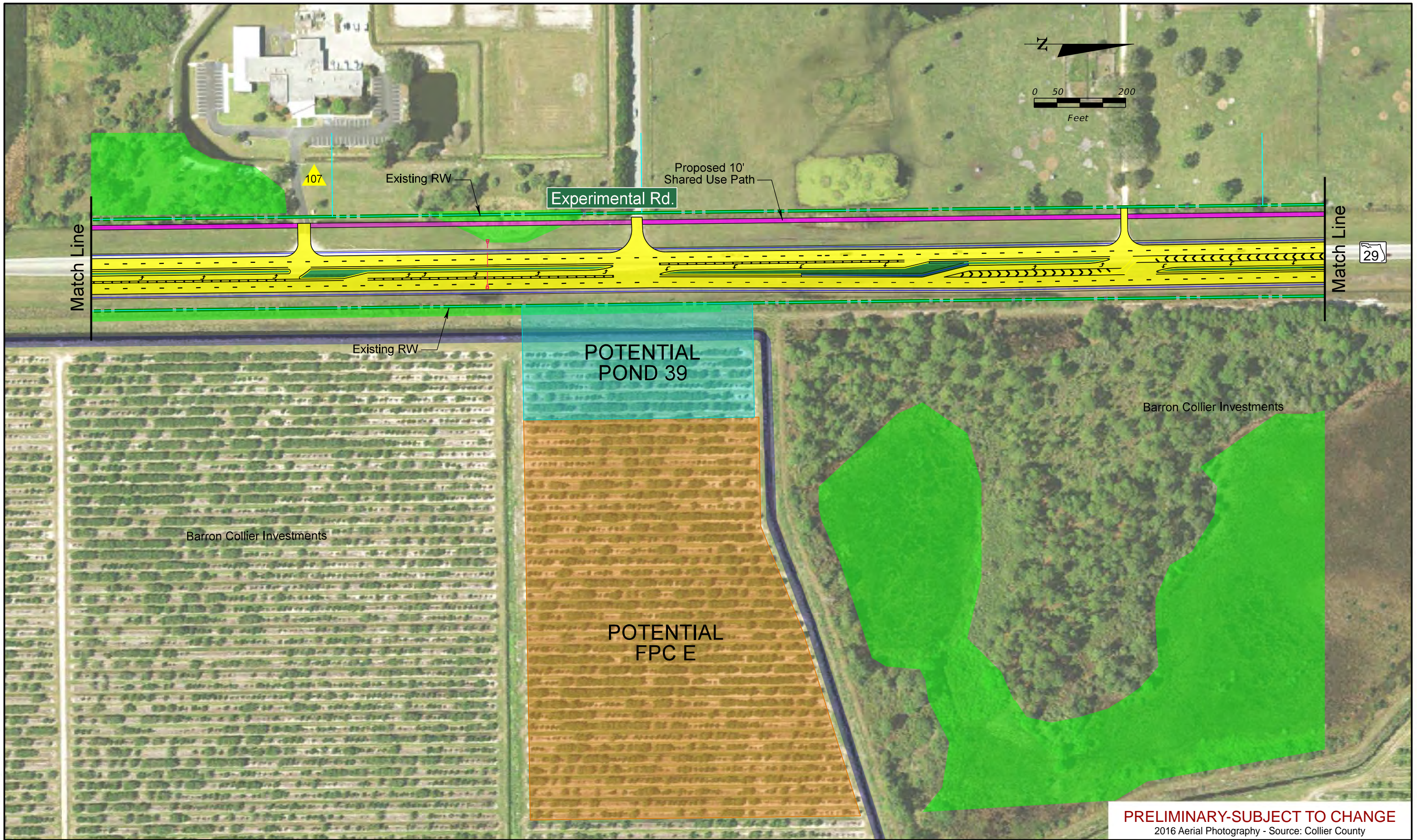
Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Median/Border
	Traffic Signal		Proposed Sidewalks
			Proposed Structure
			Proposed Guardrail
			Potential Business Relocation
			Potential Contamination (Low)
			Potential Contamination (Medium or High)

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PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

Central Alternative
 #1 Revised

Sheet No.
30



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

- | | | | |
|-----------------------|------------------------------------|------------------------|--|
| Existing Right-of-Way | Wetland | Proposed Pavement | Proposed Guardrail |
| Parcels | Potential Pond | Proposed Median/Border | Potential Business Relocation |
| Proposed Right-of-Way | Potential Flood Plain Compensation | Proposed Sidewalks | Potential Contamination (Low) |
| Water/Canal | Traffic Signal | Proposed Structure | Potential Contamination (Medium or High) |
| Seminole Land | | | |

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Central Alternative
#1 Revised

Sheet No.
31



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

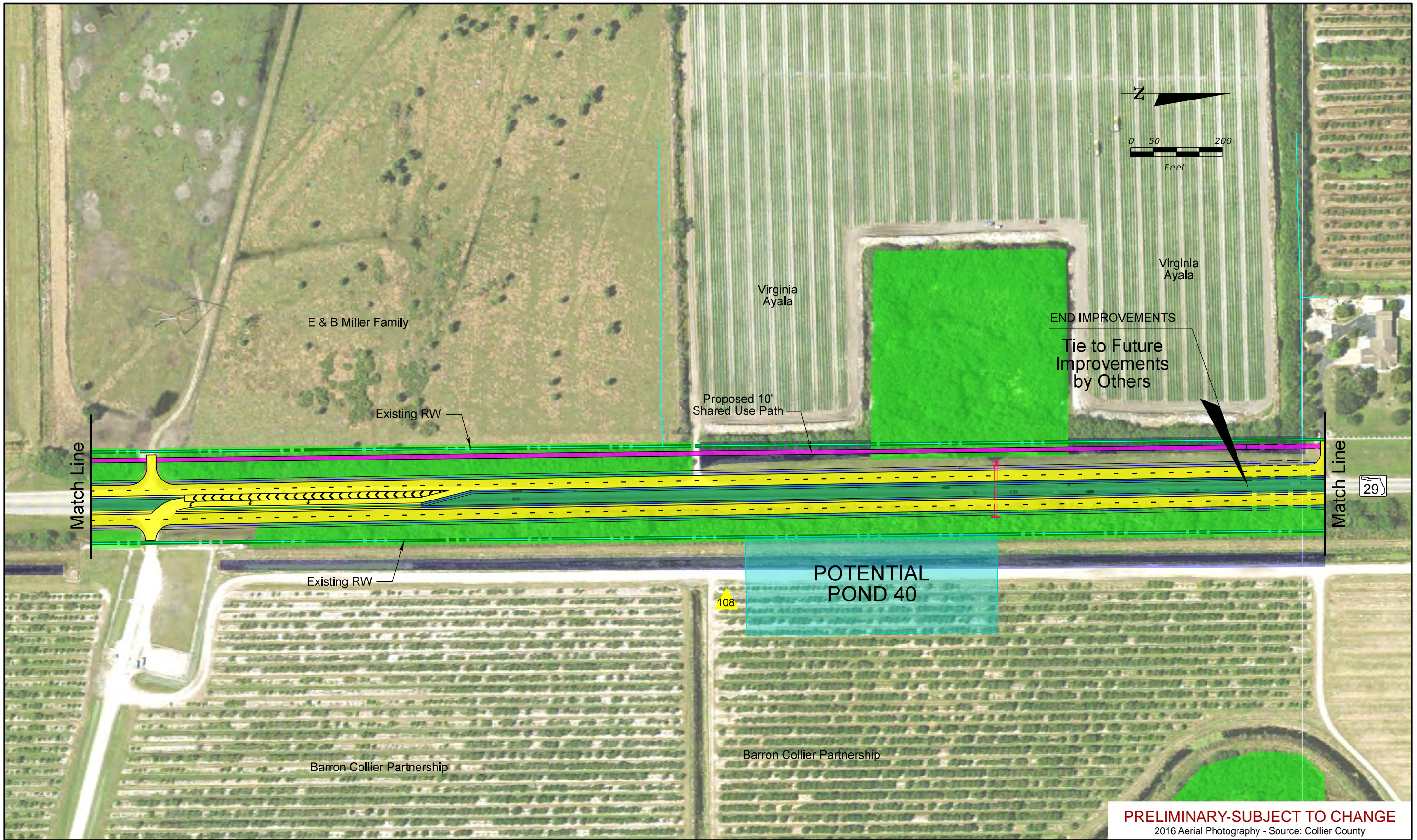
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Median/Border
	Proposed Pavement		Proposed Sidewalks
	Proposed Median/Border		Proposed Structure
	Proposed Guardrail		Potential Business Relocation
	Potential Contamination (Low)		Potential Contamination (Medium or High)
	Traffic Signal		

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Central Alternative
#1 Revised

Sheet No.
32



SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

Central Alternative #1 Revised

Sheet No.
33



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

- | | | | |
|-----------------------|------------------------------------|------------------------|--|
| Existing Right-of-Way | Wetland | Proposed Pavement | Proposed Guardrail |
| Parcels | Potential Pond | Proposed Median/Border | Potential Business Relocation |
| Proposed Right-of-Way | Potential Flood Plain Compensation | Proposed Sidewalks | Potential Contamination (Low) |
| Water/Canal | Traffic Signal | Proposed Structure | Potential Contamination (Medium or High) |
| Seminole Land | | | |

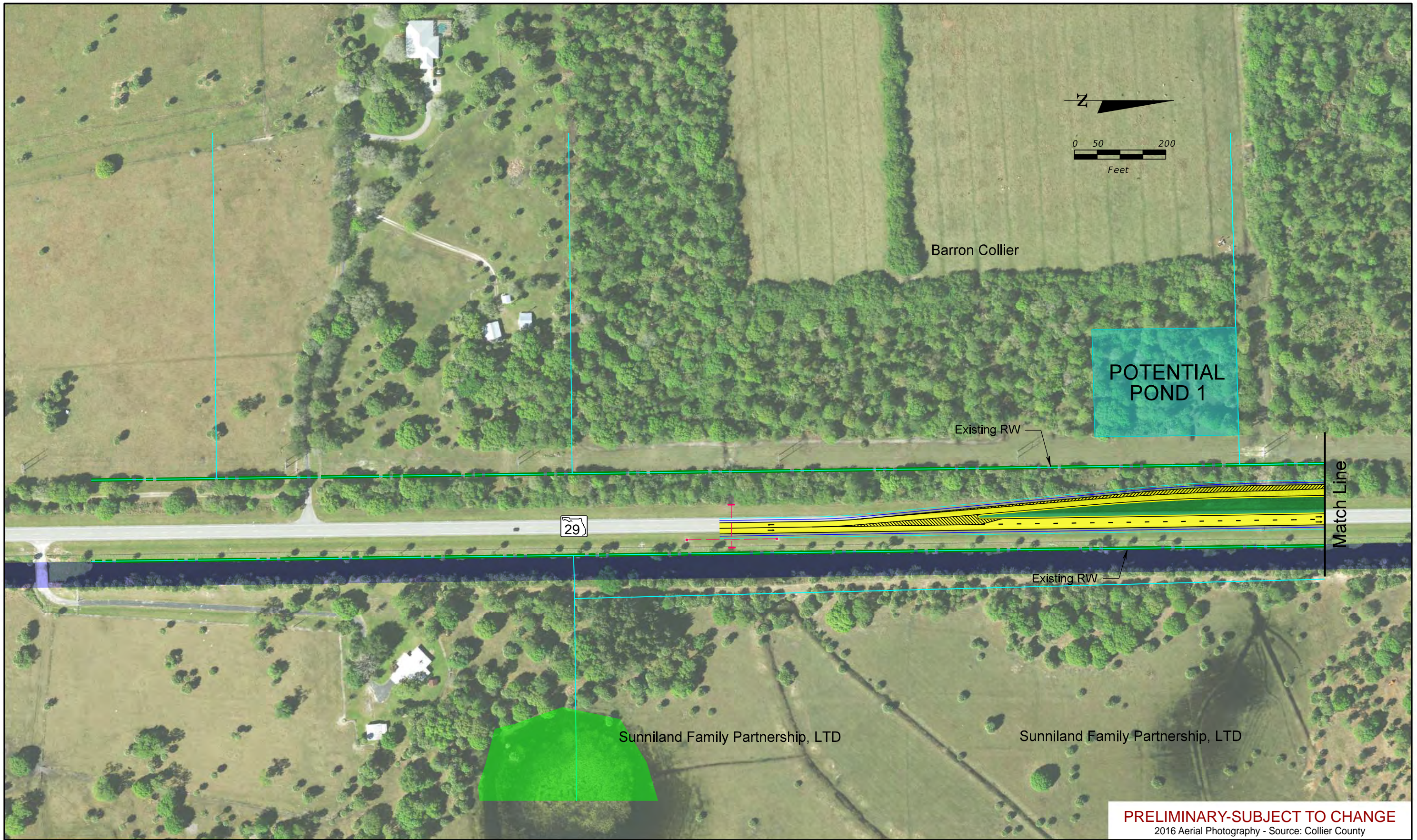
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Central Alternative
#1 Revised

Sheet No.
34

APPENDIX B-2

Conceptual Plans for Central Alternative #2



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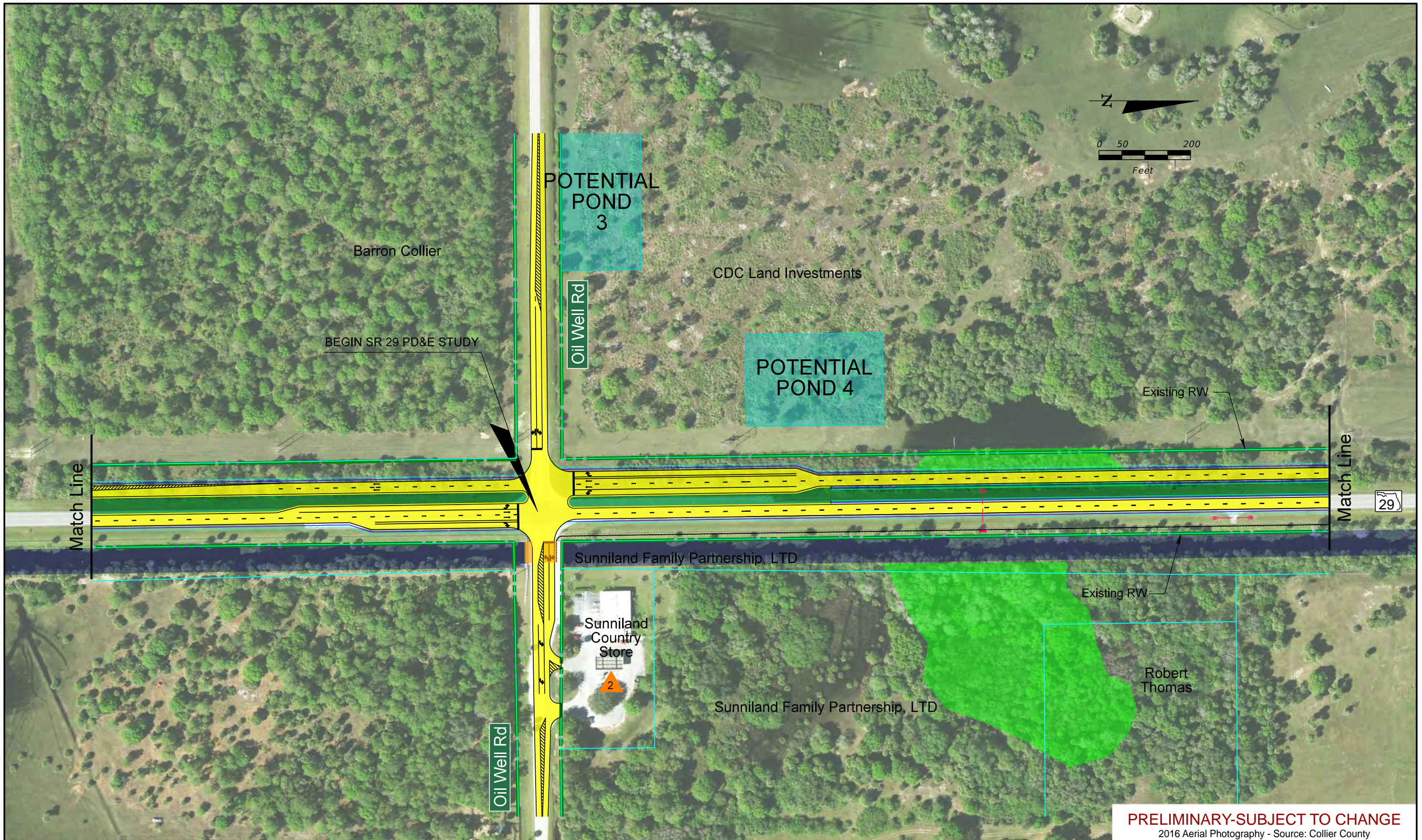
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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Central Alternative #2

Sheet No.
1



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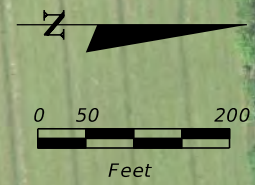
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Sidewalks
			Proposed Structure
			Potential Business Relocation
			Potential Contamination (Low)
			Potential Contamination (Medium or High)
			Proposed Guardrail
			Traffic Signal

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Central Alternative #2

Sheet No.
2



SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Median/Border
	Guardrail		Proposed Sidewalks
	Existing RW		Proposed Structure
	Potential Business Relocation		Potential Contamination (Low)
	Potential Contamination (Medium or High)		Traffic Signal

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PRELIMINARY-SUBJECT TO CHANGE
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Central Alternative #2

Sheet No.
3



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

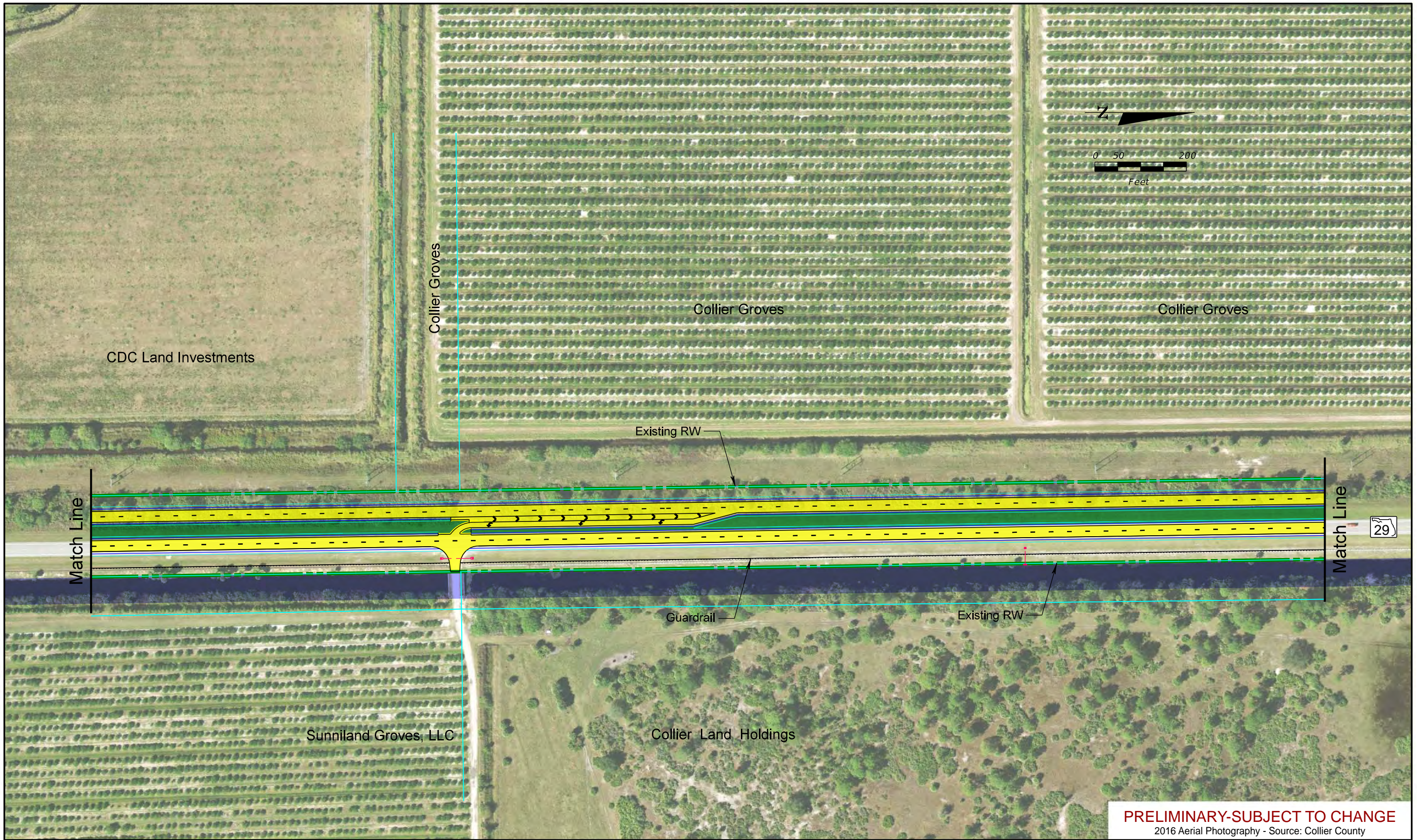
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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Central Alternative #2

Sheet No.
4



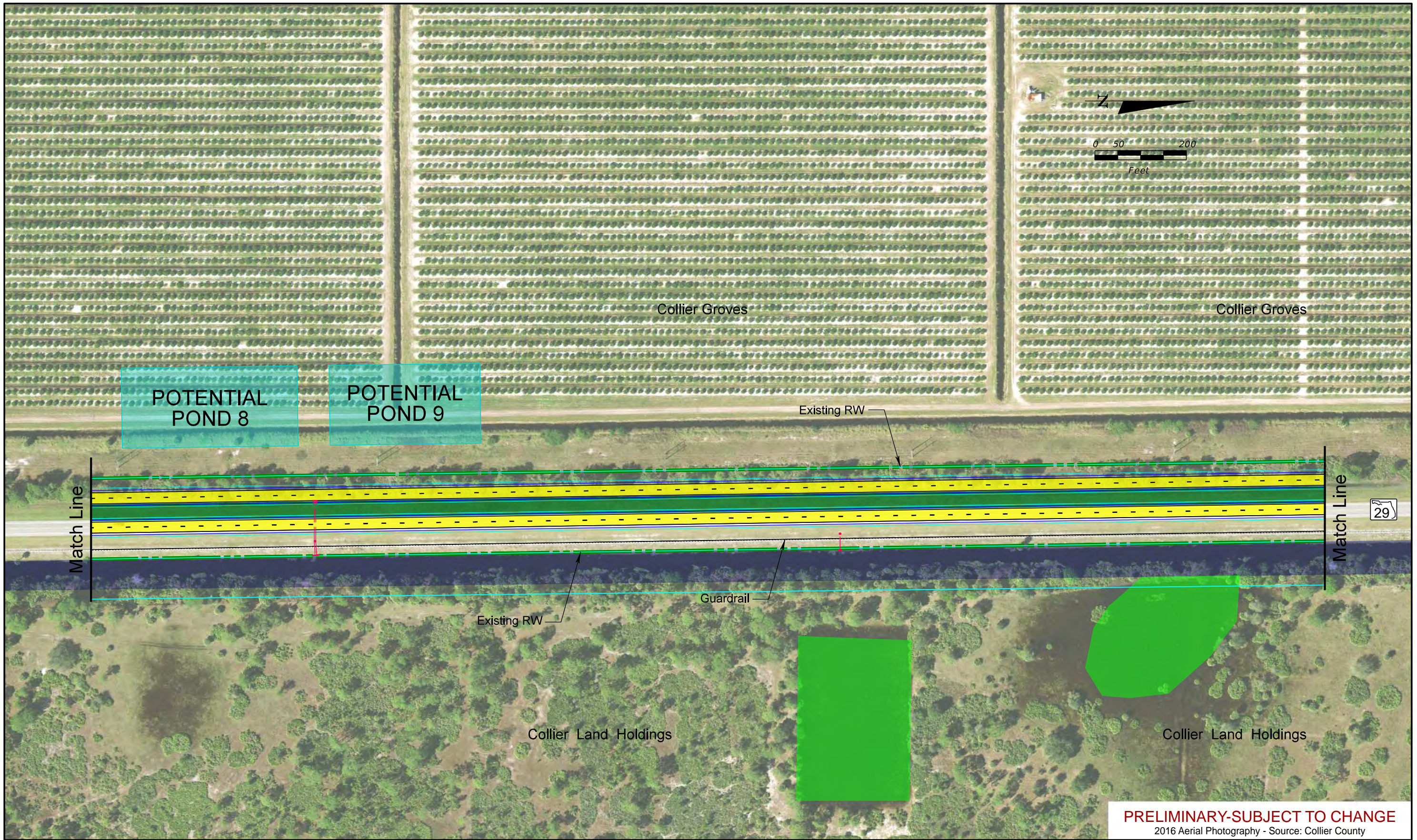
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County
Central Alternative #2

Sheet No.
5



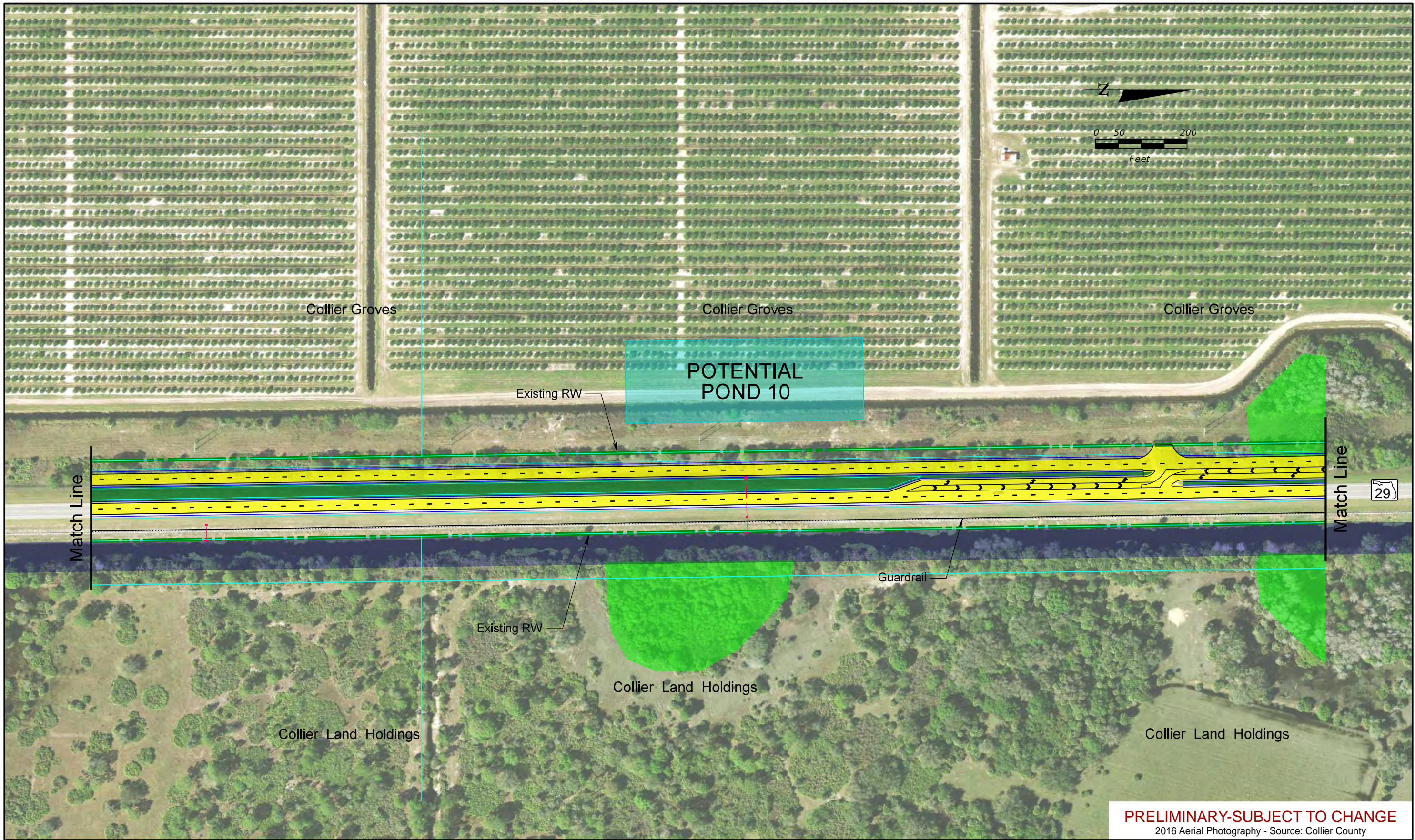
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Median/Border
	Proposed Pavement		Proposed Sidewalks
	Proposed Median/Border		Proposed Structure
	Proposed Sidewalks		Proposed Guardrail
	Proposed Structure		Potential Business Relocation
	Proposed Guardrail		Potential Contamination (Low)
	Potential Business Relocation		Potential Contamination (Medium or High)
	Potential Contamination (Low)		
	Potential Contamination (Medium or High)		

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PRELIMINARY-SUBJECT TO CHANGE
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Central Alternative #2

Sheet No.
6



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

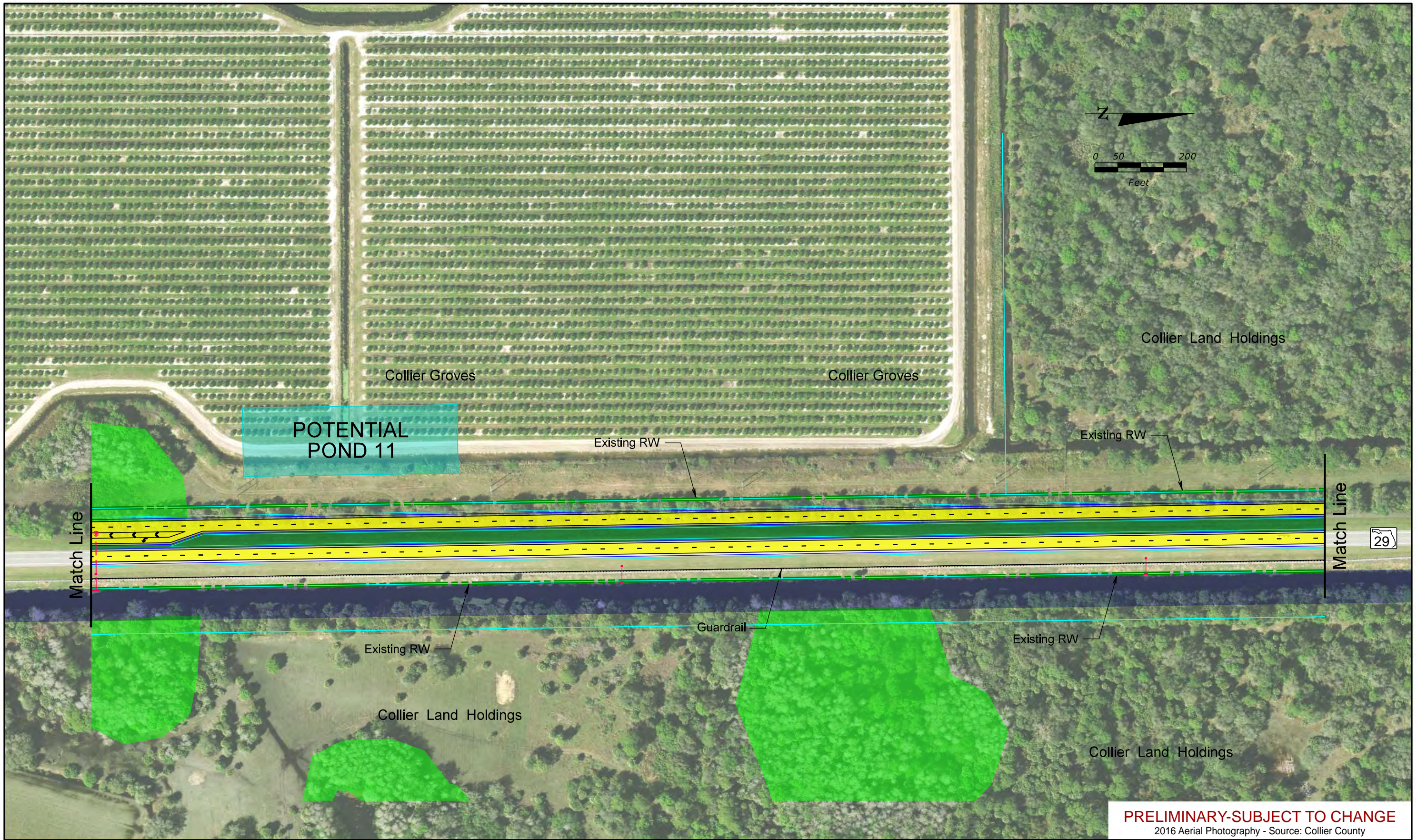
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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Central Alternative #2

Sheet No.
7



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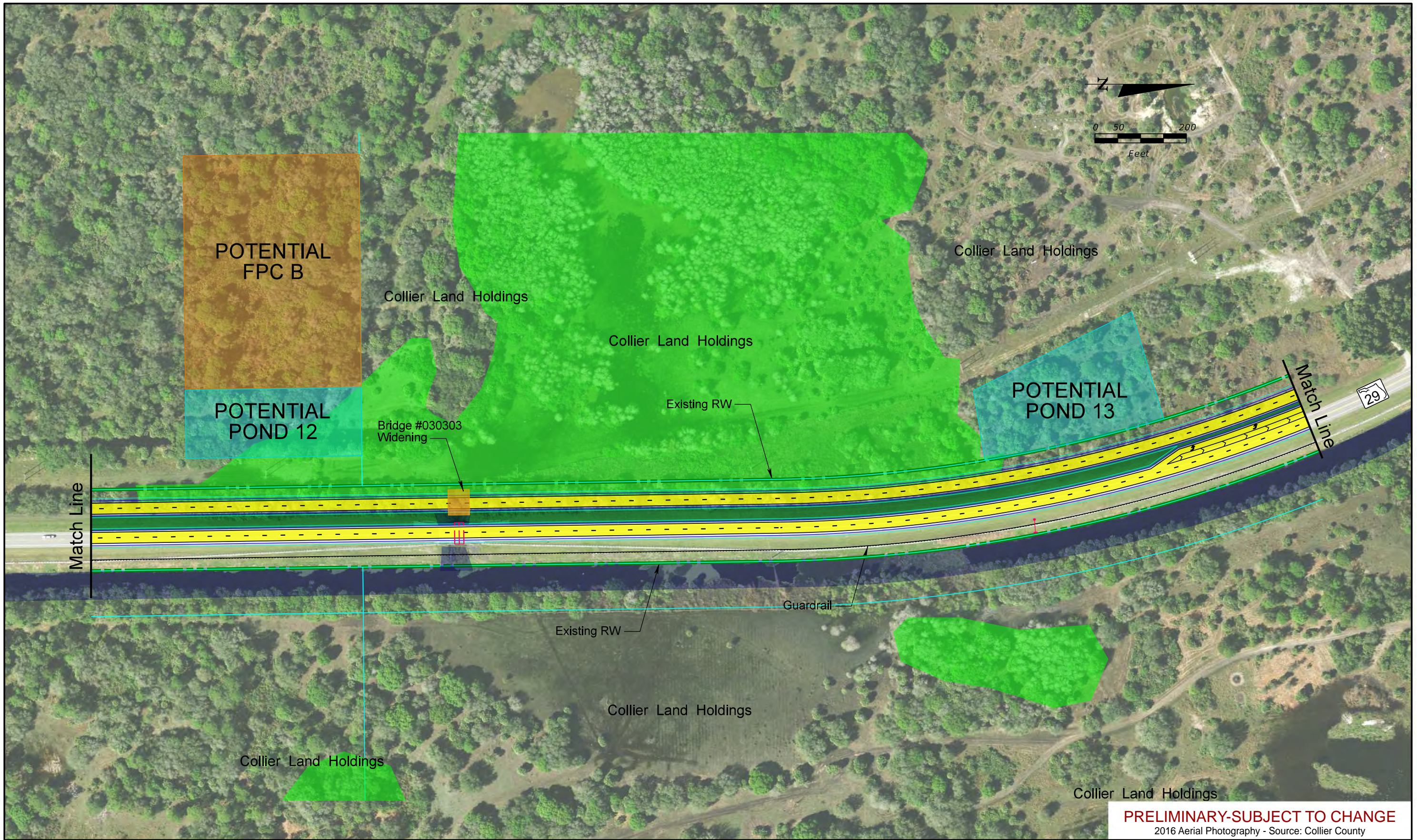
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Sidewalks
	Traffic Signal		Proposed Structure
	Proposed Guardrail		Potential Business Relocation
	Potential Contamination (Low)		Potential Contamination (Medium or High)

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Central Alternative #2

Sheet No.
8



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

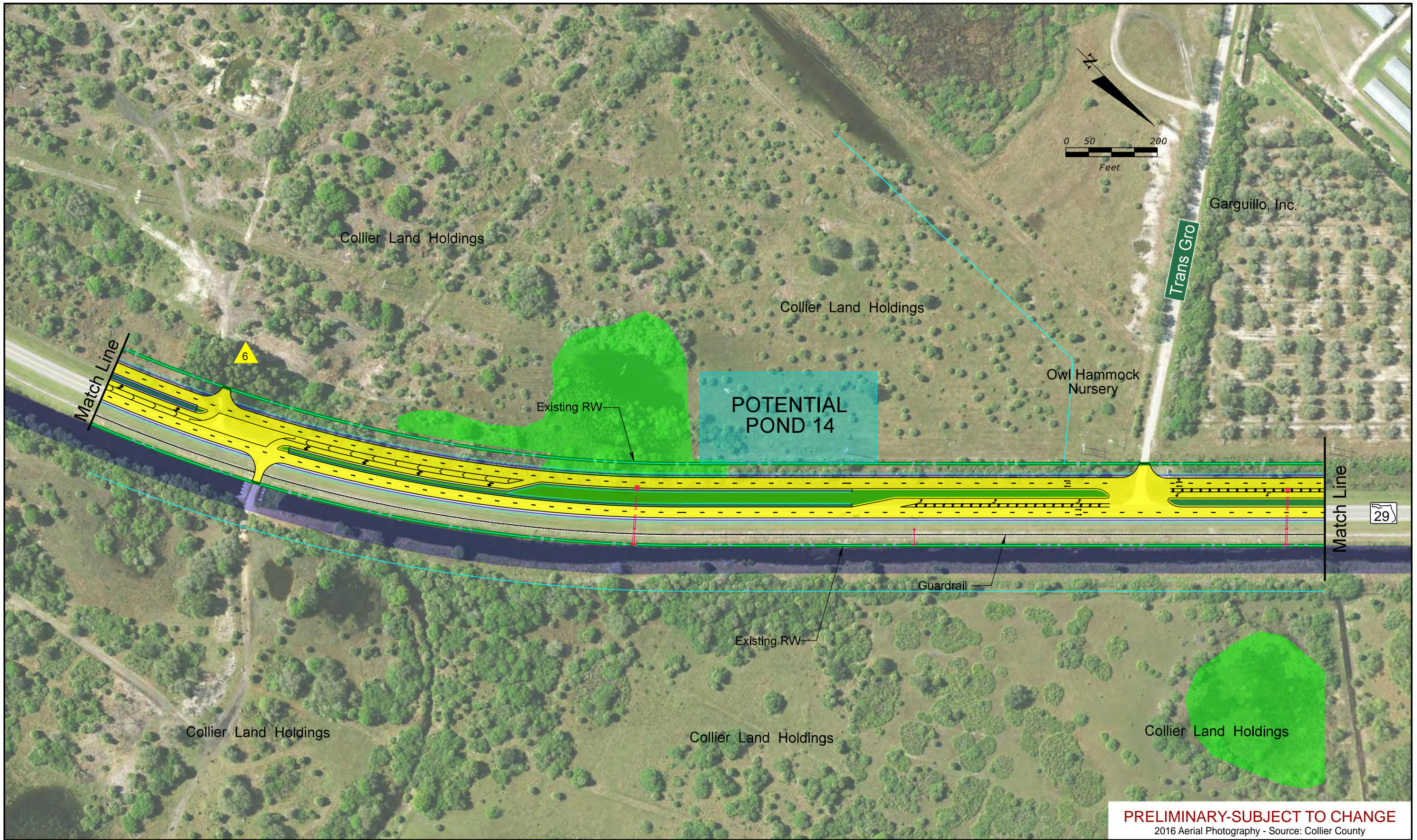
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
Existing Right-of-Way	Wetland	Proposed Pavement	Proposed Guardrail
Parcels	Potential Pond	Proposed Median/Border	Potential Business Relocation
Proposed Right-of-Way	Potential Flood Plain Compensation	Proposed Sidewalks	Potential Contamination (Low)
Water/Canal	Traffic Signal	Proposed Structure	Potential Contamination (Medium or High)
Seminole Land			

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Central Alternative #2

Sheet No.
9



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 2016 Aerial Photography - Source: Collier County

SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
Existing Right-of-Way	Wetland	Proposed Pavement	Proposed Guardrail
Parcels	Potential Pond	Proposed Median/Border	Potential Business Relocation
Proposed Right-of-Way	Potential Flood Plain Compensation	Proposed Sidewalks	Potential Contamination (Low)
Water/Canal	Traffic Signal	Proposed Structure	Potential Contamination (Medium or High)
Seminole Land			

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Central Alternative #2

Sheet No.
10



SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

Central Alternative #2
 Sheet No. **11**



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

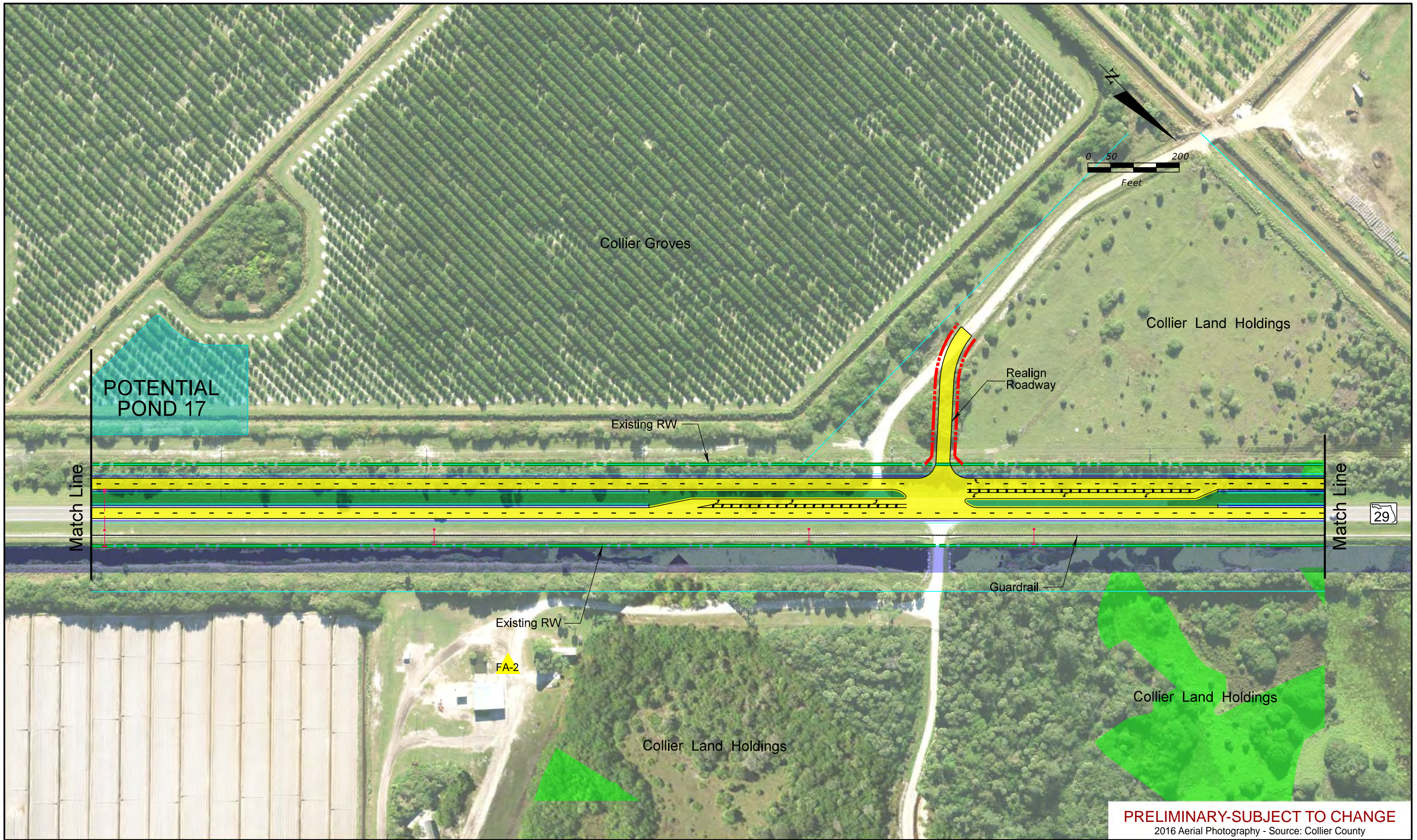
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

- Legend**
- Existing Right-of-Way
 - Potential Pond
 - Proposed Pavement
 - Proposed Guardrail
 - Parcels
 - Potential Flood Plain Compensation
 - Proposed Median/Border
 - Potential Business Relocation
 - Proposed Right-of-Way
 - Potential Contamination (Low)
 - Water/Canal
 - Proposed Sidewalks
 - Potential Contamination (Medium or High)
 - Seminole Land
 - Proposed Structure
 - Traffic Signal

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Central Alternative #2

Sheet No.
12



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

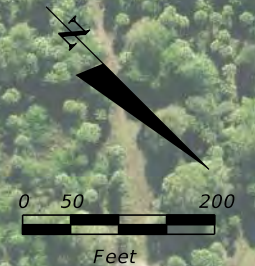
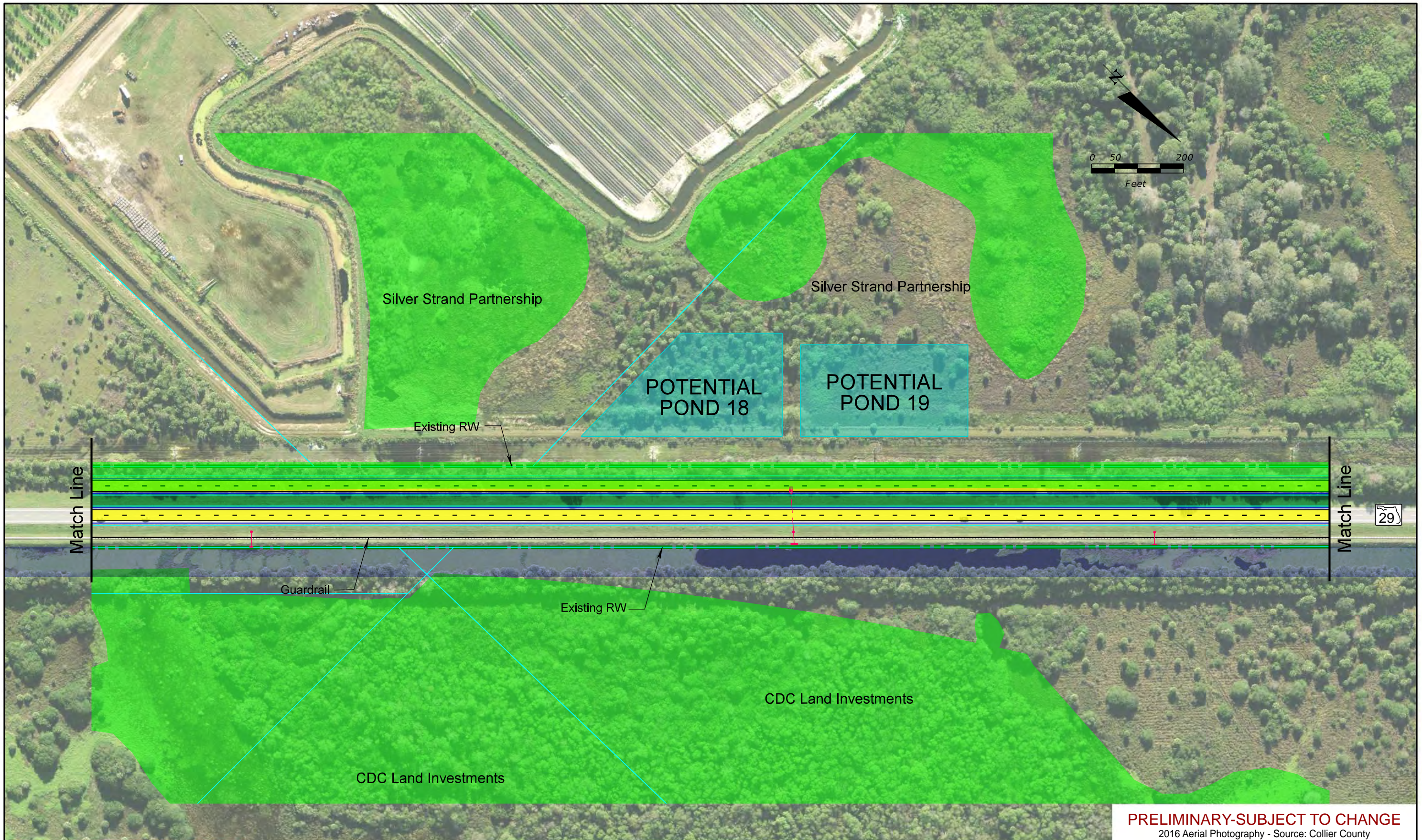
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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Central Alternative #2

Sheet No.
13



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

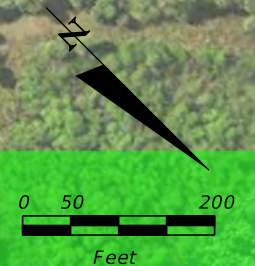
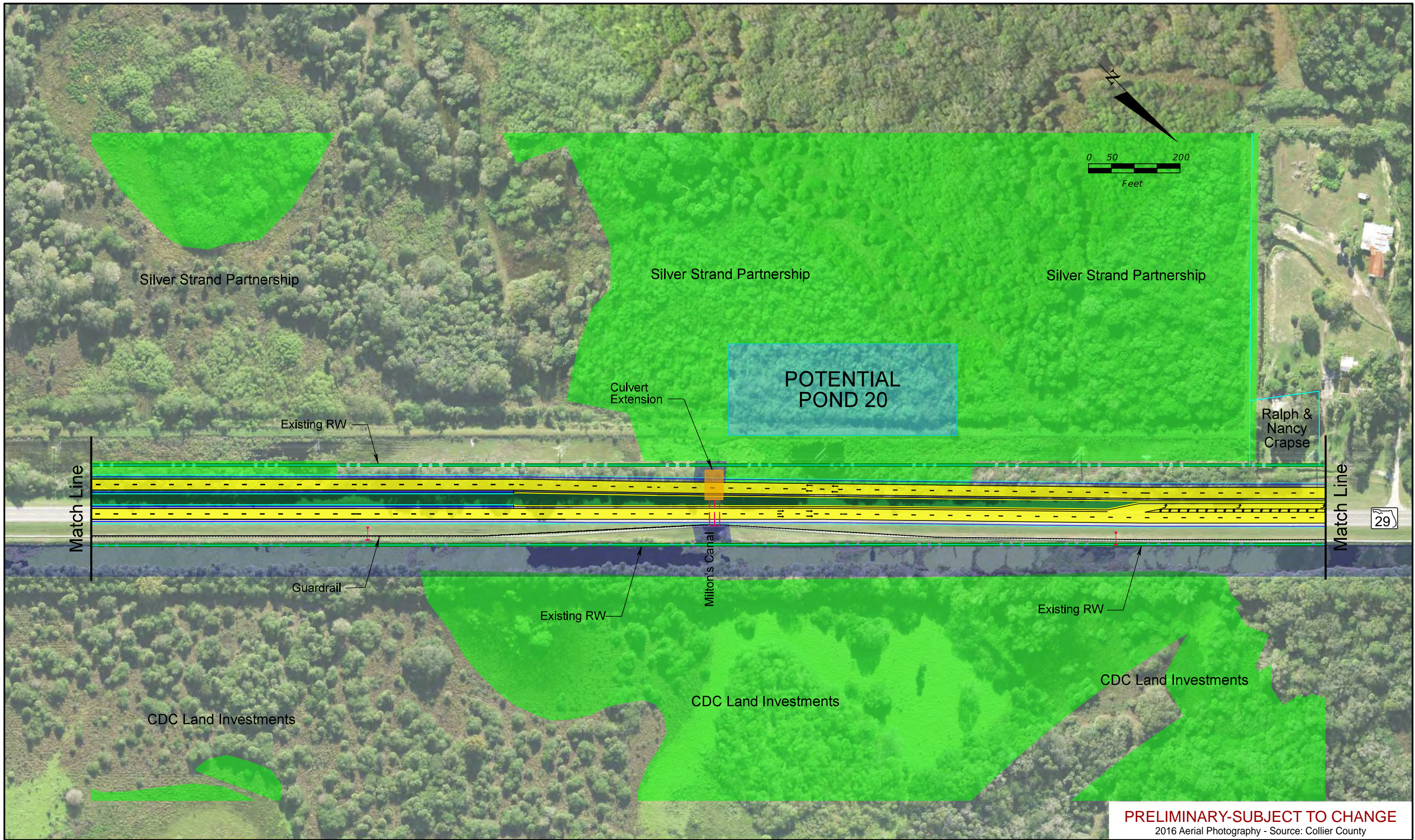
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Median/Border
	Traffic Signal		Proposed Sidewalks
			Proposed Structure
	Proposed Guardrail		Potential Business Relocation
			Potential Contamination (Low)
			Potential Contamination (Medium or High)

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Central Alternative #2

Sheet No.
14



PRELIMINARY-SUBJECT TO CHANGE
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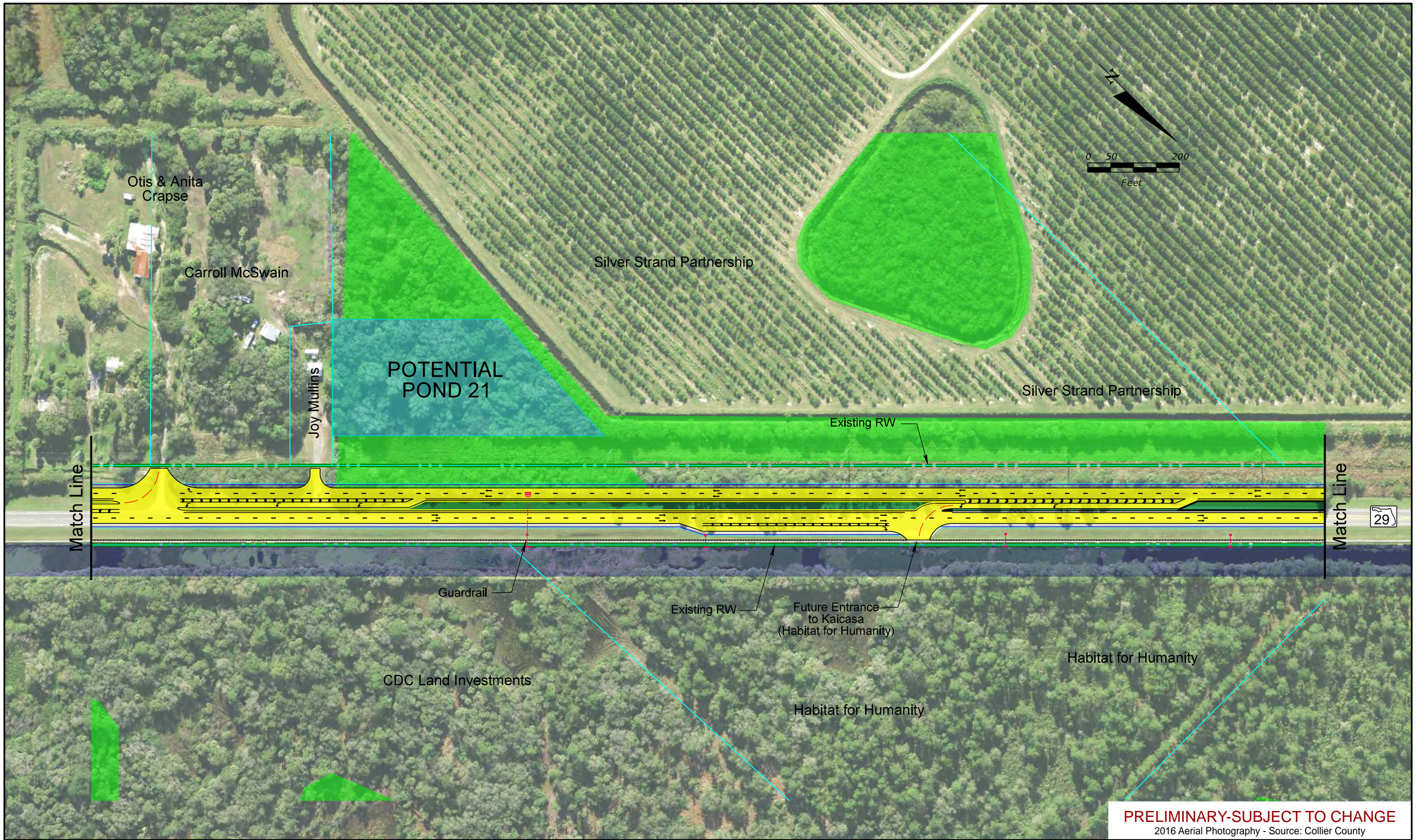
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
Existing Right-of-Way	Wetland	Proposed Pavement	Proposed Guardrail
Parcels	Potential Pond	Proposed Median/Border	Potential Business Relocation
Proposed Right-of-Way	Potential Flood Plain Compensation	Proposed Sidewalks	Potential Contamination (Low)
Water/Canal	Traffic Signal	Proposed Structure	Potential Contamination (Medium or High)
Seminole Land			

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 FBPR Certificate of Auth. #894

Central Alternative #2

Sheet No.
15



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

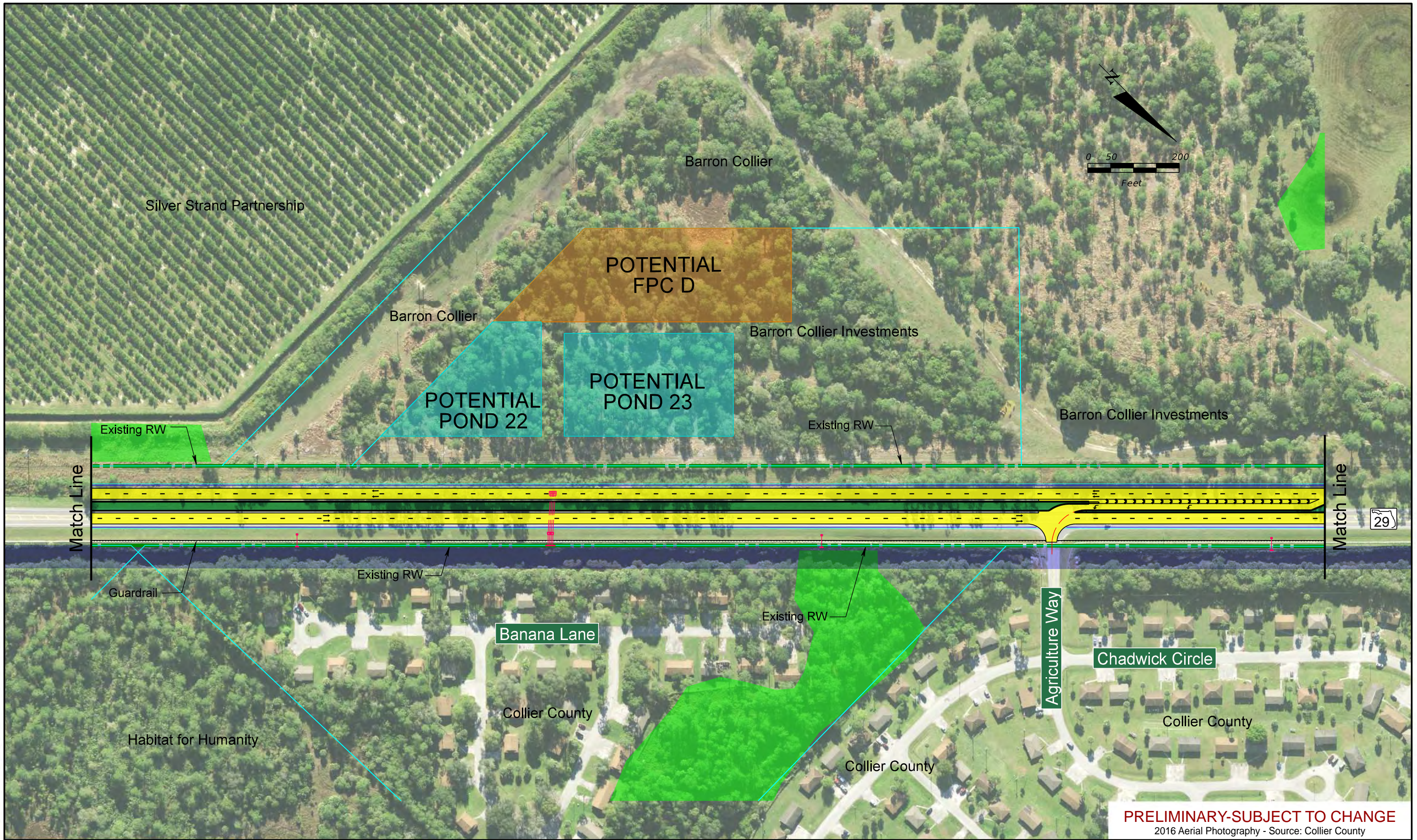
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Median/Border
	Traffic Signal		Proposed Sidewalks
			Proposed Structure
	Proposed Guardrail		Potential Business Relocation
			Potential Contamination (Low)
			Potential Contamination (Medium or High)

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Central Alternative #2

Sheet No.
16



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 2016 Aerial Photography - Source: Collier County

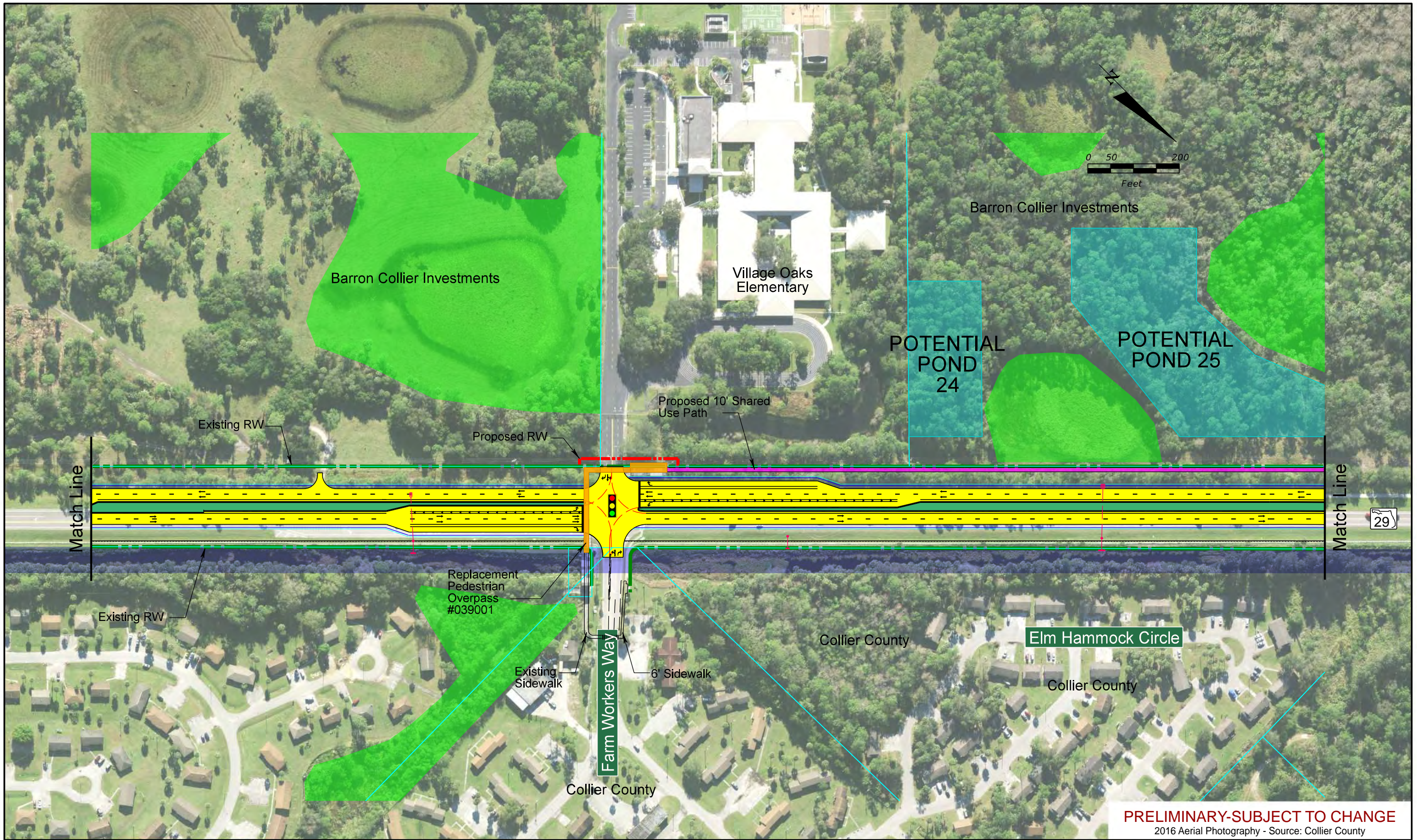
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Sidewalks
	Traffic Signal		Proposed Structure
	Proposed Guardrail		Potential Business Relocation
	Potential Contamination (Low)		Potential Contamination (Medium or High)

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 FBPR Certificate of Auth. #894

Central Alternative #2

Sheet No.
17



SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

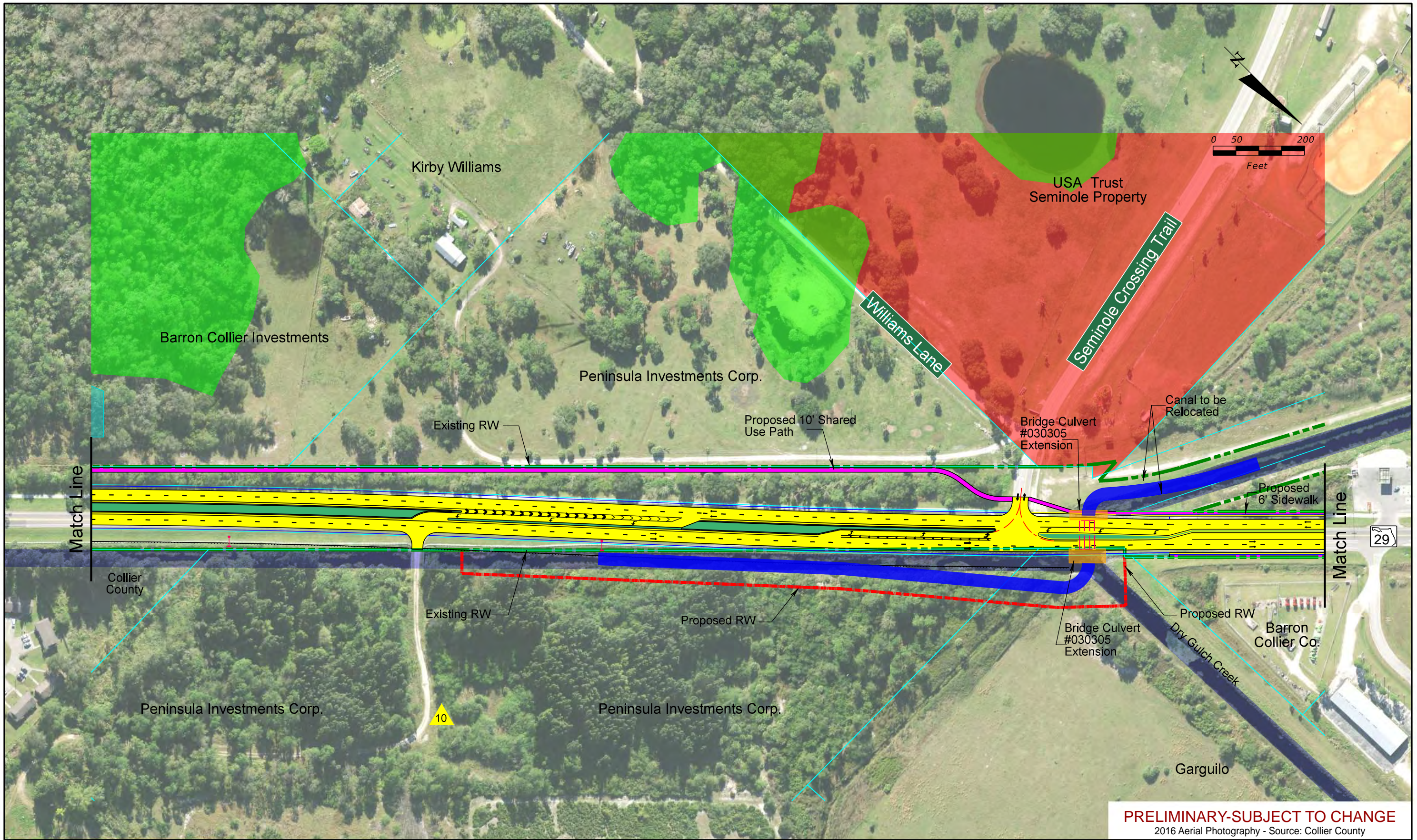
Legend			
Existing Right-of-Way	Wetland	Proposed Pavement	Potential Business Relocation
Parcels	Potential Pond	Proposed Median/Border	Potential Contamination (Low)
Proposed Right-of-Way	Potential Flood Plain Compensation	Proposed Sidewalks	Potential Contamination (Medium or High)
Water/Canal	Traffic Signal	Proposed Structure	
Seminole Land			

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PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

Central Alternative #2

Sheet No.
18



PRELIMINARY-SUBJECT TO CHANGE
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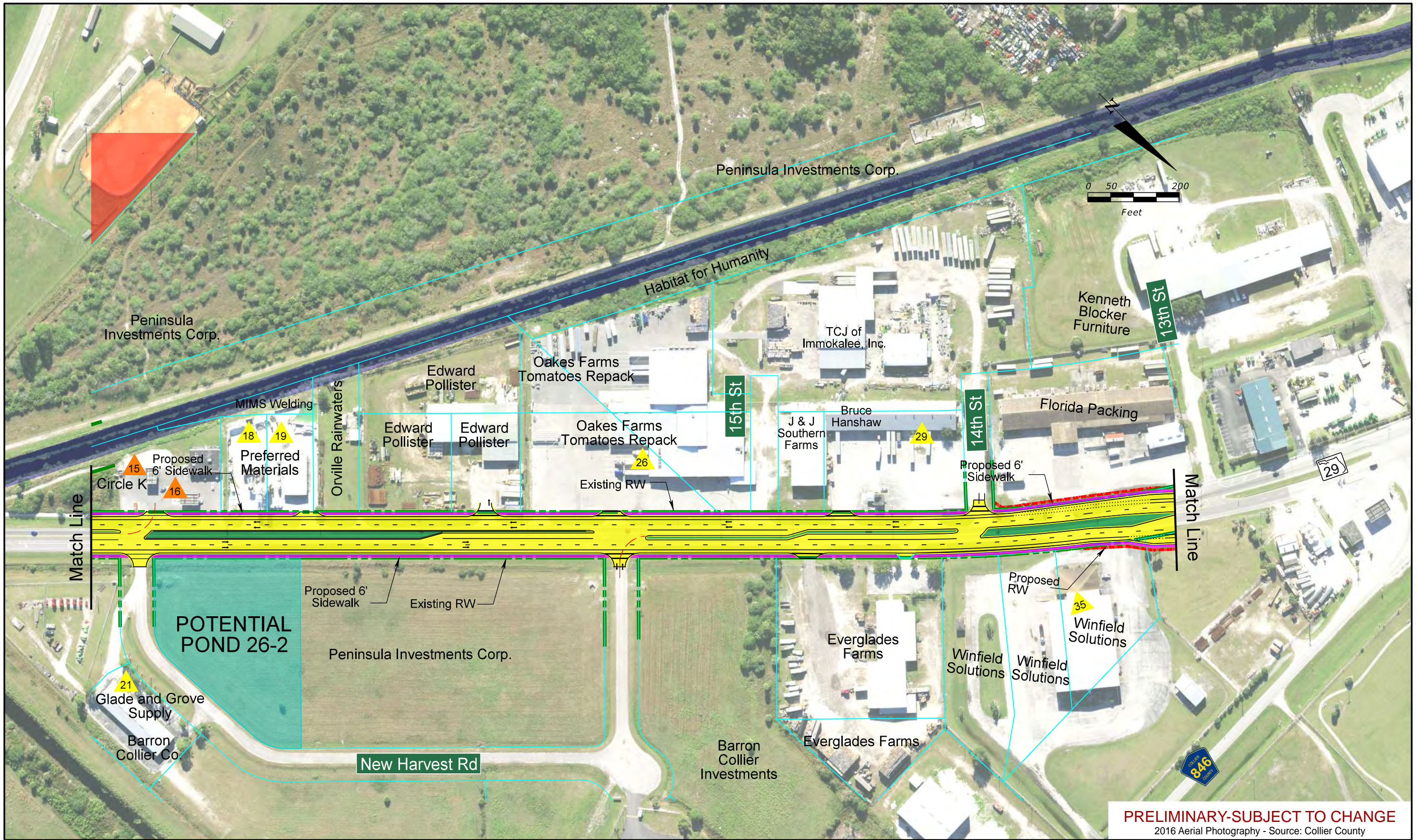
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Median/Border
	Traffic Signal		Proposed Sidewalks
			Proposed Structure
	Proposed Guardrail		Potential Business Relocation
			Potential Contamination (Low)
			Potential Contamination (Medium or High)

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 FBPR Certificate of Auth. #894

Central Alternative #2

Sheet No.
19



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

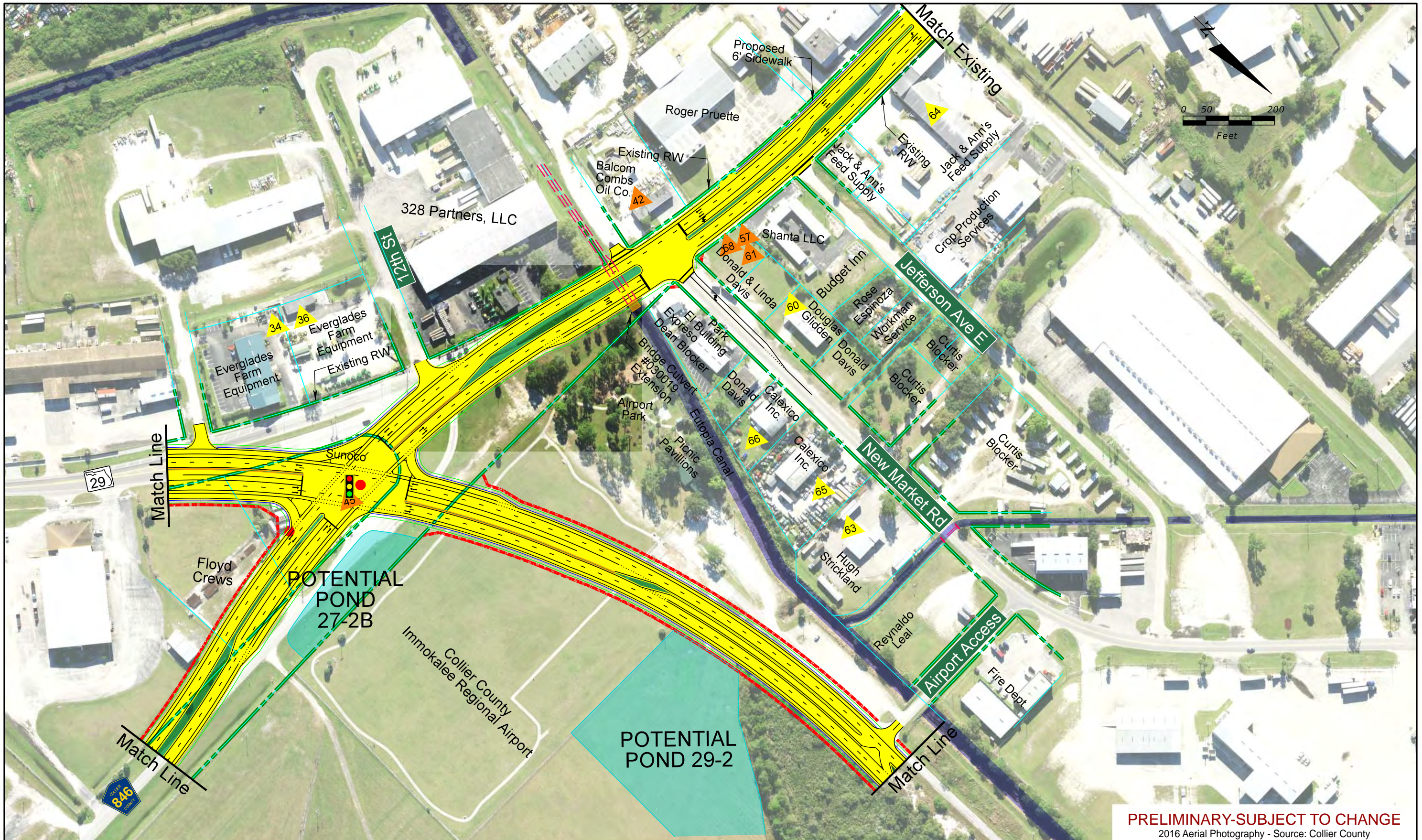
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend	
	Existing Right-of-Way
	Parcels
	Proposed Right-of-Way
	Water/Canal
	Seminole Land
	Wetland
	Potential Pond
	Potential Flood Plain Compensation
	Traffic Signal
	Proposed Pavement
	Proposed Median/Border
	Proposed Sidewalks
	Proposed Structure
	Proposed Guardrail
	Potential Business Relocation
	Potential Contamination (Low)
	Potential Contamination (Medium or High)

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Sheet No.
20



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

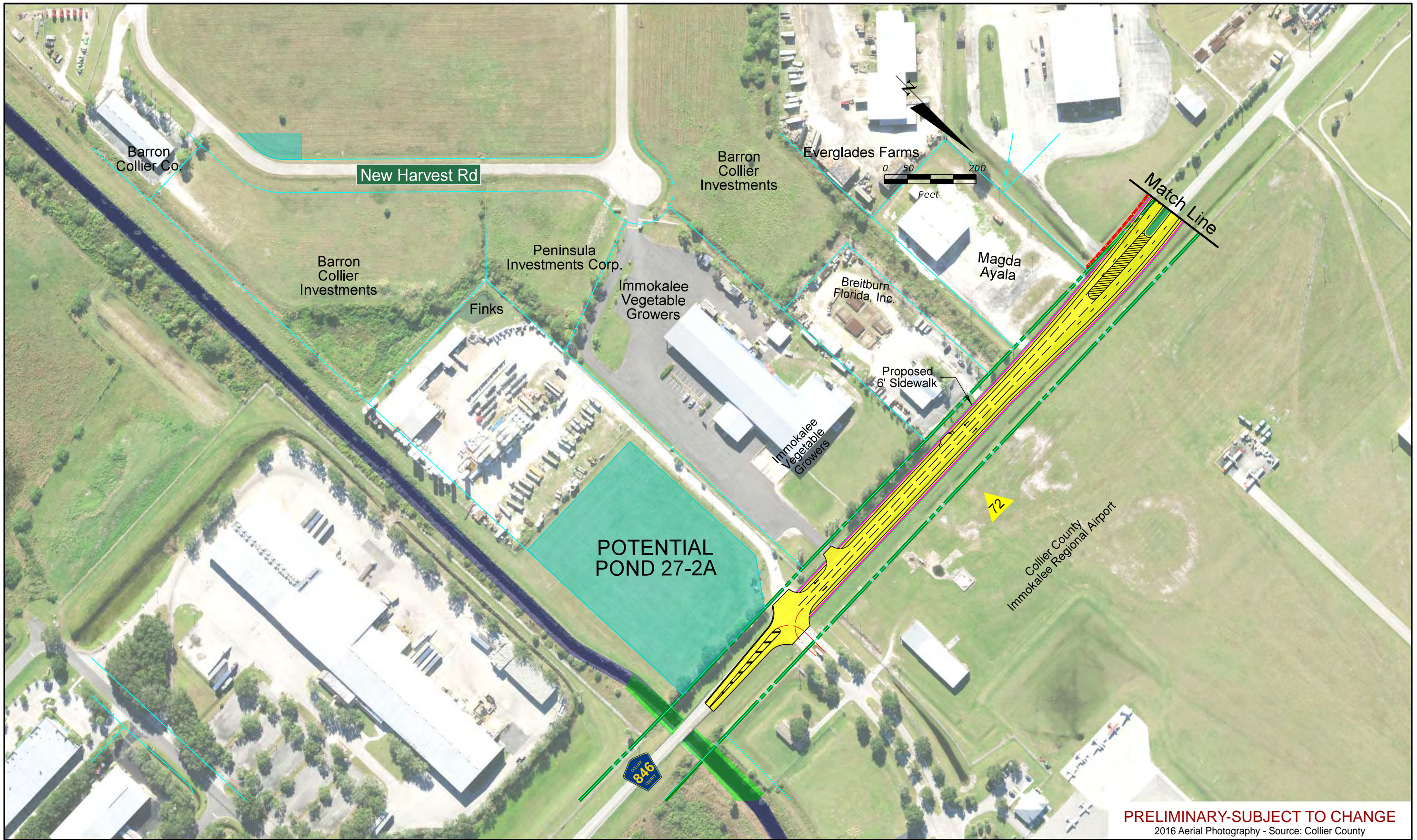
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend	
	Existing Right-of-Way
	Wetland
	Potential Pond
	Potential Flood Plain Compensation
	Seminole Land
	Proposed Pavement
	Proposed Median/Border
	Proposed Sidewalks
	Proposed Structure
	Proposed Guardrail
	Potential Business Relocation
	Potential Contamination (Low)
	Potential Contamination (Medium or High)
	Traffic Signal

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Central Alternative #2

Sheet No.
21



SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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 2016 Aerial Photography - Source: Collier County

Central Alternative #2

Sheet No.
22



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

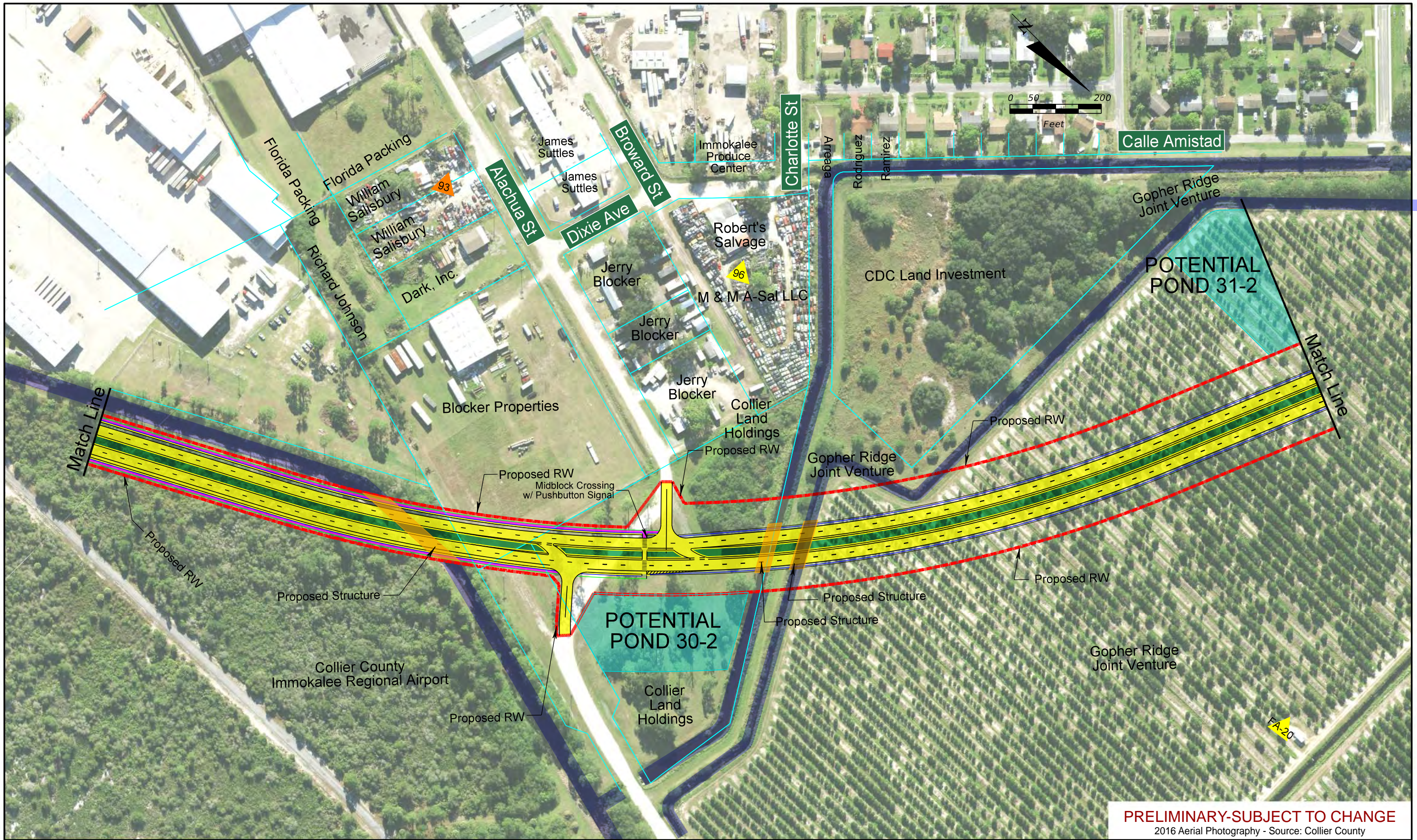
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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Sheet No.
23



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

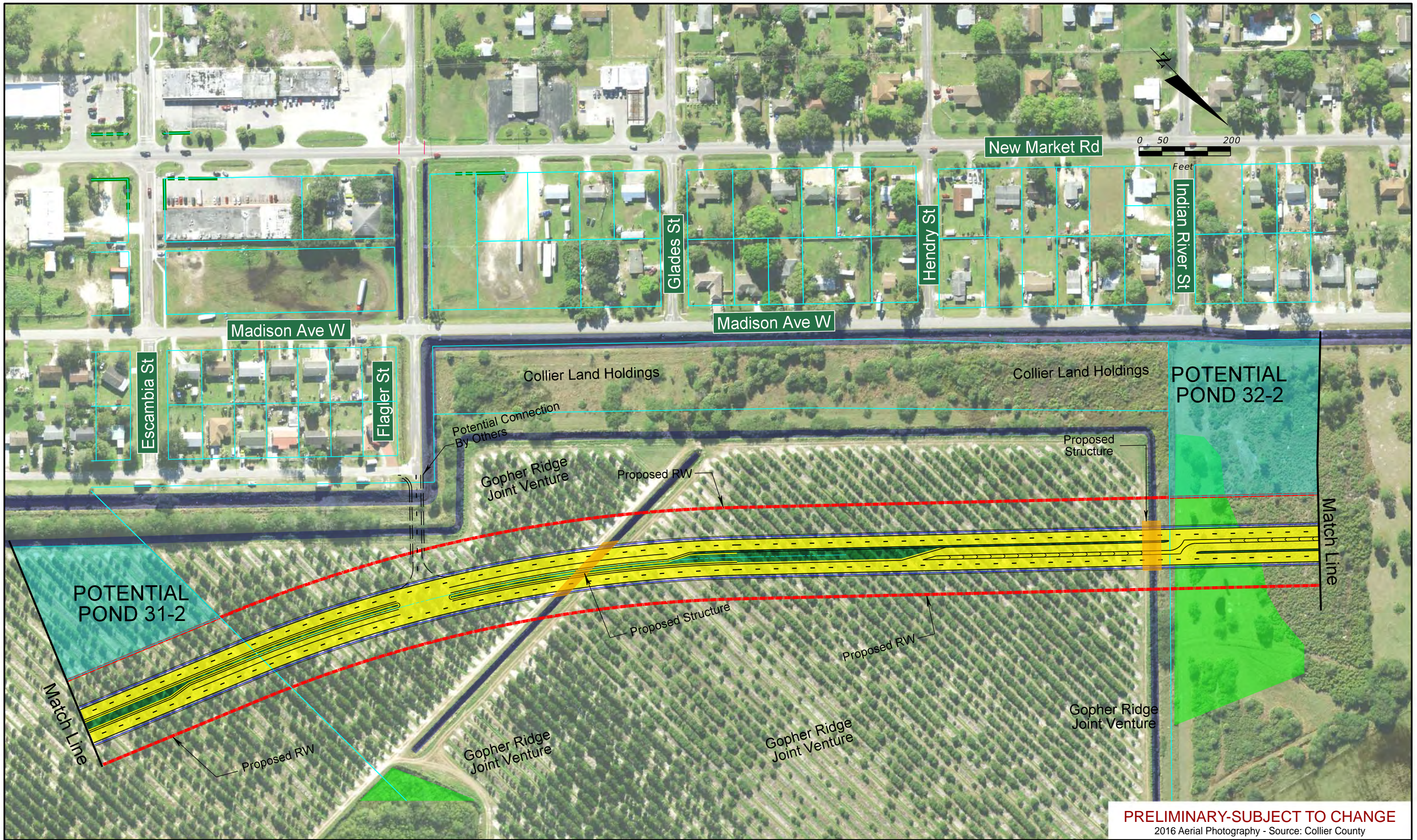
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Proposed Pavement
	Seminole Land		Proposed Median/Border
	Traffic Signal		Proposed Sidewalks
			Proposed Structure
			Proposed Guardrail
			Potential Business Relocation
			Potential Contamination (Low)
			Potential Contamination (Medium or High)

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24



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

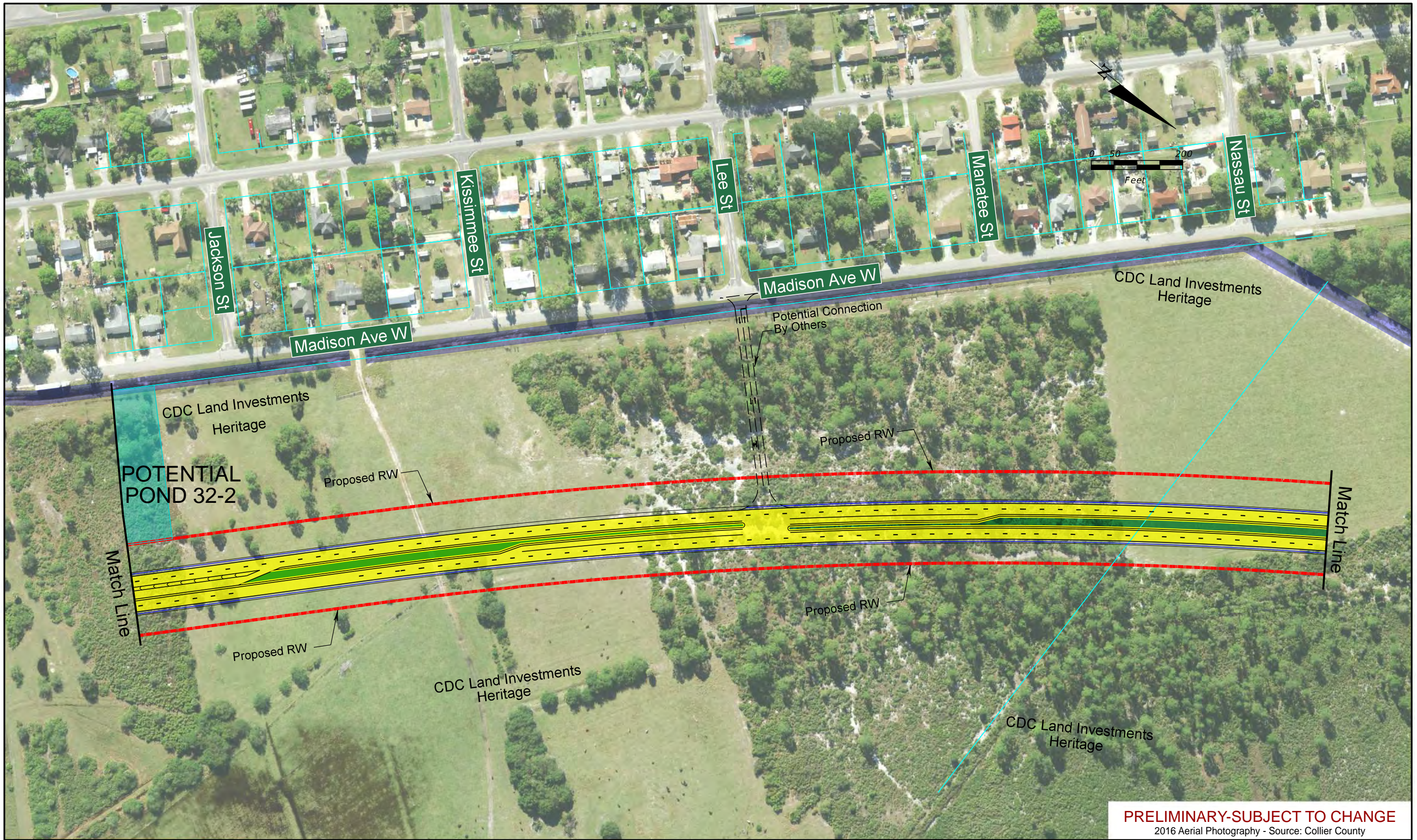
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

- | | | | |
|-----------------------|------------------------------------|------------------------|--|
| Existing Right-of-Way | Wetland | Proposed Pavement | Proposed Guardrail |
| Parcels | Potential Pond | Proposed Median/Border | Potential Business Relocation |
| Proposed Right-of-Way | Potential Flood Plain Compensation | Proposed Sidewalks | Potential Contamination (Low) |
| Water/Canal | Traffic Signal | Proposed Structure | Potential Contamination (Medium or High) |
| Seminole Land | | | |

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Central Alternative #2

Sheet No.
25



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

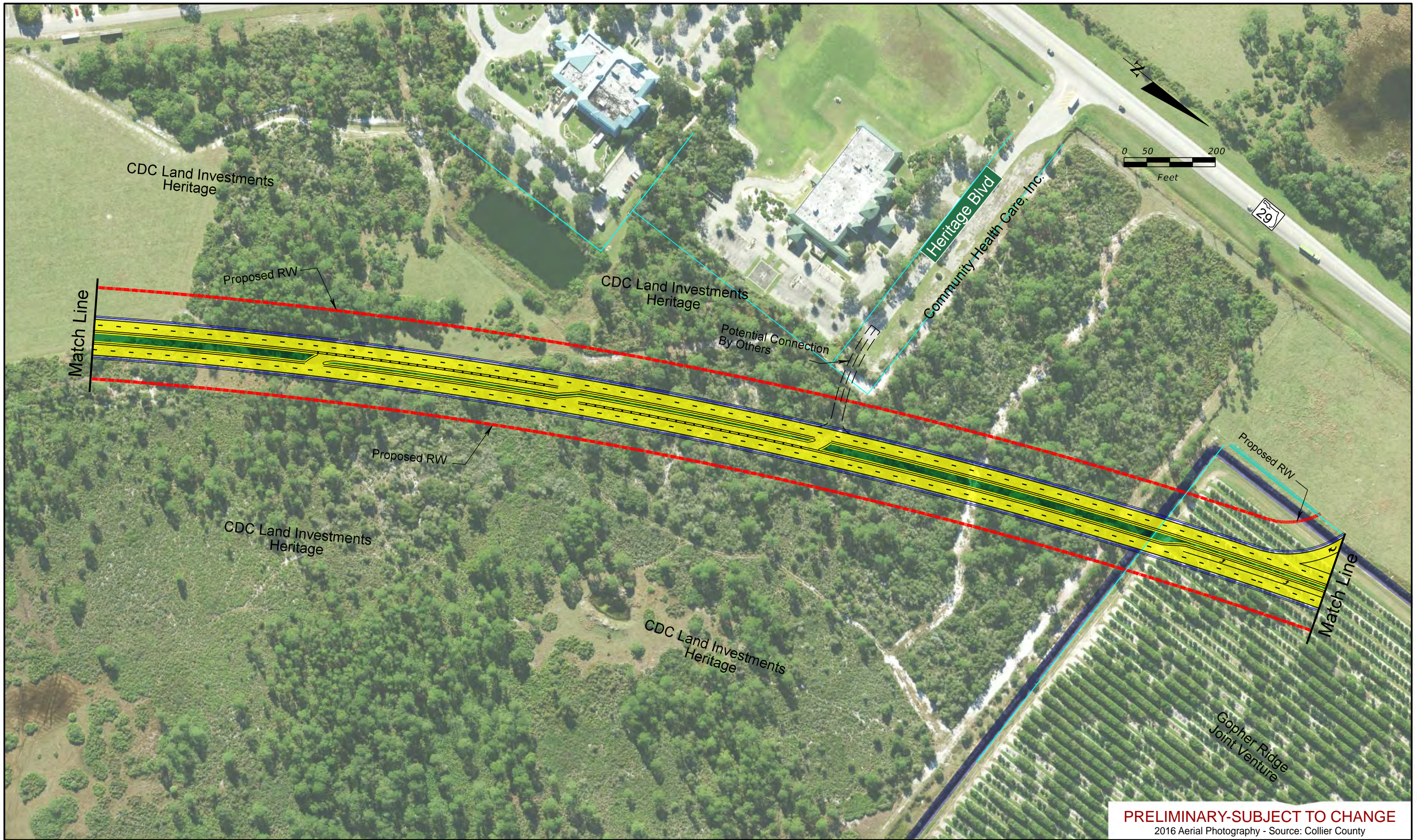
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
Existing Right-of-Way	Wetland	Proposed Pavement	Proposed Guardrail
Parcels	Potential Pond	Proposed Median/Border	Potential Business Relocation
Proposed Right-of-Way	Potential Flood Plain Compensation	Proposed Sidewalks	Potential Contamination (Low)
Water/Canal	Traffic Signal	Proposed Structure	Potential Contamination (Medium or High)
Seminole Land			

