

Introduction

The purpose of this memo report is to provide the results of the 2014 sand skink cover board survey conducted for the I-4 Beyond the Ultimate PD&E study.

Project Description and Background

The Florida Department of Transportation (FDOT) is conducting an update of the PD&E studies for the extension of express lanes for SR 400 (I-4). The project limits in the original PD&E studies were:

- West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line, (29.5 miles)
- CR 532 (Polk/Osceola County Line) to West of SR 528 Beachline Expressway (13.7 miles), and
- West of SR 528 Beachline Expressway to SR 472 (43 miles).

The corresponding environmental documents include: Environmental Assessment/Finding of No Significant Impact (EA/FONSI) for SR 400 (I-4) from West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line (FPN 201210, 1998) and from CR 532 (Polk/Osceola County Line to West of SR 528 Beachline Expressway (FPN 242526 and 242483, 1999) and Final Environmental Impact Statement (FEIS) for I-4 from SR 528 Beachline Expressway to SR 472 (FPN 242486, 242592 and 242703, 2002).

The re-evaluation study is being conducted to document changes from the FONSI for SR 400 (I-4) from CR 532 (Polk/Osceola County Line) to West of SR 528 Beachline Expressway (December 23, 1999), including environmental and engineering analysis of the original design concept which showed two high occupancy vehicle (HOV) lanes, to the current proposed design, which includes four managed lanes operating under a variable price toll plan.

The proposed improvements to I-4 include widening the existing six lane divided urban interstate to a ten lane divided highway. Generally speaking, the typical section will be consistent throughout Segments 1 and 2 and will have three 12-foot general use travel lanes with 12-foot inside and 10-foot outside shoulders and two 12-foot express lanes with 4-foot inside and 10-foot outside shoulders, in each direction. A barrier wall in between the shoulders will separate the express lanes from the general use lanes. Three 12-foot auxiliary lanes will be provided in some areas in the eastbound direction and up to two auxiliary lanes will be provided in some locations in the westbound direction. Stormwater ponds will be included to provide treatment throughout the corridor.

The project area for this survey included the portions of Segment 1 and Segment 2 occurring within Orange County, from I-4 at Osceola Parkway to the SR 528 interchange, and the potential right-of-way areas for pond sites and other improvements adjacent to the I-4 corridor. Survey areas are depicted on the attached maps.

Survey Scope

Because the project area occurs within the US Fish and Wildlife Service (USFWS) Consultation Area for sand skinks and blue-tailed mole skinks, there is a higher likelihood of skink occupancy within suitable habitats. No previous evidence of skinks was noted in the original PD&E report from May 2000, nor was a species-specific survey performed. However, the revised 2012 guidance from USFWS on the skink now classifies areas with skink soils above 82 feet elevation as potential skink habitat, whether or not natural xeric scrub habitat occurs over the soils. Areas over skink soils but altered for human uses include but are not limited to pine plantations, active or inactive citrus groves, pastures, residential developments, and neglected vegetative cover like old fields and overgrown scrub, all present potential opportunities for skink habitat. For this project, the right-of-way and potential pond sites were surveyed for all potential listed wildlife species including skinks. A pedestrian survey was conducted to identify suitable habitat and included searching for skink trails in areas of open sand. Skink soils were also mapped for the project corridor to identify the areas of coverage that overlap with proposed roadway and pond site improvements. Coordination with USFWS staff indicated that a skink cover board survey would need to be performed over any areas of soil coverage within the project footprint that contained suitable soils ("swimmable soils"). Areas that contained thick vegetation and/or a dense root mass and did not contain loose open soils could be eliminated from the survey. Based upon the results of this study, the mapped soils were amended, and cover board surveys were subsequently conducted over any remaining areas that were determined to still contain suitable mapped skink soils. The cover board survey was conducted according to the USFWS Survey Protocol for Peninsular Florida for the Sand Skink and Blue-tailed Mole Skink (USFWS 2011).

Survey Methodology

Per the USFWS Survey Protocol, the coverboard survey was conducted during the survey window of March 1st through May 15th. Plywood coverboards measuring 2' x 2' were placed in areas of bare sand or sparse vegetation to meet a minimum coverage of 40 boards per acre within the areas of suitable soils previously mapped out. A grid system was set up to pre-determine the board placement within each area, and the boards were placed in the field in the most suitable areas within the grids. Final positions of the boards were recorded with a Trimble GPS Unit, and each board was marked with a unique designation. Raking, grading, and manipulation of the soils and vegetation were conducted to ensure full contact of the coverboard with the soil surface. Areas with heavy coverage of grasses within the survey areas necessitated removal of vegetation to place the coverboards. Coverboards were placed beginning on March 24, 2014 and completed by April 8, 2014 and all boards were allowed to acclimate for a minimum of 7 days prior to the first sampling event. The first sampling event began on April 10, 2014 and was completed on April 16, 2014. Subsequent events occurred April 21-23, April 28-29, and May 5-6. The boards were collected from the field on May 21-22 and were checked informally for any signs of sand skinks.

Survey Area Descriptions

Each survey area was given a unique designation and is described below.

Unit A – St. Lucie fine sand 0 – 5%

Unit A consists of sand pines with some open sandy areas spread throughout. The coverage of sand pines is heaviest in the central portion of the site with more open sand along the eastern side and in the northwest corner.



Unit B – St. Lucie fine sand 0 – 5%

Unit B is a sand pine / scrubby area that has evidence of vegetative clearing within the last year. Most of the trees have been removed, and saw palmetto growth and ground cover are emerging. Open sandy areas are evident in patches throughout the site.