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Sheet No.
26



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

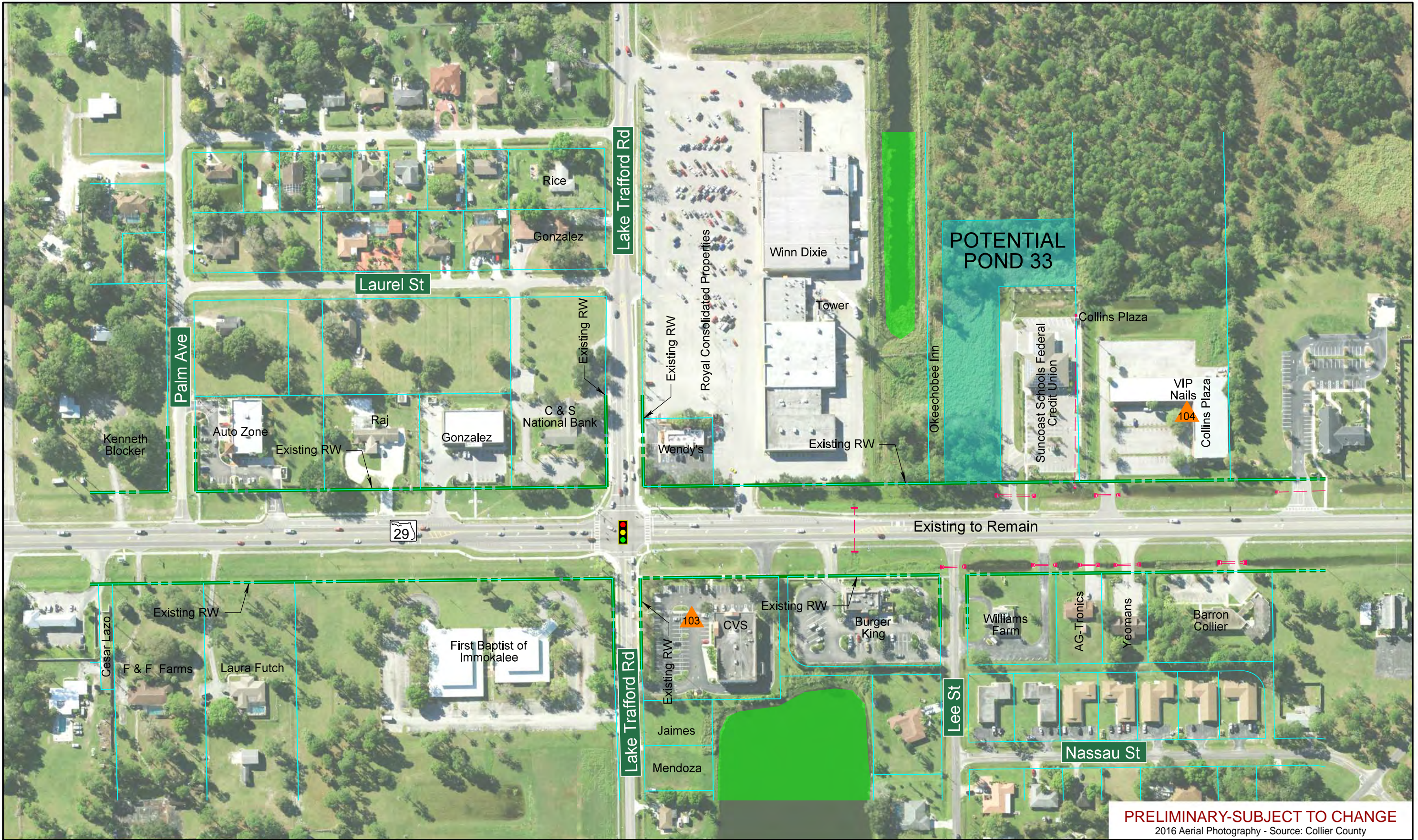
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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Central Alternative #2

Sheet No.
27



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

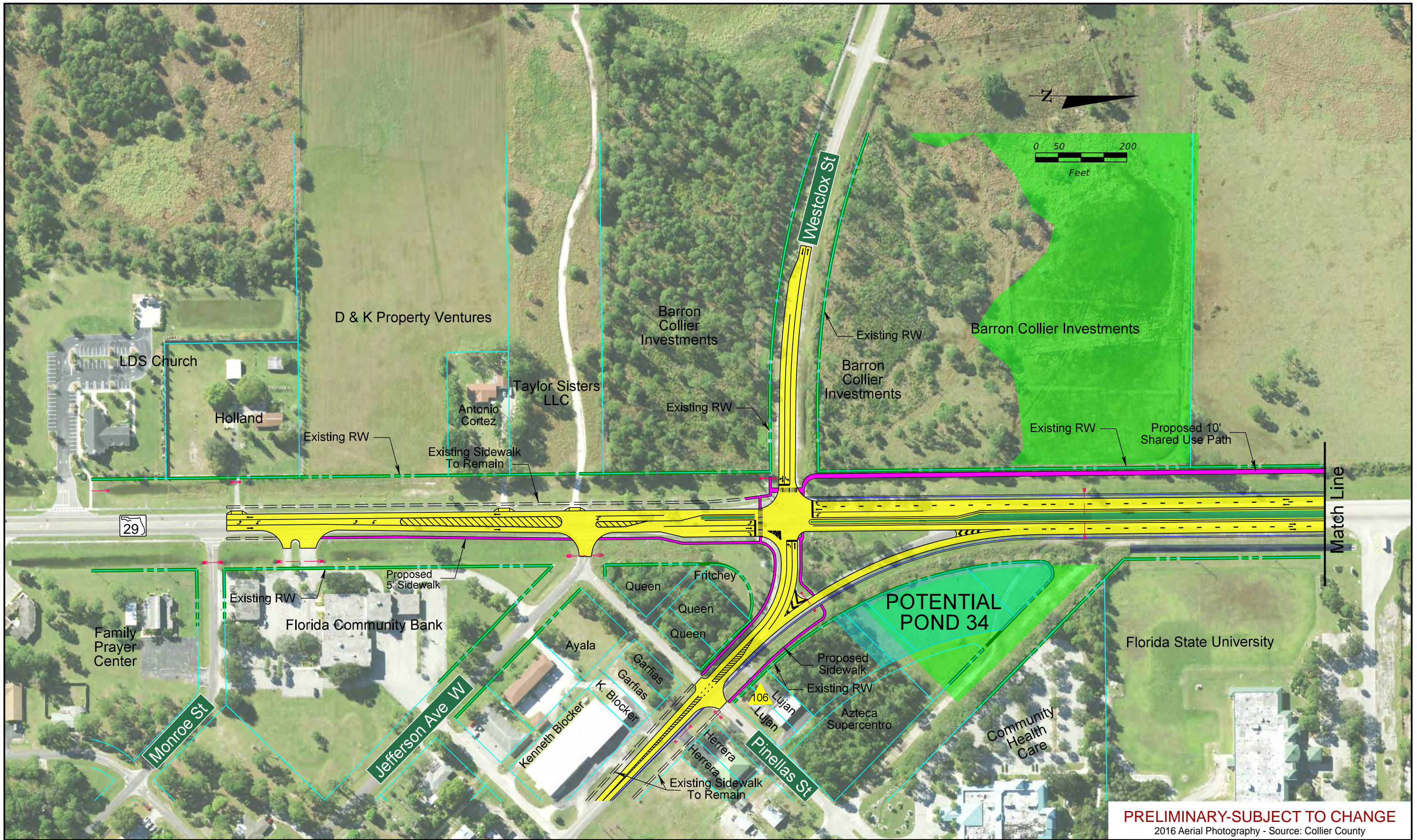
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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Central Alternative #2

Sheet No.
28



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

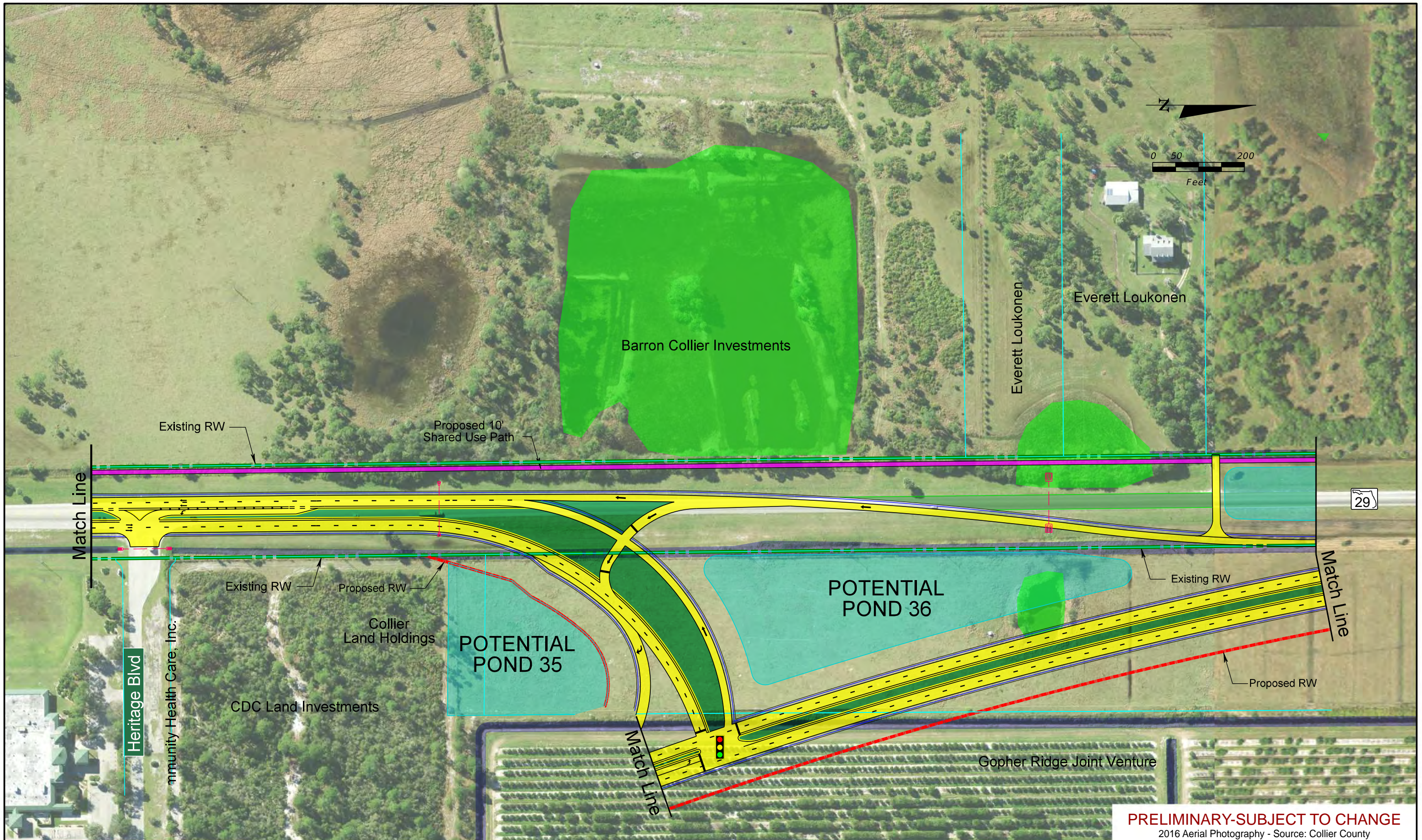
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417546 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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Central Alternative #2

Sheet No.
29



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

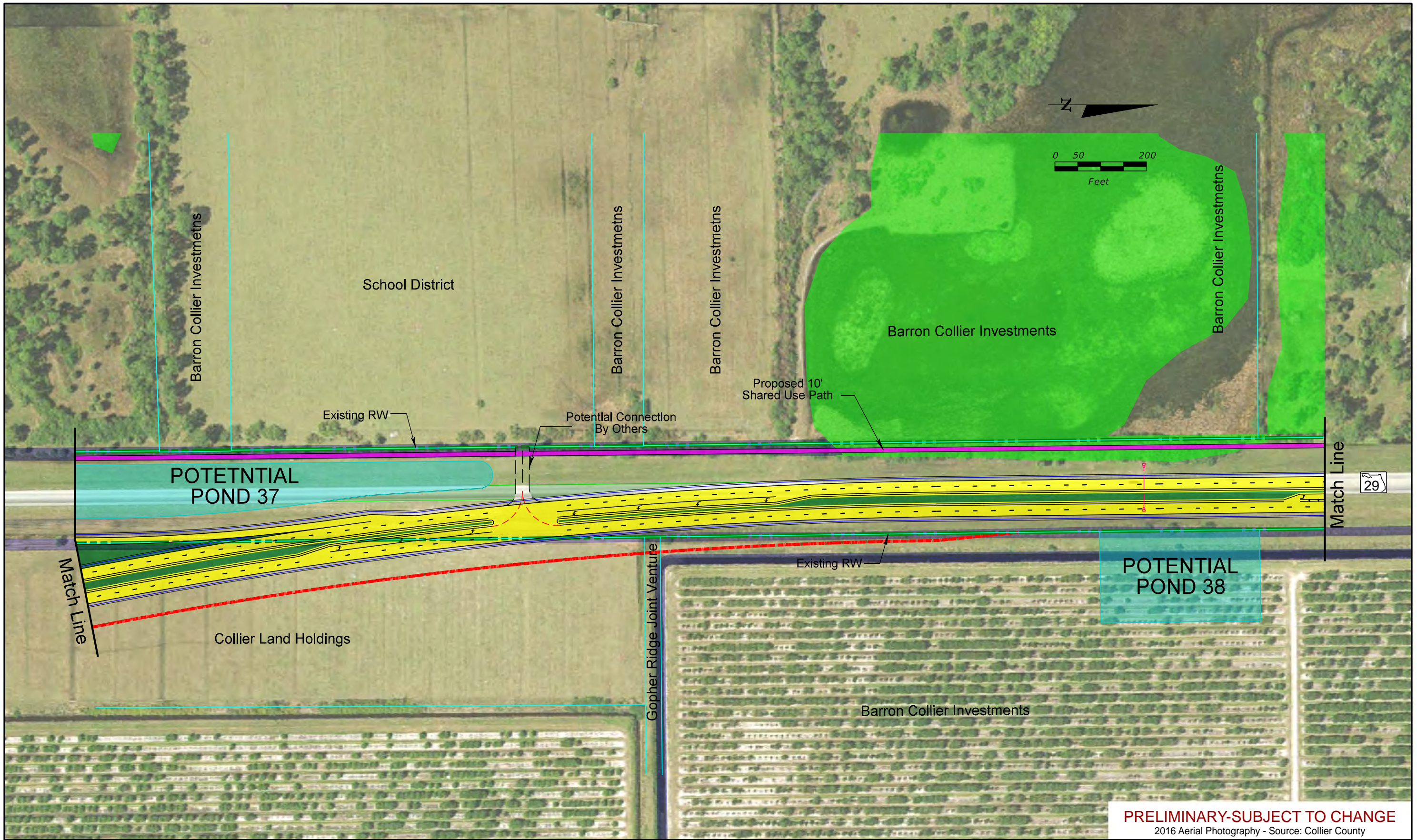
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Wetland
	Parcels		Potential Pond
	Proposed Right-of-Way		Potential Flood Plain Compensation
	Water/Canal		Seminole Land
	Proposed Sidewalks		Proposed Pavement
	Proposed Structure		Proposed Median/Border
	Proposed Guardrail		Potential Business Relocation
	Potential Contamination (Low)		Potential Contamination (Medium or High)
	Traffic Signal		

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Central Alternative #2

Sheet No.
30



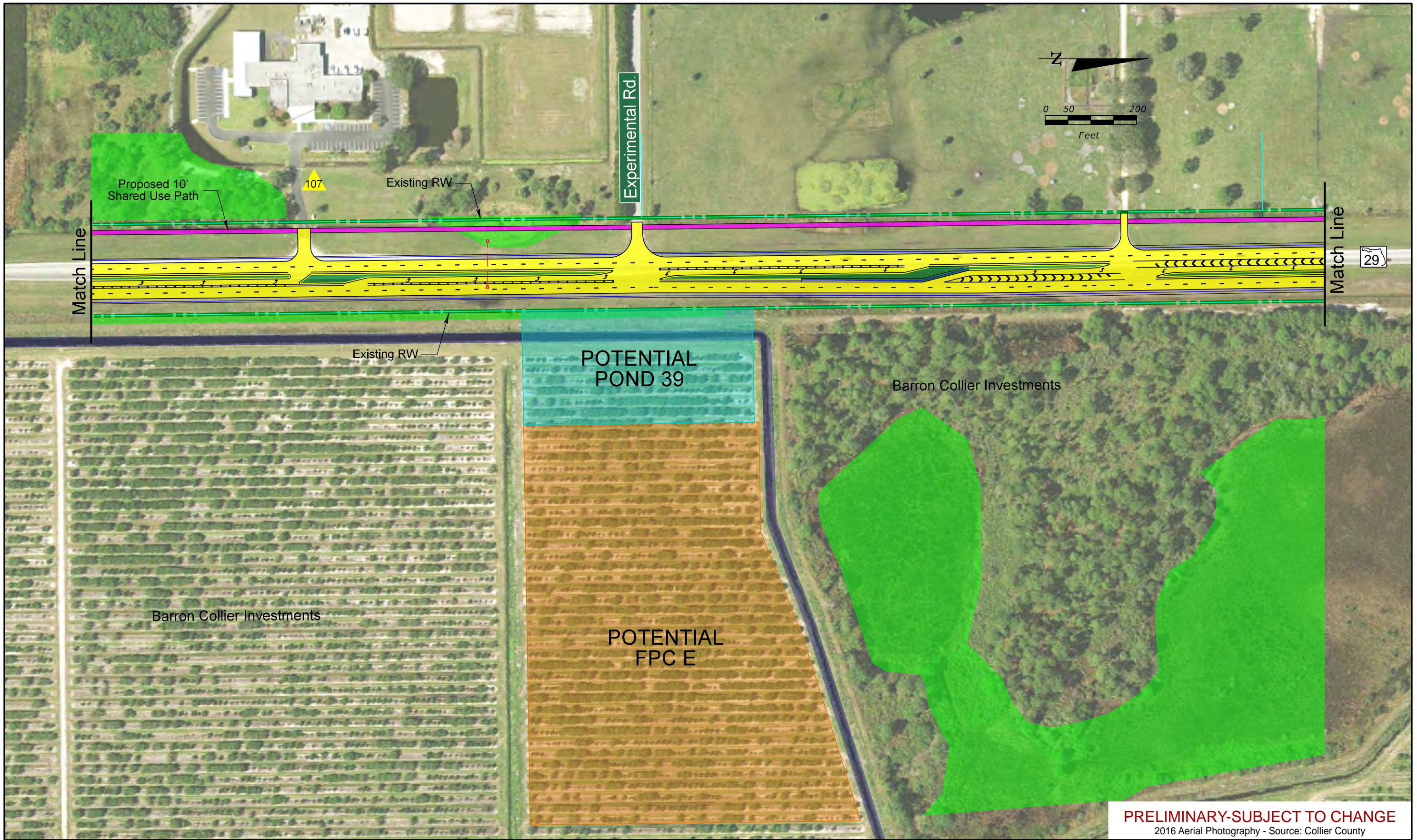
PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

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Central Alternative #2

Sheet No.
31



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

- | | | | |
|-----------------------|------------------------------------|------------------------|--|
| Existing Right-of-Way | Wetland | Proposed Pavement | Proposed Guardrail |
| Parcels | Potential Pond | Proposed Median/Border | Potential Business Relocation |
| Proposed Right-of-Way | Potential Flood Plain Compensation | Proposed Sidewalks | Potential Contamination (Low) |
| Water/Canal | Traffic Signal | Proposed Structure | Potential Contamination (Medium or High) |
| Seminole Land | | | |

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Central Alternative #2

Sheet No.
32



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

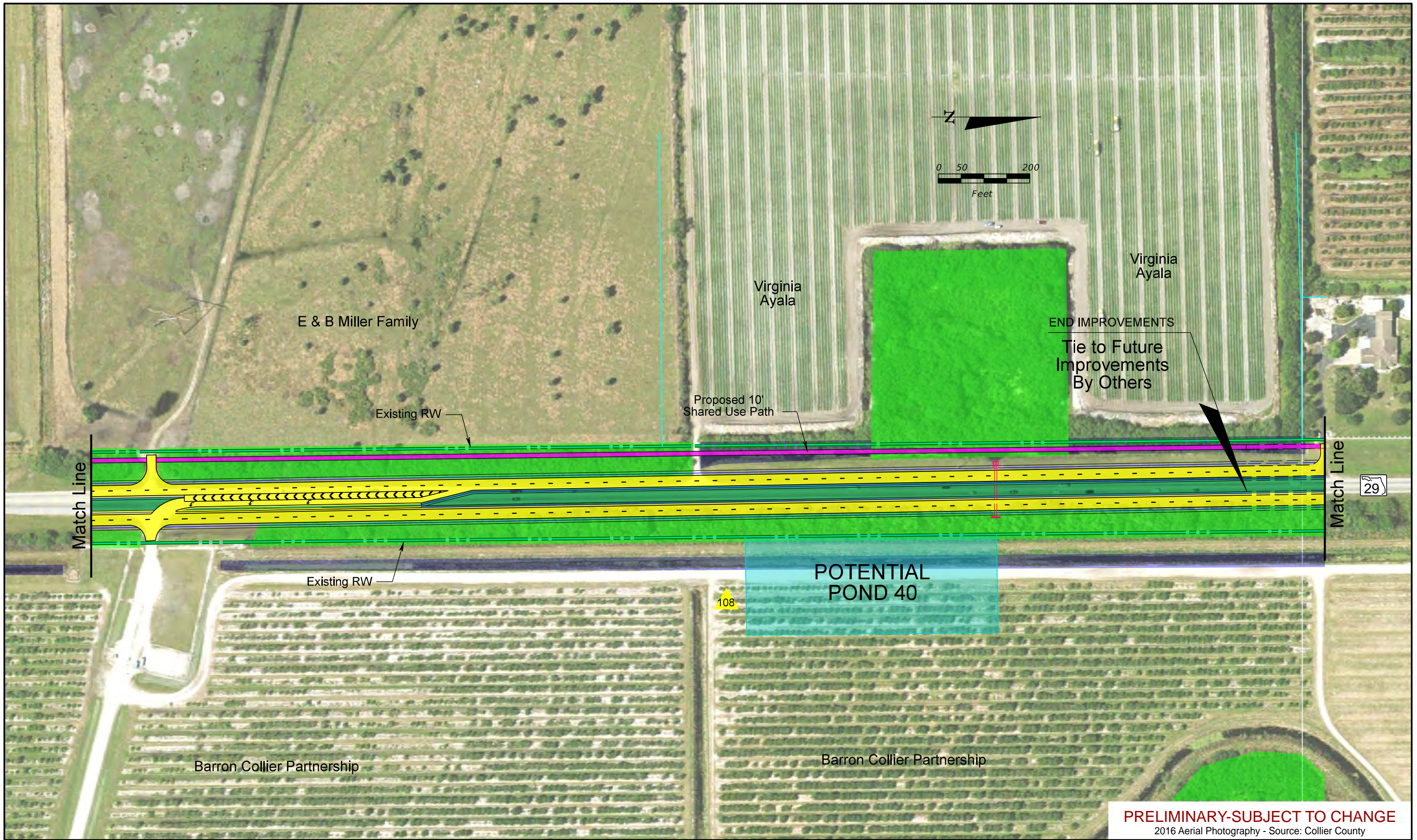
SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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Central Alternative #2

Sheet No.
33



SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

Legend			
	Existing Right-of-Way		Proposed Pavement
	Parcels		Proposed Median/Border
	Proposed Right-of-Way		Proposed Sidewalks
	Water/Canal		Proposed Structure
	Seminole Land		Proposed Guardrail
	Wetland		Potential Business Relocation
	Potential Pond		Potential Contamination (Low)
	Potential Flood Plain Compensation		Potential Contamination (Medium or High)
	Traffic Signal		

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PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County
Central Alternative #2

Sheet No.
34



PRELIMINARY-SUBJECT TO CHANGE
 2016 Aerial Photography - Source: Collier County

SR 29 PD&E Study
 From Oil Well Road to SR 82
 FPID NO: 417540 1 22 01 / FAP NO: 3911 022P

- | | | | |
|-----------------------|------------------------------------|------------------------|--|
| Existing Right-of-Way | Wetland | Proposed Pavement | Proposed Guardrail |
| Parcels | Potential Pond | Proposed Median/Border | Potential Business Relocation |
| Proposed Right-of-Way | Potential Flood Plain Compensation | Proposed Sidewalks | Potential Contamination (Low) |
| Water/Canal | Traffic Signal | Proposed Structure | Potential Contamination (Medium or High) |
| Seminole Land | | | |

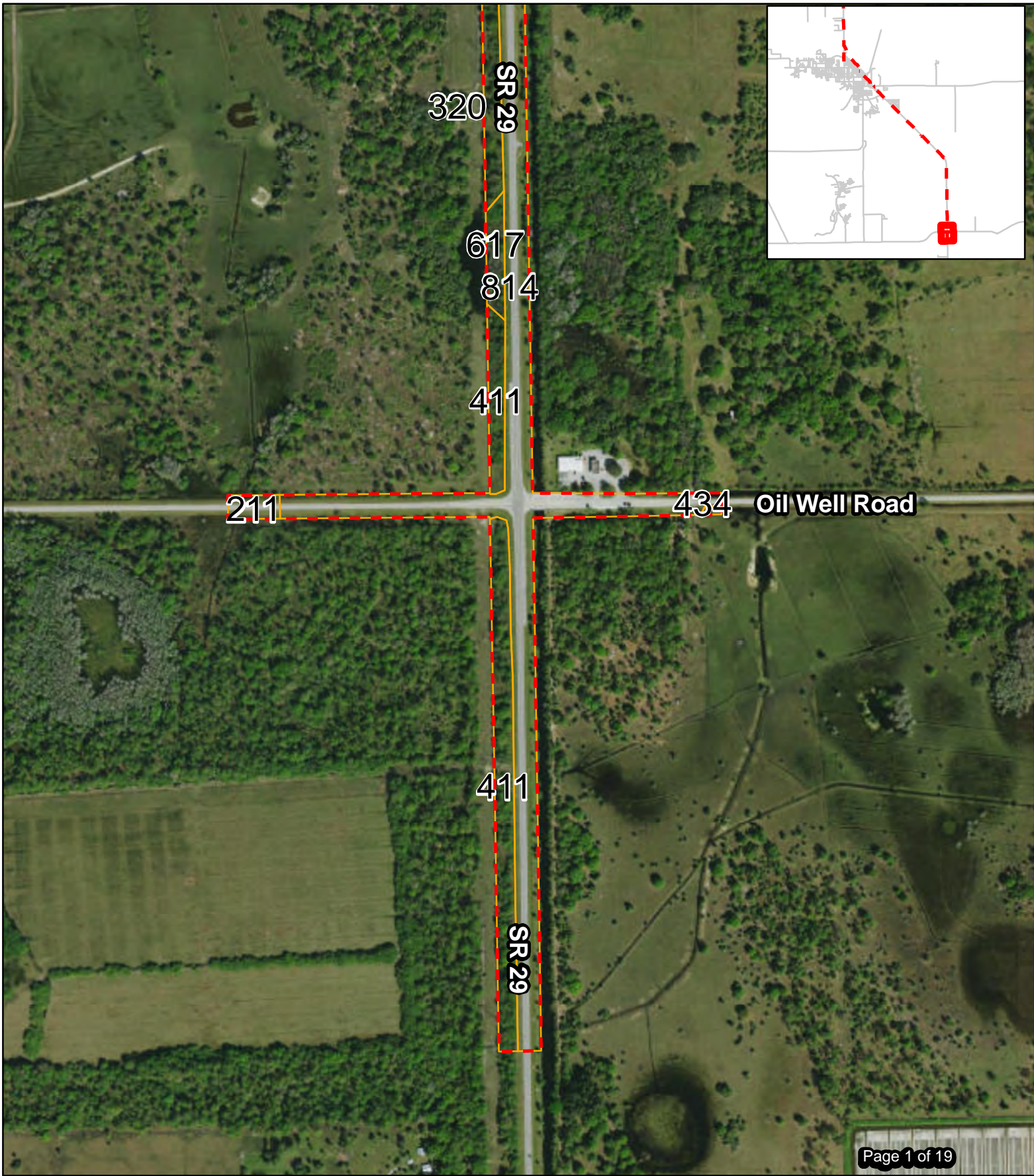
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Central Alternative #2

Sheet No.
35



APPENDIX C-1

Land Use / Vegetative Cover Maps



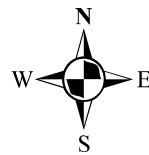
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 DATA SOURCE : AECOM 2018

Legend

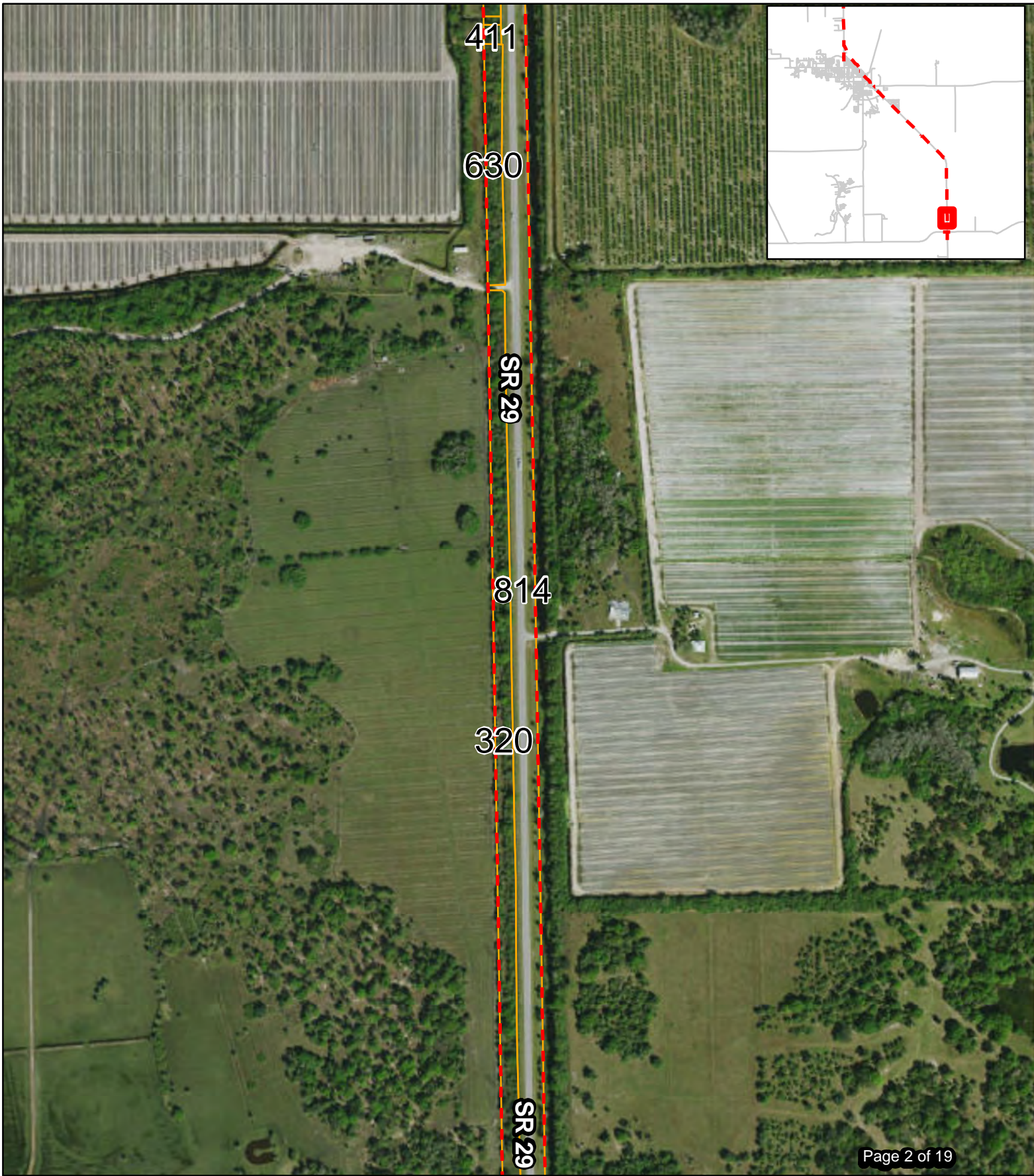
-  Central Alternative #1 Revised
-  Land Use Vegetative Cover

**Land Use and Vegetative Cover
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**

Date: 6/1/2018





0 500 1,000 Feet



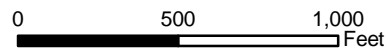
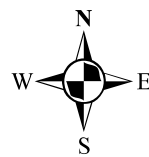
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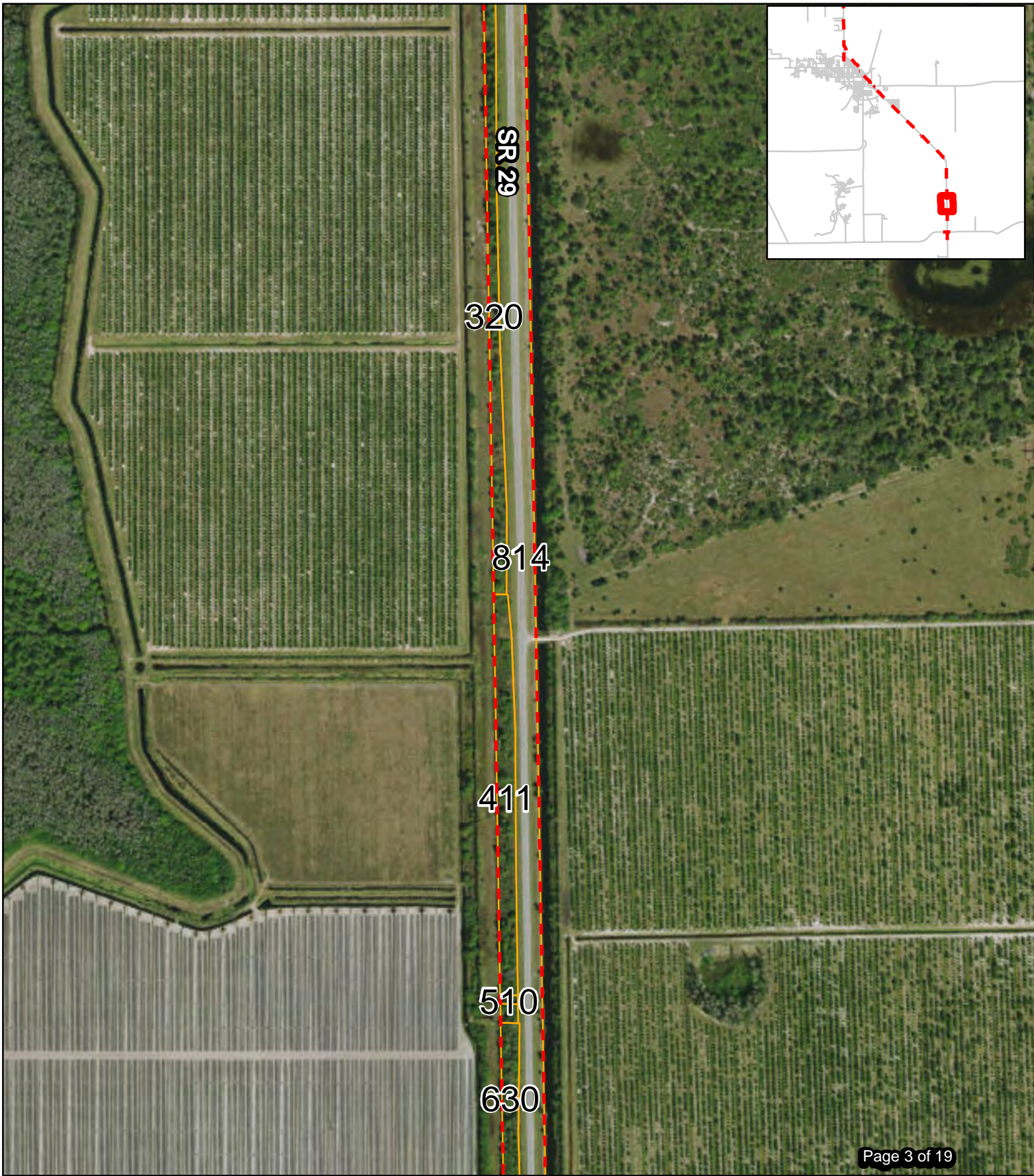
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-  Central Alternative #1 Revised
-  Land Use Vegetative Cover

**Land Use and Vegetative Cover
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**



Date: 6/1/2018






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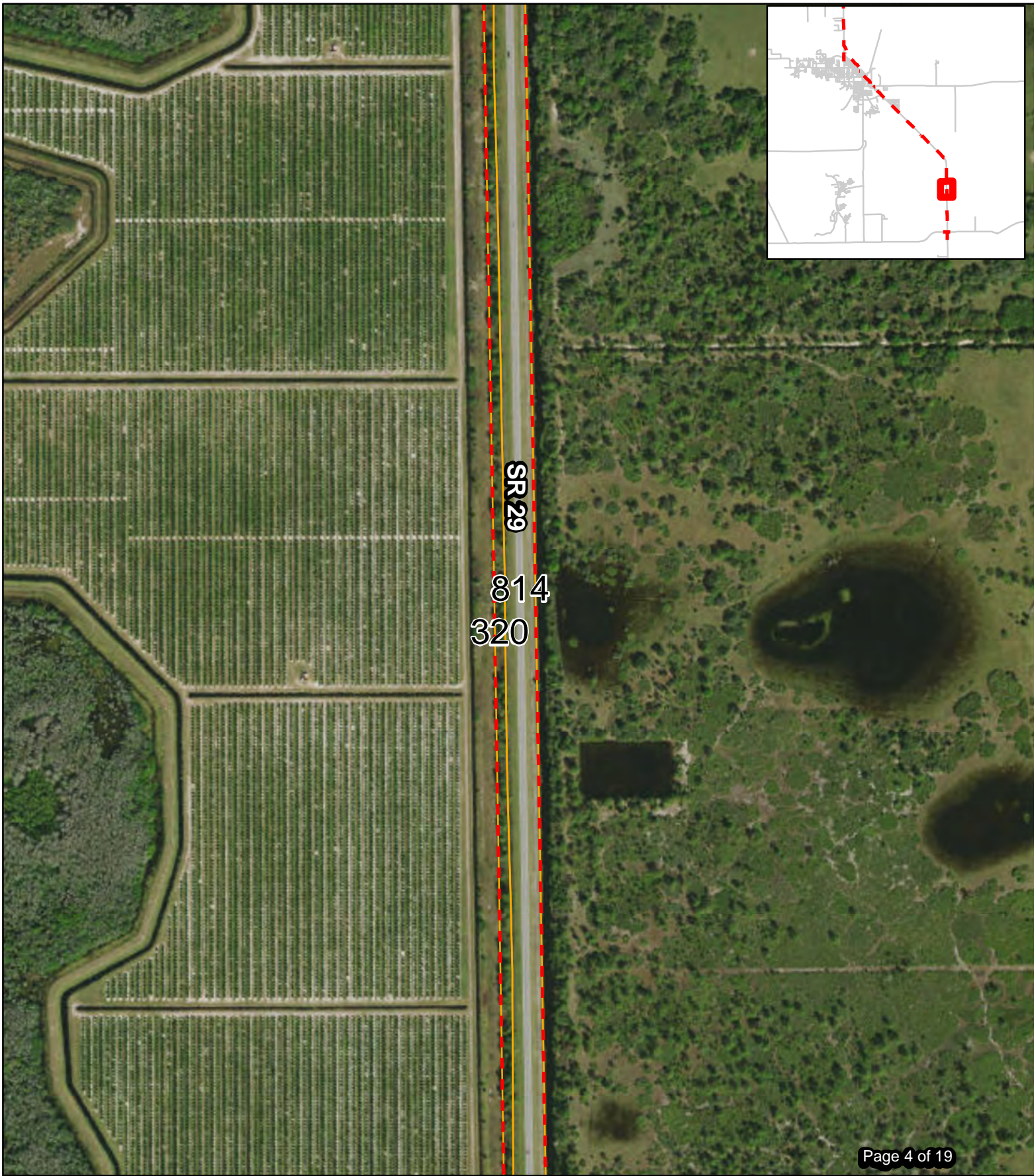
Legend

-  Central Alternative #1 Revised
-  Land Use Vegetative Cover

**Land Use and Vegetative Cover
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**



Date: 6/1/2018


 0 500 1,000
 Feet



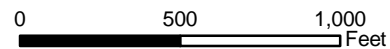
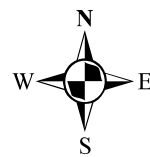
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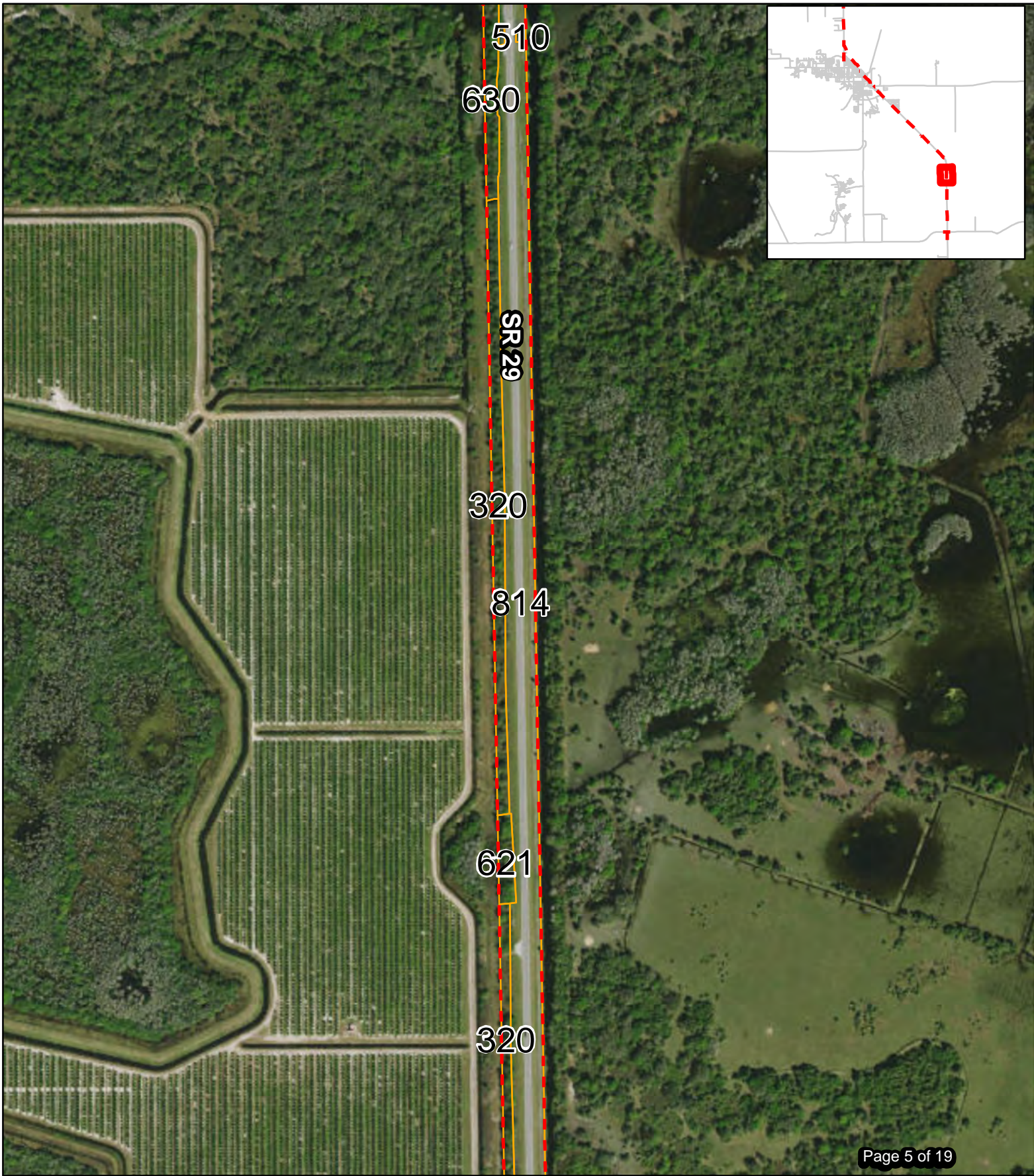
Legend

-  Central Alternative #1 Revised
-  Land Use Vegetative Cover

**Land Use and Vegetative Cover
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**

Date: 6/1/2018





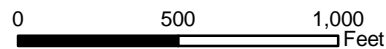
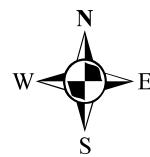
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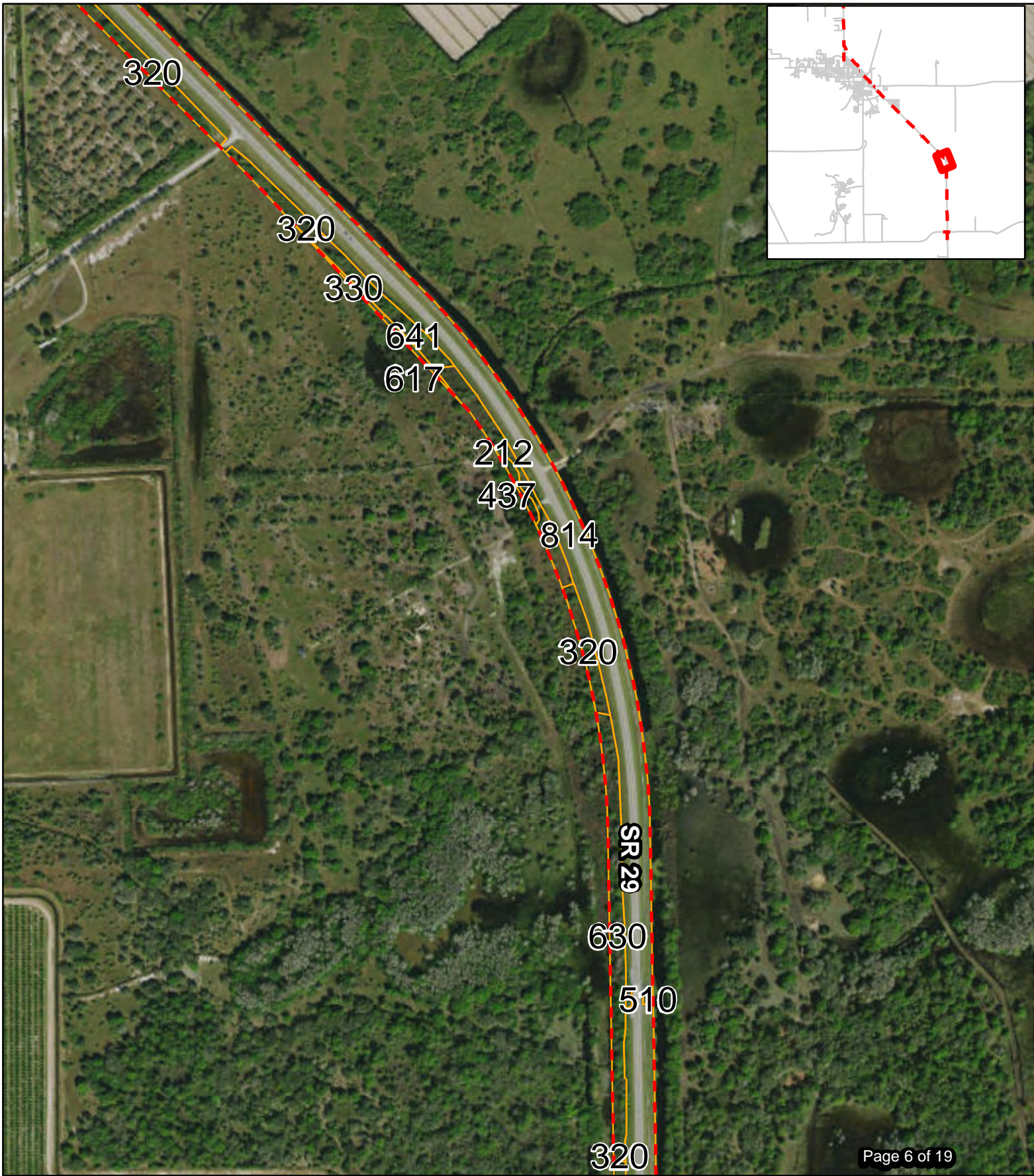
Legend

- - - Central Alternative #1 Revised
- Land Use Vegetative Cover

**Land Use and Vegetative Cover
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**

Date: 6/1/2018





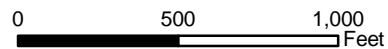
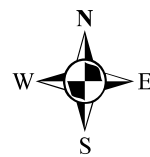
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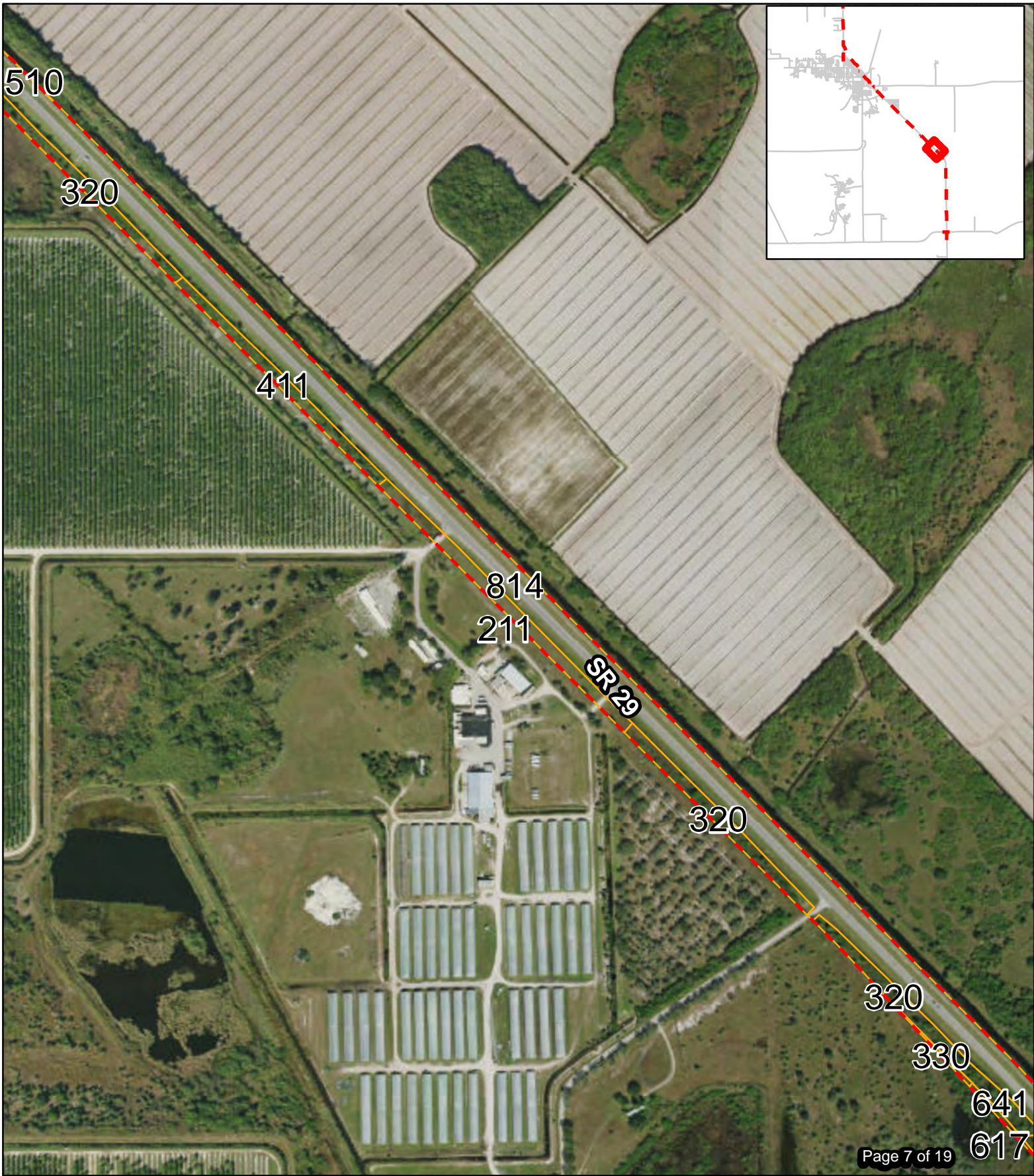
Legend

- Central Alternative #1 Revised
- Land Use Vegetative Cover

**Land Use and Vegetative Cover
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**


Date: 6/1/2018






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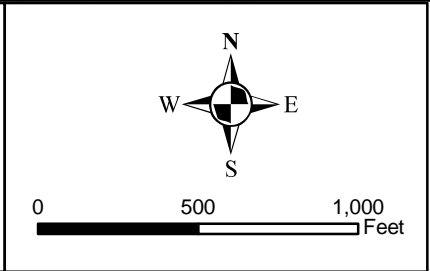
Legend

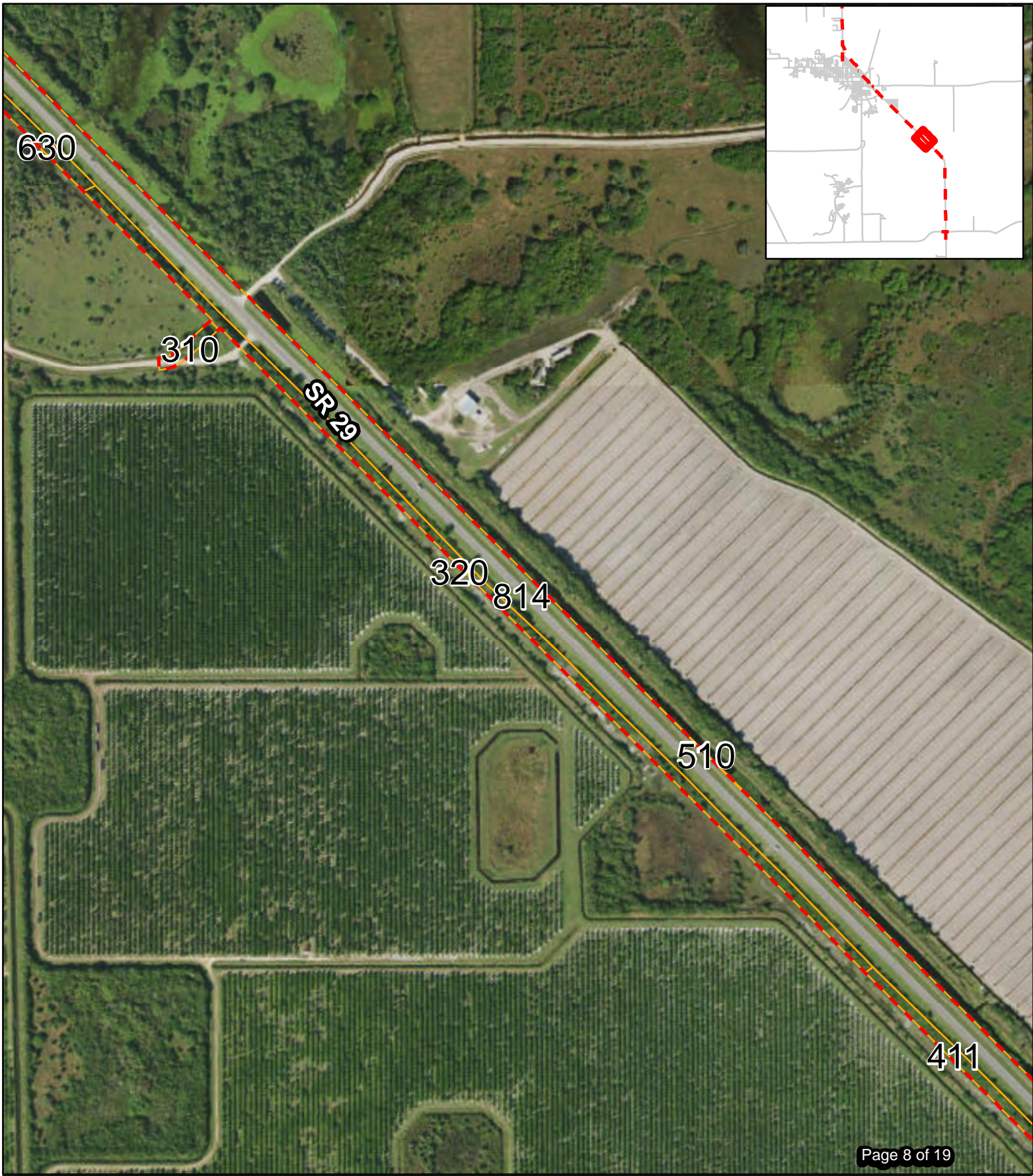
 Central Alternative #1 Revised

 Land Use Vegetative Cover

Land Use and Vegetative Cover
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised



Date: 6/1/2018





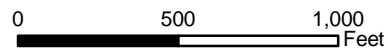
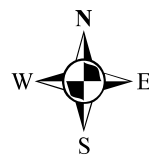
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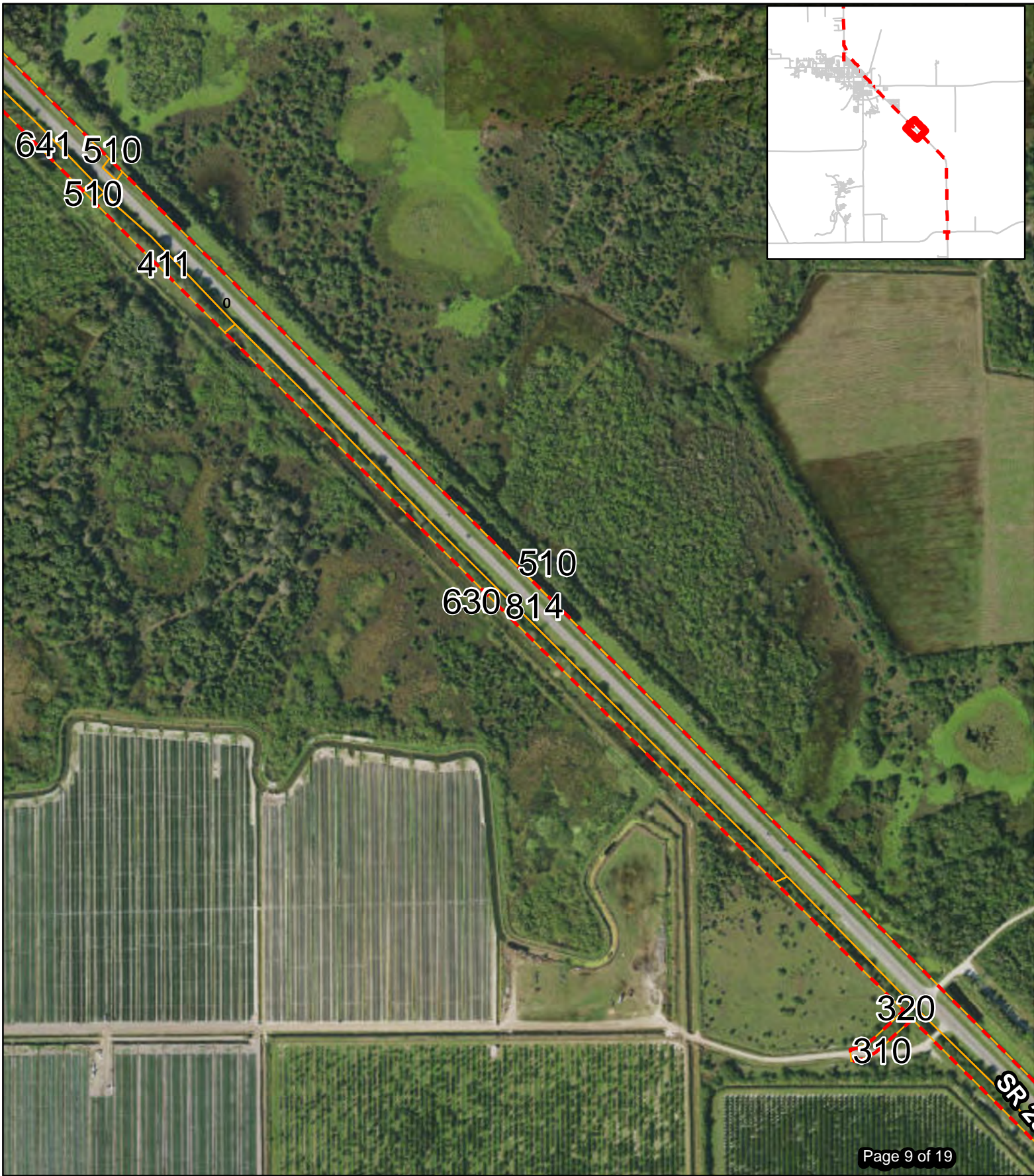
Legend

-  Central Alternative #1 Revised
-  Land Use Vegetative Cover

**Land Use and Vegetative Cover
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**

Date: 6/1/2018





MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

Legend

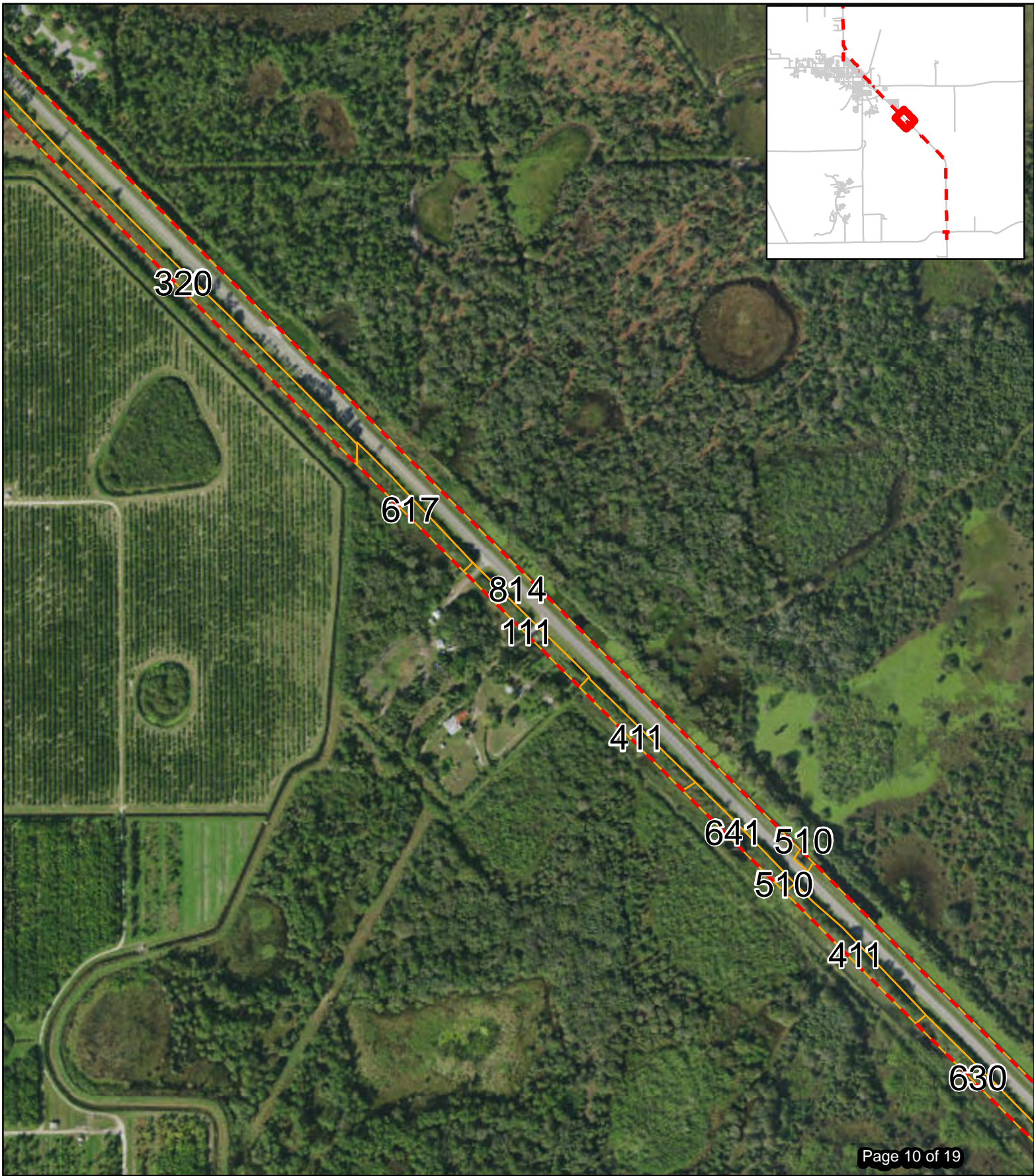
- Central Alternative #1 Revised
- Land Use Vegetative Cover

**Land Use and Vegetative Cover
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**

Date: 6/1/2018

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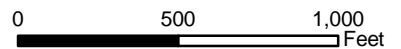
MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

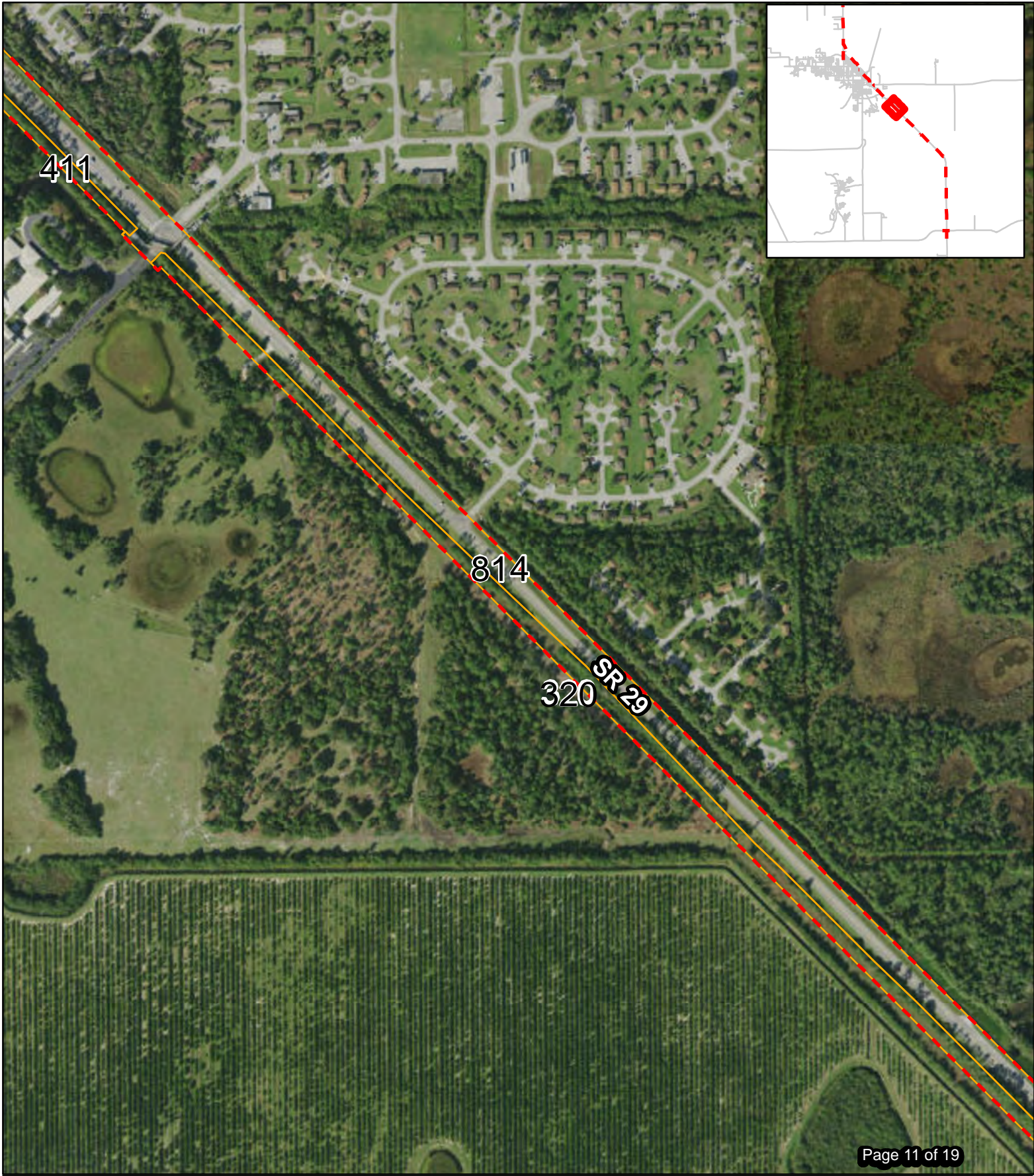
Legend

- Central Alternative #1 Revised
- Land Use Vegetative Cover

**Land Use and Vegetative Cover
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**



Date: 6/1/2018





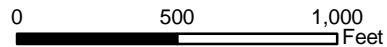
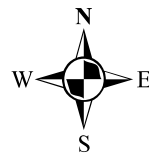
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 DATA SOURCE : AECOM 2018

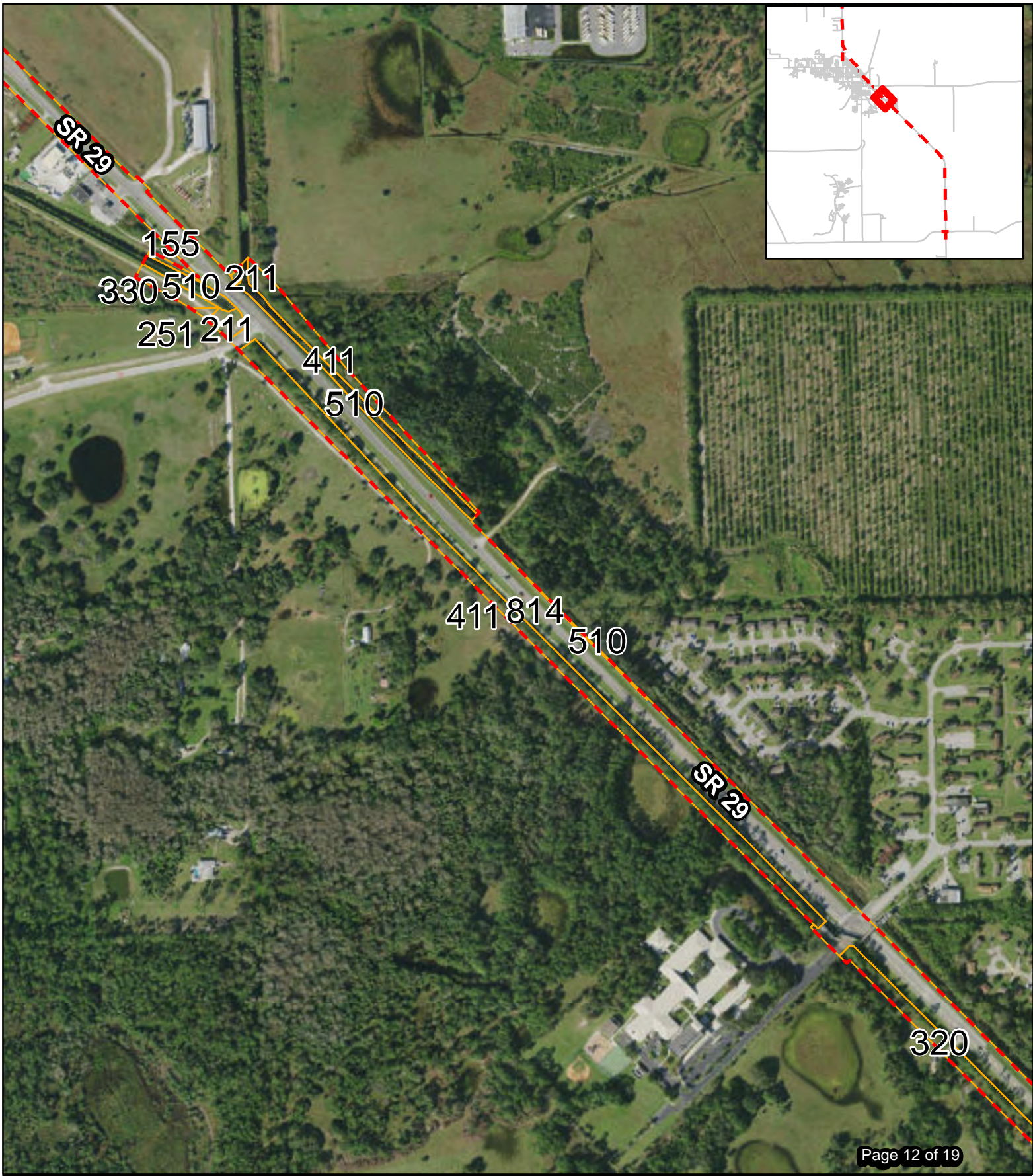
Legend

-  Central Alternative #1 Revised
-  Land Use Vegetative Cover

**Land Use and Vegetative Cover
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**



Date: 6/1/2018





MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

Legend

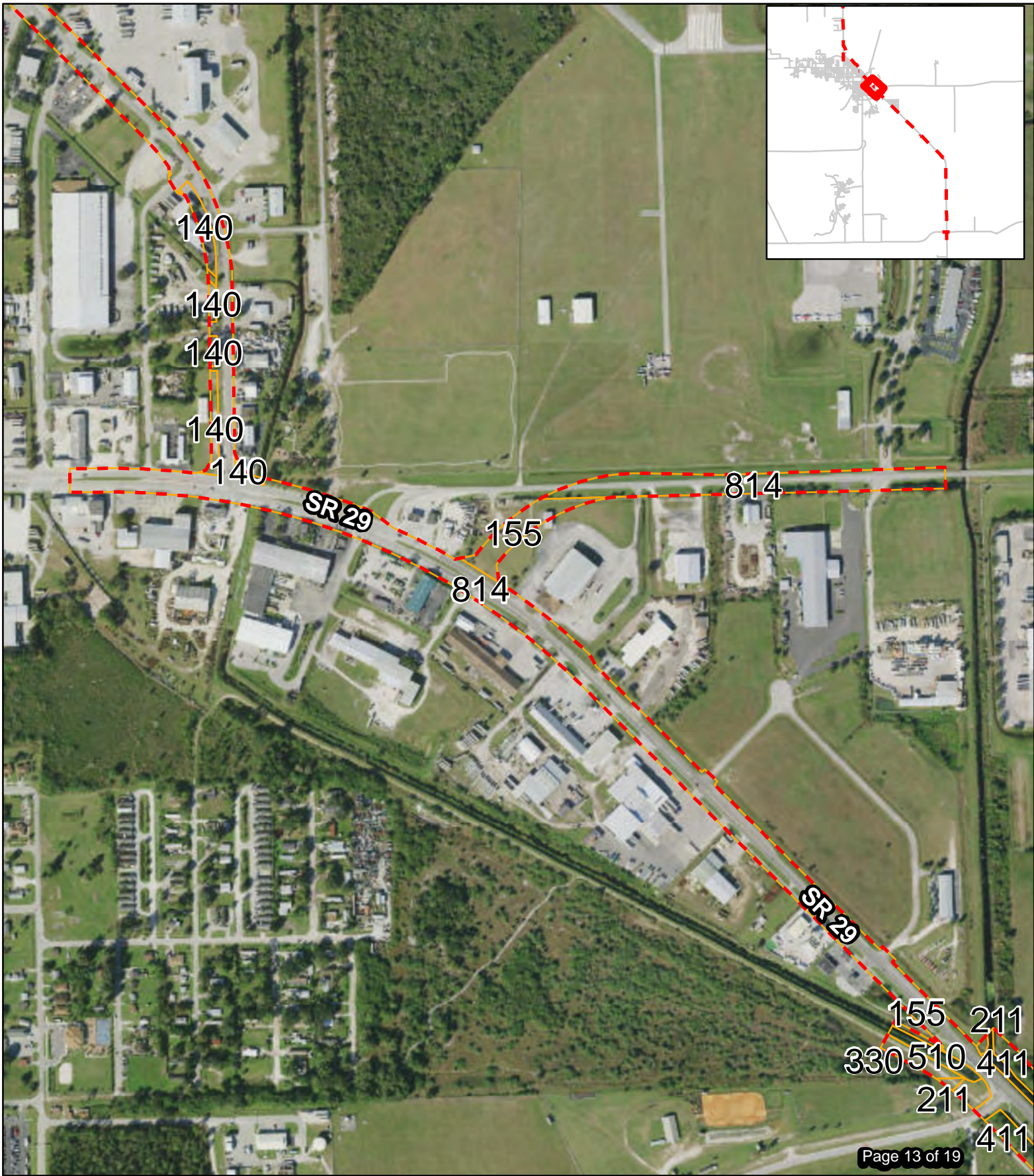
-  Central Alternative #1 Revised
-  Land Use Vegetative Cover

**Land Use and Vegetative Cover
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**

Date: 6/1/2018

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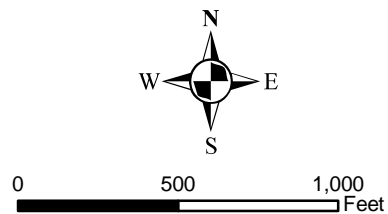
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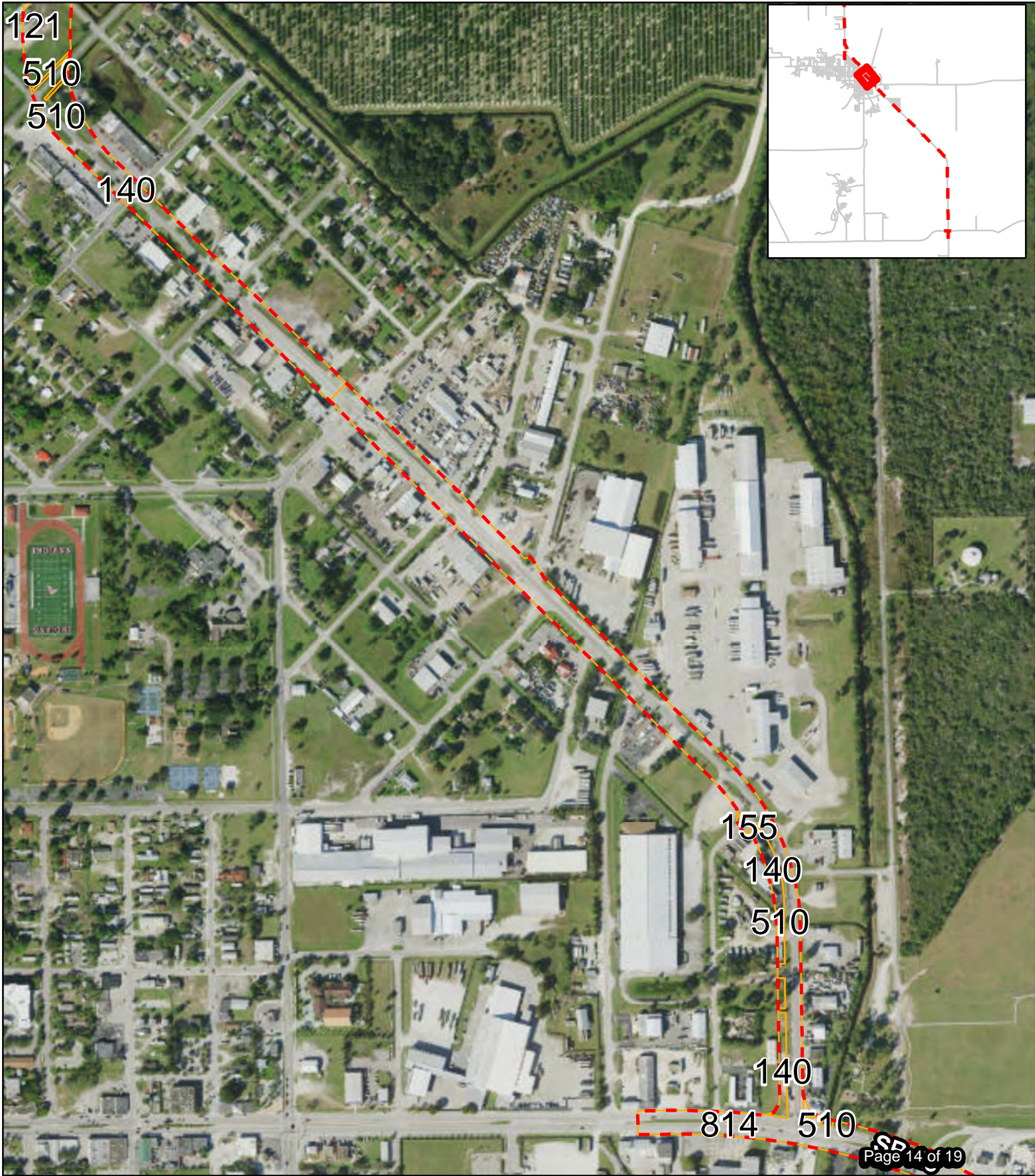
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- Land Use Vegetative Cover

**Land Use and Vegetative Cover
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**

Date: 6/1/2018





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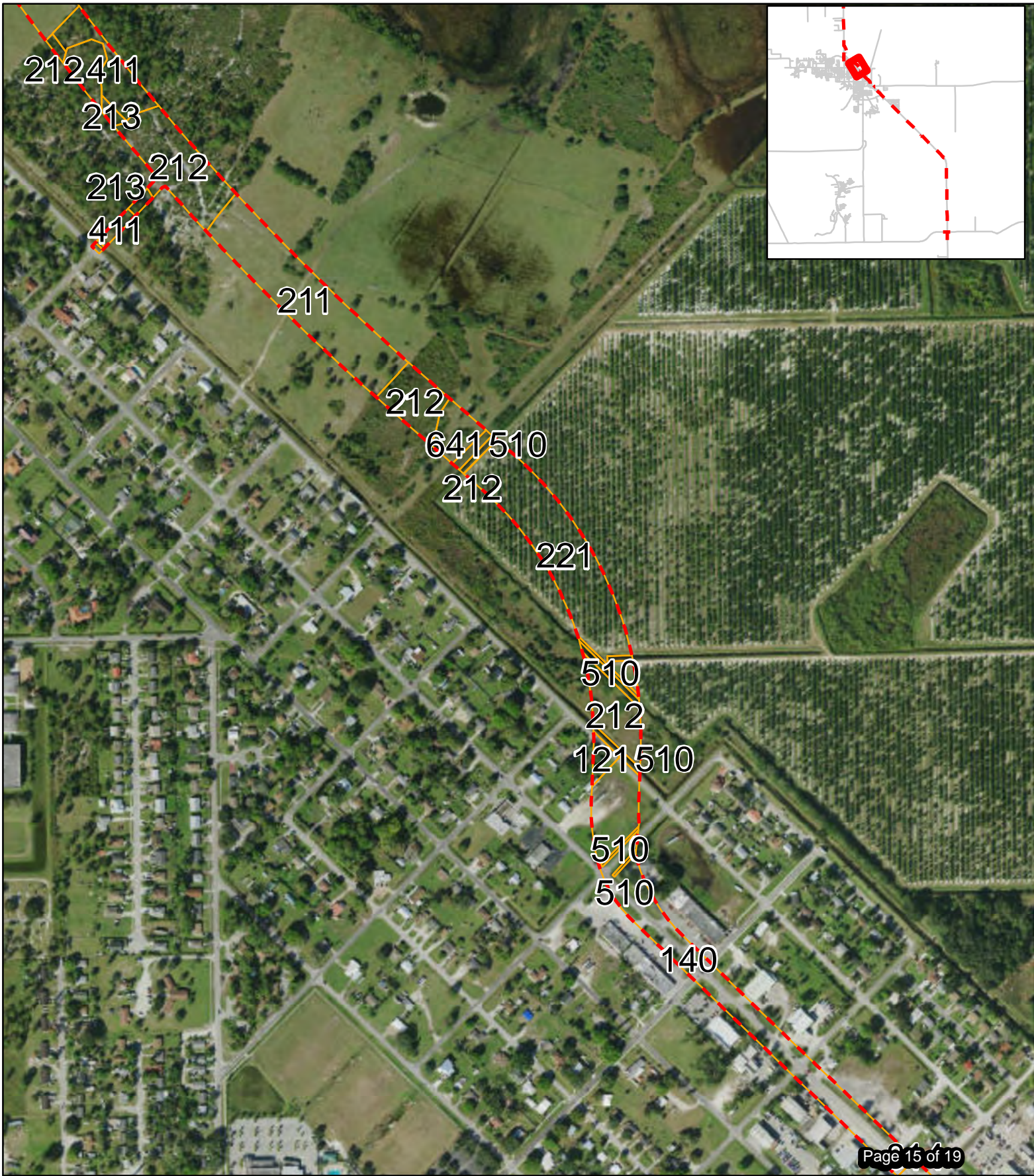
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 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**

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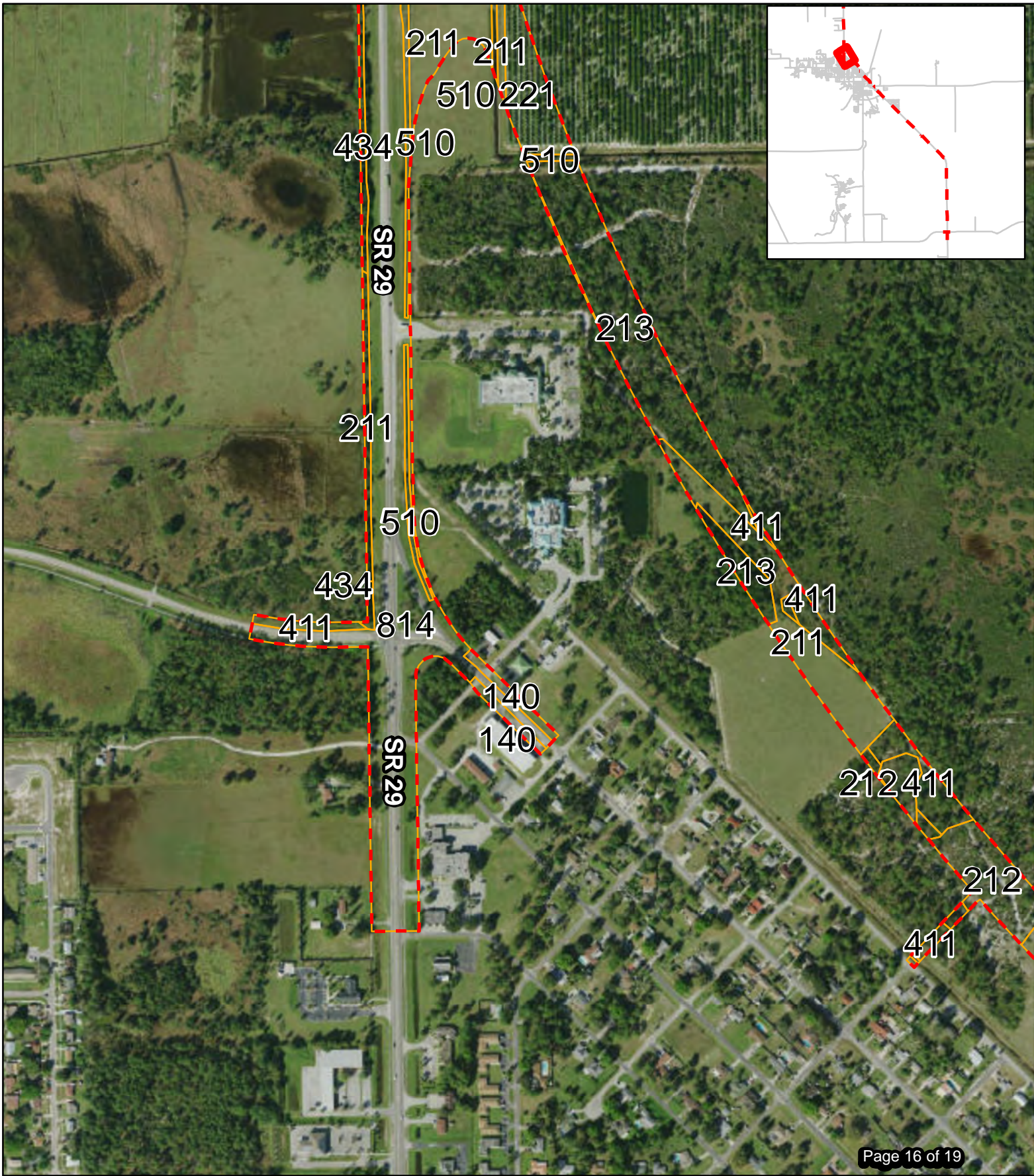
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 SR 29 from Oil Well Road to SR 82
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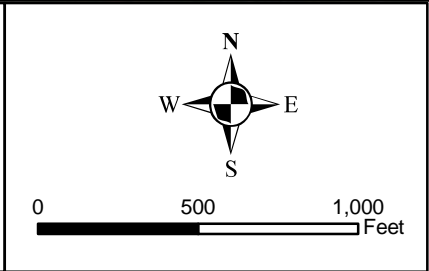
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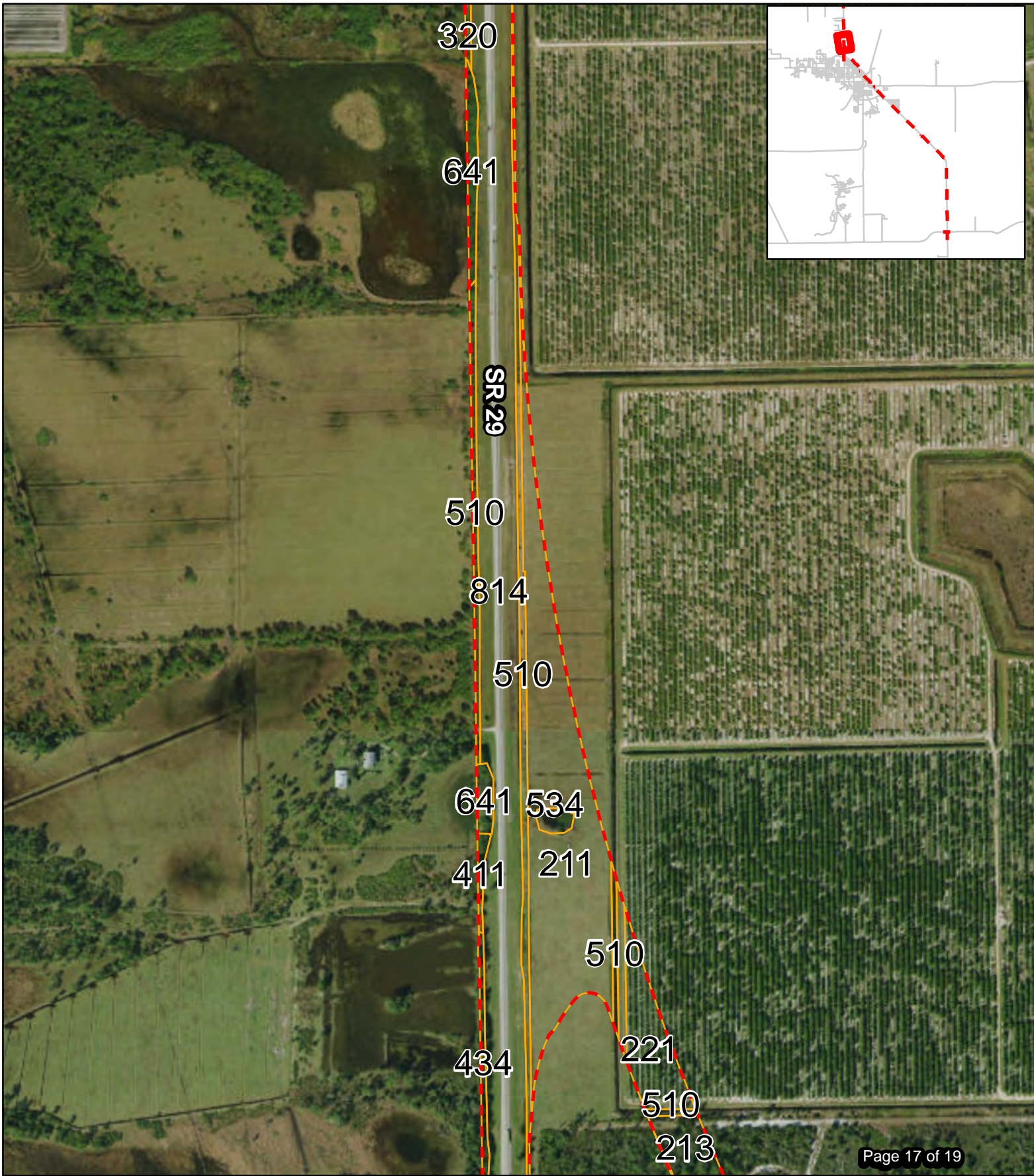
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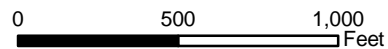
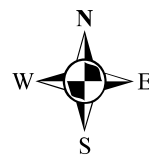
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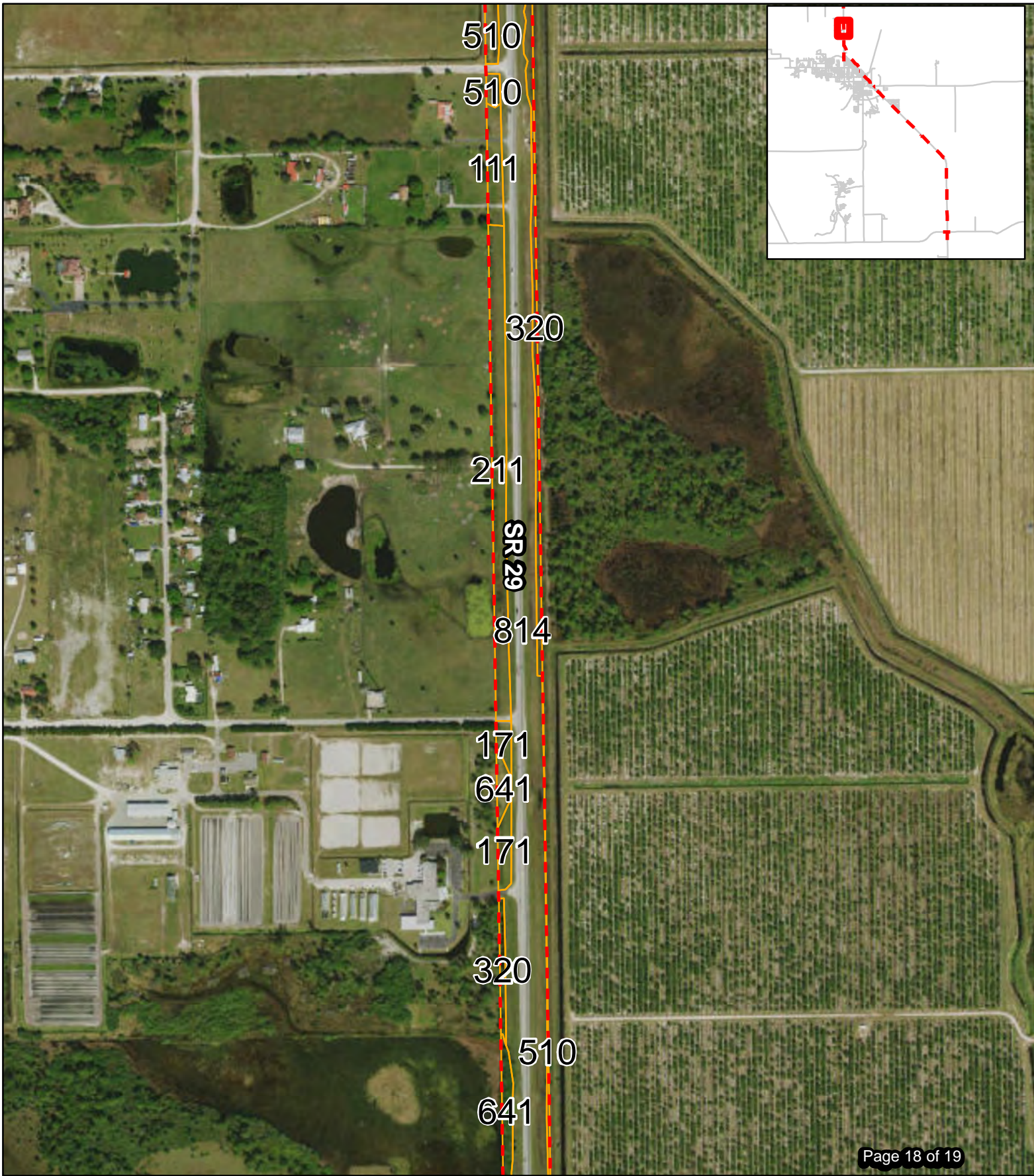
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 SR 29 from Oil Well Road to SR 82
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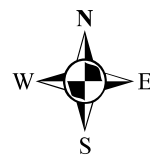
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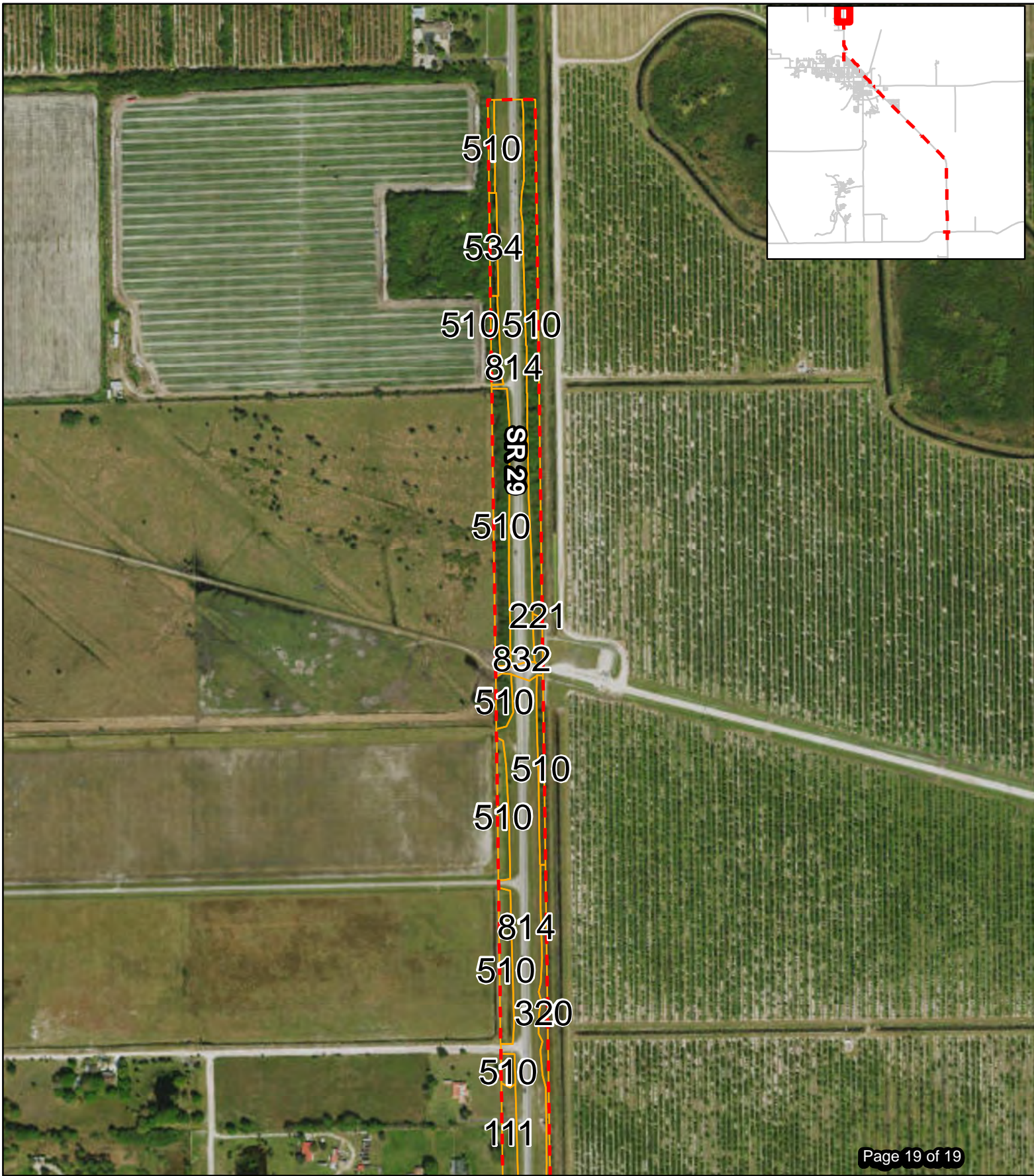
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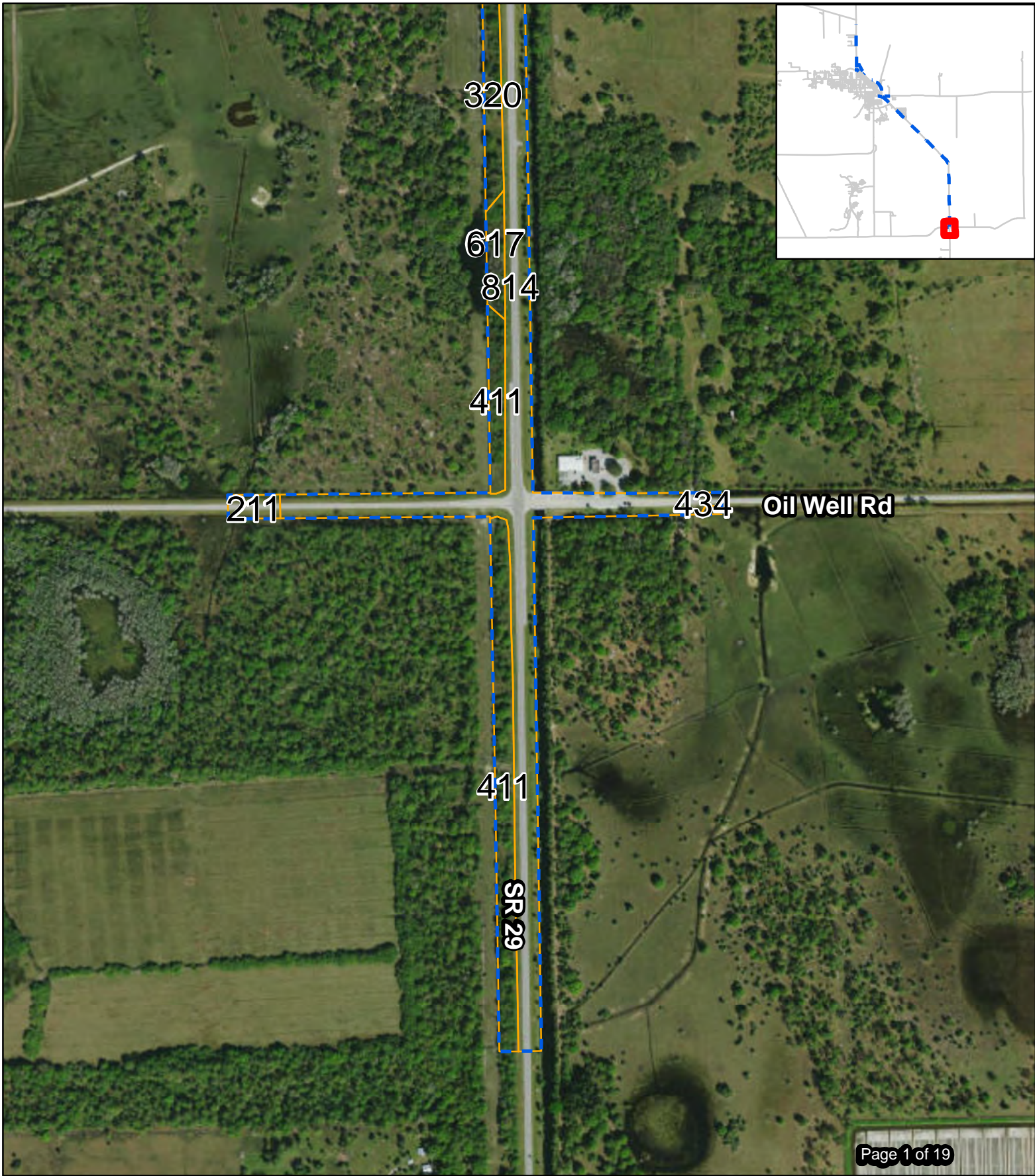
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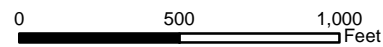
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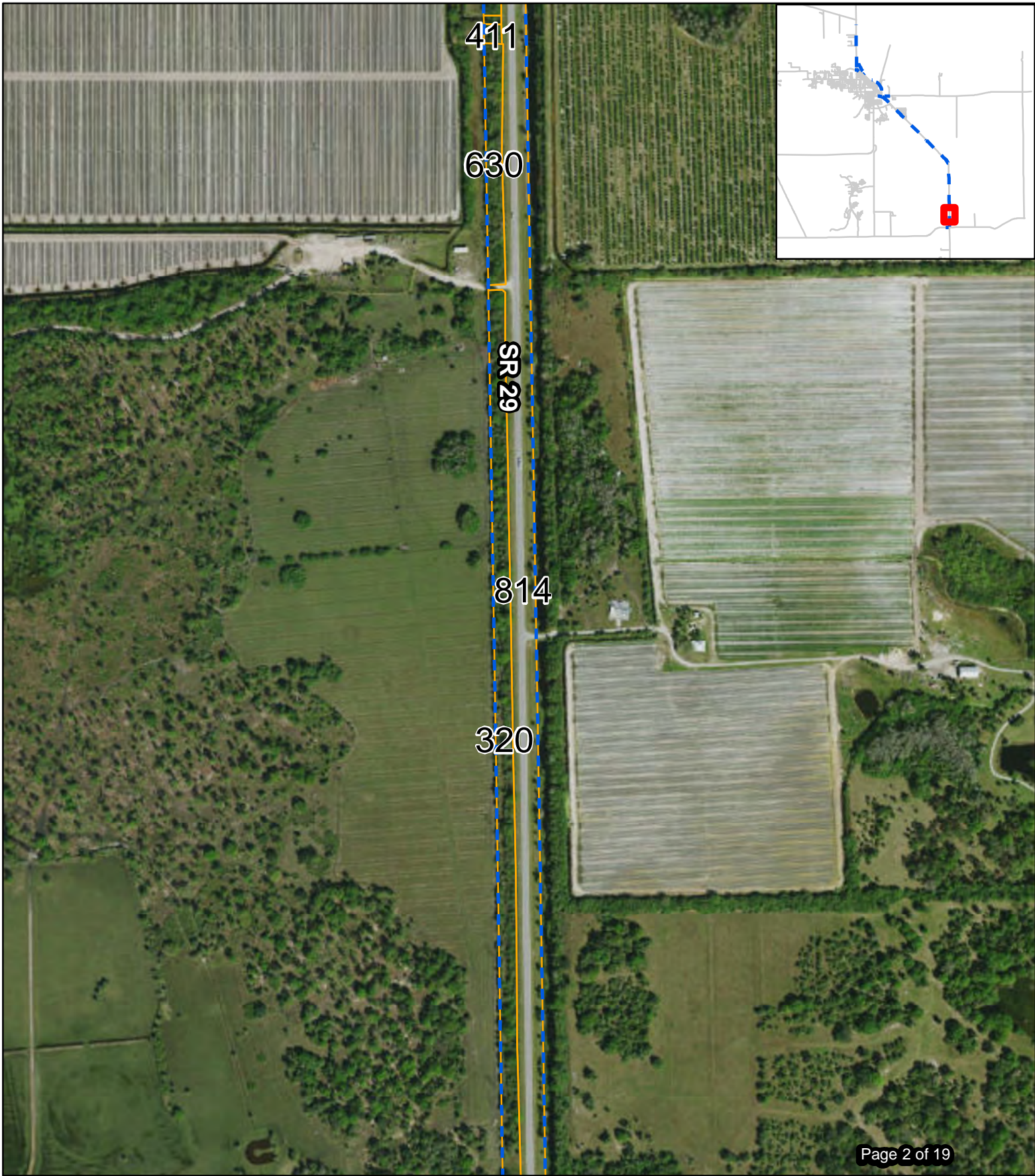
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**Land Use and Vegetative Cover
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #2**



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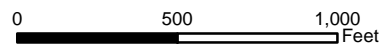
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**Land Use and Vegetative Cover
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #2**

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 Central Alternative #2**

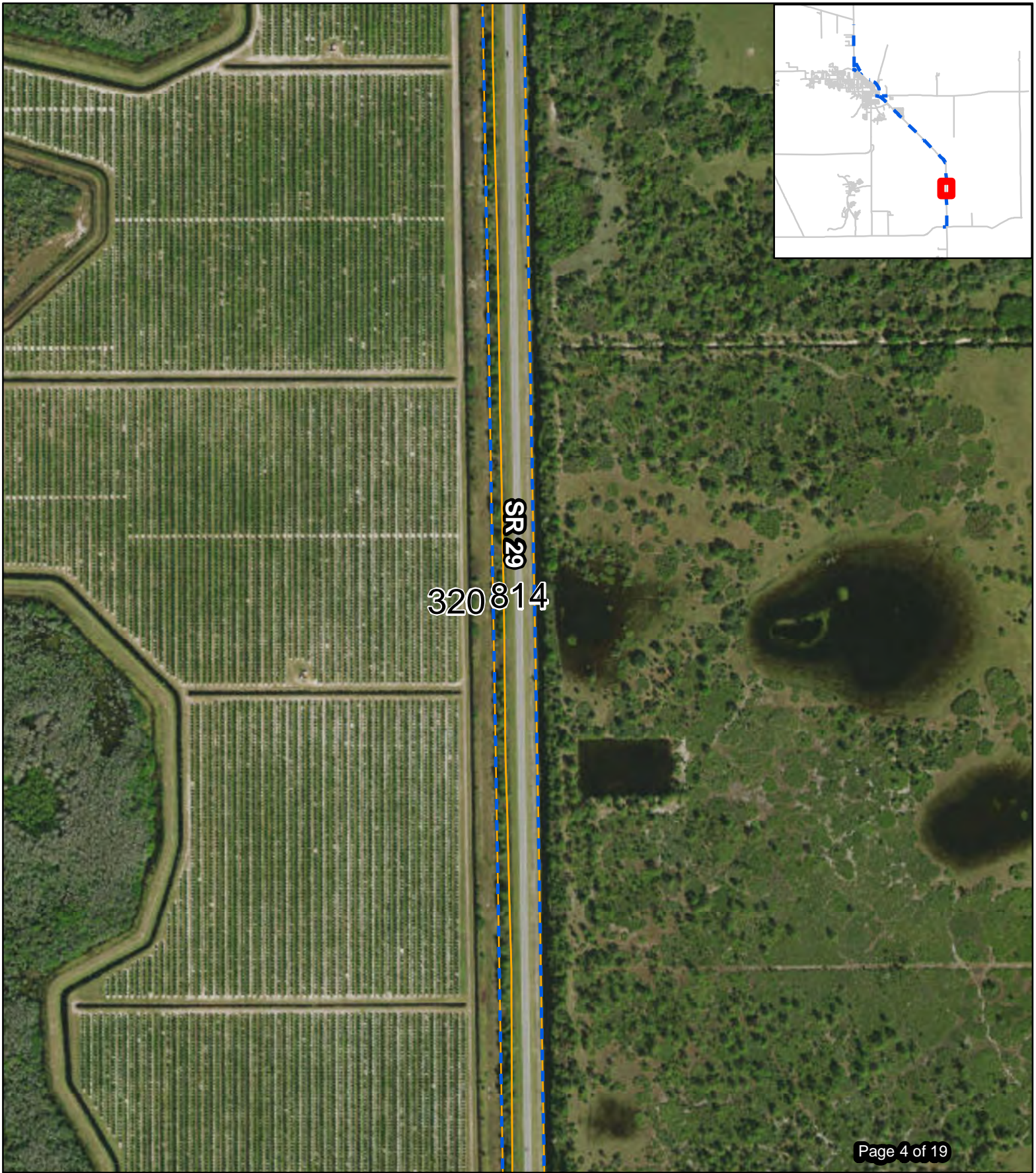


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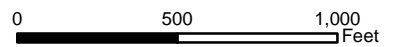
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


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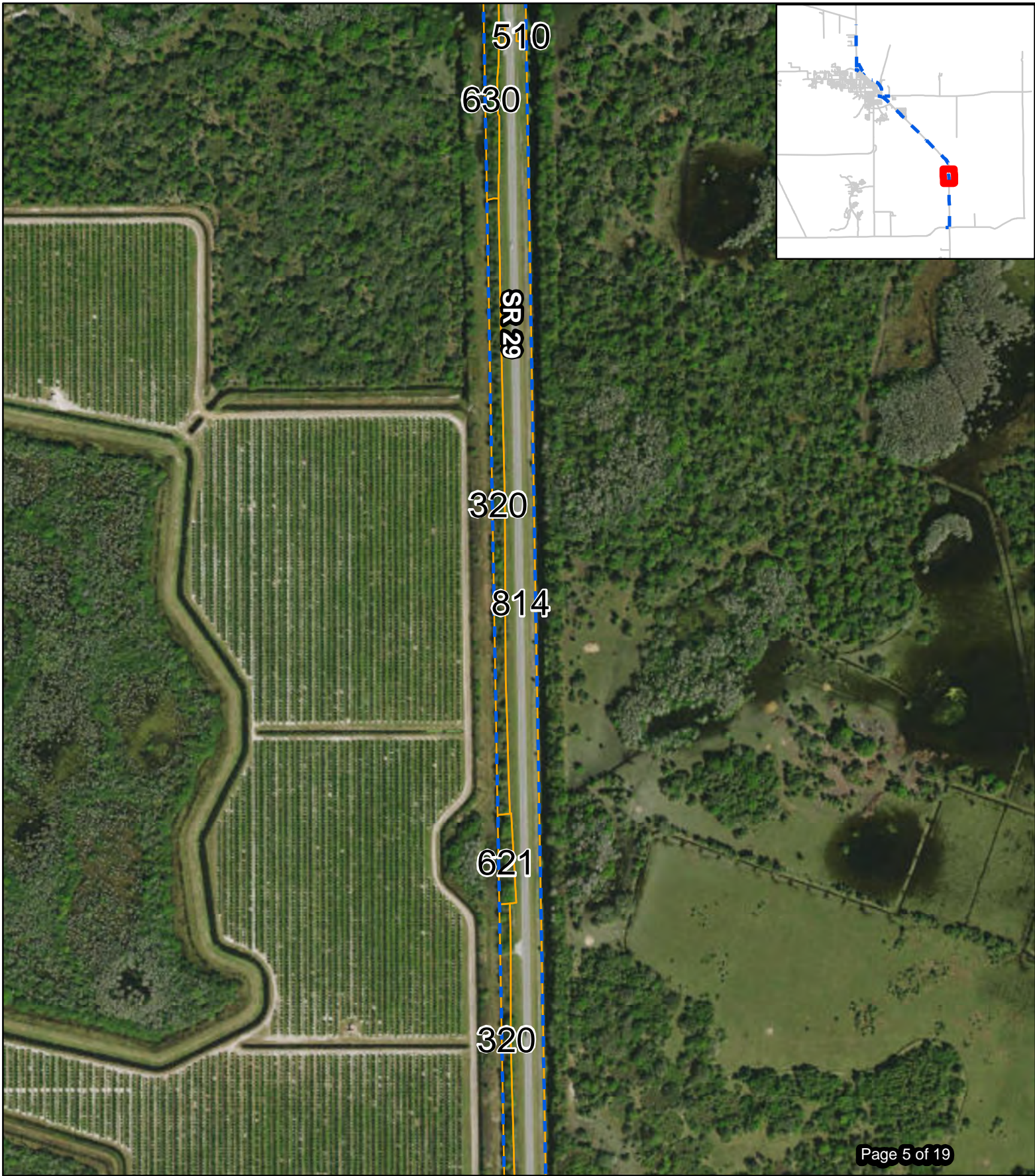
Land Use and Vegetative Cover
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Central Alternative #2



Legend

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
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**Land Use and Vegetative Cover
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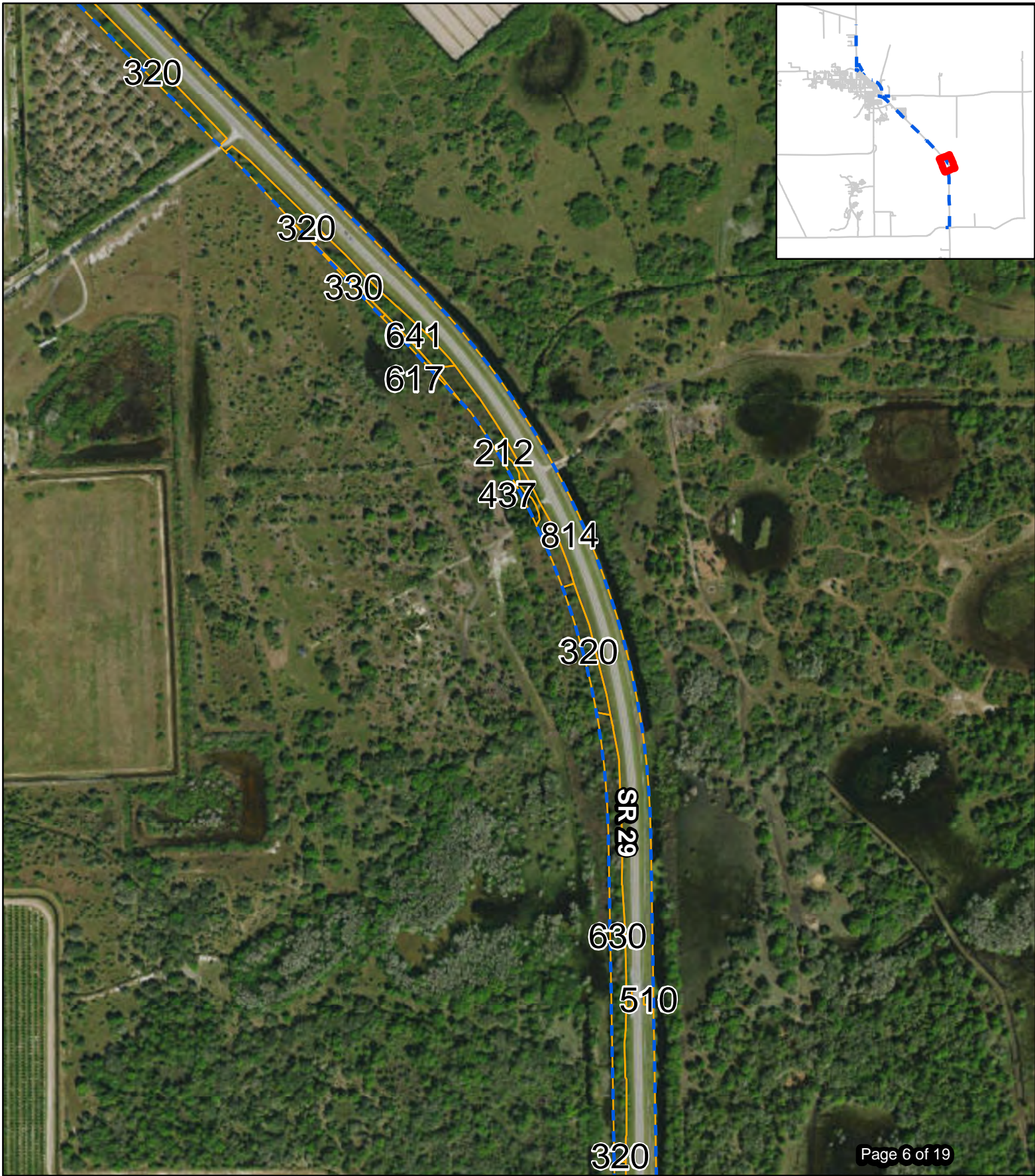


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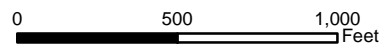
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


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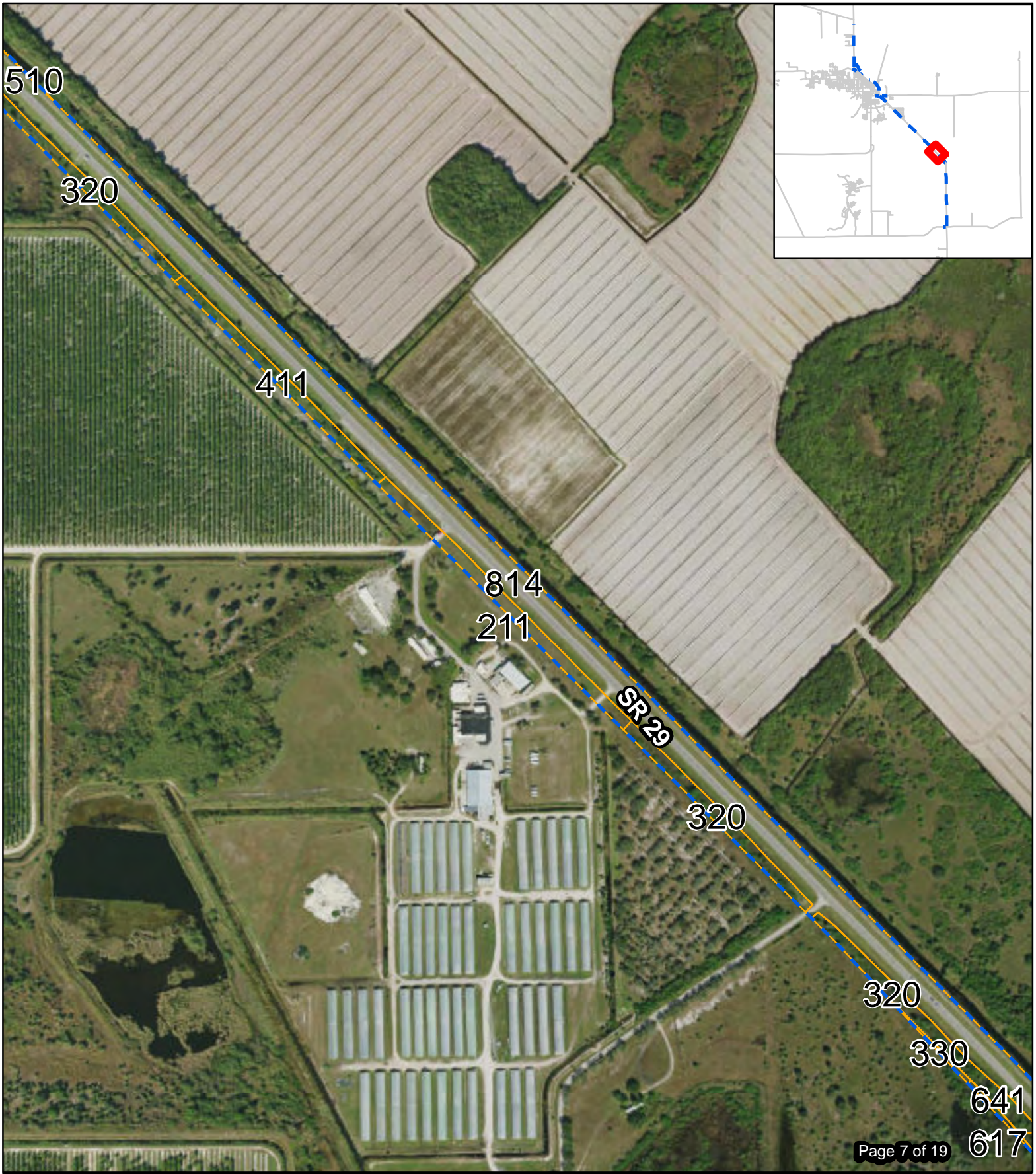
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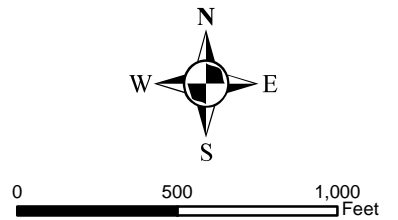
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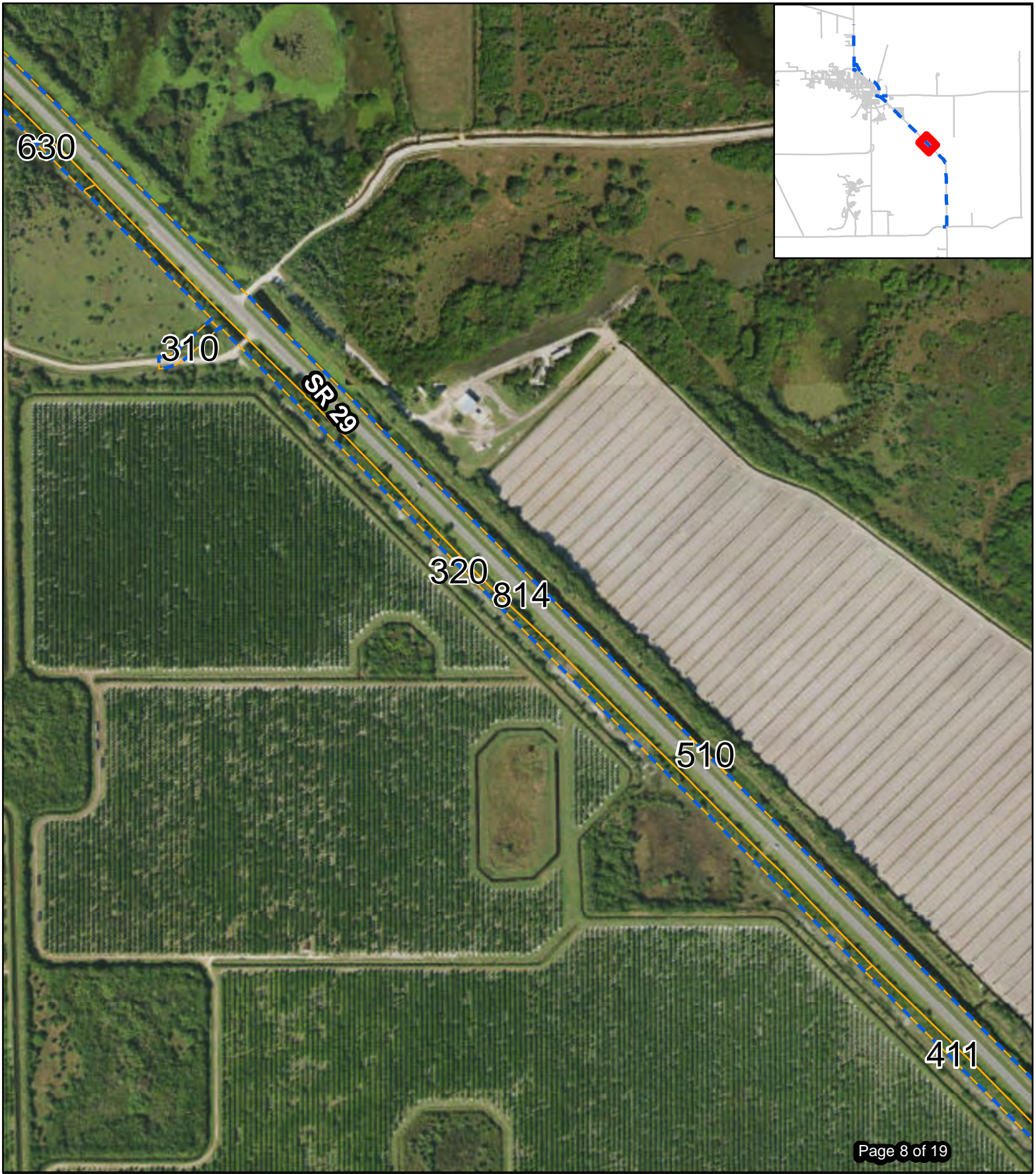
Land Use and Vegetative Cover
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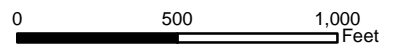
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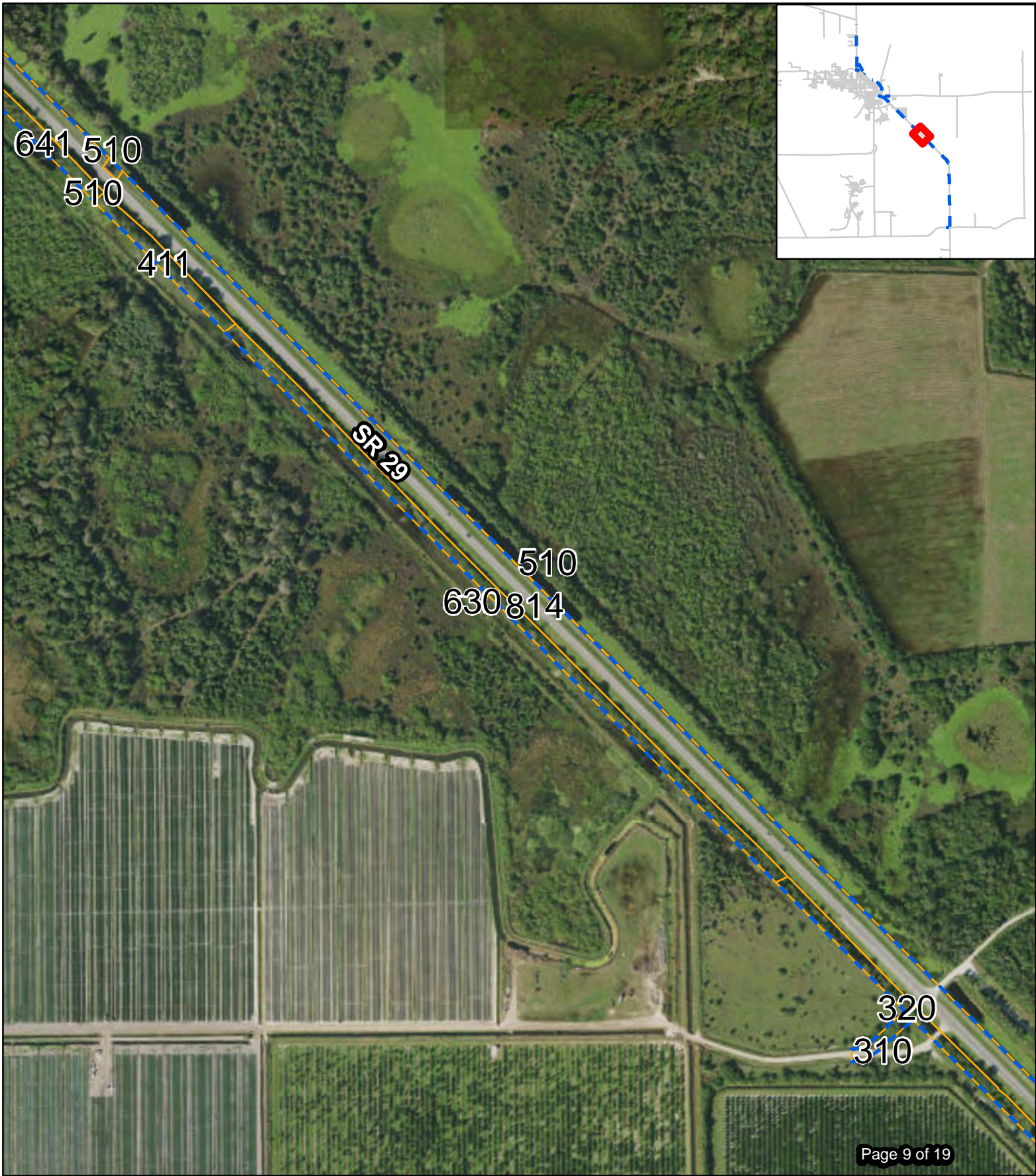
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
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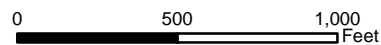
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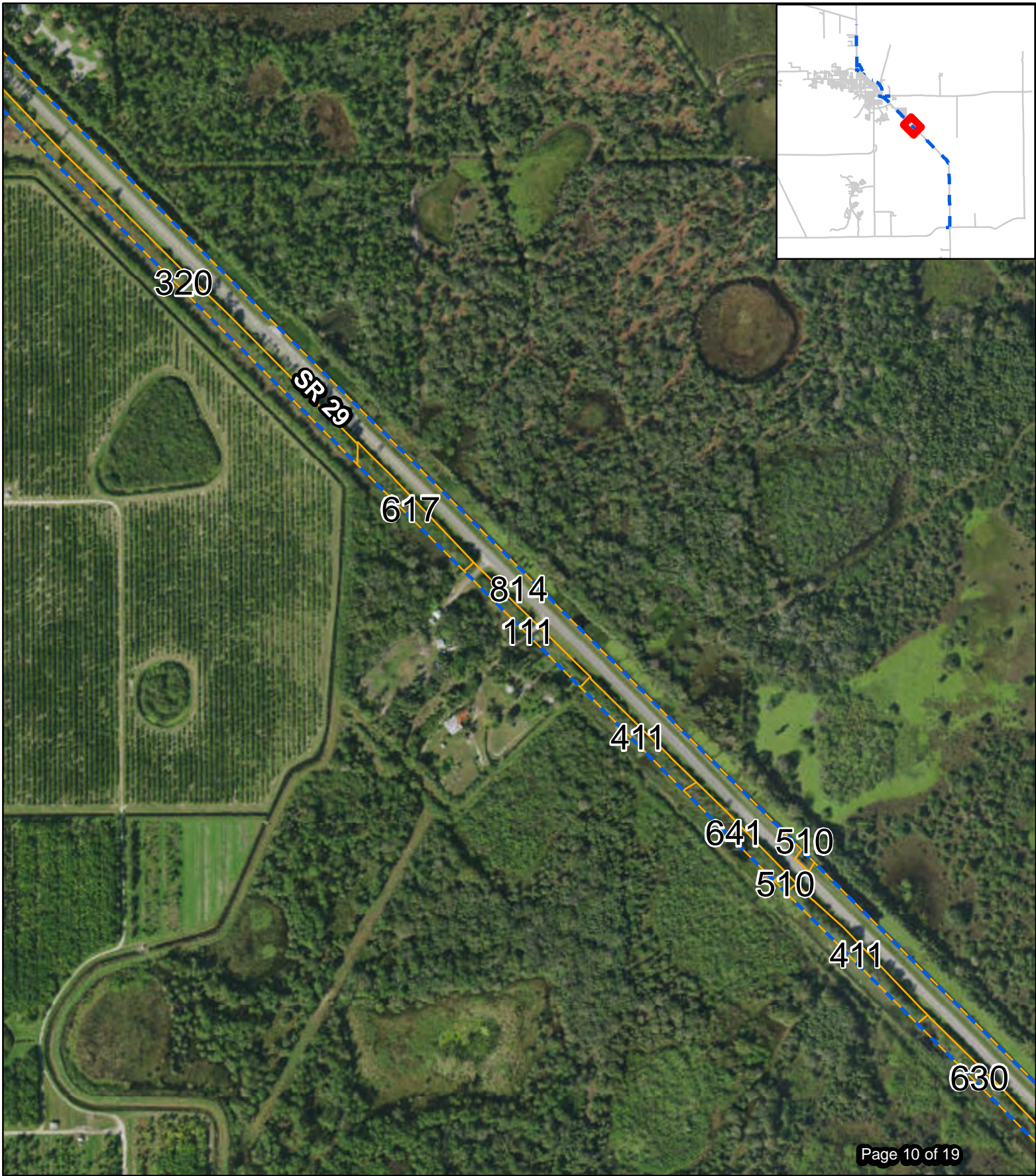
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


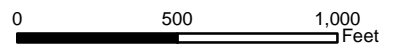
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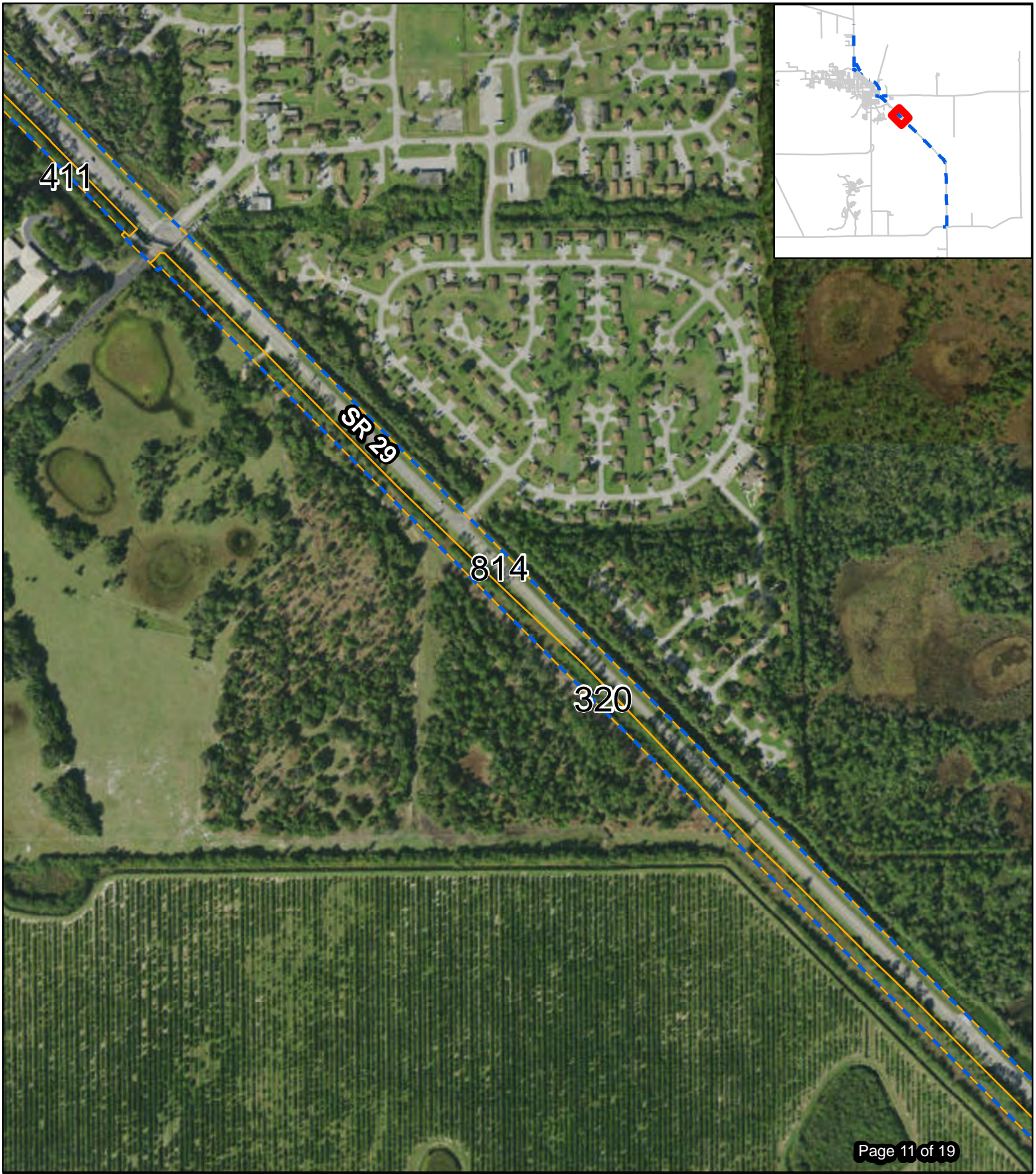
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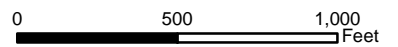
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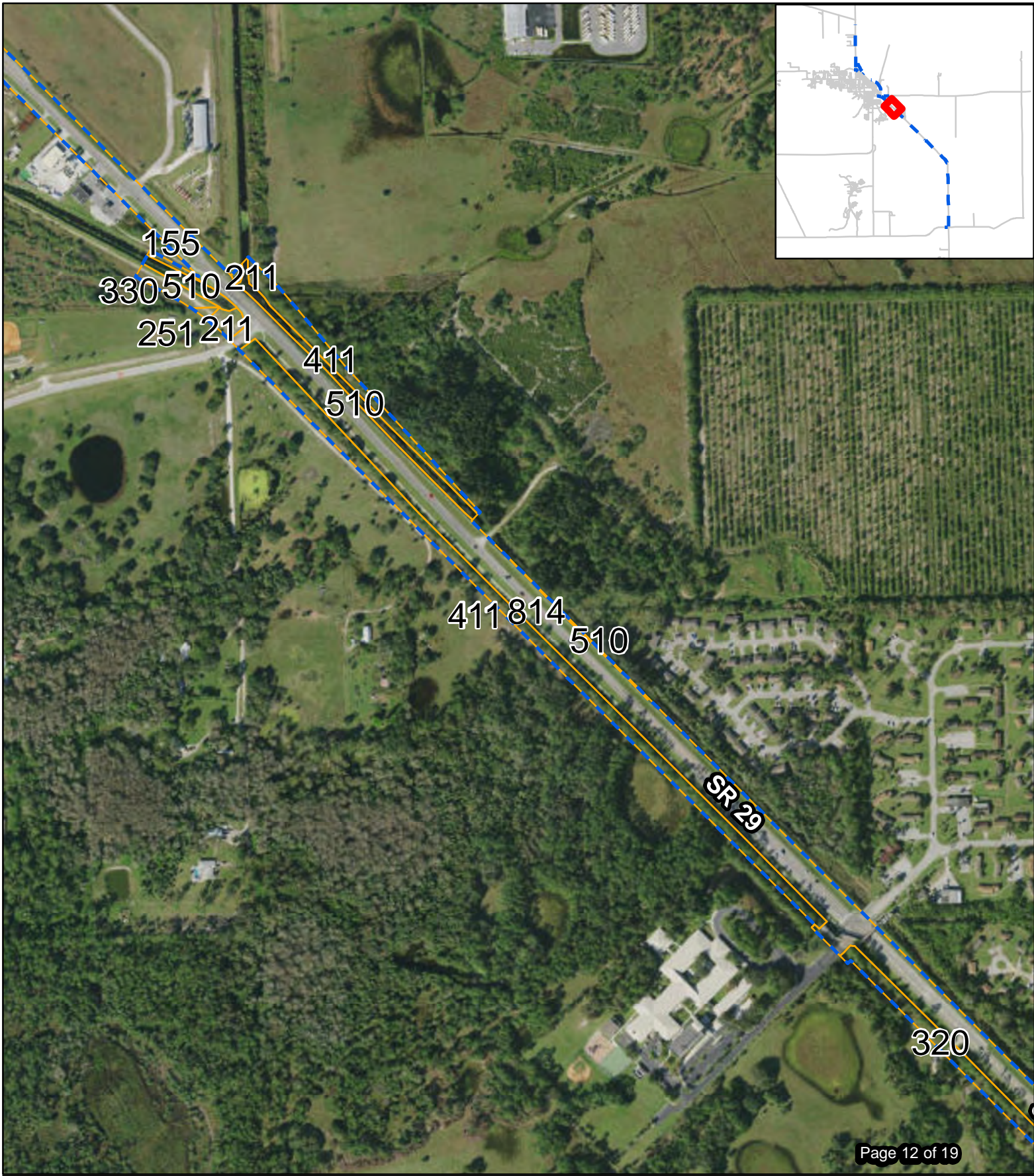
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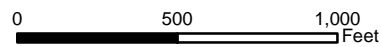
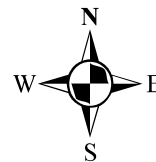
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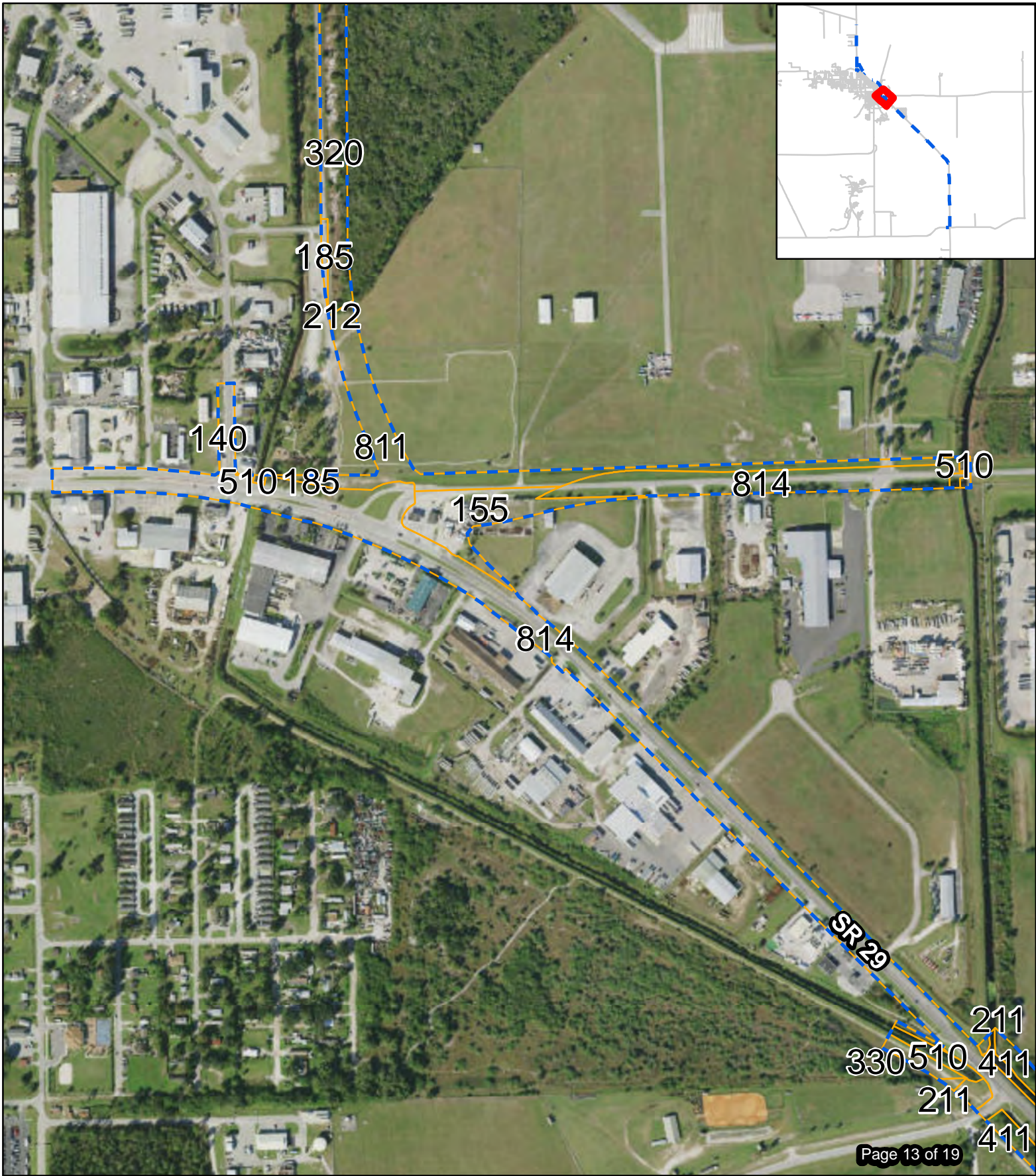
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
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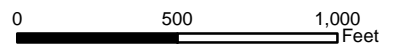
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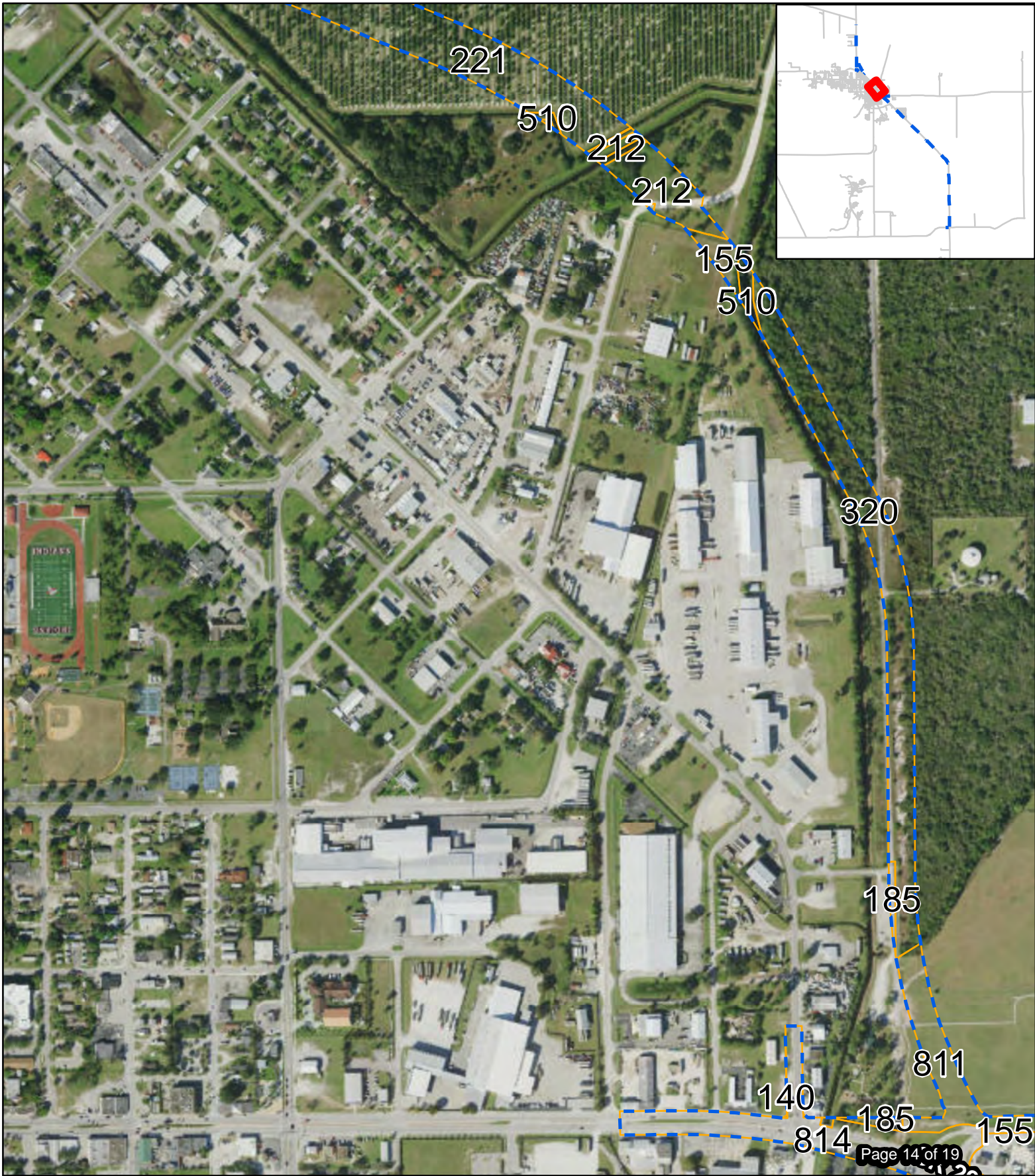
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
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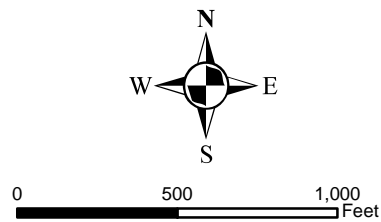
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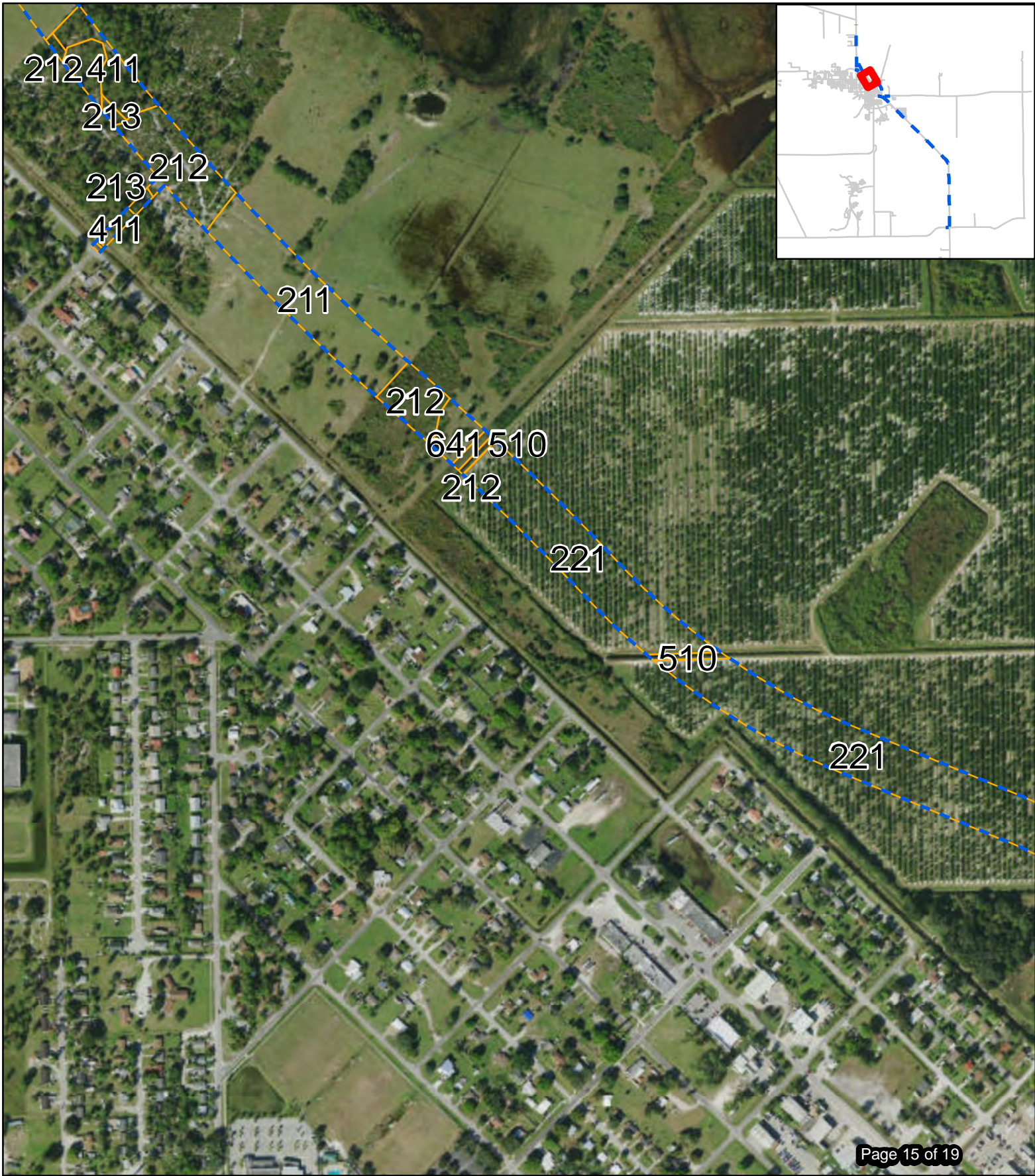
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
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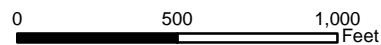
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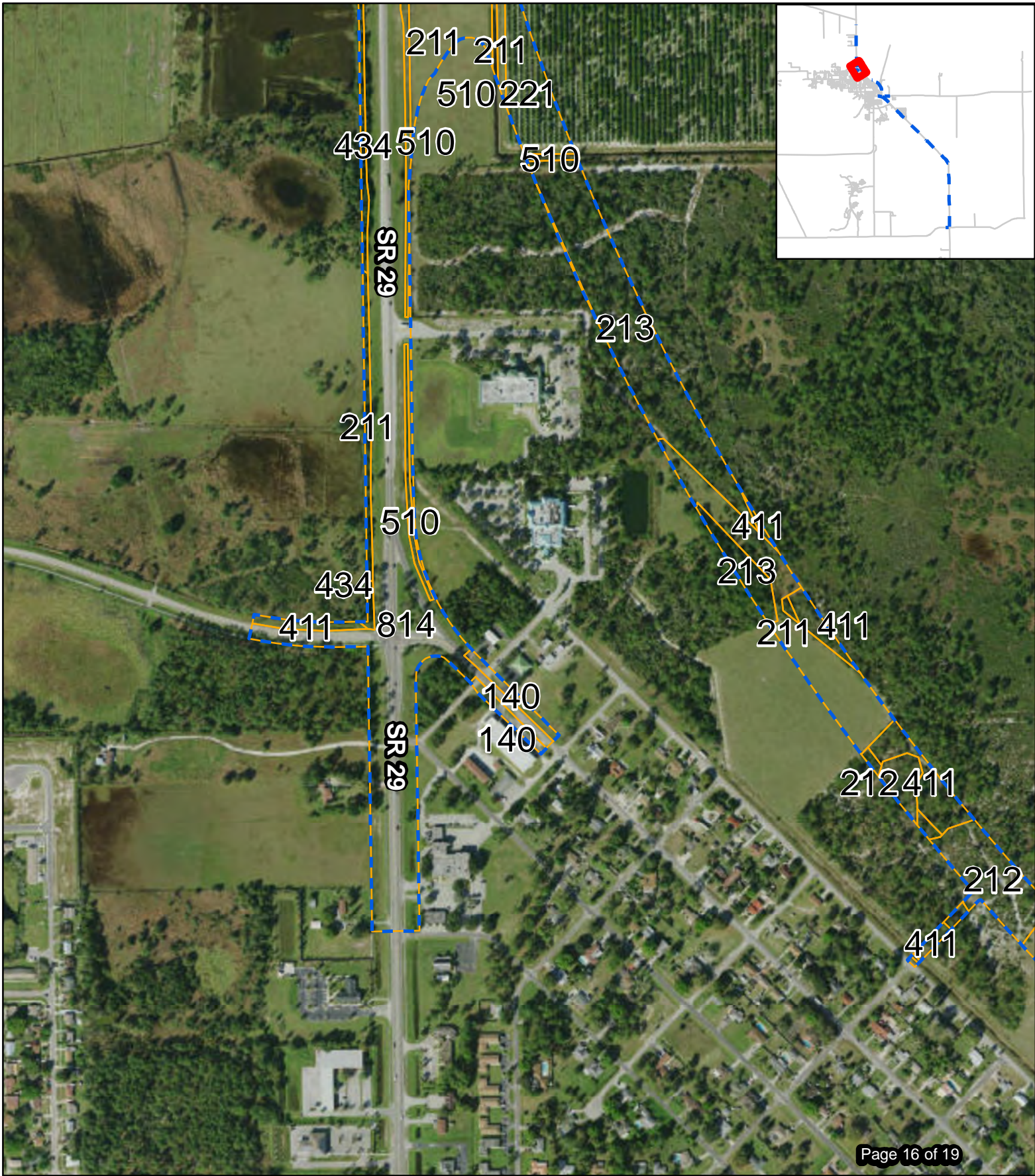
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
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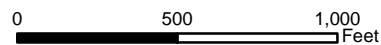
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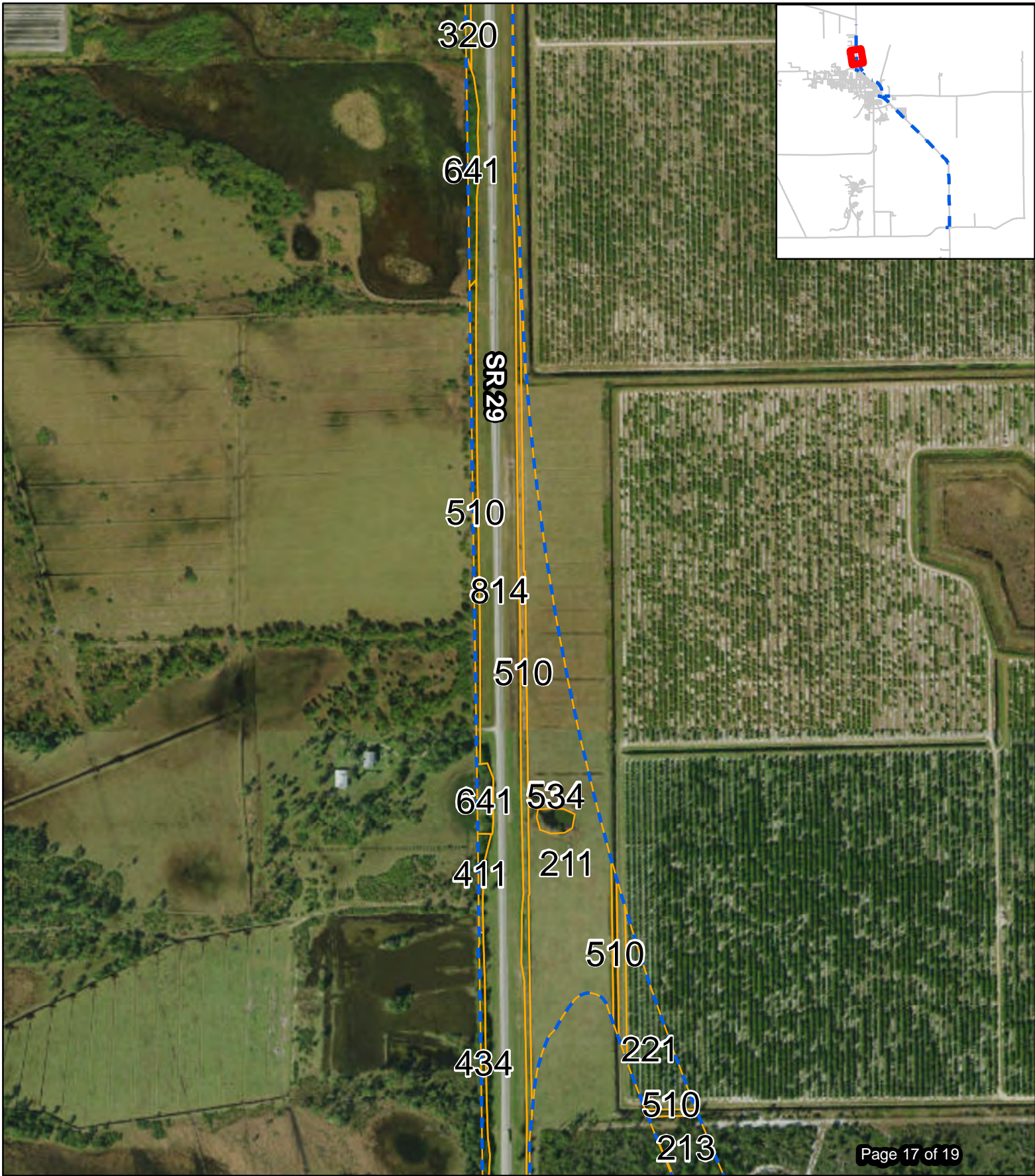
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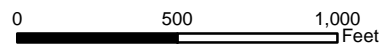
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


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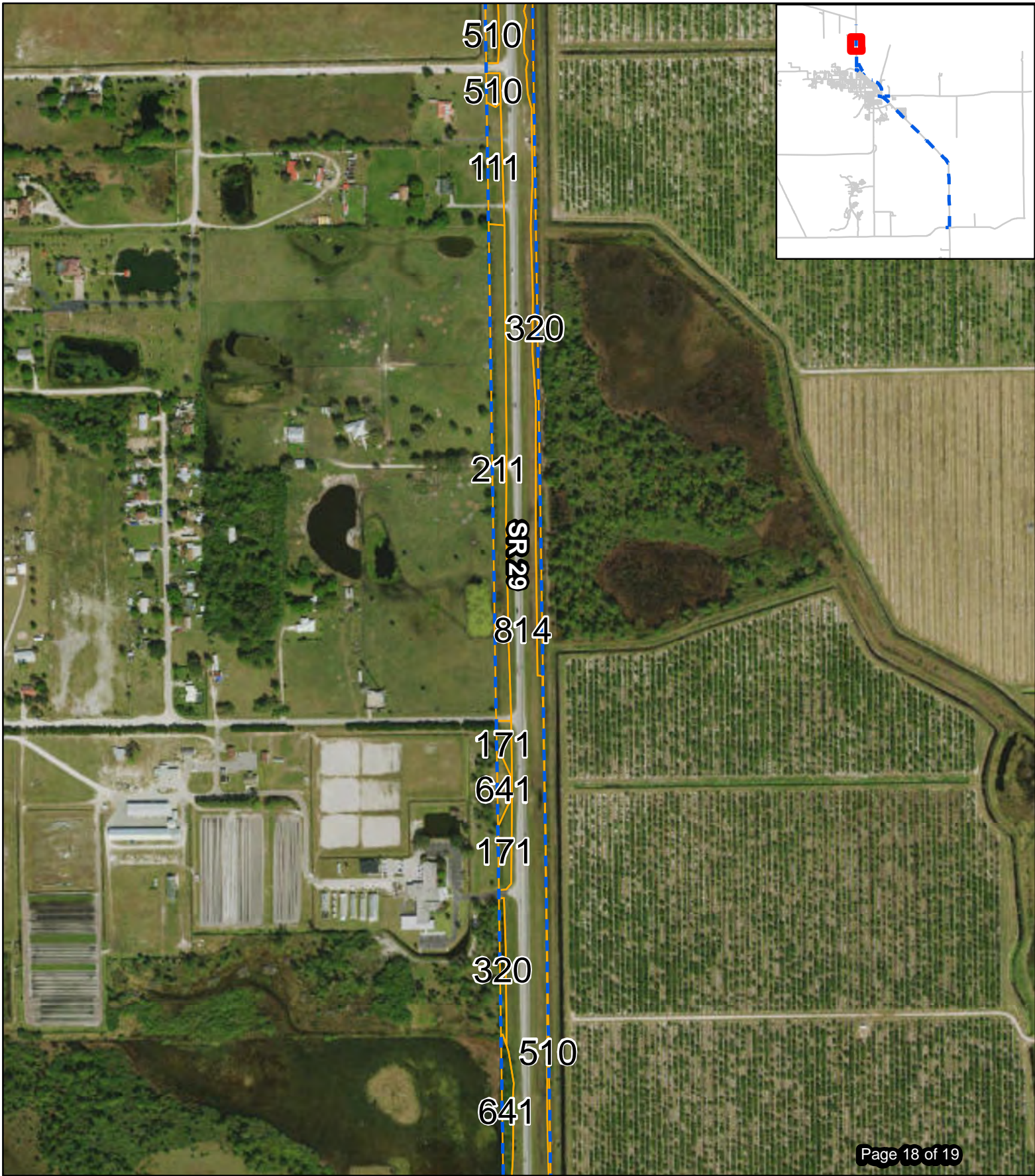
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
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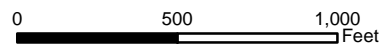
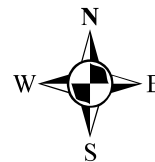
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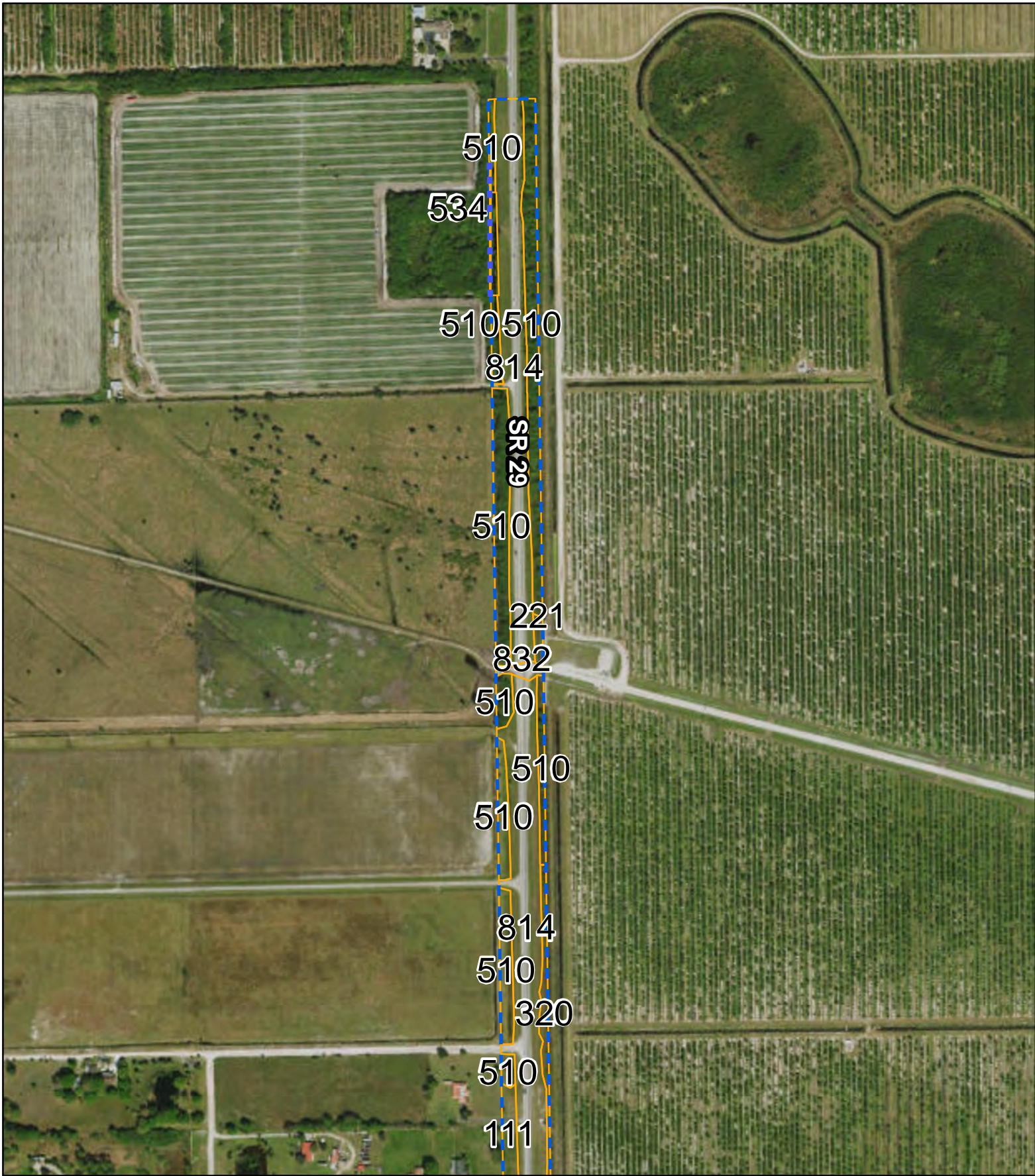
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
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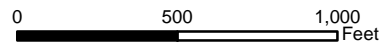
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**Land Use and Vegetative Cover
 SR 29 from Oil Well Road to SR 82
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 Central Alternative #2**

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APPENDIX C-2

Land Use Descriptions

APPENDIX C – 2

EXISTING LAND USES/VEGETATIVE COVER DESCRIPTIONS

UPLAND COMMUNITIES

Residential, Low Density - Fixed Single-Family Units

FLUCFCS: 111

Fixed single-family units in this category include less than two dwelling units per acre. This land use type occurs along the west side of SR 29, within the northern region of the project study area, and comprises 1.64 acres of each Build Alternative (0.44% of Central Alternative #1 Revised and 0.43% of Central Alternative #2).

Residential, Medium Density - Fixed Single-Family Units

FLUCFCS: 121

This land use category consists of fixed single family units with two-to-five dwelling units per acre. Medium-density fixed single-family units comprises 0.32 acre (0.09%) of Central Alternative #1 Revised and 0.02 acre (0.01%) of Central Alternative #2, within the town of Immokalee.

Commercial and Services

FLUCFCS: 140

Commercial and services is primarily devoted to the distribution of products and services and includes all secondary structures associated with an enterprise, such as sheds, warehouses, office buildings, driveways, parking lots, and surrounding landscapes. This land use category occurs along both sides of the existing SR 29 corridor, within the town of Immokalee, and comprises 7.86 acres (2.13%) of Central Alternative #1 Revised and 0.89 acre (0.23%) of Central Alternative #2.

Other Light Industrial

FLUCFCS: 155

Other light industrial land use classification includes steel fabrication businesses in addition to small boat and electronics manufacturing facilities. This land use type occurs along the north side of SR 29, immediately south of the Immokalee Airport, and comprises 1.26 acre (0.34%) of Central Alternative #1 Revised and 3.55 acres (0.93%) of Central Alternative #2.

Educational

FLUCFCS: 171

Educational institutions encompass all levels of public and private schools, colleges, universities, training centers, etc. Within the project study area, this land use category consists of the University of Florida - IFAS Agricultural Research Facility, located along the west side of SR 29 near the north project terminus. This institution comprises 0.68 acre (0.18%) of each Build Alternative.

Parks and Zoos

FLUCFCS: 185

This land use category defines recreational land use that is specifically designated for a park or zoo facility. Recreational areas are sites containing physical structures that indicate either active or potential user-oriented recreation. The parks and zoos designation denotes Airport Park, located along the southwest boundary of the Immokalee Airport. This park comprises 0.41 acre (0.11%) of Central Alternative #2 and does not occur within Central Alternative #1 Revised.

Improved Pasture

FLUCFCS: 211

Improved pasture is comprised of land that has been cleared, tilled, reseeded with specific grass types, and periodically improved with brush control and fertilizer application. Within the project study area, this land use type contains low growing herbaceous vegetation such as bahia grass (*Paspalum notatum*) and Bermuda grass (*Cynodon dactylon*) and occurs along both sides of SR 29 throughout the project corridor. Improved pastures comprise 27.81 acres (7.54%) of Central Alternative #1 Revised and 27.78 acres (7.27%) of Central Alternative #2.

Unimproved Pasture

FLUCFCS: 212

Unimproved pasture includes cleared land with major stands of trees and brush where native grasses have been allowed to develop. Within the project study area, this land use type consists of scattered stands of live oak (*Quercus virginiana*), cabbage palm (*Sabal palmetto*), and saw palmetto (*Serenoa repens*), with groundcover vegetation comprised of bahia grass, Bermuda grass, broomsedge (*Andropogon virginicus*), and dog fennel (*Eupatorium capillifolium*). This land use type covers 7.30 acres (1.98%) of Central Alternative #1 Revised and 8.08 acres (2.11%) of Central Alternative #2.

Woodland Pasture

FLUCFCS: 213

Woodland pasture is used to describe areas of forestland that are actively used as pastures. Evidence of cattle activity, such as trails to feed bunkers and watering areas is required. Within the project study area, this habitat type is characterized by a moderate to dense canopy of live oak, cabbage palm, and longleaf pine (*Pinus palustris*), with an understory of various shrubs and pasture grasses. Woodland pastures occur within the bypass segment of new alignment within both Build Alternatives and comprise 8.21 acres of the project study area (2.23% of Central Alternative #1 Revised and 2.15% of Central Alternative #2).

Citrus Groves

FLUCFCS: 221

Citrus groves generally occur in areas possessing a specific combination of soil qualities and climatology factors favorable for growing various fruit crops. Citrus groves may include

orange, grapefruit, tangerines trees as dominant crop types. This land use category, which occurs throughout the project study area, comprises 7.52 acres (2.04%) of Central Alternative #1 Revised and 18.76 acres (4.9%) of Central Alternative #2.

Herbaceous (Dry Prairie)

FLUCFCS: 310

This land use classification includes upland prairie grasses that occur on non-hydric soils but may be occasionally inundated. These habitats are generally devoid of trees and contain a variety of grasses, sedges, rushes, and other herbaceous species with occasional saw palmetto. Herbaceous (dry prairie) occurs along the west side of SR 29 within the project study area and comprises 0.32 acre (0.09 %) of Central Alternative #1 Revised and 0.33 acre (0.09%) of Central Alternative #2.

Upland Shrub and Brushland

FLUCFCS: 320

Shrub and brushland is upland habitat which occurs on dry, sandy soils and is comprised of various low-growing woody shrubs, such as saw palmetto, wax myrtle (*Myrica cerifera*), gallberry (*Ilex coriacea*), as well as various other shrub and brush species. Within the project study area, upland shrub and brushland covers 35.03 acres (9.5%) of Central Alternative #1 Revised and 42.27 acres (11.06%) of Central Alternative #2.

Mixed Rangeland

FLUCFCS: 330

Mixed Rangeland is used to describe upland areas comprised of more than one-third intermixture of either grassland or shrub-brushland. This land use classification occurs along the west side of SR 29 throughout the project study area and covers 0.57 acre (0.15%) of each Build Alternative.

Pine Flatwoods

FLUCFCS: 411

Pine flatwoods are dominated by either slash pine (*Pinus elliottii*), longleaf pine, or both species. Common understory vegetation within this habitat includes saw palmetto, wax myrtle, gallberry, and a wide variety of herbs and brush. This land use category occurs along both sides of SR 29 throughout the project study area and comprises 20.63 acres of each Build Alternative (5.60% of Central Alternative #1 Revised and 5.40% of Central Alternative #2).

Hardwood-Conifer Mixed

FLUCFCS: 434

Hardwood-conifer mixed consists of forested areas in which neither upland conifers nor hardwoods achieve a 66-% crown canopy dominance. Within the project study area, dominant vegetation within this habitat type consists of longleaf pine, slash pine, live oak, and cabbage palm. Hardwood-conifer mixed habitat comprises 1.05 acre of each Build Alternative (0.28% of

Central Alternative #1 Revised and 0.27% of Central Alternative #2).

Australian Pine

FLUCFCS: 437

This land use category is used to describe disturbed upland habitats in which Australian pine (*Casuarina equisetifolia*) is the dominant tree species. These invasive trees tend to colonize disturbed sites, forming dense thickets with little to no groundcover vegetation. Australian pines were initially introduced to Florida as ornamentals and are frequently planted for wind breaks or soil stabilization purposes. Within the project study area, Australian pine habitat is present along the west side of SR 29 near the Owl Hammock curve and comprises 0.20 acre (0.06% of Central Alternative #1 Revised and 0.05% of Central Alternative #2).

Roads and Highways

FLUCFCS: 814

Roads and highways are transportation facilities used for the movement of people and goods. This category includes roadways and associated areas used for interchanges and limited access ROW, including pavement, medians, and buffers. Within the project study area, this includes the existing SR 29 ROW, from south of Oil Well Road to south of SR 82, as well as associated cross streets, center medians, grassed shoulders, and embankments. Wetlands and other surface waters located within the existing ROW were classified separately and excluded from the total acreage of the roads and highways designation. This land use category comprises 218.58 acres (59.31%) of Central Alternative #1 Revised and 212.55 acres (55.60%) of Central Alternative #2.

Electrical Power Transmission Lines

FLUCFCS: 832

This land use classification is designated specifically for the transmission line network that conveys electric power from a specific power-generating facility and includes the extent of the maintained power easement. Within the project study area, this land use type consists of an electric transmission line located perpendicular to SR 29 that crosses the roadway near the north project terminus. Electrical power transmission lines cover 0.23 acre (0.06%) of each Build Alternative.

WETLAND COMMUNITIES

Mixed Wetland Hardwoods

FLUCFCS: 617

FWS: PFO1/3C (Palustrine, Forested, Broad-Leaved Deciduous /Broad-Leaved Evergreen, Seasonally Flooded)

Mixed wetland hardwoods are composed of a large variety of hardwood species tolerant of hydric conditions and which exhibit an ill-defined mixture of species. Within the project study area, this land use category occurs along the west side of SR 29. Dominant canopy species

consist of pop ash, cabbage palm, laurel oak, and red maple; with an understory of Brazilian pepper, Carolina willow, swamp fern, poison ivy, camphorweed, buttonbush, dog fennel, arrowhead, and water pennywort. This category comprises 1.95 acres of each Build Alternative (0.54% of Central Alternative #1 Revised and 0.52% of Central Alternative #2).

Cypress

FLUCFCS: 621

FWS: PFO2C (Palustrine, Forested, Needle-Leaved Deciduous, Seasonally Flooded)

This land use category is used to describe forested wetlands in which the predominate canopy species is either pond cypress or bald cypress. Within the project study area, a cypress-dominated wetland occurs along the west side of SR 29 near the south project terminus. Dominant canopy species consist of pond cypress and bald cypress; with an understory of Carolina willow, red maple, Brazilian pepper, maidencane, poison ivy, and water pennywort. This land use category comprises 0.56 acres (0.15%) of each Build Alternative.

Wetland Forested Mixed

FLUCFCS: 630

FWS: PFO1/2C (Palustrine, Forested, Broad-Leaved Deciduous /Needle-Leaved Deciduous, Seasonally Flooded)

This land use classification describes forested wetland communities in which neither hardwoods nor conifers achieve a 66% dominance of the crown canopy composition. Wetland forested mixed occurs along the west side of SR 29 within the project study area. Dominant canopy species consist of red maple, cabbage palm, laurel oak, pond cypress, and bald cypress; with an understory of Carolina willow, false nettle, camphorweed, poison ivy, dog fennel, flat sedges, and maidencane. This land use category comprises 8.12 acres of each Build Alternative (1.99% of Central Alternative #1 Revised and 1.93% of Central Alternative #2).

Freshwater Marshes

FLUCFCS: 641

FWS: PEM1C (Palustrine, Emergent, Persistent, Seasonally Flooded)

Freshwater marshes occur on relative level, low-lying areas and are composed of herbaceous hydric-tolerant vegetation. This category is used when the tree cover does not meet the crown closure requirements for forested wetlands. Freshwater marshes occur throughout the project study area. Dominant vegetation includes primrose willow, Carolina willow, maidencane, dog fennel, pickerelweed, paragrass, camphorweed, torpedograss, and various flat sedges. This land use category comprises 3.70 acres of each Build Alternative (1.22% of Central Alternative #1 Revised and 1.16% of Central Alternative #2).

OTHER SURFACE WATERS

Streams and Waterways

FLUCFCS: 510

FWS: PUB2F (Palustrine, Unconsolidated Bottom, Sand, Semipermanently Flooded)

This category includes rivers, creeks, canals, and other linear water bodies. Within the project study area, these OSW features consist of upland-cut roadside stormwater drainage conveyances, agricultural irrigation canals, and residential flood-control ditches. Collectively, these OSWs comprise 14.36 acres (3.89%) of Central Alternative #1 Revised and 14.78 acres (3.85%) of Central Alternative #2.

Reservoirs Less than 10 acres

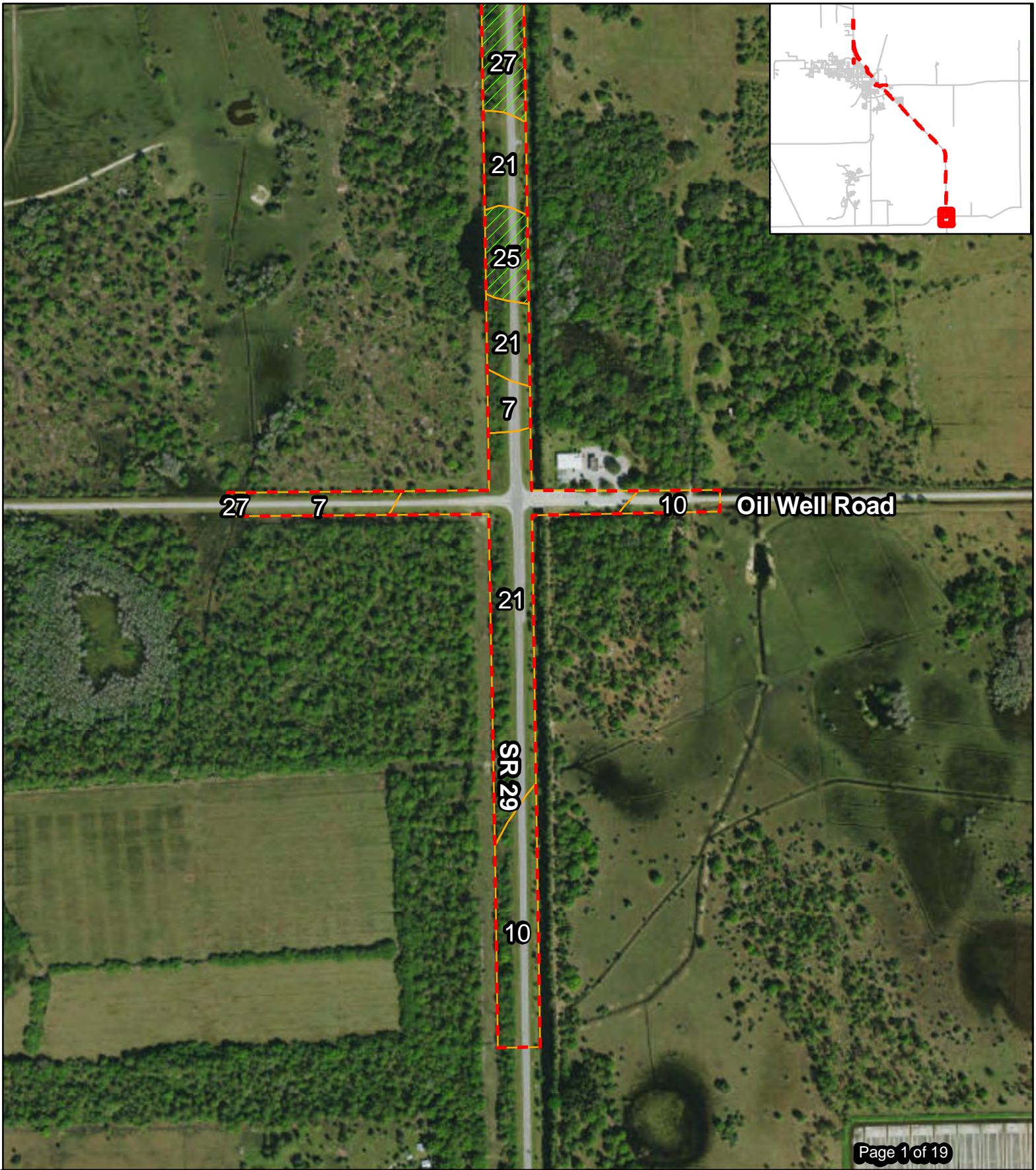
FLUCFCS: 534

FWS: PSS1C / PUB2C (Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded / Palustrine, Unconsolidated Bottom, Sand, Seasonally Flooded)

Reservoirs are artificial impoundments of water which are used for flood control, irrigation, municipal and rural water supplies, recreation, and hydro-electric power generation. Two reservoirs are located within the project study area; both are upland-cut agricultural features and occur near the north project terminus. One of these features is an unvegetated cattle pond located along the east side of SR 29 approximately 2.5 miles south of SR 82, and the other is a Carolina willow, red maple, and Brazilian pepper-dominated other surface water located within an active agricultural field along the west side of SR 29, approximately 0.5 mile south of SR 82. These reservoirs collectively comprise 0.63 acre of the project study area (0.17% of Central Alternative #1 Revised and 0.16% of Central Alternative #2).