Unit C – St. Lucie fine sand 0 – 5%

Unit C is adjacent to Unit B, though it contains more sand pines, and does not appear to have been altered like Unit B. The northern portion of the site contains a heavy layer of duff and other vegetative material from past activities on the site. Open sandy areas are sparse; though do occur sporadically on the site. A portion of Unit C is on the adjacent property and occurs over sandy areas with pasture grasses and low herbaceous vegetation.



Unit D – St. Lucie fine sand 0 – 5%

Unit D is the site of a partially completed development that was abandoned. Asphalt paved roadways and a buried sewer system is in place, and the remaining areas are open sandy soils with pasture grasses and low herbaceous vegetation. Gopher tortoise burrows were observed in several places, and several larger pines are present. Planted sabal palms occur on the northern side of the site, and a small area of pines, oaks, and palmetto is in the center of the site.



Unit F – Tavares-Millhopper fine sand 0 – 5 %

Unit F occurs adjacent to the southeast corner of Unit A, outside of the right-of-way from the on-ramp to I-4 westbound at Central Florida Parkway. The area is primarily open sand with low herbaceous vegetation and scattered saw palmetto.



Unit G- St. Lucie fine sand 0 – 5%

Unit G occurs outside of the right-of-way to the south of Unit F north of the Fenton Street overpass. The area is open sandy soils with pasture grasses and scattered scrubby vegetation. Numerous scraps of old bill boards were on the ground at the base of the current bill board.



Unit H – St. Lucie fine sand 0 – 5%

Unit H is adjacent to Area G and extends outside of the right-of-way towards Palm Parkway. It contains primarily open sandy soils and scrubby vegetation. Areas of pasture grasses were found nearer to the right-of-way fence line. Several scrub lupines were observed on this site.



Unit I – Pomello fine sand 0 – 5%

Unit I is adjacent to the Fenton Street overpass on the north side outside of the right-of-way and consists of a dense canopy of sand pines, with several areas of open white sand. Scattered saw palmetto was present but little additional ground cover was observed.



Unit J – Pomello fine sand 0 – 5%

Unit J is outside of the right-of-way adjacent to the Fenton Street overpass on the south side and consists of scattered sand pines with areas of open sand and some low scrubby vegetation. A dense area of mixed pine and oak occurs at the eastern side of the site near the right-of-way fence line.



Unit K – Pomello fine sand 0 – 5%

Unit K is located outside of the right-of-way adjacent to the hotel complex on Palm Parkway south of Fenton Street and consists of a mix of sand pine scrub and open sandy areas. One scrub lupine was observed near the hotel.



Unit L – St. Lucie fine sand 0 – 5%

Unit L is located north of the Fenton Street overpass east of I-4 outside of the right-of-way that is currently used as a pasture for cattle grazing. The site is primarily grasses with open patches of sand and some low scrubby vegetation. Several scrub lupines were observed on this site.



Unit M – Pomello fine sand 0 -5%

Unit M is located to the southeast of Unit L and is part of the same pasture and contains patches of open sand and some low scrubby vegetation. Several gopher tortoise burrows were observed, as was a patch of scrub lupine.



Unit N – Pomello fine sand 0 – 5%

Unit N is to the south of Fenton Street outside of the right-of-way in another pasture used for cattle grazing. Several large live oaks were present, along with small patches of open sand and pasture grasses. The grasses had been compacted and contained a dense root mass throughout.



Unit O – St. Lucie fine sand 0 -5%

Unit O is a pasture to the south of Unit N outside of the right-of-way, containing pasture grasses and small areas of open sand. Much of the area was compacted soils. Several scrub lupines were observed in the pasture.



Unit P – Tavares-Millhopper fine sand 0 -5%

Unit P is located within the right-of-way and median of I-4 eastbound at the on-ramp from SR 536. It consists primarily of sand pine with a fairly dense canopy, and some open sandy areas mixed in with saw palmetto, wire grass, and low scrubby herbaceous vegetation. The maintained right-of-way is Bahia grass.



Unit Q – St. Lucie fine sand 0 -5%

Unit Q is located along the right-of-way of I-4 eastbound just north of Central Florida Parkway and consists of some low scrubby areas with mixed sand pine and saw palmetto with maintained Bahia grass near the roadway. Vegetation was dense with little open ground.



Unit R – St. Lucie fine sand 0 – 5%

Unit R is located along the right-of-way of the SR 528 off-ramp from I-4 eastbound to SR 528 eastbound. It consists of open sandy areas, Bahia grass, and some scrubby vegetation with sand pines.



Unit S- St. Lucie fine sand 0 -5%

Unit S is located along the right-of-way of I-4 westbound at the on-ramp from SR 528 westbound. It consists primarily of open sand and Bahia grass, with some sand pine and low scrubby vegetation.



Unit T – St. Lucie fine sand 0 – 5%

Unit T is located along the right-of-way of I-4 westbound south of the on-ramp from SR 528 westbound and consists primarily of open sand and Bahia grass.



Unit O-24 – Tavares-Millhopper fine sand 0 - 5%

Unit O-24 is located in the median between the off-ramp from I-4 westbound to SR 536 westbound, and the off-ramp from I-4 westbound to SR 536 eastbound and consists of Bahia grass adjacent to a heavily canopied pine forest.