APPENDIX D-1

Soils Maps



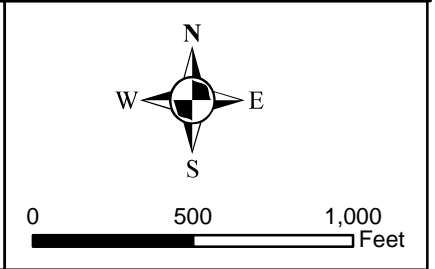
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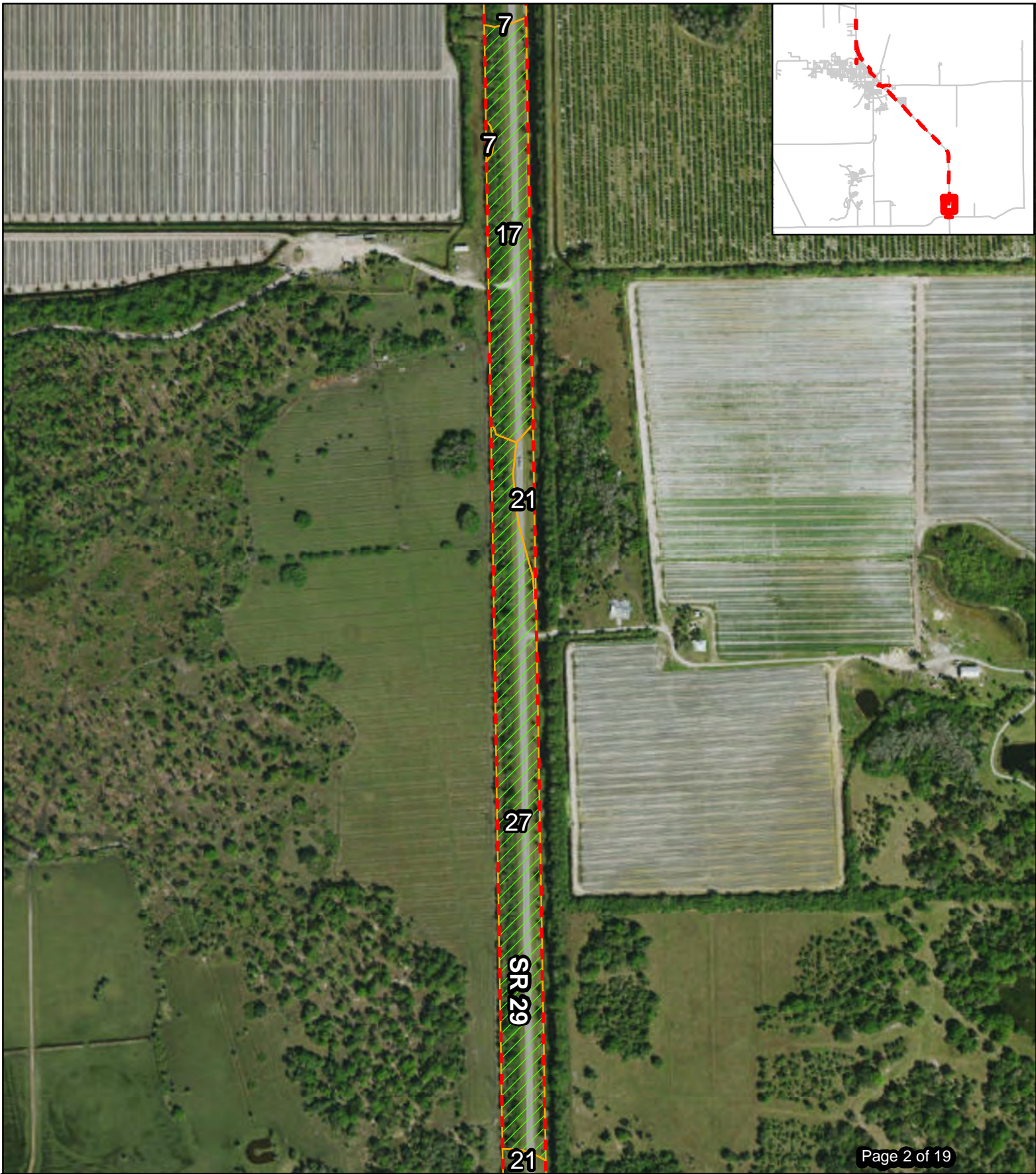
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- Central Alternative #1 Revised
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- Hydric Soils

Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/1/2018





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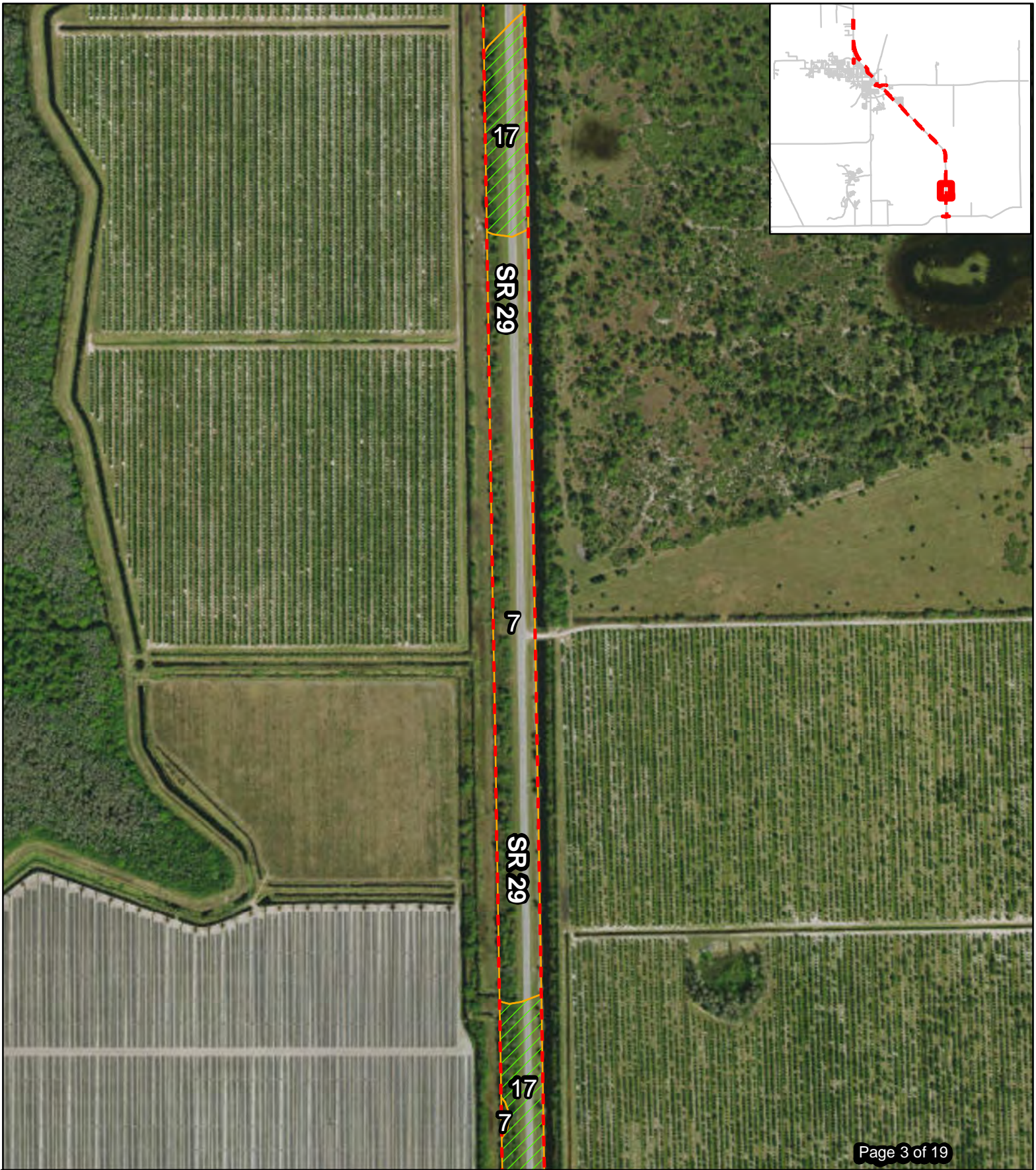
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

Date: 6/1/2018




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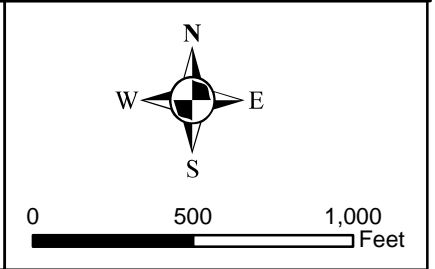
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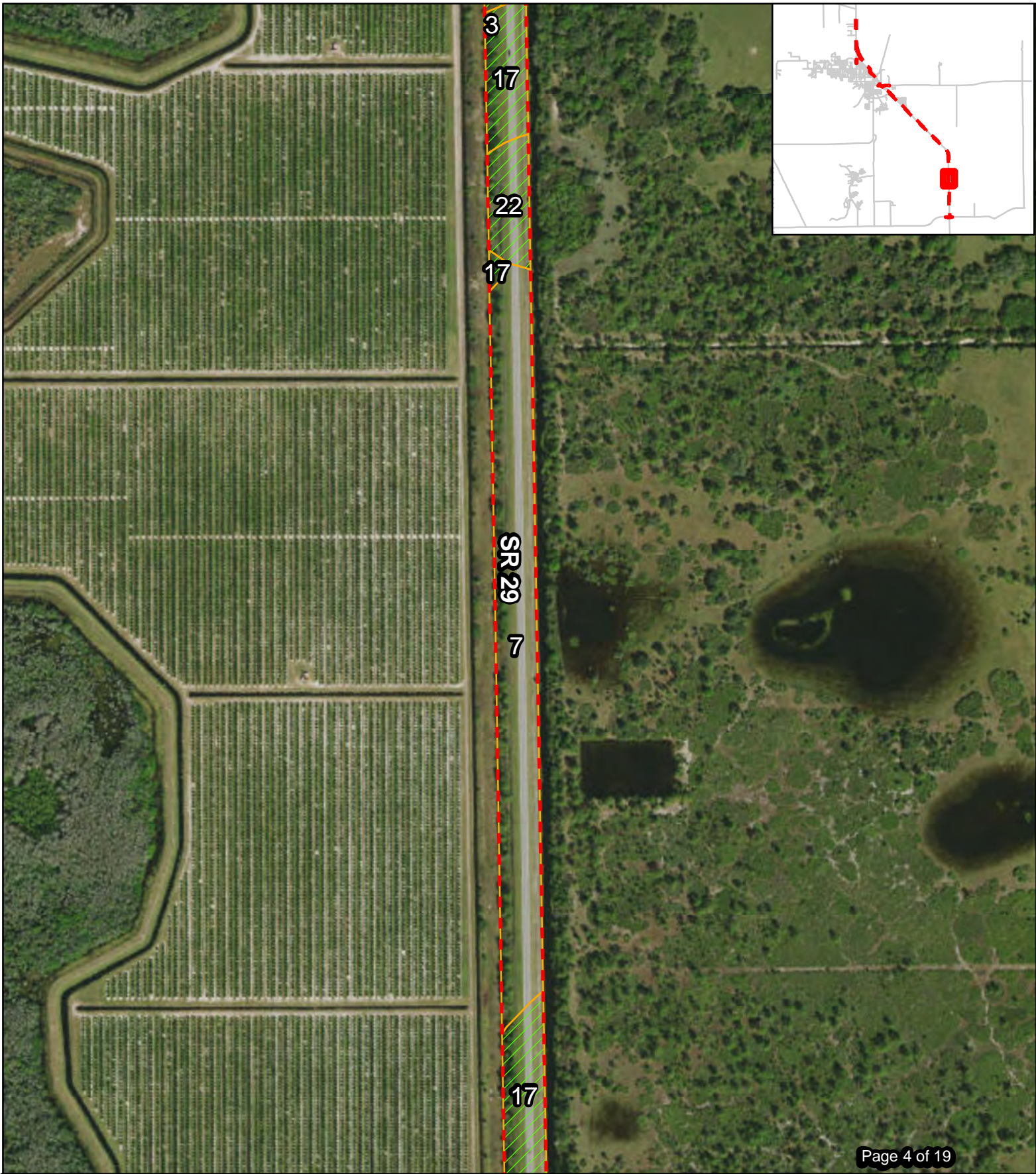
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

Date: 6/1/2018



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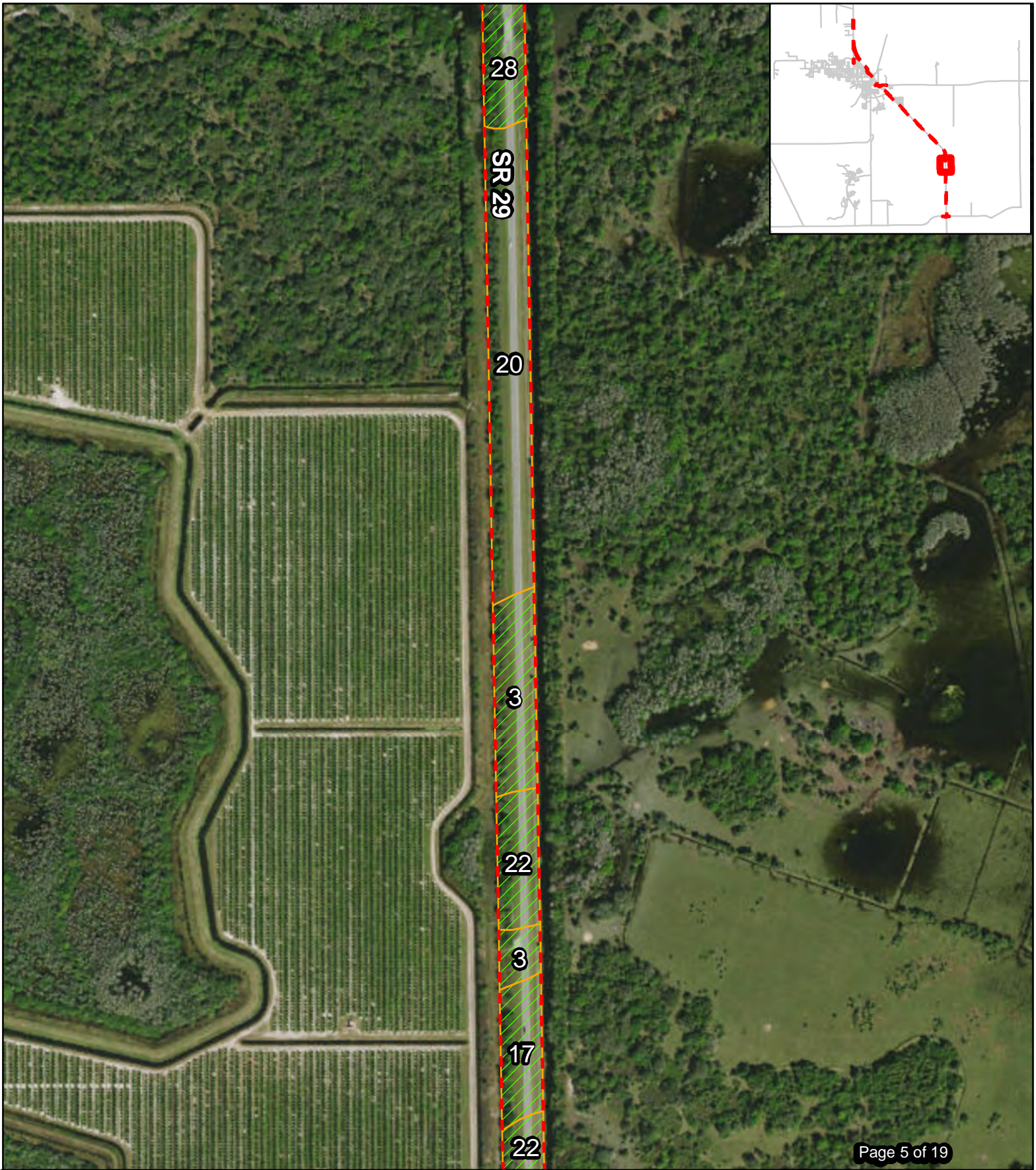
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

Date: 6/1/2018




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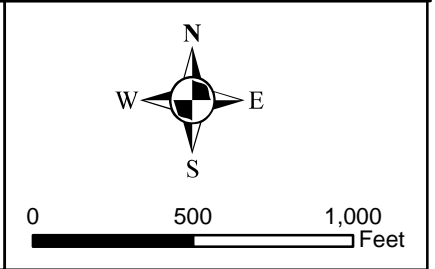
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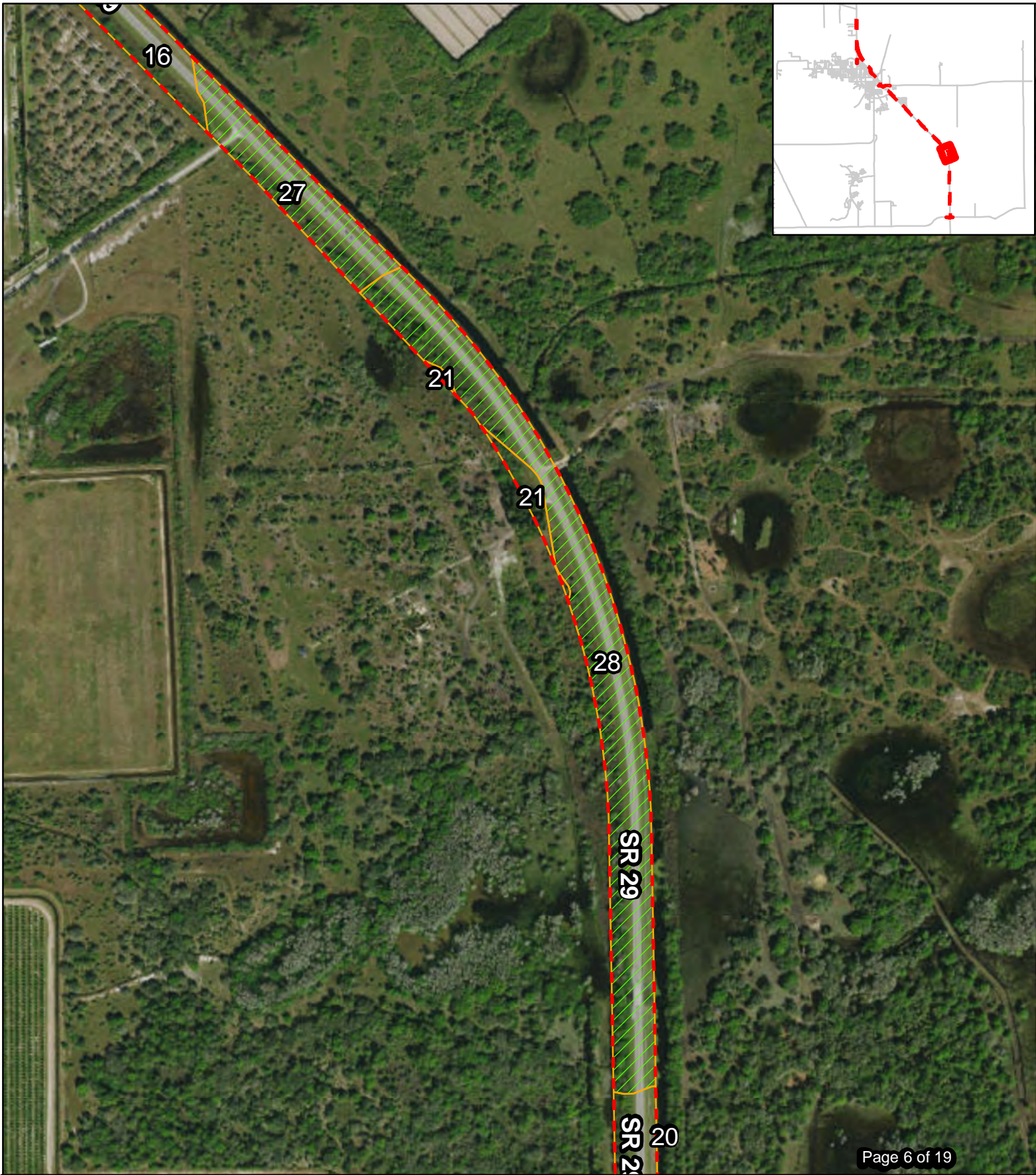
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-  Hydric Soils

Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

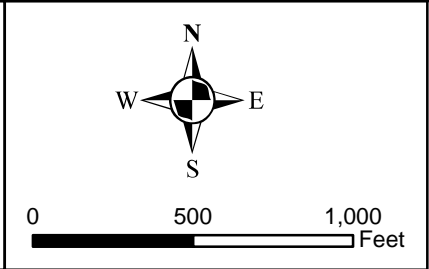
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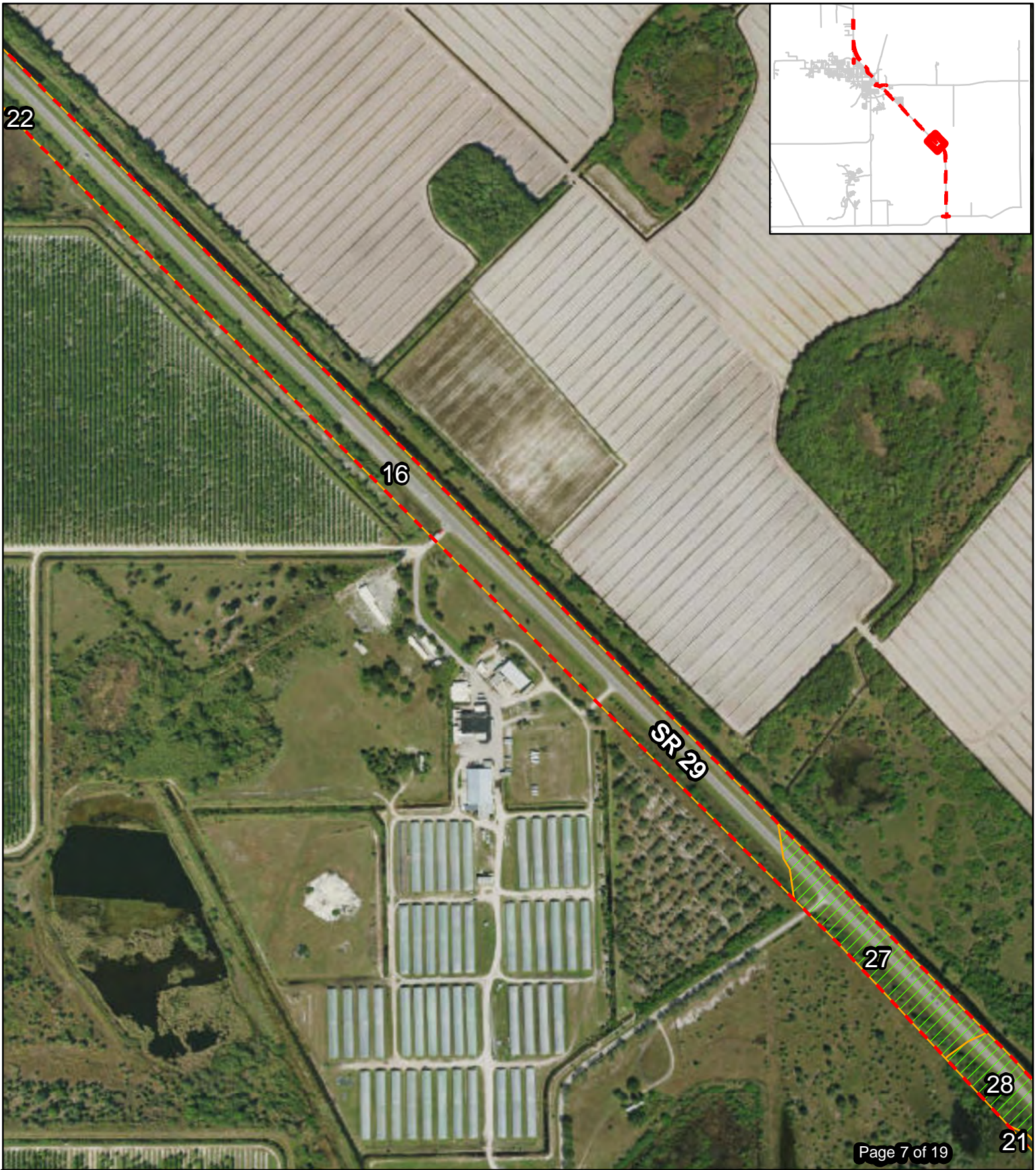




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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised
 Date: 6/1/2018





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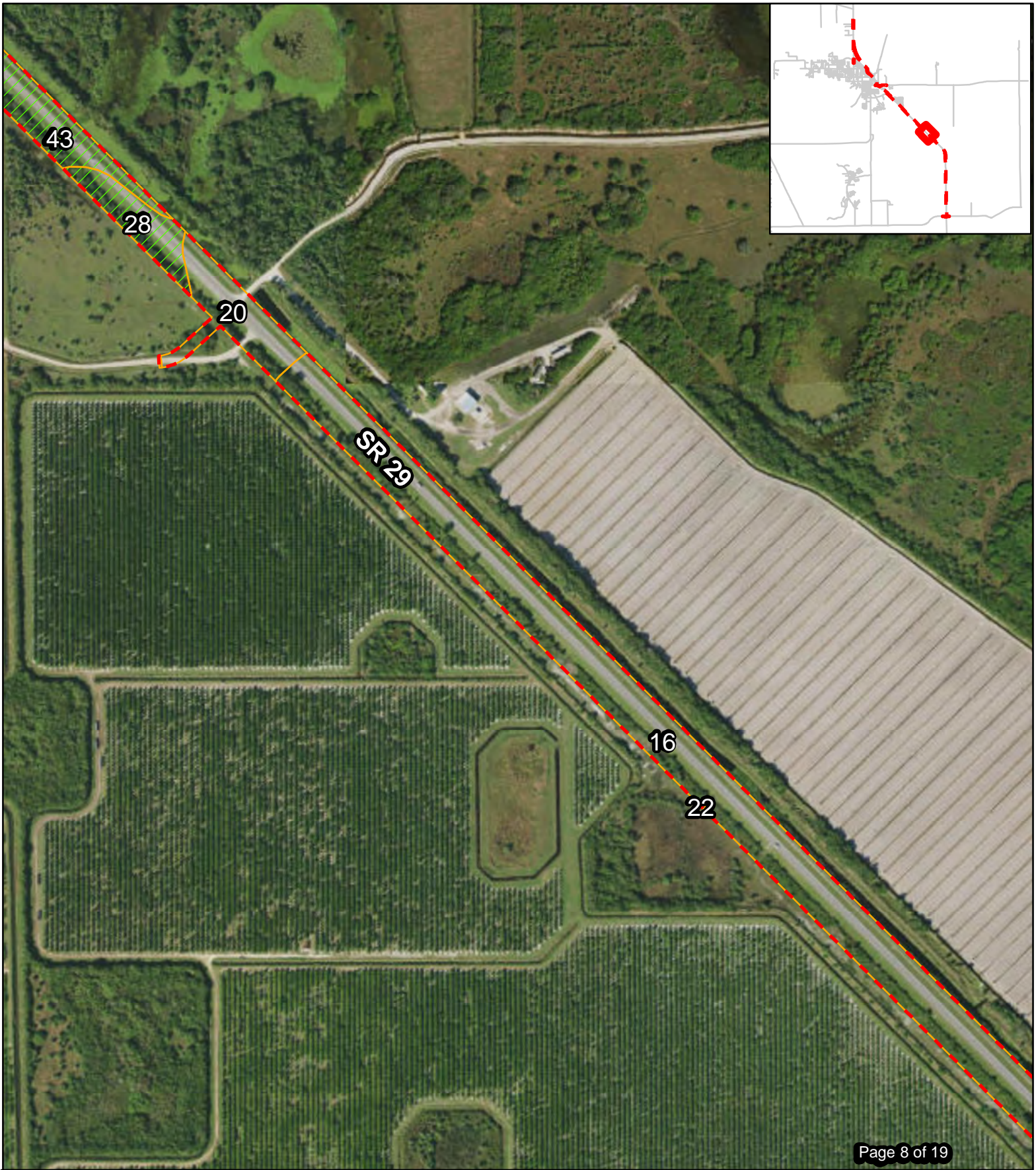
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

Date: 6/1/2018




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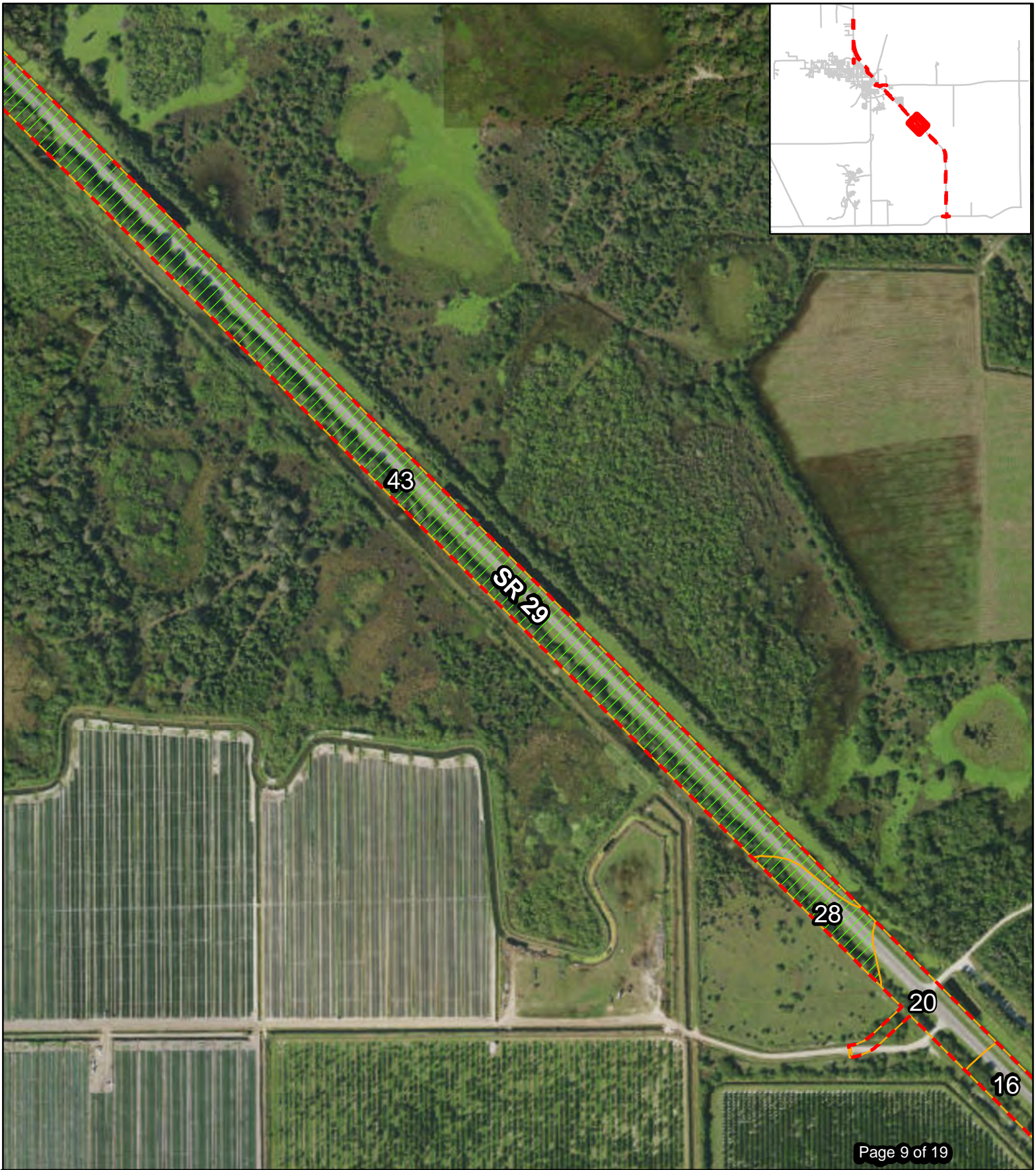
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




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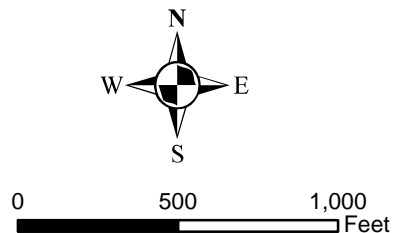


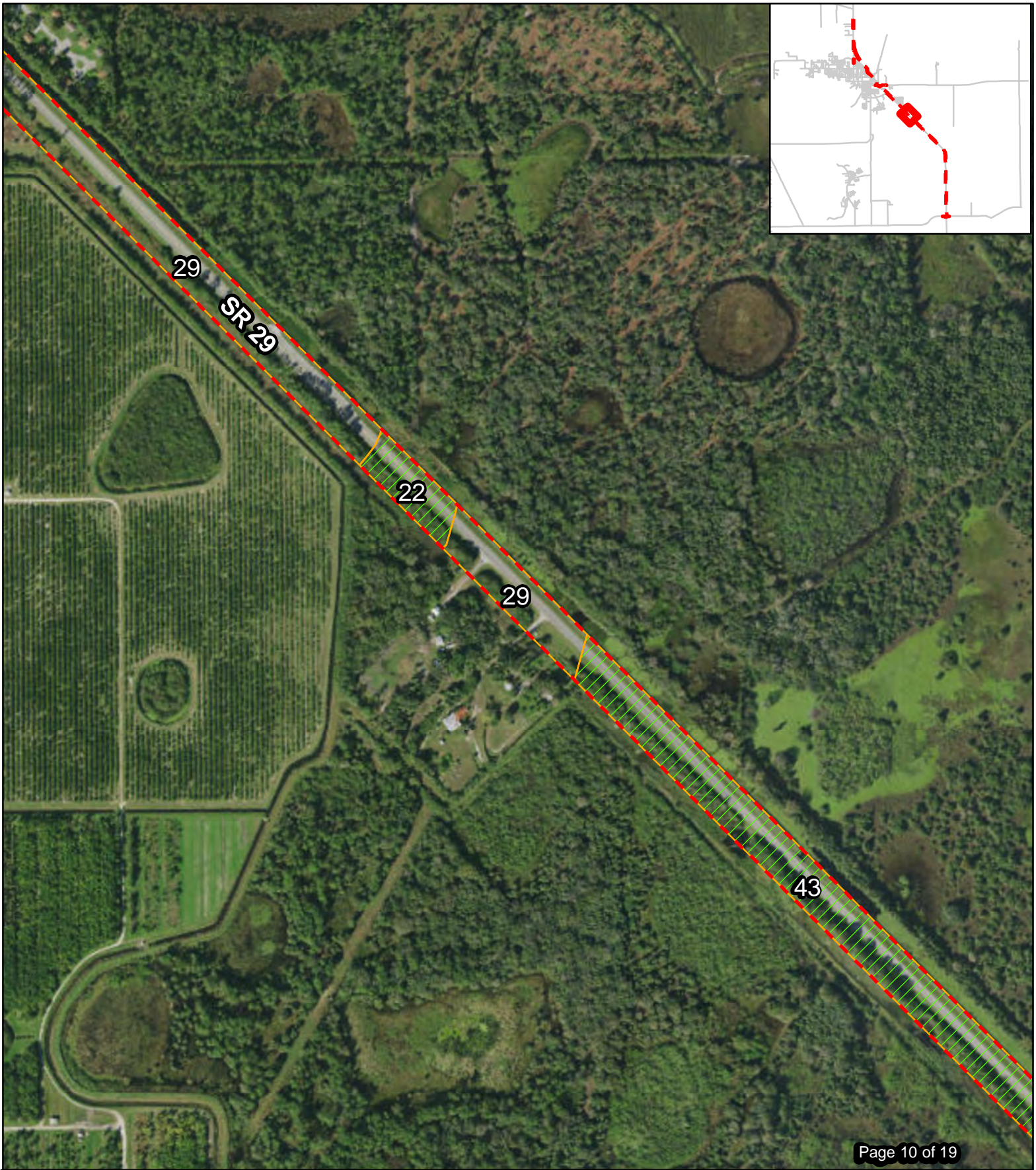
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/1/2018





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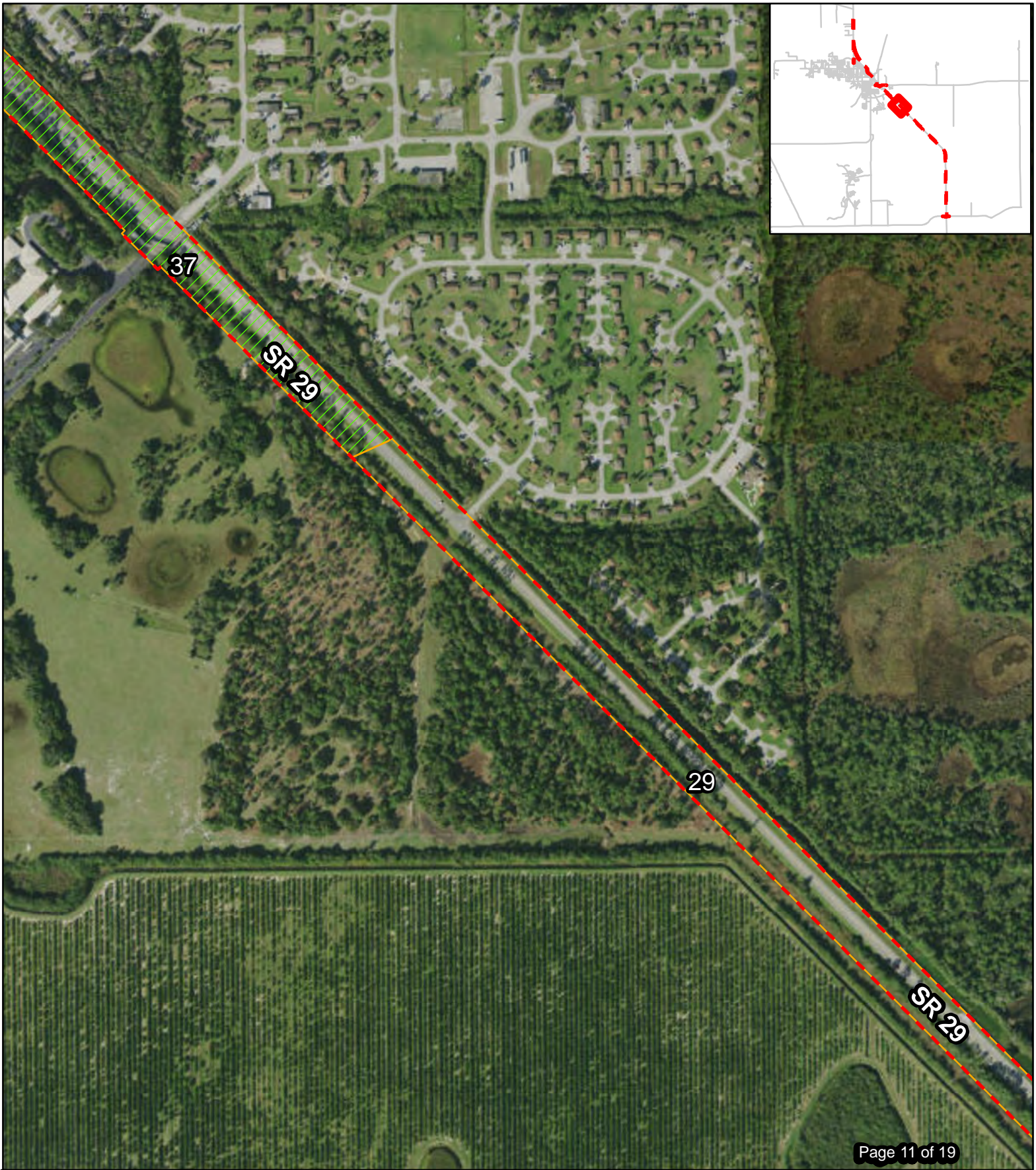
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

Date: 6/1/2018




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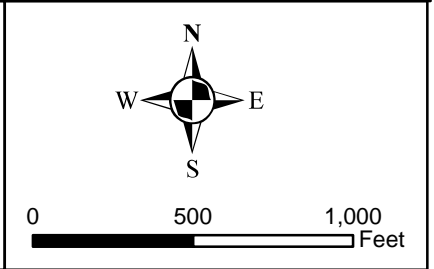
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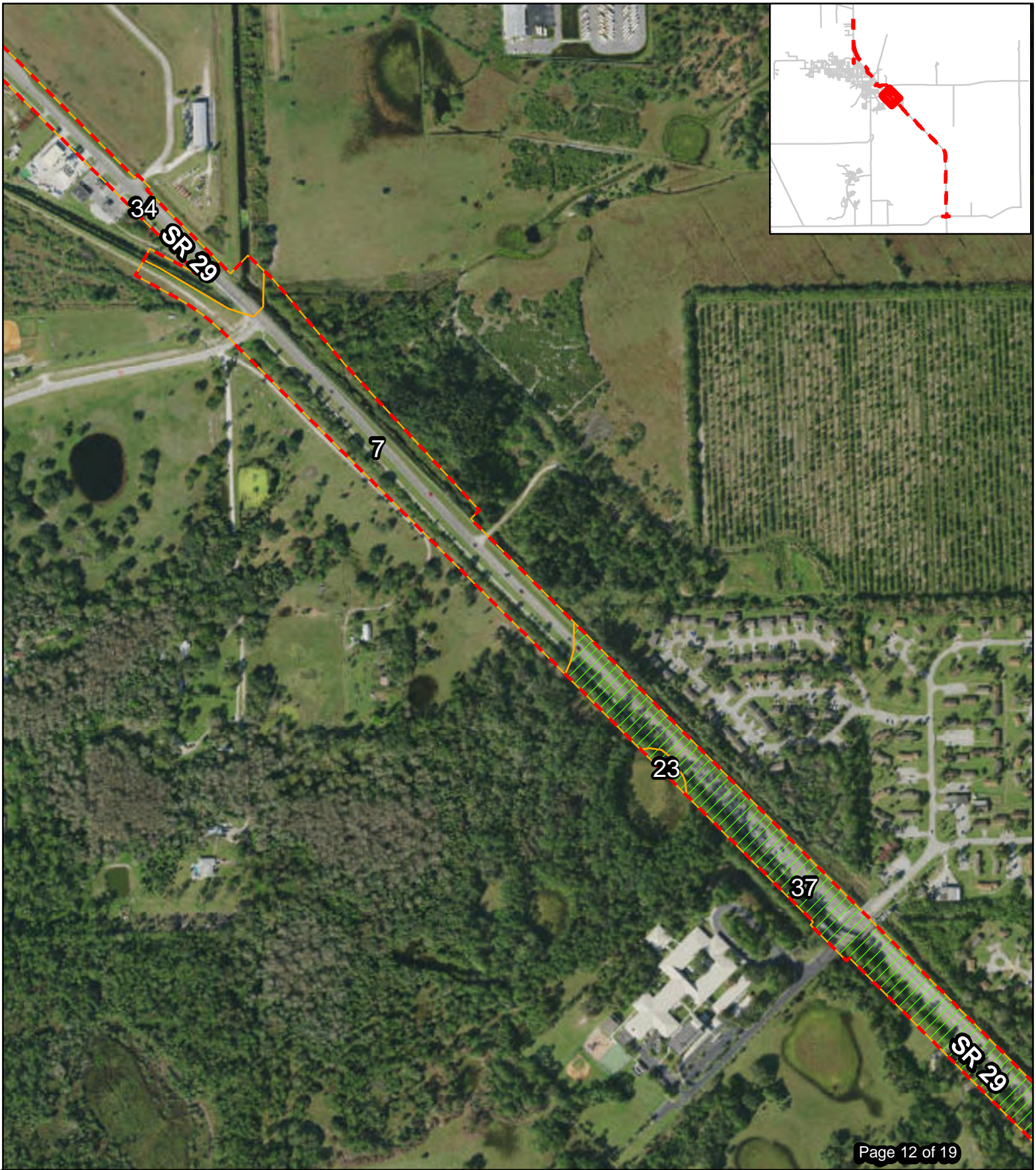
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/1/2018





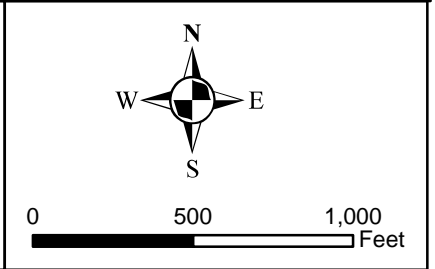
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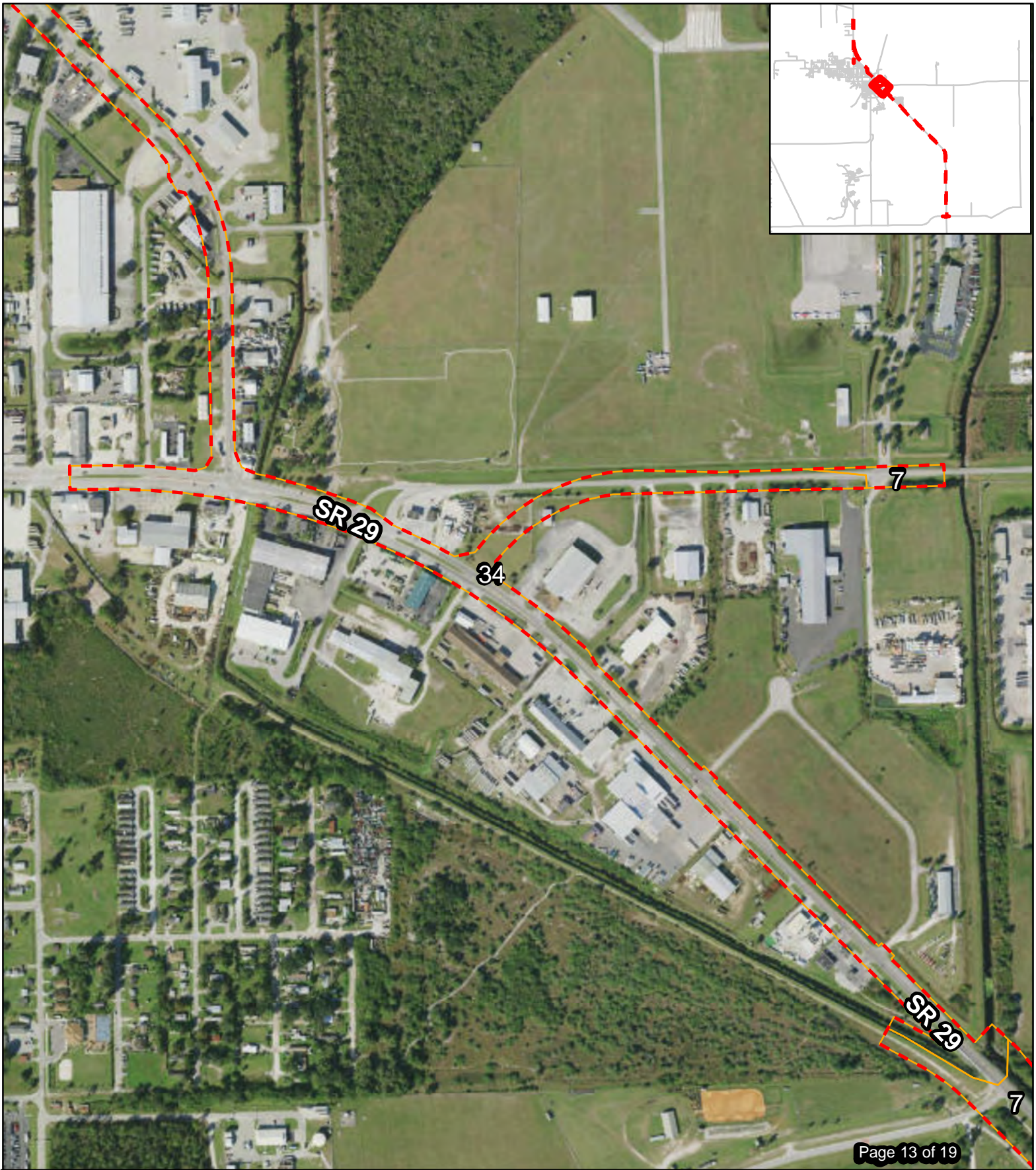
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/1/2018





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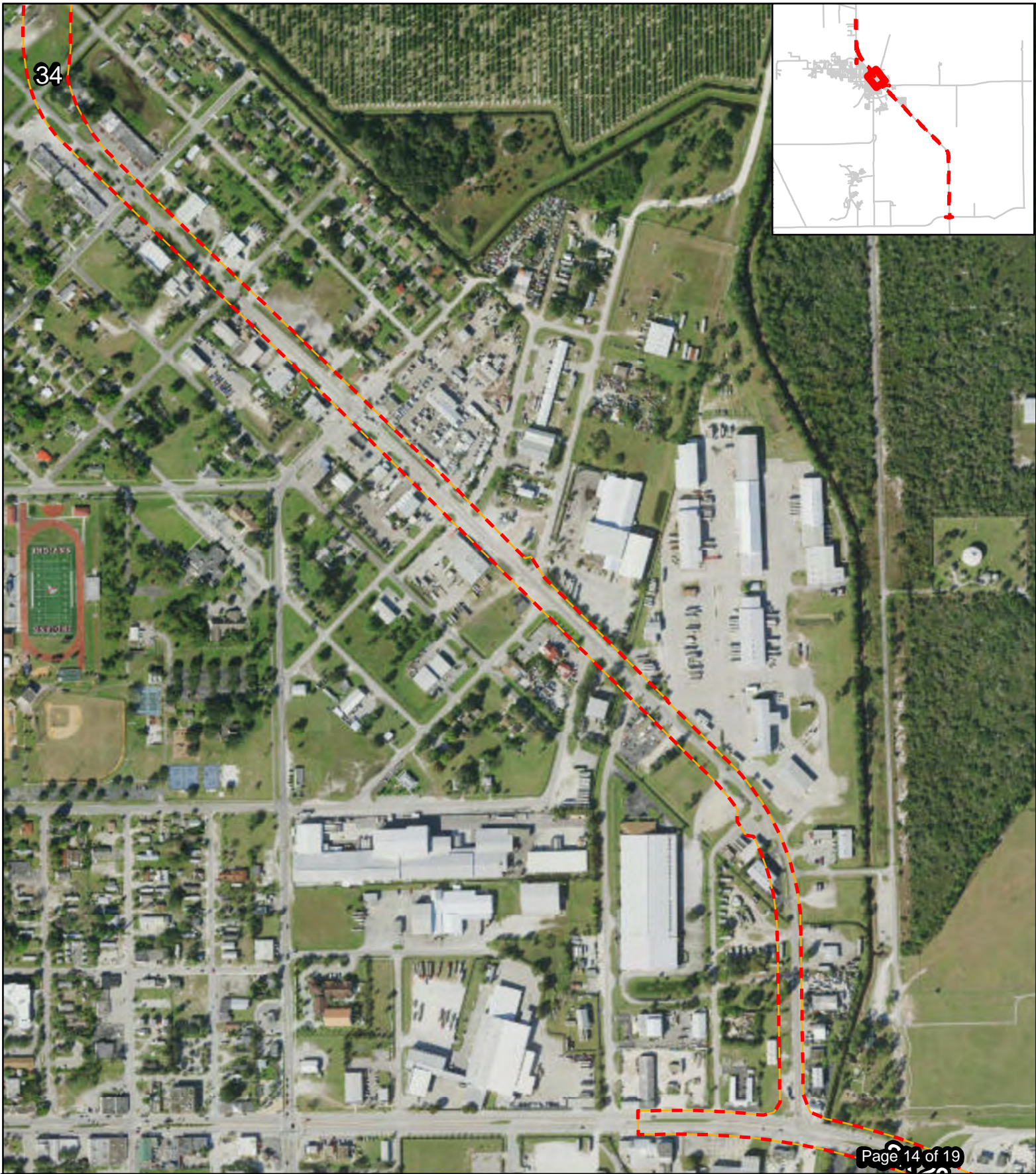
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

Date: 6/1/2018




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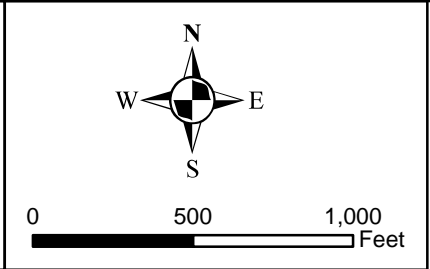
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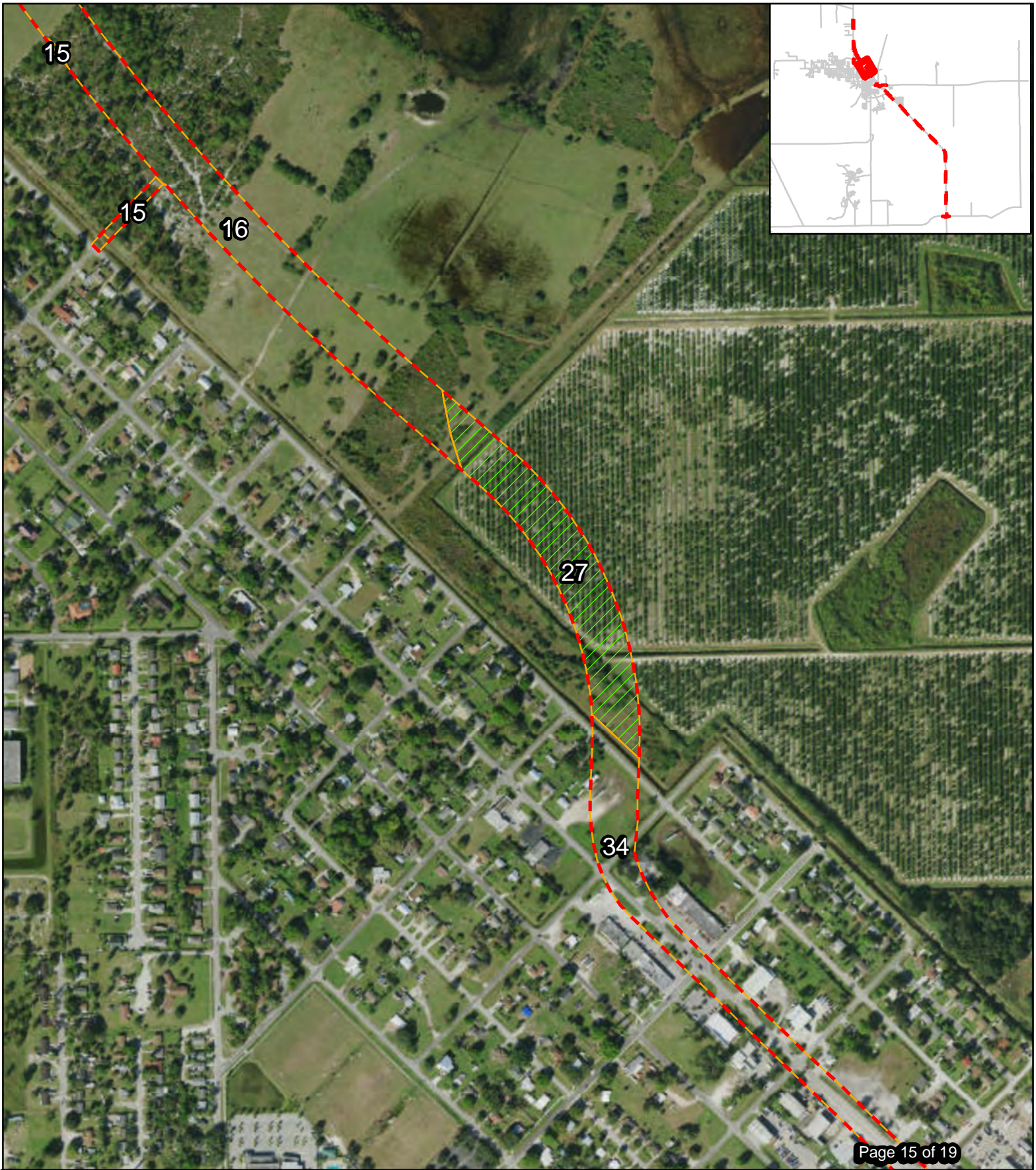
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/1/2018





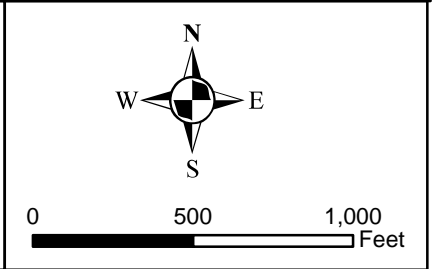
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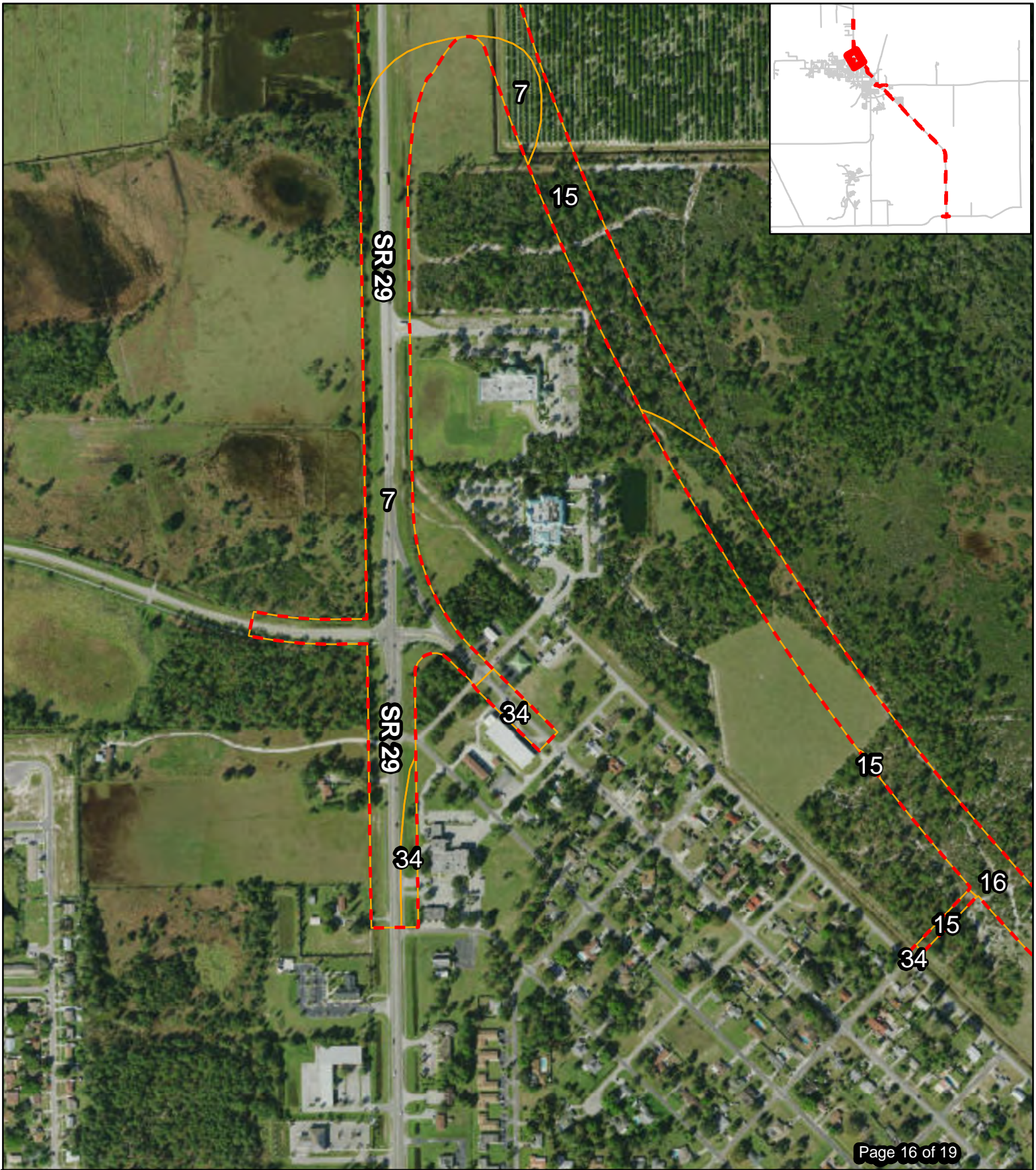
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/1/2018





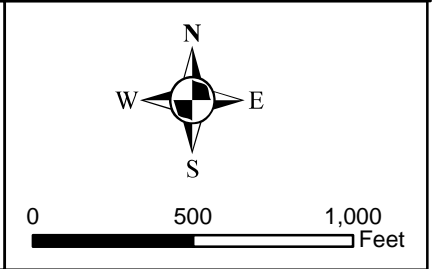
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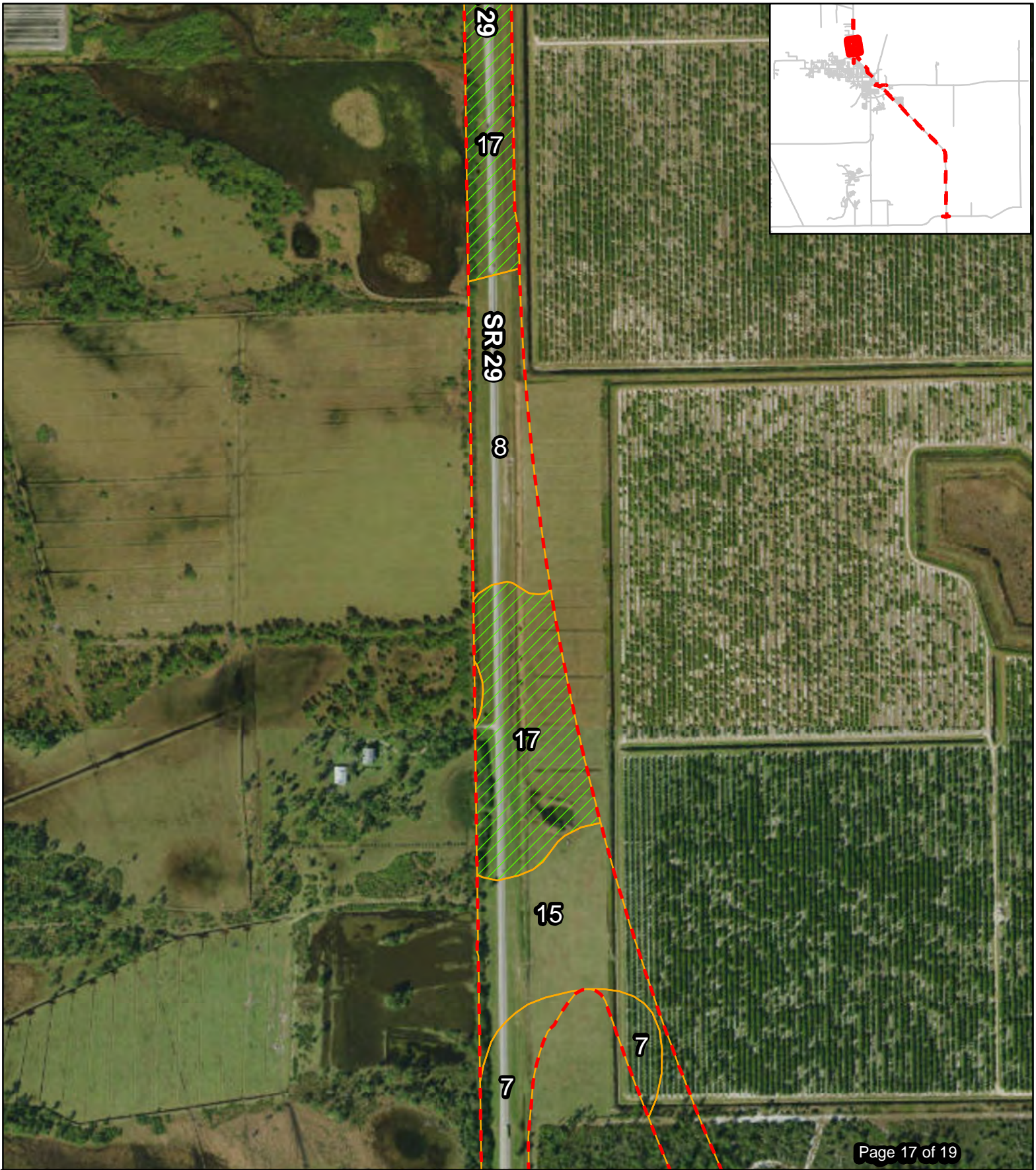
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/1/2018





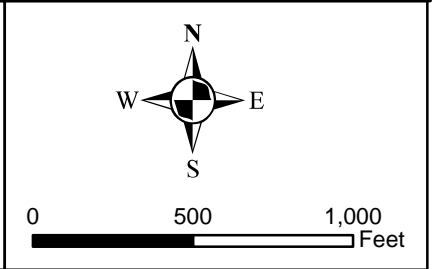
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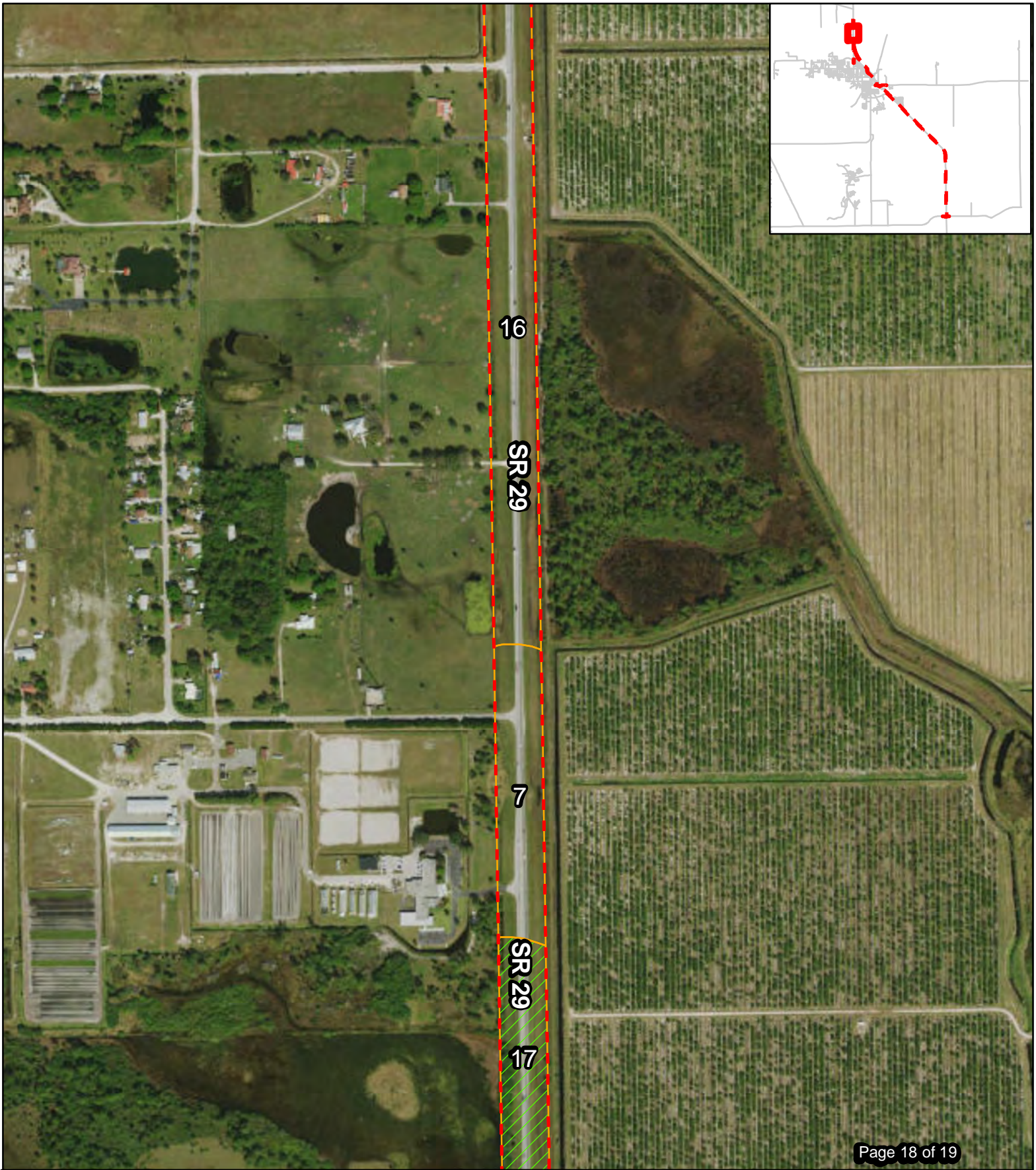
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/1/2018





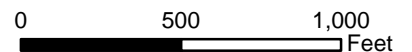
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/1/2018





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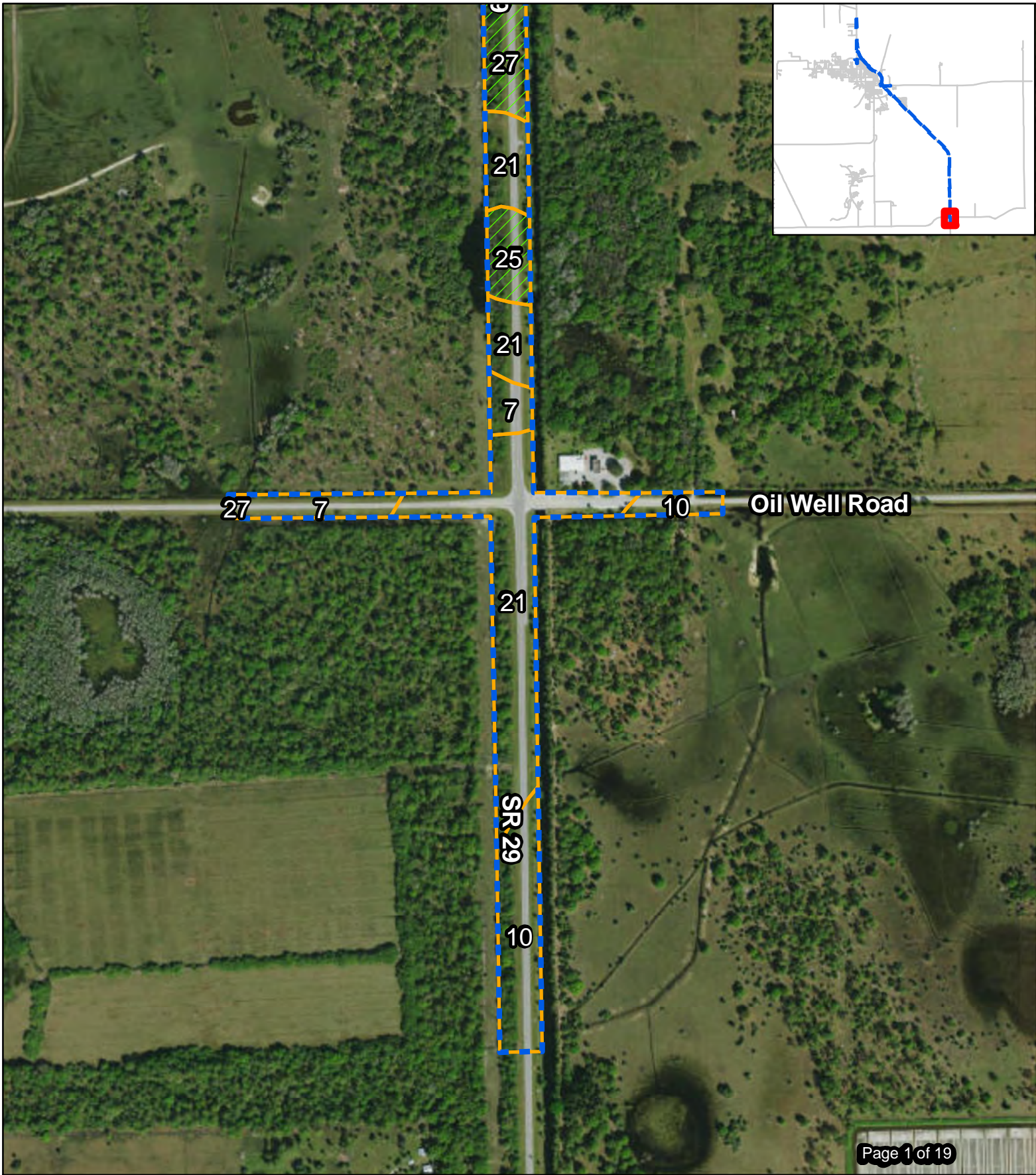
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

Date: 6/1/2018




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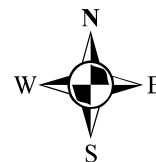
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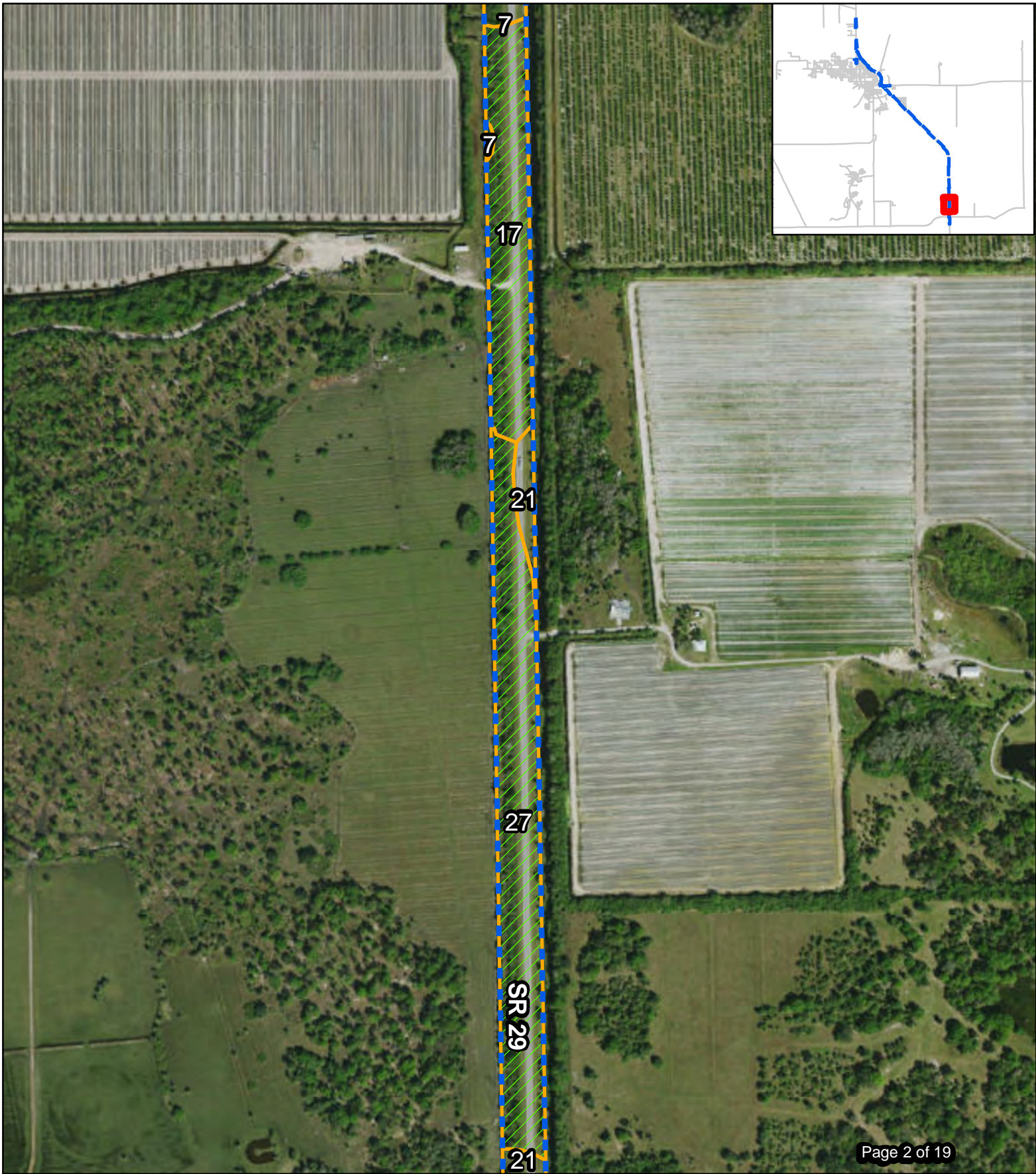
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-  Central Alternative #2
-  Central Alternative #2 Soils
-  Hydric Soils

Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2




Date: 6/1/2018





MAP SOURCE : ESRI
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Legend

-  Central Alternative #2
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-  Hydric Soils

Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/1/2018






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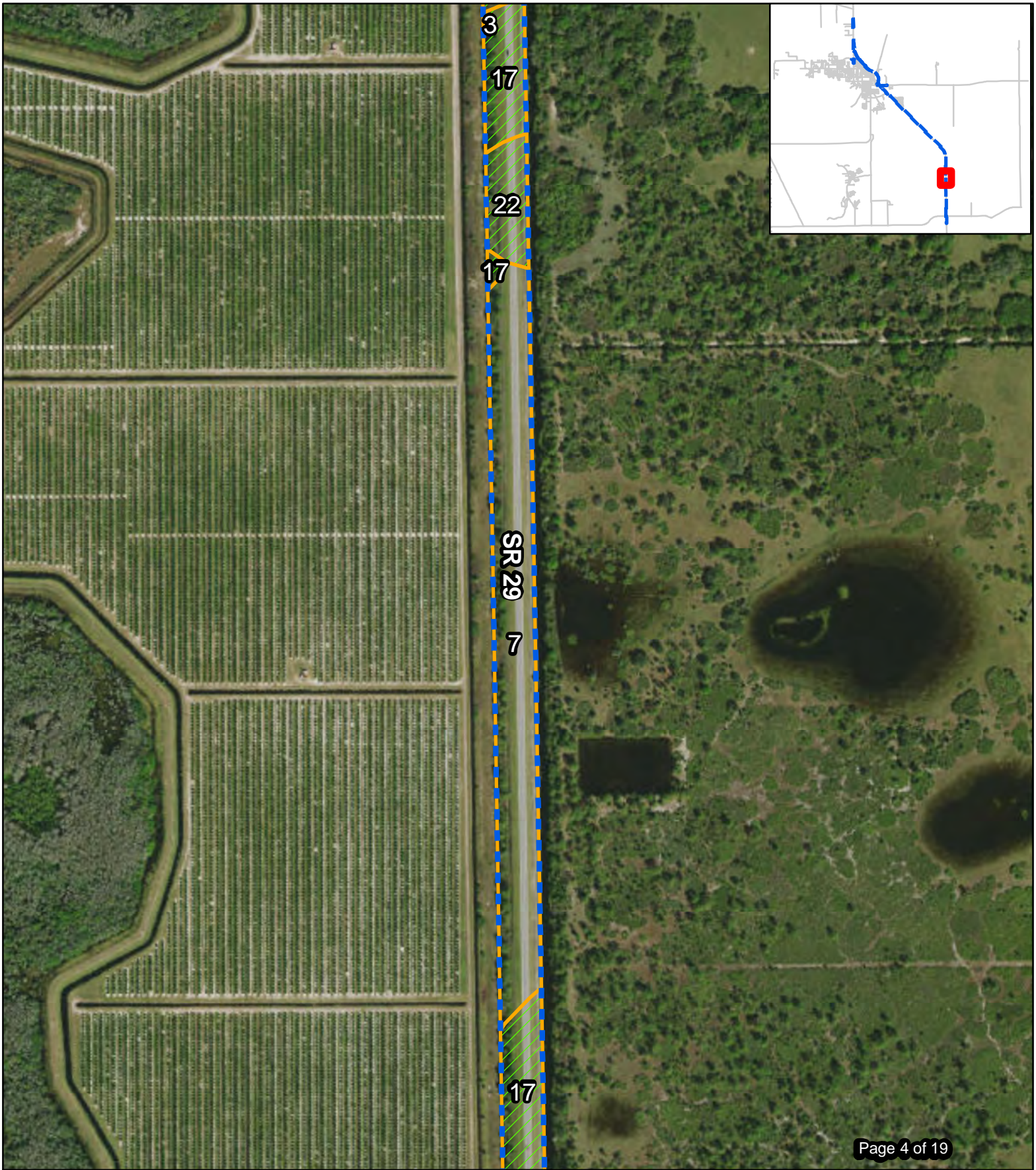
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/1/2018






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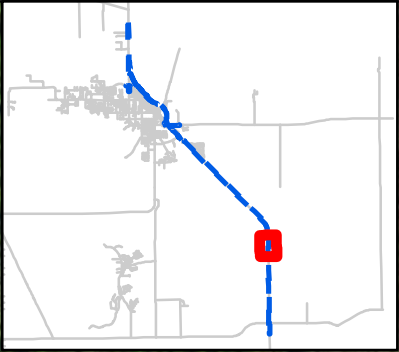
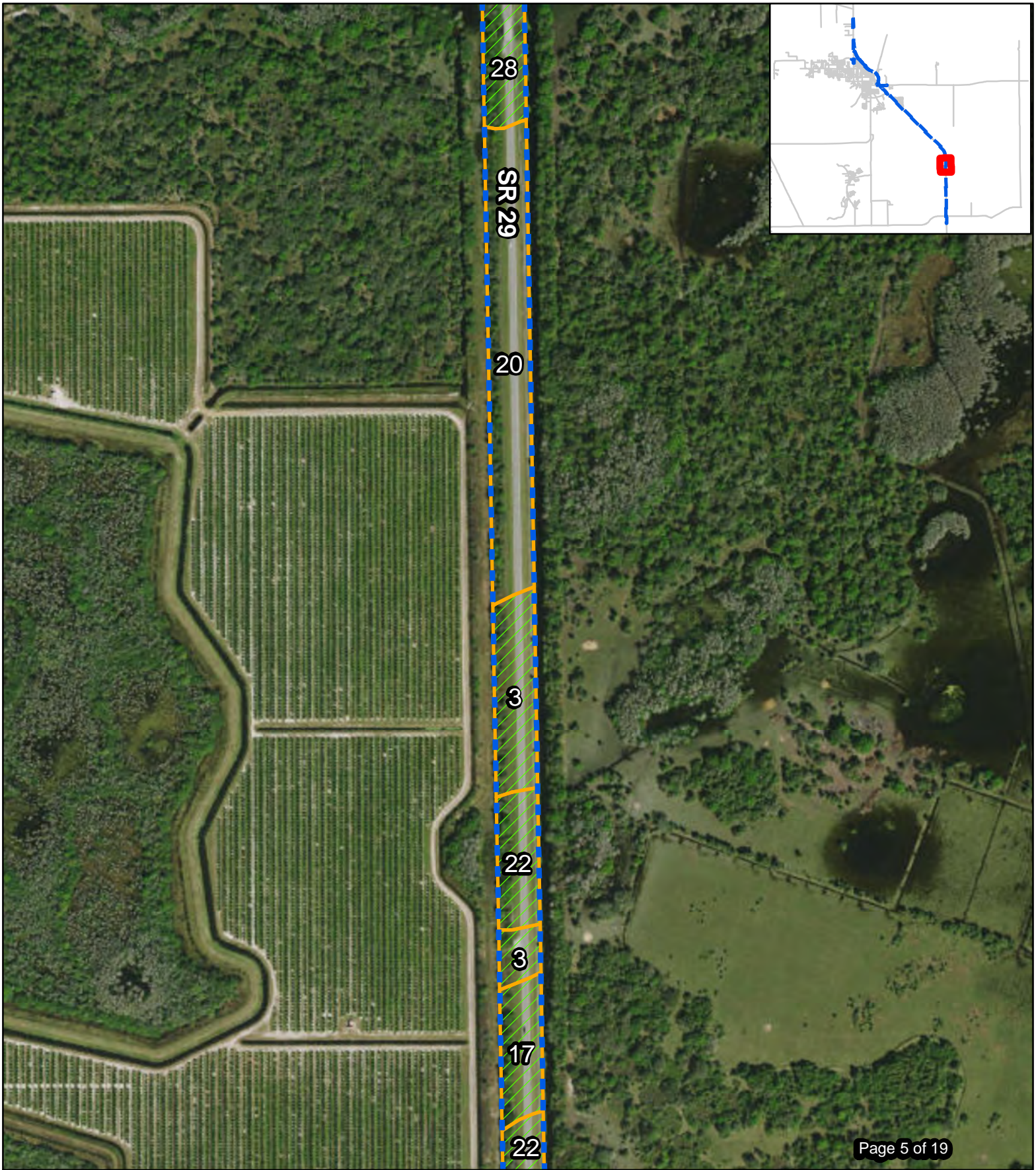
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/1/2018






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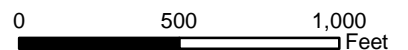
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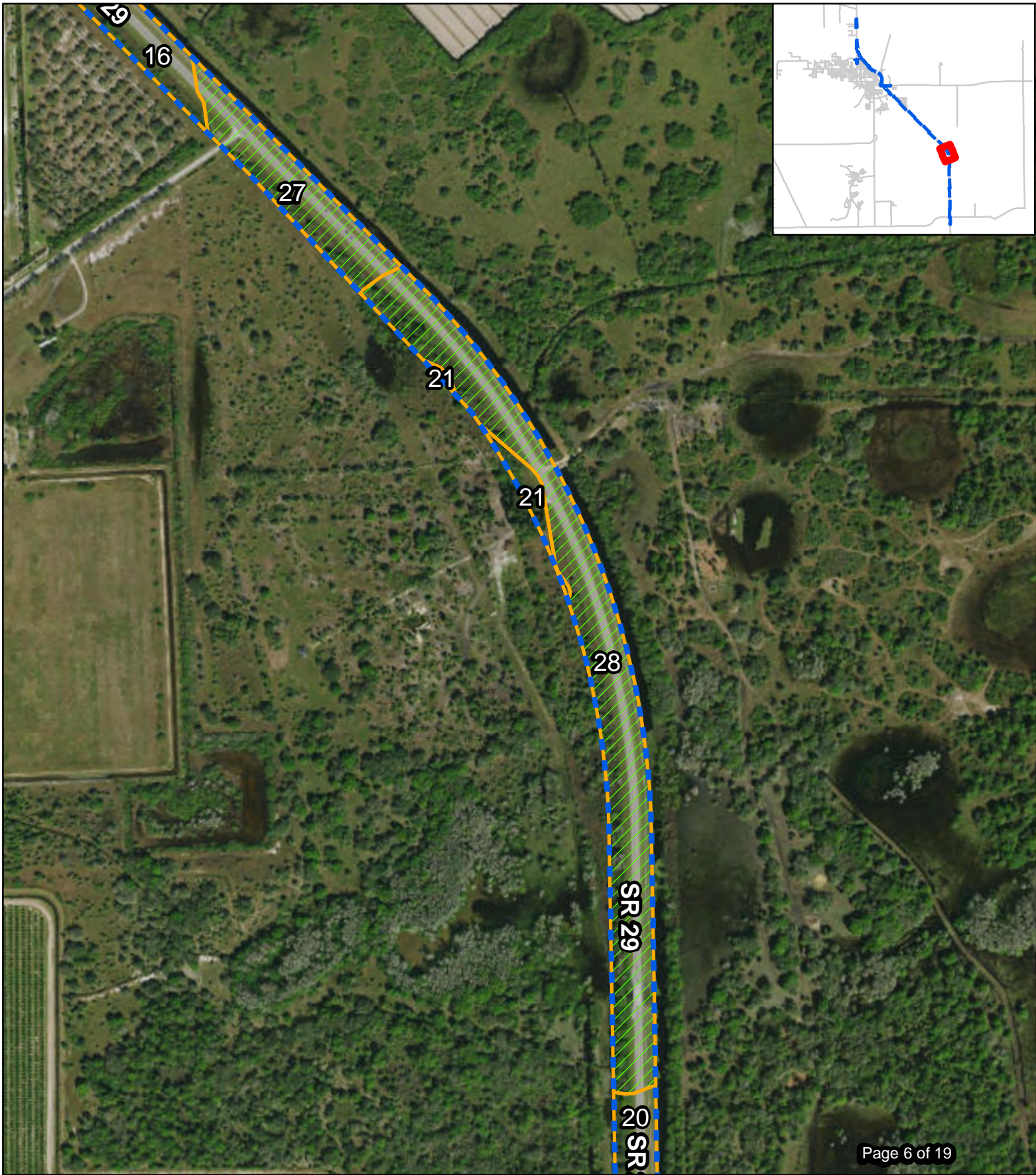
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-  Hydric Soils

Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2




Date: 6/1/2018





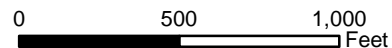
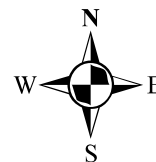
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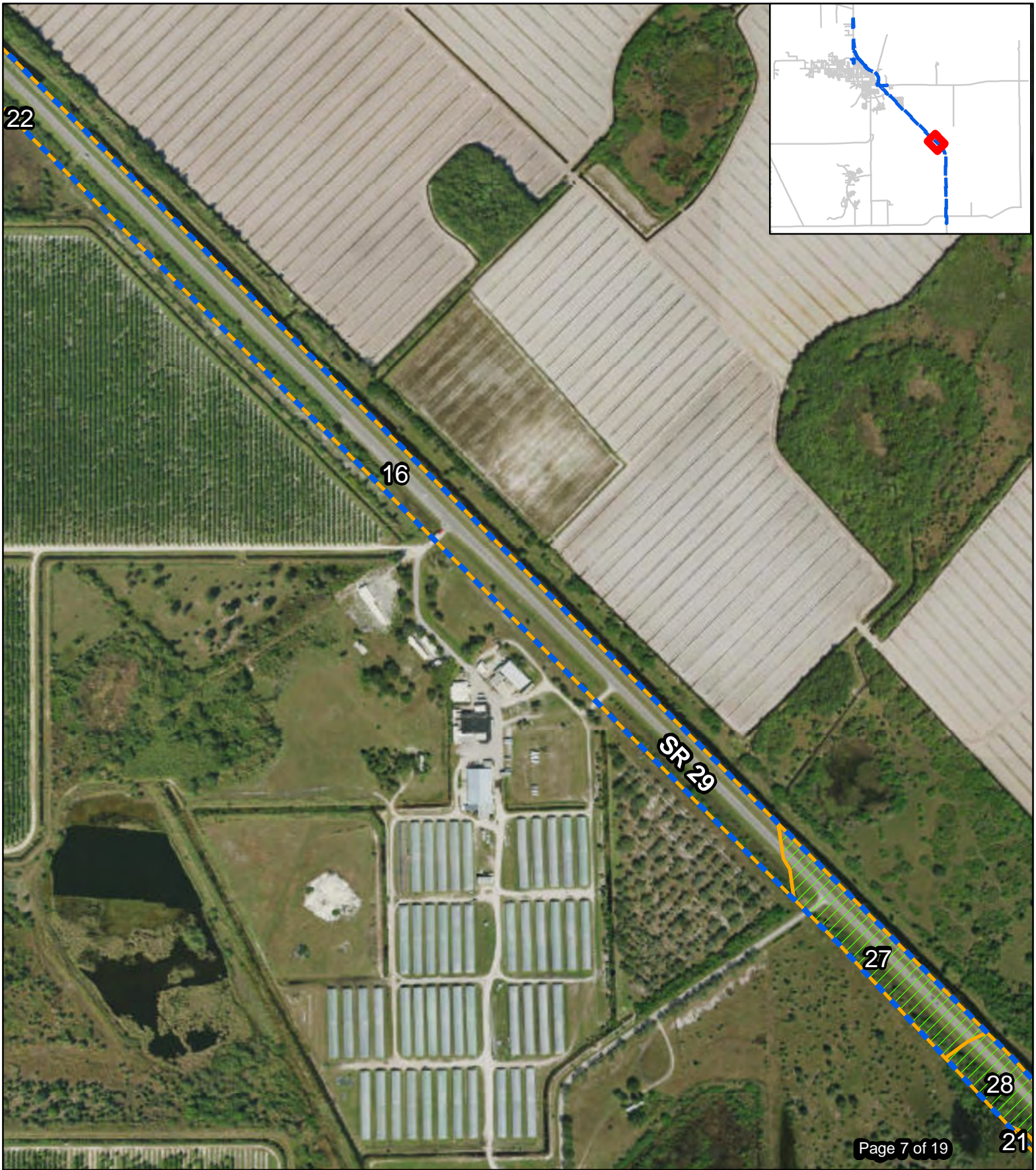
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Soils Map
SR 29 from Oil Well Road to SR 82
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Central Alternative #2




Date: 6/1/2018





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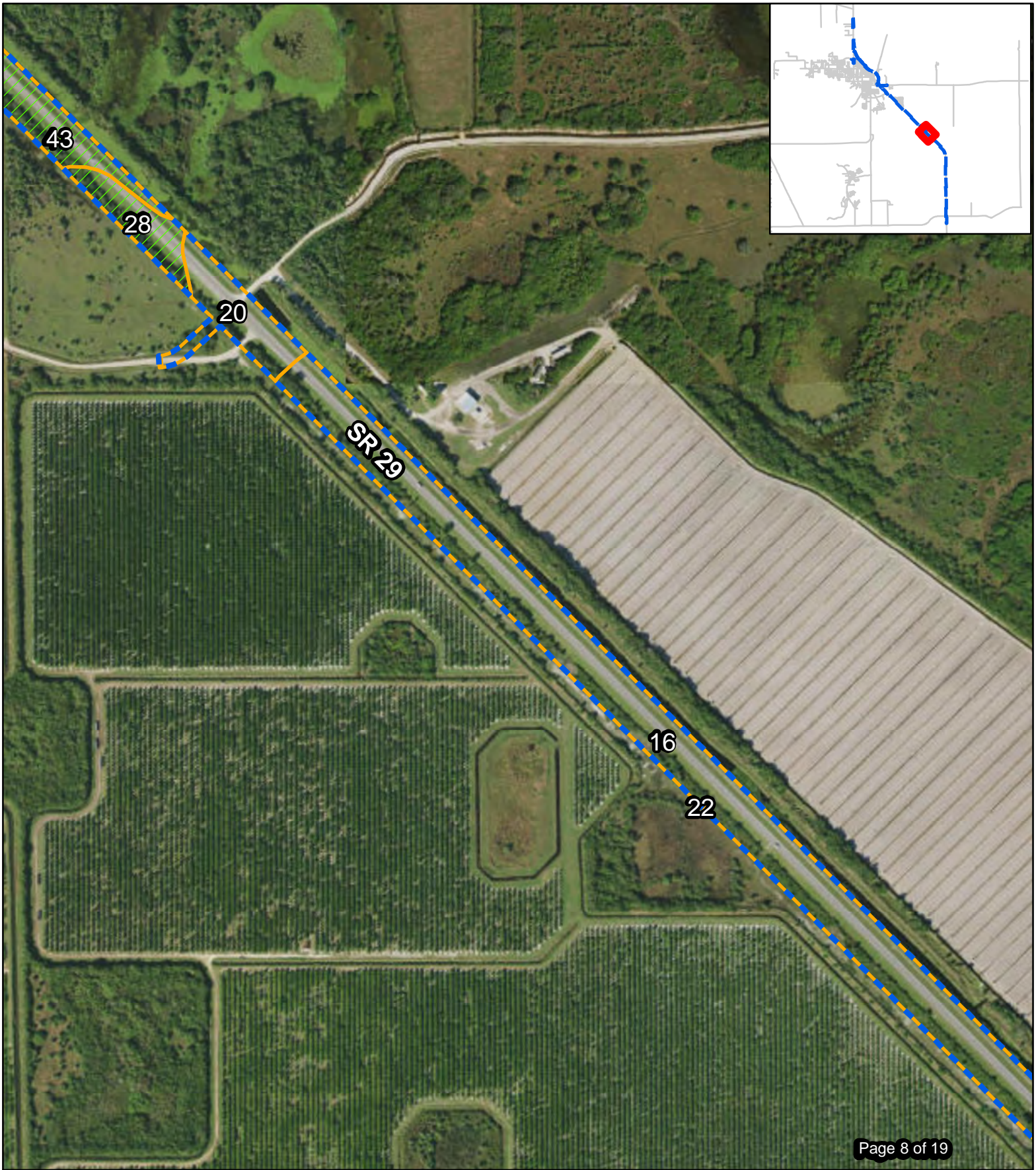
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Soils Map
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PD&E Study
Central Alternative #2