Sand Skink Cover Board Survey			
Unit	Acreage	Number of Boards	Boards per Acre
A	6.26*	275	44
B	2.05	105	51
C	2.78	140	50
D	2.2	92	42
F	1.0*	13 (27 damaged)	40
G	1.1	63	57
H	0.74	40	54
I	1.09	58	53
J	1.41	58	41
K	1.32	68	51
L	0.5	20	40
M	0.37	15	40
N	0.11	6	54
O	0.55	22	40
P	0.37	15	40
Q	0.21	11	52
R	0.42	25	59
S	0.24	10	41
T	0.19	10	52
0-24	0.02	1	50

*Survey note: While conducting the survey, it was observed that development had begun within all of Unit A and a portion of Unit F. This development was a residential project (apartments) with approved permits from Orange County. After the boards were checked during week 1, clearing and grubbing activities began to take place and the site was prepared with silt fencing. By the time of the week 3 survey, these areas were completely cleared of all vegetation and were no longer accessible.

Survey Results

Cover boards were inspected for signs of sand skinks by lifting each board and visually inspecting the area beneath. After each inspection, the area under the board was smoothed out, and the boards were placed back down in the original position. During the first survey event, any boards with vegetation or debris still under them were raked, re-graded, and smoothed out. Any boards that were moved, damaged, or removed were noted on the data sheets

Survey Event 1 – April 10, 11, 14 and 16, 2014

Numerous 6-lined race runners were observed and several different types of curves and lines were observed under boards, but no sand skink tracks or other signs of sand skinks were identified. Southern toads, 5-lined skinks, eastern narrow-mouthed toads, and brown anoles were also observed. The tracks found under boards and in the surrounding sand were later identified as belonging to ant lions, crickets, race runners, and beetles, and were ruled out as being sand skink as they did not represent continuous sinusoidal movement.



Survey Event 2 – April 21, 22, and 23, 2014

Tracks from species identified above were observed under several boards, but no signs or tracks of sand skinks were observed. Eastern narrow-mouthed toads and 6-lined race runners were observed under numerous boards throughout the survey corridor.



Survey Event 3 – April 28 and 29, 2014

No signs of sand skinks were observed under any of the cover boards. Many 6-lined race runners and eastern narrow-mouthed toads were observed, as were several pine bark scorpions.



Survey Event 4 – May 5 and 6, 2014

No signs of sand skinks were observed under any of the cover boards. 6-lined race runners and eastern narrow-mouthed toads were common under the boards throughout the survey area.



Survey Summary

No sand skinks or evidence of sand skinks was observed during the survey. Many different types of species were encountered, but no continuous sinusoidal tracks were found either under the cover boards or at any other place within the survey area.

DATA SHEETS

Date:	4/10/2014	Survey Event:	1	Start Time:	9:20 AM	End Time:	3:30 PM
Start Temp:	64 F	End Temp:	76 F	Wind Speed/Direction:	0-10 NW		
Visibility:	Clear	Precipitation:	None				
Sites Sampled (in order):	C, D, B, K, J						
Biologists/Technicians:	Mike Dinardo, Mike Drauer, Mike Holdsworth, Matt Leonard, Kevin Muldrew						
Observations:	A skink with a blue tail was observed under board D69, but a positive ID could not be made. An 8 inch "S" shaped curve was observed under coverboard B60, which was determined to not be from a sand skink. No other signs of sand skinks were found under coverboards or in open sand. Numerous six-lined racerunners were observed under coverboards.						

Date:	4/11/2014	Survey Event:	1	Start Time:	8:45 AM	End Time:	3:35 PM
Start Temp:	65 F	End Temp:	80 F	Wind Speed/Direction:	0-10 N/NE		
Visibility:	Partly Cloudy	Precipitation:	None				
Sites Sampled (in order):	A, F, G, H						
Biologists/Technicians:	Mike Drauer, Mike Holdsworth, Kevin Muldrew						
Observations:	No signs of sand skinks were found under coverboards or in open sand. Numerous six-lined racerunners were observed under coverboards. Site A included observations of southern toads, five-lined skinks, eastern narrow-mouthed toads, and some brown anoles under coverboards.						

Date:	4/14/2014	Survey Event:	1	Start Time:	8:55 AM	End Time:	4:46 PM
Start Temp:	70 F	End Temp:	89 F	Wind Speed/Direction:	5-10 SE		
Visibility:	Partly Cloudy	Precipitation:	None				
Sites Sampled (in order):	I, L, M, N, O, O (24), Q, R, T, S, P, KK, II, GG, EE, DD, CC, BB, U, V, W, FF, HH, JJ						
Biologists/Technicians:	Mike Drauer, Mike Holdsworth, Matt Leonard, Kevin Muldrew						
Observations:	No signs of sand skinks were found under coverboards or in open sand. Several tracks of an unknown species, not a sand skink, were found under coverboards I15 and I25. A southern toad, a five-lined skink, a eastern narrow-mouthed toad, and numerous six-lined racerunners were observed under coverboards.						

Date:	4/16/2014	Survey Event:	1	Start Time:	8:50 AM	End Time:	10:43 AM
Start Temp:	55 F	End Temp:	60 F	Wind Speed/Direction:	5-10 NW		
Visibility:	Clear	Precipitation:	None				
Sites Sampled (in order):	X, Y, Z, AA						
Biologists/Technicians:	Mike Drauer, Matt Leonard, Kevin Muldrew						
Observations:	No signs of sand skinks were found under coverboards or in open sand. Numerous six-lined racerunners were observed under coverboards.						