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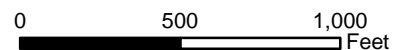
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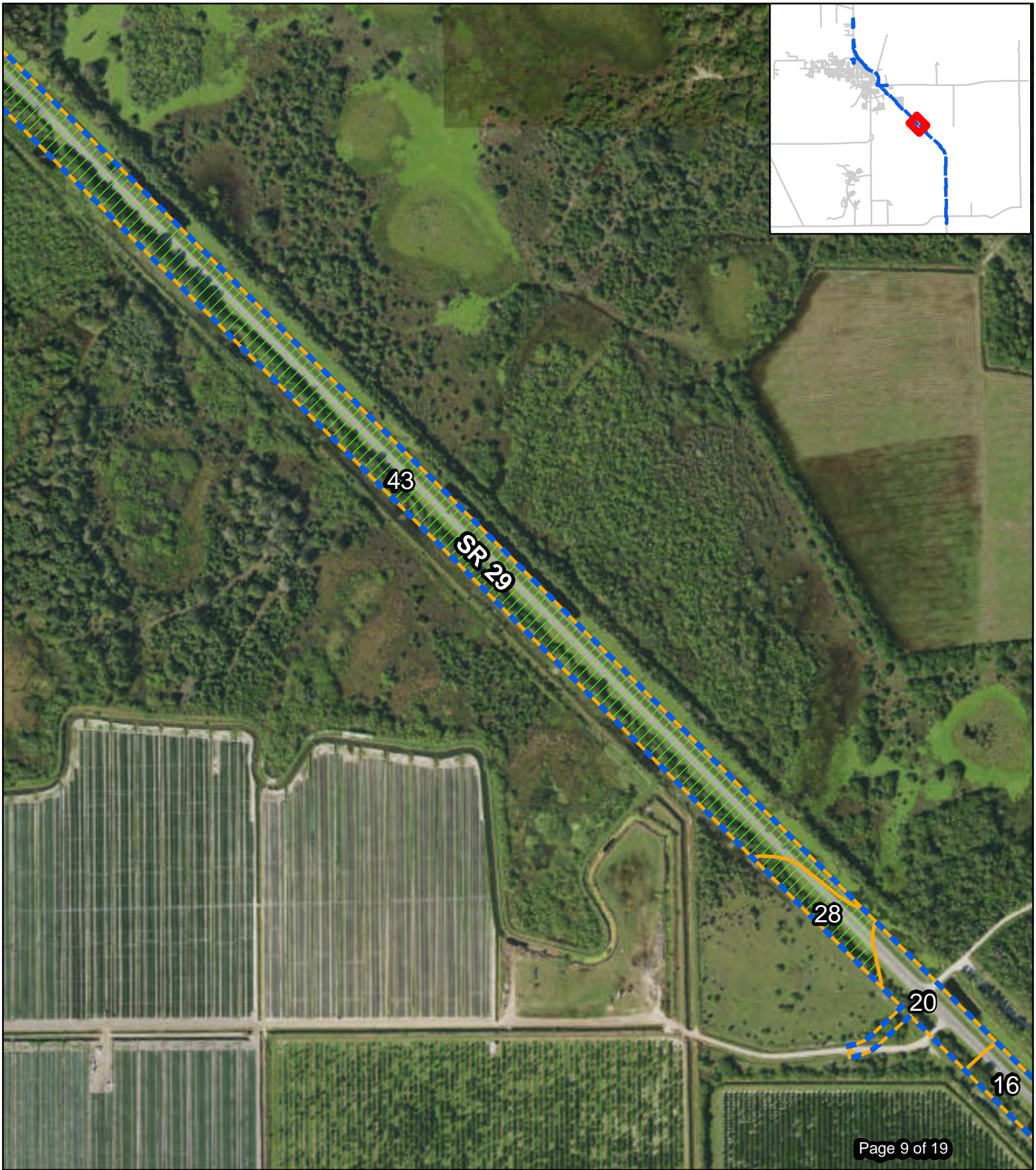
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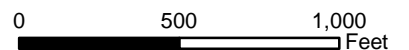
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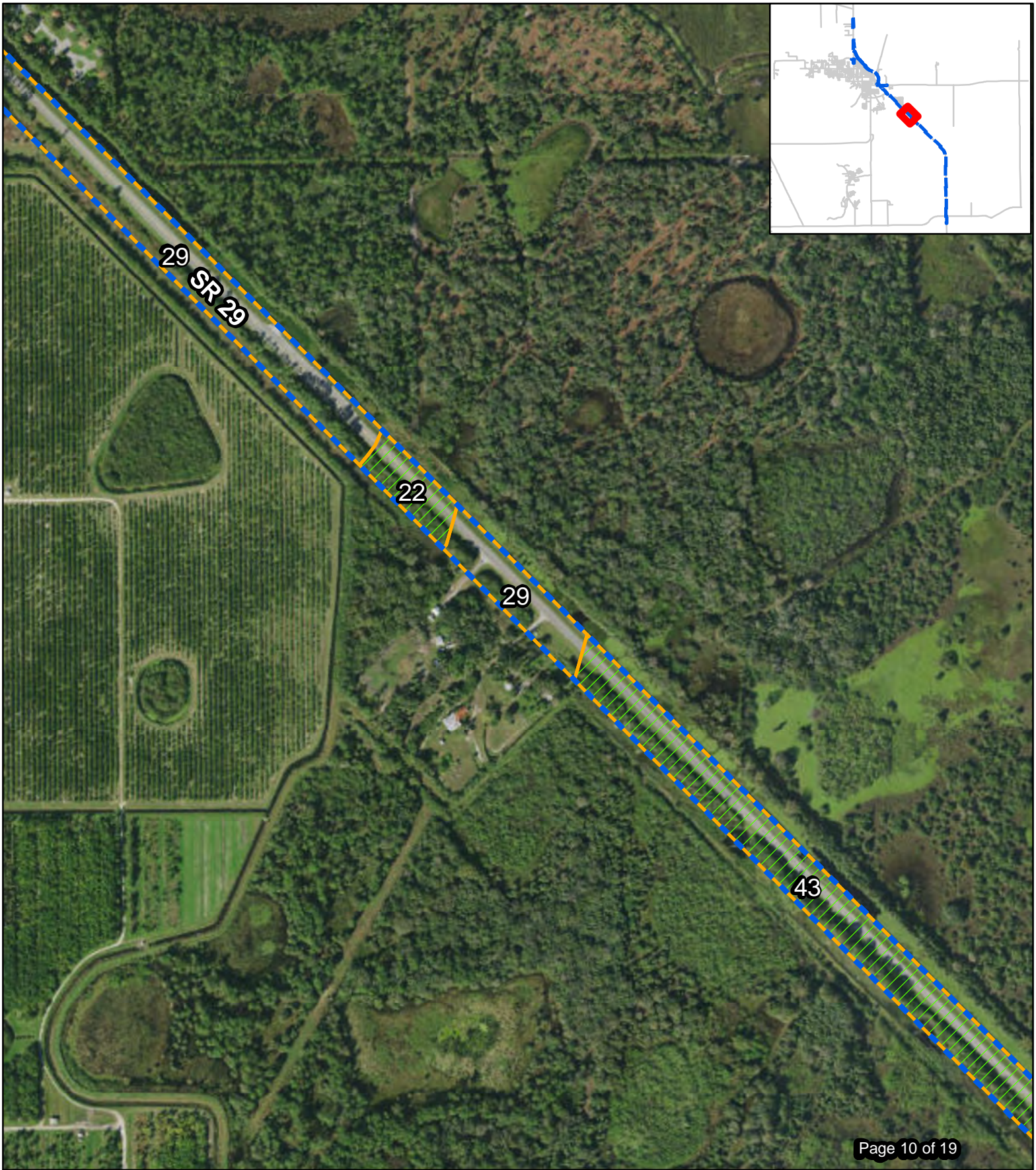
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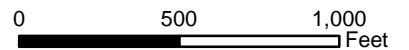
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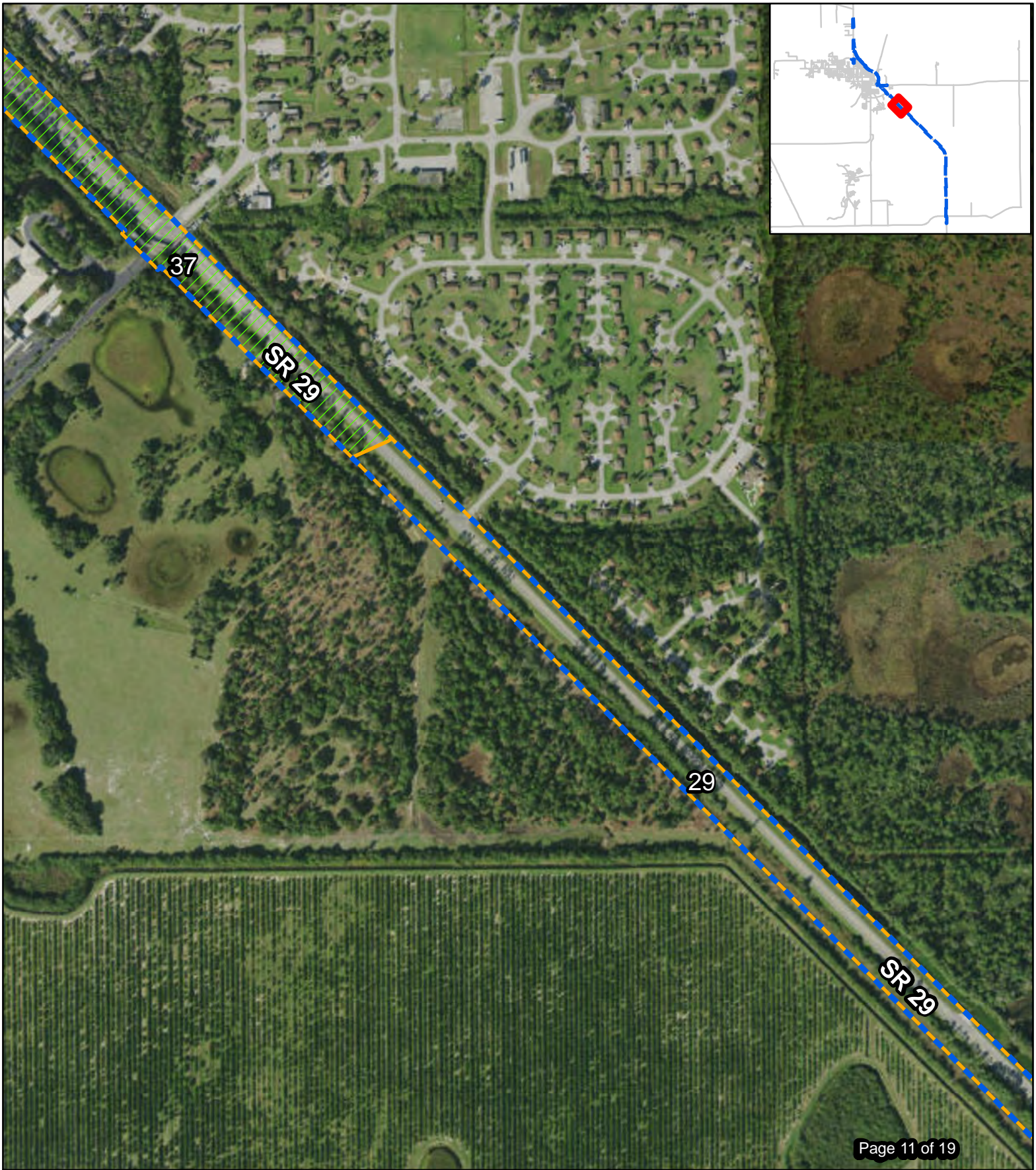
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Soils Map
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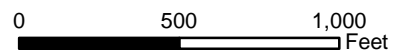
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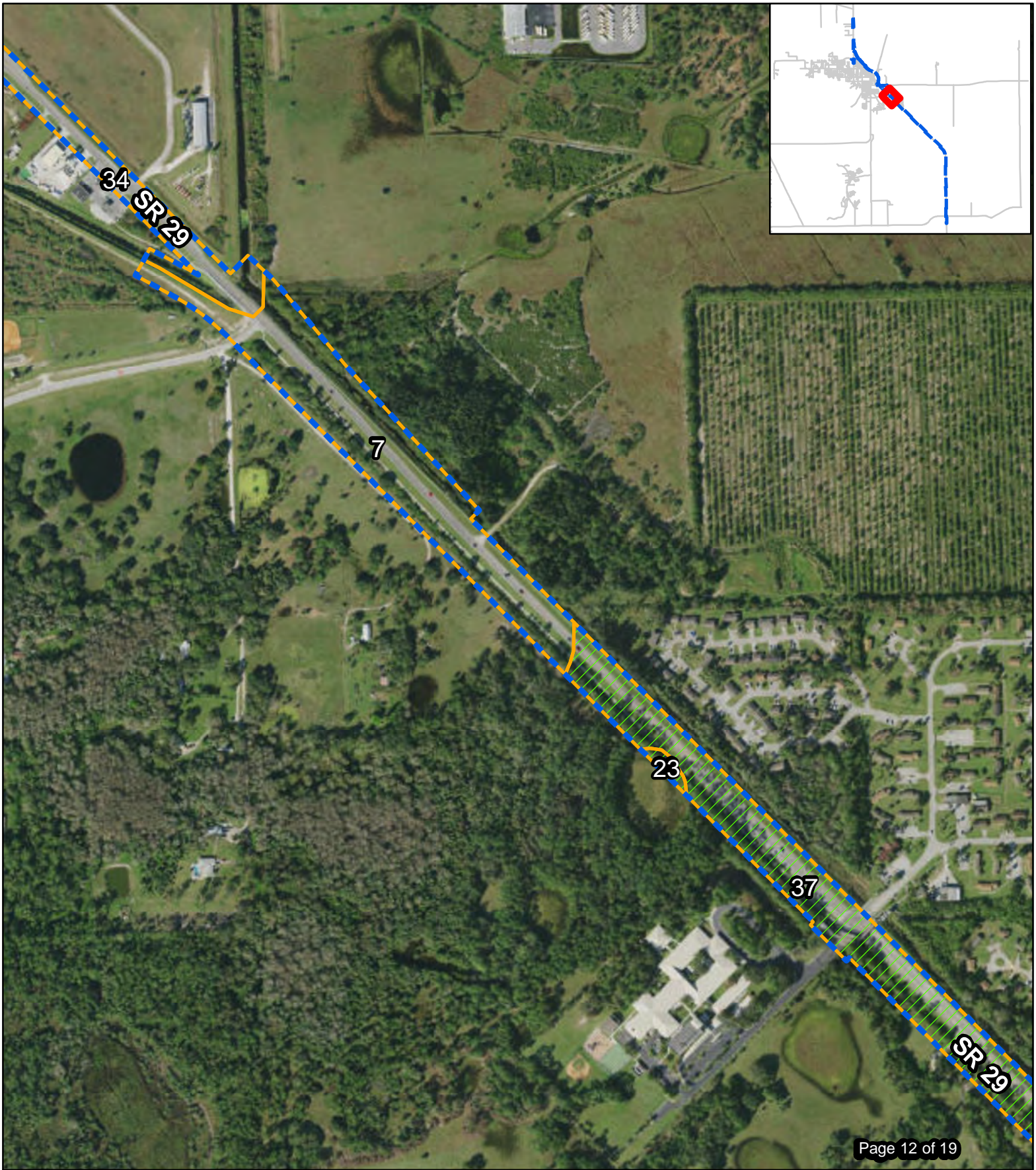
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Soils Map
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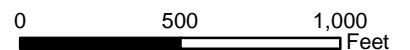
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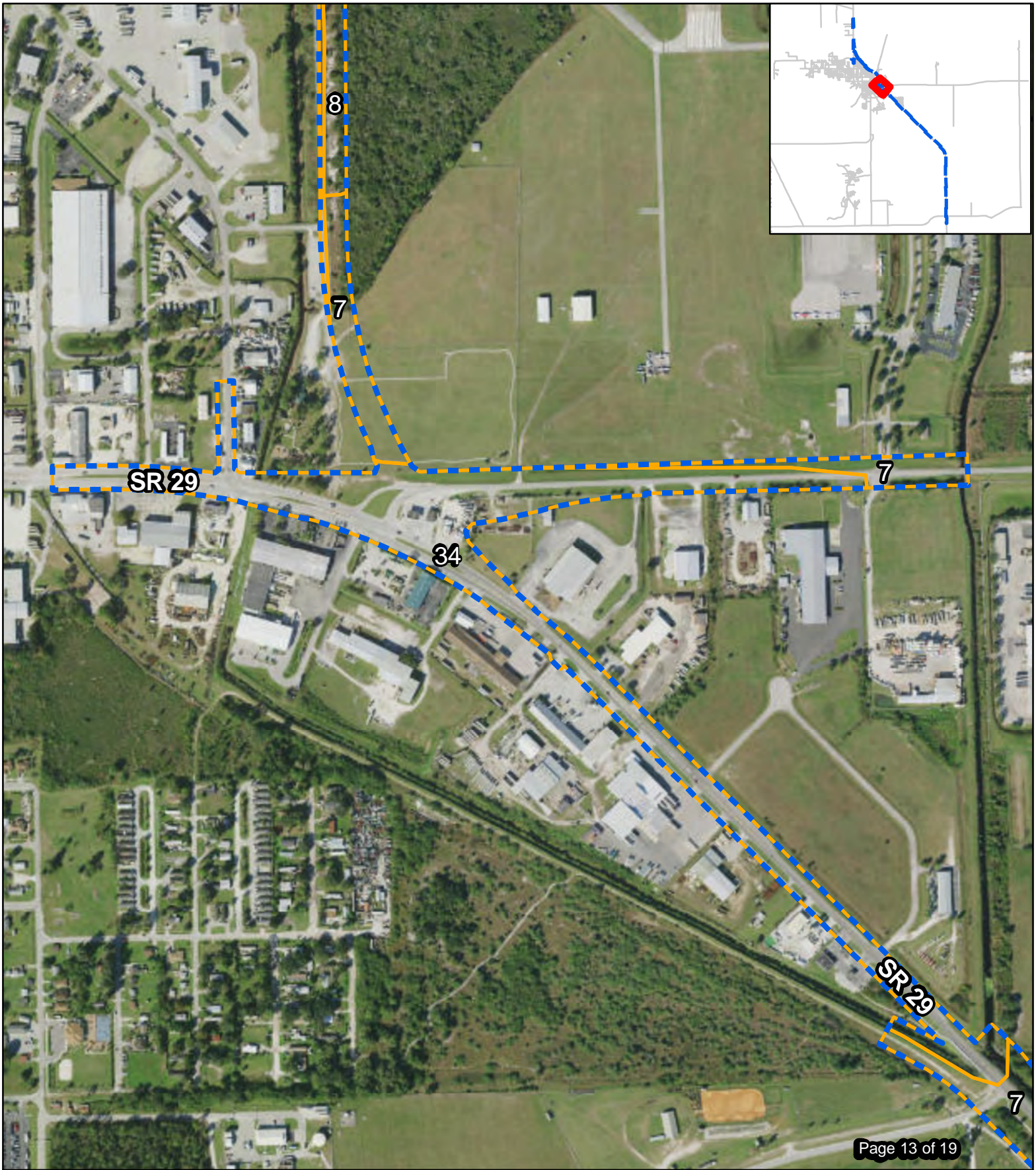
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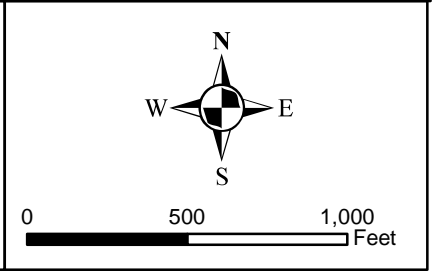
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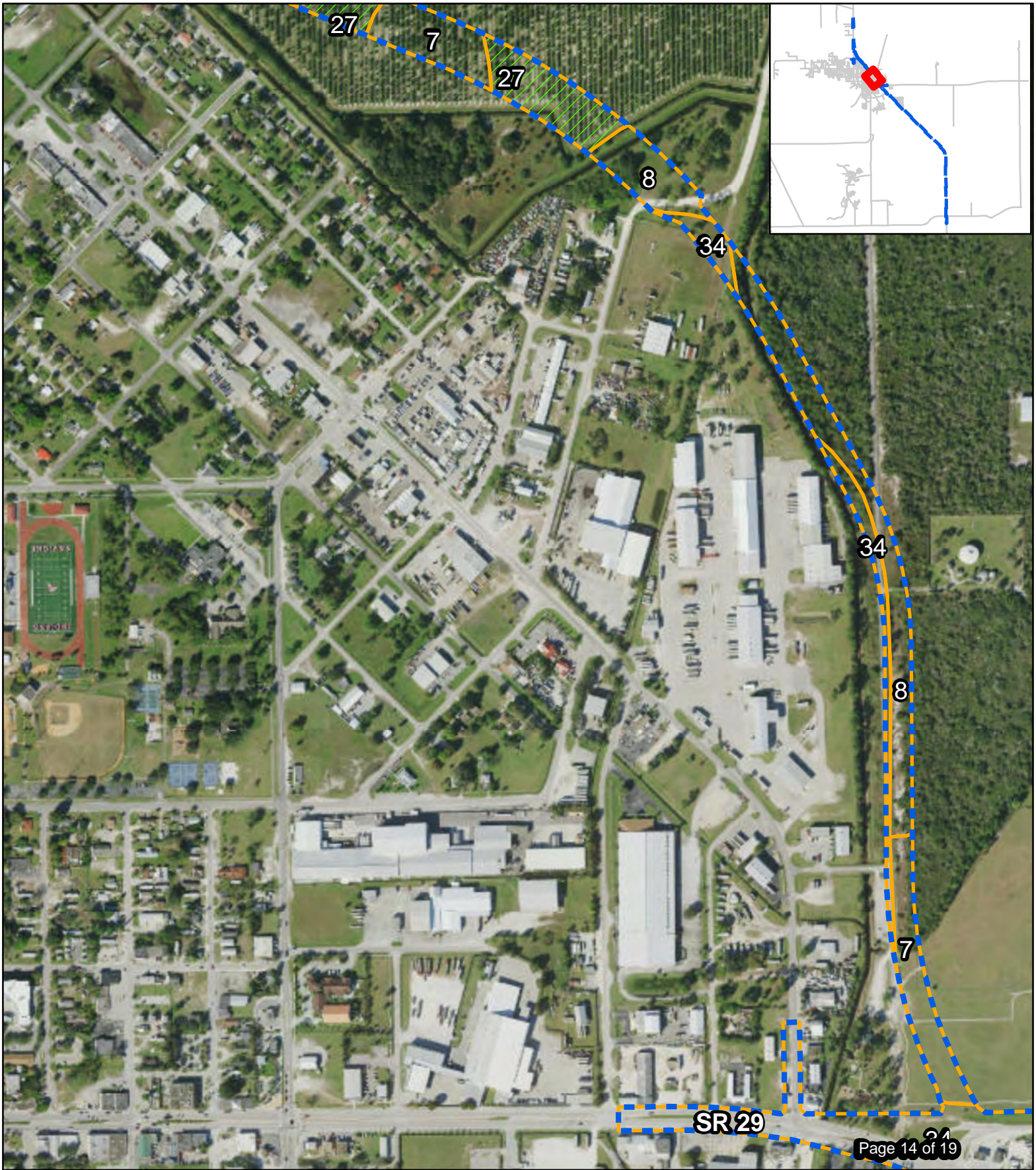
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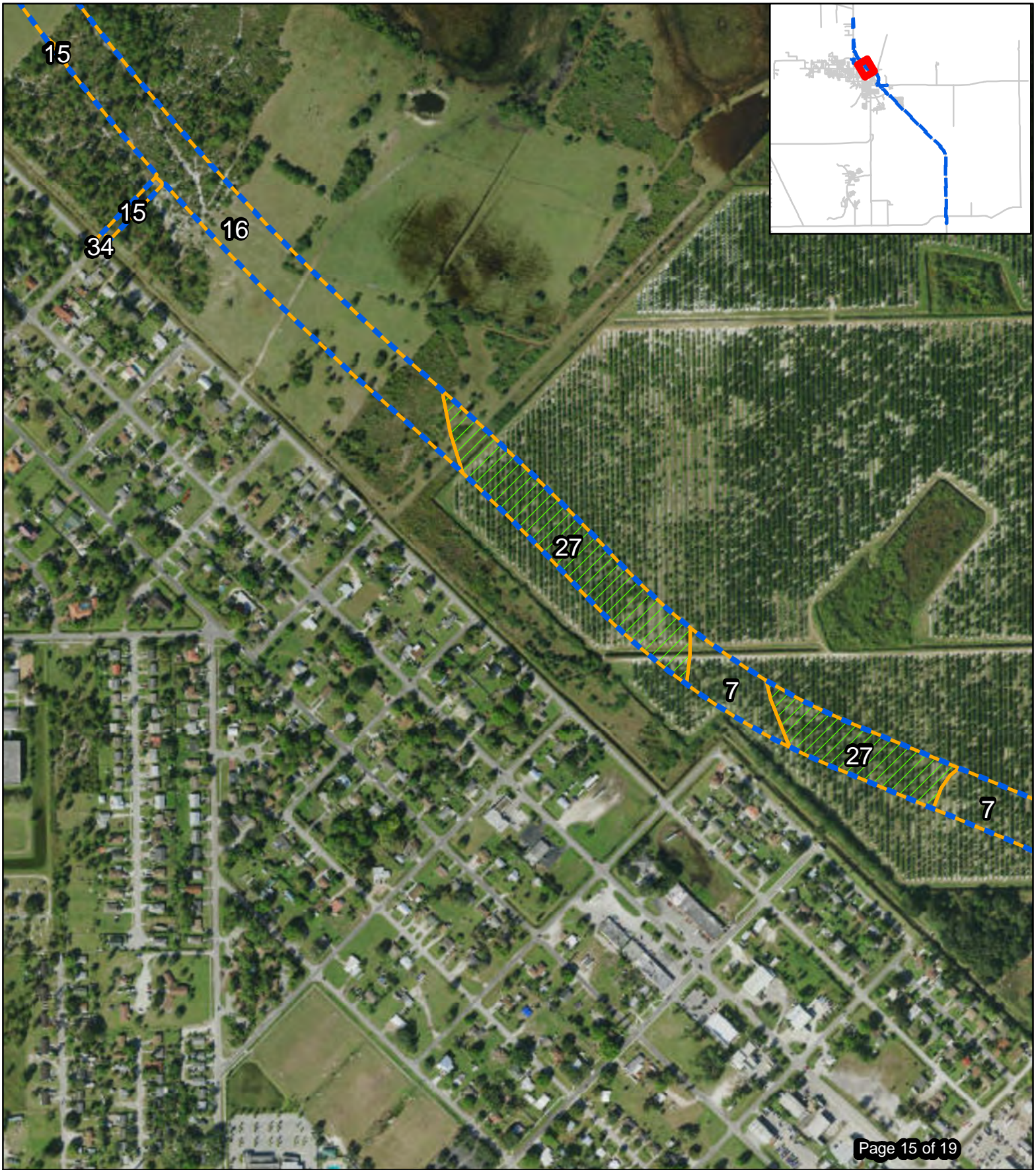
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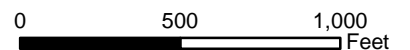
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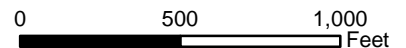
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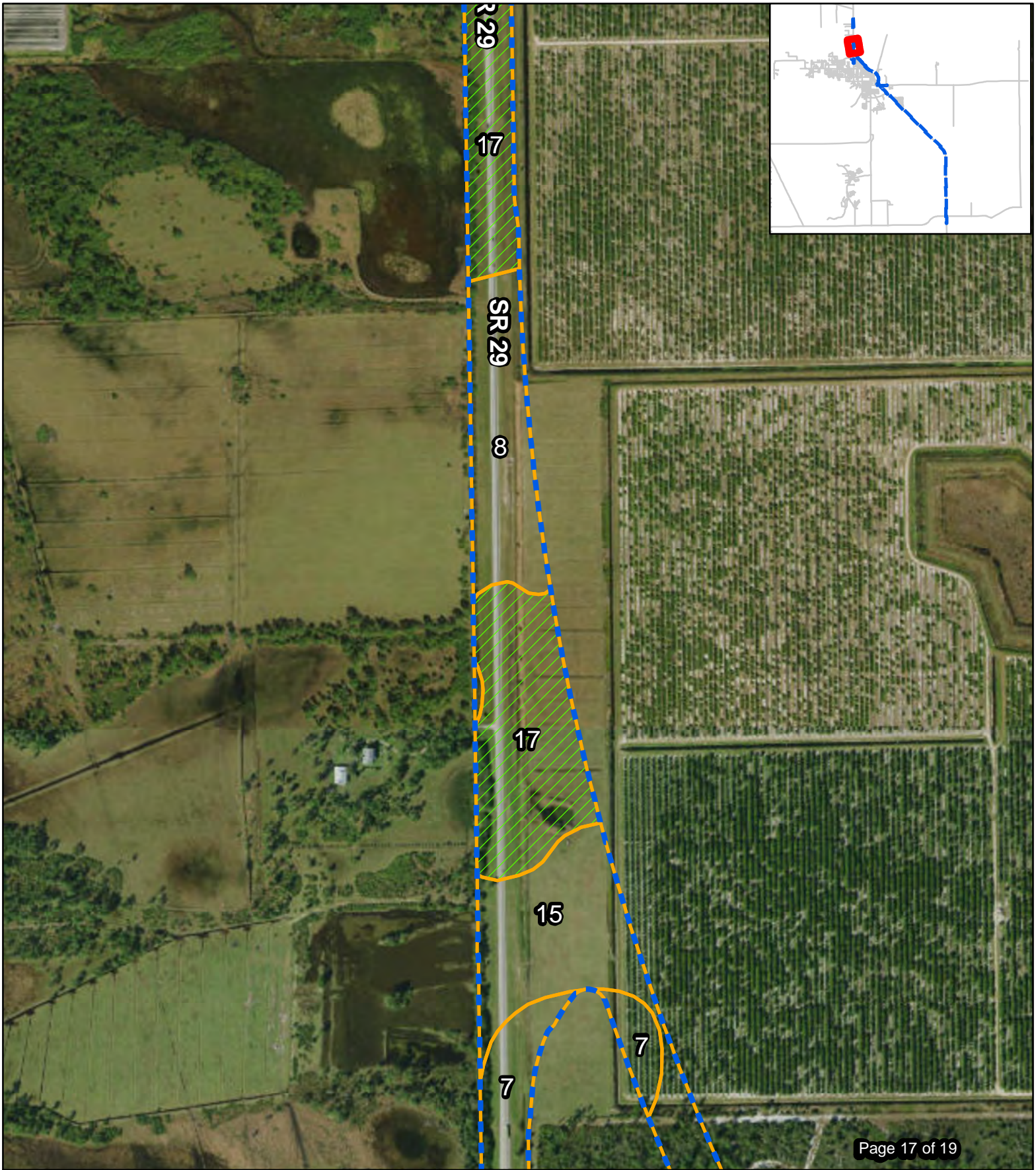
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Soils Map
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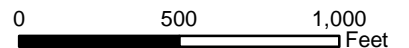
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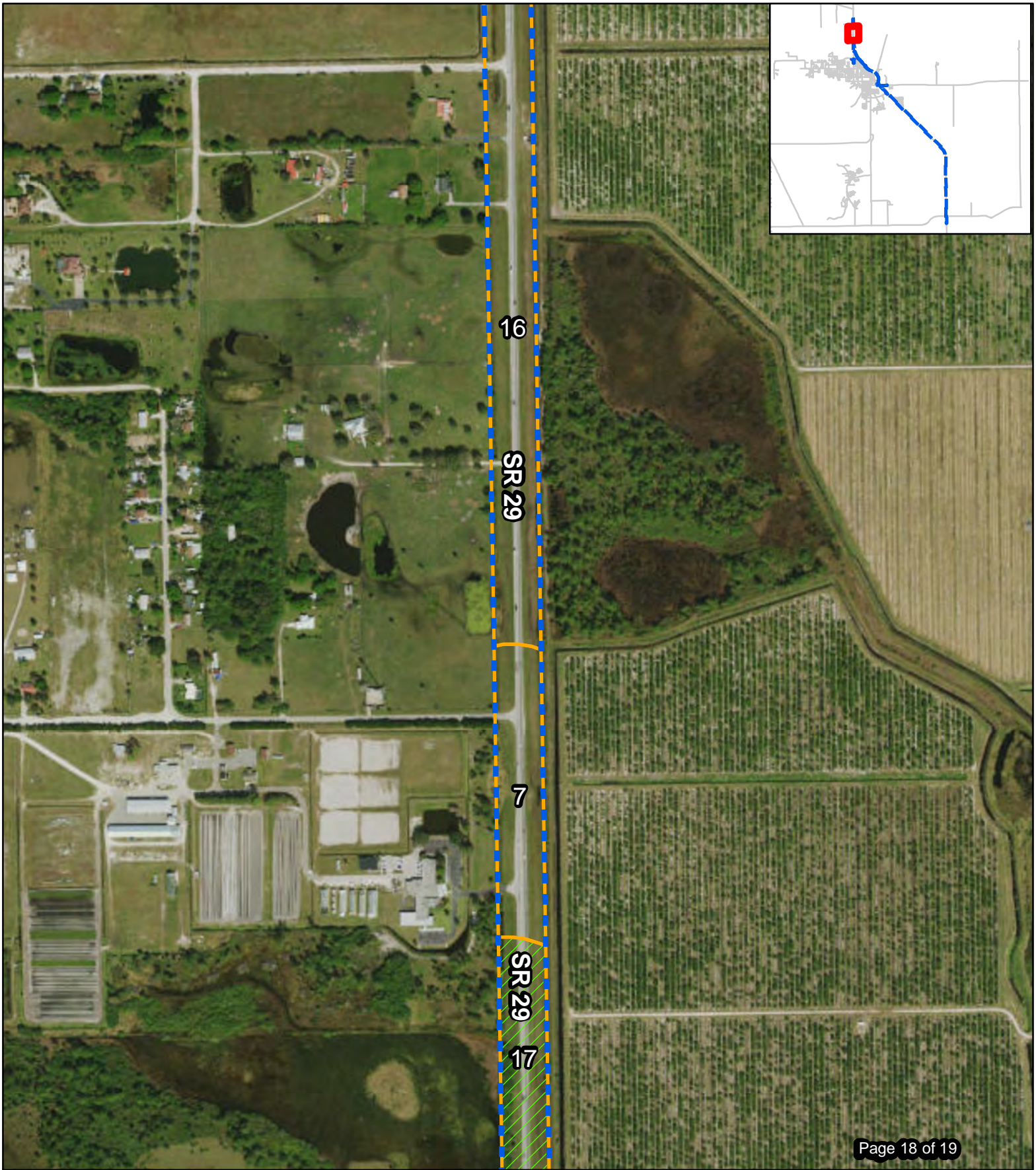
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Soils Map
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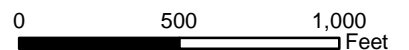
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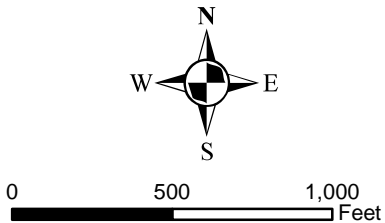
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Soils Map
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/1/2018



APPENDIX D-2
Soils Descriptions

Appendix D-2

SOILS DESCRIPTIONS

Map Unit 3 – Malabar fine sand, 0 to 2 percent slopes

This map unit consists of nearly level, poorly drained soils on flatwoods and in sloughs. The permeability of this soil is slow or very slow. The available water capacity is low. Under natural conditions, the seasonal high water table is within a depth of 12 inches for 3 to 6 months during most years. Malabar fine sand is classified as hydric by the *Hydric Soils of Florida Handbook* (Hurt, 2007). This soil unit comprises 4.22 acres (1.14%) of Central Alternative #1 Revised and 4.31 acres (1.13%) of Central Alternative #2.

Map Unit 7 – Immokalee fine sand, 0 to 2 percent slopes

This nearly level, poorly drained soil is on flatwoods. The permeability of this soil is moderate. The available water capacity is low. Under natural conditions, the seasonal high water table is within a depth of 6-18 inches for 1 to 6 months during most years. Immokalee fine sand is not classified as hydric by the *Hydric Soils of Florida Handbook* (Hurt, 2007). This soil unit comprises 69.20 acres (18.78%) of Central Alternative #1 Revised and 75.41 acres (19.73%) of Central Alternative #2.

Map Unit 8 - Myakka fine sand, 0 to 2 percent slopes

This nearly level, poorly drained soil is on flatwoods. The permeability of this soil is moderate. The available water capacity is low. Under natural conditions, the seasonal high water table is within a depth of 6-18 inches for 1 to 6 months during most years. Myakka fine sand is not classified as hydric by the *Hydric Soils of Florida Handbook* (Hurt, 2007). This soil unit comprises 14.11 acres (3.83%) of Central Alternative #1 Revised and 15.38 acres (4.02%) of Central Alternative #2.

Map Unit 10 - Oldsmar fine sand, limestone substratum

This nearly level, poorly drained soil is found on flatwoods. The permeability of this soil is slow, and the available water capacity is low. Under natural conditions, the seasonal high water table is within a depth of 6-18 inches for 1 to 6 months during most years. Oldsmar fine sand, limestone substratum is not classified as hydric by the *Hydric Soils of Florida Handbook* (Hurt, 2007). This soil unit comprises 4.71 acres of the project study area (1.31% of Central Alternative #1 Revised and 1.23% of Central Alternative #2).

Map Unit 15 - Pomello fine sand, 0 to 2 percent slopes

This nearly level, moderately well drained soil is on low ridges on flatwoods. The permeability of this soil is moderately rapid. The available water capacity is low. Under natural conditions, the seasonal high water table is at a depth of 24 to 42 inches for 1 to 5 months during most years. Pomello fine sand is not classified as hydric by the *Hydric Soils of Florida Handbook* (Hurt, 2007). This soil unit comprises 16.33 acres (4.42%) of Central Alternative #1 Revised and 16.42 acres (4.30%) of Central Alternative #2.

Map Unit 16 - Oldsmar fine sand, 0 to 2 percent slopes

This is a nearly level, poorly drained soil on flatwoods. The permeability of this soil is slow or very slow. The available water capacity is low. Under natural conditions, the seasonal high water table is between depths of 6 to 18 inches for 1 to 6 months during most years. Oldsmar fine sand is not classified as hydric by the *Hydric Soils of Florida Handbook* (Hurt, 2007). This soil unit comprises 74.12 acres (20.10%) of Central Alternative #1 Revised and 74.42 acres (19.47%) of Central Alternative #2.

Map Unit 17 - Basinger fine sand, 0 to 2 percent slopes

This nearly level, poorly drained soil is found in sloughs and poorly defined drainageways. The permeability of this soil is rapid. The available water capacity is low. Under natural conditions, the seasonal high water table is within a depth of 12 inches for 3 to 6 months during most years. Basinger fine sand is classified as hydric by the *Hydric Soils of Florida Handbook* (Hurt, 2007). This soil unit comprises 30.10 acres of the project study area (8.17% of Central Alternative #1 Revised and 7.87% of Central Alternative #2).

Map Unit 20 – Fort Drum and Malabar high fine sands

These nearly level, poorly drained soils are on ridges along sloughs. The permeability in the Ft. Drum soil is rapid. The permeability in the Malabar soil is slow or very slow. The available water capacity of both soils is low. Under natural conditions, the seasonal high water table is at a depth of 6 to 18 inches for 1 to 6 months during most years. Fort Drum and Malabar high fine sands are not classified as hydric by the *Hydric Soils of Florida Handbook* (Hurt, 2007). This soil unit comprises 11.01 acres of the project study area (3.01% of Central Alternative #1 Revised and 2.89% of Central Alternative #2).

Map Unit 21 - Boca fine sand, 0 to 2 percent slopes

This nearly level, poorly drained soil is on flatwoods. The permeability of this soil is moderate. The available water capacity is low. Under natural conditions, the seasonal high water table is within a depth of 6-18 inches for 1 to 6 months during most years. Boca fine sand is classified as hydric by the *Hydric Soils of Florida Handbook* (Hurt, 2007). This soil unit comprises 14.22 acres (3.81%) of Central Alternative #1 Revised and 14.37 acres (3.75%) of Central Alternative #2.

Map Unit 22 – Chobee, Winder, and Gator soils, depressional

These are level, very poorly drained soils in depressions and marshes. The permeability in these soils is slow or very slow. The available water capacity is moderate in the Chobee and Winder soils and high in the Gator soil. Under natural conditions, these soils are ponded for 6 months or more each year during most years. Chobee, Winder, and Gator soils, depressional are classified as hydric by the *Hydric Soils of Florida Handbook* (Hurt, 2007). This soil unit comprises 6.11 acres (1.69%) of Central Alternative #1 Revised and 6.31 acres (1.64%) of Central Alternative #2.

Map Unit 23 - Holopaw and Okeelanta soils, depressional

These are level, very poorly drained soils in depressions and marshes. The permeability in the Holopaw soil is moderate to moderately slow, and the available water capacity is low. The permeability in the Okeelanta soil is slow or very slow, and the available water capacity is high. Under natural conditions, these soils are ponded for 6 months or more each year. Holopaw and Okeelanta soils, depressional are classified as hydric by the *Hydric Soils of Florida Handbook* (Hurt, 2007). This soil unit comprises 0.30 acres (0.10% of Central Alternative #1 Revised and 0.08% of Central Alternative #2).

Map Unit 25 - Boca, Riviera, limestone substratum and Copeland fine sands, depressional

These are level, very poorly drained soils in depressions, cypress swamps, and marshes. The permeability in the Boca soil is moderate, and the available water capacity is very low. The permeability in the Riviera soil is moderately rapid to moderately slow, and the available water capacity is low. The permeability in the Copeland soil is moderately slow, and the available water capacity is moderate. Under natural conditions, these soils are ponded for 6 months or more each year. Boca, Riviera, limestone substratum and Copeland fine sands, depressional are classified as hydric by the *Hydric Soils of Florida Handbook* (Hurt, 2007). This soil unit comprises 1.36 acres (0.37%) of Central Alternative #1 Revised and 1.62 acres (0.43%) of Central Alternative #2.

Map Unit 27 - Holopaw fine sand, 0 to 2 percent slopes

This nearly level, poorly drained soil is found in sloughs and poorly defined drainageways. The permeability of this soil is moderate to moderately slow. The available water capacity is low. Under natural conditions, the seasonal high water table is within a depth of 12 inches for 3 to 6 months during most years. Holopaw fine sand is classified as hydric by the *Hydric Soils of Florida Handbook* (Hurt, 2007). This soil unit comprises 21.19 acres (5.67%) of Central Alternative #1 Revised and 31.27 acres (8.18%) of Central Alternative #2.

Map Unit 28 - Pineda and Riviera fine sands

This is a nearly level, poorly drained soil found in sloughs and poorly defined drainageways. The permeability of Pineda and Riviera soils is slow or very slow. The available water capacity for both soils is low. Under natural conditions, the seasonal high water table is within a depth of 12 inches for 3 to 6 months during most years. Pineda and Riviera fine sands are classified as hydric by the *Hydric Soils of Florida Handbook* (Hurt, 2007). This soil unit comprises 16.51 acres (4.52%) of Central Alternative #1 Revised and 16.70 acres (4.37%) of Central Alternative #2.

Map Unit 29 - Wabasso fine sands, 0 to 2 percent slopes

This nearly level, moderately well drained soil is found on flatwoods. The permeability of this soil is slow or very slow, and the available water capacity is low. Under natural conditions, the seasonal high water table is at a depth of 6 to 18 inches for 1 to 6 months during most years. Wabasso fine sand is not classified as hydric by the *Hydric Soils of*

Florida Handbook (Hurt, 2007). This soil unit comprises 19.12 acres (5.23%) of Central Alternative #1 Revised and 19.12 acres (5.01%) of Central Alternative #2.

Map Unit 34 - Urban land -Immokalee-Oldsmar, limestone substratum complex

These areas of Urban land and nearly level, poorly drained soils are in urban areas. The permeability in the Immokalee soil is moderate, and the available water capacity is low. The permeability in the Oldsmar soil is moderately slow, and the available water capacity is low. Under natural conditions, the seasonal high water table is at a depth of 6 to 18 inches for 1 to 6 months during most years. Urban land -Immokalee-Oldsmar, limestone substratum complex is unranked. This soil unit comprises 31.66 acres (8.58%) of Central Alternative #1 Revised and 26.34 acres (6.89%) of Central Alternative #2.

Map Unit 37 -Tusawilla fine sand

This nearly level, poorly drained soil is found in flatwoods and hammocks. The permeability of this soil is moderate to moderately slow. The available water capacity is low. Under natural conditions, the seasonal high water table is within a depth of 6 to 18 inches for 1 to 6 months during most years. Tusawilla fine sand is classified as hydric by the *Hydric Soils of Florida Handbook* (Hurt, 2007). This soil unit comprises 12.71 acres (3.40%) of Central Alternative #1 Revised and 12.76 acres (3.33%) of Central Alternative #2.

Map Unit 43 -Winder, Riviera, limestone substratum and Chobee soils, depressional

These are level, very poorly drained soils in marshes. The permeability in the Winder and Chobee soils is slow or very slow. The available water capacity of both soils is moderate. The permeability in the Riviera soil is moderately rapid to moderately slow. The available water capacity is low. Under natural conditions, the soils in this unit are ponded for 6 months or more during most years. Winder, Riviera, limestone substratum and Chobee soils, depressional are classified as hydric by the *Hydric Soils of Florida Handbook* (Hurt, 2007). This soil unit comprises 21.65 acres (5.87%) of Central Alternative #1 Revised and 21.71 acres (5.68%) of Central Alternative #2.

APPENDIX E
IPaC Resource List

IPaC Information for Planning and Consultation U.S. Fish & Wildlife Service

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Collier County, Florida



Local office

South Florida Ecological Services Field Office

☎ (772) 562-3909

📅 (772) 562-4288

1339 20th Street

Vero Beach, FL 32960-3559

<http://fws.gov/verobeach>

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species

¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Florida Bonneted Bat <i>Eumops floridanus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8630	Endangered
Florida Panther <i>Puma (=Felis) concolor coryi</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1763	Endangered
Puma (=mountain Lion) <i>Puma (=Felis) concolor (all subsp. except coryi)</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6049	SAT
West Indian Manatee <i>Trichechus manatus</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/4469	Threatened Marine mammal

Birds

NAME	STATUS
Audubon's Crested Caracara <i>Polyborus plancus audubonii</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8250	Threatened
Cape Sable Seaside Sparrow <i>Ammodramus maritimus mirabilis</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6584	Endangered
Everglade Snail Kite <i>Rostrhamus sociabilis plumbeus</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/7713	Endangered
Florida Grasshopper Sparrow <i>Ammodramus savannarum floridanus</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/32	Endangered
Florida Scrub-jay <i>Aphelocoma coerulescens</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6174	Threatened

Ivory-billed Woodpecker <i>Campephilus principalis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8230	Endangered
Kirtland's Warbler <i>Setophaga kirtlandii</i> (= <i>Dendroica kirtlandii</i>) No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8078	Endangered
Piping Plover <i>Charadrius melodus</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot <i>Calidris canutus rufa</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1864	Threatened
Red-cockaded Woodpecker <i>Picoides borealis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/7614	Endangered
Wood Stork <i>Mycteria americana</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8477	Threatened

Reptiles

NAME	STATUS
American Alligator <i>Alligator mississippiensis</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/776	SAT
American Crocodile <i>Crocodylus acutus</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6604	Threatened
Eastern Indigo Snake <i>Drymarchon corais couperi</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/646	Threatened
Loggerhead Sea Turtle <i>Caretta caretta</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/1110	Threatened

Fishes

NAME	STATUS
Atlantic Sturgeon (gulf Subspecies) <i>Acipenser oxyrinchus</i> (=oxyrhynchus) <i>desotoi</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/651	Threatened

Insects

NAME	STATUS
Bartram's Hairstreak Butterfly <i>Strymon acis bartrami</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/4837	Endangered
Florida Leafwing Butterfly <i>Anaea troglodyta floridalis</i> There is final critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/6652	Endangered
Miami Blue Butterfly <i>Cyclargus</i> (=Hemiargus) <i>thomasi</i> <i>bethunebakeri</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3797	Endangered

Flowering Plants

NAME	STATUS
Florida Prairie-clover <i>Dalea carthagenensis floridana</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2300	Endangered
Garber's Spurge <i>Chamaesyce garberi</i> No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8229	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act

[1](#) and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.p>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE")

INDICATES THAT THE BIRD DOES
NOT LIKELY BREED IN YOUR
PROJECT AREA.)

<p>American Kestrel <i>Falco sparverius paulus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p>	Breeds Apr 1 to Aug 31
<p>Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.</p>	Breeds Sep 1 to Jul 31
<p>Black Skimmer <i>Rynchops niger</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234</p>	Breeds May 20 to Sep 15
<p>Common Ground-dove <i>Columbina passerina exigua</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p>	Breeds Feb 1 to Dec 31
<p>Dunlin <i>Calidris alpina arcticola</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p>	Breeds elsewhere
<p>King Rail <i>Rallus elegans</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936</p>	Breeds May 1 to Sep 5
<p>Least Tern <i>Sterna antillarum</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p>	Breeds Apr 20 to Sep 10
<p>Lesser Yellowlegs <i>Tringa flavipes</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679</p>	Breeds elsewhere
<p>Limpkin <i>Aramus guarana</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds Jan 15 to Aug 31
<p>Magnificent Frigatebird <i>Fregata magnificens</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p>	Breeds Oct 1 to Apr 30

Prairie Warbler <i>Dendroica discolor</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Ruddy Turnstone <i>Arenaria interpres morinella</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Short-billed Dowitcher <i>Limnodromus griseus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Short-tailed Hawk <i>Buteo brachyurus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8742	Breeds Mar 1 to Jun 30
Swallow-tailed Kite <i>Elanoides forficatus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8938	Breeds Mar 10 to Jun 30

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

- To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
- The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

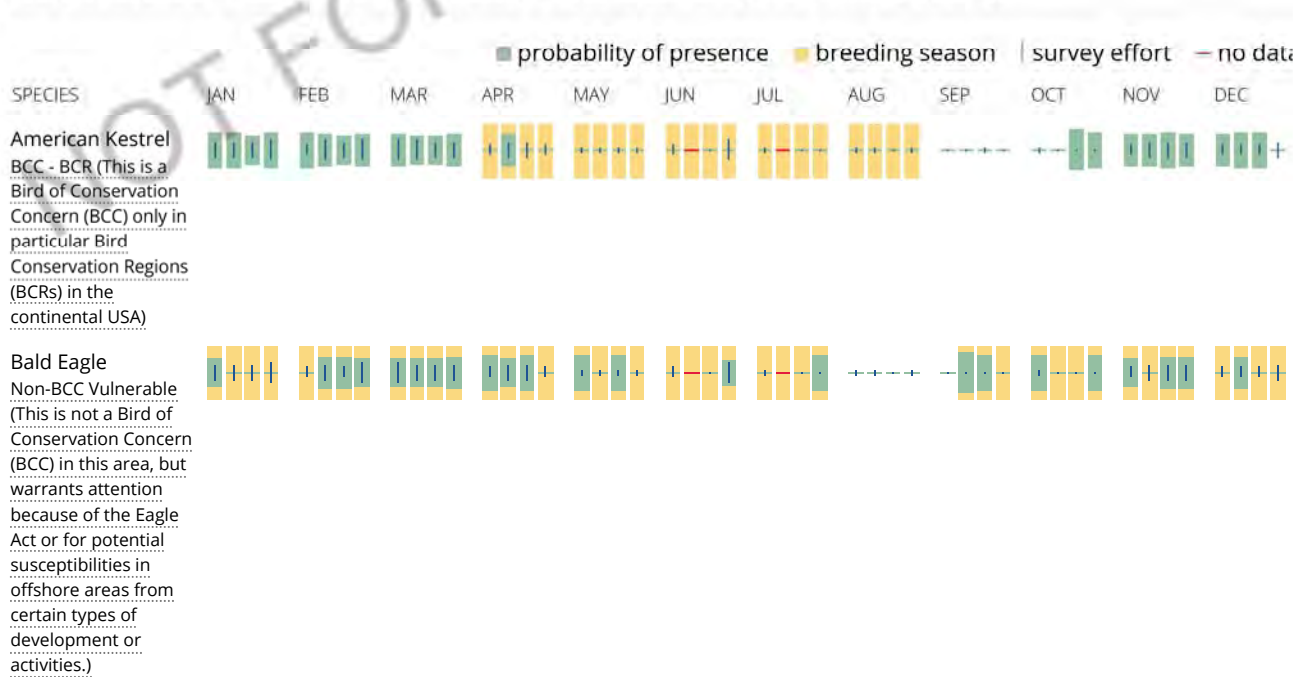
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

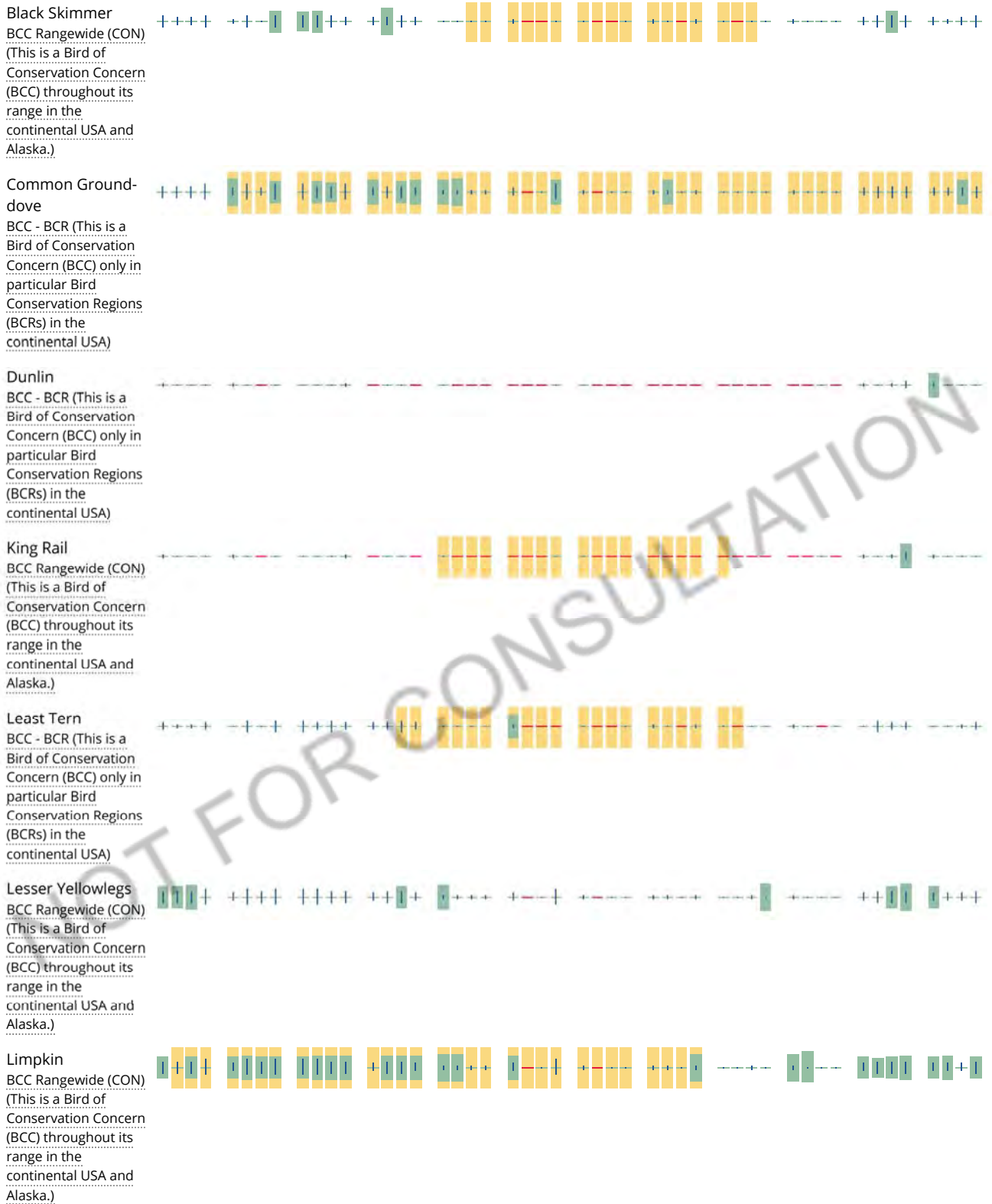
No Data (-)

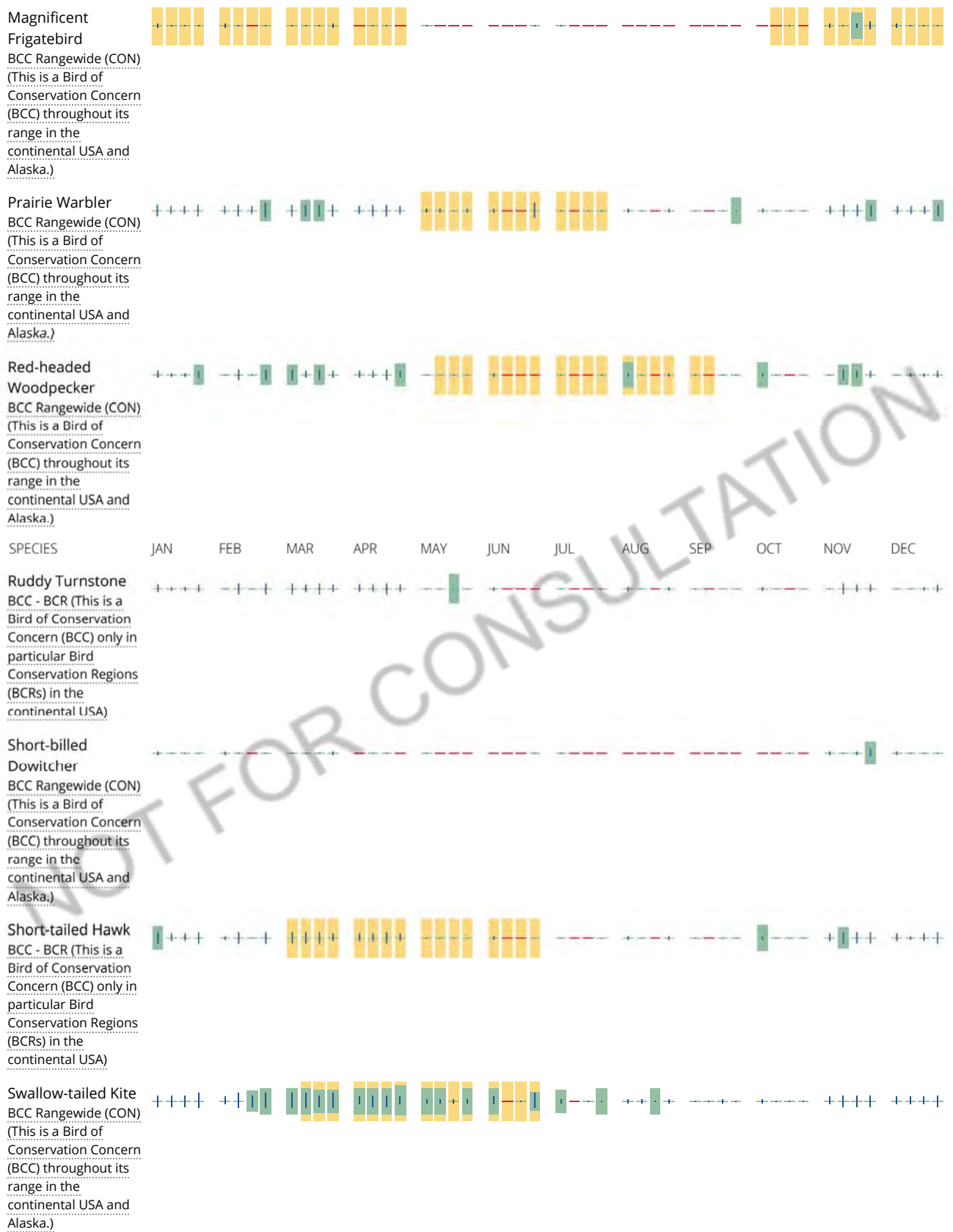
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.







Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [E-bird Explore Data Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Marine mammals

Marine mammals are protected under the [Marine Mammal Protection Act](#). Some are also protected under the Endangered Species Act

¹ and the Convention on International Trade in Endangered Species of Wild Fauna and Flora².

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walrus, polar bears, manatees, and dugongs] and NOAA Fisheries

³ [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the [Marine Mammals](#) page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take (to harass, hunt, capture, kill, or attempt to harass, hunt, capture or kill) of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

1. The [Endangered Species Act](#) (ESA) of 1973.
2. The [Convention on International Trade in Endangered Species of Wild Fauna and Flora](#) (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
3. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following marine mammals under the responsibility of the U.S. Fish and Wildlife Service are potentially affected by activities in this location:

NAME

West Indian Manatee *Trichechus manatus*
<https://ecos.fws.gov/ecp/species/4469>

Facilities

Wildlife refuges and fish hatcheries

REFUGE AND FISH HATCHERY INFORMATION IS NOT AVAILABLE AT THIS TIME

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers](#)

[District.](#)

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

[PEM1Fd](#)[PEM1Cd](#)[PEM1A](#)[PEM1Ad](#)[PEM1C](#)[PEM1Fx](#)[PEM1Cx](#)[PEM1F](#)

FRESHWATER FORESTED/SHRUB WETLAND

[PFO2Cd](#)[PFO1C](#)[PSS1/3Fd](#)[PFO2/1C](#)[PFO2C](#)[PFO1Fd](#)[PSS1/3Cd](#)[PFO1/3C](#)[PFO1Ad](#)[PFO1/2C](#)[PSS1/3C](#)[PSS1/3Ad](#)[PFO2Fd](#)[PFO1/3Cd](#)[PFO4C](#)[PFO4Cd](#)[PFO4Fd](#)[PFO1Cd](#)[PFO2/1Cd](#)[PFO2/1Fd](#)[PSS1/3E](#)[PFO1A](#)

FRESHWATER POND

[PUBHx](#)[PUBKx](#)[PAB4Hx](#)

RIVERINE

[R2UBHx](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX F
FNAI Data Report



1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
850-224-8207
fax 850-681-9364
www.fnai.org

April 19, 2012

Tia Norman
URS Corporation
7650 West Courtney Campbell Causeway
Tampa, FL 33607

Dear Ms. Norman,

Thank you for requesting information from the Florida Natural Areas Inventory (FNAI). We have compiled the following information for your project area.

Project: State Road 29 PD&E Study
Date Received: 04/18/2012
Location: Collier County

Based on the information available, this site appears to be located on or very near a significant region of scrub habitat, a natural community in decline that provides important habitat for several rare species within a small area. Additional consideration should be given to avoid and/or mitigate impacts to these natural resources, and to design land uses that are compatible with these resources.

Element Occurrences

A search of our maps and database indicates that we currently have several element occurrences mapped in the vicinity of the study area (see enclosed map and element occurrence table). Please be advised that a lack of element occurrences in the FNAI database is not a sufficient indication of the absence of rare or endangered species on a site.

Federally Listed Species

Our data indicate federally listed species are present on or very near this site (see enclosed map and tables for details). This statement should not be interpreted as a legal determination of presence or absence of federally listed species on a property.

The element occurrences data layer includes occurrences of rare species and natural communities. The map legend indicates that some element occurrences occur in the general vicinity of the label point. This may be due to lack of precision of the source data, or an element that occurs over an extended area (such as a wide ranging species or large natural community). For animals and plants, element occurrences generally refer to more than a casual sighting; they usually indicate a viable population of the species. Note that some element occurrences represent historically documented observations which may no longer be extant. Extirpated element occurrences will be marked with an 'X' following the occurrence label on the enclosed map.

*Several of the species and natural communities tracked by the Inventory are considered **data sensitive**. Occurrence records for these elements contain information that we consider sensitive due to collection pressures, extreme rarity, or at the request of the source of the information. The Element Occurrence Record has been labeled "Data Sensitive." We request that you not publish or release specific locational*



Florida Resources
and Environmental
Analysis Center

Institute of Science
and Public Affairs

The Florida State University

Tracking Florida's Biodiversity

data about these species or communities without consent from the Inventory. If you have any questions concerning this please do not hesitate to call.

Likely and Potential Rare Species

In addition to documented occurrences, other rare species and natural communities may be identified on or near the site based on habitat models and species range models (see enclosed Biodiversity Matrix Report). These species should be taken into consideration in field surveys, land management, and impact avoidance and mitigation.

FNAI habitat models indicate areas, which based on land cover type, offer suitable habitat for one or more rare species that is known to occur in the vicinity. Habitat models have been developed for approximately 300 of the rarest species tracked by the Inventory, including all federally listed species.

FNAI species range models indicate areas that are within the known or predicted range of a species, based on climate variables, soils, vegetation, and/or slope. Species range models have been developed for approximately 340 species, including all federally listed species.

The FNAI Biodiversity Matrix Geodatabase compiles Documented, Likely, and Potential species and natural communities for each square mile Matrix Unit statewide.

Florida Scrub-jay Survey – U.S. Fish and Wildlife Service

This survey was conducted by staff and associates of the Archbold Biological Station from 1992 to 1996. An attempt was made to record all scrub-jay (*Aphelocoma coerulescens*) groups, although most federal lands were not officially surveyed. Each map point represents one or more groups.

This data layer indicates that there are potential scrub-jay populations on or very near your site. For additional information:

Fitzpatrick, J.W., B. Pranty, and B. Stith, 1994, Florida scrub jay statewide map, 1992-1993. U. S. Fish and Wildlife Service Report, Cooperative Agreement no. 14-16-004-91-950.

The Inventory always recommends that professionals familiar with Florida's flora and fauna conduct a site-specific survey to determine the current presence or absence of rare, threatened, or endangered species.

Please visit www.fnai.org/trackinglist.cfm for county or statewide element occurrence distributions and links to more element information.

The database maintained by the Florida Natural Areas Inventory is the single most comprehensive source of information available on the locations of rare species and other significant ecological resources. However, the data are not always based on comprehensive or site-specific field surveys. Therefore this information should not be regarded as a final statement on the biological resources of the site being considered, nor should it be substituted for on-site surveys. Inventory data are designed for the purposes of conservation planning and scientific research, and are not intended for use as the primary criteria for regulatory decisions.

Information provided by this database may not be published without prior written notification to the Florida Natural Areas Inventory, and the Inventory must be credited as an information source in these publications. FNAI data may not be resold for profit.

Thank you for your use of FNAI services. An invoice will be mailed separately. If I can be of further assistance, please contact me at (850) 224-8207 or at mobrien@fnai.org.

Sincerely,

Michael O'Brien

Michael O'Brien
GIS / Data Services

Encl

State Road 29 Project

Collier County

1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 881-9364 Fax
www.fnai.org

**FLORIDA
Natural Areas
INVENTORY**

Element Occurrences

- Animals
- Plants
- Communities
- Other
- Data Sensitive
- ⊕ Point Indicates General Vicinity of Element
- 🌿 U.S. Fish & Wildlife Service Scrub Jay Survey 1992-96

Conservation Lands

- Federal
- State
- Local
- Private
- ▨ State Aquatic Preserves

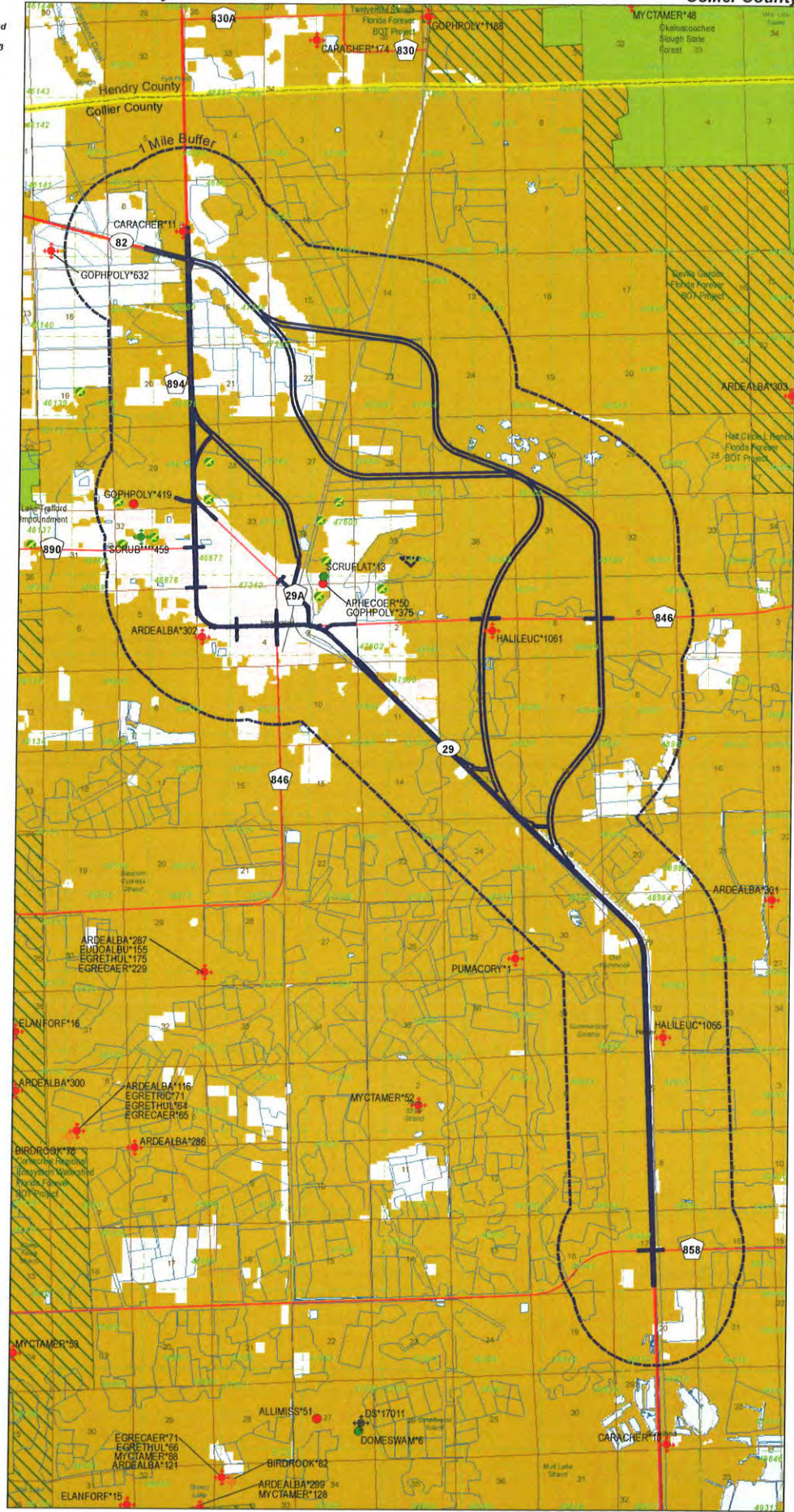
Land Acquisition Projects

- ▨ Florida Forever
- ▨ Board of Trustees Projects

- FNAI Rare Species Habitat
- FNAI Biodiversity Matrix Square Mile Units

- County Boundary
- Interstate
- Turnpike
- Major Highway
- Local Road
- Railroad [Inactive railroads shown in Gray]
- Water

NOTES
Map should not be interpreted without accompanying documents.



Map produced by MGO
Map Date: 4/19/2012



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 Suite 200-C
 Tallahassee, FL 32303
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 (850) 681-9364 Fax
 www.fnai.org

Florida Natural Areas Inventory

DOCUMENTED ELEMENT OCCURRENCES ON OR NEAR State Road 29 Project



Global State Federal State Observation

Map Label	Scientific Name	Common Name	Rank	Status	Listing	Date	Description	EO Comments	
ALLIMISS*51	<i>Alligator mississippiensis</i>	American Alligator	G5	S4	SAT	FT(S/A)	1988-PRE	OPEN POND IN CENTER WITH CYPRESS ON PERIPHERY. TREE S. HARBOR EPIPHYTES MARSH OPEN WITH CLUMPS OF DAHOON HOLLY, WAX MYRTLE, SALTBUUSH, WATER SURFACE DOTTED WITH DUCKWEED, SALVINIA.	1 ADULT SEEN SWIMMING IN THE CENTRAL POND.
APHECOER*50	<i>Aphelocoma coerulescens</i>	Florida Scrub-Jay	G2	S2	LT	FT	1987-12-22	OAK SCRUB, PALMETTO SCRUB, OPEN SLASH PINE SCRUB [I=SCRUBBY FLATWOODS]. 1987 -- SEE ATTACHED DESCRIPTION (P87ADD01).	1981-08-05; 2 SCRUB JAYS. P87ADD01 -- 2 ADULTS SEEN. 3 JAYS SEEN ON CORNER 15TH ST AND L. TRAFFORD RD IN SCRUBBY FLATWOODS (1.2 MI NW OF SITE) ON 2-12-1987 (CCI #231/1).
ARDEALBA*116	<i>Ardea alba</i>	Great Egret	G5	S4	N	N	1988-04-27	COLONY SITE IS A MARSHY POND IN A CYPRESS STRAND SURROUNDED BY FLAG MARSH & CYPRESS. NESTING SUBSTRATE IS WILLOWS OVER WATER. MORE THAN 0.8 KM FROM HUMAN DISTURBANCE.	NONE REPORTED 7/77. 50 NESTING PAIRS 5/78. SOME 6/78. PRESENT 4/88. ABSENT 5/89.
ARDEALBA*121	<i>Ardea alba</i>	Great Egret	G5	S4	N	N	1988-04-27	COLONY SITE IS POND IN CYPRESS DOME SURROUNDED BY CYPRESS STRAND & FARMLAND. NESTING SUBSTRATE IS CYPRESS, WILLOWS, AND SWAMP SHRUBS OVER WATER. MORE THAN 0.8 KM FROM HUMAN DISTURBANCE.	100-200 NESTING PAIRS 7/76. SOME 7/77, 30 PRS. 5/78. NONE REPORTED 6/78. PRESENT 3/88 AND 4/88, ABSENT 5/89.
ARDEALBA*286	<i>Ardea alba</i>	Great Egret	G5	S4	N	N	1988-03-22	Cypress strand w/2-3 interior domes. Surrounded on 3 sides by ag fields.	1988/03/22: M.S. Robson, GFC; Great egret count is about 60 nests (accurate count taken).
ARDEALBA*287	<i>Ardea alba</i>	Great Egret	G5	S4	N	N	1988-05-26	Site is cypress dome w/shrubs in marsh and along drainage canal.	1988: M.S. Robson, GFC; 25 nests counted 3/22. This site was flown twice and visited on the ground. E. Carter, GFC; CAEG prenesting. LBHE incubating. ANHI young flying/ready. Total (individuals?) = 220 (also includes GREG, SNEG, WHIB) 5/26.



1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 661-9364 Fax
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DOCUMENTED ELEMENT OCCURRENCES ON OR NEAR State Road 29 Project



Map Label	Scientific Name	Common Name	Rank	Status	Listing	Date	Description	EO Comments
ARDEALBA*299	<i>Ardea alba</i>	Great Egret	G5	S4	N	1988-04-27	Big open pond surrounded by cypress - birds scattered throughout.	1988/04/27: M.S. Robson, GFC; 5-6 WOST on nests in cypress trees. GREG also on nests in willows. Total = C (includes GREG, WOST).
ARDEALBA*300	<i>Ardea alba</i>	Great Egret	G5	S4	N	1988-04-27	Nests located in low willows and shrubs in a shrubby pond.	1988/04/27: M.S. Robson, GFC; 20-30 GREG observed on nests scattered about in cypress around the open slough. CAEG were also on nests. Total = D (includes GREG, CAEG).
ARDEALBA*301	<i>Ardea alba</i>	Great Egret	G5	S4	N	1988-05-03	Nests in a willow thicket, which is part of a very large willow marsh surrounded by cypress.	1988/05/03: M.S. Robson, GFC; GBHE numbers are the number of nests observed. Difficult to access on the ground. Total = C (includes GREG, GBHE, SMWHITE).
ARDEALBA*302	<i>Ardea alba</i>	Great Egret	G5	S4	N	1988-05-03	Shrubs in open pond surrounded by cypress.	1988/05/03: M.S. Robson, GFC; Total = C (includes GREG, CAEG, LRGDARK).
ARDEALBA*303	<i>Ardea alba</i>	Great Egret	G5	S4	N	1988-05-03	Opening in cypress dome.	1988/05/03: M.S. Robson, GFC; GREG on nests. Total = 50.
BIRDROOK*76	Bird Rookery		GNR	SNR	N	1988-04-27	COLONY SITE IS A MARSHY POND IN A CYPRESS STRAND SURROUNDED BY FLAG MARSH & CYPRESS. NESTING SUBSTRATE IS WILLOWS OVER WATER. MORE THAN 0.8 KM FROM HUMAN DISTURBANCE.	MULTI-SPECIES ROOKERY, 5 SPECIES; 2050-3050+ NESTING PAIRS 6/78; 251-500 BIRDS 4/88; VACANT 5/89. LITTLE BLUE HERON (50++ NESTING PAIRS 7/77 & SOME 6/78), CATTLE EGRET (2500-3000 NP 7/77, 2000+ 5/78, 2500 6/78, PRESENT 4/88), GREAT EGRET (50 NP 5/78, SOME
BIRDROOK*82	Bird Rookery		GNR	SNR	N	1988-04-27	COLONY SITE IS POND IN CYPRESS DOME SURROUNDED BY CYPRESS STRAND & FARMLAND. NESTING SUBSTRATE IS CYPRESS, WILLOWS, AND SWAMP SHRUBS OVER WATER. MORE THAN 0.8 KM FROM HUMAN DISTURBANCE.	MULTI-SPECIES ROOKERY, 6 SPECIES. VACANT 4/76; 15-1800 (+ OR -) NESTING PAIRS 7/76-5/78; 11-100 BIRDS 6/78, 3/88 AND 4/88; VACANT 5/89. LITTLE BLUE HERON (EMPTY 4/76, 50-100 NESTING PRS. IN 7/76, 50+ PRS. 7/77. MANY 5/78. NONE REPORTED 6/78, PRESENT 3/88
CARACHER*10	<i>Caracara cheriway</i>	Crested Caracara	G5	S2	LT	1978	No general description given	BELIEVED TO BE ACTIVE TERRITORY/BREEDING PAIR.
CARACHER*11	<i>Caracara cheriway</i>	Crested Caracara	G5	S2	LT	1978	No general description given	BELIEVED TO BE ACTIVE TERRITORY/BREEDING PAIR.



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Suite 200-C
Tallahassee, FL 32303
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(850) 681-9364 Fax
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			Rank	Status	Listing	Date		
CARACHER*174	<i>Caracara cheriway</i>	Crested Caracara	G5	S2	LT	FT	1989	No general description given 1989: One nesting territory recorded by J. Layne during GFC population study (U97GFC02).
DOMESWAM*6	Dome swamp		G4	S4	N	N	1987-03-26	NIGHT-SCENT EPIDENDRUMS (EPIDENDRUM NOCTURNUM) WERE SEEN HERE.
DS*17011	<i>Data Sensitive Element</i>	Data Sensitive	G4G5	S2	N	LE	1987-03-26	CANOPY OF CYPRESSES, RED MAPLES, SUBSTORY OF CABBAGE PALMS, WILLOWS, TREES HARBOR EPIPHYTES, DENSE LOW GROWTH OF DAHOON HOLLY, WAX MYRTLE, FERNS AND MIXED EMERGENTS.
EGRECAER*229	<i>Egretta caerulea</i>	Little Blue Heron	G5	S4	N	SSC	1988-05-26	Data Sensitive Cypress dome w/shrubs in marsh and along drainage canal.
EGRECAER*65	<i>Egretta caerulea</i>	Little Blue Heron	G5	S4	N	SSC	1978-06	COLONY SITE IS A MARSHY POND IN A CYPRESS STRAND SURROUNDED BY FLAG MARSH & CYPRESS. NESTING SUBSTRATE IS WILLOWS OVER WATER. MORE THAN 0.8 KM FROM HUMAN DISTURBANCE.
EGRECAER*1	<i>Egretta caerulea</i>	Little Blue Heron	G5	S4	N	SSC	1988-03-21	COLONY SITE IS POND IN CYPRESS DOME SURROUNDED BY CYPRESS STRAND & FARMLAND. NESTING SUBSTRATE IS CYPRESS, WILLOWS, AND SWAMP SHRUBS OVER WATER. MORE THAN 0.8 KM FROM HUMAN DISTURBANCE.
EGRETHUL*175	<i>Egretta thula</i>	Snowy Egret	G5	S3	N	SSC	1988-05-26	Site is cypress dome w/shrubs in marsh and along drainage canal. 1988/05/26: E. Carter, GFC. CAEG prenesting. LBHE incubating. ANHI young flying/ready. "Total" (individuals?) = 220 (also includes GREG, SNEG, WHIB).



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Tallahassee, FL 32303
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EGRETHUL*64	<i>Egretta thula</i>	Snowy Egret	G5	S3	N	SSC	1978-05	COLONY SITE IS A MARSHY POND IN A CYPRESS STRAND SURROUNDED BY FLAG MARSH & CYPRESS. NESTING SUBSTRATE IS WILLOWS OVER WATER. MORE THAN 0.8 KM FROM HUMAN DISTURBANCE.	SOME NESTING PAIRS 5/78, NONE REPORTED 7/77 OR 6/78, ABSENT 4/88 AND 5/89.
EGRETHUL*66	<i>Egretta thula</i>	Snowy Egret	G5	S3	N	SSC	1988-03-21	COLONY SITE IS POND IN CYPRESS DOME SURROUNDED BY CYPRESS STRAND & FARMLAND. NESTING SUBSTRATE IS CYPRESS, WILLOWS, AND SWAMP SHRUBS OVER WATER. MORE THAN 0.8 KM FROM HUMAN DISTURBANCE.	CA. 100 NESTING PAIRS (MIXED WITH CATTLE EGRETS) REPORTED 5/78, ABSENT 6/78, PRESENT 3/88, ABSENT 5/89.
EGRETRIC*71	<i>Egretta tricolor</i>	Tricolored Heron	G5	S4	N	SSC	1978-05	COLONY SITE IS A MARSHY POND IN A CYPRESS STRAND SURROUNDED BY FLAG MARSH & CYPRESS. NESTING SUBSTRATE IS WILLOWS OVER WATER. MORE THAN 0.8 KM FROM HUMAN DISTURBANCE.	SOME NESTING PAIRS 5/78, NONE REPORTED 7/77 OR 6/78, ABSENT 4/88 AND 5/89.
ELANFOR*15	<i>Elanoides forficatus</i>	Swallow-tailed Kite	G5	S2	N	N	1990-05-18	Basin marsh	1990-05-18: M.S. Robson, GFC, observed kettie of birds (15) circling around over open marsh habitat.
ELANFOR*16	<i>Elanoides forficatus</i>	Swallow-tailed Kite	G5	S2	N	N	1990-05-18	Dome Swamp nest to open marsh	1990-05-18: M.S. Robson, GFC, observed 2 chicks in nest; 2 adults perched nearby. Nest was in tallest cypress tree in a small dome next to open marsh.
EUDOALBU*155	<i>Eudocimus albus</i>	White Ibis	G5	S4	N	SSC	1988-05-26	Dome Swamp with shrubs in marsh along drainage canal.	1988/05/26: E. Carter, GFC, CAEG prenesting. LBHE incubating. ANHI young flying/ready. "Total" (individuals?) = 220 (also includes GREG, SNEG, WHIB).



1018 Thomasville Road
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Tallahassee, FL 32303
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(850) 681-9364 Fax
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Global State Federal State Observation

Map Label	Scientific Name	Common Name	Rank	Global	Federal	State	Observation	Date	Description	EO Comments
GOPHPOLY*1188	<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST	2005	2005: Along a north-south oriented powerline right-of-way. Based on aerial photography and nearby FNAI mapping data (F05FNA04FLUS), habitat is likely mesic flatwoods. PNDPOD01FLUS provided no habitat information (PNDKIN02FLUS).	2005: 60 burrows (U05POD01FLUS, PNDPOD02FLUS).	
GOPHPOLY*375	<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST	1988-PRE	SCRUB/SCRUBBY FLATWOODS WITH CHAPMAN'S AND MYRTLE OAKS. SCATTERED SLASH PINES. NUMEROUS SAW PALMETTO THICKETS. UNDERSTORY OPEN WITH TARFLOWER AND LYONIA SP.	1 INDIVIDUAL SEE. 9 ACTIVE BURROWS, 4 INACTIVE BURROWS.	
GOPHPOLY*419	<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST	1988-PRE	LOW BROKEN CANOPY OF LIVE OAKS, MYRTLE OAKS, CHAPMAN'S OAKS WITH SCATTERED SLASH PINES. DENSE GROUND COVER OF SAW PALMETTO, ROSEMARY, HOG PLUM, LYONIA, GROUND DOTTED WITH PRICKLY PEAR, PENNYROYAL.	11 BURROWS WERE SEEN, FIVE OF WHICH APPEARED TO BE ACTIVE. THE INDIVIDUALS WERE NOT VISIBLE.	
GOPHPOLY*632	<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST	1990-09-15	RANGE (PASTURE) TO PINE FLATWOODS WITH FREQUENT TEMPORARY PONDS.	1 TORTOISE OBSERVED, 4 ACTIVE BURROWS.	
HALILEUC*1061	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S3	N	N	1999	2005-07-12: Source does not provide a description.	Nest status: Active, 1999; Not active, 2003, 2002; Unknown status or not assessed, 2001, 2000;(U03FWC01FLUS)	
HALILEUC*1065	<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S3	N	N	2003	2005-07-12: Source does not provide a description.	Nest status: Active, 2003, 2002; Unknown status or not assessed, 2001, 2000, 1999;(U03FWC01FLUS)	
MYCTAMER*128	<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE	1988-04-27	No general description given	1988/04/27: M.S. Robson, GFC. 5-6 WOST on nests in cypress trees. GREG also on nests in willows. "Total" = C (includes GREG, WOST).	



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Suite 200-C
Tallahassee, FL 32303
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(850) 681-9364 Fax
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Map Label	Scientific Name	Common Name	Global State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments	
MYCTAMER*48	<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE	1974-04-18	No general description given	11 STORKS OBSERVED FORAGING BETWEEN 15-21 DEC 1973, 25 ON 25-26 JAN 1974, 25 ON 9 FEB 1974, 18 ON 23 FEB 1974, 8 ON 15 MAR 1974 AND 4 ON 16-18 APR 1974. FEEDING SITE ASSOC. WITH NEARBY ROOKERIES; USE OF SITE IS HIGHLY SEASONAL.
MYCTAMER*52	<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE	1974-03-09	No general description given	15 STORKS OBSERVED FORAGING. FEEDING SITE ASSOC. WITH NEARBY ROOKERIES; USE OF SITE IS HIGHLY SEASONAL.
MYCTAMER*53	<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE	1974-02-09	No general description given	9 STORKS OBSERVED FORAGING. FEEDING SITE ASSOC. WITH NEARBY ROOKERIES; USE OF SITE IS HIGHLY SEASONAL.
MYCTAMER*88	<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE	1988-04-27	COLONY SITE IS POND IN CYPRESS DOME SURROUNDED BY CYPRESS STRAND AND FARMLAND. NESTING SUBSTRATE IS CYPRESS, WILLOWS, AND SWAMP SHRUBS OVER WATER (U82NES01).	SPECIES PRESENT 4/88, ABSENT 5/89.
PUMACORY*1	<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE	1990	1990: part of Big Cypress Swamp, includes several water courses, numerous ponds and low "uplands". Diverse habitats include wet and dry prairie, cypress forest (logged), mixed pines, mixed hardwoods; seasonally flooded (PNDMAE01FLUS).	Probably the largest remaining EO despite frequent roadkills on SR-29 and SR-84 (Alligator Alley); known animals (1987) include 3 adult males, 3 adult females, 1 juvenile female. Animals tend to be malnourished, though some are healthy; 1 of 3 "populat
SCRUB****459	Scrub		G2	S2	N	N	1999	LOW, BROKEN CANOPY OF LIVE OAKS, MYRTLE OAKS, CHAPMAN'S OAKS WITH SEVERAL SLASH PINES. DENSE GROUND COVER OF SAW PALMETTO, ROSEMARY, HOG PLUM, LYONIA. GROUND DOTTED WITH PRICKLY PEAR, PENNYROYAL.	1999: Update to last obs date was based on interpretation of aerial photography (previous value was empty) (U05FNA02FLUS). GOPHER TORTOISES INHABIT THE SITE (-419). SEE ATTACHED DESCRIPTION AND SPECIES LIST.



1018 Thomasville Road
 Suite 200-C
 Tallahassee, FL 32303
 (850) 224-8207
 (850) 681-9364 Fax
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 State Road 29 Project**



Map Label	Scientific Name	Common Name	Global State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
SCRUFLAT*13	Scrubby flatwoods		G2	S2?	N	N	1999 OAK SCRUB, PALMETTO SCRUB, OPEN SLASH PINE SCRUB (=SCRUBBY FLATWOODS)	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1981-08-05) (U05FNA02FLUS); OCCURRENCE AT SITE



1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax

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Florida Natural Areas Inventory

Biodiversity Matrix Report



Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Matrix Unit ID: 46513					
Likely					
<i>Caracara cheriway</i>	Crested Caracara	G5	S2	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Sciurus niger avicennia</i>	Mangrove Fox Squirrel	G5T2	S2	N	ST
Potential					
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Centrosema arenicola</i>	Sand Butterfly Pea	G2Q	S2	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Eumops floridanus</i>	Florida bonneted bat	G1	S1	C	ST
<i>Grus canadensis pratensis</i>	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Neofiber alleni</i>	Round-tailed Muskrat	G3	S3	N	N
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Platanthera integra</i>	Yellow Fringeless Orchid	G3G4	S3	N	LE
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Tephrosia angustissima</i> var. <i>curtissii</i>	Coastal Hoary-pea	G1T1	S1	N	LE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*

Matrix Unit ID: 46876

Likely

<i>Ardea alba</i>	Great Egret	G5	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*

Potential

<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Centrosema arenicola</i>	Sand Butterfly Pea	G2Q	S2	N	LE
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat	G3G4	S2	N	N
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Elytraria caroliniensis</i> var. <i>angustifolia</i>	Narrow-leaved Carolina Scalystem	G4T2	S2	N	N
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Gymnopogon chapmanianus</i>	Chapman's Skeletongrass	G3	S3	N	N
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE

Definitions: Documented - Rare species and natural communities documented on or near this site.
 Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
 Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
 Potential - This site lies within the known or predicted range of the species listed.



1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
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Florida Natural Areas Inventory

Biodiversity Matrix Report



Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Platanthera integra</i>	Yellow Fringeless Orchid	G3G4	S3	N	LE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE

Matrix Unit ID: 46877

Documented

Scrub		G2	S2	N	N
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Likely

<i>Aphelocoma coerulescens</i>	Florida Scrub-Jay	G2	S2	LT	FT
<i>Caracara cheriway</i>	Crested Caracara	G5	S2	LT	FT
Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*

Potential

<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Centrosema arenicola</i>	Sand Butterfly Pea	G2Q	S2	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Elytraria caroliniensis var. angustifolia</i>	Narrow-leaved Carolina Scalystem	G4T2	S2	N	N
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Gymnopogon chapmanianus</i>	Chapman's Skeletongrass	G3	S3	N	N
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri var. smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Platanthera integra</i>	Yellow Fringeless Orchid	G3G4	S3	N	LE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Tephrosia angustissima var. curtissii</i>	Coastal Hoary-pea	G1T1	S1	N	LE

Matrix Unit ID: 46878

Documented

Scrub		G2	S2	N	N
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Likely

<i>Aphelocoma coerulescens</i>	Florida Scrub-Jay	G2	S2	LT	FT
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Biodiversity Matrix Report



Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
<i>Caracara cheriway</i>	Crested Caracara	G5	S2	LT	FT
Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Tephrosia angustissima</i> var. <i>curtissii</i>	Coastal Hoary-pea	G1T1	S1	N	LE
Matrix Unit ID: 46879					
Likely					
<i>Caracara cheriway</i>	Crested Caracara	G5	S2	LT	FT
Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Potential					
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Centrosema arenicola</i>	Sand Butterfly Pea	G2Q	S2	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Tephrosia angustissima</i> var. <i>curtissii</i>	Coastal Hoary-pea	G1T1	S1	N	LE

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Biodiversity Matrix Report



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Matrix Unit ID: 46880					
Likely					
<i>Caracara cheriway</i>	Crested Caracara	G5	S2	LT	FT
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
Potential					
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Centrosema arenicola</i>	Sand Butterfly Pea	G2Q	S2	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Grus canadensis pratensis</i>	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Tephrosia angustissima</i> var. <i>curtissii</i>	Coastal Hoary-pea	G1T1	S1	N	LE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Matrix Unit ID: 46881					
Likely					
<i>Caracara cheriway</i>	Crested Caracara	G5	S2	LT	FT
<i>Grus canadensis pratensis</i>	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Sciurus niger avicennia</i>	Mangrove Fox Squirrel	G5T2	S2	N	ST
Potential					
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Centrosema arenicola</i>	Sand Butterfly Pea	G2Q	S2	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Eumops floridanus</i>	Florida bonneted bat	G1	S1	C	ST
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Neofiber alleni</i>	Round-tailed Muskrat	G3	S3	N	N
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Platanthera integra</i>	Yellow Fringeless Orchid	G3G4	S3	N	LE

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<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Tephrosia angustissima</i> var. <i>curtissii</i>	Coastal Hoary-pea	G1T1	S1	N	LE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*

Matrix Unit ID: 47242

Likely

<i>Ardea alba</i>	Great Egret	G5	S4	N	N
Mesic flatwoods		G4	S4	N	N
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*

Potential

<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE

Matrix Unit ID: 47243

Likely

<i>Aphelocoma coerulescens</i>	Florida Scrub-Jay	G2	S2	LT	FT
Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*

Potential

<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE

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Matrix Unit ID: 47244					
Likely					
<i>Aphelocoma coerulescens</i>	Florida Scrub-Jay	G2	S2	LT	FT
<i>Caracara cheriway</i>	Crested Caracara	G5	S2	LT	FT
Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
Scrub		G2	S2	N	N
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
Matrix Unit ID: 47245					
Likely					
<i>Caracara cheriway</i>	Crested Caracara	G5	S2	LT	FT
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Potential					
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Centrosema arenicola</i>	Sand Butterfly Pea	G2Q	S2	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE

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Matrix Unit ID: 47246					
Likely					
<i>Caracara cheriway</i>	Crested Caracara	G5	S2	LT	FT
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
Potential					
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Centrosema arenicola</i>	Sand Butterfly Pea	G2Q	S2	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri var. smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Platanthera integra</i>	Yellow Fringeless Orchid	G3G4	S3	N	LE
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Matrix Unit ID: 47601					
Likely					
Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri var. smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
Matrix Unit ID: 47602					
Documented					

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Florida Natural Areas Inventory

Biodiversity Matrix Report



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<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
Scrubby flatwoods		G2	S2?	N	N
Documented-Historic					
<i>Aphelocoma coerulescens</i>	Florida Scrub-Jay	G2	S2	LT	FT
Likely					
Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
Scrub		G2	S2	N	N
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
Matrix Unit ID: 47604					
Likely					
<i>Caracara cheriway</i>	Crested Caracara	G5	S2	LT	FT
Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Centrosema arenicola</i>	Sand Butterfly Pea	G2Q	S2	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Platanthera integra</i>	Yellow Fringeless Orchid	G3G4	S3	N	LE

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Tallahassee, FL 32303
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Biodiversity Matrix Report



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<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE

Matrix Unit ID: 47605

Likely

<i>Caracara cheriway</i>	Crested Caracara	G5	S2	LT	FT
Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*

Potential

<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Centrosema arenicola</i>	Sand Butterfly Pea	G2Q	S2	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Platanthera integra</i>	Yellow Fringeless Orchid	G3G4	S3	N	LE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE

Matrix Unit ID: 47606

Likely

<i>Caracara cheriway</i>	Crested Caracara	G5	S2	LT	FT
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*

Potential

<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Centrosema arenicola</i>	Sand Butterfly Pea	G2Q	S2	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Eumops floridanus</i>	Florida bonneted bat	G1	S1	C	ST
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT

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Biodiversity Matrix Report



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<i>Platanthera integra</i>	Yellow Fringeless Orchid	G3G4	S3	N	LE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE

Matrix Unit ID: 47959

Likely

Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*

Potential

<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE

Matrix Unit ID: 47960

Likely

Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*

Potential

<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT

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<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
Matrix Unit ID: 47963					
Likely					
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Potential					
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Centrosema arenicola</i>	Sand Butterfly Pea	G2Q	S2	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri var. smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Platanthera integra</i>	Yellow Fringeless Orchid	G3G4	S3	N	LE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
Matrix Unit ID: 47964					
Likely					
Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Potential					
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Centrosema arenicola</i>	Sand Butterfly Pea	G2Q	S2	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri var. smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Platanthera integra</i>	Yellow Fringeless Orchid	G3G4	S3	N	LE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE

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Matrix Unit ID: 47965					
Likely					
<i>Caracara cheriway</i>	Crested Caracara	G5	S2	LT	FT
Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Centrosema arenicola</i>	Sand Butterfly Pea	G2Q	S2	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Eumops floridanus</i>	Florida bonneted bat	G1	S1	C	ST
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Grus canadensis pratensis</i>	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
<i>Gymnopogon chapmanianus</i>	Chapman's Skeletongrass	G3	S3	N	N
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Platanthera integra</i>	Yellow Fringeless Orchid	G3G4	S3	N	LE
<i>Pteroglossaspis ecrinata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
Matrix Unit ID: 48304					
Likely					
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
Matrix Unit ID: 48305					

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Likely					
Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
Matrix Unit ID: 48306					
Likely					
Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
Matrix Unit ID: 48307					

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Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Documented					
<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S3	N	N
Likely					
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Gymnopogon chapmanianus</i>	Chapman's Skeletongrass	G3	S3	N	N
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Matrix Unit ID: 48308					
Likely					
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Grus canadensis pratensis</i>	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Platanthera integra</i>	Yellow Fringeless Orchid	G3G4	S3	N	LE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC

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Florida Natural Areas Inventory

Biodiversity Matrix Report



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<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Matrix Unit ID: 48309					
Likely					
Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Potential					
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Grus canadensis pratensis</i>	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Platanthera integra</i>	Yellow Fringeless Orchid	G3G4	S3	N	LE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
Matrix Unit ID: 48645					
Likely					
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Sciurus niger avicennia</i>	Mangrove Fox Squirrel	G5T2	S2	N	ST
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*

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Suite 200-C
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Biodiversity Matrix Report



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Matrix Unit ID: 48646					
Likely					
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri var. smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Matrix Unit ID: 48647					
Likely					
Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri var. smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Matrix Unit ID: 48648					
Likely					

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Florida Natural Areas Inventory

Biodiversity Matrix Report



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Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*

Matrix Unit ID: 48649

Likely

Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE

Potential

<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*

Matrix Unit ID: 48650

Likely

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Florida Natural Areas Inventory

Biodiversity Matrix Report



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Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
Potential					
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Grus canadensis pratensis</i>	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Peucaea aestivalis</i>	Bachman's Sparrow	G3	S3	N	N
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Platanthera integra</i>	Yellow Fringeless Orchid	G3G4	S3	N	LE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*

Matrix Unit ID: 48651

Likely

<i>Grus canadensis pratensis</i>	Florida Sandhill Crane	G5T2T3	S2S3	N	ST
Mesic flatwoods		G4	S4	N	N
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE

Potential

<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Centrosema arenicola</i>	Sand Butterfly Pea	G2Q	S2	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri</i> var. <i>smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Peucaea aestivalis</i>	Bachman's Sparrow	G3	S3	N	N
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Platanthera integra</i>	Yellow Fringeless Orchid	G3G4	S3	N	LE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE

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Florida Natural Areas Inventory Biodiversity Matrix Report



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<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Matrix Unit ID: 48980					
Likely					
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Elytraria caroliniensis var. angustifolia</i>	Narrow-leaved Carolina Scalystem	G4T2	S2	N	N
<i>Eumops floridanus</i>	Florida bonneted bat	G1	S1	C	ST
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri var. smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Roystonea elata</i>	Florida Royal Palm	G2G3	S2	N	LE
<i>Sciurus niger avicennia</i>	Mangrove Fox Squirrel	G5T2	S2	N	ST
Matrix Unit ID: 48981					
Likely					
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Elytraria caroliniensis var. angustifolia</i>	Narrow-leaved Carolina Scalystem	G4T2	S2	N	N
<i>Eumops floridanus</i>	Florida bonneted bat	G1	S1	C	ST
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri var. smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Roystonea elata</i>	Florida Royal Palm	G2G3	S2	N	LE
<i>Sciurus niger avicennia</i>	Mangrove Fox Squirrel	G5T2	S2	N	ST

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 Potential - This site lies within the known or predicted range of the species listed.



1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax

FLORIDA
Natural Areas
INVENTORY

Florida Natural Areas Inventory

Biodiversity Matrix Report



Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Matrix Unit ID: 48982					
Likely					
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Elytraria caroliniensis var. angustifolia</i>	Narrow-leaved Carolina Scalystem	G4T2	S2	N	N
<i>Eumops floridanus</i>	Florida bonneted bat	G1	S1	C	ST
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri var. smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*

Matrix Unit ID: 48983

Documented

<i>Haliaeetus leucocephalus</i>	Bald Eagle	G5	S3	N	N
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Likely

<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE

Potential

<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Corynorhinus rafinesquii</i>	Rafinesque's Big-eared Bat	G3G4	S2	N	N
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Elytraria caroliniensis var. angustifolia</i>	Narrow-leaved Carolina Scalystem	G4T2	S2	N	N
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri var. smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Polyrrhiza lindenii</i>	Ghost Orchid	G2G4	S2	N	LE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT

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Florida Natural Areas Inventory
Biodiversity Matrix Report



Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*
Matrix Unit ID: 48984					
Likely					
<i>Mycteria americana</i>	Wood Stork	G4	S2	LE	FE
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	LE	FE
Potential					
<i>Andropogon arctatus</i>	Pine-woods Bluestem	G3	S3	N	LT
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	SSC
<i>Calopogon multiflorus</i>	Many-flowered Grass-pink	G2G3	S2S3	N	LE
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	LT	FT
<i>Elytraria caroliniensis var. angustifolia</i>	Narrow-leaved Carolina Scalystem	G4T2	S2	N	N
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	N	ST
<i>Lechea cernua</i>	Nodding Pinweed	G3	S3	N	LT
<i>Linum carteri var. smallii</i>	Small's Flax	G2T2	S2	N	LE
<i>Matelea floridana</i>	Florida Spiny-pod	G2	S2	N	LE
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3	S3	N	N
<i>Nemastylis floridana</i>	Celestial Lily	G2	S2	N	LE
<i>Nolina atopocarpa</i>	Florida Beargrass	G3	S3	N	LT
<i>Picoides borealis</i>	Red-cockaded Woodpecker	G3	S2	LE	FE
<i>Pteroglossaspis ecristata</i>	Giant Orchid	G2G3	S2	N	LT
<i>Rana capito</i>	Gopher Frog	G3	S3	N	SSC
<i>Rostrhamus sociabilis plumbeus</i>	Snail Kite	G4G5T2	S2	LE	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T2	S2	N	ST*

Definitions: Documented - Rare species and natural communities documented on or near this site.
 Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
 Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
 Potential - This site lies within the known or predicted range of the species listed.

Elements and Element Occurrences

An **element** is any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, spring, sinkhole, cave, or other ecological feature.

An **element occurrence (EO)** is an area of land and/or water in which a species or natural community is, or was, present. An EO should have practical conservation value for the Element as evidenced by potential continued (or historical) presence and/or regular recurrence at a given location.

Element Ranking and Legal Status

Using a ranking system developed by NatureServe and the Natural Heritage Program Network, the Florida Natural Areas Inventory assigns two ranks for each element. The global rank is based on an element's worldwide status; the state rank is based on the status of the element in Florida. Element ranks are based on many factors, the most important ones being estimated number of Element Occurrences (EOs), estimated abundance (number of individuals for species; area for natural communities), geographic range, estimated number of adequately protected EOs, relative threat of destruction, and ecological fragility.

FNAI GLOBAL ELEMENT RANK

- G1** = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
- G2** = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
- G3** = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
- G4** = Apparently secure globally (may be rare in parts of range).
- G5** = Demonstrably secure globally.
- GH** = Of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker).
- GX** = Believed to be extinct throughout range.
- GXC** = Extirpated from the wild but still known from captivity or cultivation.
- G#?** = Tentative rank (e.g., G2?).
- G#G#** = Range of rank; insufficient data to assign specific global rank (e.g., G2G3).
- G#T#** = Rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1).
- G#Q** = Rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q).
- G#T#Q** = Same as above, but validity as subspecies or variety is questioned.
- GU** = Unrankable; due to a lack of information no rank or range can be assigned (e.g., GUT2).
- GNA** = Ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).
- GNR** = Element not yet ranked (temporary).
- GNRTNR** = Neither the element nor the taxonomic subgroup has yet been ranked.

FNAI STATE ELEMENT RANK

- S1** = Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
- S2** = Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
- S3** = Either very rare and local in Florida (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
- S4** = Apparently secure in Florida (may be rare in parts of range).
- S5** = Demonstrably secure in Florida.
- SH** = Of historical occurrence in Florida, possibly extirpated, but may be rediscovered (e.g., ivory-billed woodpecker).
- SX** = Believed to be extirpated throughout Florida.
- SU** = Unrankable; due to a lack of information no rank or range can be assigned.
- SNA** = State ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).
- SNR** = Element not yet ranked (temporary).

FEDERAL LEGAL STATUS

Legal status information provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant federal agency.

Definitions derived from U.S. Endangered Species Act of 1973, Sec. 3. Note that the federal status given by FNAI refers only to Florida populations and that federal status may differ elsewhere.

- C** = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.
- LE** = Endangered: species in danger of extinction throughout all or a significant portion of its range.
- LE, LT** = Species currently listed endangered in a portion of its range but only listed as threatened in other areas
- LE, PDL** = Species currently listed endangered but has been proposed for delisting.
- LE, PT** = Species currently listed endangered but has been proposed for listing as threatened.
- LE, XN** = Species currently listed endangered but tracked population is a non-essential experimental population.
- LT** = Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.
- SAT** = Treated as threatened due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.
- SC** = Not currently listed, but considered a "species of concern" to USFWS.

STATE LEGAL STATUS

Provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant state agency.

Animals: Definitions derived from "Florida's Endangered Species and Species of Special Concern, Official Lists" published by Florida Fish and Wildlife Conservation Commission, 1 August 1997, and subsequent updates.

- FE** = Listed as Endangered Species at the Federal level by the U. S. Fish and Wildlife Service
- FT** = Listed as Threatened Species at the Federal level by the U. S. Fish and Wildlife Service
- F(XN)** = Federal listed as an experimental population in Florida
- FT(S/A)** = Federal Threatened due to similarity of appearance
- ST** = State population listed as Threatened by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future. (ST* for *Ursus americanus floridanus* (Florida black bear) indicates that this status does not apply in Baker and Columbia counties and in the Apalachicola National Forest. ST* for *Neovison vison* pop.1 (Southern mink, South Florida population) indicates that this status applies to the Everglades population only.)
- SSC** = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species. (SSC* indicates that a species has SSC status only in selected portions of its range in Florida. SSC* for *Pandion haliaetus* (Osprey) indicates that this status applies in Monroe county only.)
- N** = Not currently listed, nor currently being considered for listing.

Plants: Definitions derived from Sections 581.011 and 581.185(2), Florida Statutes, and the Preservation of Native Flora of Florida Act, 5B-40.001. FNAI does not track all state-regulated plant species; for a complete list of state-regulated plant species, call Florida Division of Plant Industry, 352-372-3505 or see: <http://www.doacs.state.fl.us/pi/>.

- LE** = Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act.
- LT** = Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered.
- N** = Not currently listed, nor currently being considered for listing.

Element Occurrence Ranking

FNAI ranks of quality of the element occurrence in terms of its viability (EORANK). Viability is estimated using a combination of factors that contribute to continued survival of the element at the location. Among these are the size of the EO, general condition of the EO at the site, and the conditions of the landscape surrounding the EO (e.g. an immediate threat to an EO by local development pressure could lower an EO rank).

- A** = Excellent estimated viability
- A?** = Possibly excellent estimated viability
- AB** = Excellent or good estimated viability
- AC** = Excellent, good, or fair estimated viability
- B** = Good estimated viability
- B?** = Possibly good estimated viability
- BC** = Good or fair estimated viability
- BD** = Good, fair, or poor estimated viability
- C** = Fair estimated viability
- C?** = Possibly fair estimated viability
- CD** = Fair or poor estimated viability
- D** = Poor estimated viability
- D?** = Possibly poor estimated viability
- E** = Verified extant (viability not assessed)
- F** = Failed to find
- H** = Historical
- NR** = Not ranked, a placeholder when an EO is not (yet) ranked.
- U** = Unrankable
- X** = Extirpated

*For additional detail on the above ranks see: <http://www.natureserve.org/explorer/eorankguide.htm>

FNAI also uses the following EO ranks:

- H?** = Possibly historical
- F?** = Possibly failed to find
- X?** = Possibly extirpated

The following offers further explanation of the H and X ranks as they are used by FNAI:

The rank of H is used when there is a lack of recent field information verifying the continued existence of an EO, such as (a) when an EO is based only on historical collections data; or (b) when an EO was ranked A, B, C, D, or E at one time and is later, without field survey work, considered to be possibly extirpated due to general habitat loss or degradation of the environment in the area. This definition of the H rank is dependent on an interpretation of what constitutes "recent" field information. Generally, if there is no known survey of an EO within the last 20 to 40 years, it should be assigned an H rank. While these time frames represent suggested maximum limits, the actual time period for historical EOs may vary according to the biology of the element and the specific landscape context of each occurrence (including anthropogenic alteration of the environment). Thus, an H rank may be assigned to an EO before the maximum time frames have lapsed. Occurrences that have not been surveyed for periods exceeding these time frames should not be ranked A, B, C, or D. The higher maximum limit for plants and communities (i.e., ranging from 20 to 40 years) is based upon the assumption that occurrences of these elements generally have the potential to persist at a given location for longer periods of time. This greater potential is a reflection of plant biology and community dynamics. However, landscape factors must also be considered. Thus, areas with more anthropogenic impacts on the environment (e.g., development) will be at the lower end of the range, and less-impacted areas will be at the higher end.

The rank of X is assigned to EOs for which there is documented destruction of habitat or environment, or persuasive evidence of eradication based on adequate survey (i.e., thorough or repeated survey efforts by one or more experienced observers at times and under conditions appropriate for the Element at that location).

APPENDIX G

***Standard Protection Measures for the Eastern
Indigo Snake***

STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE
U.S. Fish and Wildlife Service
August 12, 2013

The eastern indigo snake protection/education plan (Plan) below has been developed by the U.S. Fish and Wildlife Service (USFWS) in Florida for use by applicants and their construction personnel. At least **30 days prior** to any clearing/land alteration activities, the applicant shall notify the appropriate USFWS Field Office via e-mail that the Plan will be implemented as described below (North Florida Field Office: jaxregs@fws.gov; South Florida Field Office: verobeach@fws.gov; Panama City Field Office: panamacity@fws.gov). As long as the signatory of the e-mail certifies compliance with the below Plan (including use of the attached poster and brochure), no further written confirmation or “approval” from the USFWS is needed and the applicant may move forward with the project.

If the applicant decides to use an eastern indigo snake protection/education plan other than the approved Plan below, written confirmation or “approval” from the USFWS that the plan is adequate must be obtained. At least 30 days prior to any clearing/land alteration activities, the applicant shall submit their unique plan for review and approval. The USFWS will respond via e-mail, typically within 30 days of receiving the plan, either concurring that the plan is adequate or requesting additional information. A concurrence e-mail from the appropriate USFWS Field Office will fulfill approval requirements.

The Plan materials should consist of: 1) a combination of posters and pamphlets (see **Poster Information** section below); and 2) verbal educational instructions to construction personnel by supervisory or management personnel before any clearing/land alteration activities are initiated (see **Pre-Construction Activities** and **During Construction Activities** sections below).

POSTER INFORMATION

Posters with the following information shall be placed at strategic locations on the construction site and along any proposed access roads (a final poster for Plan compliance, to be printed on 11” x 17” or larger paper and laminated, is attached):

DESCRIPTION: The eastern indigo snake is one of the largest non-venomous snakes in North America, with individuals often reaching up to 8 feet in length. They derive their name from the glossy, blue-black color of their scales above and uniformly slate blue below. Frequently, they have orange to coral reddish coloration in the throat area, yet some specimens have been reported to only have cream coloration on the throat. These snakes are not typically aggressive and will attempt to crawl away when disturbed. Though indigo snakes rarely bite, they should NOT be handled.

SIMILAR SNAKES: The black racer is the only other solid black snake resembling the eastern indigo snake. However, black racers have a white or cream chin, thinner bodies, and WILL BITE if handled.