Date:	4/21/2014	Survey Event:	2	Start Time:	9:35 AM	End Time:	2:45 PM
Start Temp:	65 F	End Temp:	75 F	Wind Speed/Direction:	0-5 NE		
Visibility:	Mostly Cloudy	Precipitation:	None				
Sites Sampled (in order):	C, D, B, J						
Biologists/Technicians:	Mike Holdsworth, Kevin Muldrew						
Observations:	No signs of sand skinks were found under coverboards or in open sand. Numerous six-lined racerunners and several eastern narrow-mouthed toads were found under coverboards.						

Date:	4/22/2014	Survey Event:	2	Start Time:	8:45 AM	End Time:	4:05 PM
Start Temp:	65 F	End Temp:	86 F	Wind Speed/Direction:	5-10 S/SW		
Visibility:	Partly Cloudy	Precipitation:	None				
Sites Sampled (in order):	K, I, H, G, F, L, M, N, O, O(24), Q, R, S, T, KK, II, GG, EE, DD, CC, U, BB, P						
Biologists/Technicians:	Mike Drauer, Mike Holdsworth, Matt Leonard						
Observations:	Tracks of an unknown species, not a sand skink, were found under coverboards K50 and G63. No signs of sand skinks were found under coverboards or in open sand. Numerous six-lined racerunners were found under coverboards.						

Date:	4/23/2014	Survey Event:	2	Start Time:	8:40 AM	End Time:	11:02 AM
Start Temp:	65 F	End Temp:	70 F	Wind Speed/Direction:	0-5 W/NW		
Visibility:	Clear	Precipitation:	None				
Sites Sampled (in order):	V, W, X, Y, Z, AA, FF, HH, JJ						
Biologists/Technicians:	Mike Drauer, Mike Holdsworth, Kevin Muldrew						
Observations:	No signs of sand skinks were found under coverboards or in open sand. A green anole, several eastern narrow-mouthed toads, and numerous six-lined racerunners were found under coverboards.						

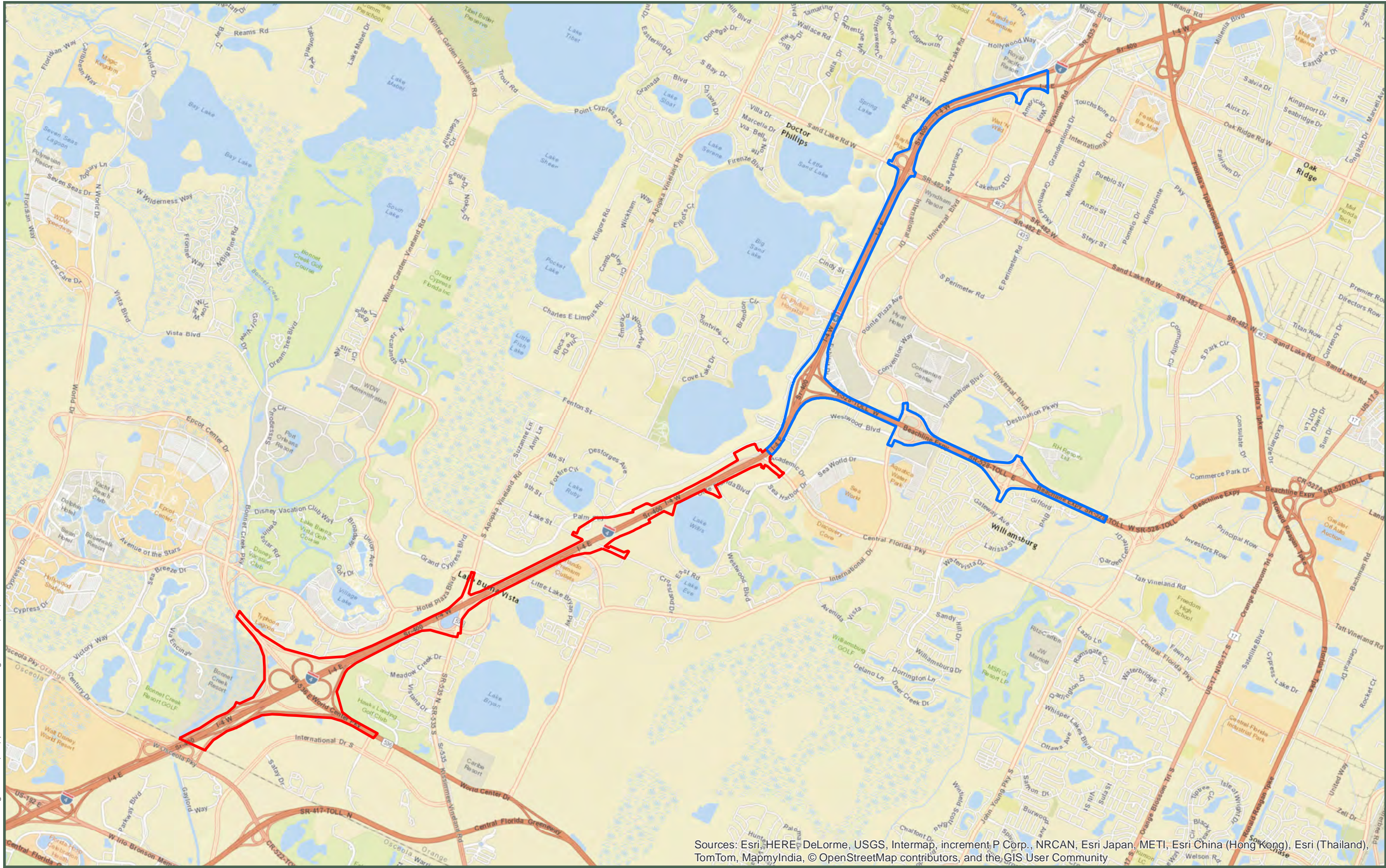
Date:	4/28/2014	Survey Event:	3	Start Time:	9:30 AM	End Time:	3:26 PM
Start Temp:	80 F	End Temp:	92 F	Wind Speed/Direction:	0-10 SE		
Visibility:	Clear	Precipitation:	None				
Sites Sampled (in order):	C, D, B, J, K						
Biologists/Technicians:	Mike Drauer, Mike Holdsworth, Kevin Muldrew						
Observations:	No signs of sand skinks were found under coverboards or in open sand. Several six-lined racerunners were found under coverboards.						