LIFE HISTORY: The eastern indigo snake occurs in a wide variety of terrestrial habitat types throughout Florida. Although they have a preference for uplands, they also utilize some wetlands

and agricultural areas. Eastern indigo snakes will often seek shelter inside gopher tortoise burrows and other below- and above-ground refugia, such as other animal burrows, stumps, roots, and debris piles. Females may lay from 4 - 12 white eggs as early as April through June, with young hatching in late July through October.

PROTECTION UNDER FEDERAL AND STATE LAW: The eastern indigo snake is classified as a Threatened species by both the USFWS and the Florida Fish and Wildlife Conservation Commission. “Taking” of eastern indigo snakes is prohibited by the Endangered Species Act without a permit. “Take” is defined by the USFWS as an attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage in any such conduct. Penalties include a maximum fine of \$25,000 for civil violations and up to \$50,000 and/or imprisonment for criminal offenses, if convicted.

Only individuals currently authorized through an issued Incidental Take Statement in association with a USFWS Biological Opinion, or by a Section 10(a)(1)(A) permit issued by the USFWS, to handle an eastern indigo snake are allowed to do so.

IF YOU SEE A LIVE EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and allow the live eastern indigo snake sufficient time to move away from the site without interference;
- Personnel must NOT attempt to touch or handle snake due to protected status.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Immediately notify supervisor or the applicant’s designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- If the snake is located in a vicinity where continuation of the clearing or construction activities will cause harm to the snake, the activities must halt until such time that a representative of the USFWS returns the call (within one day) with further guidance as to when activities may resume.

IF YOU SEE A DEAD EASTERN INDIGO SNAKE ON THE SITE:

- Cease clearing activities and immediately notify supervisor or the applicant’s designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Thoroughly soak the dead snake in water and then freeze the specimen. The appropriate wildlife agency will retrieve the dead snake.

Telephone numbers of USFWS Florida Field Offices to be contacted if a live or dead eastern indigo snake is encountered:

North Florida Field Office – (904) 731-3336
Panama City Field Office – (850) 769-0552
South Florida Field Office – (772) 562-3909

PRE-CONSTRUCTION ACTIVITIES

1. The applicant or designated agent will post educational posters in the construction office and throughout the construction site, including any access roads. The posters must be clearly visible to all construction staff. A sample poster is attached.
2. Prior to the onset of construction activities, the applicant/designated agent will conduct a meeting with all construction staff (annually for multi-year projects) to discuss identification of the snake, its protected status, what to do if a snake is observed within the project area, and applicable penalties that may be imposed if state and/or federal regulations are violated. An educational brochure including color photographs of the snake will be given to each staff member in attendance and additional copies will be provided to the construction superintendent to make available in the onsite construction office (a final brochure for Plan compliance, to be printed double-sided on 8.5" x 11" paper and then properly folded, is attached). Photos of eastern indigo snakes may be accessed on USFWS and/or FWC websites.
3. Construction staff will be informed that in the event that an eastern indigo snake (live or dead) is observed on the project site during construction activities, all such activities are to cease until the established procedures are implemented according to the Plan, which includes notification of the appropriate USFWS Field Office. The contact information for the USFWS is provided on the referenced posters and brochures.

DURING CONSTRUCTION ACTIVITIES

1. During initial site clearing activities, an onsite observer may be utilized to determine whether habitat conditions suggest a reasonable probability of an eastern indigo snake sighting (example: discovery of snake sheds, tracks, lots of refugia and cavities present in the area of clearing activities, and presence of gopher tortoises and burrows).
2. If an eastern indigo snake is discovered during gopher tortoise relocation activities (i.e. burrow excavation), the USFWS shall be contacted within one business day to obtain further guidance which may result in further project consultation.
3. Periodically during construction activities, the applicant's designated agent should visit the project area to observe the condition of the posters and Plan materials, and replace them as needed. Construction personnel should be reminded of the instructions (above) as to what is expected if any eastern indigo snakes are seen.

POST CONSTRUCTION ACTIVITIES

Whether or not eastern indigo snakes are observed during construction activities, a monitoring report should be submitted to the appropriate USFWS Field Office within 60 days of project completion. The report can be sent electronically to the appropriate USFWS e-mail address listed on page one of this Plan.

APPENDIX H-1
Panther Telemetry Data

**APPENDIX H-1
PANTHER TELEMETRY DATA**

DATE	CAT NUMBER	TIME	HABITAT	POINT_X	POINT_Y
12/5/2001	106	0839	PP	663575.773400000000	258919.149200000000
12/21/2001	106	0823	MS	662998.603100000000	258002.953900000000
1/18/2002	106	1051	PP	663707.108100000000	257619.117000000000
2/27/2002	106	0803	PP	664593.463000000000	258141.809700000000
3/1/2002	106	0808	CS	663276.283800000000	258911.899200000000
1/10/2000	11	1028	HH	663123.138900000000	261113.641400000000
3/1/2000	11	0900	CS	663383.383800000000	258613.750100000000
3/6/2000	11	0852	CS	663654.243700000000	263933.464800000000
3/8/2000	11	0820	CS	663556.839800000000	263830.857100000000
3/10/2000	11	0755	PP	663814.670200000000	261431.128400000000
3/22/2000	11	0755	PP	664550.270600000000	264055.411600000000
3/24/2000	11	1059	CS	664547.846200000000	264155.602400000000
5/12/2000	11	0806	HH	663811.785300000000	257421.157500000000
8/9/2000	11	0844	HH	660080.793600000000	271265.490400000000
8/28/2000	11	0843	HH	661127.516000000000	269285.801500000000
9/6/2000	11	0842	HH	665738.506600000000	264485.187600000000
9/25/2000	11	0939	CS	665757.905400000000	263683.661000000000
12/20/2000	11	0911	CA	666050.115100000000	263991.487000000000
2/23/2001	11	0822	TS	665850.459000000000	263986.651100000000
3/31/2004	131	0937	PP	663794.289000000000	261860.700600000000
5/10/2004	131	0807	CS	663734.754600000000	262504.860400000000
6/9/2004	131	0756	CS	663848.356800000000	262887.554100000000
8/23/2004	131	0858	HH	664769.956500000000	263273.774600000000
9/22/2004	131	0759	HH	665387.169900000000	264804.494800000000
10/20/2004	131	0802	PP	665790.395400000000	258089.591000000000
11/3/2004	131	0758	CA	663586.884700000000	261598.040600000000
11/5/2004	131	0730	PP	664125.581500000000	260594.566400000000
12/17/2004	131	0809	PC	664901.601700000000	264396.748400000000
12/20/2004	131	0758	HH	665004.797600000000	263764.668300000000
2/16/2005	131	745	PP	663329.693100000000	258809.937400000000
3/4/2005	131	750	PP	663658.288200000000	258894.079900000000
4/1/2005	131	744	CS	663671.782500000000	263332.394300000000
5/4/2005	131	1153	PP	665000.113900000000	261109.965400000000
6/8/2005	131	743	PP	663114.861300000000	262859.769900000000
6/13/2005	131	759	PP	665071.041400000000	264164.262900000000
6/15/2005	131	808	HH	665444.836000000000	265145.738600000000
6/17/2005	131	757	CA	664023.944500000000	263226.637400000000
7/25/2005	131	0810	HH	665283.712800000000	264786.951600000000
7/27/2005	131	0750	PP	664906.759400000000	263647.007300000000
8/1/2005	131	0759	PC	665991.677000000000	257532.079200000000
8/3/2005	131	0804	PC	666158.697900000000	259050.859900000000
8/8/2005	131	0847	PP	665224.405100000000	264348.426400000000
8/10/2005	131	0825	PP	664840.548600000000	264277.977800000000
9/23/2005	131	0750	HH	666188.610000000000	258929.282300000000
10/5/2005	131	0753	PP	663869.059100000000	258109.234900000000
10/28/2005	131	0751	PP	663970.183100000000	258140.754600000000
10/31/2005	131	0745	HH	665813.171900000000	258882.096400000000
11/7/2005	131	0731	PP	664478.307900000000	257616.735000000000
2/10/2006	131	0803	PP	664498.044000000000	257957.049900000000
9/15/2006	131	0828	HH	665086.799800000000	264214.769300000000
9/18/2006	131	0854	HH	665419.224400000000	265172.185800000000
9/22/2006	131	0805	PP	665183.345900000000	260968.040000000000
7/9/2007	131	730	CS	663819.979100000000	258816.794000000000
4/9/2008	131	1129	CS	663647.344200000000	259222.626400000000
4/11/2008	131	746	PP	663632.108700000000	259067.876500000000
4/14/2008	131	808	CS	663831.546700000000	258834.116100000000
4/16/2008	131	748	CS	663791.696700000000	258912.346700000000
8/15/2005	135	0753	PP	665827.609200000000	256345.195500000000
8/17/2005	135	0756	PP	665936.302700000000	257715.192700000000
8/22/2005	135	0920	PP	665822.108000000000	257728.467000000000
8/24/2005	135	0811	PP	665932.768700000000	256994.332200000000
9/16/2005	135	0822	PP	665828.366900000000	257511.082700000000
12/12/2005	135	0808	PP	665672.485700000000	257513.322900000000
1/16/2006	135	0806	PC	666375.891000000000	259074.164400000000
1/18/2006	135	0819	PP	666643.652100000000	258576.404200000000
2/1/2006	135	0806	PP	666532.547200000000	259039.864300000000
2/3/2006	135	0747	AD	666366.106100000000	259107.009200000000
7/21/2006	135	0826	AD	666109.909400000000	262222.534400000000

**APPENDIX H-1
PANTHER TELEMETRY DATA**

DATE	CAT NUMBER	TIME	HABITAT	POINT_X	POINT_Y
8/11/2006	135	0817	CS	663897.7740000000	257748.0387000000
8/16/2006	135	0831	HH	664952.4184000000	262998.4982000000
8/18/2006	135	0803	HH	664929.2823000000	263417.9819000000
8/21/2006	135	0802	HH	665921.0097000000	264620.9353000000
9/4/2006	135	0915	PP	663463.0391000000	258706.9033000000
9/11/2006	135	0758	PP	666161.8000000000	258675.0069000000
9/29/2006	135	0805	PP	666170.3938000000	258897.7644000000
7/14/2006	143	0931	HH	664796.4237000000	263748.5945000000
8/7/2006	143	0940	HH	665472.7591000000	264858.6977000000
8/25/2006	143	0949	PP	665816.8041000000	258690.7117000000
1/5/2007	143	0906	HH	664755.0147000000	262652.8713000000
1/12/2007	143	0800	PP	666374.9654000000	259071.1346000000
1/22/2007	143	0757	HH	664991.8062000000	264342.7932000000
2/26/2007	143	0735	PP	665003.0457000000	262598.7283000000
2/28/2007	143	0859	TS	665531.3364000000	263841.5800000000
4/11/2007	143	0809	HH	665794.6892000000	264598.8281000000
4/27/2007	143	0847	PP	662331.1095000000	268749.5269000000
5/18/2007	143	0812	HH	665886.4538000000	265305.8077000000
7/2/2007	143	821	TS	665743.0771000000	263924.9030000000
7/18/2007	154	833	PP	664021.5800000000	259195.5974000000
11/5/2007	154	831	PP	664005.2854000000	258713.0131000000
11/7/2007	154	730	PP	664004.1659000000	258717.9984000000
11/19/2007	154	854	PP	664898.7134000000	262369.6393000000
11/21/2007	154	820	PC	665131.7318000000	262646.9567000000
1/21/2011	185	855	MS	663734.8048000000	257300.0004000000
2/23/2011	185	1040	MS	664561.2331000000	264345.3982000000
6/3/2011	189	805	MS	665829.5455000000	258989.7577000000
9/6/2011	189	0749	PC	666221.4254000000	259100.4979000000
9/12/2011	189	0736	PC	666142.2589000000	258780.7960000000
9/14/2011	189	0755	HH	665440.3826000000	259014.4181000000
11/4/2011	189	0800	MS	666297.3805000000	258975.0229000000
11/7/2011	189	0742	HH	665824.0934000000	259008.6727000000
11/9/2011	189	0747	HH	666008.0188000000	258962.0005000000
3/15/2006	48	0748	PP	665204.4687000000	261787.5813000000
3/17/2006	48	0810	CS	665593.1982000000	264257.1089000000
3/24/2006	48	0815	HH	665865.5790000000	264476.2355000000
4/17/2006	48	0830	PP	664938.7586000000	261829.2661000000
4/21/2006	48	0822	HH	664810.2528000000	262805.5848000000
5/30/2006	48	0843	PP	664902.9975000000	262357.7132000000
6/16/2006	48	0928	TS	664750.1903000000	262852.2498000000
6/23/2006	48	0820	TS	665915.5212000000	264269.9283000000
8/18/2006	48	0825	HH	665508.5960000000	264822.4732000000
8/25/2006	48	0837	HH	665273.8755000000	264780.6984000000
8/28/2006	48	0906	HH	664737.3622000000	264290.5163000000
9/1/2006	48	0843	HH	665916.7658000000	265291.5044000000
9/4/2006	48	0917	PP	665230.3826000000	262326.5444000000
9/8/2006	48	0913	AD	665945.0879000000	261190.9939000000
9/11/2006	48	0906	HH	664852.5891000000	264399.5714000000
10/2/2006	48	0959	HH	665976.9573000000	265322.0349000000
10/4/2006	48	0920	CS	665217.6747000000	264007.4150000000
10/9/2006	48	0918	HH	666189.2518000000	264350.7433000000
10/16/2006	48	0918	PP	665958.0714000000	257723.7396000000
1/31/2000	59	1056	CS	663576.2313000000	263029.3337000000
5/1/2000	59	0756	CS	664082.6448000000	262740.8487000000
6/5/2000	59	0842	CS	663475.9435000000	258916.7325000000
6/26/2000	59	0808	CS	663568.9596000000	263329.9046000000
6/28/2000	59	0804	PP	663488.0605000000	258415.7898000000
7/24/2000	59	0759	CS	663712.4175000000	261528.9010000000
7/26/2000	59	0757	HH	664880.8341000000	258650.0034000000
7/31/2000	59	0754	AD	664247.9207000000	260038.1450000000
8/2/2000	59	0758	PP	663773.0095000000	259024.1713000000
9/11/2000	59	0806	CS	664121.4287000000	261137.8107000000
9/18/2000	59	0804	PP	665776.8807000000	258771.9478000000
9/20/2000	59	0805	HH	666069.0976000000	259079.7668000000
9/29/2000	59	0809	PP	665876.7108000000	258774.3653000000
11/27/2000	59	0828	HH	664766.8975000000	263358.9123000000
11/29/2000	59	0810	PP	666468.4177000000	259089.4375000000
1/17/2001	59	1030	PC	663278.7072000000	258811.7106000000

**APPENDIX H-1
PANTHER TELEMETRY DATA**

DATE	CAT NUMBER	TIME	HABITAT	POINT_X	POINT_Y
2/5/2001	59	0815	PC	663578.19680000000	258818.96050000000
2/19/2001	59	0916	CS	664104.46100000000	261839.13860000000
2/23/2001	59	0818	CS	663084.36130000000	262716.67820000000
3/5/2001	59	0757	PP	663867.99210000000	259226.96560000000
3/9/2001	59	0801	PC	663809.36190000000	257521.34550000000
3/14/2001	59	0816	PP	663912.07520000000	261533.73510000000
8/13/2001	59	1055	PP	663088.74040000000	258406.12360000000
8/15/2001	59	0820	PP	664469.39470000000	259141.27850000000
11/9/2001	59	0830	HH	663812.24640000000	261531.31800000000
2/20/2002	59	0804	PC	663578.19680000000	258818.96050000000
3/18/2002	59	0806	CS	663376.11370000000	258914.31580000000
8/9/2002	59	809	HH	663624.24090000000	256915.38460000000
10/29/2003	59	0737	PP	663149.38600000000	257509.37960000000
10/23/2000	65	0932	HH	663048.44700000000	268329.80270000000
2/11/2002	65	0913	PP	662261.95760000000	267809.50410000000
7/19/2002	65	929	HH	665241.79220000000	264372.90750000000
7/26/2002	65	911	HH	661443.95880000000	268591.70540000000
9/6/2002	65	1125	HH	662244.99020000000	268510.84920000000
9/23/2002	65	942	PP	661543.78470000000	268594.12230000000
1/3/2000	66	0957	PC	663193.41690000000	258208.16340000000
1/5/2000	66	0754	PC	663193.41690000000	258208.16340000000
1/7/2000	66	1059	PC	663193.41690000000	258208.16340000000
1/10/2000	66	0934	PC	663193.41690000000	258208.16340000000
1/12/2000	66	0758	PC	663193.41690000000	258208.16340000000
1/14/2000	66	0757	PC	663193.41690000000	258208.16340000000
1/24/2000	66	0820	PC	663193.41690000000	258208.16340000000
1/31/2000	66	1054	PC	663193.41690000000	258208.16340000000
3/1/2000	66	0800	PC	663103.27960000000	257804.99390000000
7/20/2001	97	0905	PP	663846.62720000000	264238.87140000000
7/25/2001	97	0839	PP	664128.70040000000	260837.24220000000
8/15/2001	97	0825	PP	664783.42790000000	258547.39770000000
8/27/2001	97	0822	PP	664133.54810000000	260636.86340000000
8/31/2001	97	0830	PP	664255.63540000000	263847.77790000000
9/5/2001	97	0815	PP	663412.93110000000	261521.65020000000
9/7/2001	97	0833	CS	663079.51400000000	262917.05850000000
9/21/2001	97	0831	AD	661818.56880000000	265493.01360000000
9/24/2001	97	0815	HH	664673.90220000000	258945.73520000000
9/26/2001	97	0824	PP	663675.60320000000	258921.56590000000
9/28/2001	97	0833	PP	663478.36690000000	258816.54390000000
10/1/2001	97	0829	PP	664574.07230000000	258943.31810000000
10/3/2001	97	0830	HH	664781.00400000000	258647.58630000000
10/10/2001	97	0833	HH	663960.99980000000	263640.14480000000
10/12/2001	97	0815	PP	664357.88770000000	263750.00470000000
10/15/2001	97	0835	HH	664759.62420000000	263659.48400000000
10/17/2001	97	0830	HH	664365.16050000000	263449.43300000000
10/19/2001	97	0828	PP	664455.29140000000	263852.61270000000
10/24/2001	97	1056	HH	664460.14000000000	263652.23150000000
10/26/2001	97	1227	HH	664362.73620000000	263549.62350000000
10/31/2001	97	0832	HH	665918.76230000000	265291.55280000000
11/2/2001	97	0924	HH	665818.93480000000	265289.13480000000

APPENDIX H-2
Panther Mortality Data

**APPENDIX H -2
PANTHER MORTALITY DATA**

PANTHER ID	SEX	AGE	LOCATION	CAUSE	YEAR	DATE
UCFP53	F	2-3	SR29, 1.4 MI N CR858, COLLIER	VEHICLE	2003	2003-05-25
UCFP54	M	8-10 MOS	SR29, 1.7 MI N CR858, COLLIER	VEHICLE	2003	2003-06-03
UCFP69	F	2	SR 29 2.5 MILES N OF CR 858	VEHICLE	2004	2004-10-25
UCFP70	F	1	SR 29 AT OWL HAMMOCK CURVE	VEHICLE	2004	2004-12-01
UCFP75	M	2	SR 29 AT OWL HAMMOCK CURVE	VEHICLE	2005	2005-06-19
UCFP100	M	2-3	SR 29 3 MI S OF IMMOKALEE	VEHICLE	2007	2007-06-23
FP131	M	9	HORSE TRIAL GROUNDS, N OF CR 858, W OF SR 29	PNEUMONIA	2008	2008-04-16
UCFP111	F	6-8 MOS.	2.4KM N OF OIL WELL RD ON SR29	VEHICLE	2008	2008-10-24
UCFP116	F	4-5	SR 29 3 MI S OF IMMOKALEE	VEHICLE	2009	2009-01-20
UCFP145	M	16-18 MOS.	SR29, 3.7KM SOUTH OF FARM WORKERS VILLAGE	VEHICLE	2010	2010-06-24
UCFP146	F	3-4	SR 29, 1 MI S OF OWL HAMMOCK, COLLIER CO.	VEHICLE	2010	2010-08-03
UCFP162	M	1-1.5	SR29, OWL HAMMOCK CURVE (SOUTH OF IMMOKALEE)	VEHICLE	2011	2011-07-11
UCFP164	F	3-4	SR29, OWL HAMMOCK CURVE (SOUTH OF IMMOKALEE)	VEHICLE	2011	2011-09-19
UCFP179	M	3	SR 29, OWL HAMMOCK CURVE	VEHICLE	2012	2012-11-19
UCFP185	M	10 MOS.	SR 29, 600 FT. S OIL WELL RD, COLLIER COUNTY	VEHICLE	2013	2013-01-03
UCFP204	M	1.5	SR 29, OWL HAMMOCK CURVE, COLLIER COUNTY	VEHICLE	2014	2014-01-22
UCFP240	F	1	SR29, 1.3 MI N. OF CR858	VEHICLE	2015	2015-04-13
UCFP258	M	1	SR29, OWL HAMMOCK CURVE, COLLIER CO.	VEHICLE	2015	2015-12-21
K421	M	2YR 5MO	2685 FLORIDA 29, IMMOKALEE, 34142	VEHICLE	2016	2016-10-02
UCFP292	F	2	SR 29 2 MILES N OF CR 858, COLLIER COUNTY	VEHICLE	2016	2016-12-06

APPENDIX H-3

PHU Assessment Summary Table

FDOT D1 - SR 29 Oil Well To SR82

May 2, 2018

Florida Panther Habitat and Landcover Grid

Central Alternative #1 Revised and Central Alternative #2

Panther Zone	Impact Type	Land Cover	Impacts			Mitigation		
			Acres	Habitat Score	Habitat Value	Base Rate	Landscape Multiplier	PHUs Required
Primary	Corridor	111 Fixed single family units	0.91	0	0.00	2.5	1.00	0.00
Primary	Corridor	171 Educational facilities	0.02	0	0.00	2.5	1.00	0.00
Primary	Corridor	211 Improved pasture	2.30	5.2	11.96	2.5	1.00	29.90
Primary	Corridor	212 Unimproved pasture	1.29	5.7	7.35	2.5	1.00	18.38
Primary	Corridor	310 Herbaceous dry prairie	0.32	6.3	2.02	2.5	1.00	5.04
Primary	Corridor	320 Shrub and brushland	33.17	5.5	182.44	2.5	1.00	456.09
Primary	Corridor	330 Mixed rangeland	0.12	5.7	0.68	2.5	1.00	1.71
Primary	Corridor	411 Pine flatwoods	12.32	9.5	117.04	2.5	1.00	292.60
Primary	Corridor	434 Hardwood Conifer Mixed	0.27	9.5	2.57	2.5	1.00	6.41
Primary	Corridor	437 Australian pine	0.20	3	0.60	2.5	1.00	1.50
Primary	Corridor	510 Streams and waterways	0.37	0	0.00	2.5	1.00	0.00
Primary	Corridor	617 Mixed wetland hardwoods	1.98	9.2	18.22	2.5	1.00	45.54
Primary	Corridor	621 Cypress	0.56	9.2	5.15	2.5	1.00	12.88
Primary	Corridor	630 Wetland forested mixed	8.12	9.3	75.52	2.5	1.00	188.79
Primary	Corridor	641 Freshwater marsh	1.38	4.7	6.49	2.5	1.00	16.22
			63.33		430.02			1,075.06
Secondary	Corridor	111 Fixed single family units	0.73	0	0.00	2.5	0.69	0.00
Secondary	Corridor	171 Educational facilities	0.66	0	0.00	2.5	0.69	0.00
Secondary	Corridor	211 Improved pasture	15.50	5.2	80.60	2.5	0.69	139.04
Secondary	Corridor	213 Woodland pasture	1.56	5.7	8.89	2.5	0.69	15.34
Secondary	Corridor	221 Citrus groves	2.70	4.7	12.69	2.5	0.69	21.89
Secondary	Corridor	320 Shrub and brushland	1.86	5.5	10.23	2.5	0.69	17.65
Secondary	Corridor	411 Pine flatwoods	0.27	9.5	2.57	2.5	0.69	4.42
Secondary	Corridor	434 Hardwood Conifer Mixed	0.59	9.3	5.49	2.5	0.69	9.47
Secondary	Corridor	510 Streams and waterways	11.04	0	0.00	2.5	0.69	0.00
Secondary	Corridor	531 Reservoirs	0.32	0	0.00	2.5	0.69	0.00
Secondary	Corridor	534 Reservoirs	0.32	0	0.00	2.5	0.69	0.00
Secondary	Corridor	641 Freshwater marsh	1.56	4.7	7.33	2.5	0.69	12.65
Secondary	Corridor	832 Electrical power transmission lines	0.23	3	0.69	2.5	0.69	1.19
			37.34		128.49			221.64
Secondary	Fragmentation	211 Improved pasture	3.55	5.2	18.46	2.5	0.69	31.84
Secondary	Fragmentation	221 Citrus groves	0.17	4.7	0.80	2.5	0.69	1.38
Secondary	Fragmentation	411 Pine flatwoods	3.77	9.5	35.82	2.5	0.69	61.78
Secondary	Fragmentation	510 Streams and waterways	0.31	0	0.00	2.5	0.69	0.00
			7.80		55.07			95.00
							Total Mitigation PHUs	1,391.70
Total Acres in Primary Zone			63.33					
Total Impact Habitat Value in Primary Zone					430.02			
Total Acres in Secondary Zone			45.14					
Total Impact Habitat Value in Secondary Zone					183.56			
Total Acres			108.47					
Total Impact Habitat Value					613.58			

APPENDIX I

Wetland Photographs

APPENDIX I – WETLAND PHOTOGRAPHS



Wetland 1 (WL-1)
FLUCFCS: 617 - FWS: PFO1/3C
Facing West



Wetland 2 (WL-2)
FLUCFCS: 630 - FWS: PFO1/2C
Facing West

APPENDIX I – WETLAND PHOTOGRAPHS



Wetland 3 (WL-3)
FLUCFCS: 621 - FWS: PFO2C
Facing Southwest



Wetland 4 (WL-4)
FLUCFCS: 630 - FWS: PFO1/2C
Facing Southwest

APPENDIX I – WETLAND PHOTOGRAPHS



Wetland 5 (WL-5)
FLUCFCS: 641 & 617 - FWS: PEM1C & PFO1/3C
Facing West



Wetland 6 (WL-6)
FLUCFCS: 630 - FWS: PFO1/2C
Facing Southwest

APPENDIX I – WETLAND PHOTOGRAPHS



Wetland 7 (WL-7)
FLUCFCS: 641 - FWS: PEM1C
Facing West



Wetland 8 (WL-8)
FLUCFCS: 617 - FWS: PFO1/3C
Facing West

APPENDIX I – WETLAND PHOTOGRAPHS



Wetland 10 (WL-10)
FLUCFCS: 641 - FWS: PEM1C
Facing Southwest



Wetland 11 (WL-11)
FLUCFCS: 641 - FWS: PEM1C
Facing Southwest

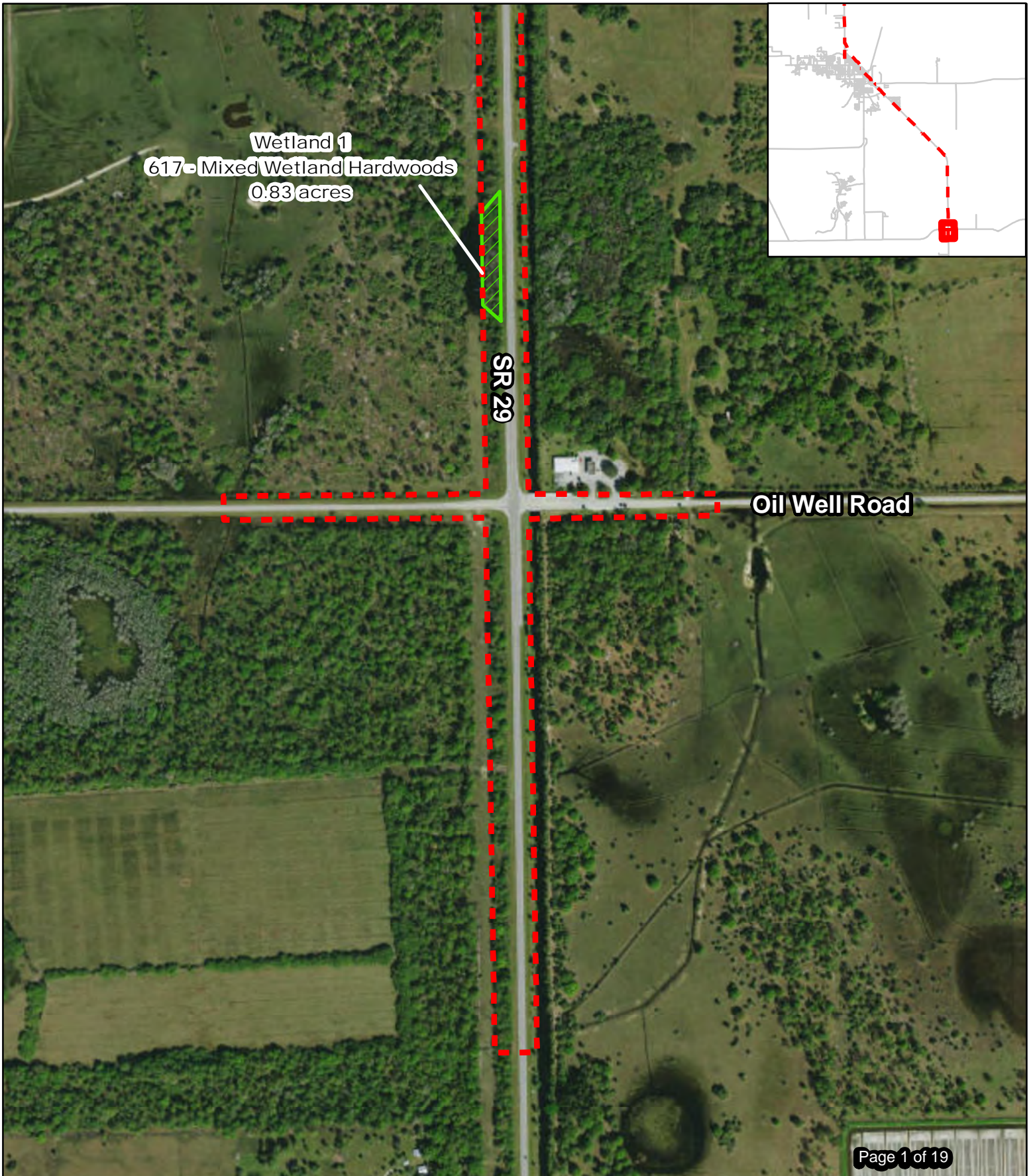
APPENDIX I – WETLAND PHOTOGRAPHS






Wetland 12 (WL-12)
FLUCFCS: 641 - FWS: PEM1C
Facing West

APPENDIX J

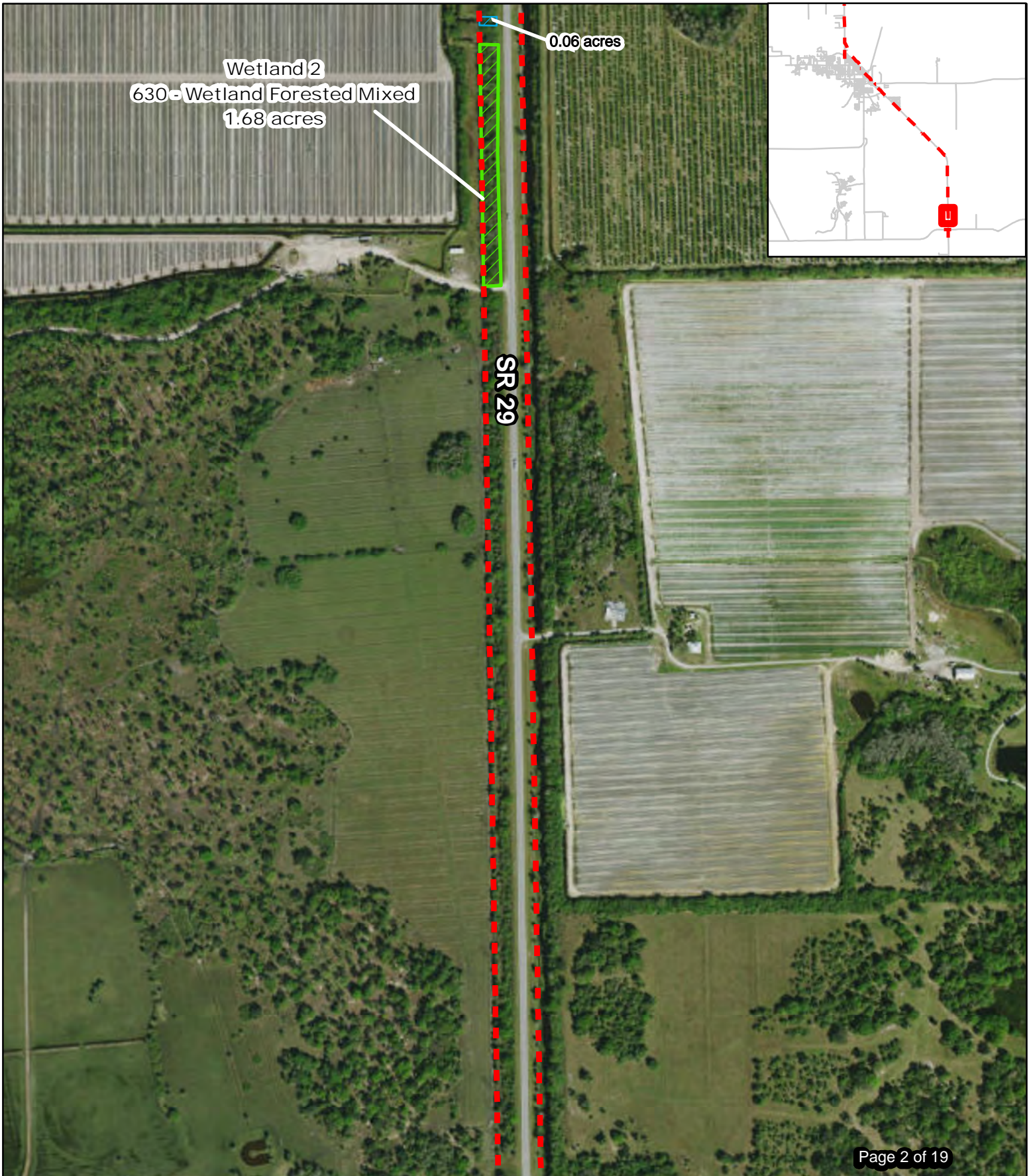
Wetland and OSW Location Maps






MAP SOURCE : ESRI DATA SOURCE : AECOM 2018	
Legend	
	Central Alternative #1 Revised
	600 Wetlands
	500 Other Surface Waters

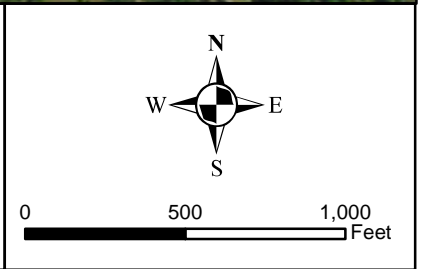
Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised
 Date: 6/1/2018

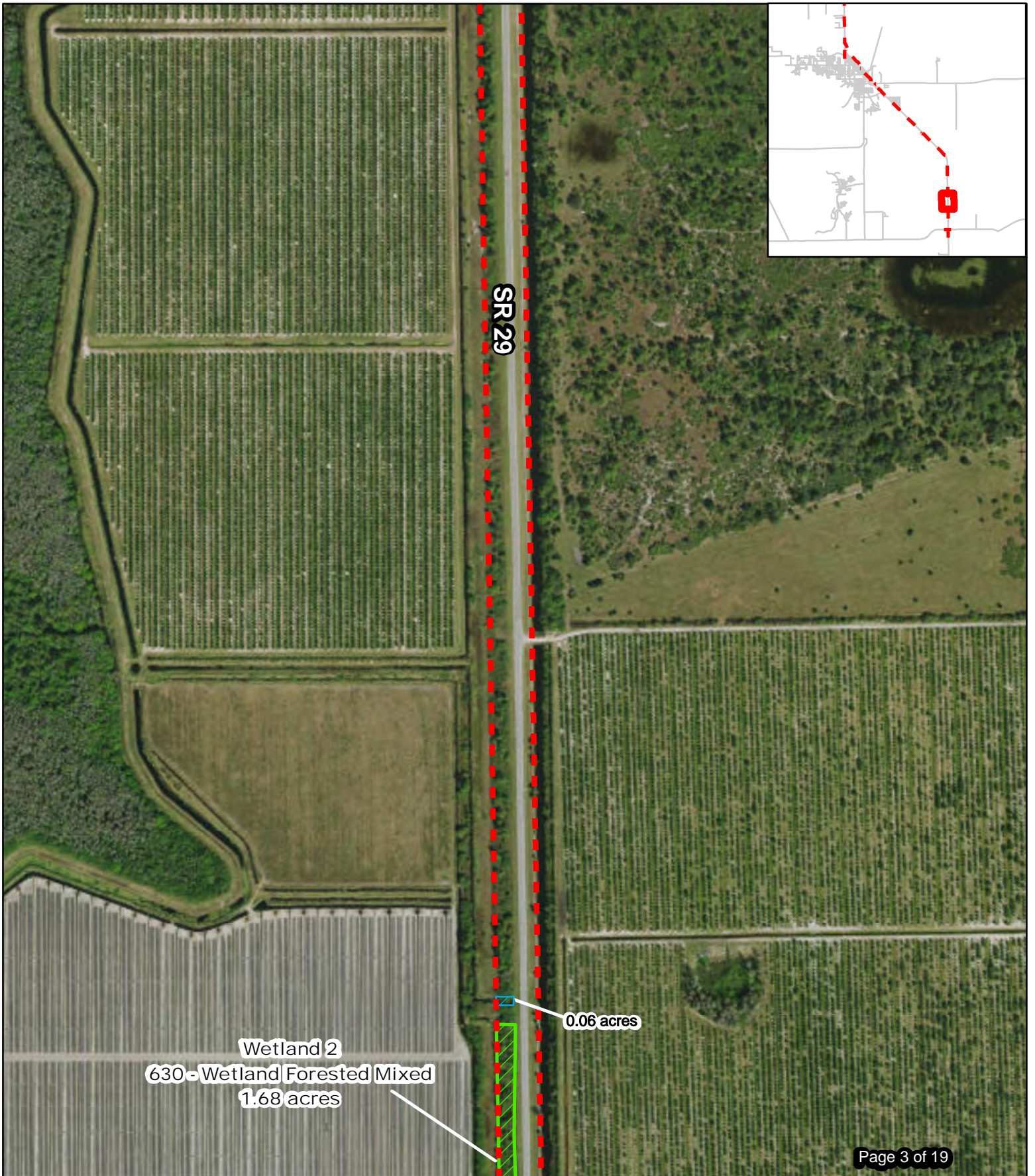




MAP SOURCE : ESRI	
DATA SOURCE : AECOM 2018	
Legend	
	Central Alternative #1 Revised
	600 Wetlands
	500 Other Surface Waters




Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised
 Date: 6/1/2018





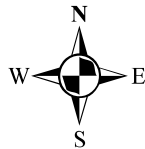
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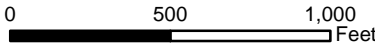
Legend

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-  600 Wetlands
-  500 Other Surface Waters

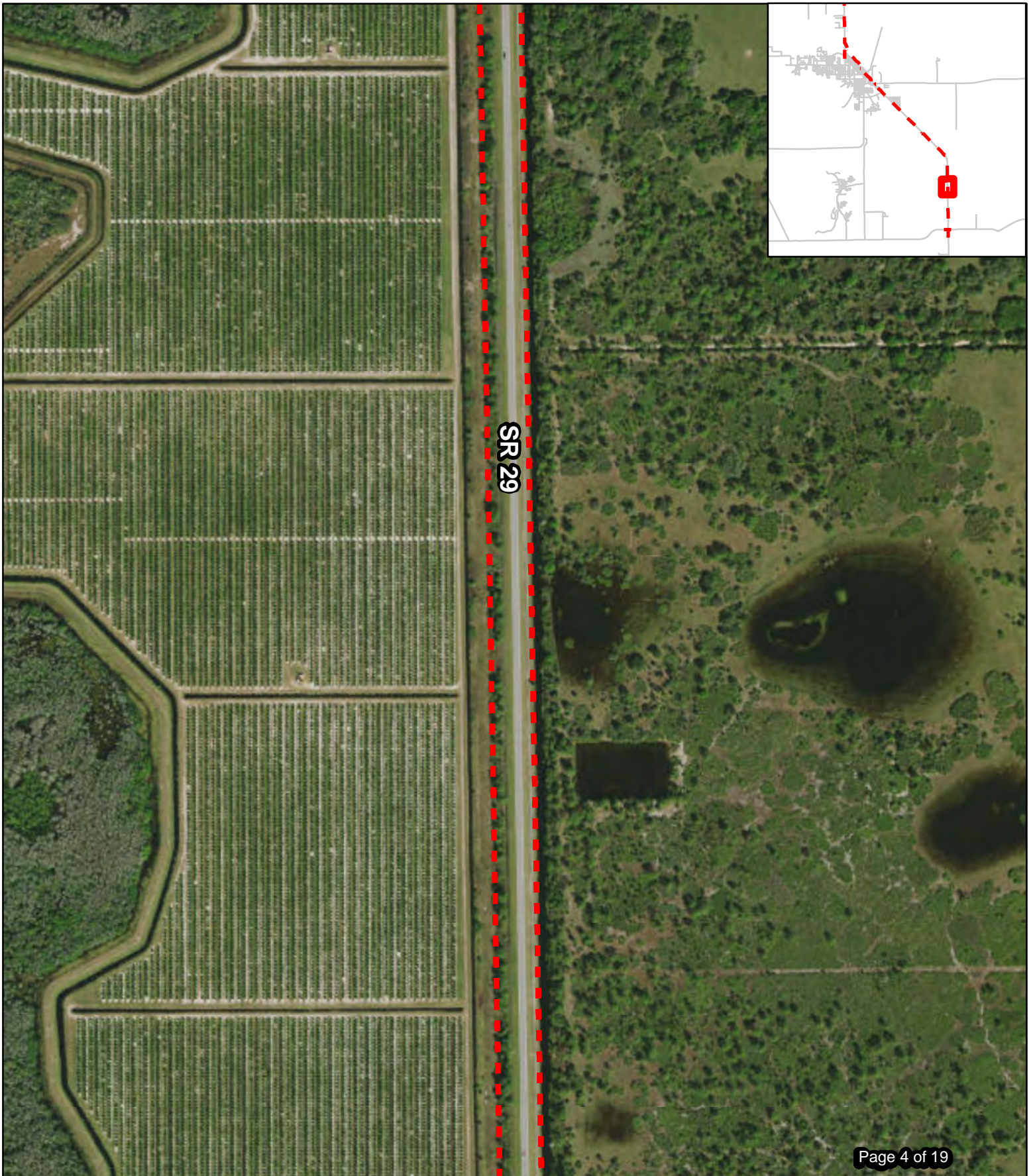
**Wetlands and Other Surface Waters
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**

Date: 6/1/2018








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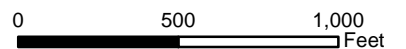
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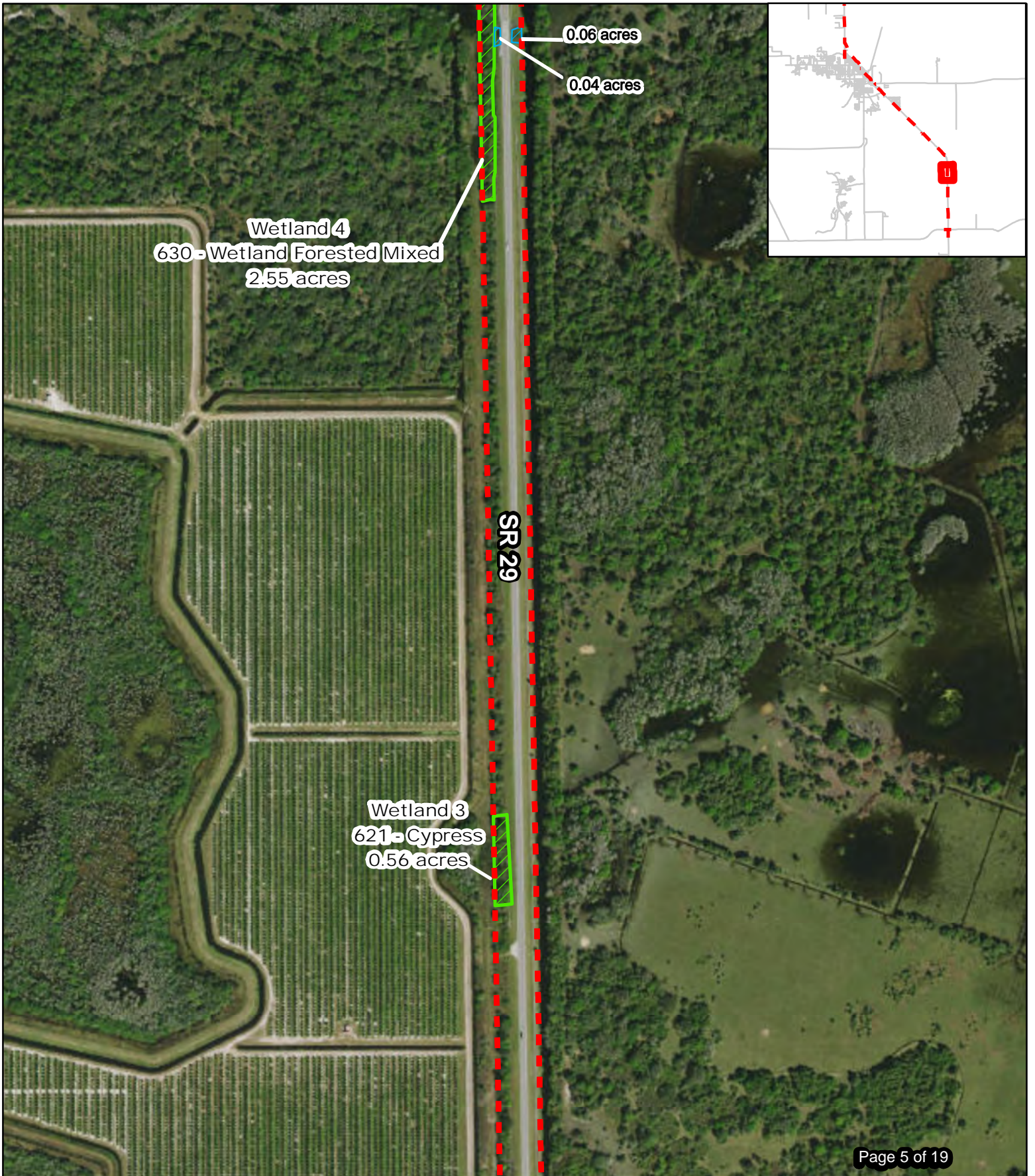
Legend

-  Central Alternative #1 Revised
-  600 Wetlands
-  500 Other Surface Waters

**Wetlands and Other Surface Waters
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**

Date: 6/1/2018





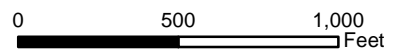
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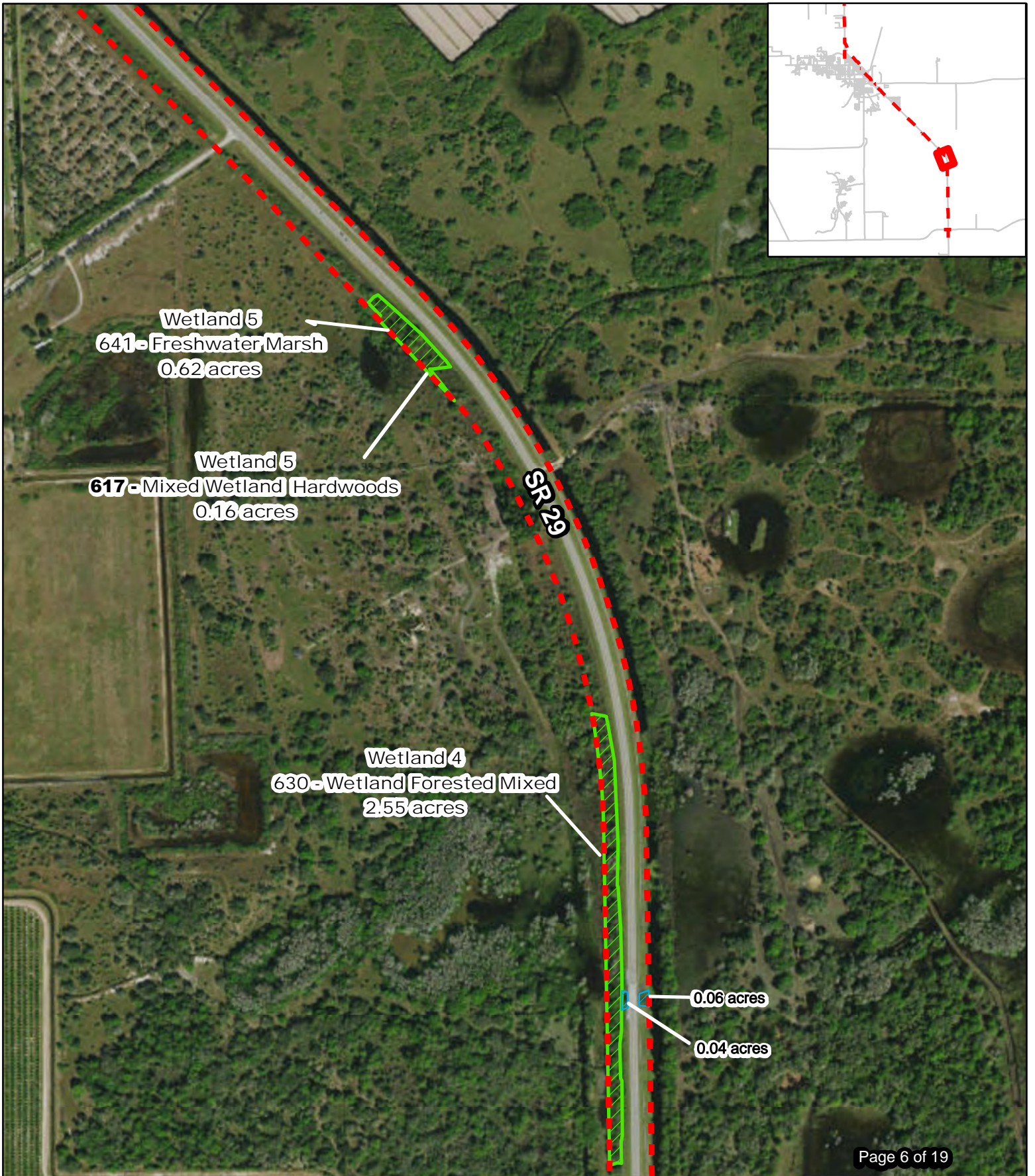
Legend




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- 600 Wetlands
- 500 Other Surface Waters

**Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised**

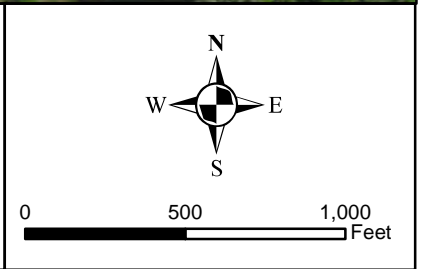
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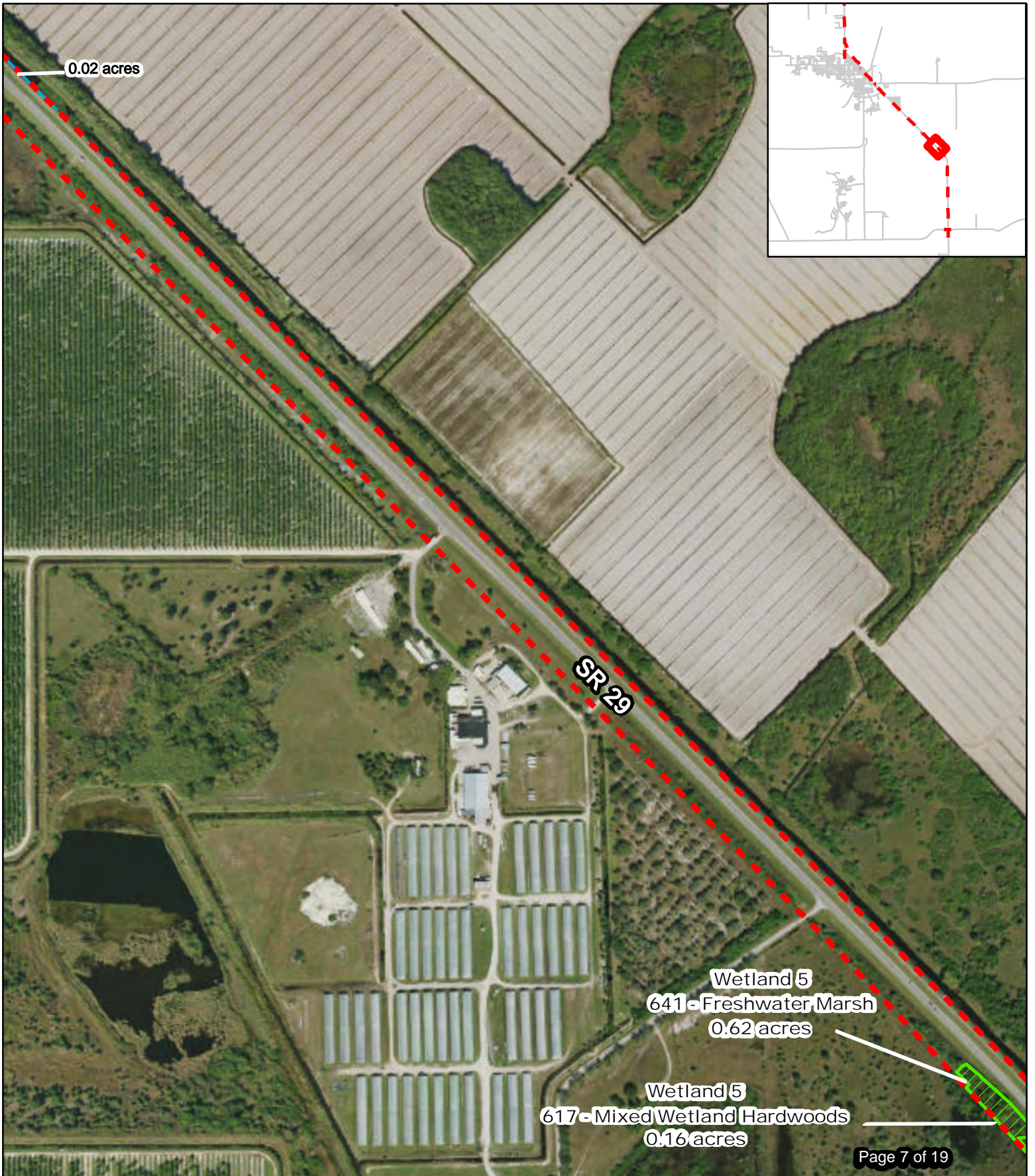




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DATA SOURCE : AECOM 2018	
Legend	
	Central Alternative #1 Revised
	600 Wetlands
	500 Other Surface Waters




Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised
 Date: 6/1/2018





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DATA SOURCE : AECOM 2018

Legend

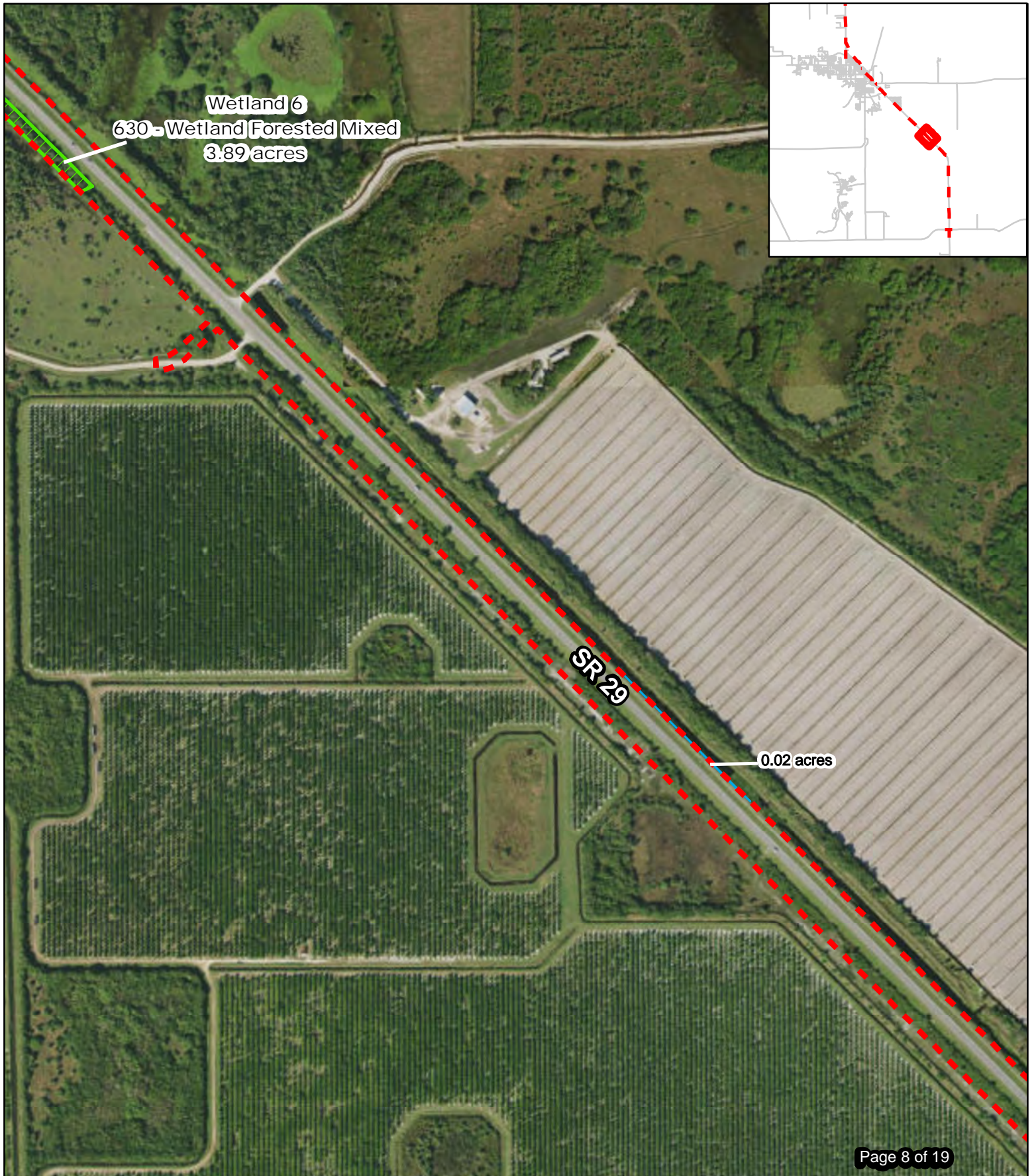
-  Central Alternative #1 Revised
-  600 Wetlands
-  500 Other Surface Waters

**Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised**

Date: 6/1/2018






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 DATA SOURCE : AECOM 2018

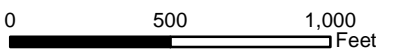
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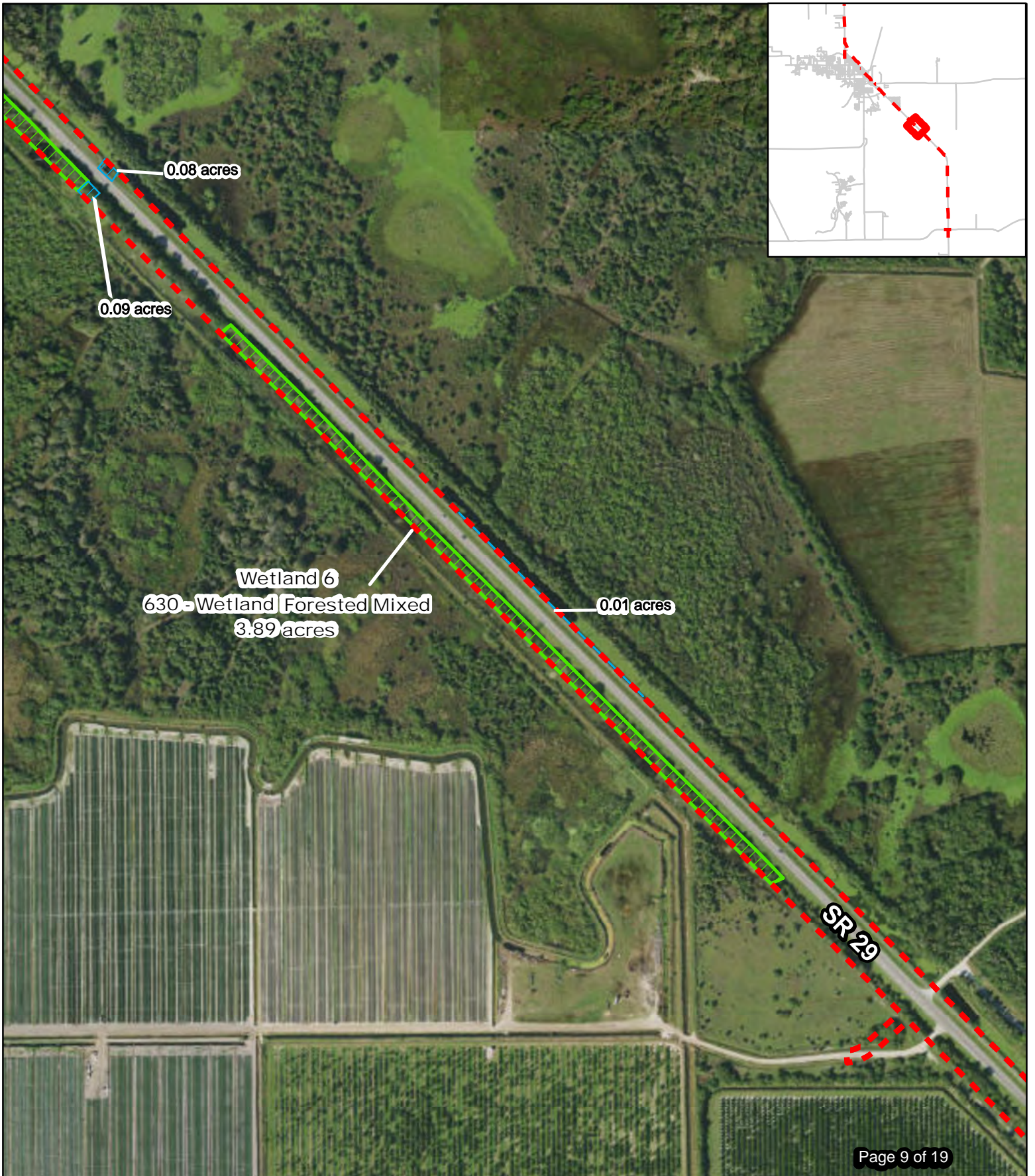
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-  500 Other Surface Waters

Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

Date: 6/1/2018










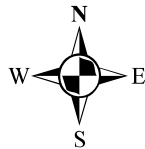
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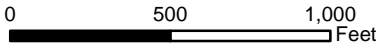
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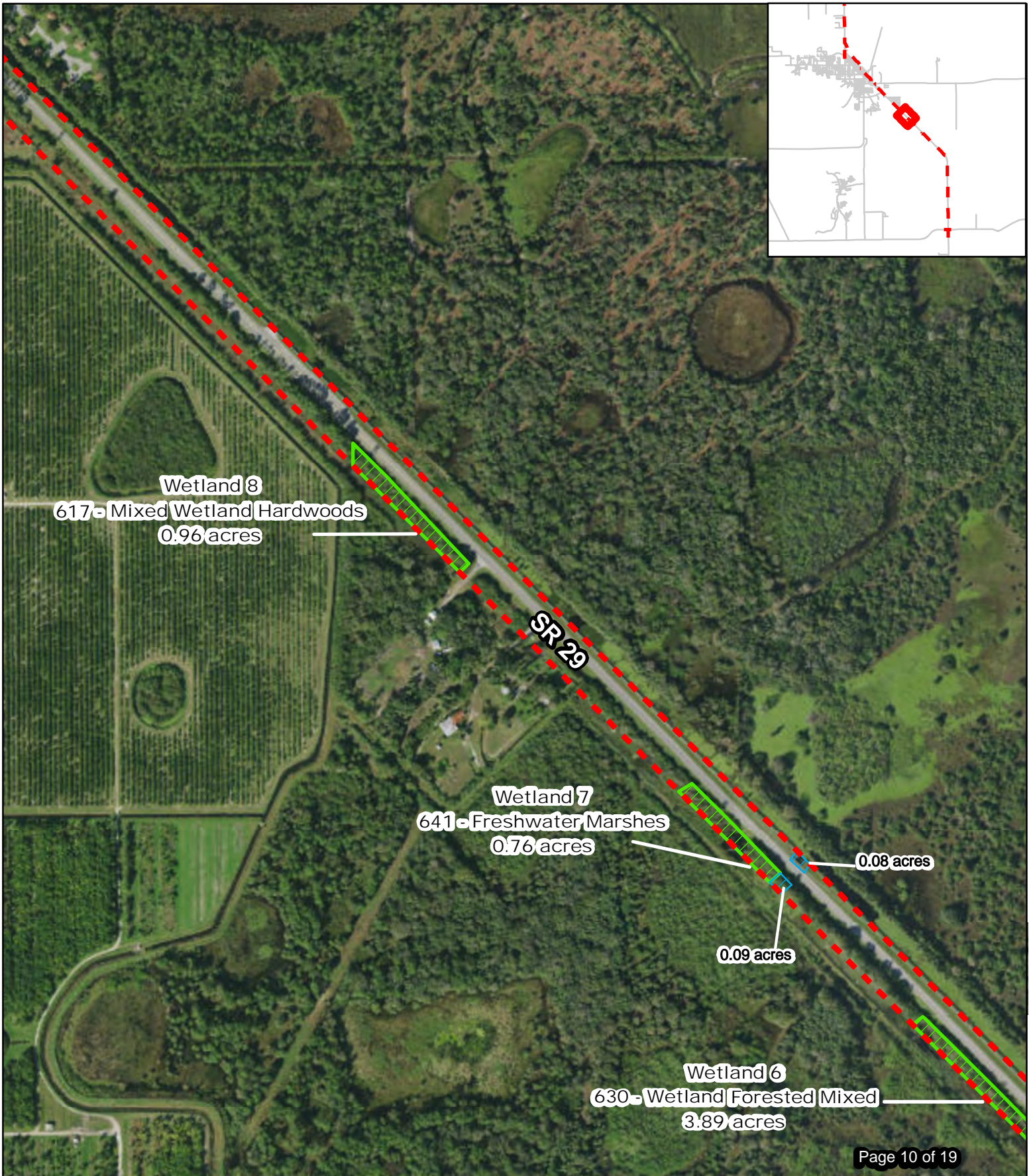
-  Central Alternative #1 Revised
-  600 Wetlands
-  500 Other Surface Waters

**Wetlands and Other Surface Waters
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**

Date: 6/1/2018





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MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

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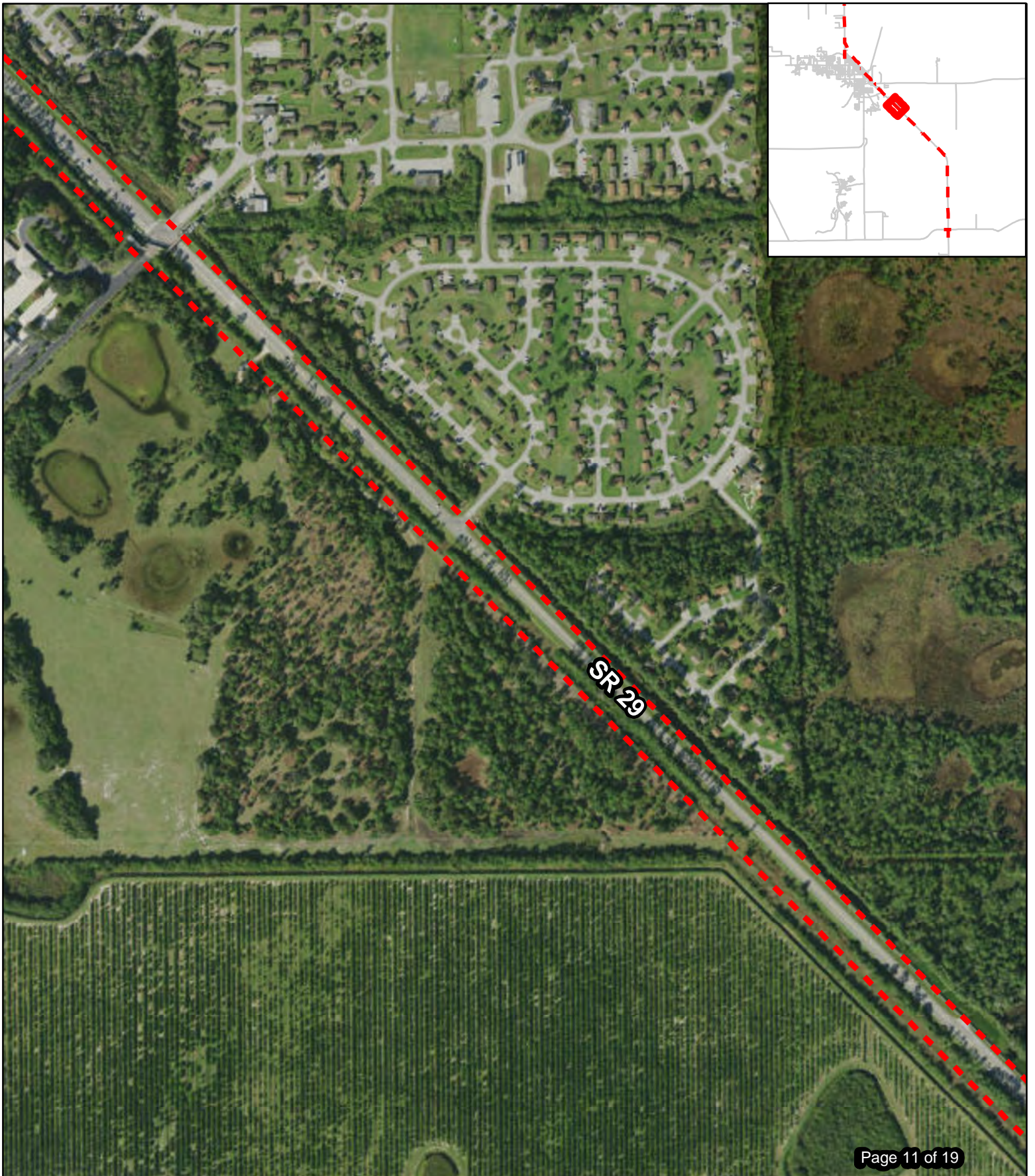
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-  600 Wetlands
-  500 Other Surface Waters

**Wetlands and Other Surface Waters
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**

Date: 6/1/2018




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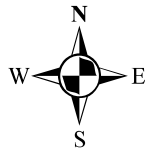
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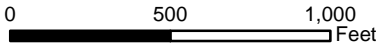
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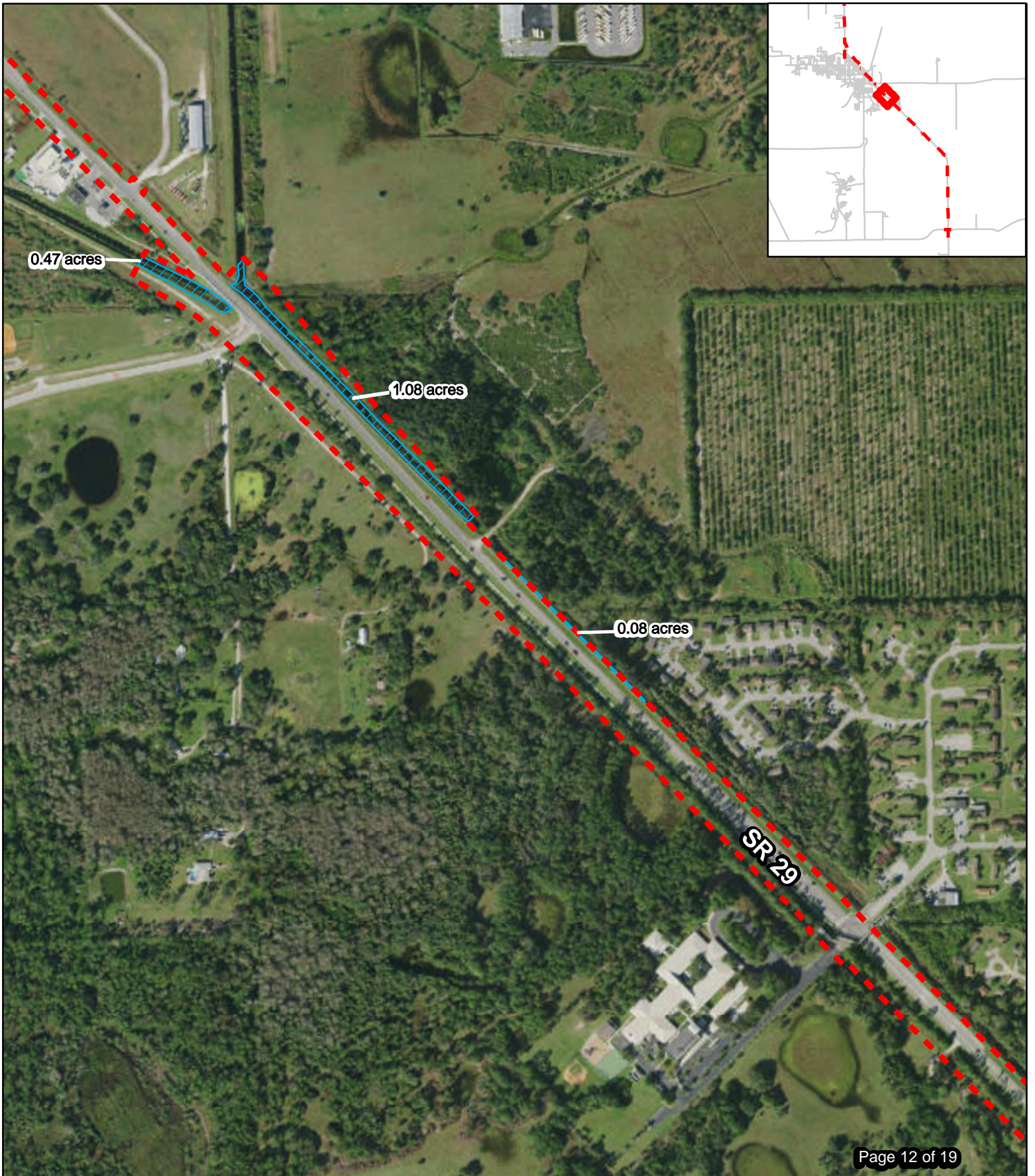
-  Central Alternative #1 Revised
-  600 Wetlands
-  500 Other Surface Waters

**Wetlands and Other Surface Waters
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**

Date: 6/1/2018


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MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

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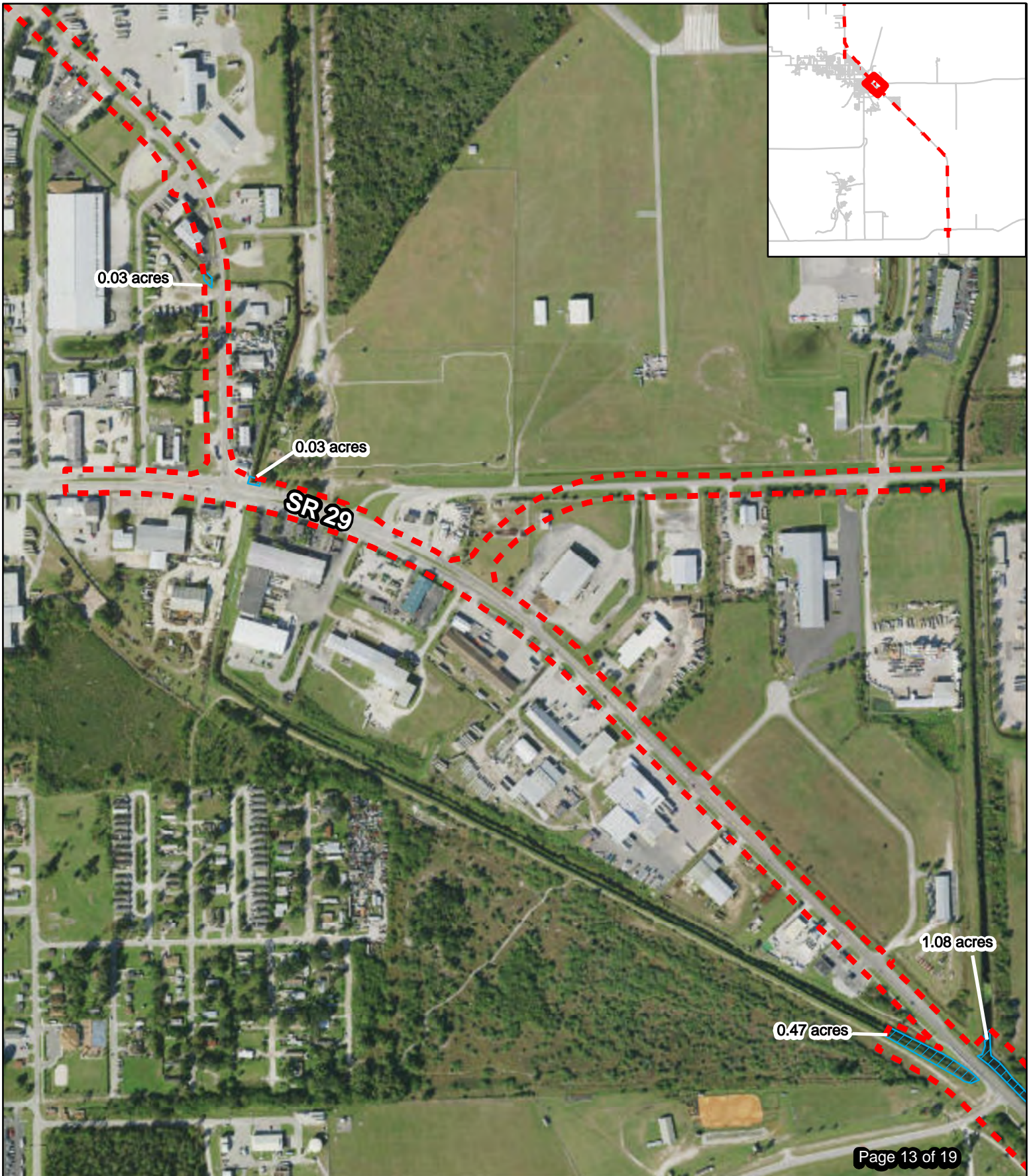
- Central Alternative #1 Revised
- 600 Wetlands
- 500 Other Surface Waters

Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

Date: 6/1/2018






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MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

Legend

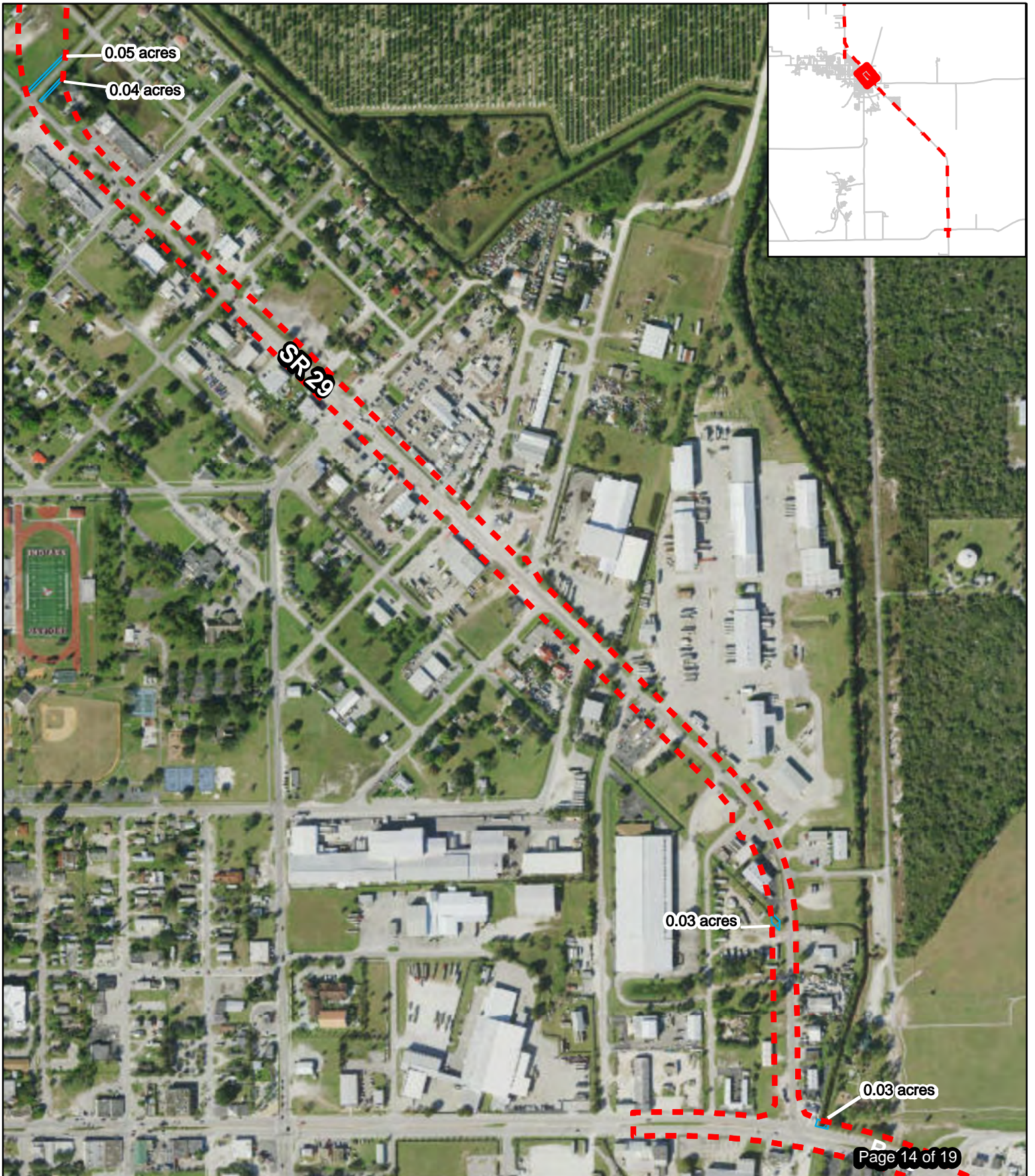
-  Central Alternative #1 Revised
-  600 Wetlands
-  500 Other Surface Waters

Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

Date: 6/1/2018




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MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

Legend

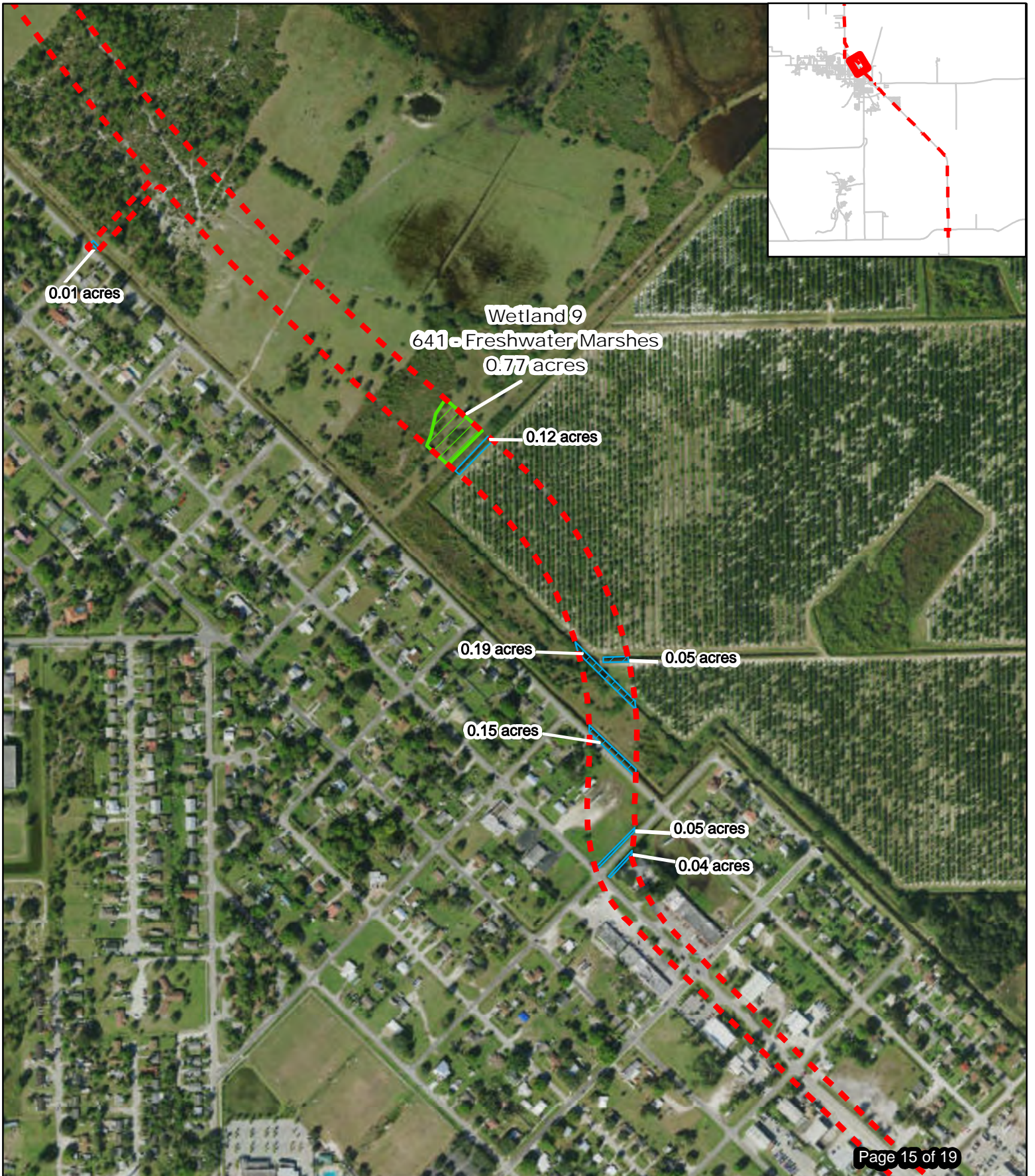
-  Central Alternative #1 Revised
-  600 Wetlands
-  500 Other Surface Waters

Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

Date: 6/1/2018




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MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

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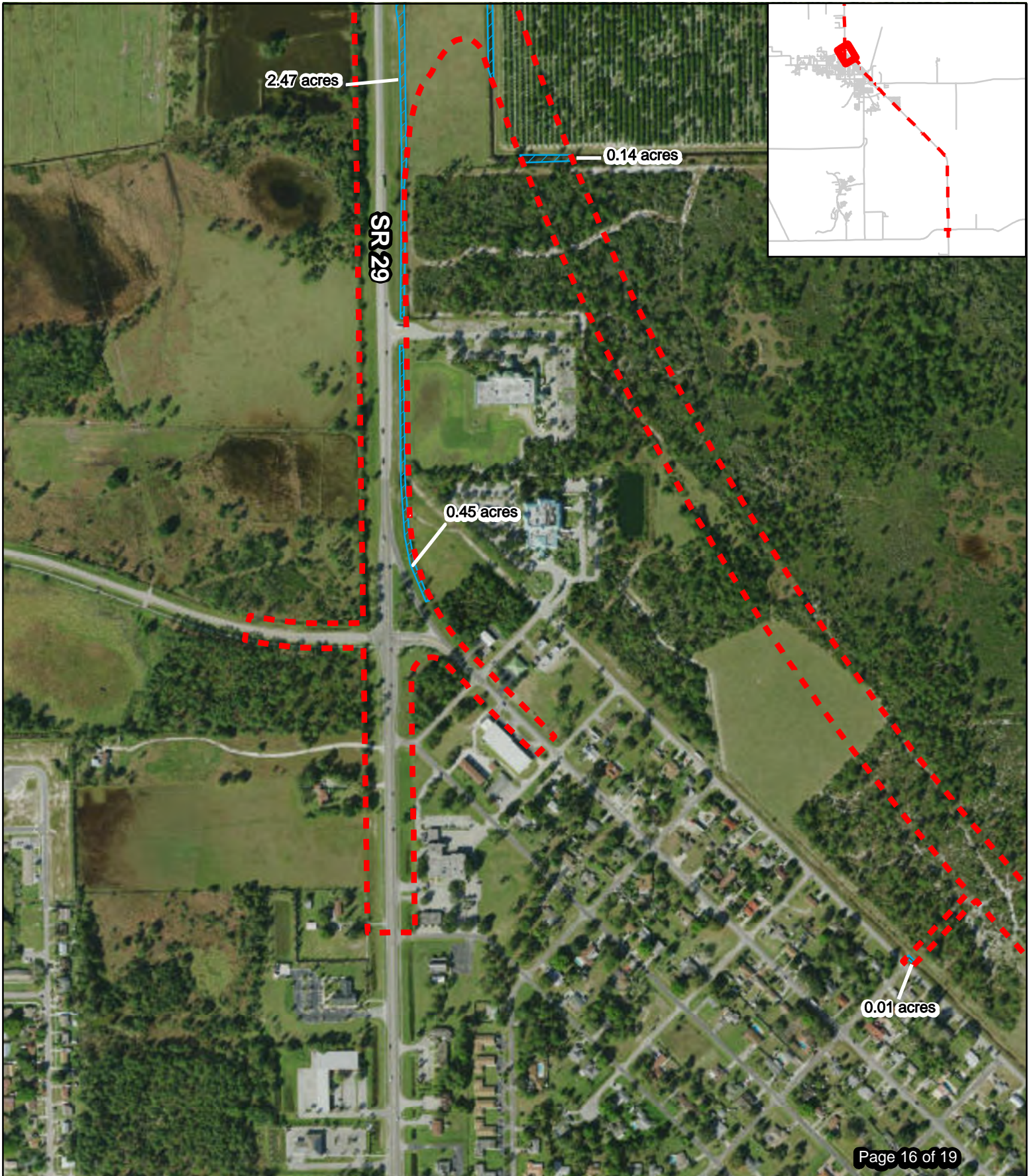
-  Central Alternative #1 Revised
-  600 Wetlands
-  500 Other Surface Waters

Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/1/2018


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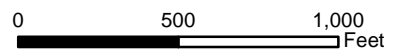


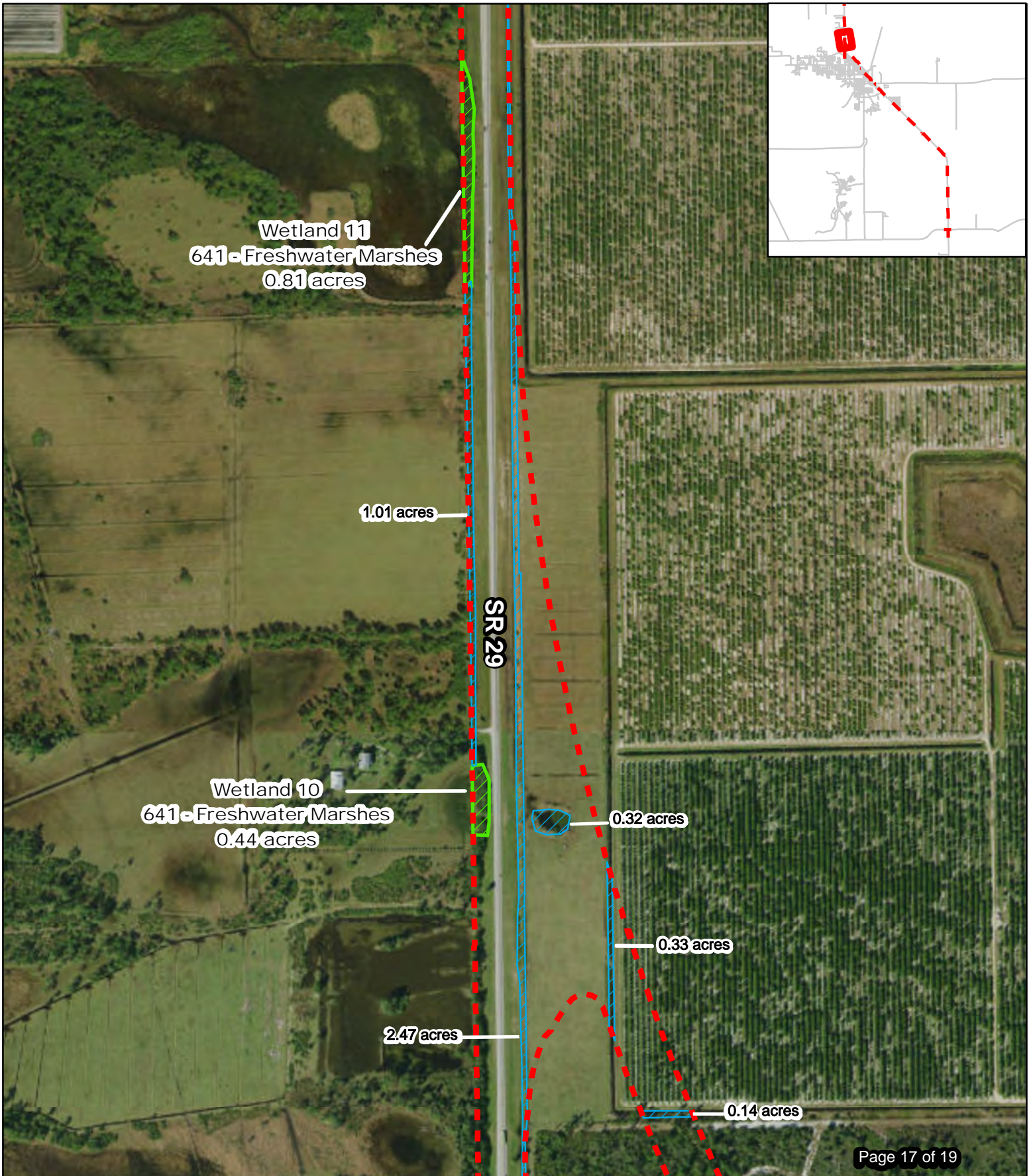
MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

- Legend**
-  Central Alternative #1 Revised
 -  600 Wetlands
 -  500 Other Surface Waters

**Wetlands and Other Surface Waters
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**




Date: 6/1/2018





MAP SOURCE : ESRI
DATA SOURCE : AECOM 2018

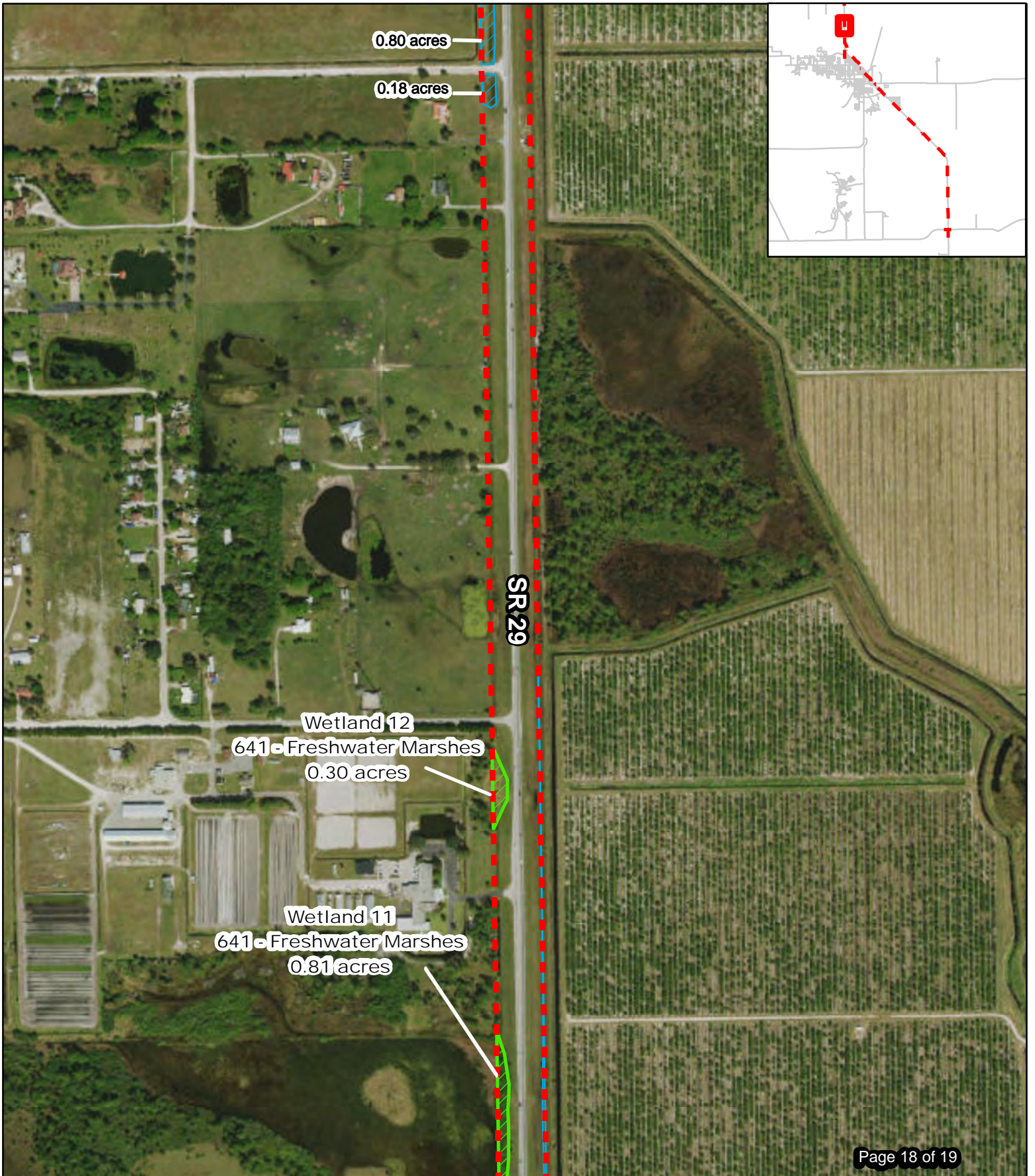
Legend

-  Central Alternative #1 Revised
-  600 Wetlands
-  500 Other Surface Waters

Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/1/2018





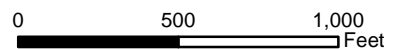
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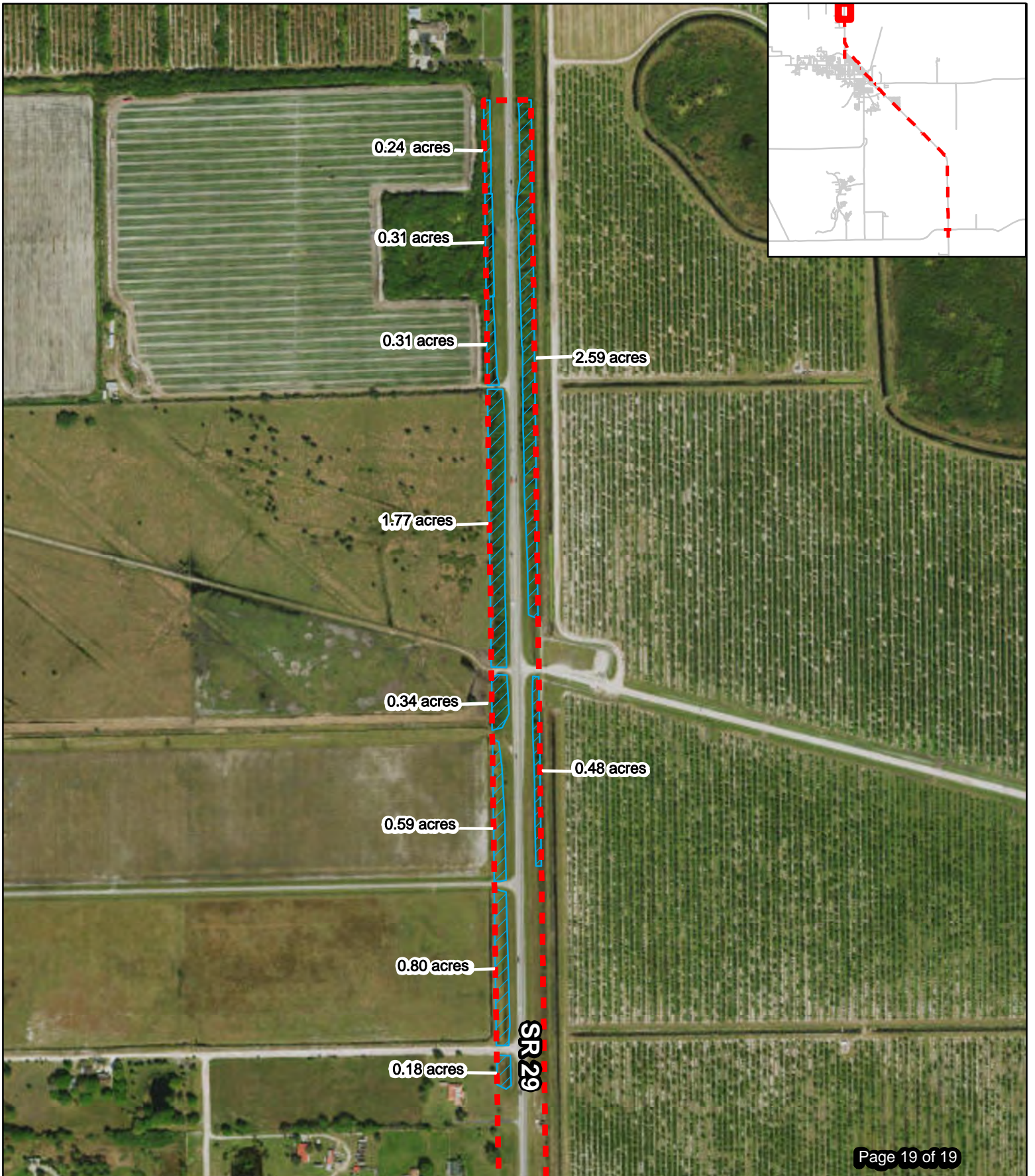
Legend

-  Central Alternative #1 Revised
-  600 Wetlands
-  500 Other Surface Waters

**Wetlands and Other Surface Waters
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**




Date: 6/1/2018





MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

Legend

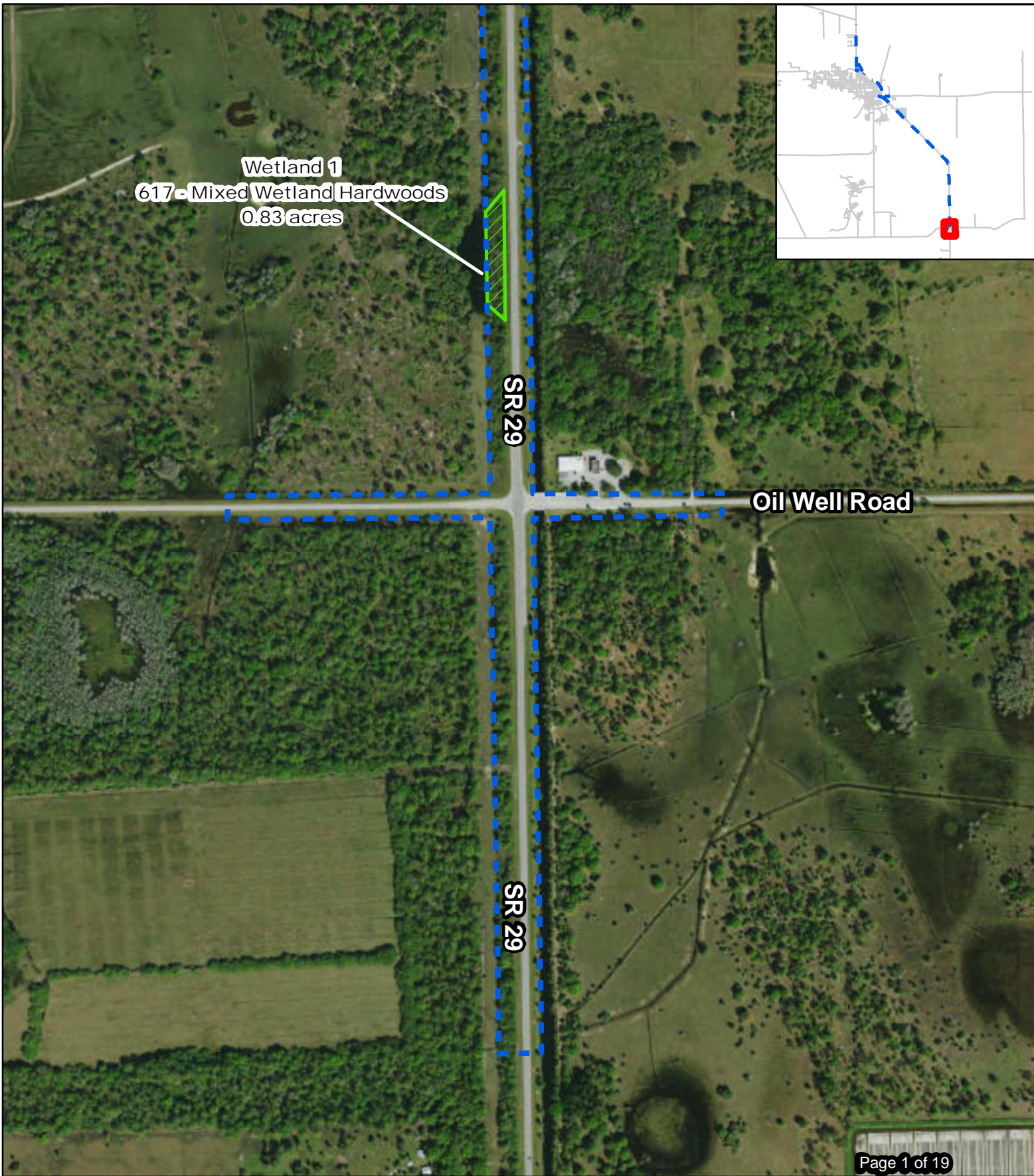
-  Central Alternative #1 Revised
-  600 Wetlands
-  500 Other Surface Waters

**Wetlands and Other Surface Waters
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**

Date: 6/1/2018




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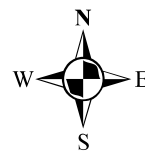
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DATA SOURCE : AECOM 2018

Legend

-  Central Alternative #2
-  600 Wetlands
-  500 Other Surface Waters

**Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2**




Date: 6/1/2018






MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

Legend

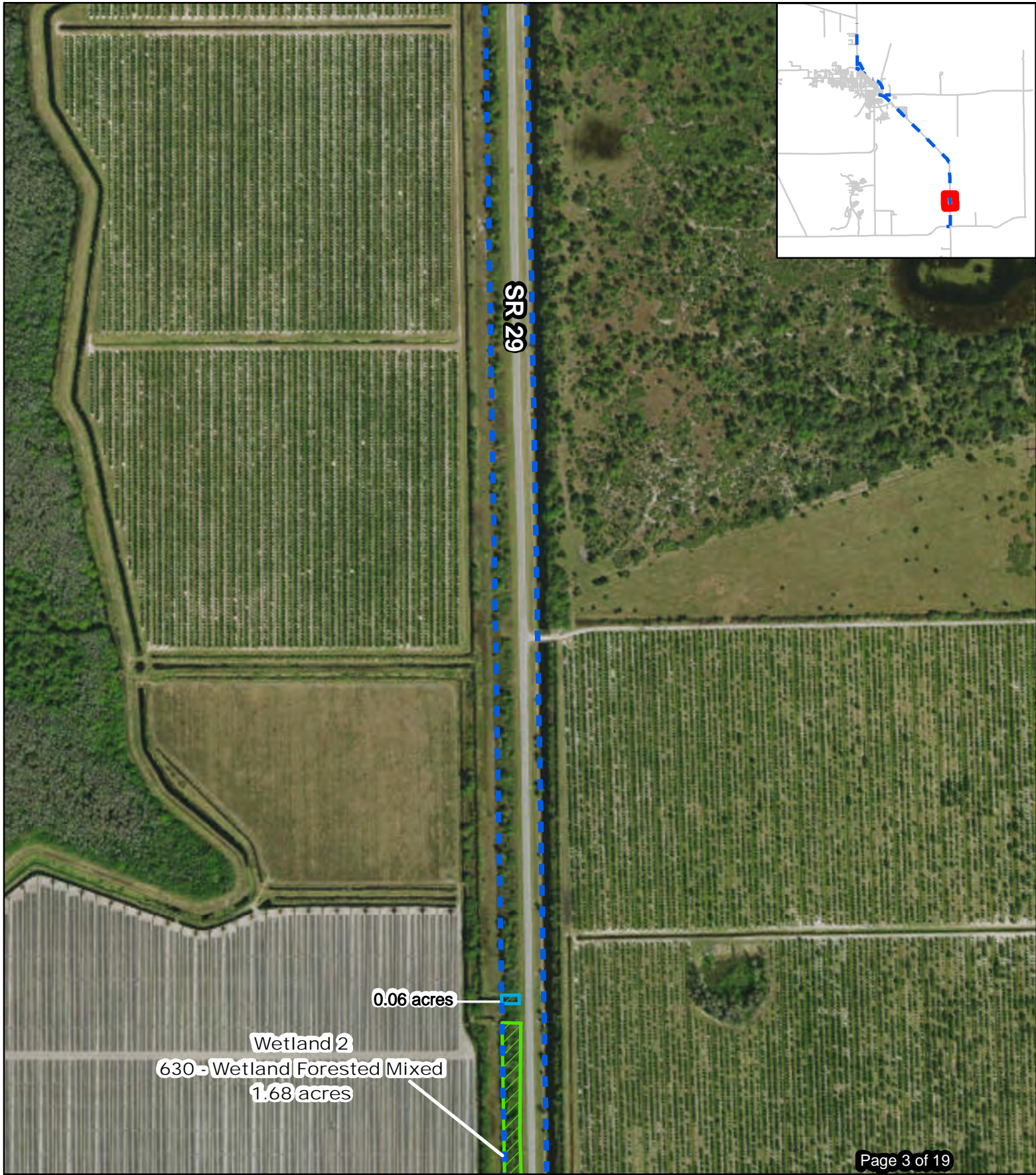
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-  600 Wetlands
-  500 Other Surface Waters

Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/1/2018

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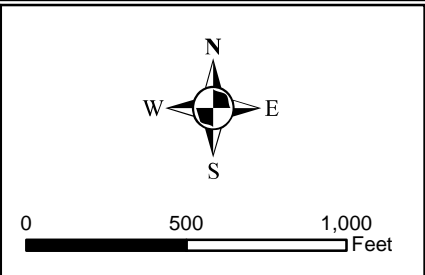


MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

Legend

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	500 Other Surface Waters




Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2
 Date: 6/1/2018





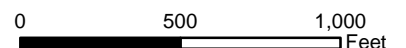
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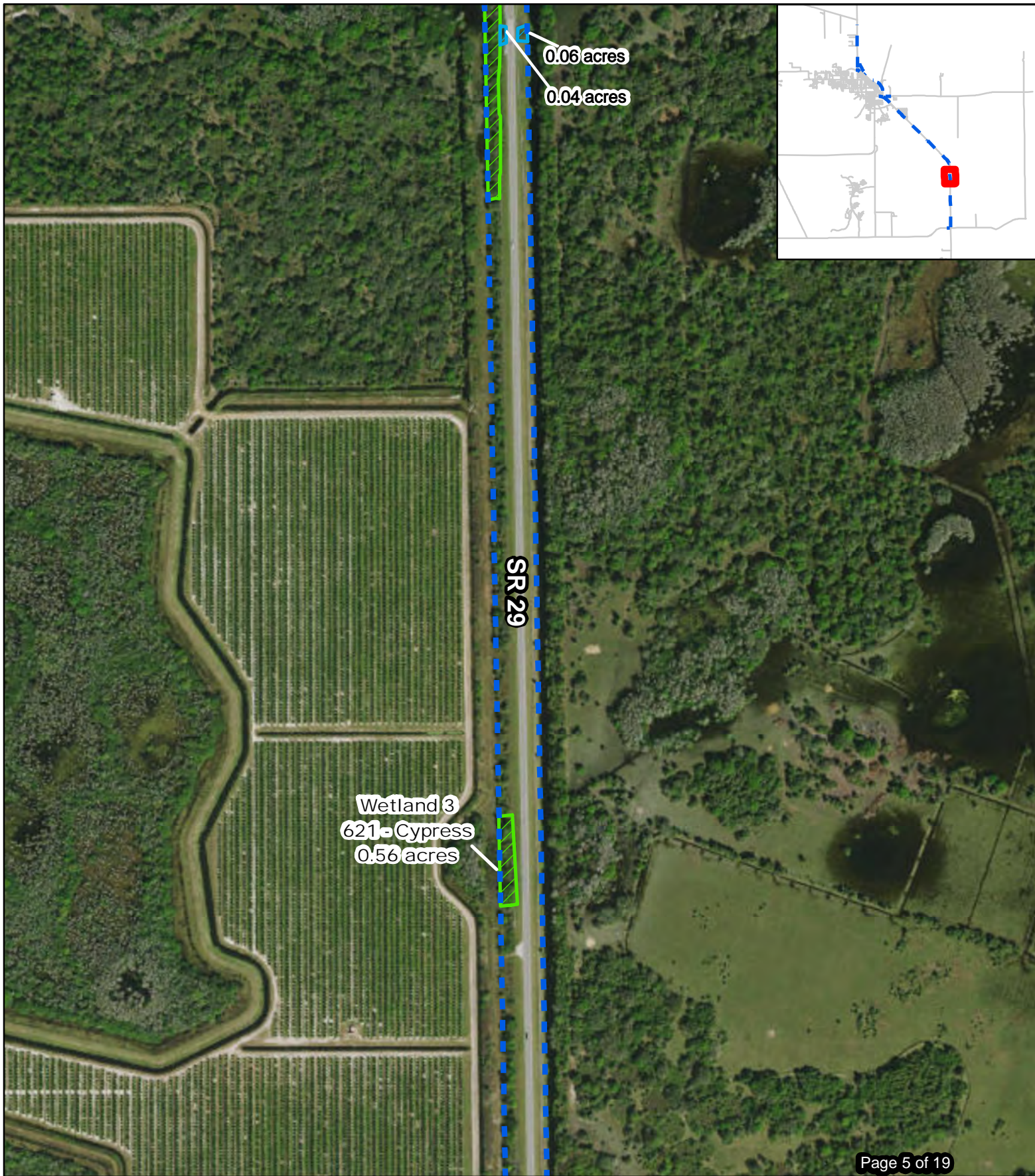
Legend

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-  600 Wetlands
-  500 Other Surface Waters

**Wetlands and Other Surface Waters
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #2**




Date: 6/1/2018





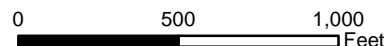
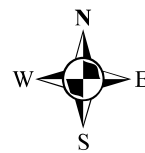
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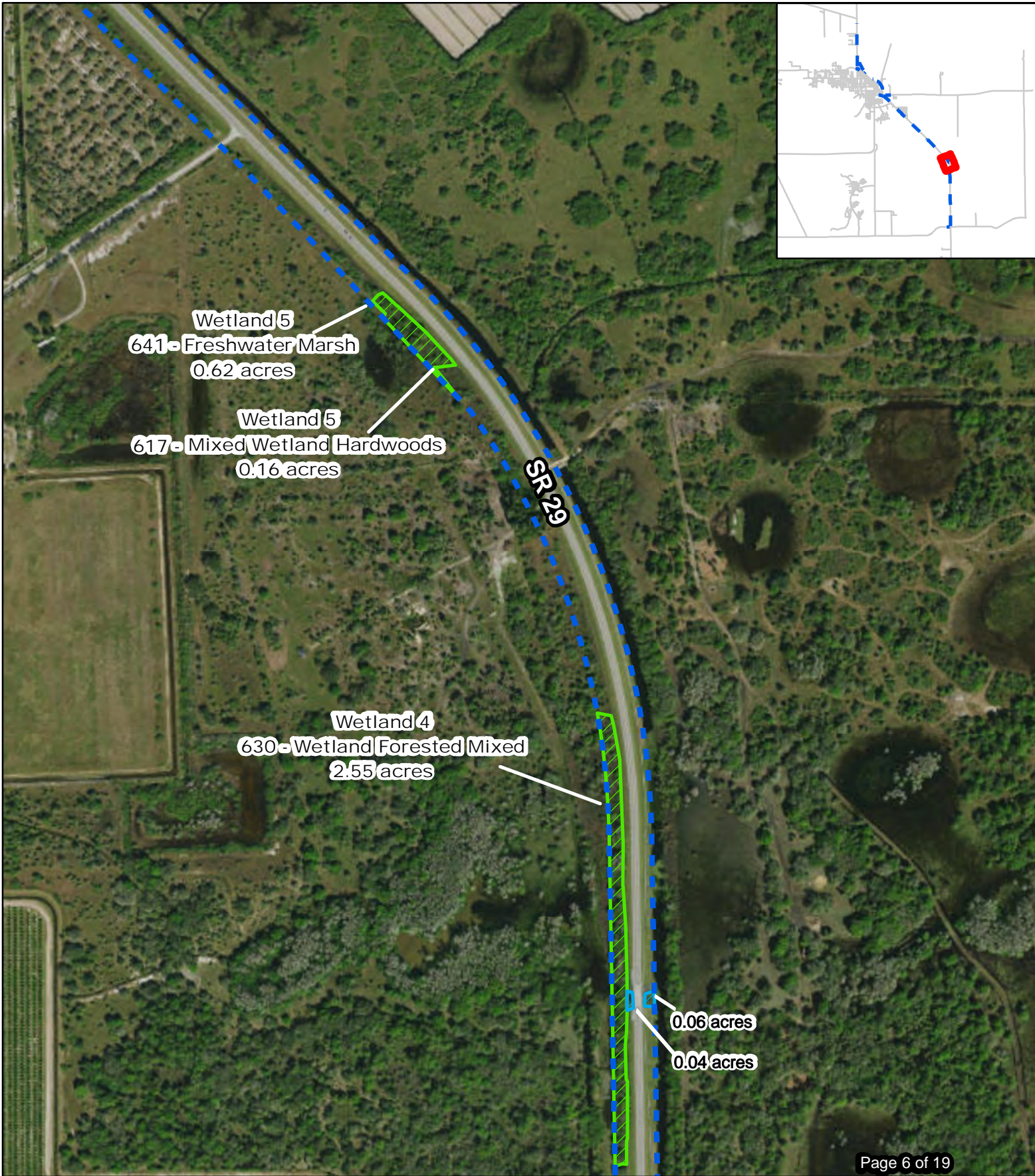
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-  Central Alternative #2
-  600 Wetlands
-  500 Other Surface Waters

**Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2**

Date: 6/1/2018





MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

Legend

- Central Alternative #2
- 600 Wetlands
- 500 Other Surface Waters

**Wetlands and Other Surface Waters
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #2**

Date: 6/1/2018

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MAP SOURCE : ESRI
DATA SOURCE : AECOM 2018

Legend

- Central Alternative #2
- 600 Wetlands
- 500 Other Surface Waters

Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/1/2018




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MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

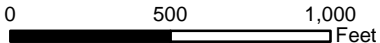
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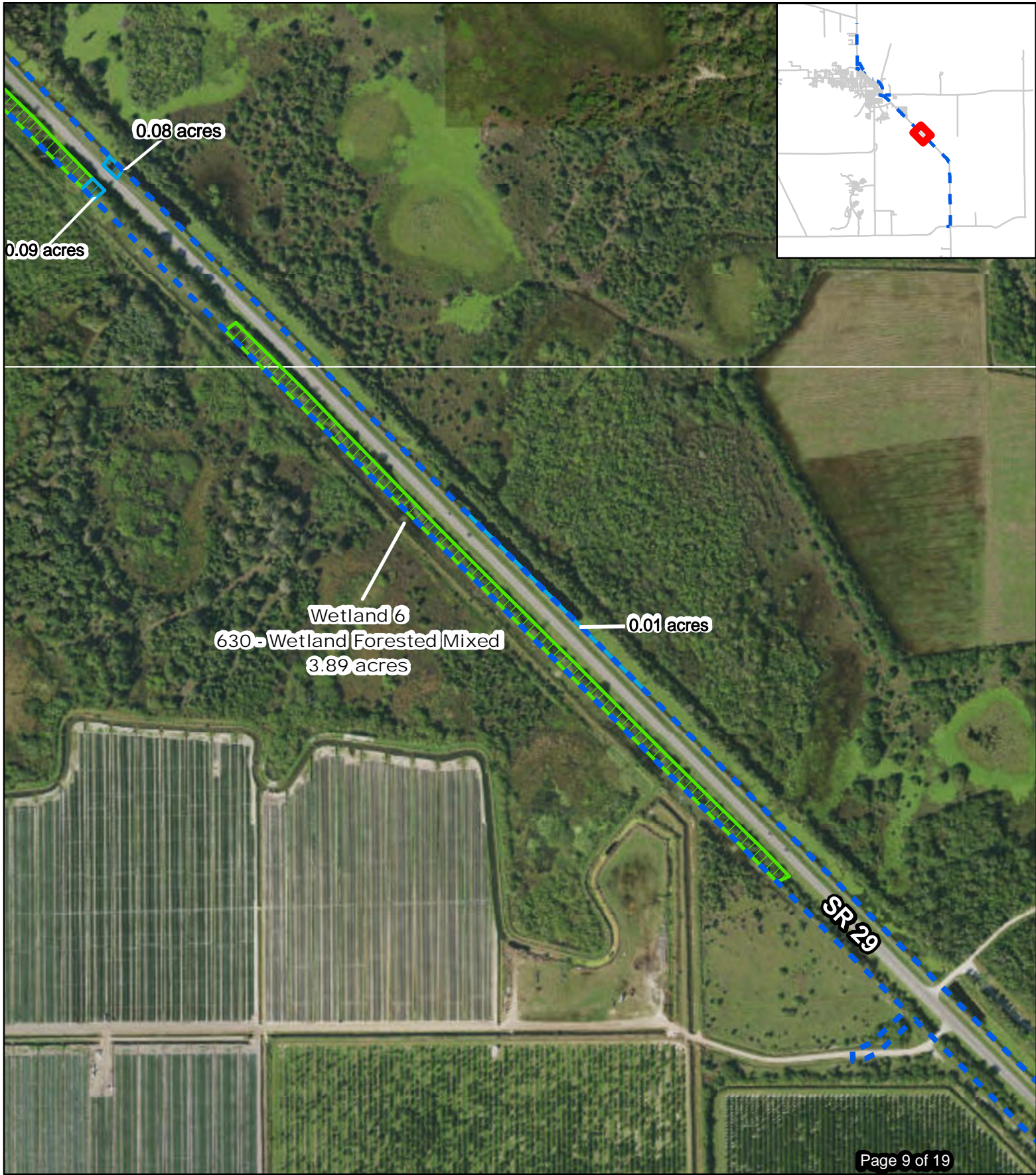
-  Central Alternative #2
-  600 Wetlands
-  500 Other Surface Waters

Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/1/2018










MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

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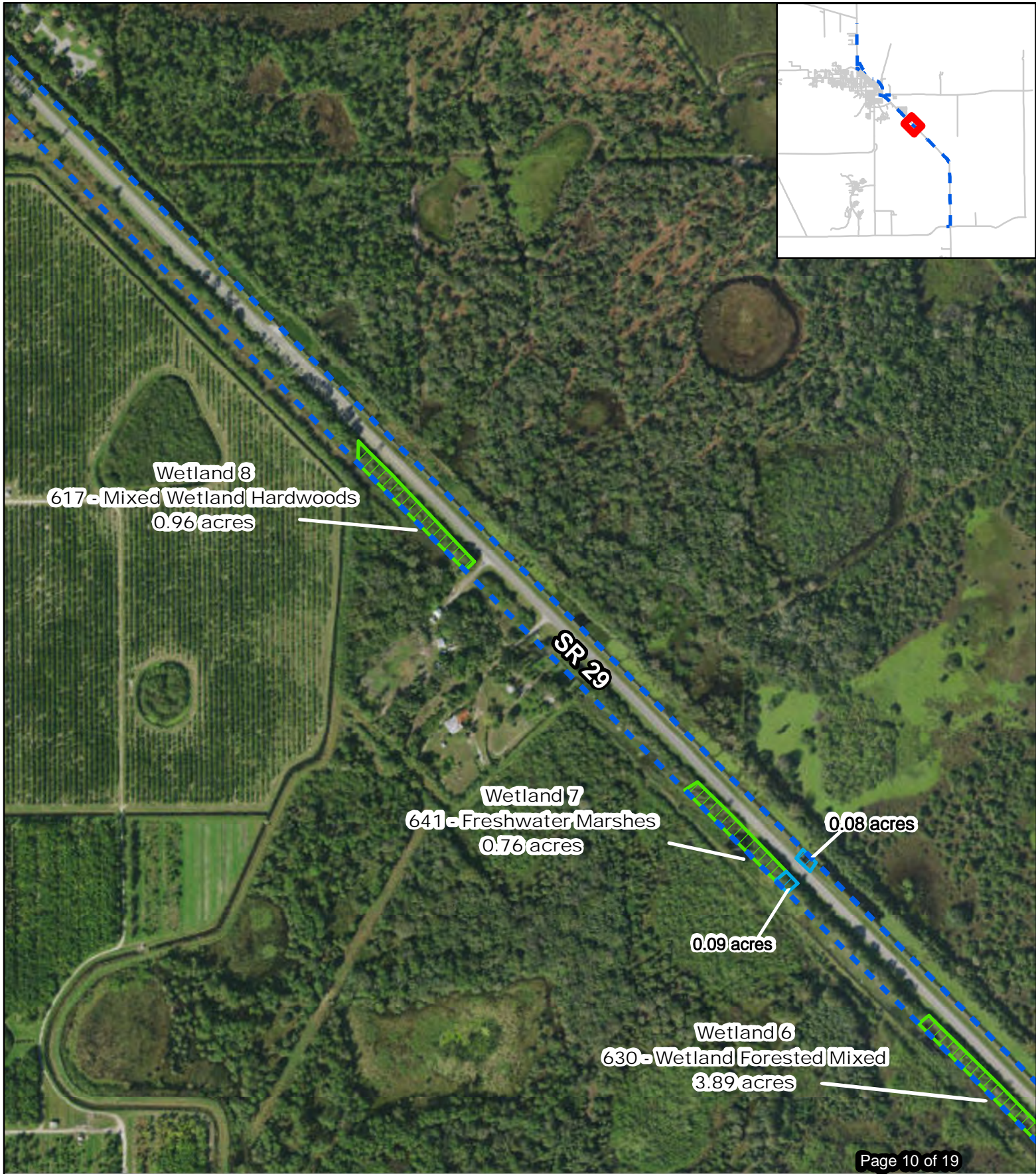
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-  600 Wetlands
-  500 Other Surface Waters

Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/1/2018

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MAP SOURCE : ESRI
DATA SOURCE : AECOM 2018

Legend

- Central Alternative #2
- 600 Wetlands
- 500 Other Surface Waters

Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/1/2018




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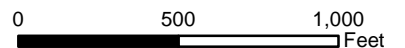
MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

Legend

-  Central Alternative #2
-  600 Wetlands
-  500 Other Surface Waters

**Wetlands and Other Surface Waters
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #2**




Date: 6/1/2018






MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

Legend

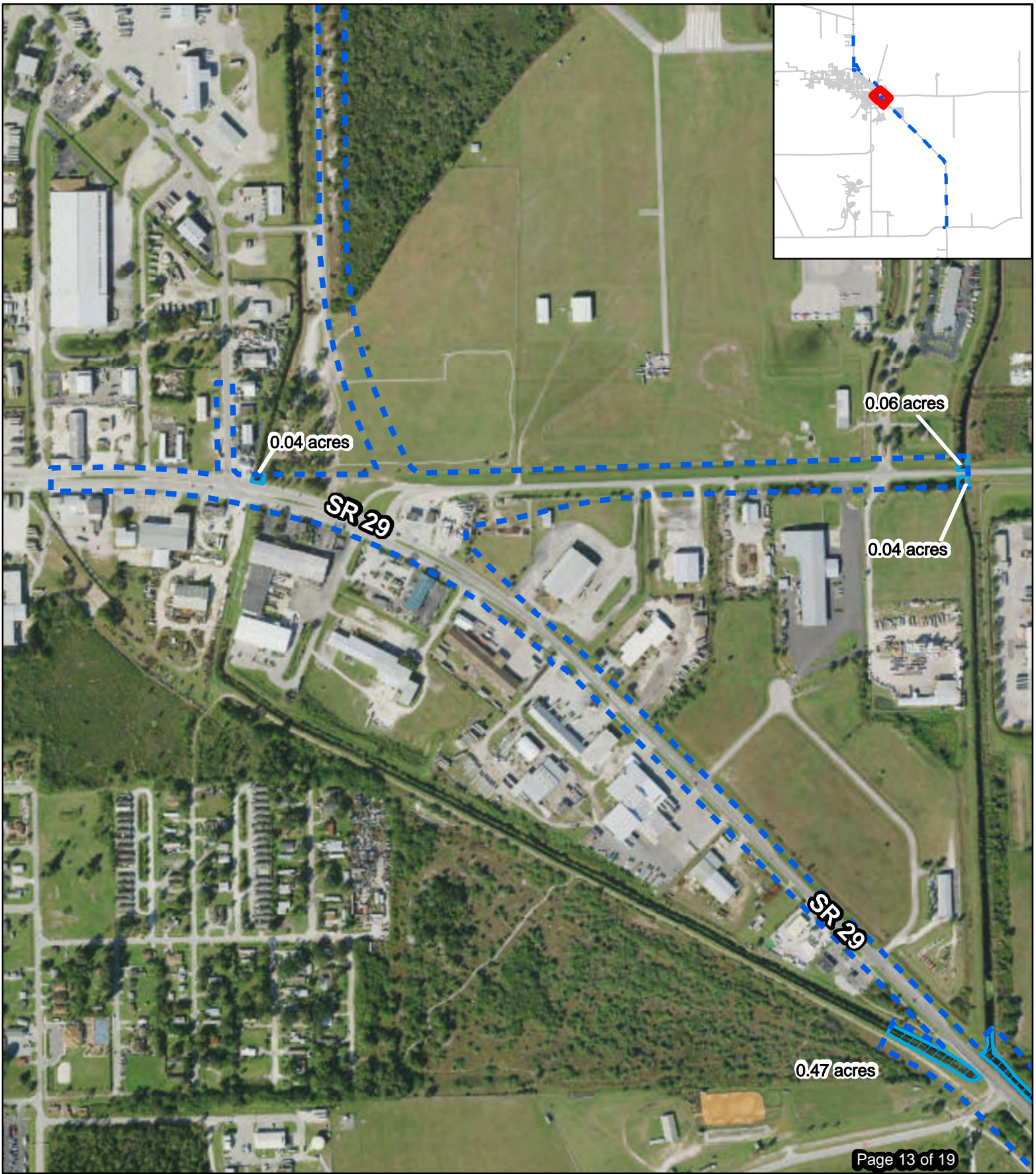
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-  600 Wetlands
-  500 Other Surface Waters

Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/1/2018





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MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

Legend

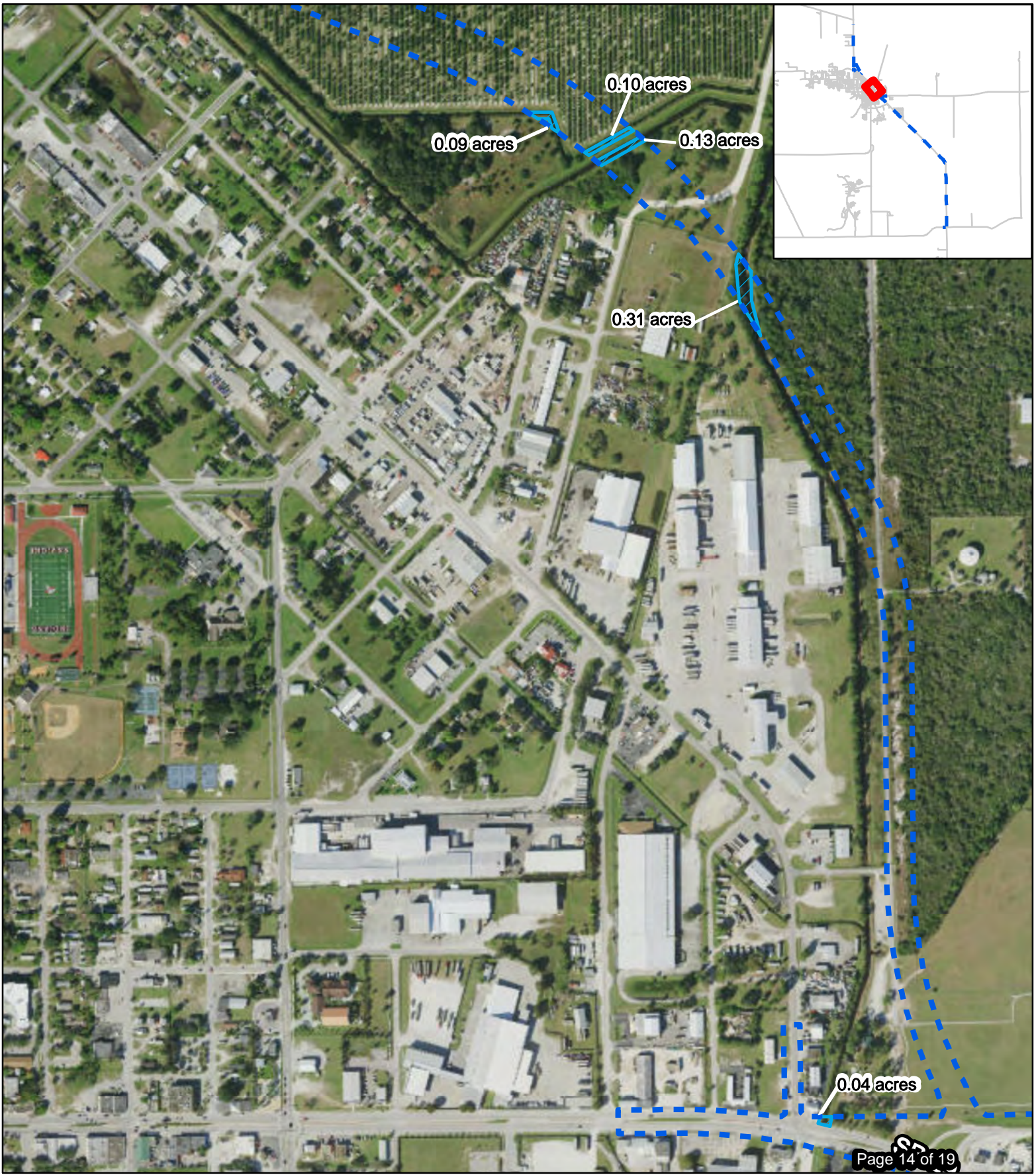
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-  600 Wetlands
-  500 Other Surface Waters

Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/1/2018




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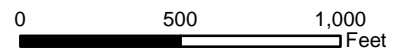
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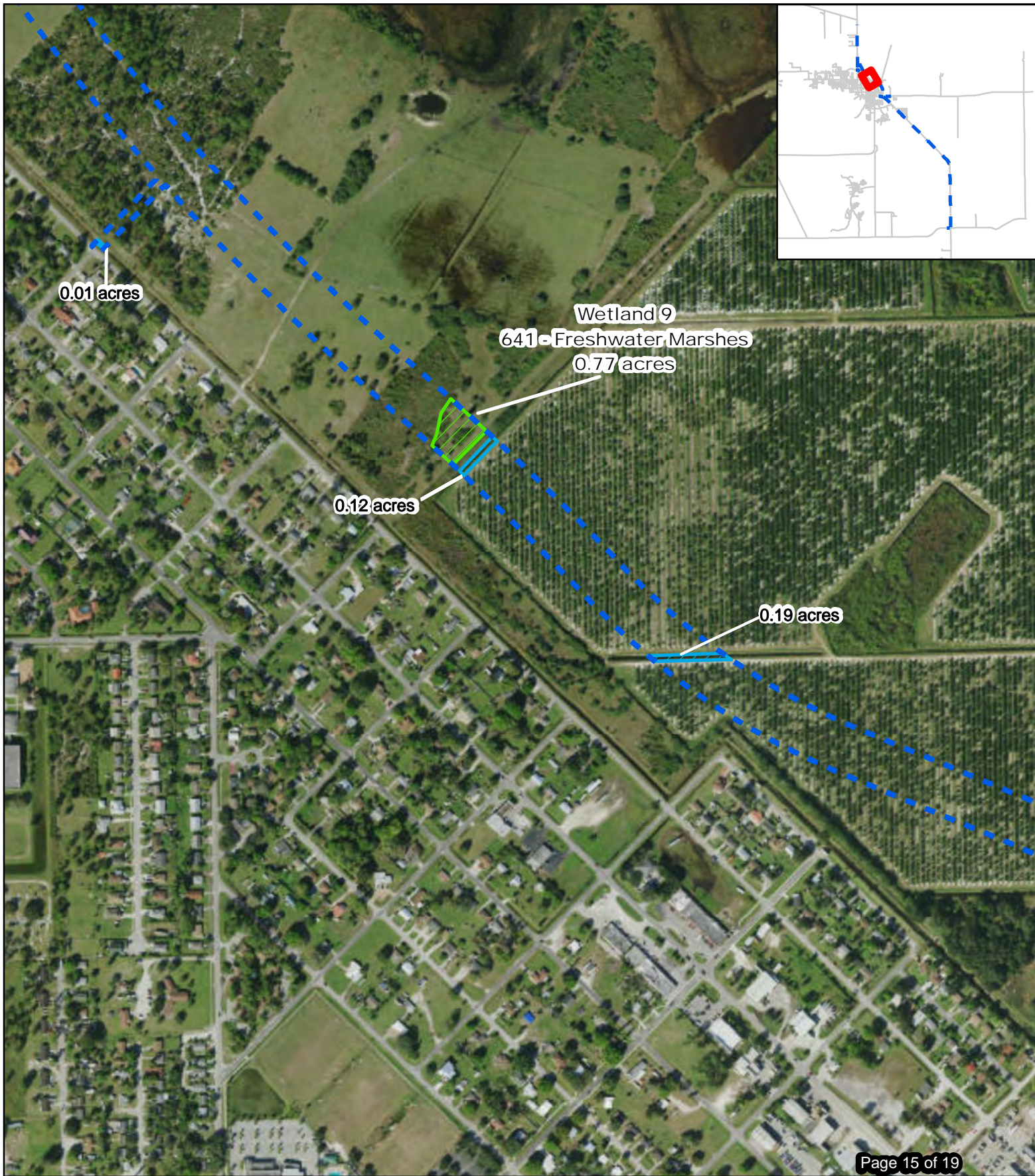
Legend

-  Central Alternative #2
-  600 Wetlands
-  500 Other Surface Waters

**Wetlands and Other Surface Waters
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #2**

Date: 6/1/2018





MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

Legend

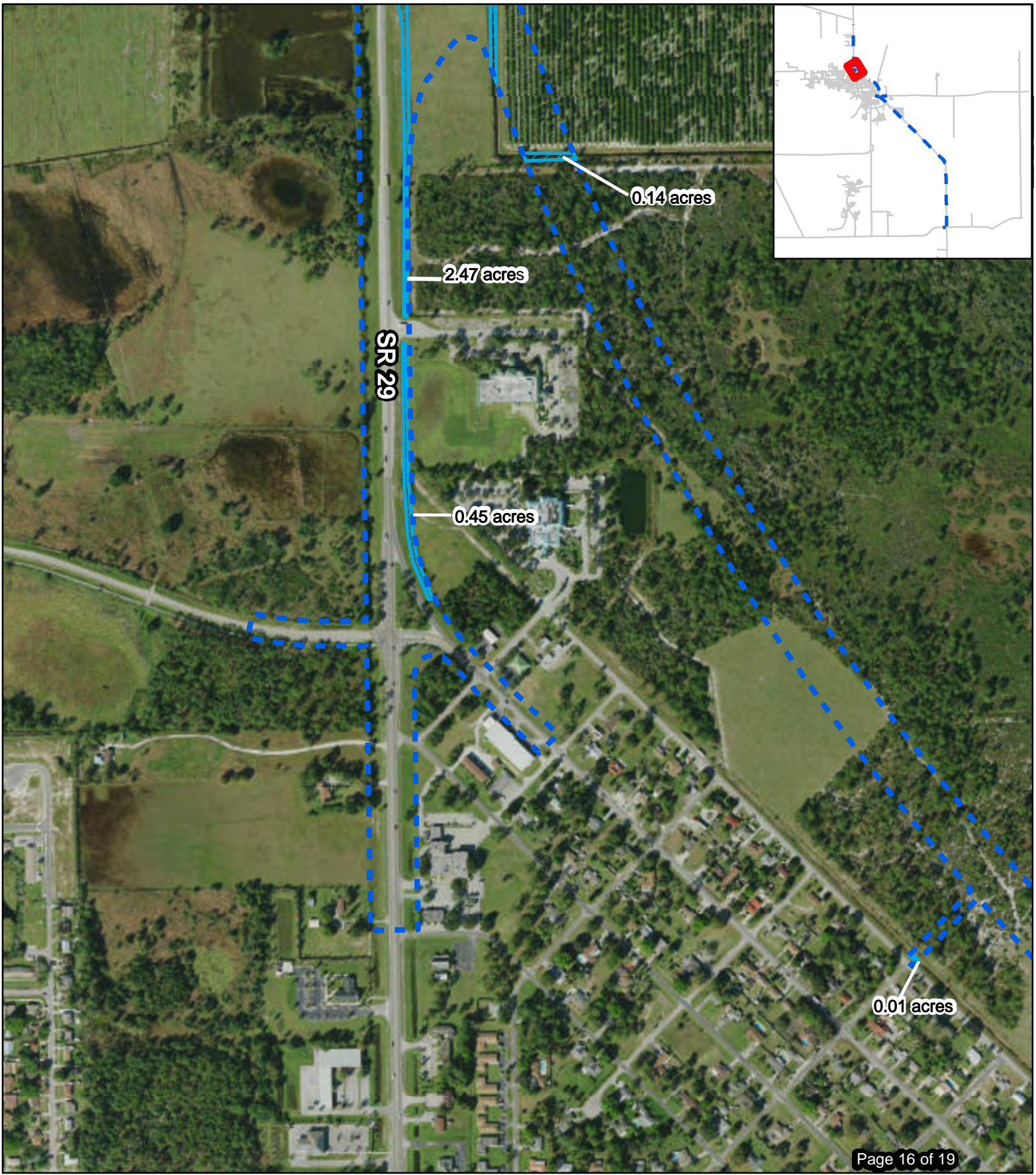
- Central Alternative #2
- 600 Wetlands
- 500 Other Surface Waters

Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/1/2018




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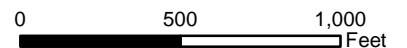
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 DATA SOURCE : AECOM 2018

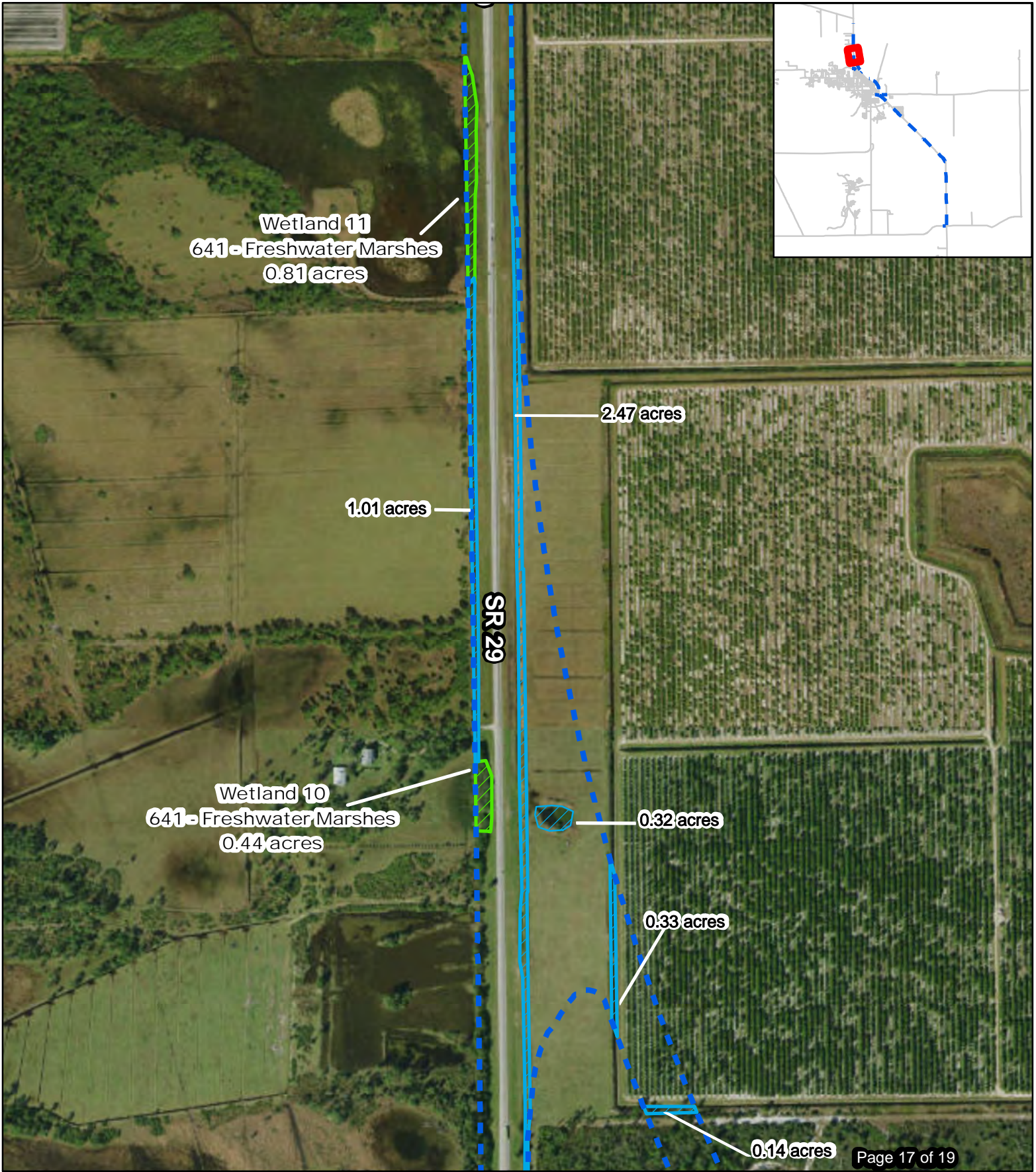
Legend

-  Central Alternative #2
-  600 Wetlands
-  500 Other Surface Waters

**Wetlands and Other Surface Waters
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #2**




Date: 6/1/2018





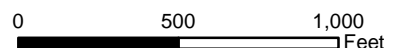
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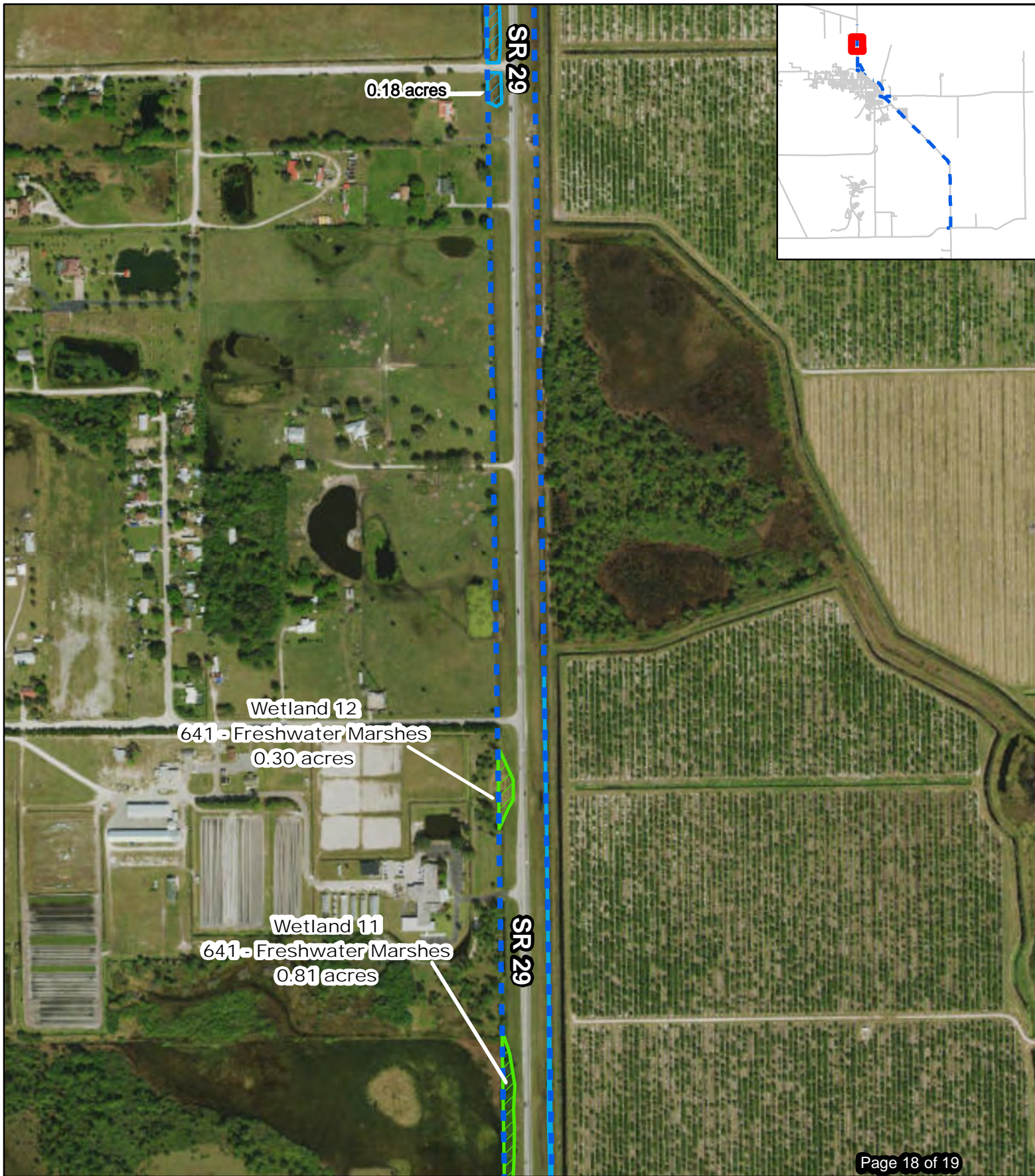
Legend

-  Central Alternative #2
-  600 Wetlands
-  500 Other Surface Waters

**Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2**

Date: 6/1/2018





MAP SOURCE : ESRI
DATA SOURCE : AECOM 2018

Legend

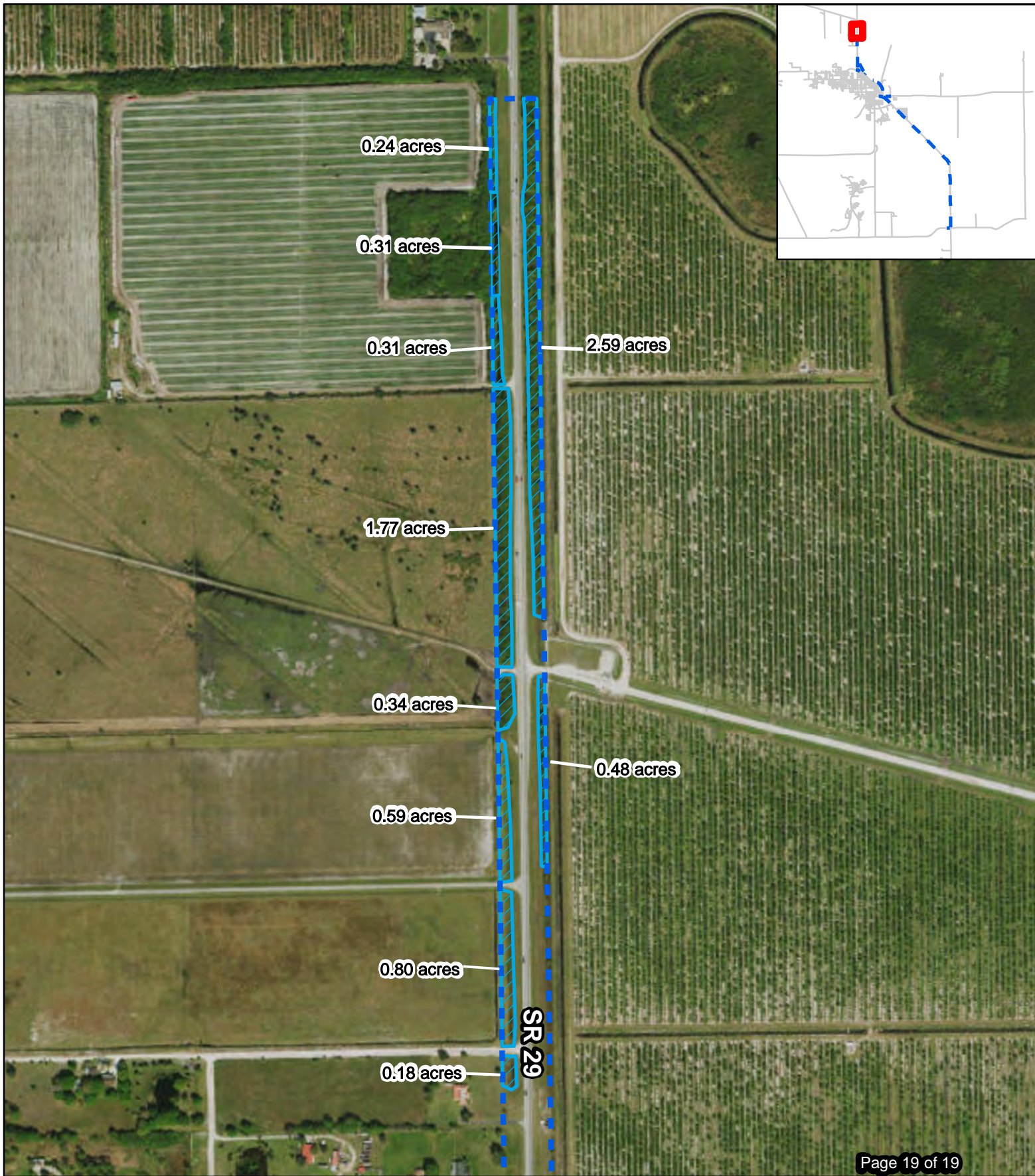
- Central Alternative #2
- 600 Wetlands
- 500 Other Surface Waters

Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/1/2018

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MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

Legend

- Central Alternative #2
- 600 Wetlands
- 500 Other Surface Waters

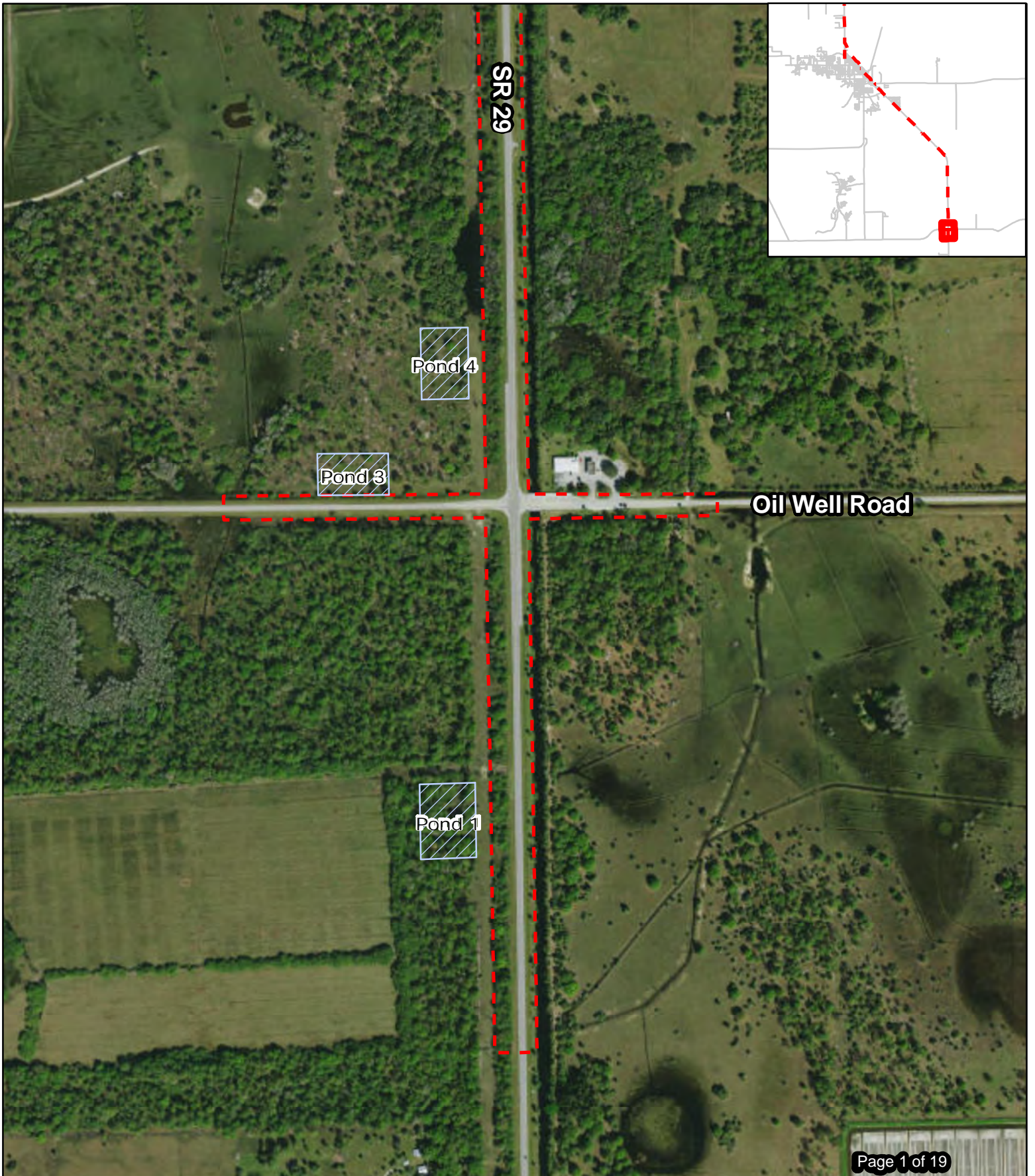
Wetlands and Other Surface Waters
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/1/2018

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 Feet




APPENDIX K-1

Pond and Floodplain Compensation Site Maps



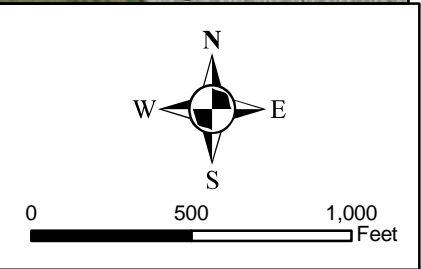
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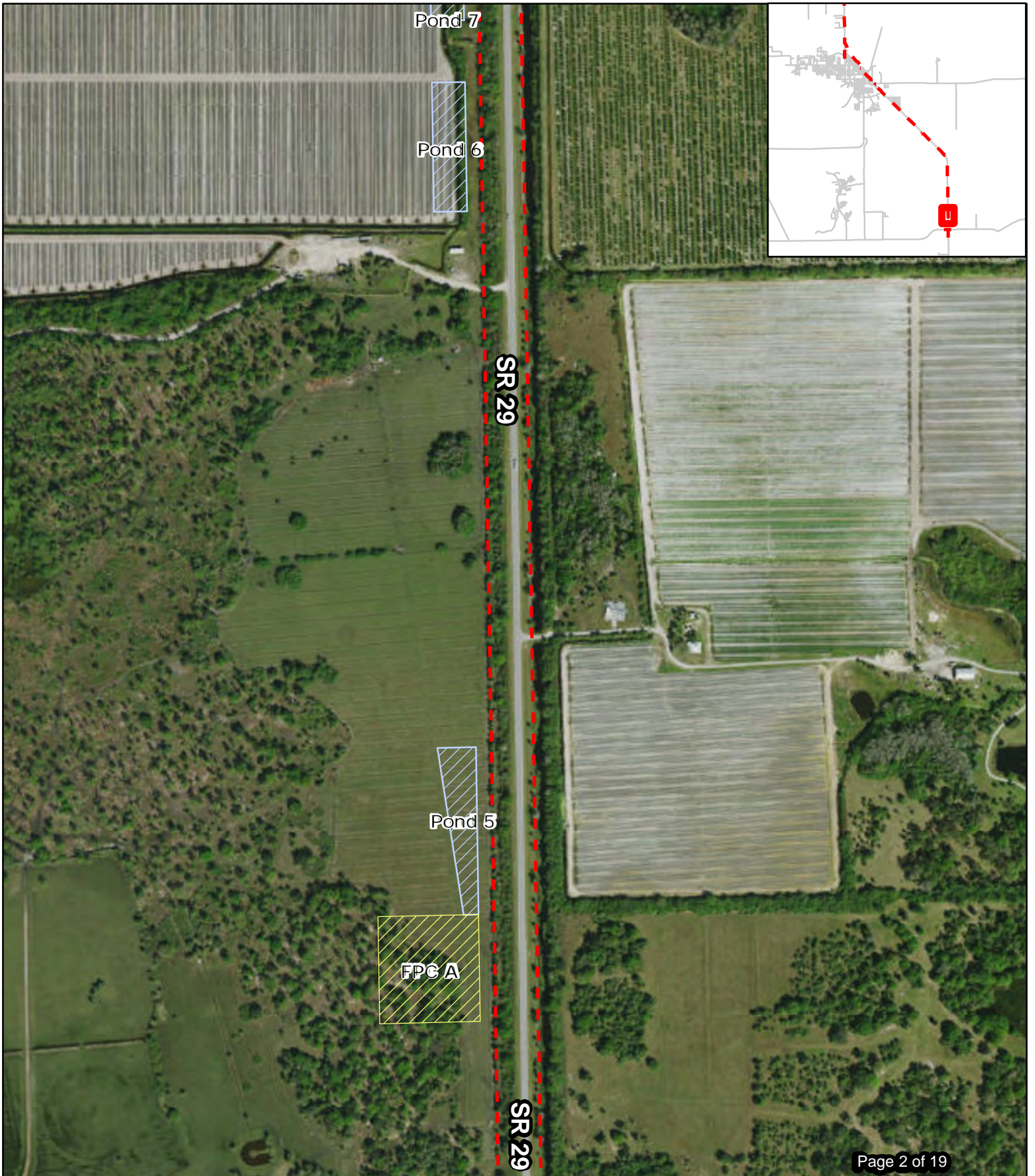
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-  Central Alternative #1 Revised
-  Floodplain Compensation Sites
-  Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/5/2018






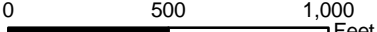
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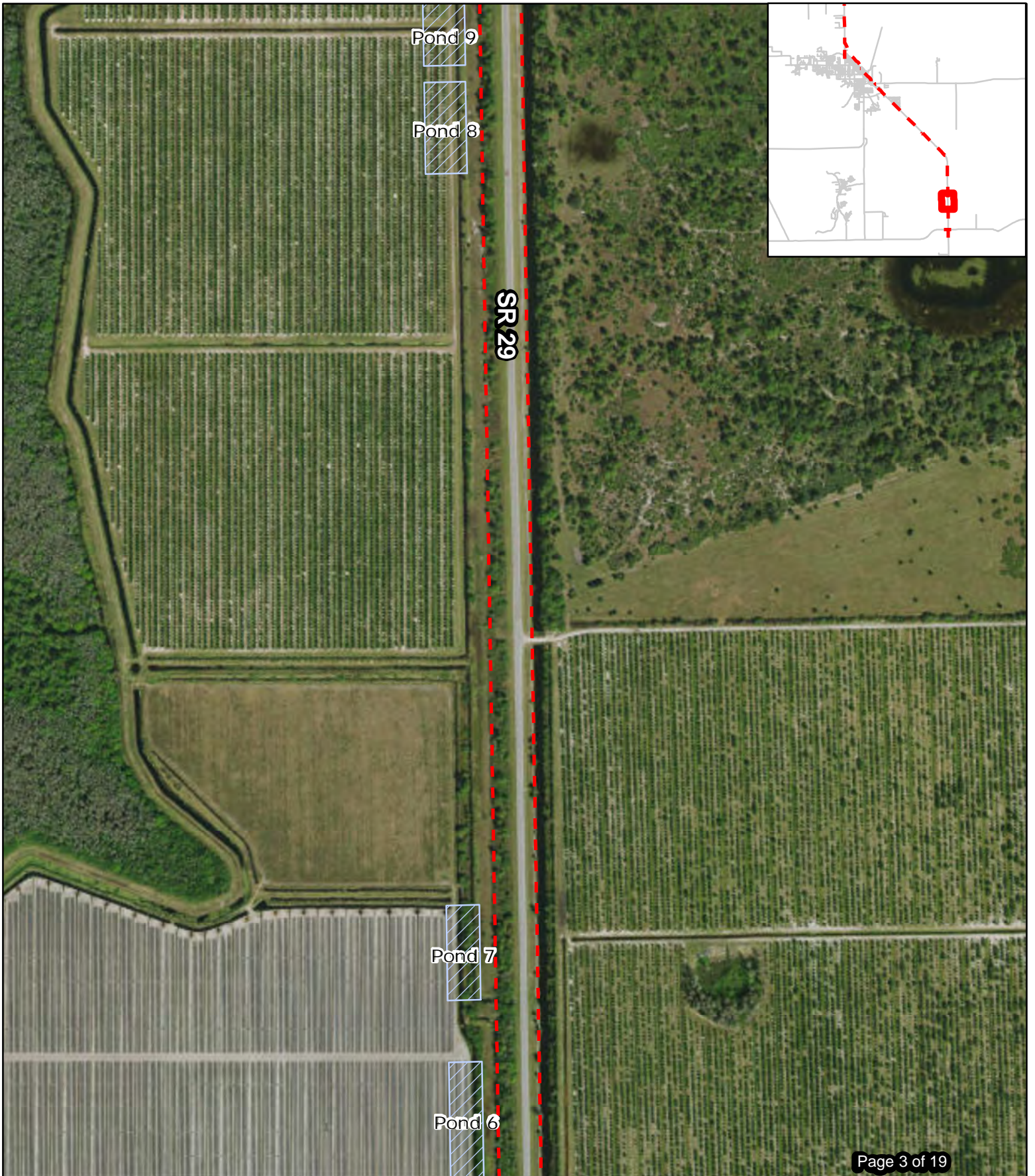
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-  Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/5/2018


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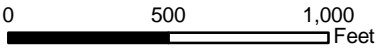
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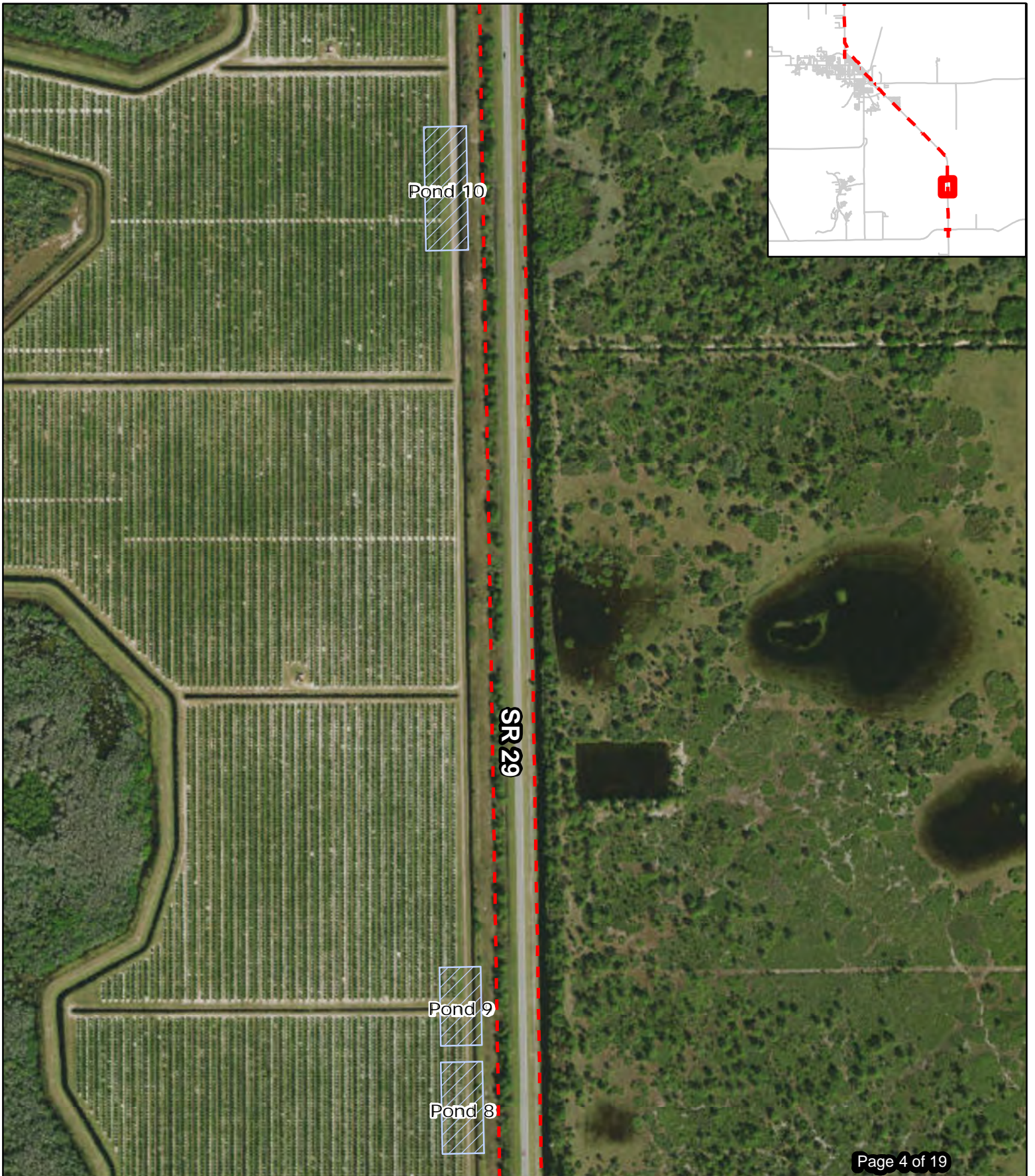
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Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

Date: 6/5/2018



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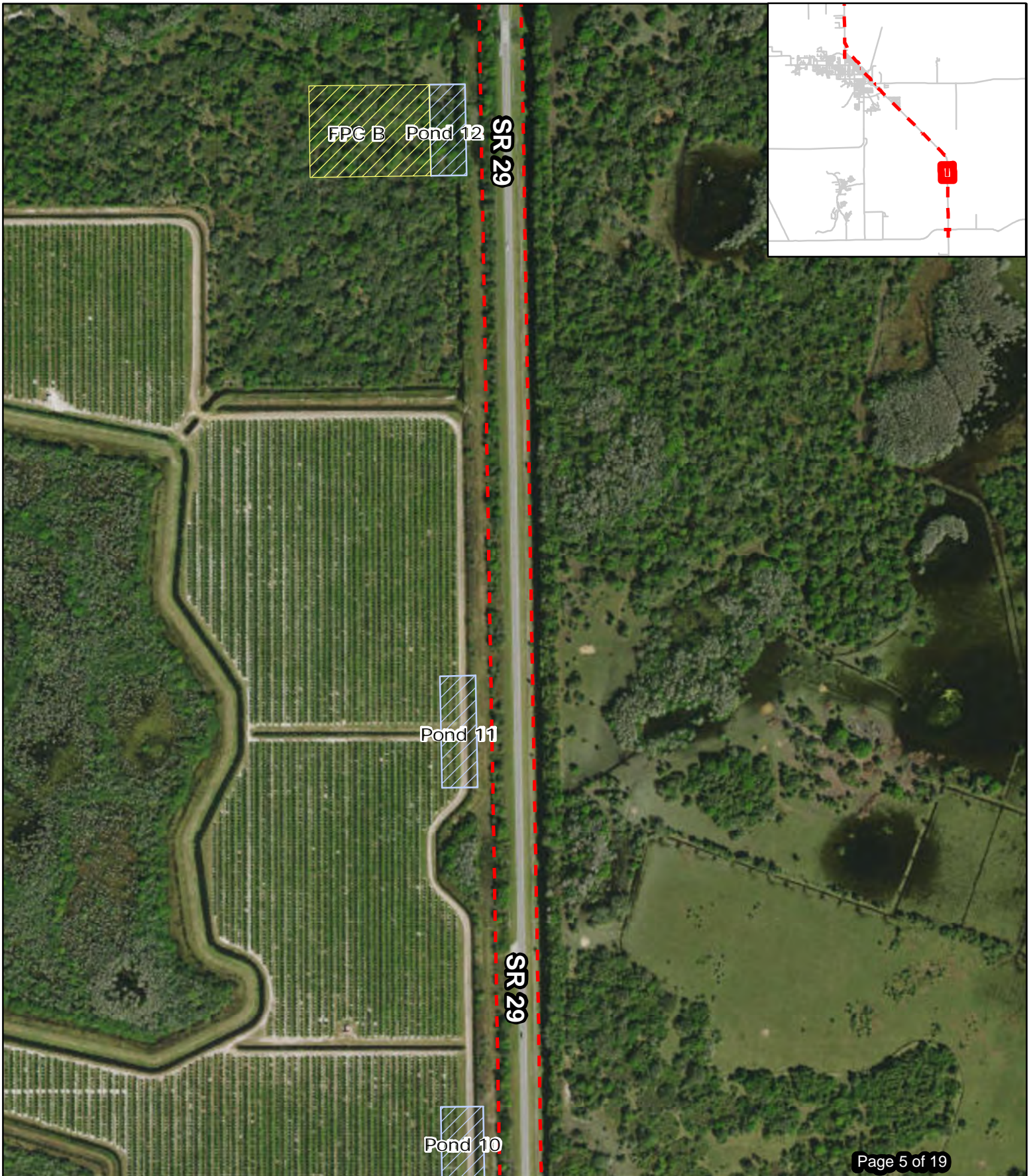
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- Floodplain Compensation Sites
- Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

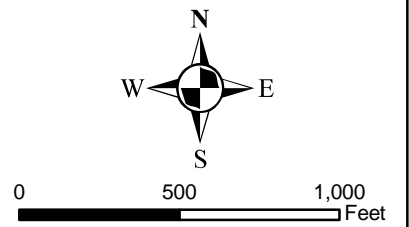
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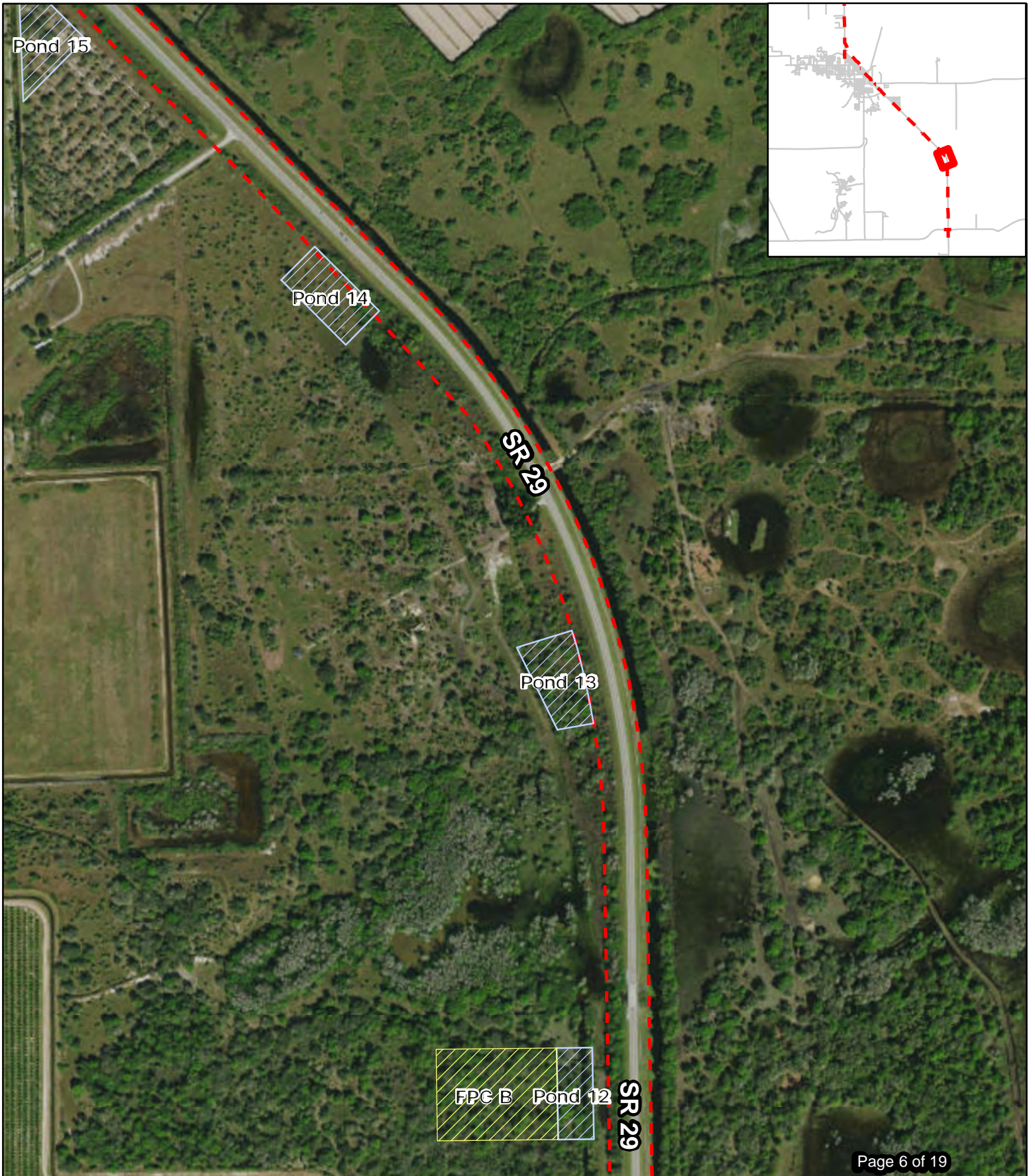
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Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised






- Legend**
-  Central Alternative #1 Revised
 -  Floodplain Compensation Sites
 -  Pond Sites

Date: 6/5/2018

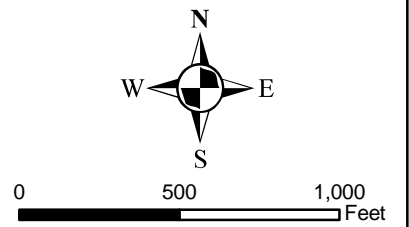


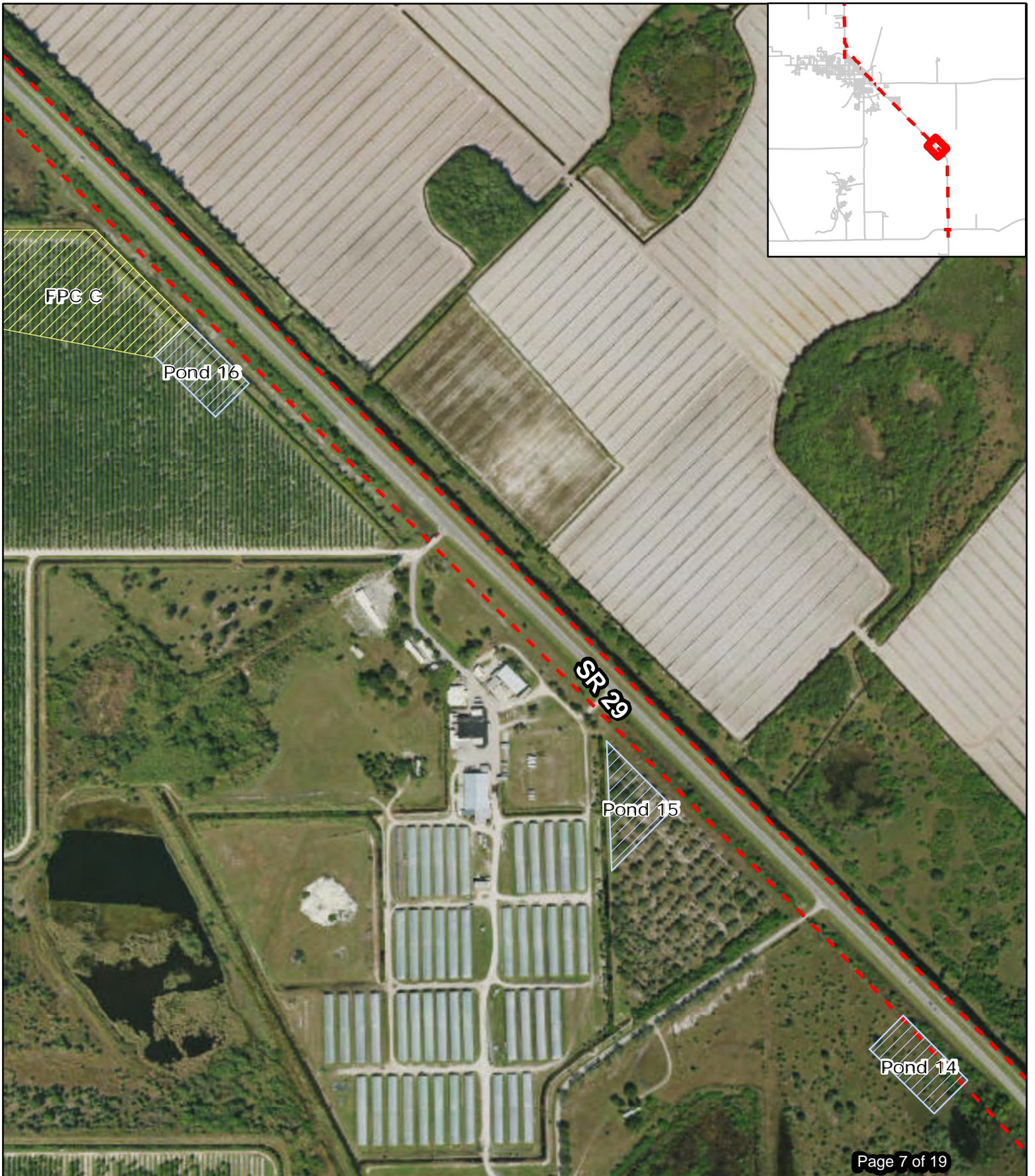
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Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




- Legend**
-  Central Alternative #1 Revised
 -  Floodplain Compensation Sites
 -  Pond Sites

Date: 6/5/2018



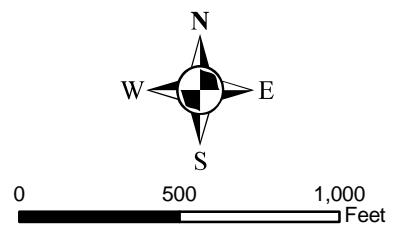


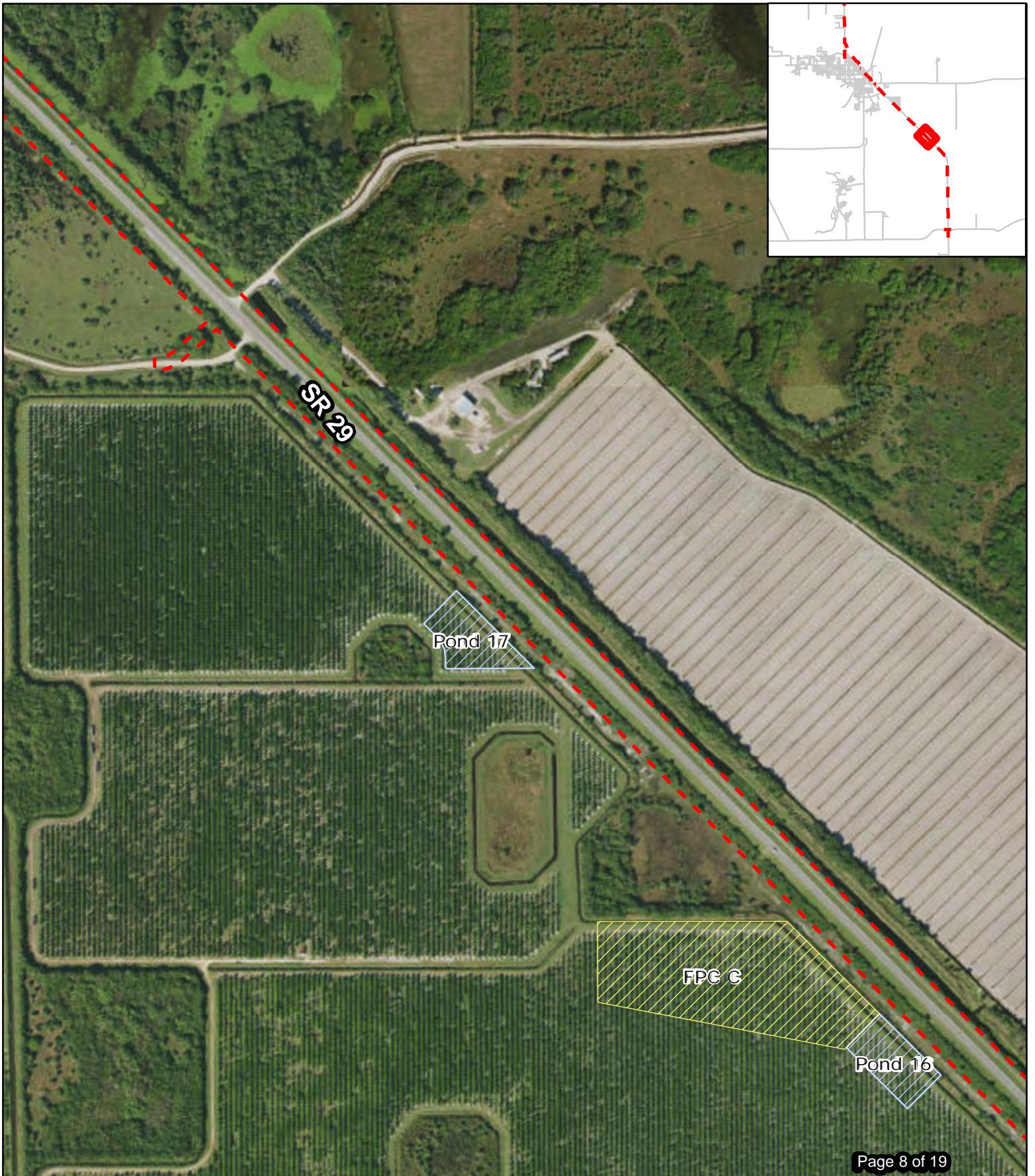
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- Legend**
-  Central Alternative #1 Revised
 -  Floodplain Compensation Sites
 -  Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/5/2018






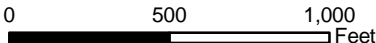
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-  Floodplain Compensation Sites
-  Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

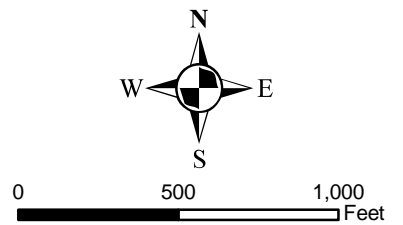
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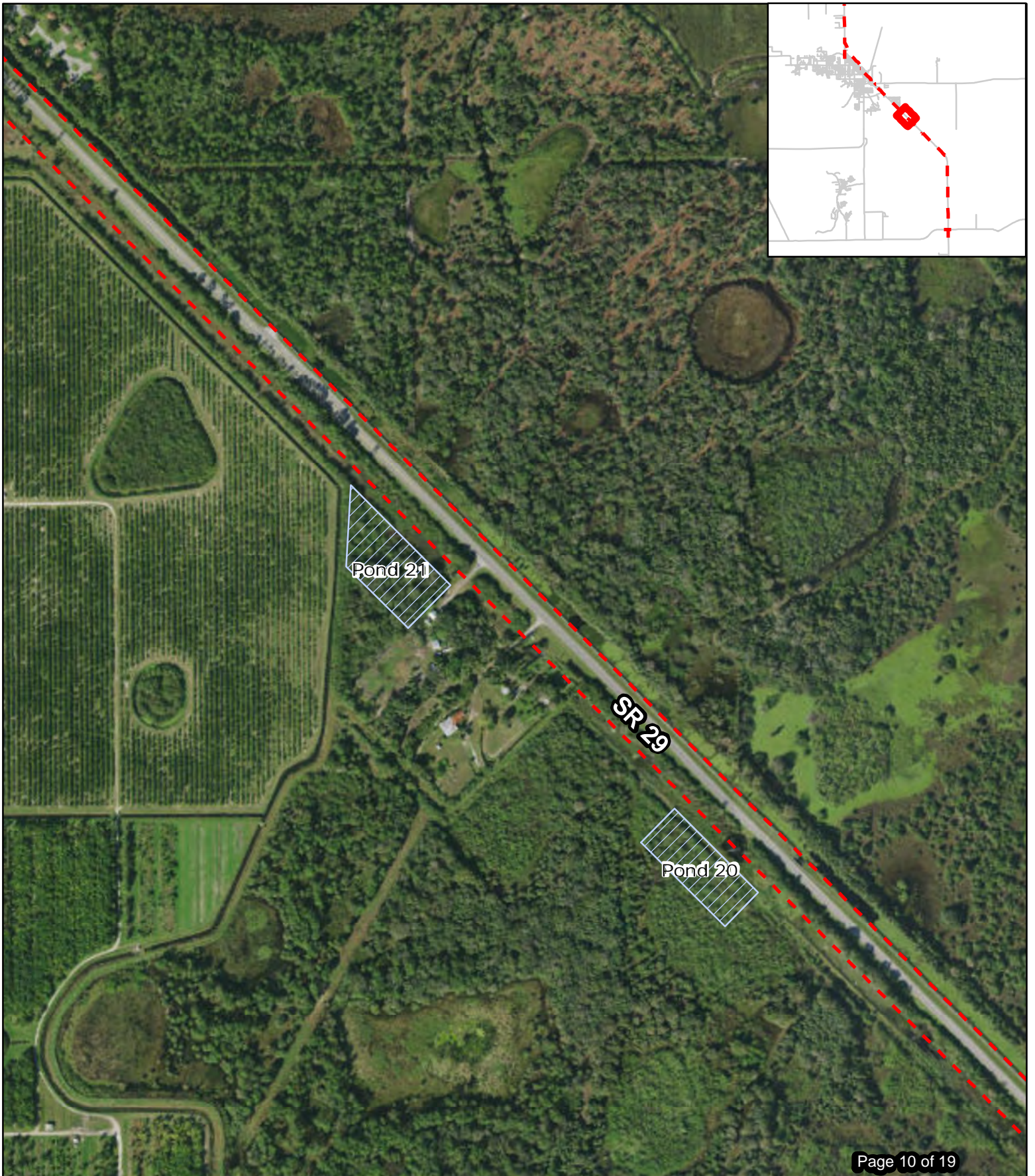
Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised



Legend




-  Central Alternative #1 Revised
-  Floodplain Compensation Sites
-  Pond Sites

Date: 6/5/2018



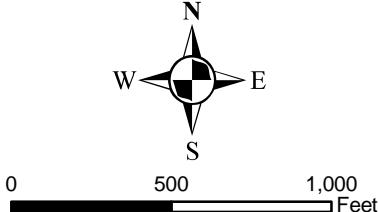
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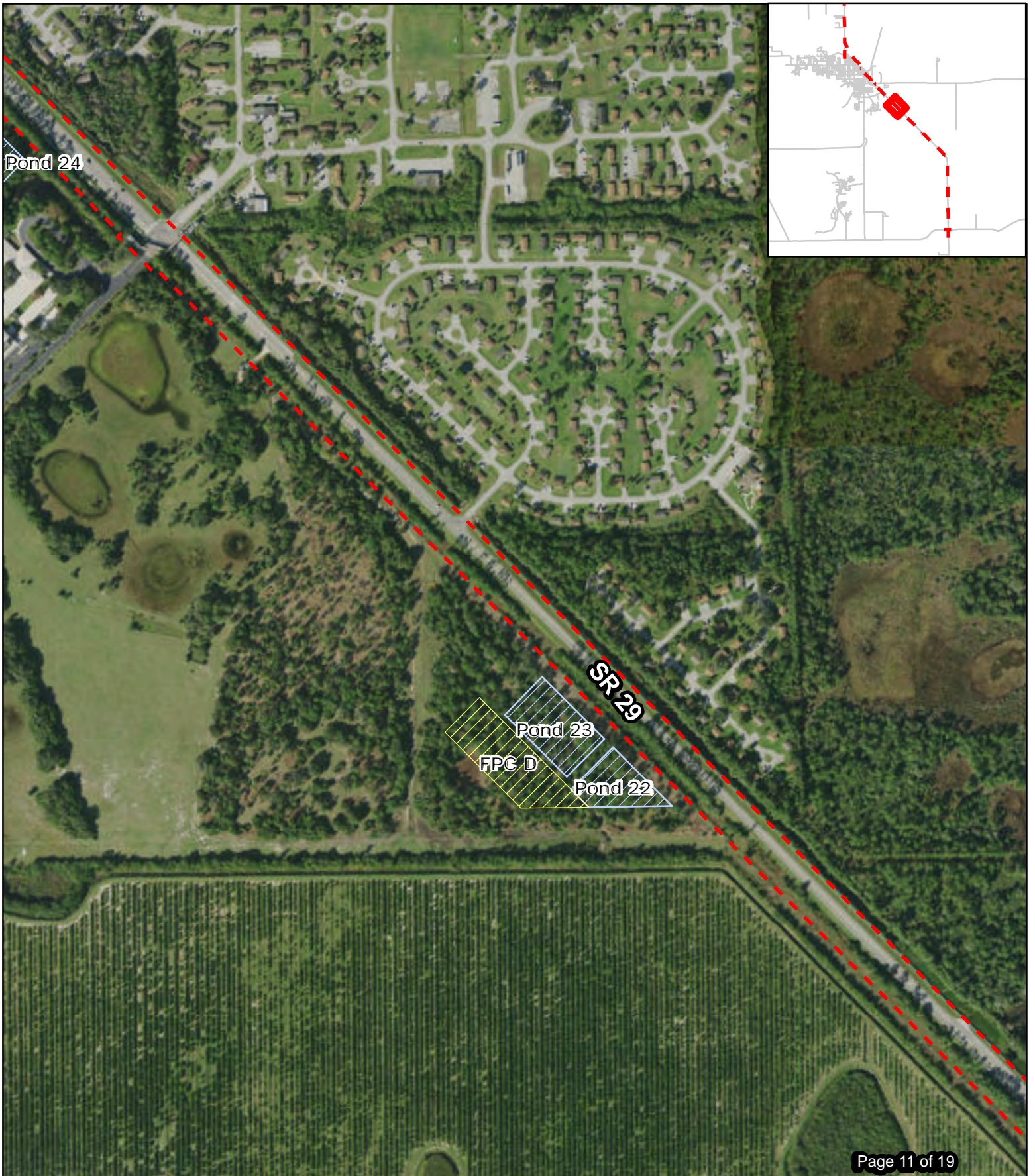
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-  Floodplain Compensation Sites
-  Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