Date:	4/29/2014	Survey Event:	3	Start Time:	9:15 AM	End Time:	3:00 PM
Start Temp:	78 F	End Temp:	90 F	Wind Speed/Direction:	0-5 S		
Visibility:	Mostly Cloudy	Precipitation:	None				
Sites Sampled (in order):	F, V,W, X, Y, G, H, I, Z, AA, FF, HH, JJ, L, M, N, O, O(24), BB, P, Q, R, S, T, KK, II, GG, EE, DD, CC, U						
Biologists/Technicians:	Mike Drauer, Mike Holdsworth, Matt Leonard, Kevin Muldrew						
Observations:	No signs of sand skinks were found under coverboards or in open sand. Numerous six-lined racerunners, several eastern narrow-mouthed toads, and a brown anole were found under coverboards.						

Date:	5/5/2014	Survey Event:	4	Start Time:	9:00 AM	End Time:	2:27 PM
Start Temp:	65 F	End Temp:	85 F	Wind Speed/Direction:	0-5 W		
Visibility:	Clear	Precipitation:	None				
Sites Sampled (in order):	C, D, B, I, H, G, F, K, J, L, M, N, R, Q, S, T, U, P, O, O(24)						
Biologists/Technicians:	Mike Drauer, Mike Holdsworth, Matt Leonard, Kevin Muldrew						
Observations:	No signs of sand skinks were found under coverboards or in open sand. Numerous six-lined racerunners and several eastern narrow-mouthed toads were found under coverboards.						

Date:	5/6/2014	Survey Event:	4	Start Time:	8:38 AM	End Time:	10:55 AM
Start Temp:	70 F	End Temp:	80 F	Wind Speed/Direction:	0-5 W		
Visibility:	Clear	Precipitation:	None				
Sites Sampled (in order):	V, W, X, Y, Z, FF, HH, JJ, KK, AA, BB, II, GG, EE, DD, CC						
Biologists/Technicians:	Mike Drauer, Mike Holdsworth, Matt Leonard, Kevin Muldrew						
Observations:	No signs of sand skinks were found under coverboards or in open sand. Numerous six-lined racerunners and one eastern narrow-mouthed toad were found under coverboards.						

FIGURES



Map Key

Estimated R/W
 SR 400 PD&E Study

- ▬ Segment 1 (Orange Co.)
- ▬ Segment 2 (Orange Co.)

Segment 1 (Orange County):
 Begin Station 1042+95
 End Station 1345+48.48
 Begin MP 0.00 / End MP 5.650
 Total Length 5.650 miles

Segment 2 (Orange County):
 Begin Station 1345+48.48
 End Station 1550+23.13
 Begin MP 5.65 / End MP 9.562
 Total Length 3.912 miles

Title:
 SR 400 SAND SKINK SURVEY MEMO-
 Orange County
 Location Map

Client/Project:
 Florida Department of Transportation- D5
 SR 400 Project Development & Environment Study
 Orange County: Osceola/Orange County Line to
 W of SR 434 Kirkman Road

Project Location:
 23S/28E/24-26, 35-36
 24S/28E/1-2, 11-12, 14-15, 21-23, 27-29
 25S/28E/4-5

Prepared by: mLeonard 2014/08/12
 Technical Review by: mDrauer 2014/08/12
 Independent Review by: jMoore 2014/08/12

Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet



Figure A

1" = 4,500'

SR 400 (I-4) Project Development and Environmental (PD&E) Study | FM No. 432100-1-22-01

2024230168



Map Key

Estimated R/W
SR 400 PD&E Study

- Segment 1 (Orange Co.)
- Segment 2 (Orange Co.)
- County Line

Sand Skink Soil Series

- ARCHBOLD (2)
- ASTATULA (6) (7) (8)
- CANDLER (4) (5) (6) (7) (8) (9) (10)
- FLORAHOME (28) (29)
- LAKE (21)
- MILLHOPPER (24)
- PAOLA (24)
- POMELLO (27) (34) (35) (41)
- ST. LUCIE (38) (39) (43)
- TAVARES (31) (44) (45) (46) (47) (48)

Lat: 28.347581 / Long: -81.53064 (start) | Lat: 28.467916 / Long: -81.460961 (end)

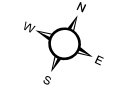
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Title:
SR 400 SAND SKINK SURVEY MEMO-
Orange County
NRCS Soil Unit Map

Client/Project:
Florida Department of Transportation- D5
SR 400 Project Development & Environment Study
Orange County: Osceola/Orange County Line to
W of SR 434 Kirkman Road

Project Location:
23S/28E/24-26, 35-36
24S/28E/1-2, 11-12, 14-15, 21-23, 27-29
25S/28E/4-5

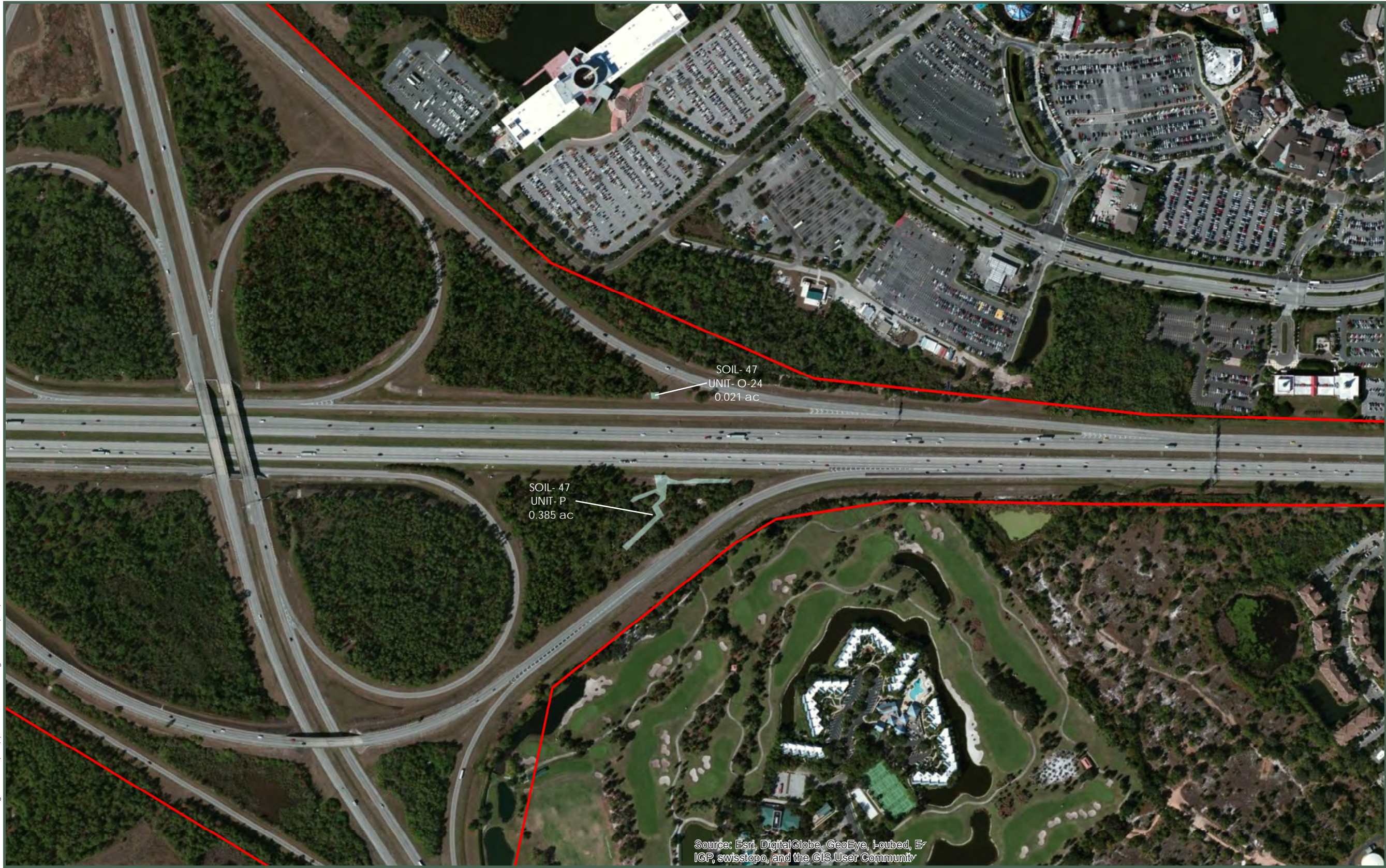
Prepared by: mLeonard 2014/08/12
 Technical Review by: mDrauer 2014/08/12
 Independent Review by: jMoore 2014/08/12



Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet

Figure B

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Map Key

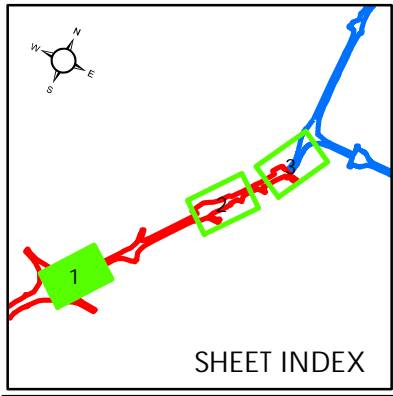
Estimated R/W
SR 400 PD&E Study

- Segment 1 (Orange Co.)
- Segment 2 (Orange Co.)
- County Line

Soil Units of Survey

- POMELLO (FINE SAND 0-5%), 34
- ST. LUCIE (FINE SAND 0-5%), 38
- TAVARES-MILLHOPPER (FINE SAND 0-5%), 47

Lat: 28.347581 / Long: -81.53064 (start) | Lat: 28.467916 / Long: -81.460961 (end)



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Orange County
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Client/Project:
Florida Department of Transportation- D5
SR 400 Project Development & Environment Study
Orange County: Osceola/Orange County Line to
W of SR 434 Kirkman Road

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23S/28E/24-26, 35-36
24S/28E/1-2, 11-12, 14-15, 21-23, 27-29
25S/28E/4-5

Prepared by: mLeonard 2014/08/12
 Technical Review by: mDrauer 2014/08/12
 Independent Review by: jMoore 2014/08/12

Source: Esri, DigitalGlobe, GeoEye, I-cubed, Earthstar, IGN, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet

Figure C - Sheet 1 of 3

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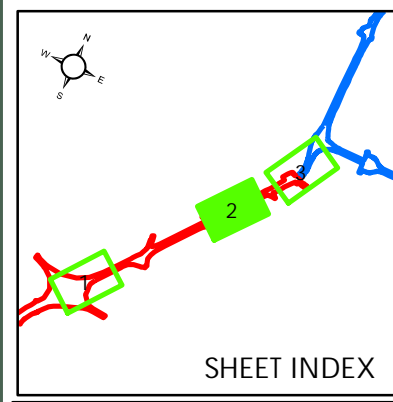
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 SR 400 PD&E Study

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- Segment 2 (Orange Co.)
- County Line

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- ST. LUCIE (FINE SAND 0-5%), 38
- TAVARES-MILLHOPPER (FINE SAND 0-5%), 47



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Source: Esri, DigitalGlobe, GeoEye, I-cubed, F
 IGP, swisstopo, and the GIS User Communit

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet

Figure C - Sheet 2 of 3

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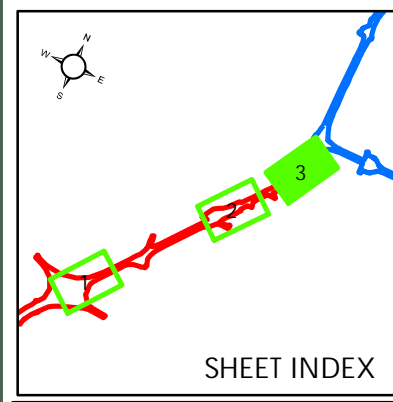
Map Key

Estimated R/W
SR 400 PD&E Study

- Segment 1 (Orange Co.)
- Segment 2 (Orange Co.)
- County Line

Soil Units of Survey

- POMELLO (FINE SAND 0-5%), 34
- ST. LUCIE (FINE SAND 0-5%), 38
- TAVARES-MILLHOPPER (FINE SAND 0-5%), 47



Title:
SR 400 SAND SKINK SURVEY MEMO-
Orange County
Sand Skink Survey Units Map

Client/Project:
Florida Department of Transportation- D5
SR 400 Project Development & Environmental Study
Orange County: Osceola/Orange County Line to
W of SR 434 Kirkman Road

Project Location:
23S/28E/24-26, 35-36
24S/28E/1-2, 11-12, 14-15, 21-23, 27-29
25S/28E/4-5

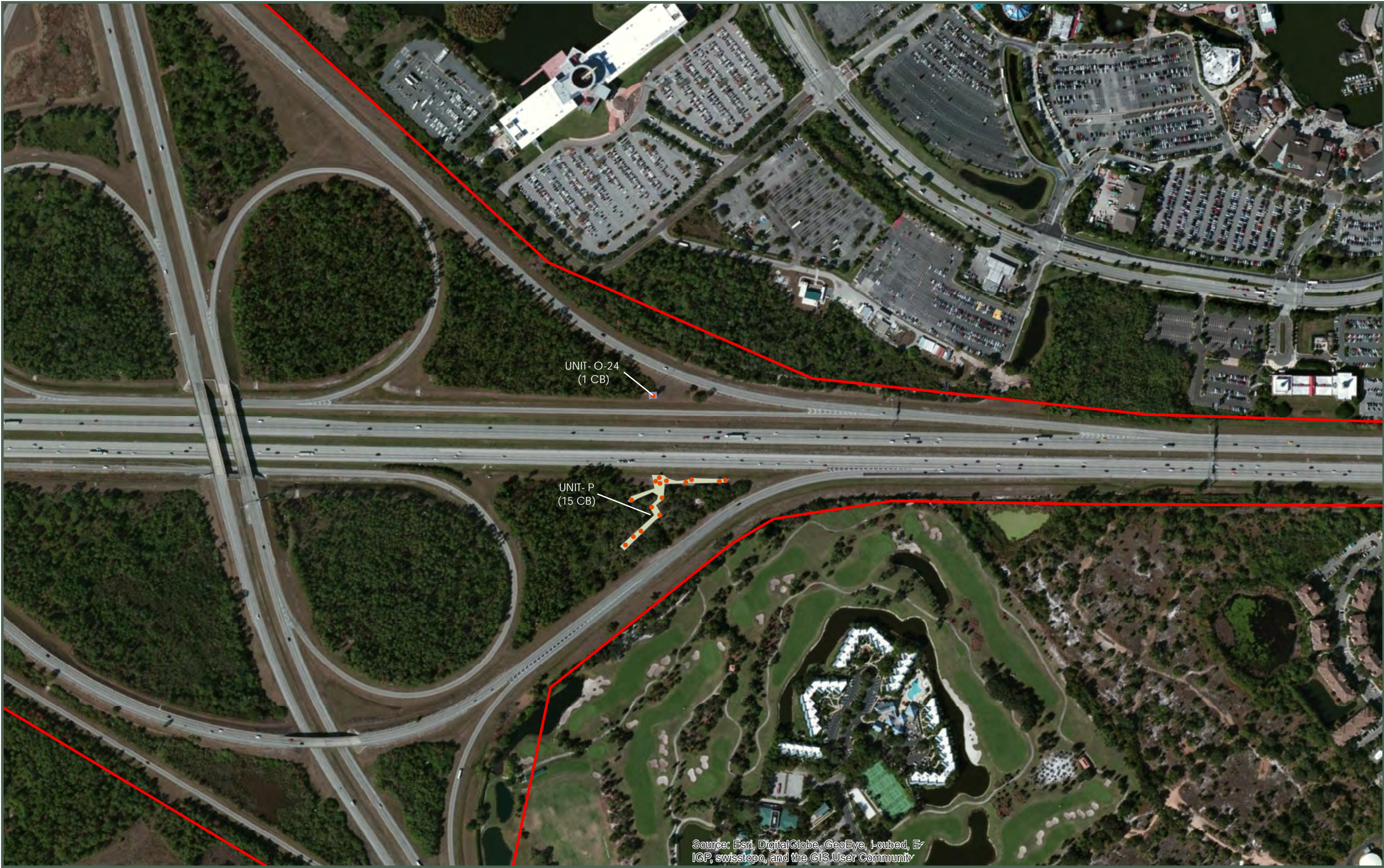
Prepared by: mLeonard 2014/08/12
 Technical Review by: mDrauer 2014/08/12
 Independent Review by: jMoore 2014/08/12

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar
IGP, swisstopo, and the GIS User Community

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet

Figure C - Sheet 3 of 3

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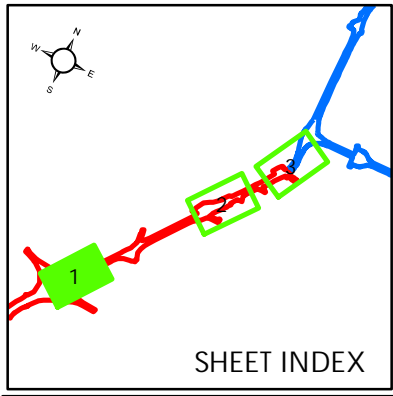
Map Key

Estimated R/W
SR 400 PD&E Study

- Segment 1 (Orange Co.)
- Segment 2 (Orange Co.)
- County Line

Survey Units

 UNIT- A	 UNIT- L
 UNIT- B	 UNIT- M
 UNIT- C	 UNIT- N
 UNIT- D	 UNIT- O
 UNIT- F	 UNIT-O24
 UNIT- G	 UNIT- P
 UNIT- H	 UNIT- Q
 UNIT- I	 UNIT- R
 UNIT- J	 UNIT- S
 UNIT- K	 UNIT- T



Title:
SR 400 SAND SKINK SURVEY MEMO-
Orange County
Coverboard Location Map

Client/Project:
Florida Department of Transportation- D5
SR 400 Project Development & Environment Study
Orange County: Osceola/Orange County Line to
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Project Location:
23S/28E/24-26, 35-36
24S/28E/1-2, 11-12, 14-15, 21-23, 27-29
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Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet

Figure D - Sheet 1 of 3

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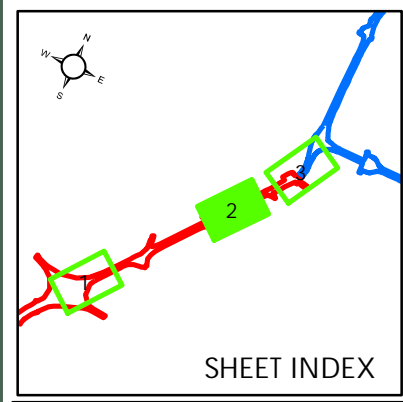
Map Key

Estimated R/W
SR 400 PD&E Study

- Segment 1 (Orange Co.)
- Segment 2 (Orange Co.)
- County Line

Survey Units

UNIT-A	UNIT-L
UNIT-B	UNIT-M
UNIT-C	UNIT-N
UNIT-D	UNIT-O
UNIT-F	UNIT-O24
UNIT-G	UNIT-P
UNIT-H	UNIT-Q
UNIT-I	UNIT-R
UNIT-J	UNIT-S
UNIT-K	UNIT-T



Title:
SR 400 SAND SKINK SURVEY MEMO-
Orange County
Coverboard Location Map

Client/Project:
Florida Department of Transportation- D5
SR 400 Project Development & Environment Study
Orange County: Osceola/Orange County Line to
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24S/28E/1-2, 11-12, 14-15, 21-23, 27-29
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IGP, swisstopo, and the GIS User Communit

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet

Lat: 28.347581 / Long: -81.53064 (start) | Lat: 28.467916 / Long: -81.460961 (end)

Figure D - Sheet 2 of 3

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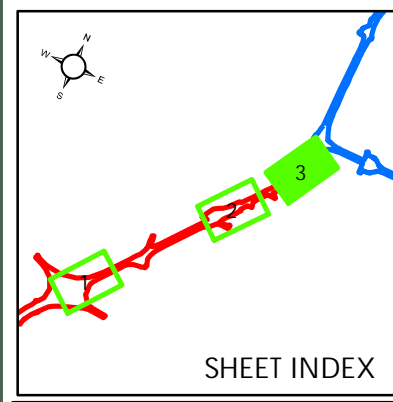
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UNIT-B	UNIT-M
UNIT-C	UNIT-N
UNIT-D	UNIT-O
UNIT-F	UNIT-O24
UNIT-G	UNIT-P
UNIT-H	UNIT-Q
UNIT-I	UNIT-R
UNIT-J	UNIT-S
UNIT-K	UNIT-T



Title:
SR 400 SAND SKINK SURVEY MEMO-
Orange County
Coverboard Location Map

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Figure D - Sheet 3 of 3

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