Date: 6/5/2018






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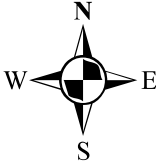
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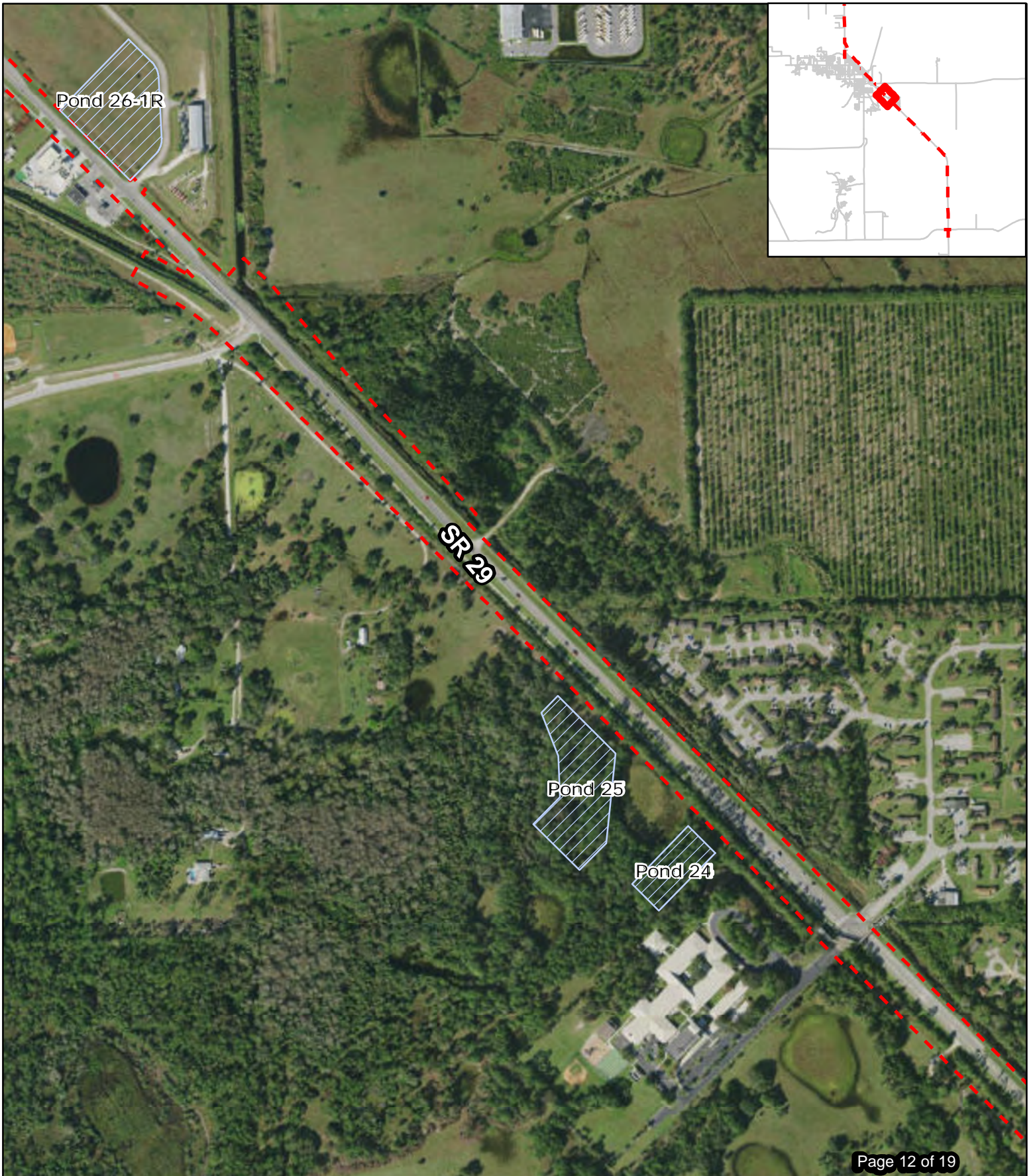
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-  Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/5/2018


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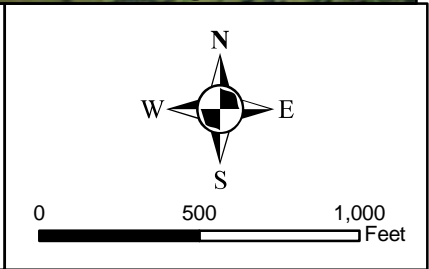
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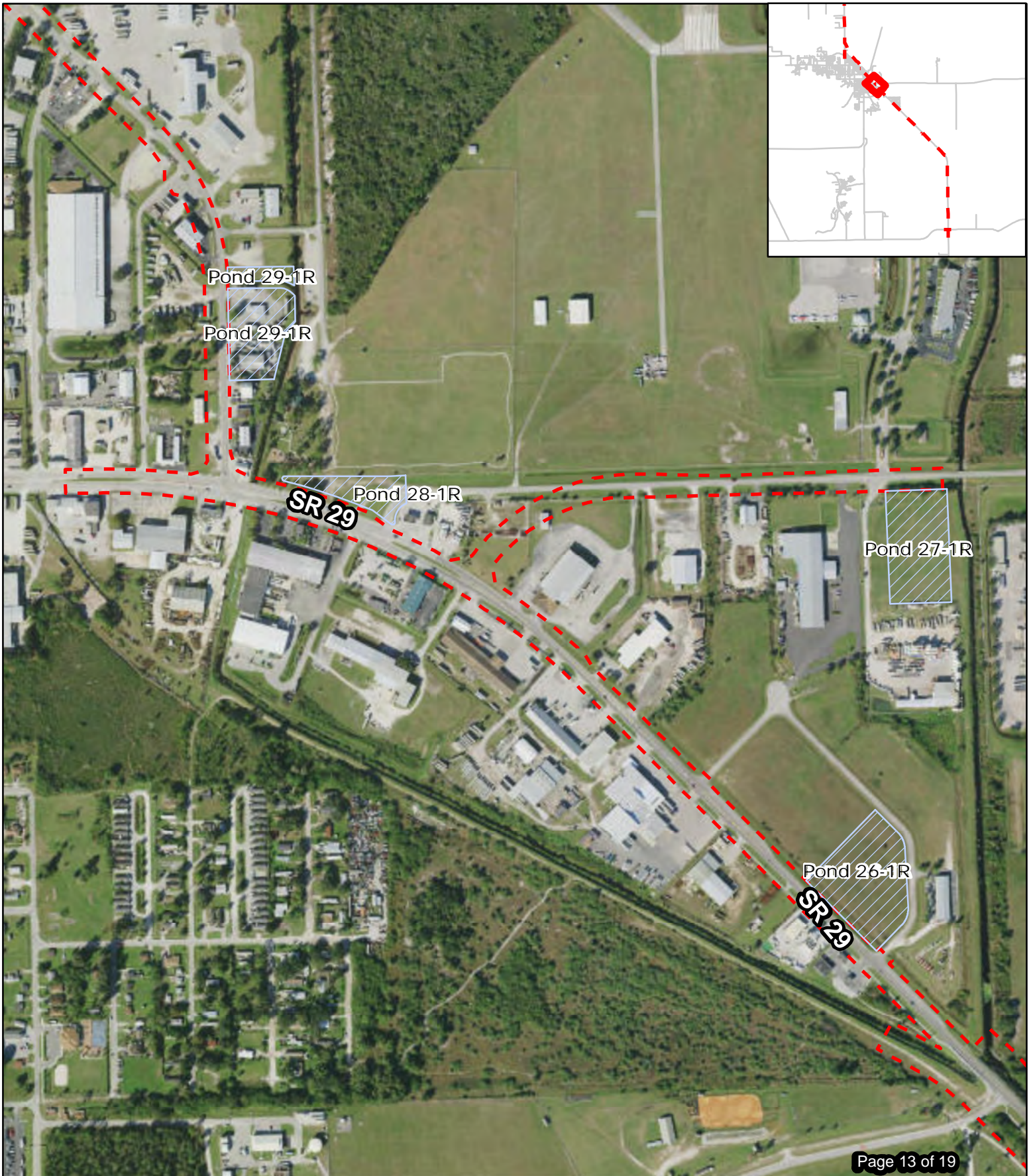
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-  Floodplain Compensation Sites
-  Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/5/2018



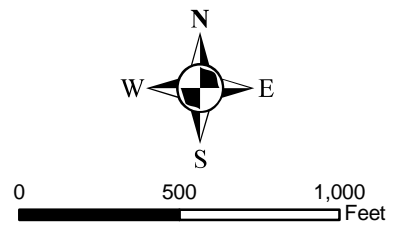


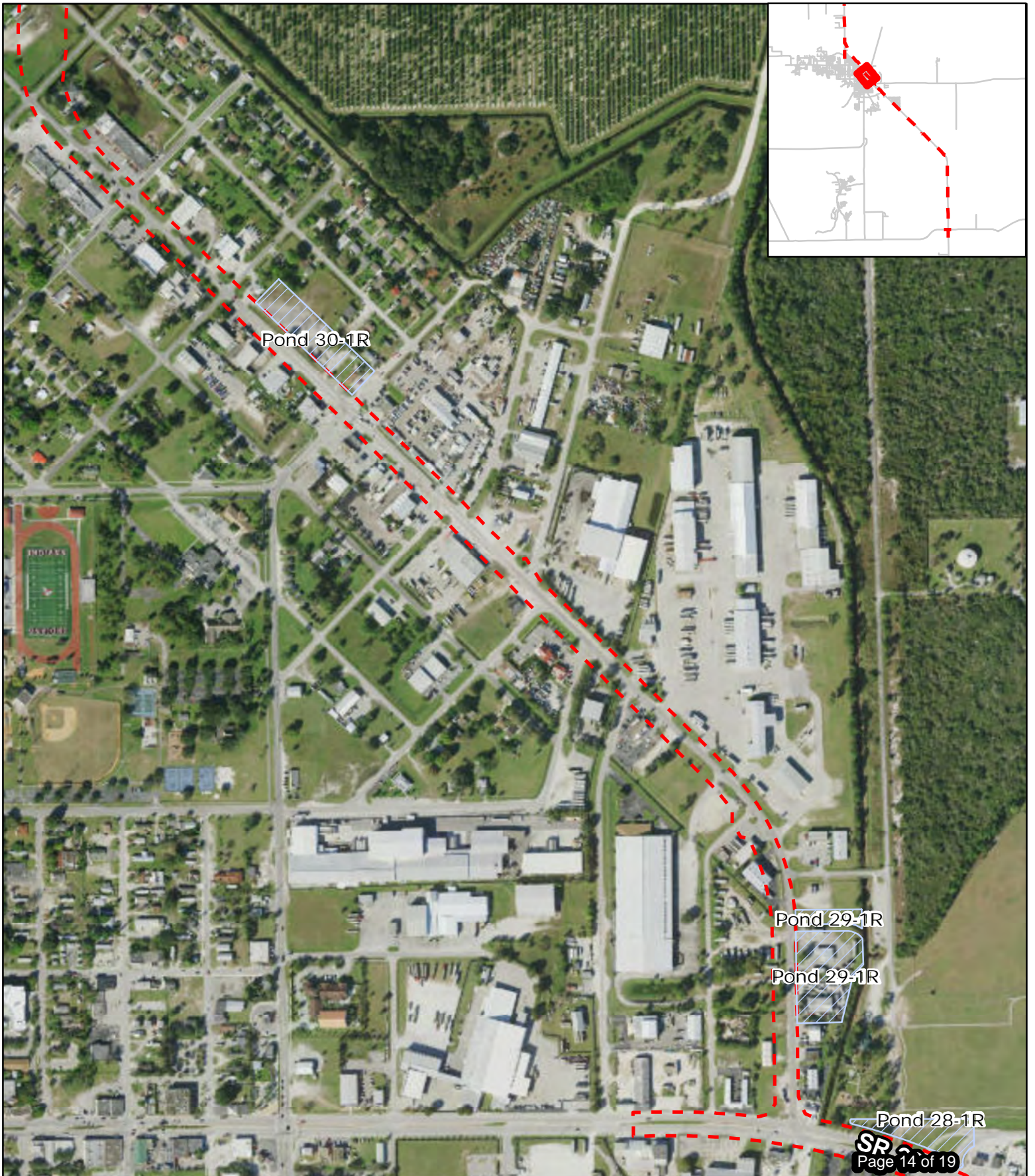
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**Pond and Floodplain Compensation Sites
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**




- Legend**
-  Central Alternative #1 Revised
 -  Floodplain Compensation Sites
 -  Pond Sites

Date: 6/5/2018



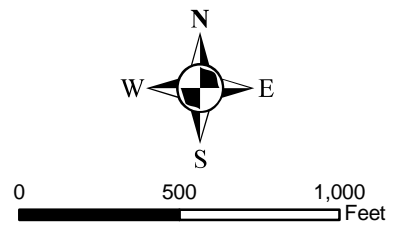


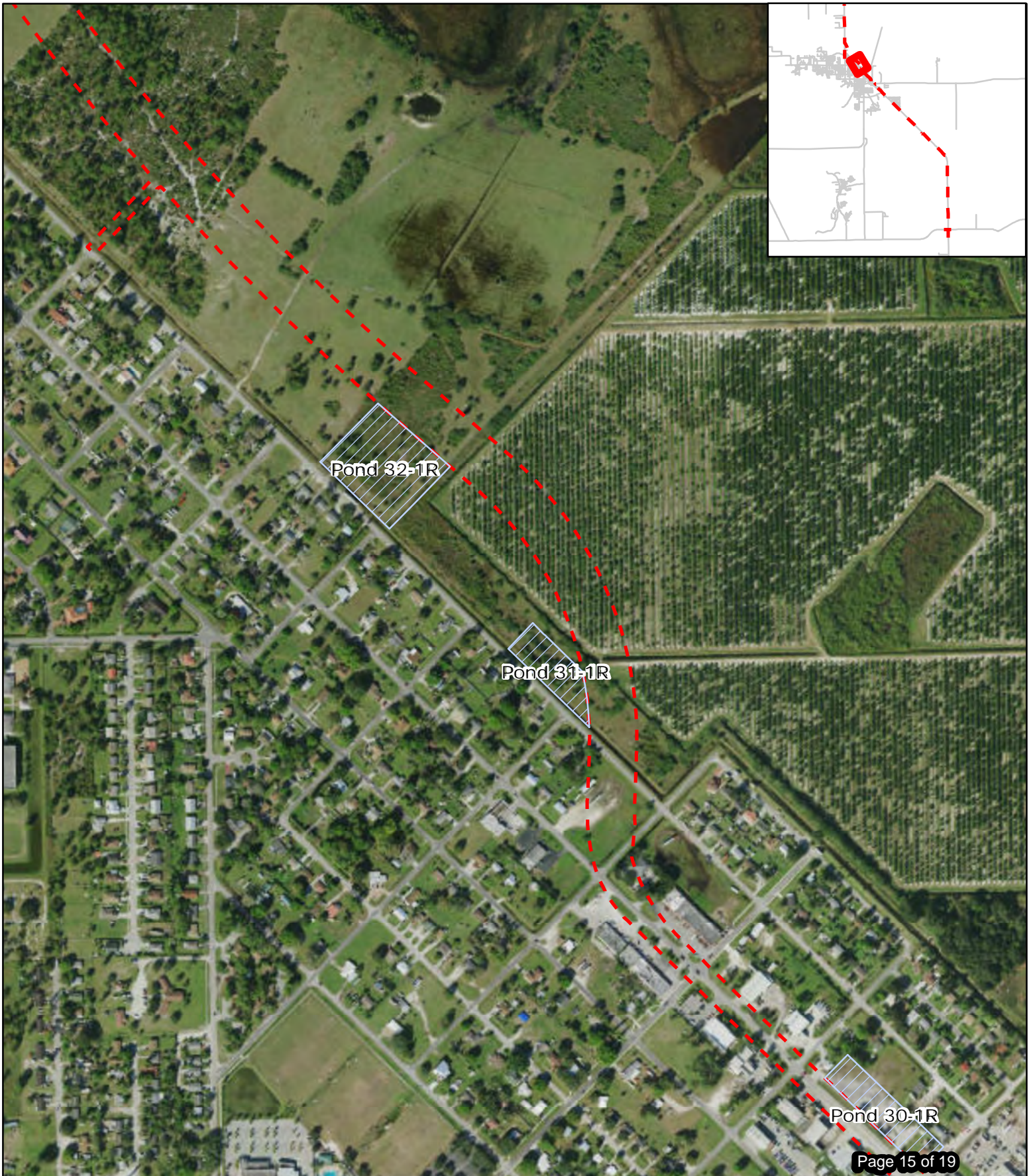
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- Legend**
-  Central Alternative #1 Revised
 -  Floodplain Compensation Sites
 -  Pond Sites




Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

Date: 6/5/2018



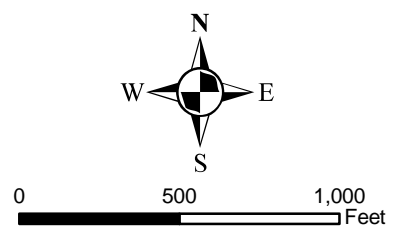


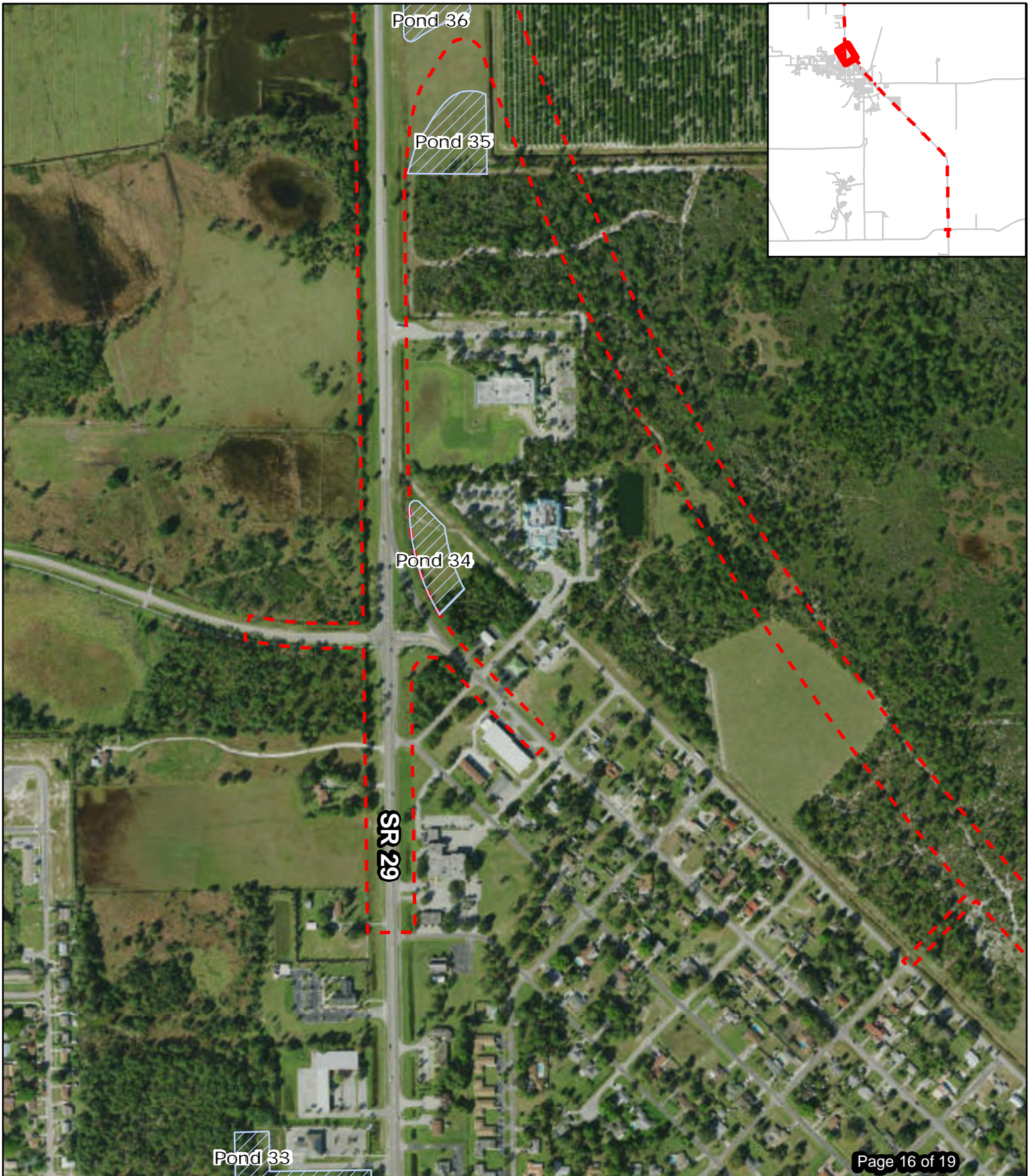
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- Legend**
-  Central Alternative #1 Revised
 -  Floodplain Compensation Sites
 -  Pond Sites

**Pond and Floodplain Compensation Sites
 SR 29 from Oil Well Road to SR 82
 PD&E Study
 Central Alternative #1 Revised**

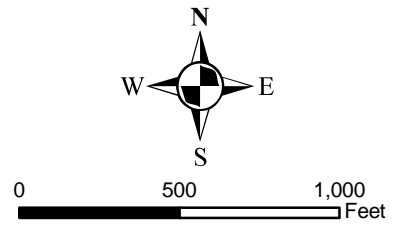
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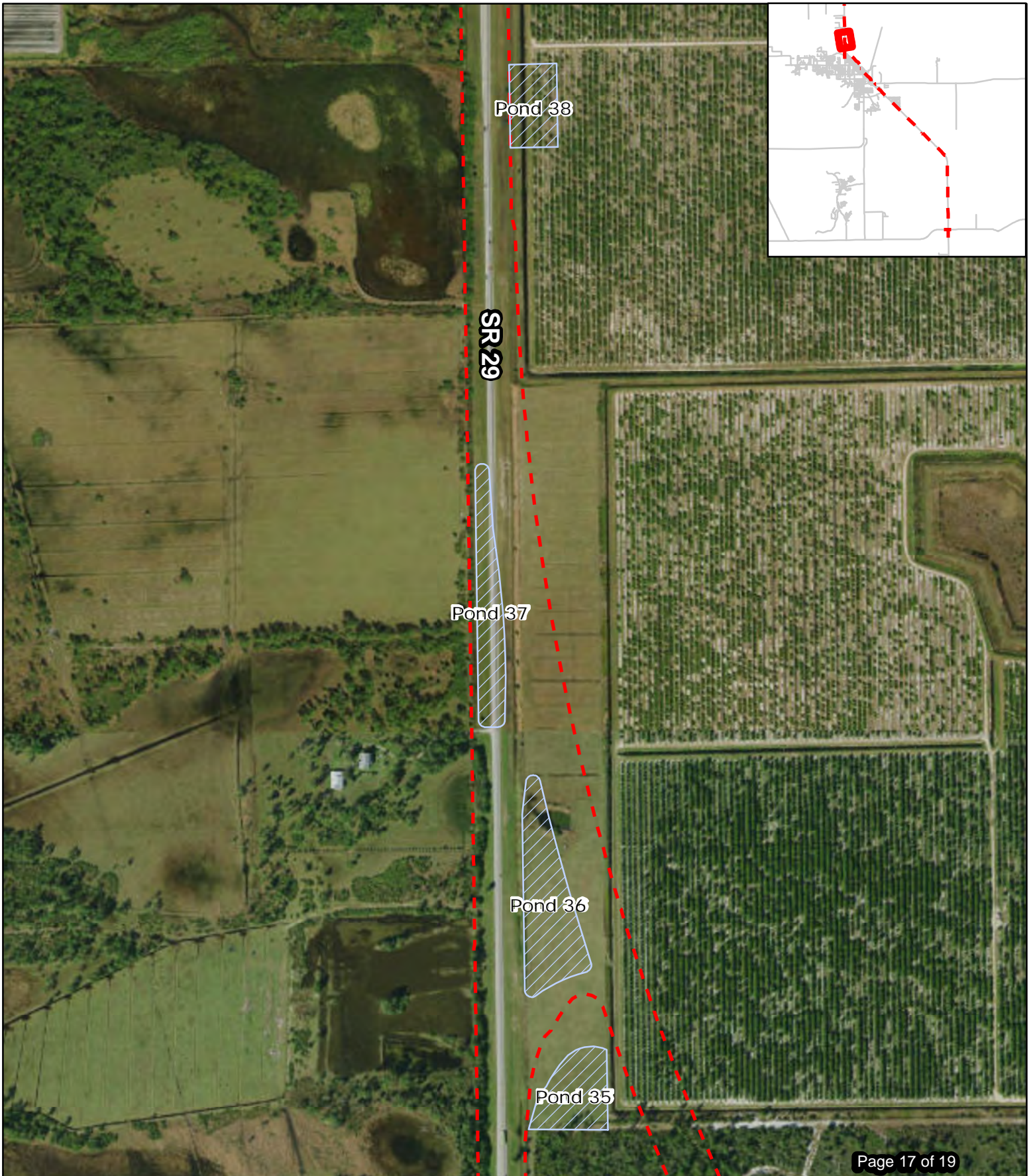
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Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised






- Legend**
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 -  Floodplain Compensation Sites
 -  Pond Sites

Date: 6/5/2018



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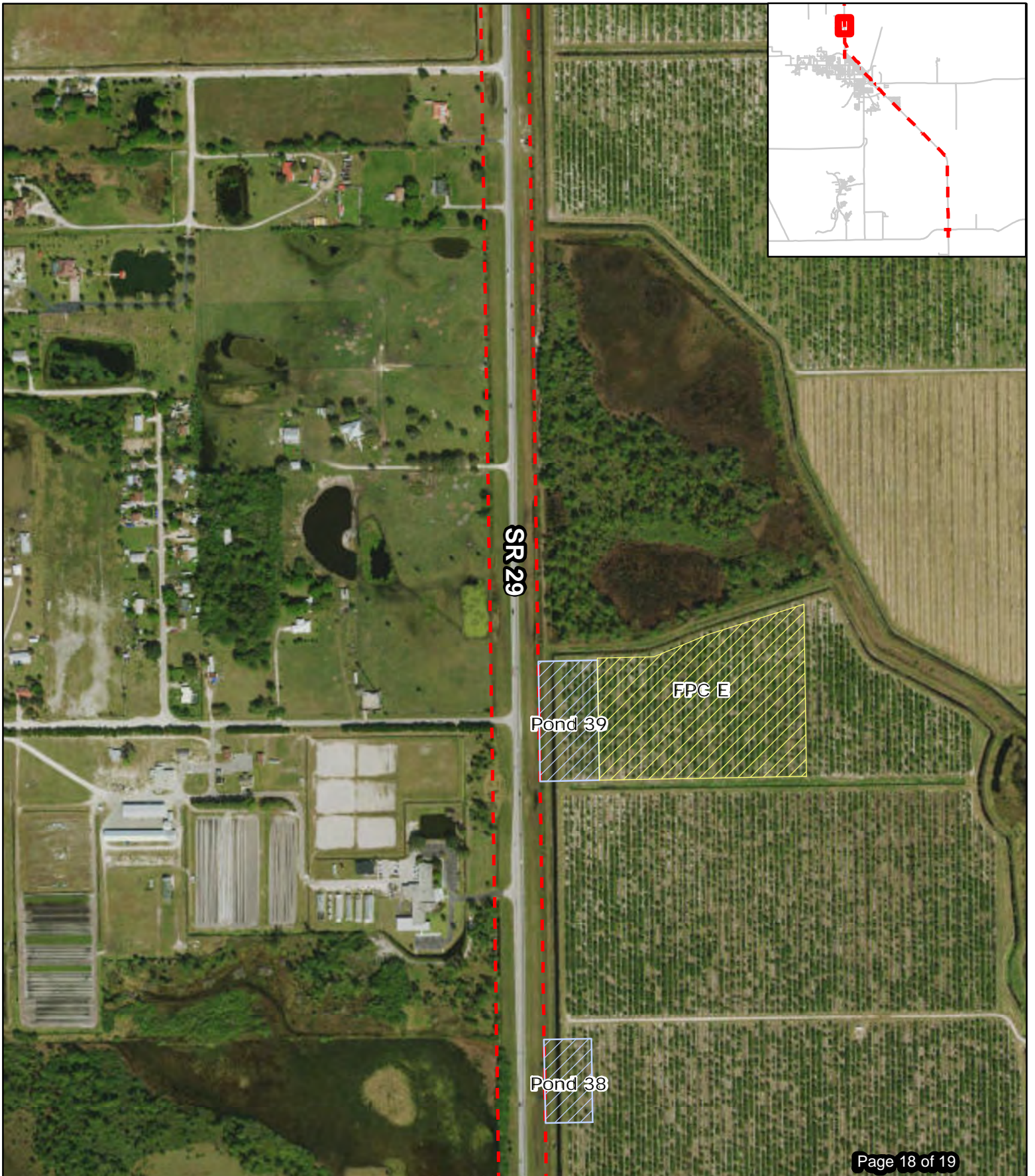
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-  Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised




Date: 6/5/2018


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MAP SOURCE : ESRI
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Legend

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	Floodplain Compensation Sites
	Pond Sites




Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised
 Date: 6/5/2018





MAP SOURCE : ESRI
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Legend

-  Central Alternative #1 Revised
-  Floodplain Compensation Sites
-  Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #1 Revised

Date: 6/5/2018








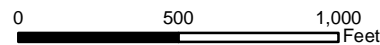
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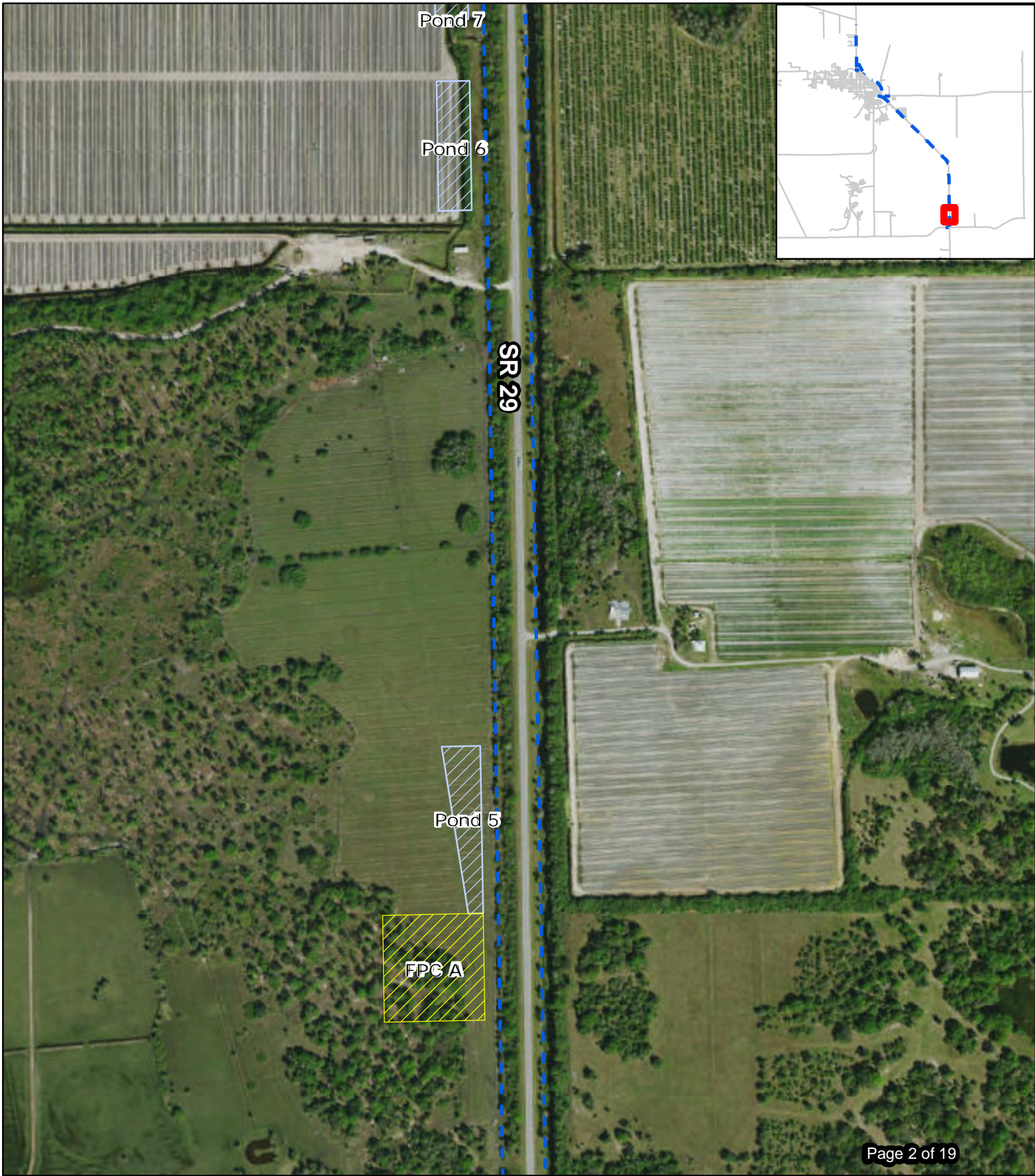
Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/5/2018

Legend




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-  Floodplain Compensation Sites
-  Pond Sites






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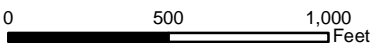
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-  Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/5/2018





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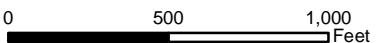
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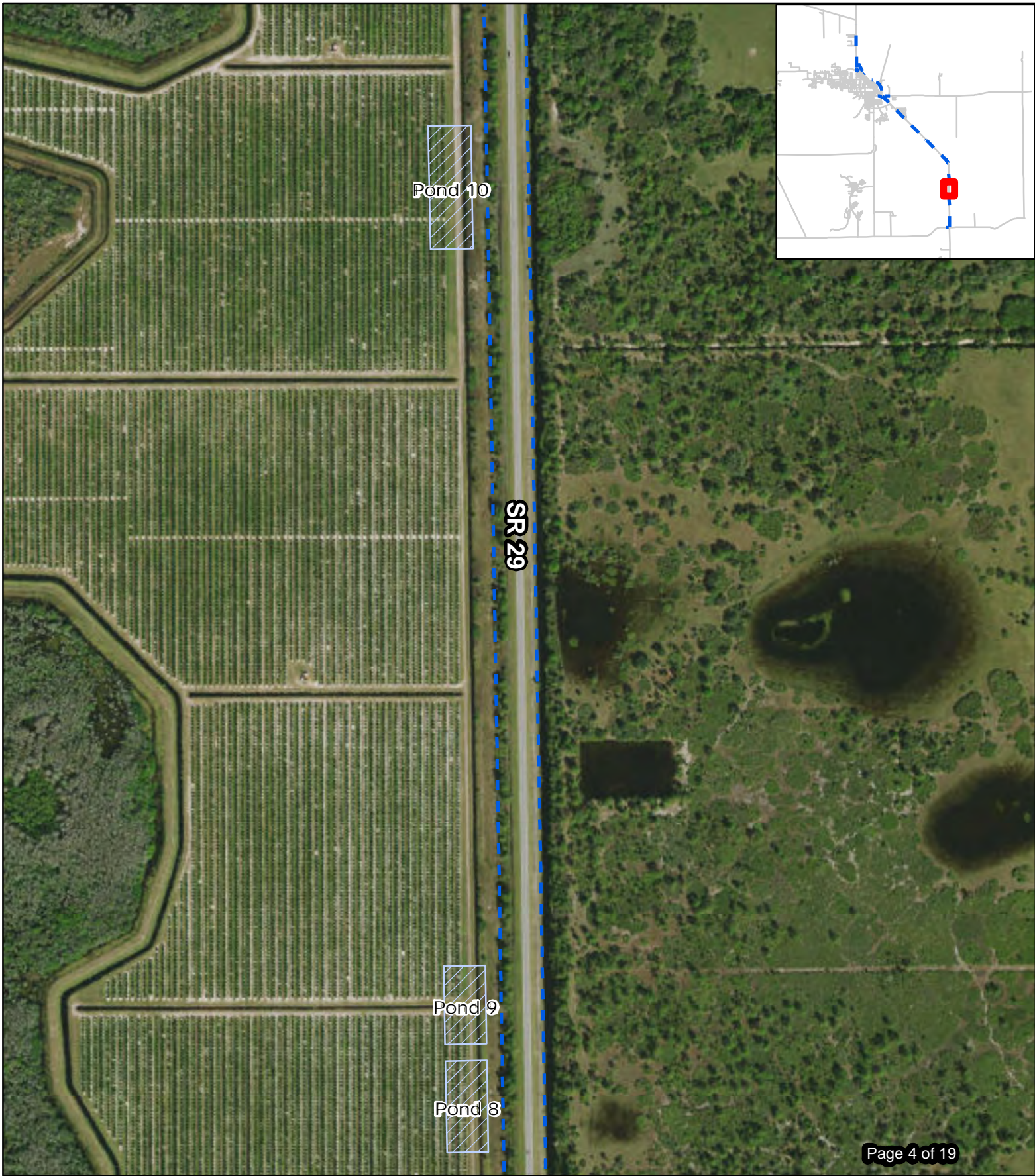
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-  Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2




Date: 6/5/2018




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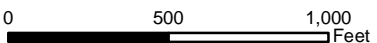
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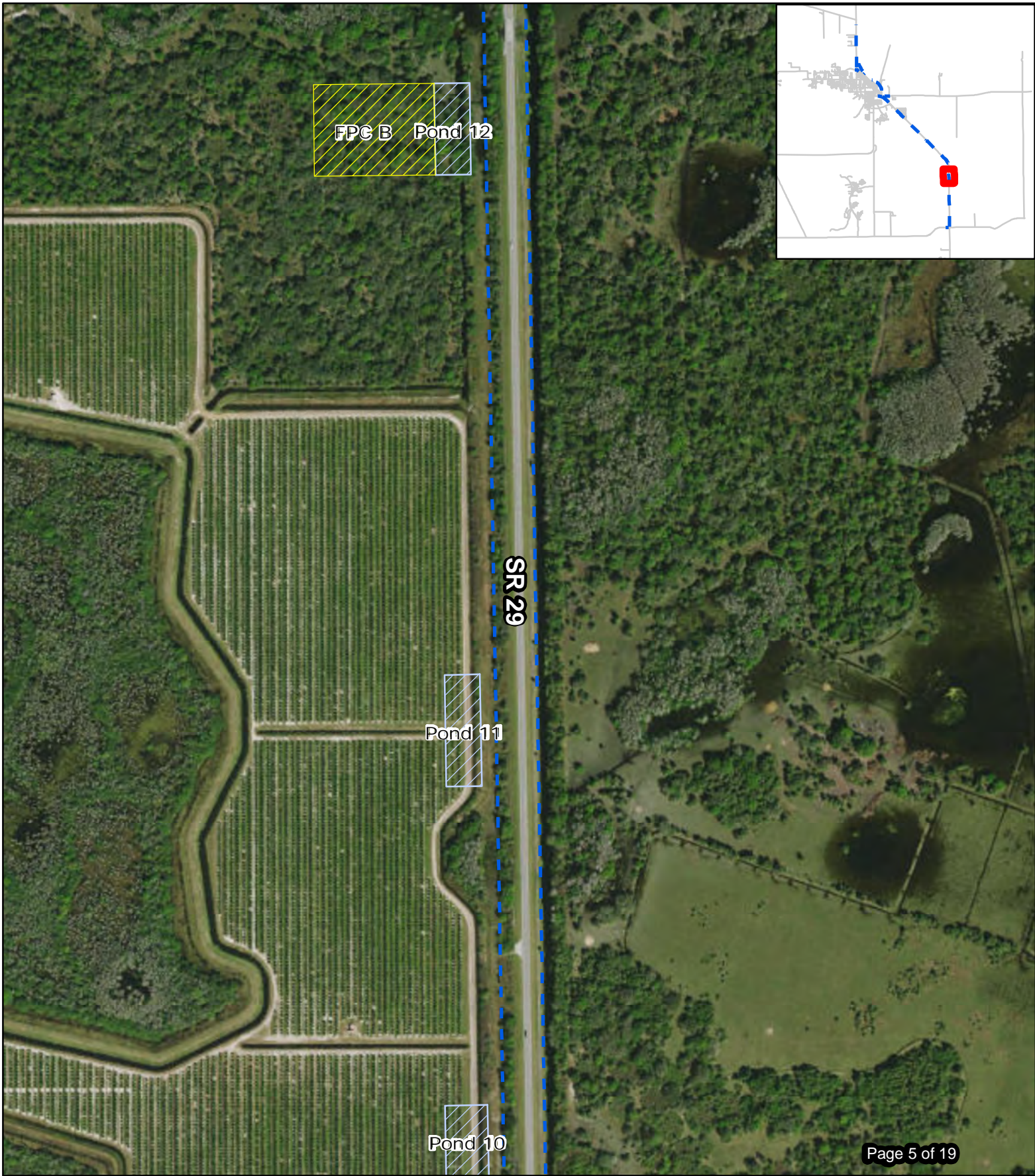
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SR 29 from Oil Well Road to SR 82
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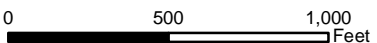
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-  Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2




Date: 6/5/2018




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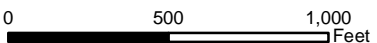
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Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

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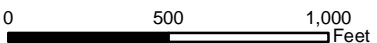
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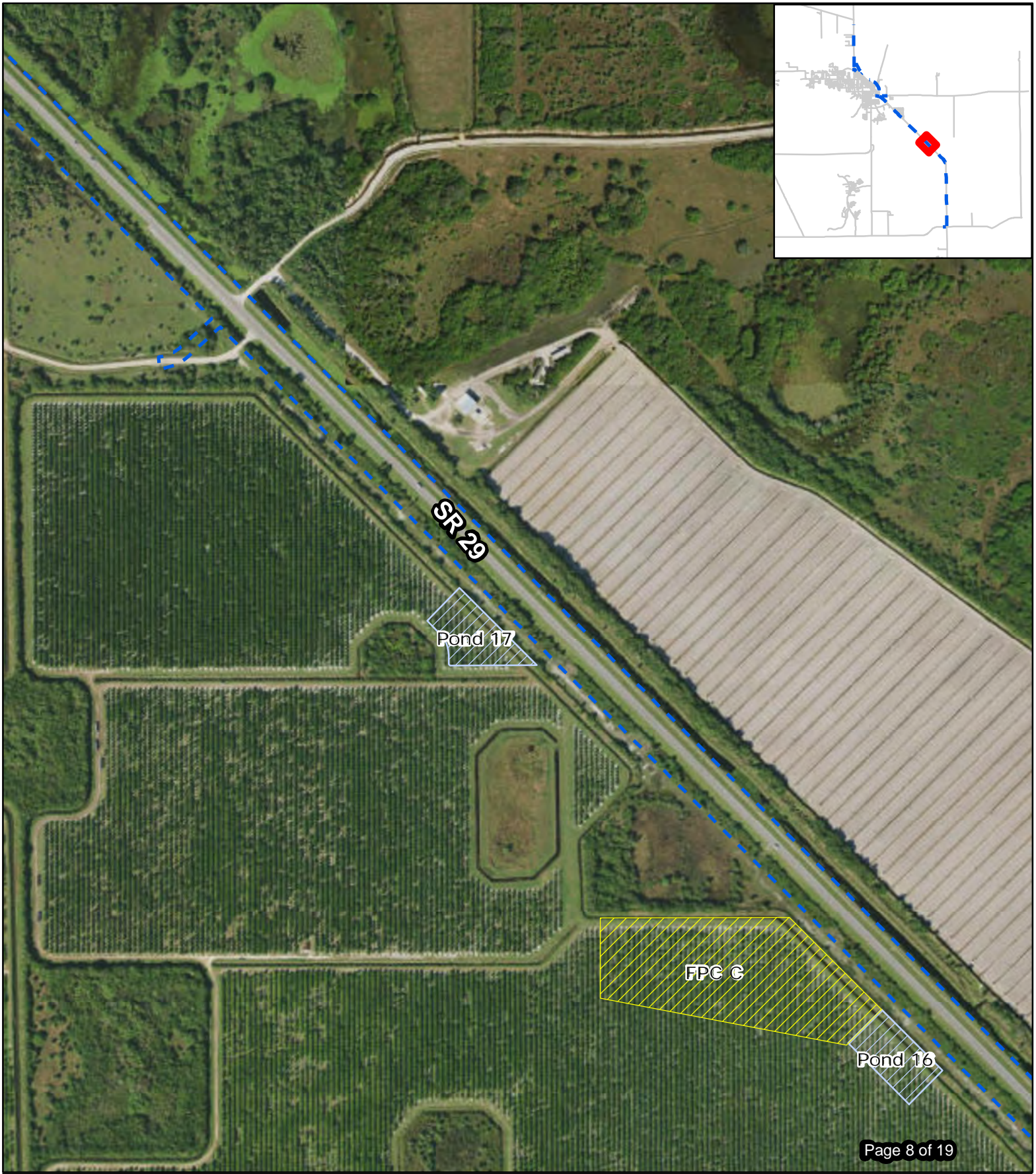
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Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/5/2018





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MAP SOURCE : ESRI
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Legend

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-  Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
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Central Alternative #2

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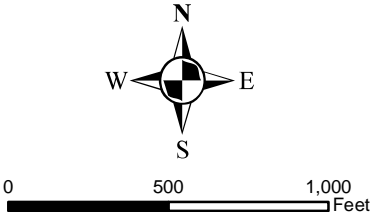


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Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

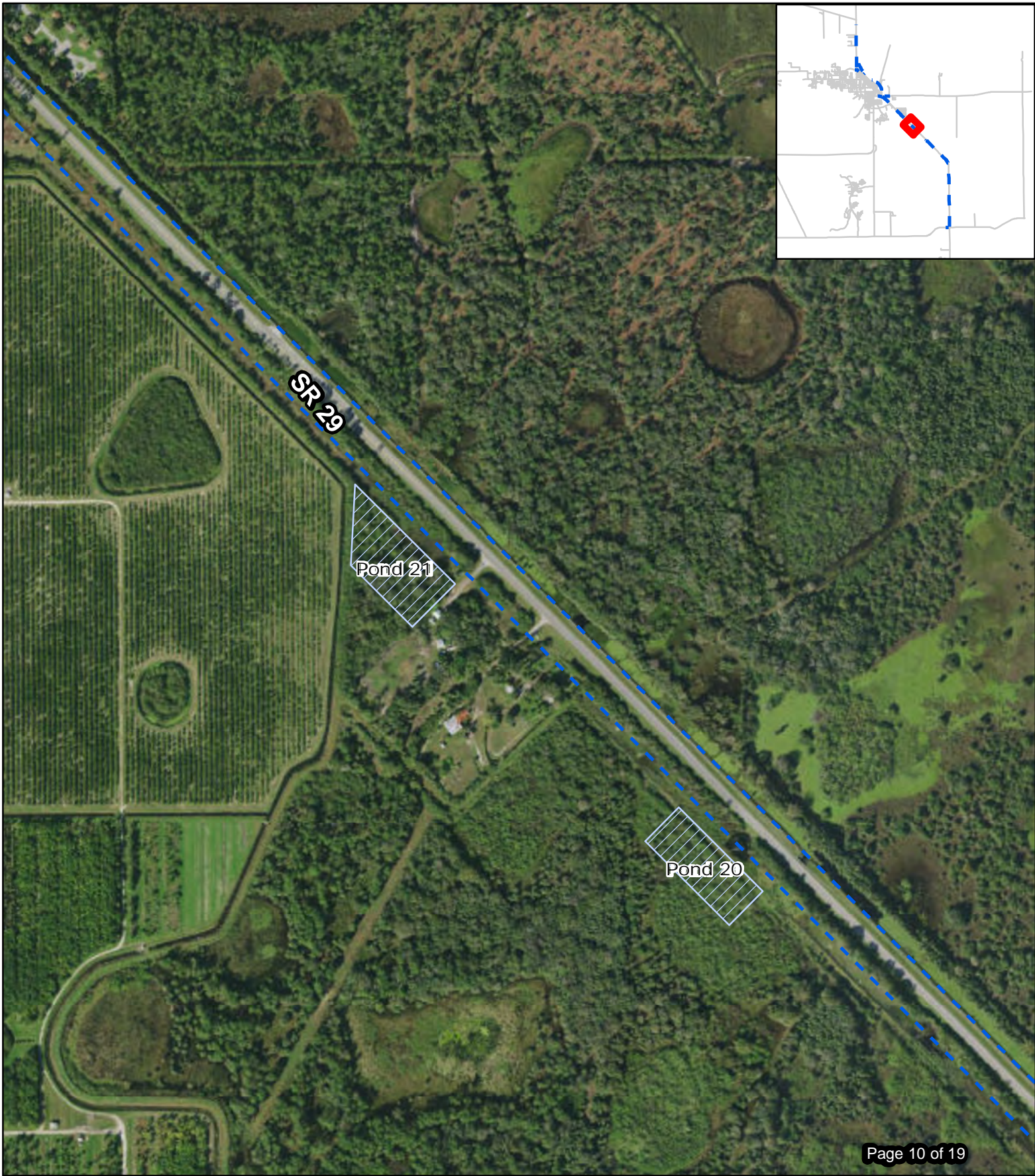
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-  Pond Sites






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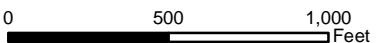
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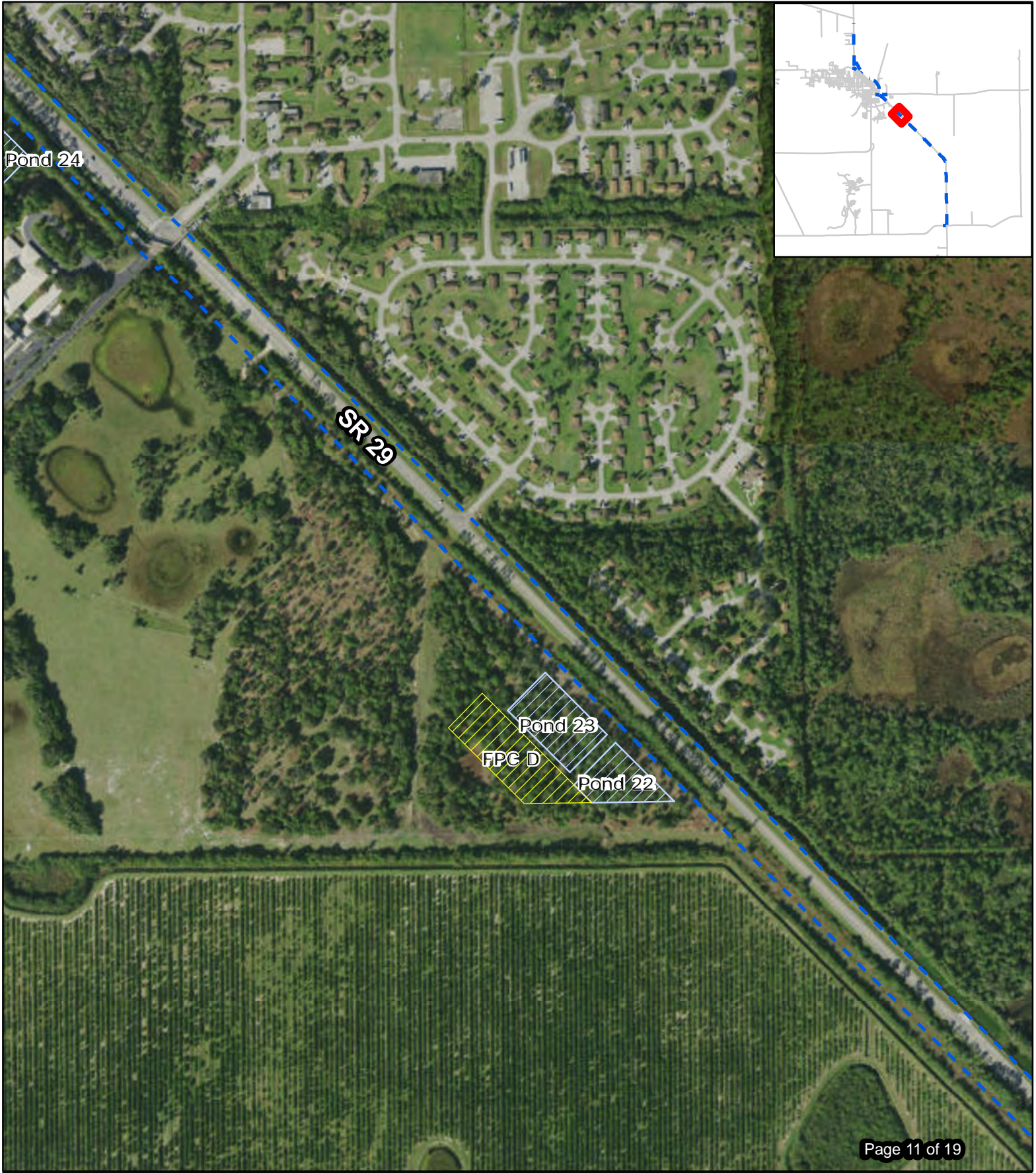
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-  Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2




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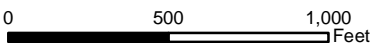
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Pond and Floodplain Compensation Sites
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PD&E Study
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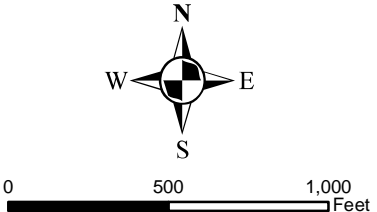
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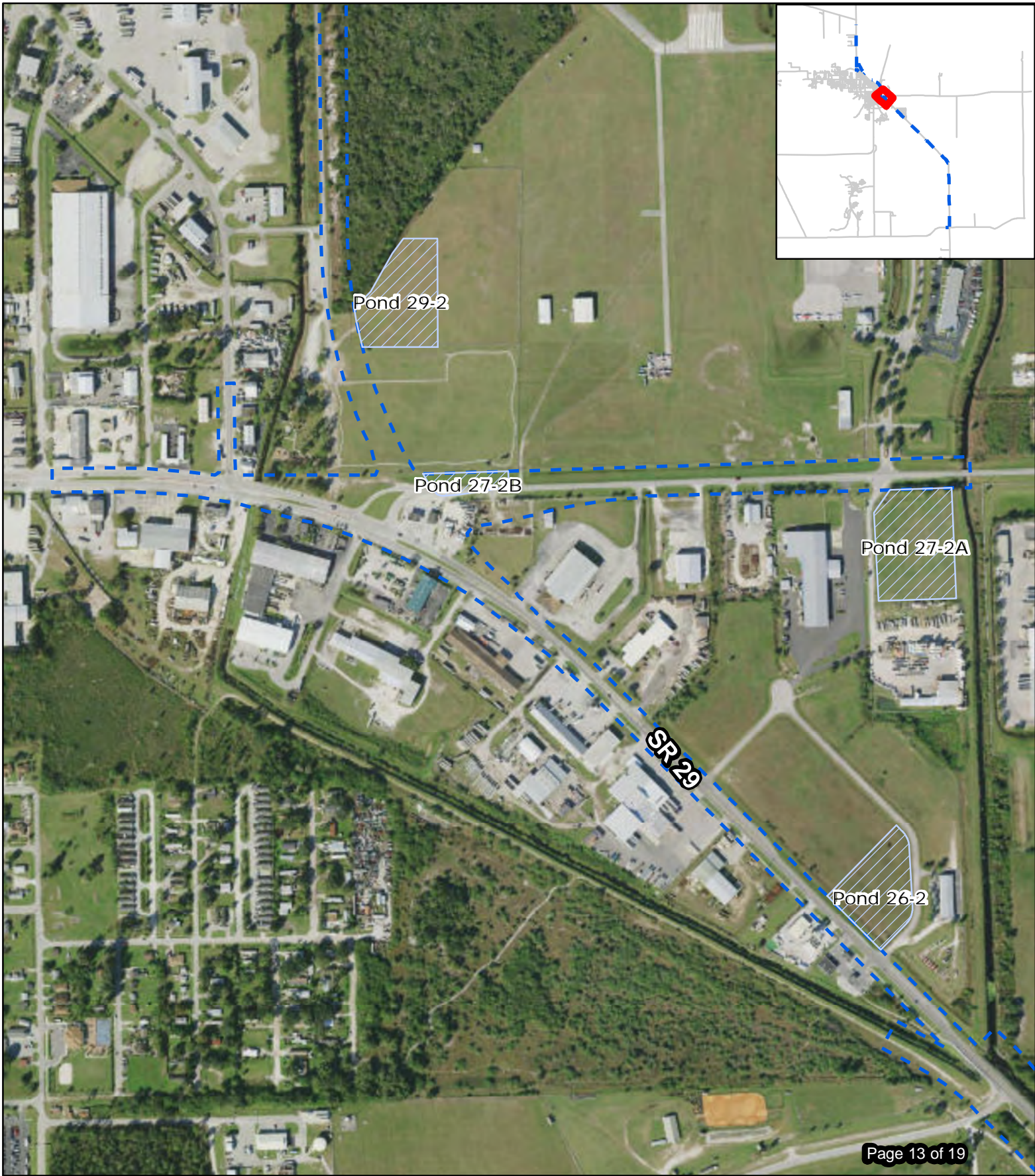
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Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/5/2018






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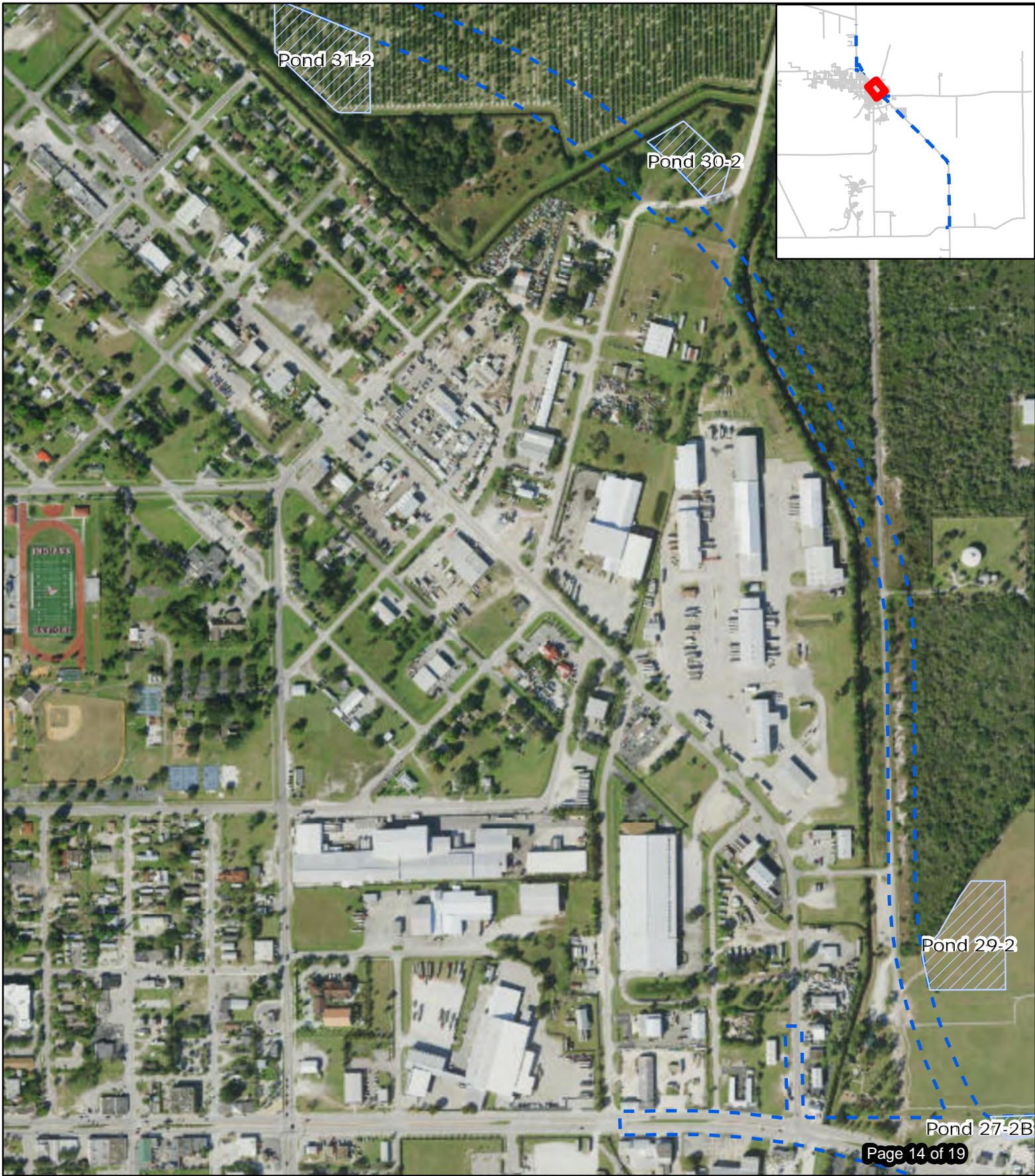
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Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
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Central Alternative #2




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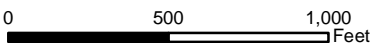
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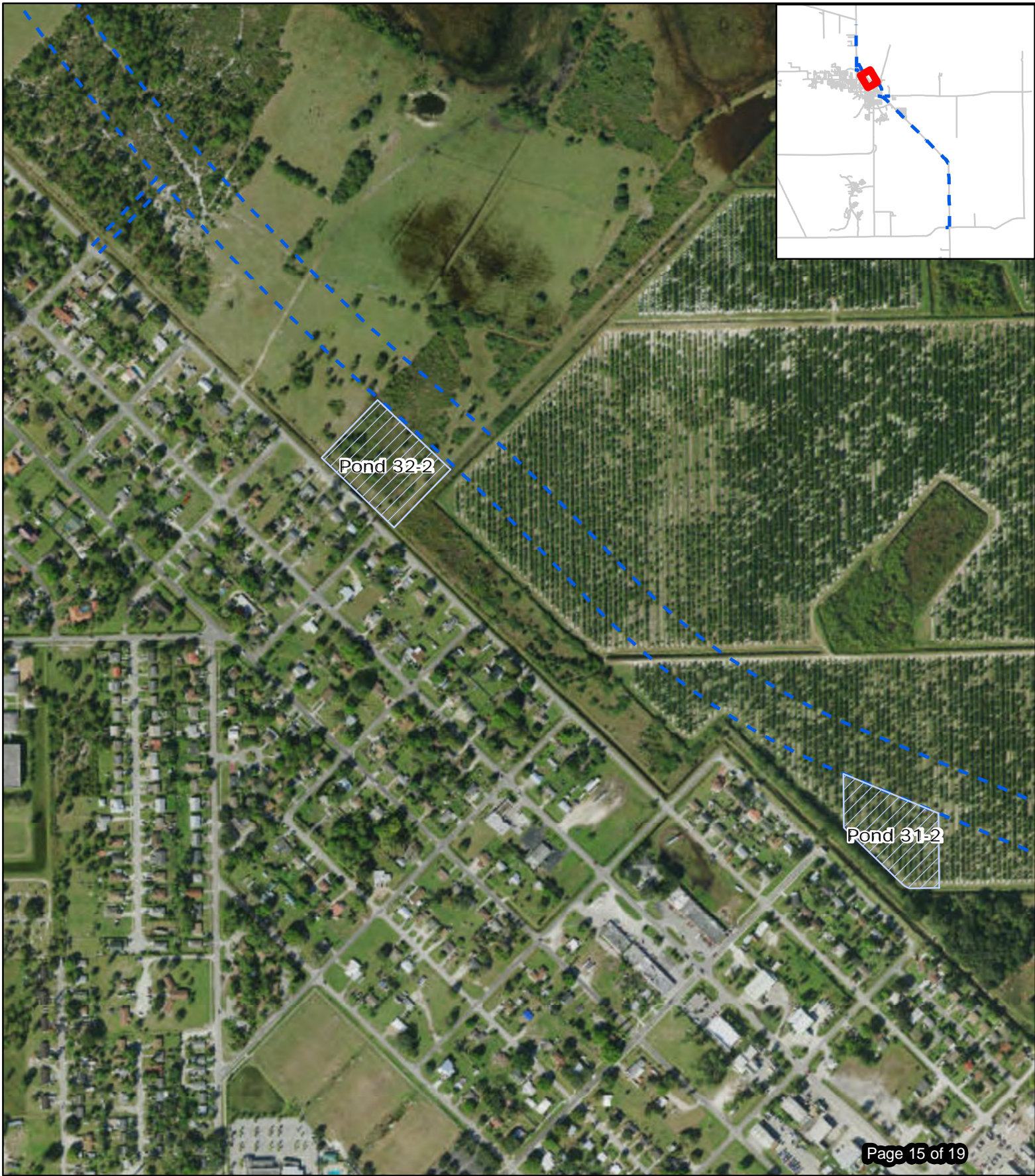
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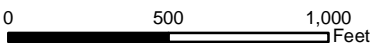
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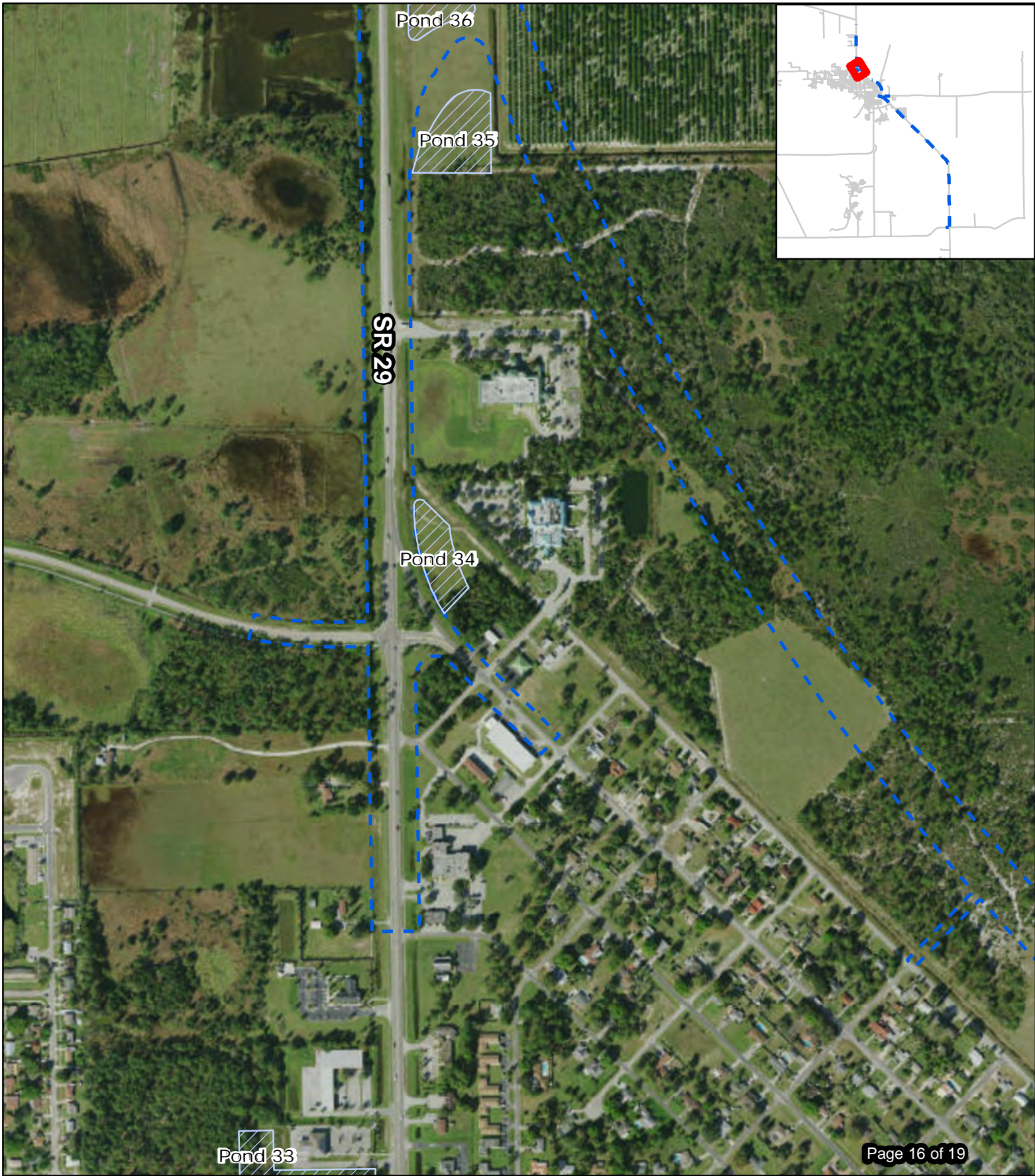
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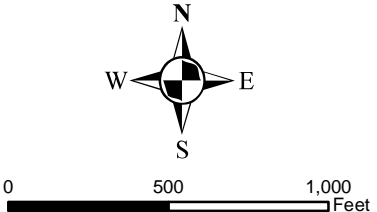
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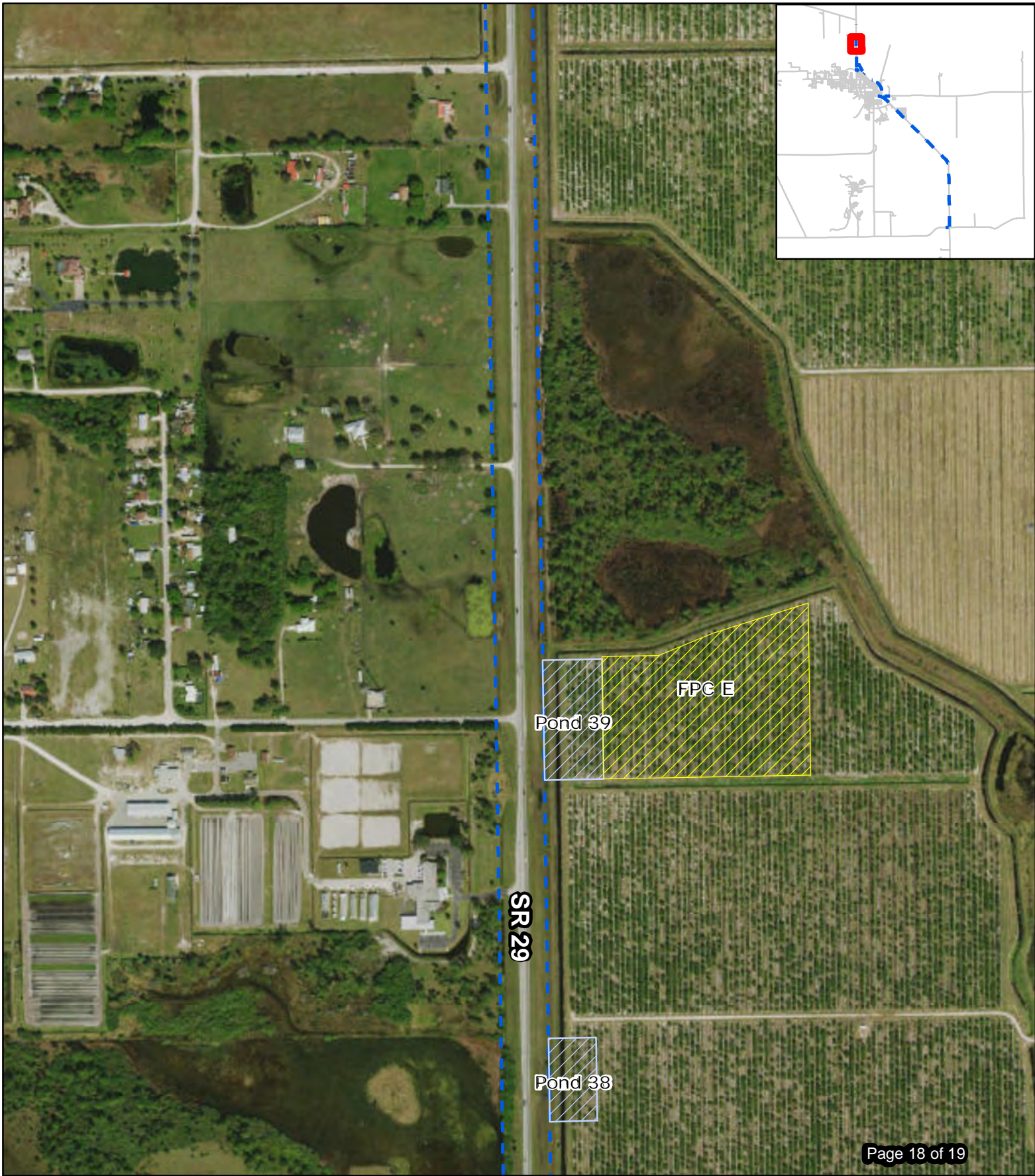
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-  Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/5/2018






0 500 1,000
 Feet



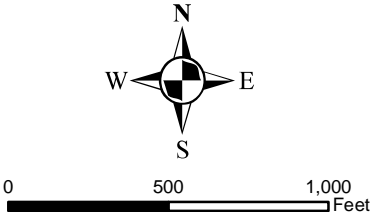
MAP SOURCE : ESRI
 DATA SOURCE : AECOM 2018

Legend

-  Central Alternative #2
-  Floodplain Compensation Sites
-  Pond Sites

Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/5/2018






0 500 1,000
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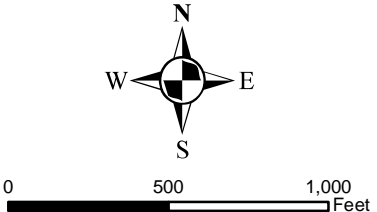
MAP SOURCE : ESRI
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Legend

-  Central Alternative #2
-  Floodplain Compensation Sites
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Pond and Floodplain Compensation Sites
SR 29 from Oil Well Road to SR 82
PD&E Study
Central Alternative #2

Date: 6/5/2018



0 500 1,000 Feet

APPENDIX K-2

***Pond and Floodplain Compensation Sites
Discussion***

APPENDIX K-2

SUMMARY OF ALTERNATIVE POND AND FLOODPLAIN COMPENSATION SITES

A total of forty (40) alternative pond site locations and five (5) potential floodplain compensation (FPC) sites were identified for each Build Alternative to be further reviewed as part of this PD&E Study. Nearly all of the potential pond locations and FPC sites included in this evaluation are common to both Build Alternatives as they occur along the existing SR 29 corridor. However, the Build Alternatives each include five (5) pond site locations not shared by the other Build Alternative. The individual locations of potential pond and FPC sites within the two Build Alternatives are depicted on the attached aerial photographs, and general descriptions are provided in the following paragraphs. The below table summarizes the alternative pond and FPC sites by acreage, corresponding Build Alternative(s), and FLUCFCS designations, based on review of SFWMD 2008 GIS land use data. Pond and FPC sites with similar land uses and habitat types are discussed collectively for general assessment purposes.

**Table Appendix K-2
Summary of Alternative Pond and Floodplain Compensation Sites**

Corresponding Alternative	Pond/FPC Site ID	FLUCFCS Categories	FLUCFCS Acreages	Total Size (acres)
Common to both Build Alternatives	FPC A	211	1.50	4.39
		434	2.89	
	FPC B	434	4.51	4.51
		641	0.001	
	FPC C	221	10.33	10.33
	FPC D	434	2.60	2.60
	FPC E	221	11.96	11.96
	Pond 1	320	0.09	1.70
		420	1.61	
	Pond 3	411	1.14	1.21
		814	0.07	
	Pond 4	411	1.15	1.38
		434	0.23	
	Pond 5	211	1.83	1.83
	Pond 6	214	1.75	1.75
	Pond 7	214	1.22	1.29
		320	0.07	
	Pond 8	221	1.09	1.54
		320	0.45	
	Pond 9	221	0.89	1.32
		320	0.43	
	Pond 10	221	1.49	2.15
		320	0.66	
	Pond 11	221	1.10	1.62
		320	0.52	
	Pond 12	434	0.88	1.32
		641	0.44	
	Pond 13	320	0.07	1.82
		330	1.74	
		630	0.01	

Table K-2 (Continued)
Summary of Alternative Pond and Floodplain Compensation Sites

Corresponding Alternative	Pond/FPC Site ID	FLUCFCS Categories	FLUCFCS Acreages	Total Size (acres)
Common to both Build Alternatives	Pond 14	320	0.07	1.77
		330	1.69	
		641	0.01	
	Pond 15	243	1.71	1.71
	Pond 16	221	1.68	1.68
	Pond 17	221	1.76	1.76
	Pond 18	330	1.70	1.70
	Pond 19	330	1.68	1.68
	Pond 20	617	2.30	2.30
	Pond 21	112	0.11	2.82
		617	2.71	
	Pond 22	434	1.31	1.31
	Pond 23	434	1.91	1.91
	Pond 24	411	1.25	1.25
	Pond 25	411	3.33	3.33
Pond 26-2 / Pond 26-1R	155	2.34	2.42	
	814	0.08		
Within Central Alternative #1 Revised Only	Pond 28-1R	814	1.20	1.20
	Pond 27-1R	814	2.84	2.84
	Pond 29-1R	155	2.54	2.54
	Pond 30-1R	155	1.78	1.78
	Pond 31-1R	212	1.33	1.33
Within Central Alternative #2 Only	Pond 27-2A	155	3.38	3.44
		814	0.06	
	Pond 27-2B	155	0.09	0.64
		811	0.55	
	Pond 29-2	811	2.89	2.89
	Pond 30-2	212	1.26	1.26
	Pond 31-2	212	0.01	2.90
221		2.89		
Common to both Build Alternatives	Pond 32-2 / Pond 32-1R	121	0.01	3.31
		212	3.01	
		641	0.29	
	Pond 33	411	2.14	2.16
		814	0.02	
	Pond 34	411	0.20	1.34
		190	1.01	
	Pond 35	814	0.13	2.02
		211	1.72	
	Pond 36	411	0.30	3.62
		211	3.37	
		510	0.09	
	Pond 37	534	0.16	2.42
		814	2.42	
	Pond 38	814	2.42	2.42
		221	1.32	
	Pond 39	510	0.29	1.61
		221	2.77	
		320	0.02	
	Pond 40	510	0.11	2.90
		221	2.23	
510		0.14		
Pond 41	617	0.34	2.71	
	221	0.91		
	510	0.04		
Pond 41	617	0.47	1.42	
	510	0.04		

Each alternative pond and FPC site was reviewed for potential occurrences of federal and state-listed plant and animal species in accordance with Section 7 of the Endangered Species Act of 1973, as amended, the Fish and Wildlife Conservation Act, the Migratory Bird Treaty Act, Part 2 – Chapter 16 of the PD&E Manual, and Chapters 5B-40 and 68A-27 FAC. The sites were also evaluated for the occurrence of federally-designated Critical Habitat as defined by Congress in 50 CFR 17. Based on this evaluation, it was determined that no federally-designated Critical Habitat is present within or adjacent to any of the alternative pond or FPC sites.

These sites occur within the FWS Consultation Areas for the eastern indigo snake, Audubon's crested caracara, Florida scrub jay, Florida panther, Florida bonneted bat, snail kite, wood stork, and Florida grasshopper sparrow; many are also located within either Primary or Secondary Habitat Zone for the Florida panther. Florida scrub jays have been previously documented along the project corridor and were observed by project biologists during various field evaluations. The project study area falls within the core foraging area (CFA) of seven (7) active nesting wood stork colonies.

The alternative pond and FPC sites were also evaluated for the presence of wetlands in accordance with Presidential Executive Order 11990 entitled "Protection of Wetlands", United States Department of Transportation Order 5660.1A, "Preservation of the Nation's Wetlands", and Part 2, Chapter 9 of the FDOT PD&E Manual. Potential pond and FPC sites were designed outside of wetlands to the best extent feasible. However, wetland impact resulting from the proposed surface water management system may be unavoidable and will depend on the final roadway design. The purpose of this alternative pond and FPC site evaluation is for early identification of potential wetland and/or protected species issues so that avoidance and minimization measures can be incorporated into the project design to greatest extent practicable.

FPC Sites A, B, and D - Pond Sites 1, 3, 4, 12, 22, 23, 24, 25, and 33

These 12 sites are discussed collectively due to similar land use classifications and quality of suitable wildlife habitat currently available for nesting and/or foraging. Pond Sites 1, 3, and 4 occur within close proximity of one another, near the south project terminus. Pond Sites 22, 23, and FPC Site D are located immediately adjacent to each other, Pond Site 12 abuts the west boundary of FPC Site B, and Pond Sites 24 and 25 are also positioned close in proximity. Pond Site 33 is the northernmost of these sites, located along the west side of 15th St. approximately 2,200 feet south of Westclox Rd. These sites occur primarily within undeveloped forested uplands. A minimal amount of freshwater marsh habitat (0.001 acre) is reported within FPC Site B; however this acreage is negligible when compared to the overall parcel size (4.51 acres). Pond Site 12 contains 0.44 acre of freshwater marsh habitat (approximately one-third of the overall parcel acreage) which would require compensatory mitigation if impacted by the project. If this wetland is deemed suitable wood stork habitat, a prey foraging analysis may also be required as part of Section 7 consultation with the FWS, and any wetland credits obtained from a mitigation

bank for compensatory mitigation may need to include a wood stork component.

These 12 sites contain suitable habitat for Florida scrub jay, Florida panther, Florida bonneted bat, eastern indigo snake, Florida black bear, gopher tortoise, and Big Cypress fox squirrel; therefore seasonal surveys for one or more of these species may be required during the design and permitting phase as part of Section 7 consultation with FWS. A Panther Habitat Unit (PHU) assessment would also be required for impacts to suitable panther habitat within each of these sites as they each occur within FWS Primary and/or Secondary Panther Habitat Zones.

FPC Sites C and E - Pond Sites 8, 9, 10, 11, 16, 17, 31-2, 38, 39, 40, and 41

These 13 sites are located intermittently throughout the SR 29 corridor and occur primarily over active citrus groves bordered by disturbed upland shrub and brush habitat. Ponds 38, 39, and 40 contain upland-cut agricultural ditches that may provide suitable wood stork foraging habitat. Pond 41 also contains 0.47 acre of mixed wetland hardwoods, which would require compensatory mitigation if impacted by the project. If deemed suitable wood stork habitat, a prey foraging analysis may be required for ditch impacts on these sites as part of Section 7 consultation with the FWS, and any wetland credits obtained from a mitigation bank for compensatory mitigation may need to include a wood stork component.

These 13 sites also contain suitable habitat for the Florida scrub jay, Florida panther, American alligator, eastern indigo snake, snail kite, gopher tortoise, Florida black bear, little blue heron, tricolored heron, roseate spoonbill, Florida sandhill crane, and Florida burrowing owl; therefore seasonal surveys for one or more of these species may be required during the design and permitting phase as part of Section 7 consultation with FWS. A PHU assessment would also be required for impacts to suitable panther habitat associated with these sites as they occur within FWS Primary and/or Secondary Panther Habitat Zones.

Pond Sites 5, 30-2, 32-2, 31-1R, 32-1R, 35, and 36

These 7 alternative pond sites are concentrated primarily in the northern region of the project corridor (the exception is Pond 5, located near the south terminus). These sites are comprised primarily of improved and unimproved pastures with active cattle grazing. Ponds 32-1R and 32-2, which share the same footprint, contain 0.29 acre of freshwater marsh habitat that would require compensatory mitigation if impacted by the project. Pond 36 also includes a total of 0.25 acre of OSWs (0.09 acre of ditches and 0.16 acre of reservoirs). If the impacted OSW features are deemed suitable wood stork habitat, a prey foraging analysis may be required, and compensatory wetland mitigation may be necessary to offset impacts to suitable wood stork foraging habitat.

These 7 sites also provide suitable habitat for the Florida scrub jay, Florida panther, American alligator, eastern indigo snake, snail kite, crested caracara, gopher tortoise, Florida black bear,

little blue heron, tricolored heron, roseate spoonbill, Florida sandhill crane, and Florida burrowing owl; therefore seasonal surveys for one or more of these species may be required during the design and permitting phase as part of Section 7 consultation with FWS. A PHU assessment would also be required for impacts to suitable panther habitat in these sites as they each occur within FWS Primary and/or Secondary Panther Habitat Zones.

Pond Sites 6, 7, and 15

These 3 alternative pond sites are discussed collectively due to the similarity of existing land uses and marginal quality of suitable habitat available for wildlife utilization. Ponds 6 and 7 are used for active row crop production, and Pond 15 occurs entirely over a field that is currently used for cultivation of landscape plants for the adjacent nursery. None of these 3 alternative pond site locations contain suitable habitat for any state or federally listed species, and no wetlands or OSWs occur within these sites. Pond 7 does contain 0.07 acre of upland shrub and brushland along its outer fringe; however this habitat has been severely fragmented by the nursery and existing roadway and contains an infestation of nuisance/exotic vegetation.

Pond Sites 13, 14, 18, and 19

These 4 alternative pond sites are comprised of mixed rangeland interspersed with upland shrub and brushland and occur within the center region of the project corridor. Ponds 13 and 14 are positioned within close proximity to one another, and Pond 18 is located adjacent to the south boundary of Pond 19. Very minor wetland acreage (0.01 acre) is reported within Ponds 18 and 19, and Ponds 13 and 14 occur entirely within uplands.

These 4 sites may provide suitable habitat for the Florida scrub jay, Florida panther, eastern indigo snake, gopher tortoise, Florida black bear, Florida sandhill crane, and Florida burrowing owl; therefore seasonal surveys for one or more of these species may be required during the design and permitting phase as part of Section 7 consultation with FWS. A PHU assessment would also be required for impacts to suitable panther habitat in these sites as they each occur within FWS Primary and/or Secondary Panther Habitat Zones.

Pond Sites 26-1R, 27-1R, 28-1R, 29-1R, 30-1R, 26-2, 27-2A, 27-2B, 29-2, 34, and 37

These 11 alternative pond sites are discussed collectively due to the industrial and/or developed nature of current land uses associated with each site and the proximity of surrounding commercial development. Ponds 26-1R, 29-1R, 30-1R, 26-2, and 27-2A are positioned within open, regularly maintained grounds associated with industrial manufacturing facilities. Ponds 27-1R, 28-1R, 27-2B and 29-2 are each located within regularly maintained parcels associated with the Immokalee Airport. Pond 34 abuts the east side of SR 29, immediately north of Westclox Rd., and is comprised primarily of upland disturbed open land. Pond 37 is located entirely within a portion of maintained ROW associated with SR 29 and borders both sides of the

existing roadway. All 11 alternative pond site locations have previously been altered by development and do not provide suitable habitat for any state or federally listed species. Additionally, no wetlands or OSWs exist within any of these sites. A PHU assessment would not be necessary for potential land alterations associated with these 11 sites as they all occur outside of the FWS Primary and Secondary Panther Habitat Zones.

Pond Sites 20 and 21

Pond 20 is located entirely within forested wetlands, and Pond 21 occurs almost entirely within forested wetlands with the exception of a 0.11-acre portion of the site designated as a mobile home unit within a low-density residential area. Selection of either alternative pond site for future utilization in the project's stormwater management system would result in similar impacts to a currently undeveloped 'mixed wetland hardwoods' habitat; Pond 20 would impact 2.30 acres of this wetland, and Pond 21 would result in 2.71 acres of wetland impact. Compensatory mitigation would be required to offset any adverse wetland impacts resulting from pond installations at these sites.

Both sites contain suitable wood stork foraging habitat. As such, a wood stork prey analysis may be required, and compensatory wetland mitigation that includes a wood stork component may be necessary to offset adverse impacts to suitable wood stork foraging habitat.

These 2 alternative pond sites also provide suitable habitat for the Florida panther, American alligator, eastern indigo snake, snail kite, Florida black bear, little blue heron, tricolored heron, roseate spoonbill, and Florida sandhill crane; therefore seasonal surveys for one or more of these species may be required during the design and permitting phase as part of Section 7 consultation with FWS. A PHU assessment would also be required for impacts to suitable panther habitat within these sites as they both occur within FWS Primary Panther Habitat Zone.

APPENDIX L
UMAM Data Sheets

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name SR 29 from Oil Well Road to SR 82		Application Number N/A	Assessment Area Name or Number WL-1, WL-5, & WL-8
FLUCCs code 617 - Mixed Wetland Hardwoods	Further classification (optional) FWS - PFO1/3C	Impact or Mitigation Site? Impact	Assessment Area Size 1.95 acres
Basin/Watershed Name/Number Cocohatchee & Okaloacoochee	Affected Waterbody (Class) Class III	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands WL-1, WL-5, and WL-8 are located within the existing SR 29 ROW and extend west beyond the limits of the project. These wetland habitats are abutted by undeveloped uplands to the north and south, and SR 29 to the east.			
Assessment area description These are mixed hardwood forested wetlands located primarily over mapped hydric soils. Dominant species include red maple, pop ash, Carolina willow, primrose willow, swamp fern, arrowhead, and various flat sedges. Habitat quality is poor due to their location within the existing ROW.			
Significant nearby features Adjacent areas consist primarily of agricultural lands, such as pasture and citrus groves. The project corridor traverses the town of Immokalee.	Uniqueness (considering the relative rarity in relation to the regional landscape.) This habitat type occurs commonly throughout region.		
Functions Provides water retention/nutrient uptake; also provides foraging habitat for wetland dependent wildlife species.	Mitigation for previous permit/other historic use N/A		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) various wading birds, frogs, turtles, snakes, snails, invertebrates	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) little blue heron (T, feeding), tricolored heron (T, feeding), wood stork (T, feeding), roseate spoonbill (T, feeding)		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Various wading birds were observed during the field reviews.			
Additional relevant factors:			
Assessment conducted by: Tobi Richey (AECOM biologist)		Assessment date(s): 21-May-18	

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name SR 29 from Oil Well Road to SR 82	Application Number N/A - PD&E Study	Assessment Area Name or Number WL-1, WL-5, & WL-8 (FLUCFCS-617)
Impact or Mitigation Impact	Assessment conducted by: Tobi Richey (AECOM biologist)	Assessment date: 21-May-18

Scoring Guidance
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	These wetlands are disturbed/fragmented due to their position within the existing ROW and encroachment from ongoing adjacent agricultural activities. SR 29 occurs immediately to the east, pastures and citrus groves are located to the west, and mowed and maintained uplands associated with the SR 29 ROW abut these wetlands to the north and south.
w/o pres or current	
with	
6	0

.500(6)(b) Water Environment (n/a for uplands)	These are seasonally-flooded wetlands that have been hydrologically impacted by the existing roadway. Hydrology is sufficient to support hydrophytic vegetation.
w/o pres or current	
with	
7	0

.500(6)(c) Community structure	These wetlands contain a mixture of native and nuisance/exotic vegetation. Habitat quality is low due to fragmentation and their proximity to the existing roadway.
1. Vegetation and/or	
2. Benthic Community	
w/o pres or current	with
6	0

Score = sum of above scores/30 (if uplands, divide by 20)	
current	
or w/o pres	
with	
0.63	0.00

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.63 x 1.95 = 1.23

Delta = [with-current]
0.63

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name SR 29 from Oil Well Road to SR 82		Application Number N/A	Assessment Area Name or Number WL-3
FLUCCs code 621 - Cypress	Further classification (optional) FWS - PFO2C	Impact or Mitigation Site? Impact	Assessment Area Size 0.56 acres
Basin/Watershed Name/Number Cocohatchee & Okaloacoochee	Affected Waterbody (Class) Class III	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands WL-3 is located within the existing SR 29 ROW and extends west beyond the project limits. This wetland is abutted by undeveloped uplands to the north and south, an active citrus grove is located along its west boundary, and SR 29 occurs to the east.			
Assessment area description WL-3 is a cypress-dominated wetland located entirely on mapped hydric soils. Dominant species include red maple, pond cypress, cabbage palm, laurel oak, Carolina willow, primrose willow, dog fennel, poison ivy, maidencane, and various flat sedges. Habitat quality is poor due to its location within the existing ROW.			
Significant nearby features Adjacent areas consist primarily of agricultural lands, such as pasture and citrus groves. The project corridor traverses the town of Immokalee.		Uniqueness (considering the relative rarity in relation to the regional landscape.) This habitat type is common throughout region.	
Functions Provides water retention/nutrient uptake; also provides foraging habitat for wetland dependent wildlife species.		Mitigation for previous permit/other historic use N/A	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) various wading birds, frogs, turtles, snakes, snails, invertebrates		Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) little blue heron (T, feeding), tricolored heron (T, feeding), wood stork (T, feeding), roseate spoonbill (T, feeding)	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Various wading birds were observed during the field reviews.			
Additional relevant factors:			
Assessment conducted by: Tobi Richey (AECOM biologist)		Assessment date(s): 21-May-18	

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name SR 29 from Oil Well Road to SR 82	Application Number N/A - PD&E Study	Assessment Area Name or Number WL-3 (FLUCFCS-621)
Impact or Mitigation Impact	Assessment conducted by: Tobi Richey (AECOM biologist)	Assessment date: 21-May-18

Scoring Guidance The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	WL-3 is disturbed/fragmented due to its position within the existing ROW and encroachment from ongoing adjacent agricultural activities. SR 29 occurs immediately to the east, an active citrus grove is located to the west, and mowed and maintained uplands associated with the SR 29 ROW abut this wetland to the north and south.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>6</td> <td>0</td> </tr> </table>	w/o pres or current	with	6	0	
w/o pres or current	with				
6	0				
.500(6)(b) Water Environment (n/a for uplands)	This is a seasonally-flooded wetland that has been hydrologically impacted by the existing roadway. Hydrology within WL-3 is sufficient to support hydrophytic vegetation.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>7</td> <td>0</td> </tr> </table>	w/o pres or current	with	7	0	
w/o pres or current	with				
7	0				
.500(6)(c) Community structure	WL-3 is dominated by pond cypress and bald cypress; however, Brazilian pepper is present along the outer fringe. Habitat quality is low due to fragmentation and its proximity to the existing roadway.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>7</td> <td>0</td> </tr> </table>	w/o pres or current	with	7	0	
w/o pres or current	with				
7	0				

Score = sum of above scores/30 (if uplands, divide by 20)				
<table border="1"> <tr> <td>current</td> <td>with</td> </tr> <tr> <td>0.67</td> <td>0.00</td> </tr> </table>	current	with	0.67	0.00
current	with			
0.67	0.00			

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.67 x 0.56=0.38

Delta = [with-current]
0.67

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name SR 29 from Oil Well Road to SR 82		Application Number N/A	Assessment Area Name or Number WL-2, WL-4, & WL-6
FLUCCs code 630 - Wetland Forested Mixed	Further classification (optional) FWS - PFO1/2C	Impact or Mitigation Site? Impact	Assessment Area Size 8.12 acres
Basin/Watershed Name/Number Cocohatchee & Okaloacoochee	Affected Waterbody (Class) Class III	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands WL-2, WL-4, & WL-6 are located within the existing SR 29 ROW and extend west beyond the limits of the project. These wetland habitats are abutted by undeveloped uplands to the north and south, and SR 29 to the east.			
Assessment area description These are mixed forested wetlands located primarily on mapped hydric soils. Dominant species include red maple, pond cypress, cabbage palm, laurel oak, Carolina willow, primrose willow, dog fennel, poison ivy, maidencane, and various flat sedges. Habitat quality is poor due to their location within the existing ROW.			
Significant nearby features Adjacent areas consist primarily of agricultural lands, such as pasture and citrus groves. The project corridor traverses the town of Immokalee.	Uniqueness (considering the relative rarity in relation to the regional landscape.) This habitat type is common throughout region.		
Functions Provides water retention/nutrient uptake; also provides foraging habitat for wetland dependent wildlife species.	Mitigation for previous permit/other historic use N/A		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) various wading birds, frogs, turtles, snakes, snails, invertebrates	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) little blue heron (T, feeding), tricolored heron (T, feeding), wood stork (T, feeding), roseate spoonbill (T, feeding)		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Various wading birds were observed during the field reviews.			
Additional relevant factors:			
Assessment conducted by: Tobi Richey (AECOM biologist)		Assessment date(s): 21-May-18	

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name SR 29 from Oil Well Road to SR 82	Application Number N/A - PD&E Study	Assessment Area Name or Number WL-2, WL-4, & WL-6 (FLUCFCS-630)
Impact or Mitigation Impact	Assessment conducted by: Tobi Richey (AECOM biologist)	Assessment date: 21-May-18

Scoring Guidance The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	These wetlands are disturbed/fragmented due to their position within the existing ROW and encroachment from ongoing adjacent agricultural activities. SR 29 occurs immediately to the east, pastures and citrus groves are located to the west, and mowed and maintained uplands associated with the SR 29 ROW abut these wetlands to the north and south.			
w/o pres or current				
with				
6	0			

.500(6)(b) Water Environment (n/a for uplands)	These are seasonally-flooded wetlands that have been hydrologically impacted by the existing roadway. Hydrology is sufficient to support hydrophytic vegetation.			
w/o pres or current				
with				
7	0			

.500(6)(c) Community structure	These wetlands contain a mixture of native and nuisance/exotic vegetation. Habitat quality is low due to fragmentation and their proximity to the existing roadway.			
1. Vegetation and/or 2. Benthic Community				
w/o pres or current				
with				
6	0			

Score = sum of above scores/30 (if uplands, divide by 20)
current
or w/o pres
with
0.63
0.00

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.63 x 8.12 = 5.12

Delta = [with-current]
0.63

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name SR 29 from Oil Well Road to SR 82		Application Number N/A	Assessment Area Name or Number WL-5, WL-7, WL-9, WL-10, WL-11, & WL-12	
FLUCCs code 641 - Freshwater Marshes	Further classification (optional) FWS - PEM1C		Impact or Mitigation Site? Impact	Assessment Area Size 3.70 acres
Basin/Watershed Name/Number Cocohatchee & Okaloacoochee	Affected Waterbody (Class) Class III	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A		
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands WL-5, WL-7, WL-9, WL-10, WL-11, & WL-12 are located within the existing SR 29 ROW and extend west beyond the limits of the project. These herbaceous wetlands are abutted by undeveloped uplands to the north and south, and SR 29 to the east.				
Assessment area description These are freshwater marshes located primarily over mapped hydric soils. Dominant species include Carolina willow, primrose willow, dog fennel, paragrass, torpedograss, maidencane, arrowhead, smartweed, and various flat sedges. Habitat quality is poor due to their location within the existing ROW.				
Significant nearby features Adjacent areas consist primarily of agricultural lands, such as pasture and citrus groves. The project corridor traverses the town of Immokalee.		Uniqueness (considering the relative rarity in relation to the regional landscape.) This habitat type is common throughout region.		
Functions Provides water retention/nutrient uptake; also provides foraging habitat for wetland dependent wildlife species.		Mitigation for previous permit/other historic use N/A		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) various wading birds, frogs, turtles, snakes, snails, invertebrates		Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) little blue heron (T, feeding), tricolored heron (T, feeding), wood stork (T, feeding), roseate spoonbill (T, feeding)		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): Various wading birds were observed during the field reviews.				
Additional relevant factors:				
Assessment conducted by: Tobi Richey (AECOM biologist)		Assessment date(s): 21-May-18		

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name SR 29 from Oil Well Road to SR 82	Application Number N/A - PD&E Study	Assessment Area Name or Number WL-5, WL-7, WL-9, WL-10, WL-11, & WL-12 (FLUCFCS-641)
Impact or Mitigation Impact	Assessment conducted by: Tobi Richey (AECOM biologist)	Assessment date: 21-May-18

Scoring Guidance The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	These wetlands are disturbed/fragmented due to their position within the existing ROW and encroachment from ongoing adjacent agricultural activities. SR 29 occurs immediately to the east, pastures and citrus groves are located to the west, and mowed and maintained uplands associated with the SR 29 ROW abut these wetlands to the north and south.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>6</td> <td>0</td> </tr> </table>	w/o pres or current	with	6	0	
w/o pres or current	with				
6	0				
.500(6)(b) Water Environment (n/a for uplands)	These are seasonally-flooded wetlands that have been hydrologically impacted by the existing roadway; however, hydrology is sufficient to support hydrophytic vegetation.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>7</td> <td>0</td> </tr> </table>	w/o pres or current	with	7	0	
w/o pres or current	with				
7	0				
.500(6)(c) Community structure	These wetlands contain a mixture of native and nuisance/exotic vegetation. Habitat quality is moderate to low due to fragmentation and their proximity to the existing roadway.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>7</td> <td>0</td> </tr> </table>	w/o pres or current	with	7	0	
w/o pres or current	with				
7	0				

Score = sum of above scores/30 (if uplands, divide by 20)	
current	
or w/o pres	
with	
0.67	0.00

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.67 x 3.70 = 2.48

Delta = [with-current]
0.67

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =