

Wekiva Section 6
From West of Old McDonald Road to
East of the Lake/Seminole County Line
Lake & Seminole Counties, Florida

Final Pond Siting Report

FMN: 238275-7-52-01

Prepared For:

**Florida Department of Transportation
District Five**



**719 South Woodland Boulevard
Deland, Florida 32720**

**Prepared by:
BCC Engineering, Inc.
160 North Westmonte Drive, Suite 2000
Altamonte Springs, Florida 32714**

August 10, 2014

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Responsible Professional: J. Alexander George, P.E
P.E. No. 59006
Date: August 10, 2014

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) is preparing the concept design for SR 429 (Wekiva Parkway) from west of Old McDonald Road (Sta. 640+00) to east of the Lake/Seminole County Line (Sta. 931+20), a length of approximately 5.50 miles. This section of the Wekiva Parkway is identified as Wekiva Section 6. SR 429 is designed as a 4-lane limited access rural expressway, but this Pond Siting Report will evaluate the stormwater requirements for the ultimate 6-laning of SR 429.

This Pond Siting Report is provided to present an evaluation of stormwater alternatives and recommendations. This Pond Siting Report utilizes the *SR 429 (Wekiva Parkway) Proposed Pond Update, Sections 6 and 7A* report (by The Balmoral Group, dated September 3, 2012) as the basis for evaluation, and provides updates to the evaluation based on design changes, additional geotechnical information gathered, and final design criteria listed herein. In addition, alternate pond sites and a pond site alternative analysis were identified for each basin. Nine (9) basins have been identified within the project limits.

Please note that pond siting for two of the basins (Basins RS8-E and RS9-E) are not within the scope of this Pond Siting Report. Basins RS8-E and RS9-E are located in the vicinity of the Wekiva River Mitigation Bank (formerly the New Garden Coal property). Pond siting and sizing, as well as floodplain analysis and mitigation, for Basins RS8-E and RS9-E was completed by The Balmoral Group during the Line & Grade phase. Right-of-way acquisition for Ponds RS8-E-1 and RS9-E-1 has been completed. Documentation for the recommended pond alternatives are provided in the *New Garden Coal Property Drainage Report*, dated May 17, 2013. Selected information from this report is provided herein to assist in the nutrient loading analysis for Rock Springs Run, which is contained in this report.

The project limits are located entirely within the Wekiva River Hydrologic Basin and the Wekiva Recharge Protection Basin. The Wekiva River and its tributaries, including Rock Springs Run, Black Water Creek, and Seminole Creek are designated Outstanding Florida Waters (OFW) and State Aquatic Preserves per Chapter 62-302, F.A.C. Therefore, OFW criteria as presented in the SJRWMD Permit Information Manual (dated October 1, 2013) apply for all basins identified herein.

Based on discussions with the FDEP, basins with Adopted TMDLs shall be required to demonstrate net improvement for nutrient (total nitrogen and total phosphorus) loading. Stormwater management systems within the Rock Springs Run (Basins RS7-E, RS8-E and RS9-E) and Wekiva River (Basins WR1-E and WR2A-S) basins must meet net improvement criteria for nutrient loading. Per discussion with FDEP and SJRWMD, nutrient loading criteria is not required for discharges to Seminole Creek (Basin SC1-E) or Black Water Creek (Basins BW1-E and BW2-E).

The use of flowage easements within the project limits was evaluated, but was found to be infeasible due to the site constraints, soil types and the open basins throughout the project limits. The additional runoff generated from the proposed improvements is not contained on state lands, and will be conveyed downstream to developed properties without attenuation.

Based on the analysis contained herein, the following pond sites are recommended:

- **For Basins RS7-E and SC1-E, the recommended option is Pond RS7-E-5. This option is identified as Alternative 1.** Alternative 1 will be supplemented by the use of shallow retention under Wildlife Crossing 1 where deemed feasible to minimize the size of Pond RS7-E-5. Level 1 Contamination Screening Evaluation Report (CSER) Update and Level 2 Contamination Impact Assessment Addendum – Former Cattle Dip Area, Wekiva Parkway Section 6 (Terracon, July 2014) identified arsenic contamination under Wildlife Crossing 1. Based on recommendations from Terracon, shallow retention areas will be kept a minimum 100' from the limits of contaminated area identified. As the shallow retention areas have not received final approval from FDOT and the regulatory agencies, the exact configuration and limits of the shallow retention areas will be coordinated with the Department's environmental consultant to minimize impacts to wildlife passage. Coordination on these contamination and environmental issues will continue during the design phase. Alternative 1 provides the required water quality treatment and attenuation for the basin without the use of shallow retention areas.

- **Pond siting for Basins RS8-E and RS9-E is not within the scope of this report.** Pond locations within Basins RS8-E (Pond RS8-E-1) and Basin RS9-E (Pond RS9-E-1) have already been identified during the Line & Grade phase (provided in the *New Garden Coal Property Drainage Report* by the Balmoral Group, dated May 17, 2013), and right-of-way acquisition is underway for these ponds. Based on the Line & Grade documentation, these ponds are sufficient to provide the required water quality treatment and attenuation. However, these basins are located within the Rock Springs Run basin which has adopted TMDLs for nutrients. These ponds sites are not sufficient to meet net improvement criteria for nutrient loading. Therefore, selected information from this report is provided herein to assist in the nutrient loading analysis for Rock Springs Run which is needed to meet net improvement criteria in the Rock Spring Run basin.
 - **In Basin RS8-E-1, the recommended option is Ponds RS8-E-1 and RS7-E-2A (identified as Alternative 1).** The remaining alternatives (Alternatives 2 and 3) utilize compensatory treatment of SR 46 (which will be conveyed to the County following construction of this project), and require right-of-way acquisition from 9 parcels along SR 46 that are not currently impacted by the proposed improvements for conveyance or treatment swale systems.

 - **There are no changes to the recommendations proposed during the Line & Grade phase for Basin RS9-E-1.**

- **For Basin BW1A-E, the recommended option is Pond BW1A-E-6 (identified as Alternative 1).** This option utilizes state conservation land bounded by roadways, and minimizes impacts to contiguous state conservation lands located north of CR 46A.

- **For Basin BW1-E, the recommended option is Ponds BW1-E-2, BW1-E-3 and BW1-E-4 (identified as Alternative 1).** This option minimizes the impacts to state conservation

land beyond the footprint of the roadways. Alternative 1 utilizes the area between SR 429 and SR 46, which will be impacted even if other stormwater alternatives are utilized.

- **For Basin BW2-E, the recommended option is Ponds BW2-E-1, BW2-E-2 and BW2-E-5A (identified as Alternative 1).** This option minimizes the impacts to state conservation land beyond the footprint of the roadways. The use of compensatory treatment is not required, but will be used as feasible to minimize the drainage improvements required to convey runoff from Wildlife Crossing 2 to Pond BW2-E-5A.
- **For Basin WR1-E, the recommended option is Ponds WR1-E-1, WR1-E-5A and WR1-E-7 (identified as Alternative 1).** This option minimizes the impacts to private parcels adjacent to the SR 429 right-of-way needed to meet net improvement criteria for the Wekiva River basin. The locations of Ponds WR1-E-1 and WR1-E-7 have been previously coordinated with FDEP. Approximately 600 feet of Service Road 1 (at the intersection with Wekiva River Road) may require a separate outfall and water quality treatment to meet project commitments if found to be too low to drain to Pond WR1-E-1.
- **For Basin WR2A-S, the recommended option is Pond WR2A-S-2 (identified as Alternative 1).** Due to site constraints in the vicinity of the Wekiva River, water quality treatment and attenuation requirements for the proposed SR 429 and Service Road improvements between Sta. 920+00 and Sta. 930+20 (including the proposed bridges over the Wekiva River within these limits) will be provided in the preferred pond alternative for Basin WR1 in Wekiva Section 7A (Pond WR1). Pond WR2A-S-2 will provide water quality treatment for a small section of the access road to Wekiva Oaks Circle (within Wekiva Section 7A) that cannot be treated in Pond WR1. Attenuation requirements will be met by utilizing the remaining ponds within Wekiva Section 6 and 7A that drain to the Wekiva River. Pond WR2A-S is located under the proposed Wekiva River bridges within the SR 429 right-of-way.

The proposed improvements will impact floodplains within the project limits. The floodplains identified in the vicinity of the project improvements (excluding the Wekiva River crossing) are classified as Zone A floodplains, with no base flood elevations determined. Therefore, an ICPR model of the existing condition utilizing LiDAR data from Lake County was prepared in order to determine base flood elevations. The Wekiva River floodplain is classified as Zone AE, with base flood elevations determined. Impacts to the Wekiva River Zone AE floodplain are addressed in the *Draft Bridge Hydraulic Report for the SR 429/SR 46 Bridges over the Wekiva River* (dated September 2013).

Based on the analysis contained herein, the following floodplain compensation areas are recommended:

- **For impacts to FP-15 (within Basin RS7-E), the recommended option is FPC-1.** This alternative provides a direct connection to the impacted floodplain.
- **Floodplain impacts and compensation within Basins RS8-E and RS9-E** were addressed in the *New Garden Coal Property Drainage Report* (May 2013), and **are not included herein.** Impacts to floodplains and historic basin storage were mitigated through

dynamic routing of the proposed improvements using ICPR, and not calculated using the volumetric approach. The *New Garden Coal Property Drainage Report* (May 2013) utilized a comparison of existing and proposed conditions node maximum stages to demonstrate mitigation of floodplain impacts, rather than providing a summary of floodplain impacts and compensation areas.

- **For impacts to FP-24 (within Basin BW1-E), the recommended option is Pond BW1-E-2.** FP-24 is an isolated floodplain and located entirely within the footprint of Pond BW1-E-2.
- **For impacts to FP-26 and FP-27 (within Basin BW2-E), the recommended option the use of drainage improvements to convey runoff to the north through the project site.** Due to the high SHGWT in the area, use of a floodplain compensation area using a volumetric approach is not feasible without significant impacts to state lands. Dynamic routing will be used for the evaluation of drainage improvements necessary to mitigate floodplain impacts. If necessary, Pond BW2-E-1 will be utilized to assist in floodplain compensation, and coordination will take place with state land managers will take place to determine if a nominal increase in floodplain elevation is preferred (as the floodplain is contained entirely within Rock Springs Run State Reserve.
- **For impacts to FP-28 (within Basin WR1-E), the recommended option is FPC-2.** This alternative provides a direct connection to the impacted floodplain.

The recommended stormwater alternatives meet the Recharge Standard for the Wekiva Recharge Protection Basin by providing retention storage within the project limits equal to 3 inches of runoff from all impervious areas proposed to be constructed within “Most Effective Recharge Areas”.

The project improvements meet the Wekiva River Standard for Riparian Wildlife Habitat. Currently untreated water within the proposed right-of-way will be directed to stormwater ponds that meet current state regulations for Outstanding Florida Waters (OFW) and Total maximum Daily Loads (TMDL). In addition, the proposed improvements within the RHPZ include substantially longer and higher bridge crossings over the Wekiva River and removal of existing embankment fill adjacent to the Wekiva River. Aquatic and wetland-dependent species will not be adversely affected by the project, and clear-spanning of the Wekiva River main channel and removal of the existing pier bents will result in enhanced natural conditions at the bridge crossing. These improvements will enhance the riparian area of the river, creating the opportunity for existing native vegetation to thrive which reduces the likelihood that non-native or nuisance vegetation will become established. The proposed addition of wildlife fencing at the Wekiva River bridge crossing will deter human access and entry in areas along the Wekiva River. These improvements promote a more endemic state for aquatic and wetland-dependent species within the RHPZ.

ALTERNATIVE EVALUATION MATRIX		
Project Basin	RS7-E and SC1-E	
Basin Limits	Sta. 640+00 to Sta. 680+00, SR 429; Ramps P and Q	
Basin Type and Outfall Location	Open basin with outfall to wetlands adjacent to Seminole Creek at Sta. 666+00, Lt. (at the existing animal crossing under SR 46)	
Calculated Volumes Required	23.53 ac-ft for 25-year/24-hour attenuation 5.97 ac-ft for water quality treatment (OFW criteria)	
Basin Notes	The proposed SR 429 alignment is located along the existing condition drainage boundary between the Rock Springs Run basin (which discharges to the southeast) and the Seminole Creek basin (which discharges to the northwest). The Rock Springs Run and Seminole Creek basins are interconnected within the project limits by a series of local depressions which discharge to both basins during larger storm events.	
Special Basin Criteria	Wekiva Basin criteria. Rock Springs Run (WBID 2967) has adopted TMDLs for nutrients (TP and Nitrate-N). Therefore, all pond options are sized to discharge north to Seminole Creek to assist in nutrient loading reductions.	
Description of Alternative 1:	Alternative 1 consists of a wet detention pond located at Sta. 665+00, Rt., SR 429. This option requires collection and conveyance of runoff from the Wildlife Crossing #1 bridges (3-1800' long bridges) to Pond RS7-E-5. The use of swale systems to convey runoff to the pond may adversely impact wildlife passage through Wildlife Crossing #1, so the use of storm drain systems to collect and convey runoff from scuppers or bridge deck drains may be required. This pond has been sized to discharge north to Seminole Creek in order to assist with nutrient loading reductions to Rock Springs Run. No existing utilities are impacted by this pond alternative. FGT gas lines are located north of SR 46.	
Pond RS7-E-5		
Description of Alternative 2:	Alternative 2 consists of 2 stormwater facilities - Pond RS7-E-1A is a wet detention pond located at Sta. 665+00 (in the same location as Pond RS7-E-5), and a series of shallow retention areas (identified as Stormwater Management Area [SMA] RS7-E-4) located under Wildlife Crossing #1. The shallow retention areas located under Wildlife Crossing #1 will provide complete retention of the 25-year/24-hour storm for runoff from the wildlife crossing (Sta. 662+00 to Sta. 680+00), and Pond R7-E-1A will provide the required treatment and attenuation for the remainder of the basin (Sta. 640+00 to Sta. 662+00). Pond R7-E-1A has been sized to discharge north to Seminole Creek in order to assist with nutrient loading to Rock Springs Run. The viability of wildlife passage through the shallow retention areas will continue to be coordinated with the Department's environmental consultant. No existing utilities are impacted by this pond alternative. FGT gas lines are located north of SR 46.	
Pond RS7-E-1A SMA RS7-E-4		
Pond Notes	Ponds RS7-E-5 and RS7-E-1A are located in close proximity to a pond site identified in the 2010 Pond Siting Report (PSR). The PSR indicates that coordination with FDEP occurred to place a pond (previously named Pond RS7a-E-1) in this location to avoid conflict with the wildlife crossing.	
Alternative:	Alternative 1	Alternative 2
Volume Required:	23.53 ac-ft	23.53 ac-ft
Volume Provided:	24.62 ac-ft	23.80 ac-ft (total)
Pond Area Req'd:	13.8 ac	10.0 ac (Pond RS7-E-5); N/A (SMA RS7-E-4)
Roadway LEOP EI.:	64.60	64.60
Distance from LEOP:	380 ft	380 ft
Pond DHW EI.:	60.86	60.79
Current Land Use:	State conservation land	State conservation land
Future Land Use:	No change	No change
Site Impacts:		
Wetlands/OSW:	None	None
Habitat:	Yes	Yes
4(f) Resources:	Yes*	Yes*
Floodplain:	None	None
Contamination:	Low Potential	Low Potential**
Historical:	None	None
Archeological:	None	None
Utility Reloc. Cost:	None	None
Pond Cost (Right-of-Way and Construction Cost)	\$1,158,501	\$811,987
Recommendation:	Alternative 1 is the recommended option, to be supplemented by the use of shallow retention under Wildlife Crossing 1 where deemed feasible to minimize the size of Pond RS7-E-5. As the shallow retention areas have not received final approval from FDOT and the regulatory agencies, the exact configuration and limits of the shallow retention areas will be coordinated with the Department's environmental consultant to minimize impacts to wildlife passage. Alternative 1 provides the required water quality treatment and attenuation for the basin without the use of shallow retention areas.	

Notes:	*FDEP has formally provided full Section 4(f) concurrence to FDOT for the potential impacts in Rock Springs Run State Reserve.
	** The Contamination Risk for Alternative 2 has been set to Low based on the findings provided in the Level 1 Contamination Screening Evaluation Report (CSER) Update and Level 2 Contamination Impact Assessment Addendum – Former Cattle Dip Area, Wekiva Parkway Section 6 (Terracon, July 2014). Based on recommendations from Terracon, shallow retention areas will be kept a minimum 100' from the limits of contaminated area identified. Further coordination with Terracon will take place during the design phase.

Note: The cost evaluation for the stormwater management facility alternatives in this report includes stormwater management facility construction costs, costs associated with wetland impacts, and parcel acquisition costs. The stormwater management facility construction costs include the costs of drainage structures and pipes associated with the outfall, clearing and grubbing, earthwork excavation and grading, berm construction, fencing, access accommodations and sodding. The associated parcel acquisition costs for each alternative evaluated include the estimated cost of land and any impacted improvements, administrative costs and legal fees.

ALTERNATIVE EVALUATION MATRIX			
Project Basin	RS8-E		
Basin Limits	Sta. 680+00 to Sta. 723+00, SR 429; Access Road 1; SR 46 (where indicated below)		
Basin Type and Outfall Location	Open basin with outfall south to wetlands adjacent to Rock Springs Run		
Calculated Volumes Required	N/A for 25-year/24-hour attenuation N/A for water quality treatment (OFW criteria)		
Basin Notes	Pond siting and sizing for Basin RS8-E is not within the scope of this Pond Siting Report. Pond siting and sizing for Pond RS8-E-1, a wet detention pond, was completed by The Balmoral Group during development of the Line & Grade plans for right-of-way acquisition from the Wekiva River Mitigation Bank (formerly New Garden Coal). Pond RS8-E-1 is sufficient to meet water quality treatment and attenuation requirements for Basin RS8-E-1, but wet detention does not provide the required nutrient load reduction within the Rock Springs Run basin to meet net improvement criteria. Therefore, the stormwater alternatives provided herein will supplement Pond RS8-E-1 to meet nutrient loading requirements. In addition, existing R 46 will be conveyed to Lake County following construction of this project.		
Special Basin Criteria	Wekiva Basin criteria. Rock Springs Run (WBID 2967) has adopted TMDLs for nutrients (TP and Nitrate-N).		
Description of Alternative 1:	Alternative 1 consists of a dry retention pond located west of Access Road 1 at Sta. 682+00, Lt., SR 429. This pond will provide water quality treatment and attenuation for Access Road 1 and SR 429 between Sta. 680+00 and Sta. 690+50. The use of this dry retention pond will reduce the contributing drainage area to Pond RS8-E-1, and increase the nutrient load reduction in post-development conditions. The pond is located on 2 parcels - a large remainder of a parcel impacted by Access Road 1, and Rock Springs State Reserve property. The pond is located outside of the wildlife crossing corridor, with the western limits. The pond will outfall east of Access Road 1 and drain south to a proposed cross drain under SR 429, ultimately discharging to wetlands adjacent to Rock Springs Run. This pond alternative will impact the existing Old McDonald Rd turnout at SR 46. The turnout and a portion of Old McDonald Rd (a dirt road) between SR 46 and Wildlife Crossing 1 will require relocation to the west side of Pond RS7-E-2A.		
Pond RS8-E-1 Pond RS7-E-2A			
Description of Alternative 2:	Alternative 2 consists of a dry retention pond located along existing SR 46. Pond RS7-E-3 will treat approximately 1.83 ac of existing impervious area along SR 46 within the Rock Springs Run basin in order to assist in the nutrient load reduction. In existing conditions, runoff sheet flows from existing SR 46 to adjacent properties. Therefore, this alternative will require a swale system to collect and convey runoff from the south side of SR 46 to Pond RS7-E-3. Due to the limited right-of-way along SR 46, additional right-of-way would be required in order to construct a swale system. The construction of a swale system along the south side of SR 46 may impact buried telephone and fiber optic utilities.		
Pond RS8-E-1 Pond RS7-E-3			
Description of Alternative 3:	Alternative 3 consists of linear treatment swales located along the south side of existing SR 46. The treatment swales will treat approximately 1.83 ac of existing impervious area along SR 46 within the Rock Springs Run basin in order to assist in the nutrient load reduction. Due to the limited right-of-way along SR 46, additional right-of-way would be required in order to construct a swale system.		
Pond RS8-E-1 Treatment Swales			
Pond Notes	The information provided for Alternatives 1-3 below do not consider Pond RS8-E-1 information, as Pond RS8-E-1 was sized during the Line & Grade effort. The numbers below reflect only the supplemental pond information		
Alternative:	Alternative 1	Alternative 2	Alternative 3
Volume Required:	N/A	N/A	N/A
Volume Provided:	5.73 ac-ft	0.72 ac-ft	N/A
Pond Area Req'd:	5.0 ac	1.53 ac	N/A
Roadway LEOP EI.:	58.50 (Access Road 1)	56.0 (est.) (SR 46)	varies
Distance from LEOP:	90 ft	700 ft	N/A
Pond DHW EI.:	56.51	53.18	N/A
Current Land Use:	State conservation land and agricultural	Agricultural	Agricultural and low-density residential
Future Land Use:	No change	No change	No change
Site Impacts:			
Wetlands/OSW:	None	None	None
Habitat:	Yes	No	No
4(f) Resources:	Yes*	No	No
Floodplain:	None	None	None
Contamination:	Low Potential	Low Potential	Low Potential
Historical:	None	None	None
Archeological:	None	None	None
Utility Reloc. Cost:	None		
Pond Cost** (Right-of-Way and Construction Cost)	\$542,040	\$296,908	N/A

Recommendation:	Alternative 1 is the recommended option. Pond RS7-E-2A will provide water quality treatment through retention for Access Road 1 and a portion of SR 429, thereby reducing the contributing drainage area to Pond RS8-E-1. The use of retention for water quality treatment decreases the nutrient loading to Rock Springs Run. This alternative utilizes the remainder of the parcel impacted by Access Road 1, as well as state conservation land. Alternatives 2 and 3 require right-of-way acquisition from 9 private parcels not currently impacted by the project. In addition, SR 46 will be conveyed to Lake County following construction of this project.
Notes:	*FDEP has formally provided full Section 4(f) concurrence to FDOT for the potential impacts in Rock Springs Run State Reserve. ** Pond cost does not include additional R/W required for conveyance along SR 46 or for treatment swales.

Note: The cost evaluation for the stormwater management facility alternatives in this report includes stormwater management facility construction costs, costs associated with wetland impacts, and parcel acquisition costs. The stormwater management facility construction costs include the costs of drainage structures and pipes associated with the outfall, clearing and grubbing, earthwork excavation and grading, berm construction, fencing, access accommodations and sodding. The associated parcel acquisition costs for each alternative evaluated include the estimated cost of land and any impacted improvements, administrative costs and legal fees.

ALTERNATIVE EVALUATION MATRIX		
Project Basin	BW1A-E	
Basin Limits	Sta. 2007+36 to Sta. 2018+36, SR 46; Connector Road	
Basin Type and Outfall Location	Open basin with outfall to wetlands adjacent to Seminole State Forest. Ultimate discharge to Black Water Creek.	
Calculated Volumes Required	2.00 ac-ft for 25-year/24-hour attenuation 0.62 ac-ft for water quality treatment (OFW criteria)	
Basin Notes	Volumes required for Alternatives 1 and 2 vary due to soil types and contributing areas at pond locations. Required volumes for recommended alternative provided above.	
Special Basin Criteria	Wekiva Basin criteria	
Description of Alternative 1:	Alternative 1 consists of a dry retention pond located at north of the Connector Road intersection with SR 46, on Seminole State Forest land. Pond will outfall to existing cross drain under CR 46A, and north to Black Water Creek.	
Pond BW1A-E-6	Pond BW1A-E-6 is set back from the FGT gas easement. No impacts are to the FGT easement are anticipated.	
Description of Alternative 2:	Alternative 2 consists of a dry retention pond located at north of the Connector Road intersection with CR 46A, on Seminole State Forest land. Pond will outfall north to Black Water Creek.	
Pond BW1A-E-7	Pond BW1A-E-7 is set back from the FGT gas easement. No impacts are to the FGT easement are anticipated.	
Pond Notes		
Alternative:	Alternative 1	Alternative 2
Volume Required:	2.00 ac-ft	0.91 ac-ft
Volume Provided:	2.23 ac-ft	1.34 ac-ft
Pond Area Req'd:	2.6 ac	2.3 ac
Roadway LEOP EI.:	53.00	53.00
Distance from LEOP:	200 ft	250 ft
Pond DHW EI.:	51.80	48.35
Current Land Use:	State conservation land	State conservation land
Future Land Use:	No change	No change
Site Impacts:		
Wetlands/OSW:	None	None
Habitat:	Yes	Yes
4(f) Resources:	Yes*	Yes*
Floodplain:	None	None
Contamination:	Low Potential	Low Potential
Historical:	None	None
Archeological:	None	None
Utility Reloc. Cost:	None	None
Pond Cost (Right-of-Way and Construction Cost)	\$164,355	\$162,062
Recommendation:	Alternative 1 is the recommended option. Alternative 1 utilizes state conservation land bounded by roadways, and minimizes the impact to contiguous state conservation land north of CR 46. The cost for Alternative 2 does not consider roadway improvements required for a proposed drainage system under SR 46 to convey flow to Pond BW1A-E-7.	
Notes:	*DOF has formally provided full Section 4(f) concurrence to FDOT for the potential impacts in Seminole State Forest.	

Note: The cost evaluation for the stormwater management facility alternatives in this report includes stormwater management facility construction costs, costs associated with wetland impacts, and parcel acquisition costs. The stormwater management facility construction costs include the costs of drainage structures and pipes associated with the outfall, clearing and grubbing, earthwork excavation and grading, berm construction, fencing, access accommodations and sodding. The associated parcel acquisition costs for each alternative evaluated include the estimated cost of land and any impacted improvements, administrative costs and legal fees.

ALTERNATIVE EVALUATION MATRIX			
Project Basin	BW1-E		
Basin Limits	Sta. 758+00 to Sta. 801+27, SR 429; Sta. 1112+44 to Sta. 1155+47, Service Road 2		
Basin Type and Outfall Location	Open basin with outfall to wetlands adjacent to Black Water Creek. There are 2 outfall locations in existing conditions - a 24" cross drain under SR 46 (Sta. 775+00, Rt., SR 429) and a 30" cross drain under SR 46 at Sta. 787+50. Both cross drain outfalls are in proximity to the pond alternatives, and discharge to Seminole State Forest. Ponds BW1-E-2, BW1-E-3 and BW1-E-6 utilize the cross drain outfall at Sta. 775+00, Rt., SR 429 for pond sizing purposes. Ponds BW1-E-4 and BW1-E-5 utilize the cross drain outfall at Sta 787+50, Rt. for pond sizing purposes.		
Calculated Volumes Required	14.78 ac-ft for 25-year/24-hour attenuation 5.81 ac-ft for water quality treatment (OFW criteria)		
Basin Notes	Volumes required for Alternatives 1-3 vary due to differences in contributing areas due to pond locations. Required volumes for recommended alternative provided above.		
Special Basin Criteria	Wekiva Basin criteria.		
Description of Alternative 1:	Alternative 1 consists of 3 wet detention ponds located in between SR 46 and SR 429 (Sta. 769+00 to Sta. 791+00, Rt., SR 429). Ponds BW1-E-2 and BW1-E-3 will be interconnected ponds, and Pond BW1-E-4 will have a separate pond outfall. All ponds are located in between SR 46 and SR 429 in remainders of parcels impacted by SR 429. Pond BW1-E-2 is located within floodplain FP-24, and impacts an isolated wetland located in between SR 46 and SR 429. A level spreader will be required for the pond outfalls as there is no defined channel near the proposed pond outfalls.		
Pond BW1-E-2 Pond BW1-E-3 Pond BW1-E-4	The 3 pond alternatives are located in proximity to Site 49 (Sims Landscaping) and Site U4 (TA Enterprises). Both sites are considered a Low Risk for contamination.		
Description of Alternative 2:	Alternative 2 consists of a 2 wet detention ponds, consisting of Pond BW1-E-4 (described above) and Pond BW1-E-5 (located on the south side of SR 46 at the entrance to Rock Springs Run State Reserve at Sta. 792+00, Rt., SR 429). Archeological site 8LA3585 was identified within this pond area (formerly called BW1-E-1), but is not considered potentially eligible for listing in the NHRP. A level spreader will be required for the pond outfalls as there is no defined channel near the proposed pond outfalls.		
Pond BW1-E-4 Pond BW1-E-5			
Description of Alternative 3:	Alternative 3 consists of a wet detention pond located on Seminole State Forest at Sta. 780+00, Lt., SR 429. A level spreader will be required for the pond outfalls as there is no defined channel near the proposed pond outfall. The FGT easement is located to the north of Pond BW1-E-6, adjacent to the pond. No FGT impacts are anticipated. A level spreader will be required for the pond outfalls as there is no defined channel near the proposed pond outfalls.		
Pond BW1-E-6			
Pond Notes			
Alternative:	Alternative 1	Alternative 2	Alternative 3
Volume Required:	14.78 ac-ft	15.57 ac-ft	19.25 ac-ft
Volume Provided:	16.08 ac-ft	16.59 ac-ft	19.80 ac-ft
Pond Area Req'd:	13.2 ac (total)	3.0 ac (Pond BW1-E-4); 9.2 ac (Pond BW1-E-5)	12.5 ac
Roadway LEOP EI.:	46.26 (Service Road 2) (Ponds BW1-E-2 and BW1-E-3), 43.95 (Service Road 2) (Pond BW1-E-4)	43.95 (Service Road 2) (Pond BW1-E-4); 46.26 (Service Road 2) (Pond BW1-E-5),	43.95 (Service Road 2)
Distance from LEOP:	360 ft (Ponds BW2-E-2 and BW2-E-3); 450 ft (Pond BW2-E-4)	910 ft	110 ft
Pond DHW EI.:	44.67 (Ponds BW1-E-2 and BW1-E-3); 42.54 (Pond BW1-E-4)	42.54 (Pond BW1-E-4); 44.17 (Pond BW1-E-5)	34.90
Current Land Use:	CR 46A; commercial; state conservation land	State conservation land	State conservation land
Future Land Use:	Property located in between SR 46 and SR 429	No change	No change
Site Impacts:			
Wetlands/OSW:	Yes	None	Yes
Habitat:	Yes	Yes	Yes
4(f) Resources:	Yes*	Yes**	Yes*
Floodplain:	Yes	Yes	None
Contamination:	Low Potential	Low Potential	Low Potential
Historical:	None	None	None
Archeological:	None	None	None
Utility Reloc. Cost:	None	None	None
Pond Cost (Right-of-Way and Construction Cost)	\$1,964,607	\$2,158,328	\$2,526,469

Recommendation:	Alternative 1 is the recommended option. The use of ponds within the area between SR 46 and SR 429 will minimize the impacts to state conservation land beyond the footprint of the roadways. Alternative 1 utilizes the area between SR 429 and SR 46, which will be impacted by the proposed roadway improvements. These parcels will be impacted by the roadway improvements even if other stormwater alternatives are utilized, so the the cost of Alternatives 2 and 3 have been adjusted accordingly to reflect this fact. Based on available information, the isolated wetland located between Ponds BW1-E-2 and BW1-E-3 is less than 0.5 acres. The floodplain impacts to FP-24 will be compensated for in Pond BW1-E-2.
Notes:	<p>* DOF has formally provided full Section 4(f) concurrence to FDOT for the potential impacts in Seminole State Forest.</p> <p>** FDEP has formally provided full Section 4(f) concurrence to FDOT for the potential impacts in Rock Springs Run State Reserve.</p>

Note: The cost evaluation for the stormwater management facility alternatives in this report includes stormwater management facility construction costs, costs associated with wetland impacts, and parcel acquisition costs. The stormwater management facility construction costs include the costs of drainage structures and pipes associated with the outfall, clearing and grubbing, earthwork excavation and grading, berm construction, fencing, access accommodations and sodding. The associated parcel acquisition costs for each alternative evaluated include the estimated cost of land and any impacted improvements, administrative costs and legal fees.

ALTERNATIVE EVALUATION MATRIX		
Project Basin	BW2-E	
Basin Limits	Sta. 801+27 to Sta. 891+00, SR 429 and Sta. 1155+47, Service Road 2 to Sta. 125+00, Service Road 1	
Basin Type and Outfall Location	Open basin with outfall to wetlands adjacent to Black Water Creek. There are 3 outfall locations in existing conditions - animal crossing at Sta. 805+50, Rt., SR 429 and 2 cross drain locations under SR 46 (Sta. 844+75, Lt. and Sta. 858+50, Lt., SR 429). Both cross drain outfalls are in proximity to the pond alternatives. The outfall at Sta. 844+75, Lt., SR 429 discharges directly to Seminole State Forest. The outfall at Sta. 858+50, Lt. discharges to private property within the Wekiva Pines Country Estates subdivision to a Zone A floodplain prior to outfalling to Seminole State Forest. Based on the location and downstream flow paths of the cross drains, it is recommended that the pond alternatives utilize the cross drain outfall at Sta. 844+75, Lt., SR 429 for pond sizing purposes. Off-site runoff will continue to utilize the outfall at Sta. 858+50, Lt., SR 429.	
Calculated Volumes Required	21.20 ac-ft for 25-year/24-hour attenuation 12.20 ac-ft for water quality treatment (OFW criteria)	
Basin Notes	Volumes required for Alternatives 1 and 2 vary due to differences in contributing areas due to pond locations. Required volumes for recommended alternative provided above.	
Special Basin Criteria	Wekiva Basin criteria	
Description of Alternative 1:	<p>Alternative 1 consists of three interconnected wet detention ponds located between Sta. 840+00 and 895+00, Lt., SR 429. Pond BW2-E-5A is a wet detention pond located on Seminole State Forest land, and will provide the required water quality treatment and attenuation for Wildlife Crossing 2. Ponds BW2-E-1 and BW2-E-2 are wet detention ponds located in between SR 429 and existing SR 46, and will provide the required water quality treatment and attenuation for the remaining portion of the basin. The use of flowage easements or shallow retention areas to provide stormwater treatment for the entirety of Wildlife Crossing 2 is not viable due to poorly drained soils and a high groundwater table, so drainage improvements are required to convey runoff from Wildlife Crossing 2 to Pond BW2-E-3. The conveyance system must accommodate wildlife passage and allow the large off-site area south of SR 429 within Rock Springs Run State Reserve to bypass in order to minimize the size of the conveyance system.</p> <p>These pond alternatives utilize the cross drain outfall at Sta. 844+75, Lt., SR 429 for pond sizing purposes.</p> <p>A level spreader will be required, as there is no defined channel near the outfall from Pond BW2-E-5A.</p> <p>The pipes interconnecting the ponds do not impact the FGT gas line easement. Pond BW2-E-5A is located adjacent to the west side of the FGT gas line easement. The pond site does not impact the FGT easement.</p>	
Pond BW2-E-1 Pond BW2-E-2 Pond BW2-E-5A		
Description of Alternative 2:		
Pond BW2-E-4	<p>Alternative 2 consists of a single wet detention pond located on Seminole State Forest at Sta. 840+00, Lt., SR 429. The pond is near the low point in the basin, and is capable of providing water quality treatment and attenuation for the entire basin. A conveyance system from Wildlife Crossing 2 to Pond BW2-E-4 will be required, the same as described for Alternative 1.</p> <p>A level spreader will be required, as there is no defined channel near the outfall from Pond BW2-E-4.</p> <p>Pond BW2-E-4 is bounded by the FGT gas line easement on the north and west sides. The pond does not impact the FGT easement.</p>	
Pond Notes	Pond BW2-E-1 is located in proximity to floodplain FP-27, and can be used to assist with floodplain compensation for impacts to FP-27 if required.	
Alternative:	Alternative 1	Alternative 2
Volume Required:	21.20 ac-ft	21.05 ac-ft
Volume Provided:	26.07 ac-ft	22.72 ac-ft
Pond Area Req'd:	5.9 ac (Pond BW2-E-1); 11.2 ac (Pond BW2-E-2); 11.9 ac (Pond BW2-E-5)	17.6 ac
Roadway LEOP EI.:	40.62 (Pond BW2-E-1); 36.0 (est.) (Pond BW2-E-2); 35.0 (est.) (Pond BW2-E-5)	35.0 (est.)
Distance from LEOP:	100 ft (Pond BW2-E-1); 530 ft (Pond BW2-E-2); 640 ft (Pond BW2-E-5)	640 ft
Pond DHW EI.:	34.50 (Pond BW2-E-1); 38.60 (Pond BW2-E-2); 32.00 (Pond BW2-E-5)	32.50
Current Land Use:	State conservation land	State conservation land
Future Land Use:	No change	No change
Site Impacts:		
Wetlands/OSW:	None	None
Habitat:	Yes	Yes
4(f) Resources:	Yes*	Yes*
Floodplain:	None	None
Contamination:	Low Potential**	Low Potential
Historical:	None	None
Archaeological:	None	None
Utility Reloc. Cost:	None	None
Pond Cost (Right-of-Way and Construction Cost)	\$2,497,205	\$2,078,505

Recommendation:	<p>Alternative 1 is the recommended option. The use of ponds within the area between SR 46 and SR 429 will reduce the impacts to state conservation land, and Pond BW2-E-1 can be used to assist in providing floodplain compensation to FP-27 if necessary. Alternative 1 utilizes the area between SR 429 and SR 46, which will be impacted by the proposed roadway improvements. These parcels will be impacted by the roadway improvements even if other stormwater alternates were utilized, so the the cost of Alternative 2 has been adjusted accordingly to reflect this fact. Costs do not consider the additional drainage system cost required to convey all flow to Pond BW2-E-4 from the entire basin. The use of compensatory treatment within the basin will be investigated. The use of compensatory treatment (compensatory treatment of SR 46 or overtreatment of proposed impervious area) would allow a portion of Wildlife Crossing 2 to drain directly to Seminole State Forest, and reduce the cost of drainage conveyance required under Wildlife Crossing 2.</p>
Notes:	<p>*DOF has provided full Section 4(f) concurrence to FDOT for the potential impacts in Seminole State Forest.</p> <p>** Contamination site 86 (suspected cattle operations), identified in the <i>Level 1 CSER Update and Level 2 Contamination Impact Assessment</i> (November 2013) is in close proximity to Pond BW2-E-2. The report considers this site a Low Risk for potential contamination.</p>

Note: The cost evaluation for the stormwater management facility alternatives in this report includes stormwater management facility construction costs, costs associated with wetland impacts, and parcel acquisition costs. The stormwater management facility construction costs include the costs of drainage structures and pipes associated with the outfall, clearing and grubbing, earthwork excavation and grading, berm construction, fencing, access accommodations and sodding. The associated parcel acquisition costs for each alternative evaluated include the estimated cost of land and any impacted improvements, administrative costs and legal fees.

ALTERNATIVE EVALUATION MATRIX			
Project Basin	WR1-E		
Basin Limits	Sta. 891+00 to Sta. 920+00, SR 429 and Sta. 125+00 to Sta. 159+70, Service Road 1		
Basin Type and Outfall Location	Open basin with outfall to wetlands adjacent to the Wekiva River. There are 2 outfall locations in existing conditions - an existing channel downstream of the 36" cross drain under Wekiva River Road (which outfalls to the river south of SR 46), and roadside ditches which drain along SR 46. Both outfalls are in proximity to the pond alternatives. The outfall point used for pond sizing purposes is the existing channel downstream of the 36" cross drain at Wekiva River Road.		
Calculated Volumes Required	7.37 ac-ft for 25-year/24-hour attenuation 3.79 ac-ft for water quality treatment (OFW criteria)		
Basin Notes			
Special Basin Criteria	Wekiva Basin criteria. The Wekiva River (WBID 2956A) has adopted TMDLs for nutrients (TP and Nitrate-N).		
Description of Alternative 1:	Alternative 1 consists of 3 ponds - Pond WR1-E-1, a wet detention pond located on Rock Springs Run State Reserve west of Wekiva River Road; Pond WR1-E-5A, a dry retention pond located on the remainder of a parcel impacted by SR 429; and Pond WR1-E-7, a dry retention pond located on Seminole State Forest land. Pond WR1-E-1 is sized to provide attenuation for the entire basin, and Ponds WR1-E-5A and WR1-E-7 are interconnected, sized to provide water quality treatment for improvements east of Wekiva River Road.		
Pond WR1-E-1 Pond WR1-E-5A Pond WR1-E-7	Pond WR1-E-5A is located to accommodate a cell tower proposed on the remainder parcel.		
Description of Alternative 2:	Alternative 1 consists of 3 ponds - Pond WR1-E-1, a wet detention pond located on Rock Springs Run State Reserve west of Wekiva River Road; Pond WR1-E-8, a dry retention pond located on 2 parcels; and Pond WR1-E-7, a dry retention pond located on Seminole State Forest land. Pond WR1-E-1 is sized to provide attenuation for the entire basin, and Ponds WR1-E-5A and WR1-E-7 are interconnected, sized to provide water quality treatment for improvements east of Wekiva River Road.		
Pond WR1-E-1 Pond WR1-E-7 Pond WR1-E-8	Pond WR1-E-8 is located to accommodate a cell tower proposed on the remainder parcel.		
Description of Supplement to Alternative 2:	This supplement to Alternative 2 can be used to provide additional water quality treatment for SR 429 west of Wekiva River road should additional treatment be required to meet net improvement criteria for nutrient loading. Pond WR1-E-6, a dry retention pond located at Sta. 890+00, Lt., SR 429 on Seminole State Forest land, would provide pre-treatment for runoff conveyed to Pond WR1-E-1.		
Pond WR1-E-6	Pond WR1-E-6 located near the top of the basin limits, so the drainage systems would have to "buck" the grade in order to reach the pond.		
Pond Notes	Both alternatives utilize Pond WR1-E-1. Based on prior discussions and conceptual approval of Pond WR1-E-1 by the Rock Springs Run State Reserve land manager, other alternatives to provide attenuation in the basin were not investigated. The alternatives presented address means to meet net improvement criteria for nutrient loading. The location of Pond WR1-E-7 was suggested by FDEP during coordination efforts.		
Alternative:	Alternative 1	Alternative 2	
Volume Required:	9.74 ac-ft	9.74 ac-ft	
Volume Provided:	13.45 ac-ft	13.88 ac-ft	
Pond Area Req'd:	10.3 ac (Pond WR1-E-1); 4.3 ac (Pond WR1-E-5A); 3.8 ac (Pond WR1-E-7)	10.3 ac (Pond WR1-E-1); 3.8 ac (Pond WR1-E-7); 4.5 ac (Pond WR1-E-8)	
Roadway LEOP EI.:	39.45 (Service Road 1) (Pond WR1-E-1), 41.00 (Service Road 2) (Ponds WR1-E-5A and WR1-E-7)	39.45 (Service Road 1) (Pond WR1-E-1), 41.00 (Service Road 2) (Ponds WR1-E-7 and WR1-E-8)	
Distance from LEOP:	450 ft (Pond WR1-E-1); 250 ft (Pond WR1-E-5A)	450 ft (Pond WR1-E-1); 470 ft (Pond WR1-E-5A)	
Pond DHW EI.:	39.35 (Pond WR1-E-1); 40.00 (Ponds WR1-E-5A and WR1-E-7)	39.35 (Pond WR1-E-1); 40.00 (Ponds WR1-E-7 and WR1-E-8)	
Current Land Use:	low density residential; state conservation land	low density residential; state conservation land	
Future Land Use:	No change	No change	
Site Impacts:			
Wetlands/OSW:	Yes (outfall)	None	
Habitat:	Yes	Yes	
4(f) Resources:	Yes/**	Yes/**	
Floodplain:	Yes	Yes	
Contamination:	Low Potential	Low Potential	
Historical:	None	None	

Archeological:	None	None	
Utility Reloc. Cost:	None	None	
Pond Cost (Right-of-Way and Construction Cost)	\$2,188,945	\$2,183,369	
Recommendation:	<p>Alternative 1 is the recommended option. While Alternative 2 provides additional storage volume to assist in meeting net improvement criteria for nutrient loading, Pond WR1-E-8 impacts 2 parcels. Pond WR1-E-5A impacts the remainder of a single parcel impacted by SR 429.</p> <p>The estimated pond sizes are based on utilizing an outfall point in the existing ditch downstream of the cross drain under Wekiva River Road. Should Pond WR1-E-1 not be able to provide sufficient attenuation for the basin, then the outfall for Pond WR1-E-5A will be relocated to discharge under the proposed bridge crossings. Pre-development runoff discharges to the Wekiva River adjacent to the existing bridge.</p> <p>The LEOP identified above (el. 39.45) is located on Service Road 1 at the intersection with Wekiva River Road. A portion of Basin WR1-E (between Sta. 136+00 and 142+00, Service Road 1) may be too low to drain to Pond WR1-E-1. If it is not feasible to drain this area to Pond WR1-E-1, then a separate storm drain system with water quality treatment may be required in order to meet project commitments (no direct discharge of untreated runoff to the Wekiva River). Alternatives include water quality inlets, the use of Bold & Gold, or a nutrient-separating baffle box. Further coordination with the Department will take place on this issue as design progresses.</p>		
Notes:	<p>* DOF has formally provided full Section 4(f) concurrence to FDOT for the potential impacts in Seminole State Forest.</p> <p>** FDEP has formally provided full Section 4(f) concurrence to FDOT for the potential impacts in Rock Springs Run State Reserve.</p>		

Note: The cost evaluation for the stormwater management facility alternatives in this report includes stormwater management facility construction costs, costs associated with wetland impacts, and parcel acquisition costs. The stormwater management facility construction costs include the costs of drainage structures and pipes associated with the outfall, clearing and grubbing, earthwork excavation and grading, berm construction, fencing, access accommodations and sodding. The associated parcel acquisition costs for each alternative evaluated include the estimated cost of land and any impacted improvements, administrative costs and legal fees.

ALTERNATIVE EVALUATION MATRIX			
Project Basin	WR2A-S		
Basin Limits	Access road serving River Oaks Cir. (within Wekiva Section 7A)		
Basin Type and Outfall Location	Open basin with outfall to wetlands adjacent to the Wekiva River.		
Calculated Volumes Required	0.60 ac-ft for 25-year/24-hour attenuation 0.15 ac-ft for water quality treatment (OFW criteria)		
Basin Notes	The basin will provide treatment for a portion of the the access road within Wekiva Section 7A. Total on-site area provided by URS. Pond WR1 (within Wekiva Section 7A) will provide the required water quality treatment and attenuation for SR 429 between Sta. 920+00 to Sta. 930+20. The attenuation volume provided assumes no existing on-site runoff volume.		
Special Basin Criteria	Wekiva Basin criteria. The Wekiva River (WBID 2956A) has adopted TMDLs for nutrients (TP and Nitrate-N).		
Description of Alternative 1:	Alternative 1 consists of a dry retention area located under the proposed Wekiva Bridge crossings within the proposed right-of-way. The location and configuration of the proposed retention area will be coordinated with the bridge substructure and foundation design. At a minimum, the retention area will provide the required water quality treatment for the proposed drainage area.		
Pond WR2A-S-2			
Pond Notes	Only a single pond alternative located within the proposed right-of-way has been analyzed. Pond WR2A-S-1 (identified during the Line & Grade phase as a pond alternative) has been removed from consideration after discussion with the Department. Pond WR1 (designed as part of Wekiva Section 7A) will provide the majority of the required treatment for this area, and Pond WR2A-S-2 will provide treatment for the area in the vicinity of the sump on the access road (which is too low to drain to Pond WR1). Attenuation requirements will be met by utilizing the remaining ponds within Wekiva Section 6 and 7A that drain to the Wekiva River.		
Alternative:	Alternative 1		
Volume Required:	0.60 ac-ft		
Volume Provided:	0.60 ac-ft		
Pond Area Req'd:	N/A		
Roadway LEOP EI.:	27.5 (access road to Wekiva Oaks Cir.)		
Distance from LEOP:	0 ft		
Pond DHW EI.:	25.00		
Current Land Use:	SR 46; residential; County and state lands		
Future Land Use:	No change		
Site Impacts:			
Wetlands/OSW:	Yes		
Habitat:	Yes		
4(f) Resources:	N/A		
Floodplain:	No		
Contamination:	Low Potential		
Historical:	None		
Archeological:	None		
Utility Reloc. Cost:	N/A *		
Pond Cost (Right-of-Way and Construction Cost)	N/A **		
Recommendation:	Alternative 1 is the recommended option. Location, configuration and sizing will be coordinated with the Wekiva River bridge substructure and foundation design.		
Notes:	* Any required utility relocation due to the proposed bridge improvements		
	** No cost provided. Shallow retention area is located within proposed SR 429 right-of-way		

Note: The cost evaluation for the stormwater management facility alternatives in this report includes stormwater management facility construction costs, costs associated with wetland impacts, and parcel acquisition costs. The stormwater management facility construction costs include the costs of drainage structures and pipes associated with the outfall, clearing and grubbing, earthwork excavation and grading, berm construction, fencing, access accommodations and sodding. The associated parcel acquisition costs for each alternative evaluated include the estimated cost of land and any impacted improvements, administrative costs and legal fees.

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I. INTRODUCTION

The Florida Department of Transportation (FDOT) is preparing the concept design for SR 429 (Wekiva Parkway) from 0.319 mi. W. of Old McDonald Road (Sta. 640+00) to east of the Lake/Seminole County Line (Sta. 931+20), a length of approximately 5.50 miles. This section of the Wekiva Parkway is identified as Wekiva Section 6. The project is located in Sections 23, 24, 25, 26 and 27 of Township 19 South, Range 28 East and Sections 20, 21, 28, 29 and 30 of Township 19 South, Range 29 East in Lake and Seminole Counties. The Location Map for the project can be found in **Appendix A** of this report.

This Pond Siting Report is provided to present an evaluation of stormwater alternatives and recommendations, and will evaluate the required number, types, approximate sizes, and locations of stormwater treatment options. This Pond Siting Report utilizes the *SR 429 (Wekiva Parkway) Proposed Pond Update, Sections 6 and 7A* report (by The Balmoral Group, dated September 3, 2012) as the basis for evaluation, and provides updates to the evaluation based on design changes, additional geotechnical information gathered, and final design criteria listed herein. In addition, alternate pond sites and a pond site alternative analysis were identified for each basin. Nine (9) basins have been identified within the project limits.

Please note that pond siting for two of the basins (Basins RS8-E and RS9-E) are not within the scope of this Pond Siting Report. Basins RS8-E and RS9-E are located in the vicinity of the Wekiva River Mitigation Bank (formerly the New Garden Coal property). Pond siting and sizing, as well as floodplain analysis and mitigation, for Basins RS8-E and RS9-E was completed by The Balmoral Group during the Line & Grade phase. Right-of-way acquisition for Ponds RS8-E-1 and RS9-E-1 has been completed. Documentation for the recommended pond alternatives are provided in the *New Garden Coal Property Drainage Report*, dated May 17, 2013. Selected information from this report is provided herein to assist in the nutrient loading analysis for Rock Springs Run, which is contained in this report.

The horizontal datum for the project is Florida State Plane (NAD 1983), East Zone. The vertical datum for the project is the North American Vertical Datum of 1988 (NAVD 88), and the elevation difference between NAVD 88 and NGVD 29 is -1.02 feet (i.e., the NAVD 88 elevation is 1.02 feet lower than the corresponding NGVD 29 elevation). The calculations showing the elevation difference between NAVD 88 and NGVD 29 can be found in **Appendix K**.

II. PROJECT DESCRIPTION

The proposed project improvements consist of the construction of SR 429 and Service Road on new alignment from the tie-in to Wekiva Sections 4A/4B and 5 at the western limits to Wekiva Section 7A at the eastern limits. The project also includes the construction of three new bridge crossings of the Wekiva River. SR 429 is designed as a 4-lane limited access rural expressway, but this Pond Siting Report will evaluate the stormwater management requirements for the ultimate 6-laning of SR 429. Please see **Appendix A** for the location of Wekiva Section 6, and adjacent Wekiva Parkway projects.

III. DATA COLLECTION AND REFERENCES

The following sources of information were used to develop this report:

- Natural Resource Conservation Service (NRCS) Web Soil Survey for Lake, Orange and Seminole Counties
- United States Geologic Survey (USGS) Maps
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for Lake County: Panel Nos. 12069C0385E and 12069C0425E (December 18, 2012)
- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for Seminole County: Panel No. 12117C0035F (September 28, 2007)
- Lake County GIS database and Property Appraiser's website information
- Orange County GIS database
- FDOT Drainage Manual (January 2014)
- FDOT Stormwater Management Facility Handbook (January 2004)
- St. Johns River Water Management District (SJRWMD) Permit Information Manual (October 1, 2013)
- Final Draft Programmatic Section 4(f) Evaluation for the Wekiva Parkway/SR 46 Realignment PD&E Study (April 2010)
- Endangered Species Biological Assessment for the Wekiva Parkway/SR 46 Realignment PD&E Study (June 2010)
- Cultural Resource Assessment Survey for the Wekiva Parkway/SR 46 Realignment PD&E Study Addendum (May 2010)
- Pond Siting Report for the Wekiva Parkway/SR 46 Realignment PD&E Study (July 2010)
- Location Hydraulic Report for the Wekiva Parkway/SR 46 Realignment PD&E Study (September 2010)
- FPID 431081-3: Wekiva Section 6 15% Line & Grade Plans (September 2012)
- SR 429 Proposed Pond Update, Sections 6 & 7A (September 2012)
- Preliminary Engineering Report for the Wekiva Parkway (SR 429)/SR 46 Realignment PD&E Study (September 2012)
- New Garden Coal Property Drainage Report (May 2013)
- Draft Bridge Hydraulic Report for the SR 429/SR 46 Bridges over the Wekiva River (September 2013)
- Level 1 Contamination Screening Evaluation Report (CSER) Update and Level 2 Contamination Impact Assessment, Wekiva Parkway Section 6 (November 2013)
- Level 1 Contamination Screening Evaluation Report (CSER) Update and Level 2 Contamination Impact Assessment Addendum – Former Cattle Dip Area, Wekiva Parkway Section 6 (July 2014)
- Report of Pond Borings (updated August 2014)

IV. DESIGN CRITERIA

The project is located within Lake and Seminole Counties, and is under the jurisdiction of the Florida Department of Environmental Protection (FDEP). FDEP will utilize the stormwater rules and design criteria of the St. Johns River Water Management District (SJRWMD) in order to permit this project. Drainage criteria from the Florida Department of Transportation (FDOT) and SJRWMD will be used to locate and size the stormwater facilities.

The project limits are located entirely within the Wekiva River Hydrologic Basin and the Wekiva Recharge Protection Basin. Therefore, special basin criteria for the Wekiva River basin as presented in Section 13.3 of the SJRWMD Permit Information Manual (dated October 1, 2013) apply for all basins identified herein. The Wekiva River and its tributaries, including Rock Springs Run, Black Water Creek, and Seminole Creek are designated Outstanding Florida Waters (OFW) and State Aquatic Preserves per Chapter 62-302, F.A.C. Therefore, **OFW criteria as presented in the SJRWMD Permit Information Manual (dated October 1, 2013) apply for all basins identified herein.** The following design criteria apply to this project:

A. Water Quality (Treatment) Criteria

1. Wet detention: For wet detention systems the design treatment volume is the greater of the following:
 - a) One inch of runoff over the drainage area
 - b) 2.5 inches times the impervious area (excluding water bodies)
 - c) An additional fifty percent of both the required treatment and permanent pool volumes to meet OFW criteria, or
 - d) Pre-treatment of the stormwater prior to the stormwater entering the wet detention pond. The level of pre-treatment must be at least the required for retention, underdrain, exfiltration, or swale systems

2. Dry retention: For dry retention systems the design treatment volume is the greater of the following:
 - a) Off-line retention of the first one half inch of runoff or 1.25 inches of runoff from the impervious area, whichever is greater
 - b) On-line retention of an additional one half inch of runoff from the drainage area over the volume specified above
 - c) On-line retention that provides the percolation of the runoff from the three-year, one-hour storm
 - d) On-line retention of the runoff from one inch of rainfall or 1.25 inches of runoff from the impervious area, whichever is greater, for areas with less than 40% impervious and SCS Type A hydrologic soils
 - e) An additional fifty percent of the required treatment listed above to meet OFW criteria

B. Water Quantity (Attenuation) Criteria

As described in **Section VI.E** of this report, the existing conditions ICPR model provided in **Appendix E** demonstrates that all basins within the project limits are open basins.

1. SJRWMD: For open basins, the post-development peak discharge must not exceed the predevelopment peak discharge for the 25-year / 24-hour duration event.
2. FDOT: Projects located in watersheds with positive outlets shall comply with the discharge requirements of Chapter 14-86, F.A.C. when discharging to areas subject to historical flooding.

As the roadways within the project limits are on new alignment predominately though state lands, there is no documented historical flooding. All pond discharges within the Rock Springs Run, Seminole Creek and Black Water Creek basins are directly to state lands. Pond discharges within the Wekiva River basins are proposed through an existing channel (between 7'-20'+ deep) with direct discharge to the Wekiva River, or to the river itself. There is no history of flooding in this channel based on discussions with property owners on the parcel for Pond WR1-E-8, where the channel crosses through their property. Correspondence can be found in **Appendix G**.

C. Wekiva River Hydrologic Basin and Wekiva Recharge Protection Basin Criteria

The following special basin criteria for the Wekiva River basin as presented in Section 13.3 of the *SJRWMD Permit Information Manual* (dated October 1, 2013) apply to the design of stormwater management systems. The limits of the Wekiva River Protection Basin and Wekiva River Hydrologic Basin are provided in **Appendix A**.

1. Recharge Standard: Surface water management systems located within the Wekiva Recharge Protection Basin shall demonstrate that the system provides for retention storage of three inches of runoff from all impervious areas proposed to be constructed on soils defined as a Type "A" Soils as defined by the Natural Resources Conservation Service (NRCS) Soil Survey in the Soil Survey of Lake County Area, Florida (1975). Additional geotechnical information may be submitted to establish whether or not a site contains Type "A" soils. For purposes of this rule, areas with Type "A" Soils shall be considered "Most Effective Recharge Areas." The system shall be capable of infiltrating this storage volume through natural percolation into the surrounding soils within 72 hours. Off-site areas or regional systems may be utilized to satisfy this requirement. As an alternative, applicants may demonstrate that the post-development recharge capacity is equal to or greater than the pre-development recharge capacity. Pre-development recharge shall be based upon the land uses in place as of 12-3-06. Applicants may utilize existing permitted municipal master

stormwater systems, in lieu of onsite retention, to demonstrate that post-development recharge is equal to or greater than pre-development recharge.

2. Storage Standard: Within the Wekiva River Hydrologic Basin, a system may not cause a net reduction in flood storage within the 100-year floodplain of a stream or other watercourse which has a drainage area upstream of more than one square mile and which has a direct hydrologic connection to the Wekiva River or Black Water Creek.
3. Standard for Limiting Drawdown: Within the Wekiva River Hydrologic Basin, a Water Quantity Protection Zone shall extend 300 feet landward of the landward extent of the wetlands abutting the Wekiva River, Black Water Creek and Rock Springs Run. A ground water table drawdown must not occur within the Water Quantity Protection Zone which would adversely affect the functions provided by the referenced wetlands. Where any part of a system located within this zone will cause a drawdown, reasonable assurance that construction, alteration, operation, or maintenance of the system will not cause ground water table drawdowns which would adversely affect the functions provided by the referenced wetlands.
4. Standards for Erosion and Sediment Control and Water Quality: A Water Quality Protection Zone shall extend one half mile from the Wekiva River, Little Wekiva River north of State Road 436, Black Water Creek, Rock Springs Run, Seminole Creek, and Sulphur Run. The applicant must give reasonable assurance in the erosion and sediment control plan that during construction or alteration of the system (including re-vegetation and stabilization), erosion will be minimized and sediment will be retained on-site. The plan must be in conformance with the erosion and sediment control principles set forth in section 13.8.2, SJRWMD Permit Information Manual, and must contain the information set forth in section 13.8.3, SJRWMD Permit Information Manual. Detailed plans depicting the erosion and sediment control measures shall be required when permit applications are submitted.
5. Standard for Riparian Wildlife Habitat: The Riparian Habitat Protection Zone (RHPZ) for the Wekiva River is designated to include the following areas – the wetlands abutting the Wekiva River, the uplands within 50 feet landward of the landward extent of the wetlands abutting the Wekiva River, and the uplands which are within 550 feet landward of the Wekiva River's edge. Construction of roads, ditches, swales, and any land clearing which results in the creation of any system is presumed to adversely affect the abundance, food sources, or habitat (including its use to satisfy nesting, breeding and resting needs) of aquatic or wetland dependent species provided by the designated Riparian Habitat Protection Zone. This presumption shall not apply to any activity which promotes a more endemic state, where the land in the zone has been changed by man.

It should be noted that FDEP and SJRWMD have reviewed the alternative stormwater management facility locations in the basins adjacent to the Wekiva River RHPZ, and had no objection to the locations presented in this report.

D. Total Maximum Daily Load (TMDL) Requirements

Based on discussions with the FDEP (see **Appendix H** for meeting minutes), basins with Adopted TMDLs shall be required to demonstrate net improvement for nutrient (total nitrogen and total phosphorus) loading. The pre-development condition used shall be the current condition, and the pre-development nutrient load must account for the reduction provided by any existing stormwater management systems currently in place.

The project corridor is located within the Wekiva River Planning Unit of the Middle St. Johns River Basin. The project area drains to 4 basins – Rock Springs Run (WBID 2967), Seminole Creek (WBID 2955), Black Water Creek (WBID 2929A) and the Wekiva River (WBID 2956A). **Table 1** provides the current status of each basin within the project corridor for Verified Impaired WBIDs and adopted TMDLs. The information is taken from the FDEP Map Direct website (<http://ca.dep.state.fl.us/mapdirect/?focus=tmdlvi>), and printouts of the basin status are provided in **Appendix A**.

Table 1
Status of Basins within Wekiva 6 Project Corridor

Basin	WBID	Verified Impaired WBID	Adopted TMDLs
Rock Springs Run	2967	No	Total phosphorus (TP) and Nitrate-N
Seminole Creek	2955	No	None
Black Water Creek	2929A	No	None
Wekiva River	2956A	Yes – Mercury	Total phosphorus (TP) and Nitrate-N

Based on the information presented above, stormwater management systems within the Rock Springs Run and Wekiva River basins must meet net improvement criteria for nutrient loading. Per discussion with FDEP and SJRWMD, nutrient loading criteria is not required for discharges to Seminole Creek or Black Water Creek.

E. Floodplain Impacts

Floodways and floodplains, and levels of flood flows or velocities of adjacent stream impoundments or other water courses must not be altered so as to adversely impact the off-site storage and conveyance capabilities of the water resource. The proposed improvements may not cause a net reduction in flood storage within a 10-yr floodplain, except for structures elevated on pilings or traversing works. Traversing work, works or other structures shall cause no more than one foot increase in the 100-yr flood elevation immediately upstream and no more than 0.10 foot increase in the 100-yr flood elevation 500 feet upstream. A system will not cause a net reduction in flood storage within a 10-yr floodplain if compensating storage is provided outside the 10-yr floodplain. Compensation shall be provided through excavation of a volume of uplands equivalent to the loss of storage within the regulatory floodplain.

F. Stormwater Facilities in Proximity to Wildlife Crossings

Several pond alternatives identified July 2010 PD&E Pond Siting Report that were the located adjacent to the proposed wildlife crossings (Wildlife Crossing Nos. 1-3, as well as the proposed bridge crossing of the Wekiva River) were removed during the September 2012 SR 429 Proposed Pond Update for Sections 6 & 7A due to the potential obstruction that the ponds would have on wildlife passage. In order to minimize the potential effect on wildlife passage, the following general criteria have been formulated in coordination with FDOT (and its designee) for stormwater management facilities located underneath of the proposed wildlife crossings:

1. Shallow retention areas placed in well-drained soils shall be the only type of stormwater facility used under wildlife crossings in order to minimize the duration of standing water under the wildlife crossing bridges.
2. The shallow retention areas shall use 1:6 or flatter slopes to accommodate wildlife passage.
3. The depth and footprint of the retention areas shall be minimized to the degree possible.
4. The shallow retention areas (and any open or closed system used to convey runoff to the facility) shall not create a continuous barrier along the crossing. Longitudinal barriers to wildlife passage shall be minimized.

V. COMMITMENTS

The following commitments identified in the Preliminary Engineering Report for the Wekiva Parkway (SR 429)/SR 46 Realignment PD&E Study (September 2012) have been incorporated into the pond siting analysis:

1. Continued adherence to the design principles and recommendations adopted by legislation in the *Wekiva Parkway and Protection Act*, Chapter 369, Part III, Florida Statutes (F.S.), throughout the design and permitting phases of the project, “subject to reasonable environmental, economic, and engineering considerations” (Chapter 369.317(2), F.S.). Specifically, the design of stormwater treatment facilities will ensure capture and treatment of runoff from bridges over Outstanding Florida Waters to Outstanding Florida Waters standards.
2. The use of flowage easements instead of stormwater ponds has been evaluated on or near Seminole State Forest land and on or near adjacent state park and conservation lands in accordance with the request from The Florida Department of Agriculture and Consumer Services, Division of Forestry (DOF).
3. The stormwater pond alternatives near the Wekiva River bridges have been located to meet the applicable permitting requirements for water quality, nutrient loading and attenuation while minimizing impacts to wildlife movement and habitat connectivity.

In addition to the commitments listed above, pond layouts have utilized curvilinear shapes where feasible at the request of state land managers.

VI. EXISTING CONDITIONS

A. *Existing Land Use*

The pre-development project corridor is primarily composed of undeveloped and low-density rural residential, commercial and agricultural land uses, with a significant portion of the corridor located within state lands (the Seminole State Forest and Rock Springs Run State Reserve).

B. *Soils*

Soils information for this report is based on GIS data provided by Lake, Seminole and Orange Counties, and the Natural Resources Conservation Service (NRCS) Web Soil Survey. Soils encountered in the project area are shown in **Appendix G**.

Terracon has performed a geotechnical investigation for selected pond site alternatives for this Pond Siting Report, and previous geotechnical data collected during the Line & Grade phase was reviewed in order to determine groundwater table elevations and permeability rates where applicable.

The geotechnical information includes an analysis of data collected from piezometers installed at pond sites. The piezometer data collected, which ranged in duration from approximately 3 months to 14 months, provided additional input for accurate determination of the SHGWT and average GWT elevations. Geotechnical information for the pond site alternatives can be found in **Appendix G**. Additional geotechnical investigation and/or evaluation of the data collected is anticipated prior to submission of permit applications for this project.

C. *Contamination*

Terracon completed a *Level 1 Contamination Screening Evaluation Report (CSER) Update and Level 2 Contamination Impact Assessment* for the project corridor in November 2013, and completed an addendum to this report entitled *Level 1 Contamination Screening Evaluation Report Update and Level 2 Contamination Impact Assessment Addendum – Former Cattle Dip Area* in July 2014. Excerpts of the reports are provided in **Appendix J**.

The reports identify four sites in proximity to pond site alternatives identified herein. All four sites have been assigned a Contamination Risk Potential of Low. However, Site U2

(a former cattle dipping vat located on the south side of SR 46 near the existing animal crossing) required additional sampling to determine whether the contamination risk potential should be re-assessed due to stormwater improvements proposed in the area. Additional discussion of this issue is provided in **Section VII.C** of this report.

D. Section 4(f) Resources

Both Seminole State Forest and Rock Springs Run State Reserve are designated as Section 4(f) resources. The *Final Draft Programmatic Section 4(f) Evaluation for the Wekiva Parkway/SR 46 Realignment PD&E Study* (dated April 2010) included identifies the approximate direct and proximity impacts to these 4(f) resources, and provides documentation of full Section 4(f) concurrence.

E. Existing Drainage Characteristics

A majority of the project corridor is on new alignment through undeveloped property. Runoff in these areas flows through rolling terrain to adjacent wetlands or local depressions. These depressions provide historic basin storage, and are interconnected with adjacent basins in multiple locations (i.e., the Rock Springs Run basin is interconnected with the Seminole Creek and Black Water Creek basins, and the Black Water Creek basin is interconnected with the Wekiva River basin).

An ICPR model of the existing condition utilizing LiDAR data from Lake County was prepared to determine whether the local depressions act as closed basins during the 100-year storm events (the 100-year, 24-hour and 100-year, 96-hour storm events were used). **The results of the ICPR analysis show that all basins are open basins for the 100-year storm events modeled.**

The tailwater elevations used for the existing conditions ICPR model were taken from the applicable FEMA base flood elevations at the outfall locations, or from previous permits. Additional information on the previous permit used can be found in the *New Garden Coal Property Drainage Report* by the Balmoral Group. The tailwater documentation is included as a note in the applicable ICPR model node, and is provided in **Table 2** below. ICPR nodal maps with FEMA floodplain information are also provided in **Appendix E**.

Table 2
Tailwater Elevations Used for Analysis

Node	Elevation (ft. NAVD)	Description and Source of Information
SEMINOLE	14.0	New Garden Coal Property Drainage Report (by the Balmoral Group), based on SJRWMD ERP 4-069-0112A (BMK Farms, issued 2/12/85) which established a 100-yr floodplain elevation.
BLACKWATER	14.0	New Garden Coal Property Drainage Report (by the Balmoral Group), based on SJRWMD ERP 4-069-0112A (BMK Farms, issued 2/12/85) which established a 100-yr floodplain elevation.
WEKIVA-1	2929A	100-yr base flood elevation at the confluence of Rock Springs Run and the Wekiva River from Orange County FEMA FIRM Panel 120950150F.
WEKIVA-2	2956A	100-yr base flood elevation for Wekiva River at the confluence of existing channel south of the Wekiva River bridges crossing from Lake County FEMA FIRM Panel 120690425E.

Please see **Appendix E** for the existing conditions ICPR model.

F. Existing Drainage Basins

The project limits are located entirely within the Wekiva River Hydrologic Basin and the Wekiva River Protection Basin. Therefore, special basin criteria for the Wekiva River basin as presented in Section 13.3 of the SJRWMD Permit Information Manual (dated October 1, 2013) apply for all basins identified herein. The Wekiva River and its tributaries, including Rock Springs Run, Black Water Creek, and Seminole Creek are designated Outstanding Florida Waters (OFW) and State Aquatic Preserves per Chapter 62-302, F.A.C. Therefore, OFW criteria as presented in the SJRWMD Permit Information Manual (dated October 1, 2013) apply for all basins identified herein. Design criteria for all basins within the project limits are provided in **Section IV – Design Criteria**.

The project has been broken into 9 drainage basins which are identified below. **Table 2** provides the receiving water for each of the drainage basins.

Table 3
Drainage Basin Receiving Waters

Drainage Basin	Receiving Water
RS8-E, RS9-E	Rock Springs Run
RS7-E, SC1-E	Seminole Creek
BW1A-E, BW1-E, BW2-E	Black Water Creek
WR1-E, WR2A-S	Wekiva River

The Existing Conditions ICPR Nodal Maps found in **Appendix E** show the physical drainage boundaries and drainage patterns within the project area in pre-development conditions. As the existing sub-basins are interconnected across basin boundaries with multiple discharge points, portions of the basins within the project R/W were used to calculate the pre-development basin area to be used for pond sizing. The Existing Conditions On-Site Basin Maps found in **Appendix A** reflect the basin areas used to determine pre-development runoff volumes. Portions of the existing sub-basins located within the project R/W that did not discharge to potential pond outfalls (and were therefore not needed for pond sizing analyses) are not shown on the Existing Conditions On-Site Basin Maps in order to provide clarity.

The basins shown on the Existing Conditions On-Site Basin Maps do not reflect the physical drainage boundaries, but are used to identify areas subject to land use changes as a result of the proposed improvements for comparison of pre-development and post-development runoff volumes.

The following is a brief description of the existing drainage basins within the project limits.

(1 & 2) Basins RS7-E and SC1-E

The project limits are located near the basin divide between Rock Springs Run (with a drainage pattern from the northwest to the southeast) and Seminole Creek (with a drainage pattern from south to north). The existing conditions ICPR model showed that these basins are interconnected due to the presence of local depressions at the basin boundary, and runoff from nodes in this area discharges to both Rock Springs Run and Seminole Creek.

Basins RS7-E and SC1-E have been identified and shown in the Existing Conditions On-site Basin Map as only the areas which discharge north to Seminole Creek in existing conditions in order to calculate the pond volumes required to provide attenuation. As no pond alternatives within proposed Basins RS7-E and SC1-E discharge southeast to Rock Springs Run (in order to address nutrient loading requirements for Rock Springs Run), the existing drainage areas which drain to Rock Springs Run in this area are not shown on the Existing Conditions On-site Basin Maps or included in the pre-development runoff volumes in order to properly size the proposed pond alternatives.

Basins RS7-E and SC1-E are open basins composed of existing SR 46 and undeveloped land within Rock Springs Run State Reserve and Seminole State Forest. There are currently no existing stormwater treatment facilities or cross drains within this basin, but the existing animal crossing under SR 46 serves as a drainage conveyance for runoff north to Seminole Creek.

(3 & 4) Basins R8-E and RS9-E

Pond siting for Basins RS8-E and RS9-E is not within the scope of this report. Pond locations within Basins RS8-E (Pond RS8-E-1) and Basin RS9-E (Pond RS9-E-1) have already been identified during the Line & Grade phase (provided in the *New Garden Coal Property Drainage Report* by the Balmoral Group, dated May 17, 2013), and right-of-way acquisition is underway for these ponds. Based on the Line & Grade documentation, these ponds are sufficient to provide the required water quality treatment and attenuation. Selected information from this report is provided herein to assist in the nutrient loading analysis for Rock Springs Run (which is included herein).

(5) Basin BW1A-E

Basin BW1A-E is an open basin composed of existing SR 46 and CR 46A, as well as undeveloped land within the Seminole State Forest and low-density residential area. In general, the drainage pattern is from southeast to northwest to an existing cross drain under CR 46A which discharges to Seminole State Forest, and ultimately to Black Water Creek. There is currently no existing stormwater treatment within this basin.

(6) Basin BW1-E

Basin BW1-E is an open basin composed of existing SR 46 and CR 46A, as well as undeveloped land within the Seminole State Forest and low-density residential and commercial (nursery) area. Existing residential development and Rock Springs Run State Reserve is located to the south of the basin limits, and Seminole State Forest is located north of the basin. In general, the drainage pattern is from southwest to northeast through two existing cross drains under SR 46 (a 24" cross drain at Sta. 775+00, Rt., SR 429 and a 30" cross drain at sta. 787+50, Rt., SR 429) as well as side drains and intermittent roadside ditches. The basin discharges to Seminole State Forest north of CR 46A and SR 46, ultimately draining to Black Water Creek. There is currently no existing stormwater treatment within this basin.

(7) Basin BW2-E

Basin BW2-E is an open basin composed of existing SR 46, as well as undeveloped land within the Seminole State Forest and Rock Springs Run State Reserve. Rock Springs Run State Reserve is located to the south of the basin, and existing residential development and Seminole State Forest is located north of the basin. In general, the drainage pattern is from southeast to northwest

through two existing cross drains (3-30" cross drain at Sta. 844+75, SR 429 and Sta. 858+50, Lt., SR 429) and an animal crossing (Sta. 805+50, Rt., SR 429) under SR 46. The animal crossing and cross drain at Sta. 844+75, Lt. drain to wetlands in Seminole State Forest, and the cross drain at Sta. 858+50, Lt., SR 429 drains to private property in the Wekiva Pines Country Estates subdivision. Runoff flows to the north and then west through the subdivision before discharging to Seminole State Forest and Black Water Creek. Please see **Appendix B** for an exhibit showing the existing cross drain locations and flow paths to Seminole State forest. There is currently no existing stormwater treatment within this basin.

(8) Basin WR1-E

Basin WR1-E is an open basin composed of existing SR 46 (including the existing SR 46 bridge over the Wekiva River), undeveloped land within the Seminole State Forest and Rock Springs Run State Reserve, and low-density residential land to the south of SR 46. Rock Springs Run State Reserve is located to the south of the basin west of Wekiva River Road, and existing residential development is located south of SR 46 east of Wekiva River Road. Seminole State Forest is located north of SR 46 within the basin limits.

There is currently one existing stormwater treatment facility within this basin. An existing sediment basin was constructed under SR 46 west of the existing Wekiva River bridge as part of the SR 46 Bridge Replacement project (State Project No. 77030-3517, dated 1996). Runoff from the existing bridge and western approach is treated in the sediment basin, which is composed of a sand filter and underdrain system contained within a 3-12'x9' concrete box culvert (CBC). The project was permitted under ERP No. 4-117-22408-1, and excerpts of the permitted design can be found in **Appendix I**.

In general, the drainage pattern is from north to south through one existing cross drain under SR 46 (a 30" cross drain at Sta. 895+50, SR 429), then west to east through an existing cross drain under Wekiva River Road (a 36" cross drain at Sta. 900+00, Rt., SR 429). The basin discharges to the Wekiva River. The existing SR 46 bridge drains west to the sediment basin prior to discharge into the Wekiva River.

(9) Basin WR2A-S

Basin WR2A-S is an open basin composed of existing SR 46 from east of the existing SR 46 bridge over the Wekiva River to the project limits. The existing roadway is currently treated by a series of treatment swales with ditch blocks located on the east side of the Wekiva River crossing. The treatment swales

were constructed as part of the SR 46 Bridge Replacement project (State Project No. 77030-3517, dated 1996). The project was permitted under ERP No. 4-117-22408-1, and excerpts of the permitted design can be found in **Appendix I**.

VII. PROPOSED CONDITIONS

A. *General Description*

The proposed SR 429 typical section will consist of a 4-lane rural expressway (designed for future expansion to 6 lanes), and a 2-lane rural service road. Roadway improvements also include an access road between SR 429 and SR 46, a connector road between existing SR 46 and CR 46A and construction of cul-de-sacs at the limits of SR 46 and CR 46A where the existing roadway will be removed. The proposed stormwater systems will be designed for the ultimate 6-laning of SR 429. Typical sections for the project are provided in **Appendix A**.

B. *Future Land Use*

As a significant portion of the corridor is located within state conservation lands (the Seminole State Forest and Rock Springs Run State Reserve), there are no anticipated changes to the existing land uses within the corridor.

C. *Contamination*

Terracon completed a *Level 1 Contamination Screening Evaluation Report (CSER) Update and Level 2 Contamination Impact Assessment* for the project corridor in November 2013. Excerpts of the report are provided in **Appendix J**.

The report identifies four sites in proximity to pond site alternatives identified herein. All four sites have been assigned a Contamination Risk Potential of Low. However, Site U2 (a former cattle dipping vat located on the south side of SR 46 near the existing animal crossing) will require additional sampling to determine whether the contamination risk potential should be re-assessed due to stormwater improvements proposed in the area.

D. Cultural Resources

As part of the PD&E process, an evaluation of historical and archaeological resources was conducted. There are two known potential resources, Site 8LA3585 (located within Pond BW1-E-5 in Basin BW1-E) and Site 8LA3413 (located adjacent to Ponds WR1-E-5A and WR1-E-8 in Basin WR1-E). The Division of Historical Resources determined that the sites are ineligible for listing in the National Register of Historic Places (NRHP). Supplemental cultural resources evaluations for new pond sites added since the PD&E are currently underway.

E. Environmental Permitting Coordination

Environmental permitting coordination has occurred with FDEP, SJRWMD and the USACE via telephone conversations, email, and meetings as part of this pond siting evaluation. Minutes of these coordination efforts can be found in **Appendix H**.

Two previous permits within the project corridor (for Sims Landscaping and the Wekiva River Bridge Replacement) were pulled from the SJRWMD website, and excerpts are provided in **Appendix I**.

F. Stormwater Management Evaluation

Based on the criteria, available information, and agency coordination presented above, attenuation, treatment, and recharge volumes were determined for each basin. Pond calculations are provided in **Appendix B**. The existing topography and site constraints were considered to determine potential stormwater facility types and locations.

The SCS method has been used to determine the required pond size for the basin. It should be noted that for contingency purposes, conservative estimates were used to determine the feasibility of the pond locations and approximate sizes based on preliminary data and engineering judgment. Final pond configurations may change during design when sufficient design level data becomes available. In addition to the regulatory criteria discussed in **Section IV** of this report, the pond sizes and locations were determined assuming the entire median area along SR 429 is impervious area in order to provide conservatism in the analysis.

Descriptions of stormwater facility options evaluated are provided below:

1. Offsite Pond Options

The use of wet detention or dry retention facilities is based on the preliminary geotechnical information provided by Terracon, and information contained in the Line & Grade plans.

2. Flowage Easement Options

The use of flowage easements instead of stormwater ponds has been evaluated on or near Seminole State Forest land and Rock Springs Run State Reserve in accordance with the request from The Florida Department of Agriculture and Consumer Services, Division of Forestry (DOF).

As previously stated, an existing conditions ICPR model was prepared to determine the base flood elevations of Zone A floodplains within the project corridor, and to determine whether the local depressions that receive runoff from the project act as closed basins. Please see **Appendix E** for the existing conditions ICPR model. **The results of the ICPR analysis show that all basins are open basins for the 25-year / 24-hour storm event modeled.** Runoff from the project site discharges through the Seminole State Forest and Rock Springs Run State Reserve to the Wekiva River and its tributaries (Rock Springs Run, Seminole Creek and Black Water Creek). **The additional runoff generated from the proposed improvements is not contained on state lands, and will be conveyed to the Wekiva River. Developed properties adjacent to the Wekiva River downstream of the discharge points may be adversely affected by the additional runoff generated from the project.** Poorly drained soils and short lengths available for sheet flow of runoff preclude the use of vegetated natural buffers to provide attenuation.

In addition, site constraints (including rolling terrain, wetlands and poorly drained soils) limit the opportunity to provide sufficient water quality treatment to meet net improvement criteria for nutrient loading as required by FDEP in the Rock Springs Run and Wekiva River basins without the use of stormwater ponds. For these reasons, the use of flowage easements to provide stormwater treatment in lieu of stormwater ponds on state lands is not a viable option.

3. Linear Treatment Swale Option

A linear treatment swale option was evaluated along existing SR 46 in Basin RS8-E. Pond RS8-E-1 is sufficient to provide the required water quality treatment and attenuation for the basin, but the treatment swale option is presented as a supplemental Best Management Practice to improve the nutrient load reduction to Rock Springs Run.

4. Retention Options under Proposed Wildlife Crossings

The use of shallow retention under the proposed wildlife crossings was evaluated in order to minimize the impact from larger ponds to state conservation lands. The shallow retention areas under the bridges have been

located to minimize impacts to wildlife passage under the crossings. Minutes of preliminary discussions with the Department's environmental consultant are provided in **Appendix H**.

G. Summary of Stormwater Evaluation Matrices

Based on this information, evaluation matrices were prepared for the stormwater options for each basin, which are provided herein. These matrices summarize the onsite basin information, drainage patterns and area, pond volumes required and impacts for the stormwater options considered. The factors used to select the best alternative for each basin included:

- Feasibility to meet design criteria, including nutrient loading requirements in the Rock Springs Run and Wekiva River basins
- Minimization of wetland and floodplain impacts
- Minimization of additional impacts to state conservation lands
- Minimization of impacts to wildlife movement and habitat connectivity

No pond alternatives impact the existing or proposed FGT gas easement within the project corridor.

As summary of the significant factors influencing pond site locations and outfall points is provided below:

(1 & 2) Basins RS7-E and SC1-E

- Only 2 alternatives were considered in these basins because the recommended alternative is located on state lands (Rock Springs Run State Reserve)
- The recommended option is Alternative 1, which provides 1 stormwater facility:
 - Pond RS7-E-5, a wet detention pond located south of SR 429, west of Wildlife Crossing 1 in Rock Springs Run State Reserve property
- The use of shallow retention under Wildlife Crossing 1 (SMA RS7-E-4) will be maximized as feasible based on the results of the contamination analysis and environmental evaluation
- The design details for the shallow retention area under Wildlife Crossing 1 will continue to be coordinated with the Department's environmental consultant

(3 & 4) Basins RS8-E and RS9-E

- Recommended pond locations within Basins RS8-E (Pond RS8-E-1) and Basin RS9-E (Pond RS9-E-1) were identified during the Line & Grade phase, and right-of-way acquisition has taken place for these ponds
- Based on the Line & Grade documentation, Ponds RS8-E-1 and RS9-E-1 are sufficient to provide the required water quality treatment and attenuation
- In order to meet net improvement criteria for nutrient loading in the Rock Springs Run basin, additional treatment options were evaluated for Basin RS8-E.
- The recommended option for Basin RS8-E is Alternative 1, which provides 2 stormwater facilities:
 - Pond RS8-E-1, a wet detention pond located north of SR 429, east of Wildlife Crossing 1 (previously identified and sized during the Line & Grade phase); and
 - Pond RS7-E-2, a dry retention pond located west of Access Road 1 in a remainder portion of the parcel impacted by Access Road 1 and Rock Springs Run State Reserve property
- This option reduces the contributing area to Pond RS8-E-1, and assists in meeting net improvement criteria for nutrient loading in the Rock Spring Run basin
- No supplemental treatment options were required or identified in Basin RS9-E. Therefore, no Stormwater Evaluation Matrix was developed for Basin RS9-E.

(5) Basin BW1A-E

- Only 2 alternatives were considered in these basins because the recommended alternative is located on state lands (Seminole State Forest)
- The recommended option is Alternative 1:
 - Pond BW1A-E-6, a dry retention pond located on Seminole State Forest land in between SR 46 and CR 46A
- This option limits the impacts to state conservation land bounded by roadways, and minimizes impacts to contiguous state conservation lands located north of CR 46A

(6) Basin BW1-E

- Three alternatives were considered in this basin, although the recommended alternative is located on state lands (Seminole State Forest)
- The recommended option is Alternative 1, which provides 3 stormwater facilities in between SR 46 and SR 429:
 - Pond BW1-E-2, a wet detention pond;
 - Pond BW1-E-3, a wet detention pond; and
 - Pond BW1-E-4, a wet detention pond
- This option minimizes the impacts required on state conservation land beyond the footprint of the roadways

(7) Basin BW2-E

- Only 2 alternatives were considered in this basin because the recommended alternative is located in state lands (Rock Springs Run State Reserve and Seminole State Forest)
- The recommended option is Alternative 1, which provides 3 stormwater facilities:
 - Pond BW2-E-1, a wet detention pond;
 - Pond BW2-E-2, a wet detention pond; and
 - Pond BW2-E-5A, a wet detention pond
- This option minimizes the impacts required on state conservation land beyond the footprint of the roadways
- Pond BW2-E-5A is required to provide treatment for Wildlife Crossing 2. The use of compensatory treatment (compensatory treatment of SR 46 and/or overtreatment of proposed impervious area) will be investigated as an option to reduce the drainage improvements required to convey runoff from Wildlife Crossing 2 to Pond BW2-E-5A, and maximize the allowable direct discharge from Wildlife Crossing 2 to Seminole State Forest. Should compensatory treatment prove to be infeasible, then all of Wildlife Crossing No. 2 will be conveyed to Pond BW2-E-5A. Compensatory treatment of existing SR 46 is not required to meet the applicable stormwater criteria.
- As noted in **Section VI.B** of this report, piezometers were installed at Ponds BW2-E-1 and BW2-E-2 in July 2013 in order to measure long-term groundwater fluctuations and determine an accurate groundwater table at these locations. The piezometer data is included in the geotechnical report in **Appendix G**. Based on the geotechnical data, a 2-foot drawdown of the groundwater table is required at Ponds BW2-E-1 and BW2-E-2. The design requirements for this groundwater drawdown for permitting purposes have been discussed with SJRWMD and FDEP

during a July 24, 2014 teleconference. Meeting minutes can be found in ***Appendix I.***

- The control elevations for Ponds BW2-E-1 and BW2-E-2 will be set to meet base clearance requirements for existing SR 46 in this area. It should be noted that this portion of SR 46 (in addition to the Service Road and all minor connectors) will be conveyed to Lake County.

(8) Basin WR1-E

- Only 2 alternatives were considered in this basin due to the limited amount of Type A soils suitable for retention in order to meet net improvement criteria for nutrient loading.
- The recommended option is Alternative 1, which provides 3 stormwater facilities:
 - Pond WR1-E-1, a wet detention pond;
 - Pond WR1-E-5A, a dry retention pond; and
 - Pond WR2-E-7, a dry retention pond
- This option minimizes the impacts to private parcels adjacent to the proposed right-of-way. The locations of Ponds WR1-E-1 and WR1-E-7 have been previously coordinated with FDEP.
- Pond sizing is based on discharge to an existing ditch downstream of the 36" cross drain under Wekiva River Road. This is the preferred pond outfall, and provides a conservative estimate of attenuation requirements for this basin.
- An alternate outfall location for Ponds WR1-E-5A and WR1-E-7 is discharge to a series of level spreaders under the proposed Wekiva River bridges. This is not the preferred option due to the potential for erosion from runoff discharged under the proposed bridges.
- Approximately 600 feet of Service Road 1 (at the intersection with Wekiva River Road) may require a separate outfall to the ditch downstream of the cross drain Wekiva River Road if found to be too low to drain to Pond WR1-E-1. If required, this outfall will require water quality treatment to meet the project commitment of "no direct discharge of untreated runoff to the Wekiva River". If required, alternatives to provide water quality for this area include Best Management Practices (sheet flow to promote infiltration), water quality inlets, a system utilizing Bold & Gold, or a nutrient-separating baffle box. Further coordination with the Department will take place as design progresses.
- As all facilities discharge to the same existing channel, the required attenuation for this separate outfall will be provided in the remaining pond sites within this basin. The remaining ponds have been sized to provide the required attenuation for the entire basin, and therefore this separate outfall would not need to address attenuation requirements.

(9) Basin WR2A-S

- Only 1 alternative was considered in this basin because the recommended alternative is located within the footprint of the proposed Wekiva River bridges and the proposed right-of-way for the project improvements.
- The required treatment of SR 429 between Sta. 920+00 and 930+20 will be provided by Pond WR1, which is part of Wekiva Section 7A. Basin WR2A-S is composed of the portion of the access road to Wekiva Oaks Circle (part of Wekiva Section 7A).
- The recommended option is Alternative 1:
 - Pond WR2A-S-2, a dry retention pond
- The pond is located within the proposed right-of-way. Final location and sizing will be coordinated with the bridge substructure and foundation designs.

Alternative Evaluation Matrices for each basin are provided at the end of in the ***Executive Summary***.

VIII. FLOODPLAINS

A. *Floodplain Analysis*

The current Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) for Lake and Seminole Counties were used to identify floodplains within the project area. The floodplains identified in the vicinity of the project improvements (excluding the Wekiva River crossing) are classified as Zone A floodplains, with no base flood elevations determined. The Wekiva River floodplain is classified as Zone AE, with base flood elevations determined. Impacts to the Wekiva River Zone AE floodplain are addressed in the *Draft Bridge Hydraulic Report for the SR 429/SR 46 Bridges over the Wekiva River* (dated September 2013).

It should be noted that floodplain impacts and compensation within Basins RS8-E and RS9-E were addressed in the *New Garden Coal Property Drainage Report* (May 2013), and are not included herein. Impacts to floodplains and historic basin storage were mitigated through dynamic routing of the proposed improvements using ICPR, and not calculated using the volumetric approach used for the floodplain impacts described below. The *New Garden Coal Property Drainage Report* (May 2013) utilized a comparison of existing and proposed conditions node maximum stages to demonstrate mitigation of floodplain impacts, rather than providing a summary of floodplain impacts and compensation areas. Therefore, floodplain impacts and compensation is not provided in **Table 3** below.

The project corridor is characterized by rolling terrain and local interconnected depressions that provide historical basin storage. Therefore, an ICPR model of the existing condition utilizing LiDAR data from Lake County was prepared in order to determine base flood elevations. ICPR modeling data and base flood elevations for Zone A floodplains are provided in **Appendix E**.

B. Proposed Floodplain Impacts and Compensation

The proposed improvements will impact existing floodplain areas and historical basin storage. All portions of existing floodplains within the proposed right-of-way are assumed to be impacted in the proposed condition. A summary of proposed floodplain impacts, where compensation is to occur and the volumetric compensation provided can be found in **Appendix E**. Only 2 alternatives were considered for impacts to FP-15 and FP-28, as the floodplain compensation alternatives were located on state lands (Rock Springs Run State Reserve).

A high SHGWT exists in the vicinity of FP-26 and FP-27 (soil maps showing depth to water table, as well a long-term piezometer readings at Pond BW2-E-1 are provided **Appendix G**). Therefore, the mitigation of floodplain impacts will be addressed through drainage improvements to convey flow Wildlife Crossing 2 and proposed cross drains as noted in **Table 3** below. If necessary, Pond BW2-E-1 will be utilized to supplement the dynamic routing using ICPR to provide floodplain compensation. In addition, coordination with state land managers will take place during design to determine if a nominal increase in floodplain elevation is preferred, as these floodplains are contained entirely within Rock Springs Run State Reserve property. A summary of this information and description of compensation approach can be found in **Table 3** below:

Table 4
Estimated Floodplain Impacts and Compensation

Floodplain ID	ICPR Node ID	Base Flood El. (100-yr/24-hr) (ft)	Floodplain Impact (ac-ft)	Recommended Floodplain Compensation Site	Alternate Floodplain Compensation Site	Compensating Storage Available (ac-ft)
FP-15	N-2 N-6	61.10 60.40	7.35	FPC-1	Pond RS7-E-1A (see note 3)	15.50
FP-24	N-53A	48.10	2.46	Pond BW1-E-2	(see note 4)	3.49
FP-24A	N-50	44.40	0.00	N/A		N/A
FP-26	N-58	34.20	5.12	(see note 1)		N/A
FP-27	N-59	39.30	14.78	(see note 2)	Pond BW2-E-1 (see note 5)	N/A
FP-28	N-54	39.80	2.79	FPC-2	Pond WR1-E-1 (see note 3)	7.37

- Notes:
1. Proposed impact a using volumetric comparison of floodplain volume impacts indicates an increase in base flood stage to el. 34.50, an increase of 0.30 ft. over existing base flood el. Impacts do not currently consider proposed drainage improvements to convey flow to Wildlife Crossing 2. The increase in base flood elevation will be mitigated through the use of drainage improvements to convey flow to the north through Wildlife Crossing 2. If necessary, coordination with state land managers will take place during design to determine if a nominal increase in floodplain elevation is preferred, as this floodplain is contained entirely within Rock Springs Run State Reserve property.
 2. Proposed impact a using volumetric comparison of floodplain volume impacts indicates an increase in base flood stage to el. 40.10, an increase of 0.80 ft. over existing base flood el. Impacts do not currently consider proposed drainage improvements to convey flow north to Seminole State Forest. The increase in base flood elevation will be mitigated through the use of drainage improvements to convey flow to the north. If necessary, Pond BW2-E-1 will be utilized to supplement the dynamic routing using ICPR to provide floodplain compensation. In addition, coordination with state land managers will take place during design to determine if a nominal increase in floodplain elevation is preferred, as this floodplain is contained entirely within Rock Springs Run State Reserve property.
 3. As the pond outfalls are not directly connected to the impacted floodplain areas, separate control structures which provide a direct connection to the impacted floodplain will be required to allow runoff to enter the pond for use as a floodplain compensation area.
 4. Only one alternative for impacts to FP-24 was evaluated, as the floodplain is isolated and located entirely within the footprint of Pond BW1-E-2.

IX. RESULTS AND CONCLUSIONS

This Pond Siting Report provides an evaluation of stormwater alternatives to accommodate the proposed construction of SR 429 and associated improvements. SR 429 is designed as a 4-lane limited access rural expressway, but this Pond Siting Report will evaluate the stormwater requirements for the ultimate 6-laning of SR 429. Pond locations were selected to meet the design criteria provided herein, while minimizing impacts to wetland and floodplain impacts, wildlife movement and habitat connectivity. There are nine (9) basins identified within the project limits.

Please note that pond siting for two of the basins (Basins RS8-E and RS9-E) are not within the scope of this Pond Siting Report. Basins RS8-E and RS9-E are located in the vicinity of the Wekiva River Mitigation Bank (formerly the New Garden Coal property). Pond siting and sizing, as well as floodplain analysis and mitigation, for Basins RS8-E and RS9-E was completed by The Balmoral Group during the Line & Grade phase. Right-of-way acquisition for Ponds RS8-E-1 and RS9-E-1 has been completed. Documentation for the recommended pond alternatives are provided in the *New Garden Coal Property Drainage Report*, dated May 17, 2013. Selected information from this report is provided herein to assist in the nutrient loading analysis for Rock Springs Run, which is contained in this report.

The project limits are located entirely within the Wekiva River Hydrologic Basin and the Wekiva Recharge Protection Basin. The Wekiva River and its tributaries, including Rock Springs Run, Black Water Creek, and Seminole Creek are designated Outstanding Florida Waters (OFW) and State Aquatic Preserves per Chapter 62-302, F.A.C. Therefore, OFW criteria as presented in the SJRWMD Permit Information Manual (dated October 1, 2013) apply for all basins identified herein.

Based on discussions with the FDEP, basins with Adopted TMDLs shall be required to demonstrate net improvement for nutrient (total nitrogen and total phosphorus) loading. Stormwater management systems within the Rock Springs Run (Basins RS7-E, RS8-E and RS9-E) and Wekiva River (Basins WR1-E and WR2A-S) basins must meet net improvement criteria for nutrient loading. Per discussion with FDEP and SJRWMD, nutrient loading criteria is not required for discharges to Seminole Creek (Basin SC1-E) or Black Water Creek (Basins BW1-E and BW2-E).

The use of flowage easements within the project limits was evaluated, but was found to be infeasible due to the site constraints, soil types and the open basins throughout the project limits. The additional runoff generated from the proposed improvements is not contained on state lands, and will be conveyed downstream to developed properties without attenuation.

Based on the analysis contained herein, the following pond sites are recommended:

- **For Basins RS7-E and SC1-E, the recommended option is Pond RS7-E-5. This option is identified as Alternative 1.** Alternative 1 will be supplemented by the use of shallow retention under Wildlife Crossing 1 where deemed feasible to minimize the size of Pond RS7-E-5. Level 1 Contamination Screening Evaluation Report (CSER) Update and Level 2 Contamination Impact Assessment Addendum – Former Cattle Dip Area, Wekiva Parkway Section 6 (Terracon, July 2014) identified arsenic contamination under Wildlife Crossing 1. Based on recommendations from Terracon, shallow retention areas will be kept a minimum 100' from the limits of contaminated area identified. As the shallow retention areas have not received final approval from FDOT and the regulatory agencies, the exact configuration and limits of the shallow retention areas will be coordinated with the Department's environmental consultant to minimize impacts to wildlife passage. Coordination on these contamination and environmental issues will continue during the design phase. Alternative 1 provides the required water quality treatment and attenuation for the basin without the use of shallow retention areas.

- **Pond siting for Basins RS8-E and RS9-E is not within the scope of this report.** Pond locations within Basins RS8-E (Pond RS8-E-1) and Basin RS9-E (Pond RS9-E-1) have already been identified during the Line & Grade phase (provided in the *New Garden Coal Property Drainage Report* by the Balmoral Group, dated May 17, 2013), and right-of-way acquisition is underway for these ponds. Based on the Line & Grade documentation, these ponds are sufficient to provide the required water quality treatment and attenuation. However, these basins are located within the Rock Springs Run basin which has adopted TMDLs for nutrients. These ponds sites are not sufficient to meet net improvement criteria for nutrient loading. Therefore, selected information from this report is provided herein to assist in the nutrient loading analysis for Rock Springs Run which is needed to meet net improvement criteria in the Rock Spring Run basin.
 - **In Basin RS8-E-1, the recommended option is Ponds RS8-E-1 and RS7-E-2A (identified as Alternative 1).** The remaining alternatives (Alternatives 2 and 3) utilize compensatory treatment of SR 46 (which will be conveyed to the County following construction of this project), and require right-of-way acquisition from 9 parcels along SR 46 that are not currently impacted by the proposed improvements for conveyance or treatment swale systems.
 - **There are no changes to the recommendations proposed during the Line & Grade phase for Basin RS9-E-1.**
- **For Basin BW1A-E, the recommended option is Pond BW1A-E-6 (identified as Alternative 1).** This option utilizes state conservation land bounded by roadways, and minimizes impacts to contiguous state conservation lands located north of CR 46A.
- **For Basin BW1-E, the recommended option is Ponds BW1-E-2, BW1-E-3 and BW1-E-4 (identified as Alternative 1).** This option minimizes the impacts to state conservation land beyond the footprint of the roadways. Alternative 1 utilizes the area between SR 429 and SR 46, which will be impacted even if other stormwater alternatives are utilized.
- **For Basin BW2-E, the recommended option is Ponds BW2-E-1, BW2-E-2 and BW2-E-5A (identified as Alternative 1).** This option minimizes the impacts to state conservation land beyond the footprint of the roadways. The use of compensatory treatment is not required, but will be used as feasible to minimize the drainage improvements required to convey runoff from Wildlife Crossing 2 to Pond BW2-E-5A.
- **For Basin WR1-E, the recommended option is Ponds WR1-E-1, WR1-E-5A and WR1-E-7 (identified as Alternative 1).** This option minimizes the impacts to private parcels adjacent to the SR 429 right-of-way needed to meet net improvement criteria for the Wekiva River basin. The locations of Ponds WR1-E-1 and WR1-E-7 have been previously coordinated with FDEP. Approximately 600 feet of Service Road 1 (at the intersection

with Wekiva River Road) may require a separate outfall and water quality treatment to meet project commitments if found to be too low to drain to Pond WR1-E-1.

- **For Basin WR2A-S, the recommended option is Pond WR2A-S-2 (identified as Alternative 1).** Due to site constraints in the vicinity of the Wekiva River, water quality treatment and attenuation requirements for the proposed SR 429 and Service Road improvements between Sta. 920+00 and Sta. 930+20 (including the proposed bridges over the Wekiva River within these limits) will be provided in the preferred pond alternative for Basin WR1 in Wekiva Section 7A (Pond WR1). Pond WR2A-S-2 will provide water quality treatment for a small section of the access road to Wekiva Oaks Circle (within Wekiva Section 7A) that cannot be treated in Pond WR1. Attenuation requirements will be met by utilizing the remaining ponds within Wekiva Section 6 and 7A that drain to the Wekiva River. Pond WR2A-S is located under the proposed Wekiva River bridges within the SR 429 right-of-way.

The proposed improvements will impact floodplains within the project limits. The floodplains identified in the vicinity of the project improvements (excluding the Wekiva River crossing) are classified as Zone A floodplains, with no base flood elevations determined. Therefore, an ICPR model of the existing condition utilizing LiDAR data from Lake County was prepared in order to determine base flood elevations. The Wekiva River floodplain is classified as Zone AE, with base flood elevations determined. Impacts to the Wekiva River Zone AE floodplain are addressed in the *Draft Bridge Hydraulic Report for the SR 429/SR 46 Bridges over the Wekiva River* (dated September 2013).

Based on the analysis contained herein, the following floodplain compensation areas are recommended:

- **For impacts to FP-15 (within Basin RS7-E), the recommended option is FPC-1.** This alternative provides a direct connection to the impacted floodplain.
- **Floodplain impacts and compensation within Basins RS8-E and RS9-E** were addressed in the *New Garden Coal Property Drainage Report* (May 2013), and **are not included herein**. Impacts to floodplains and historic basin storage were mitigated through dynamic routing of the proposed improvements using ICPR, and not calculated using the volumetric approach. The *New Garden Coal Property Drainage Report* (May 2013) utilized a comparison of existing and proposed conditions node maximum stages to demonstrate mitigation of floodplain impacts, rather than providing a summary of floodplain impacts and compensation areas.
- **For impacts to FP-24 (within Basin BW1-E), the recommended option is Pond BW1-E-2.** FP-24 is an isolated floodplain and located entirely within the footprint of Pond BW1-E-2.
- **For impacts to FP-26 and FP-27 (within Basin BW2-E), the recommended option the use of drainage improvements to convey runoff to the north through the project site.** Due to the high SHGWT in the area, use of a floodplain compensation area using a volumetric approach is not feasible without significant impacts to state lands. Dynamic

routing will be used for the evaluation of drainage improvements necessary to mitigate floodplain impacts. If necessary, Pond BW2-E-1 will be utilized to assist in floodplain compensation, and coordination will take place with state land managers will take place to determine if a nominal increase in floodplain elevation is preferred (as the floodplain is contained entirely within Rock Springs Run State Reserve.

- **For impacts to FP-28 (within Basin WR1-E), the recommended option is FPC-2.** This alternative provides a direct connection to the impacted floodplain.

The recommended stormwater alternatives meet the Recharge Standard for the Wekiva Recharge Protection Basin by providing retention storage within the project limits equal to 3 inches of runoff from all impervious areas proposed to be constructed within “Most Effective Recharge Areas”.

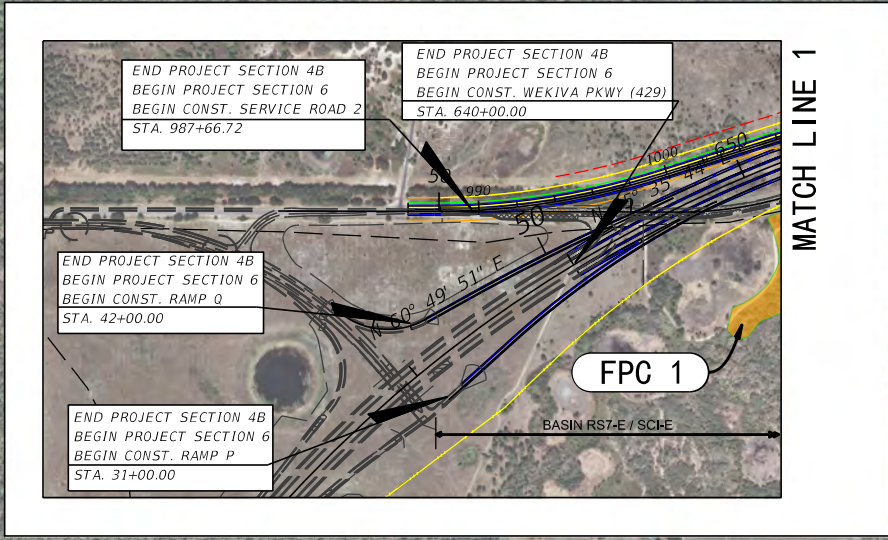
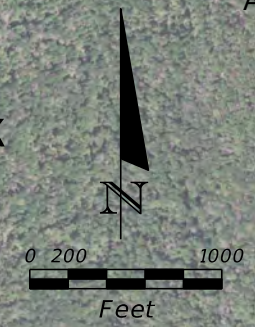
The project improvements meet the Wekiva River Standard for Riparian Wildlife Habitat. Currently untreated water within the proposed right-of-way will be directed to stormwater ponds that meet current state regulations for Outstanding Florida Waters (OFW) and Total maximum Daily Loads (TMDL). In addition, the proposed improvements within the RHPZ include substantially longer and higher bridge crossings over the Wekiva River and removal of existing embankment fill adjacent to the Wekiva River. Aquatic and wetland-dependent species will not be adversely affected by the project, and clear-spanning of the Wekiva River main channel and removal of the existing pier bents will result in enhanced natural conditions at the bridge crossing. These improvements will enhance the riparian area of the river, creating the opportunity for existing native vegetation to thrive which reduces the likelihood that non-native or nuisance vegetation will become established. The proposed addition of wildlife fencing at the Wekiva River bridge crossing will deter human access and entry in areas along the Wekiva River. These improvements promote a more endemic state for aquatic and wetland-dependent species within the RHPZ.

SR 429 (Wekiva Parkway) from West of Old McDonald Rd to
East of the Lake /Seminole County Line
FPID 238275-7
Draft Pond Siting Report

APPENDIX A

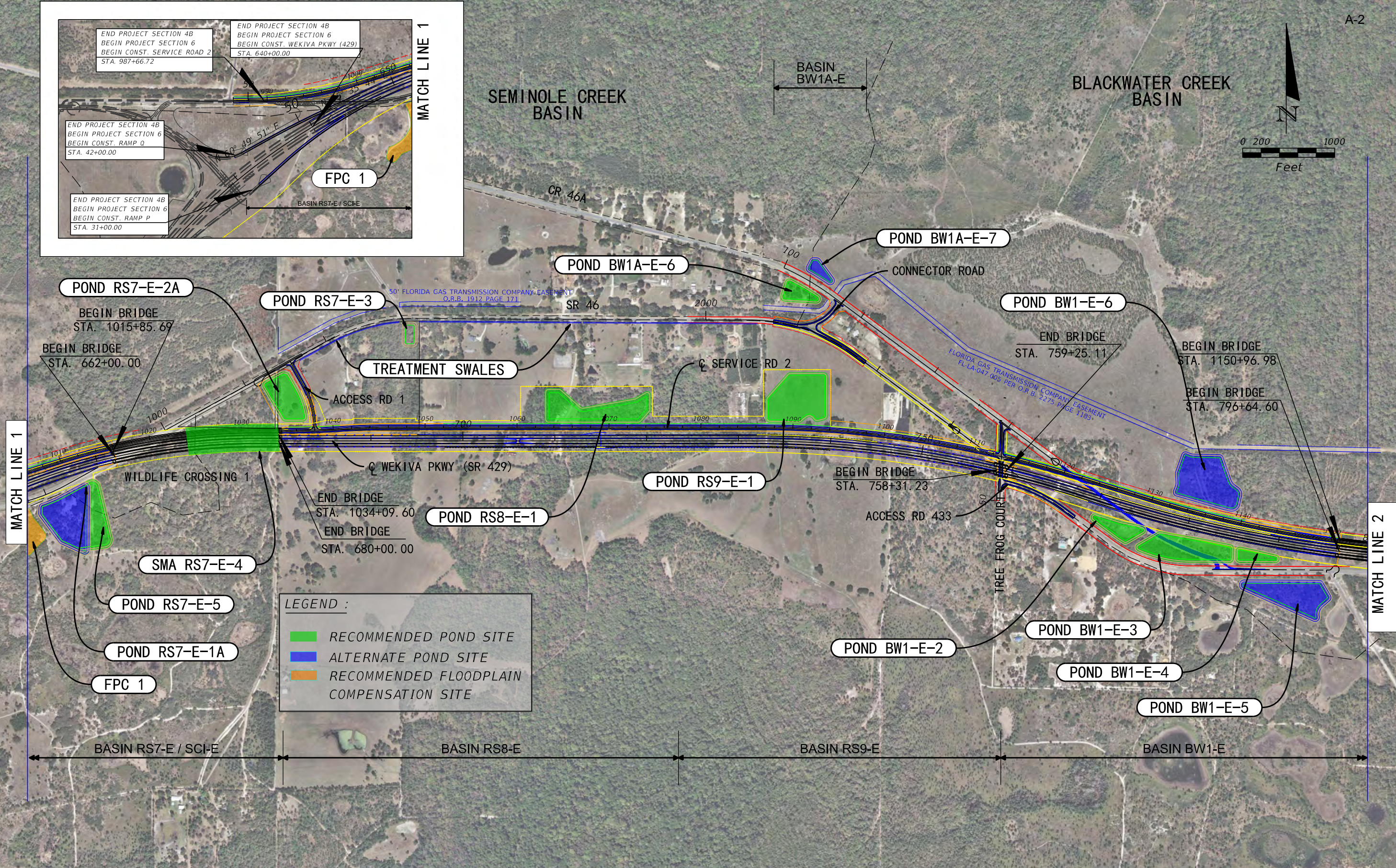
Exhibits

EXHIBITS
AERIAL MAPS



SEMINOLE CREEK BASIN

BLACKWATER CREEK BASIN



LEGEND :

- RECOMMENDED POND SITE
- ALTERNATE POND SITE
- RECOMMENDED FLOODPLAIN COMPENSATION SITE

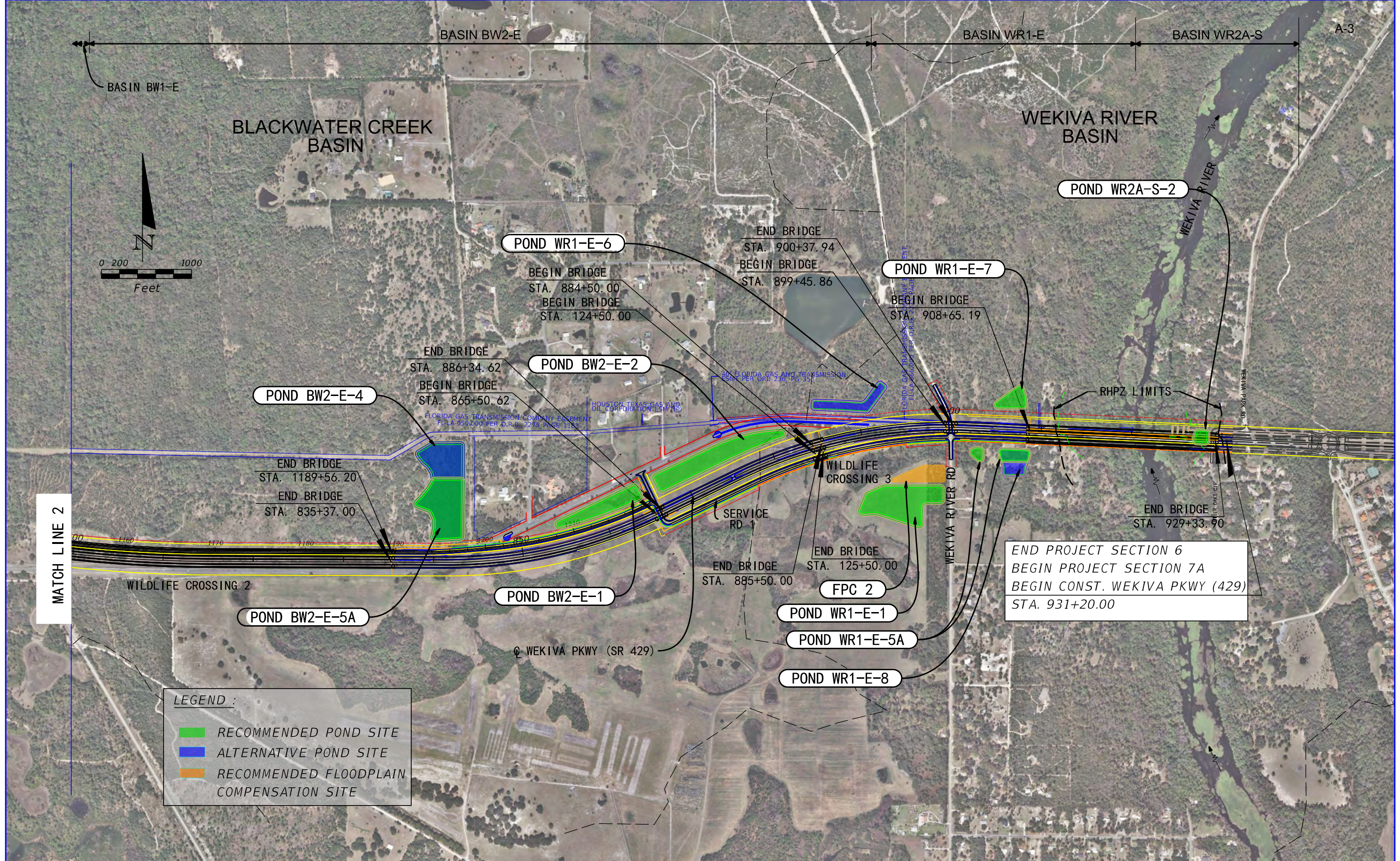
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 P.E. LICENSE NUMBER 59006
 BCC ENGINEERING, INC.
 160 N. WESTMONTE DRIVE, SUITE 2000
 ALTAMONTE SPRINGS, FLORIDA 32714
 CERTIFICATE OF AUTHORIZATION NO. 7184

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
 AERIAL MAP (1)**

SHEET
 NO.
 1 OF 2



MATCH LINE 2

LEGEND :

- RECOMMENDED POND SITE
- ALTERNATIVE POND SITE
- RECOMMENDED FLOODPLAIN COMPENSATION SITE

REVISIONS	
DATE	DESCRIPTION

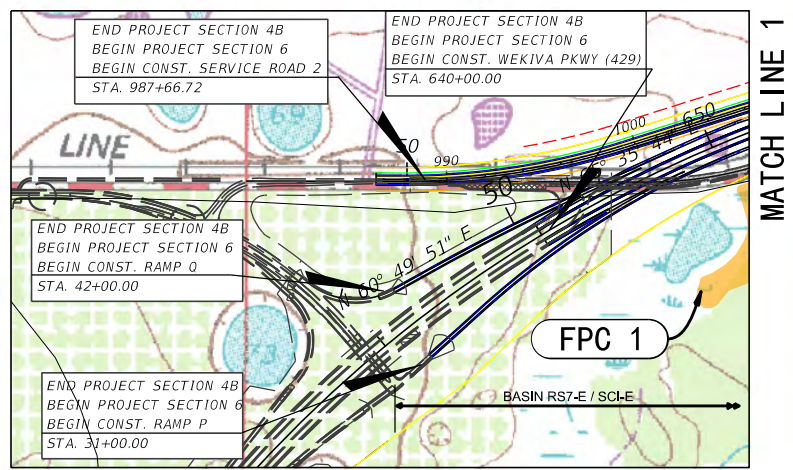
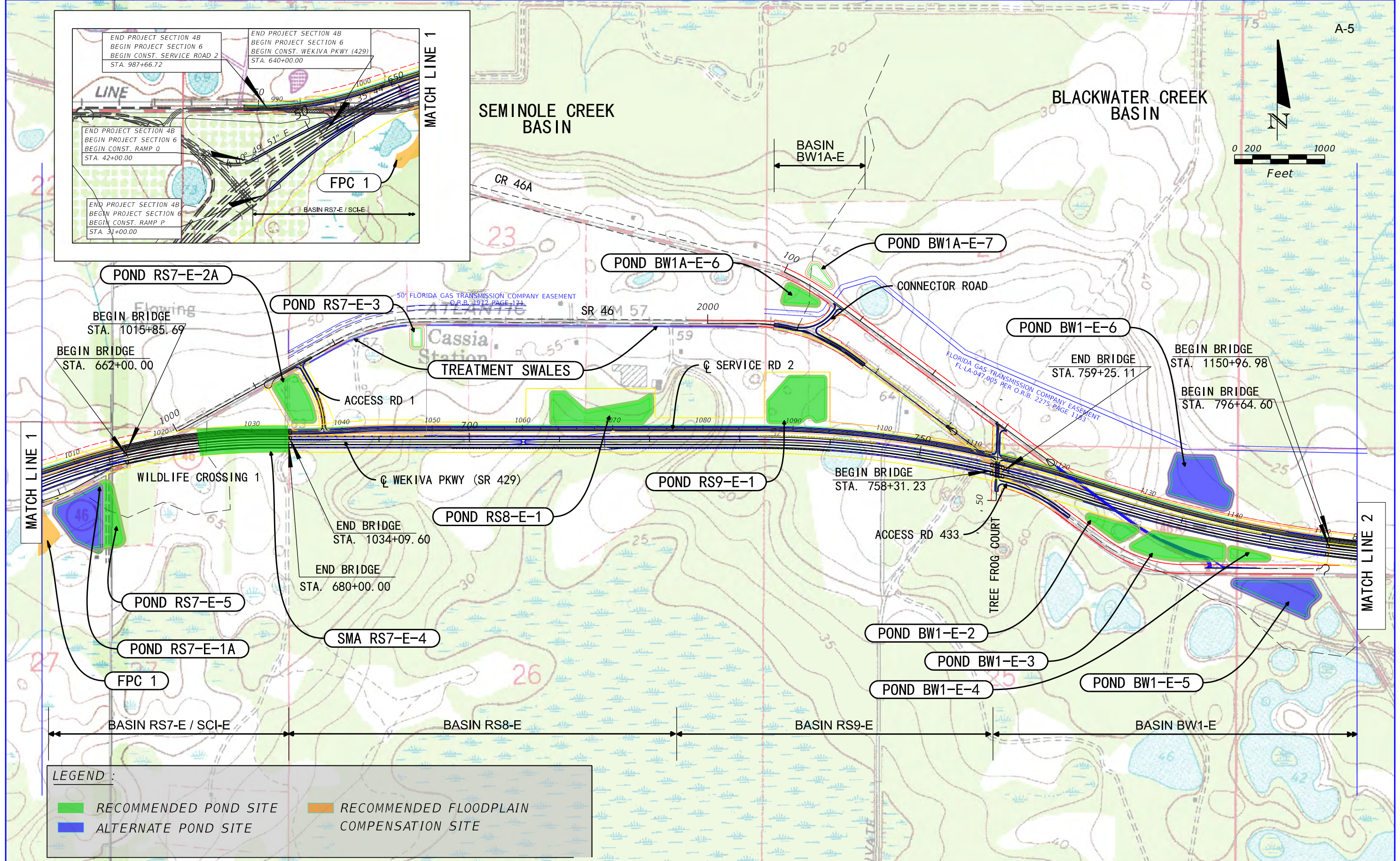
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
AERIAL MAP (2)**

SHEET NO.
2 OF 2

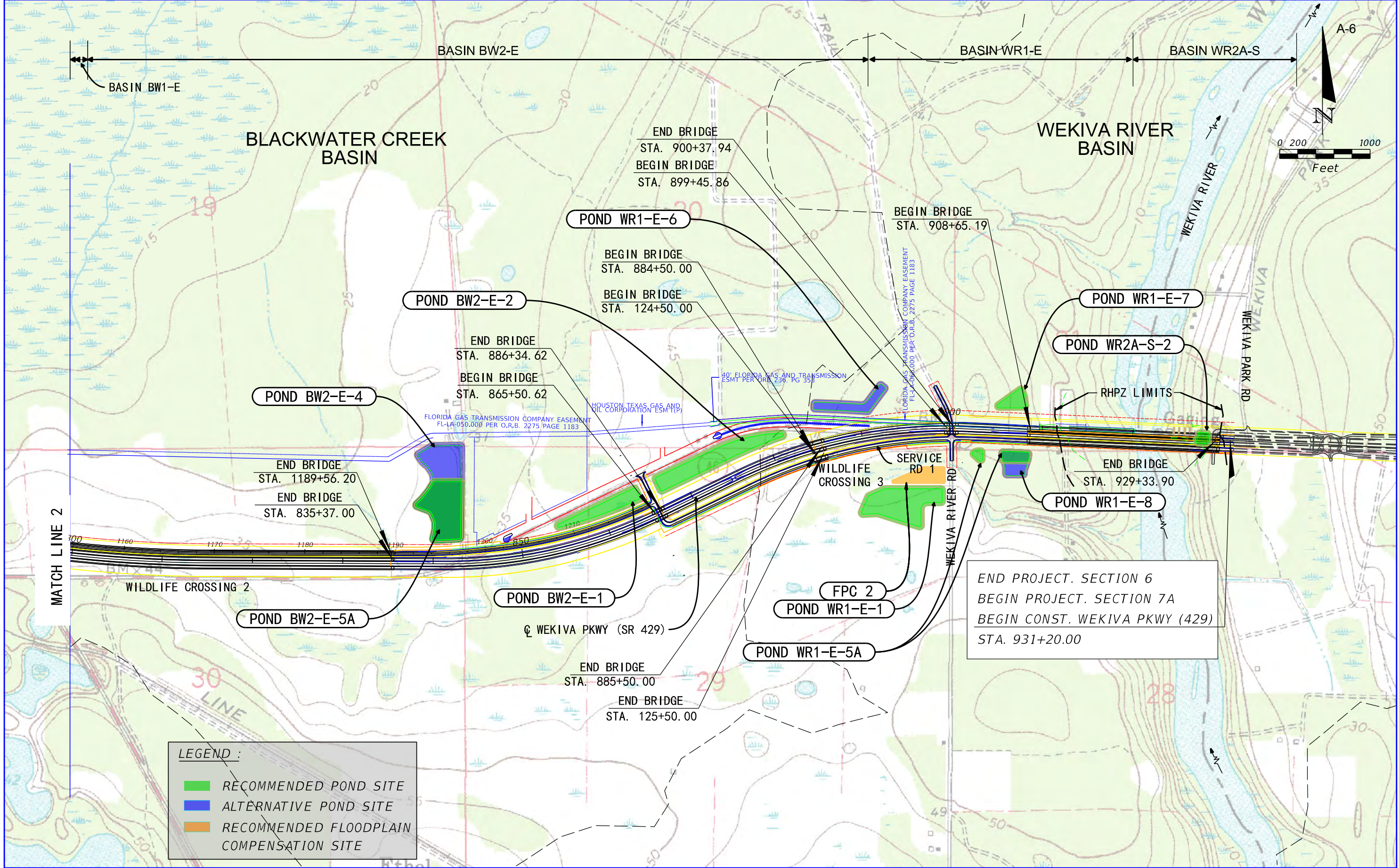
EXHIBITS
QUAD MAPS



LEGEND :

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■ ALTERNATE POND SITE	

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REVISIONS																						
DATE	DESCRIPTION																					
ROAD NO.	COUNTY	FINANCIAL PROJECT ID																				
SR 429	LAKE SEMINOLE	238275-7-52-01																				



LEGEND :

■	RECOMMENDED POND SITE
■	ALTERNATIVE POND SITE
■	RECOMMENDED FLOODPLAIN COMPENSATION SITE

REVISIONS	
DATE	DESCRIPTION

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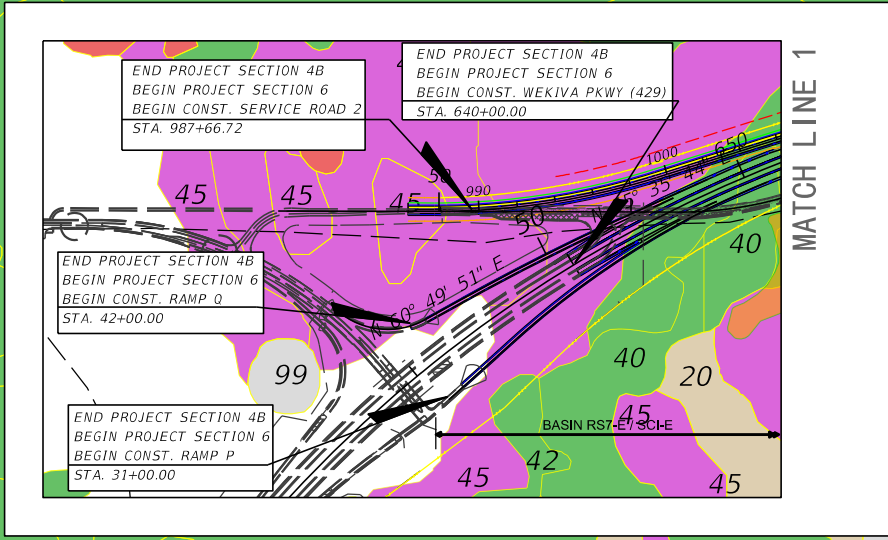
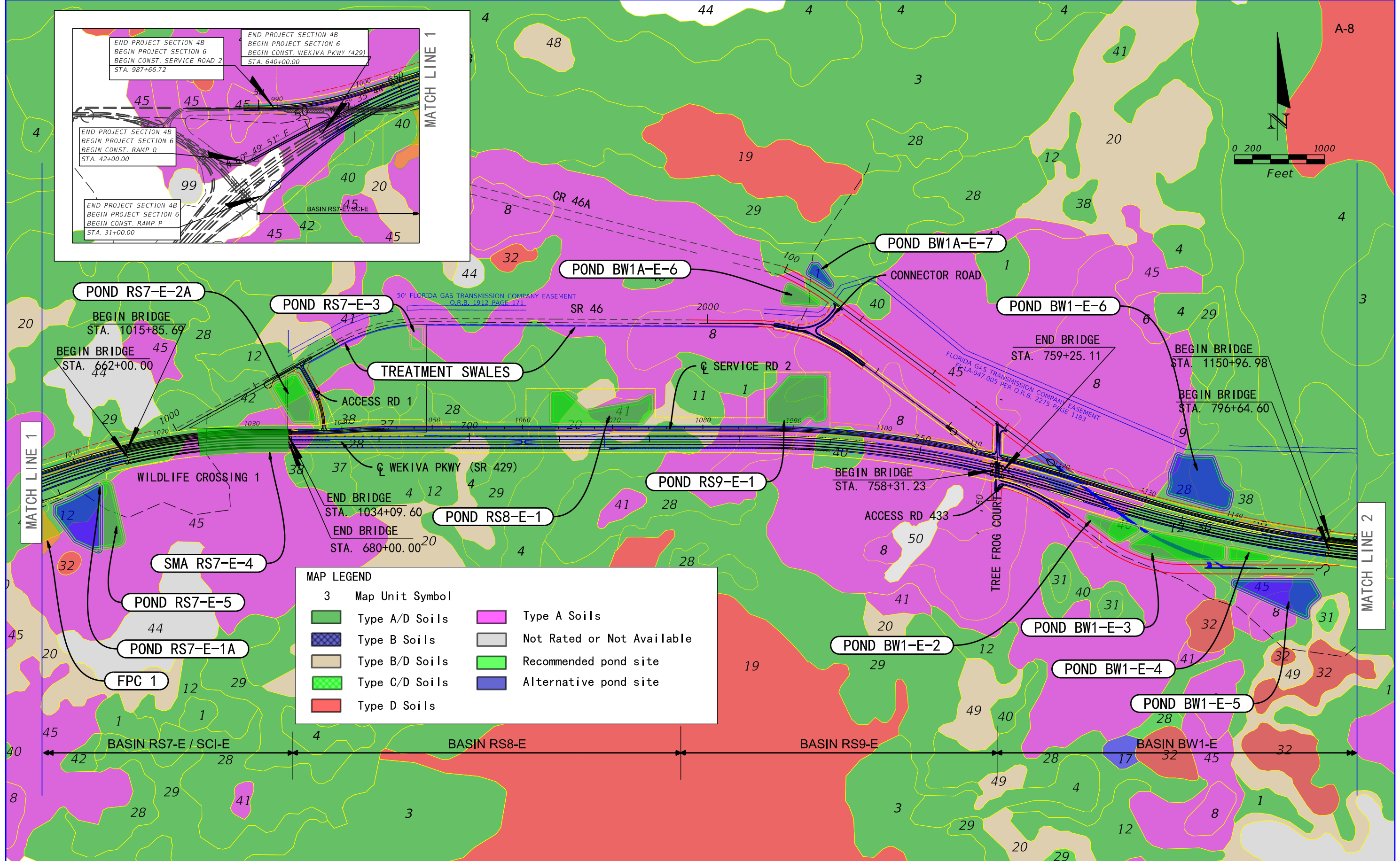
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
QUAD MAP (2)**

SHEET
NO.

2 OF 2

EXHIBITS
SOILS MAPS



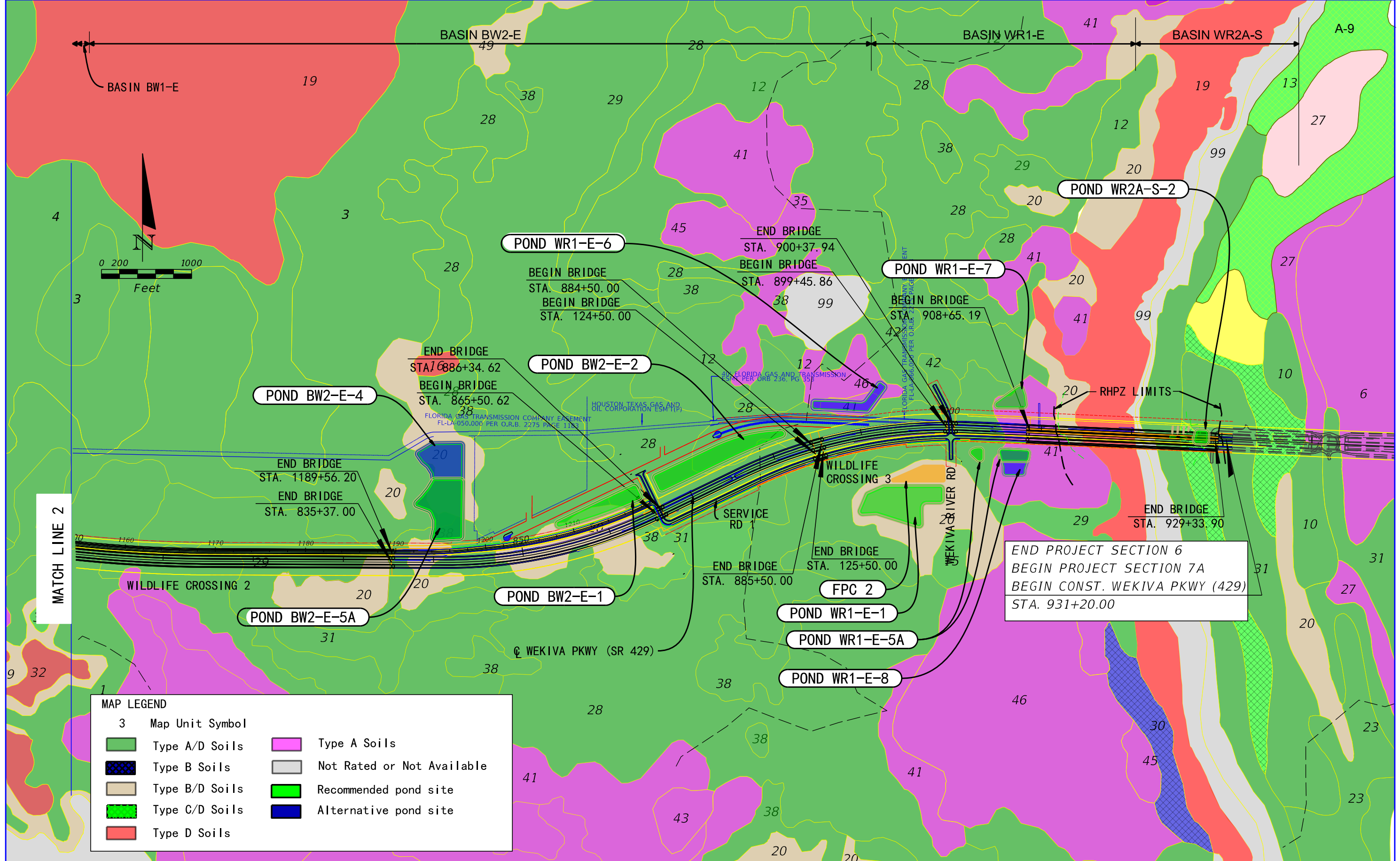
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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
SOILS MAP (1)**

SHEET NO.
1 OF 2



MAP LEGEND

3	Map Unit Symbol		
[Green Box]	Type A/D Soils	[Pink Box]	Type A Soils
[Blue Box]	Type B Soils	[Grey Box]	Not Rated or Not Available
[Tan Box]	Type B/D Soils	[Light Green Box]	Recommended pond site
[Light Green Box]	Type C/D Soils	[Dark Blue Box]	Alternative pond site
[Red Box]	Type D Soils		

END PROJECT SECTION 6
 BEGIN PROJECT SECTION 7A
 BEGIN CONST. WEKIVA PKWY (429)
 STA. 931+20.00

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

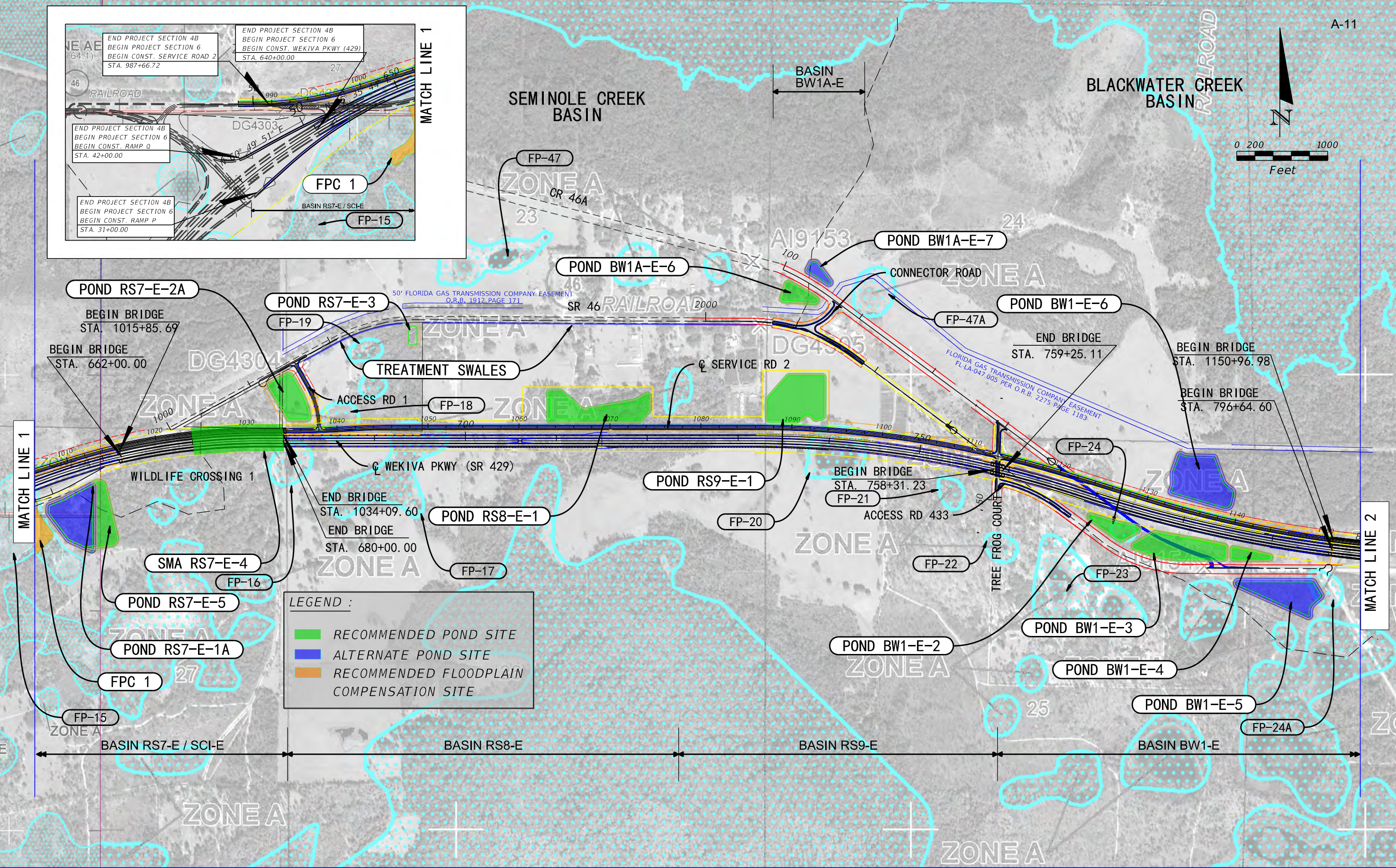
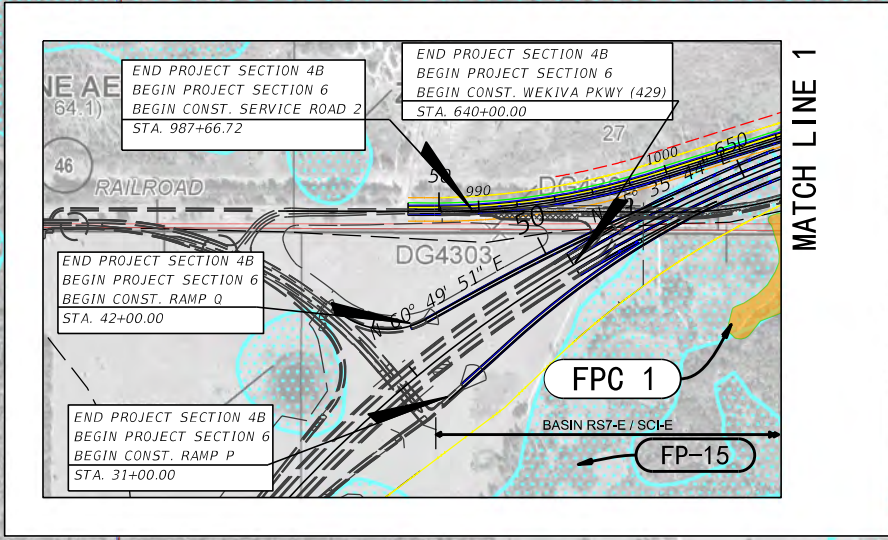
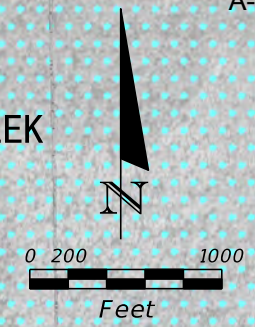
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
 SOILS MAP (2)**

SHEET NO.
2 OF 2

EXHIBITS
FEMA MAPS



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- ALTERNATE POND SITE
- RECOMMENDED FLOODPLAIN COMPENSATION SITE

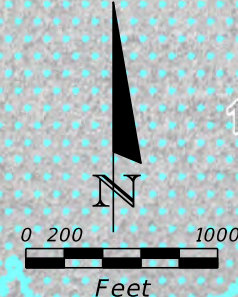
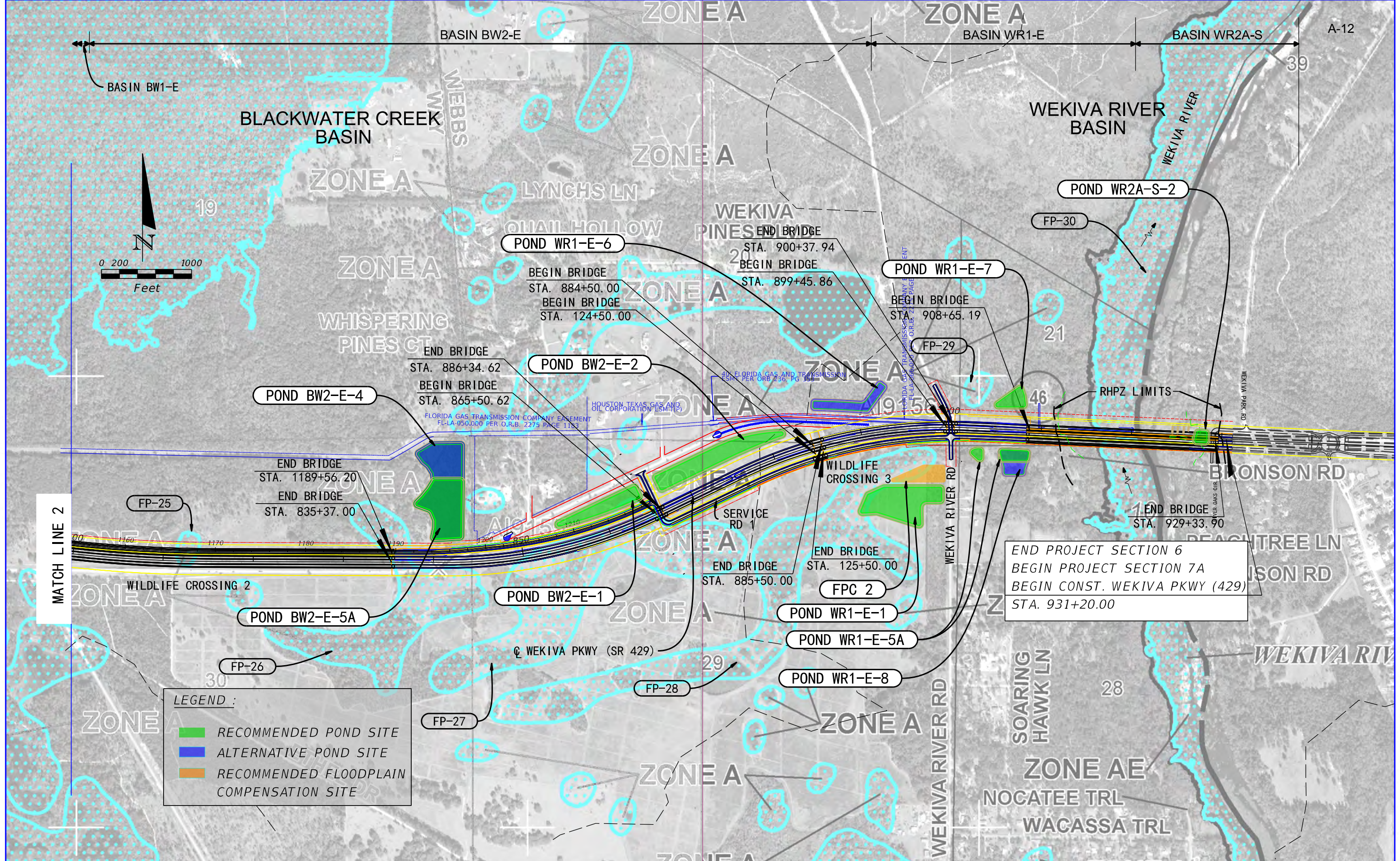
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

J. ALEXANDER GEORGE, P.E.
 P.E. LICENSE NUMBER 59006
 BCC ENGINEERING, INC.
 160 N. WESTMONTE DRIVE, SUITE 2000
 ALTAMONTE SPRINGS, FLORIDA 32714
 CERTIFICATE OF AUTHORIZATION NO. 7184

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
FEMA MAP (1)**

SHEET
NO.
1 OF 2



LEGEND :

	RECOMMENDED POND SITE
	ALTERNATIVE POND SITE
	RECOMMENDED FLOODPLAIN COMPENSATION SITE

REVISIONS	
DATE	DESCRIPTION

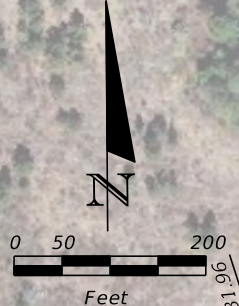
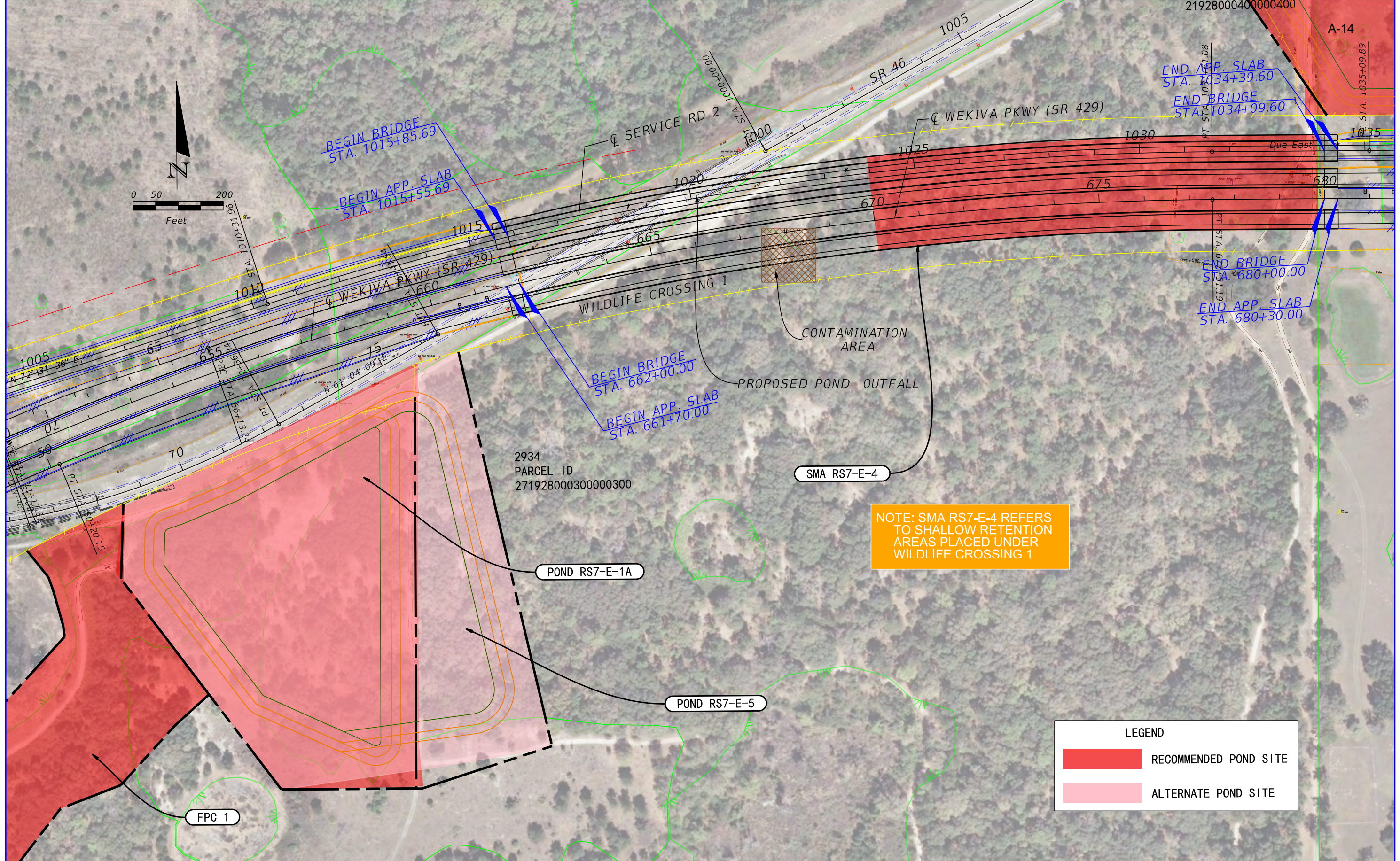
J. ALEXANDER GEORGE, P.E.
 P.E. LICENSE NUMBER 59006
 BCC ENGINEERING, INC.
 160 N. WESTMONTE DRIVE, SUITE 2000
 ALTAMONTE SPRINGS, FLORIDA 32714
 CERTIFICATE OF AUTHORIZATION NO. 7184

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
FEMA MAP (2)**

SHEET NO.
2 OF 2

EXHIBITS
POND ALTERNATIVES



2934
PARCEL ID
271928000300000300

NOTE: SMA RS7-E-4 REFERS TO SHALLOW RETENTION AREAS PLACED UNDER WILDLIFE CROSSING 1

LEGEND	
	RECOMMENDED POND SITE
	ALTERNATE POND SITE

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

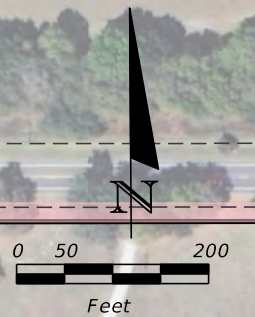
J. ALEXANDER GEORGE, P.E.
P.E. LICENSE NUMBER 59006
BCC ENGINEERING, INC.
160 N. WESTMONTE DRIVE, SUITE 2000
ALTAMONTE SPRINGS, FLORIDA 32714
CERTIFICATE OF AUTHORIZATION NO. 7184

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
POND ALTERNATIVES**

SHEET
NO.
1 OF 11

FLORIDA GAS TRANSMISSION COMPANY
5' CATHODIC PROTECTION EASEMENT
PER O.R.B. 1083 PAGE 2427.
APPROXIMATE LOCATION OF
FGT EASEMENT, BASED ON
DEEDS OF RECORD, PENDING
THE FIELD LOCATION OF THE
UNDERGROUND GAS MAIN(S)



POND RS7-E-3

DRAINAGE EASEMENT

POND RS7-E-2A

3296
PARCEL ID
231928000300000500

3279
PARCEL ID
21928000400000400

LEGEND

- RECOMMENDED POND SITE
- ALTERNATE POND SITE

END APP. SLAB
STA. 1034+39.60
END BRIDGE
STA. 1034+09.60

SERVICE RD 2
STA. 1038+00.00 =
STA. 1040+00.00
ACCESS RD 1

END BRIDGE
STA. 680+00.00
END APP. SLAB
STA. 680+30.00

PROPOSED POND OUTFALL

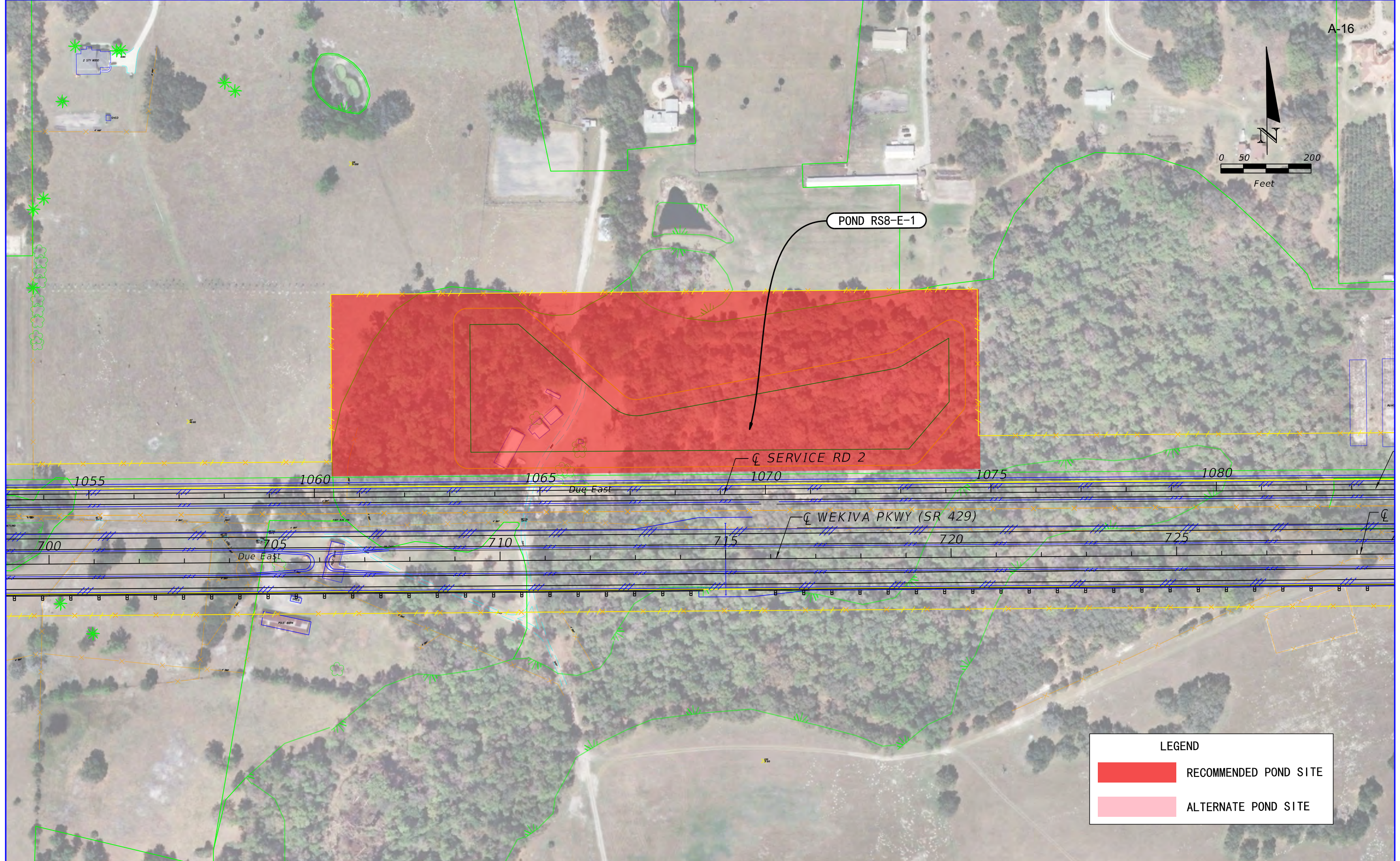
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

J. ALEXANDER GEORGE, P.E.
P.E. LICENSE NUMBER 59006
BCC ENGINEERING, INC.
160 N. WESTMONTE DRIVE, SUITE 2000
ALTAMONTE SPRINGS, FLORIDA 32714
CERTIFICATE OF AUTHORIZATION NO. 7184

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
POND ALTERNATIVES**

SHEET NO.
2 OF 11



LEGEND	
	RECOMMENDED POND SITE
	ALTERNATE POND SITE

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

J. ALEXANDER GEORGE, P.E.
 P.E. LICENSE NUMBER 59006
 BCC ENGINEERING, INC.
 160 N. WESTMONTE DRIVE, SUITE 2000
 ALTAMONTE SPRINGS, FLORIDA 32714
 CERTIFICATE OF AUTHORIZATION NO. 7184

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
POND ALTERNATIVES**

SHEET
NO.
3 OF 11



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

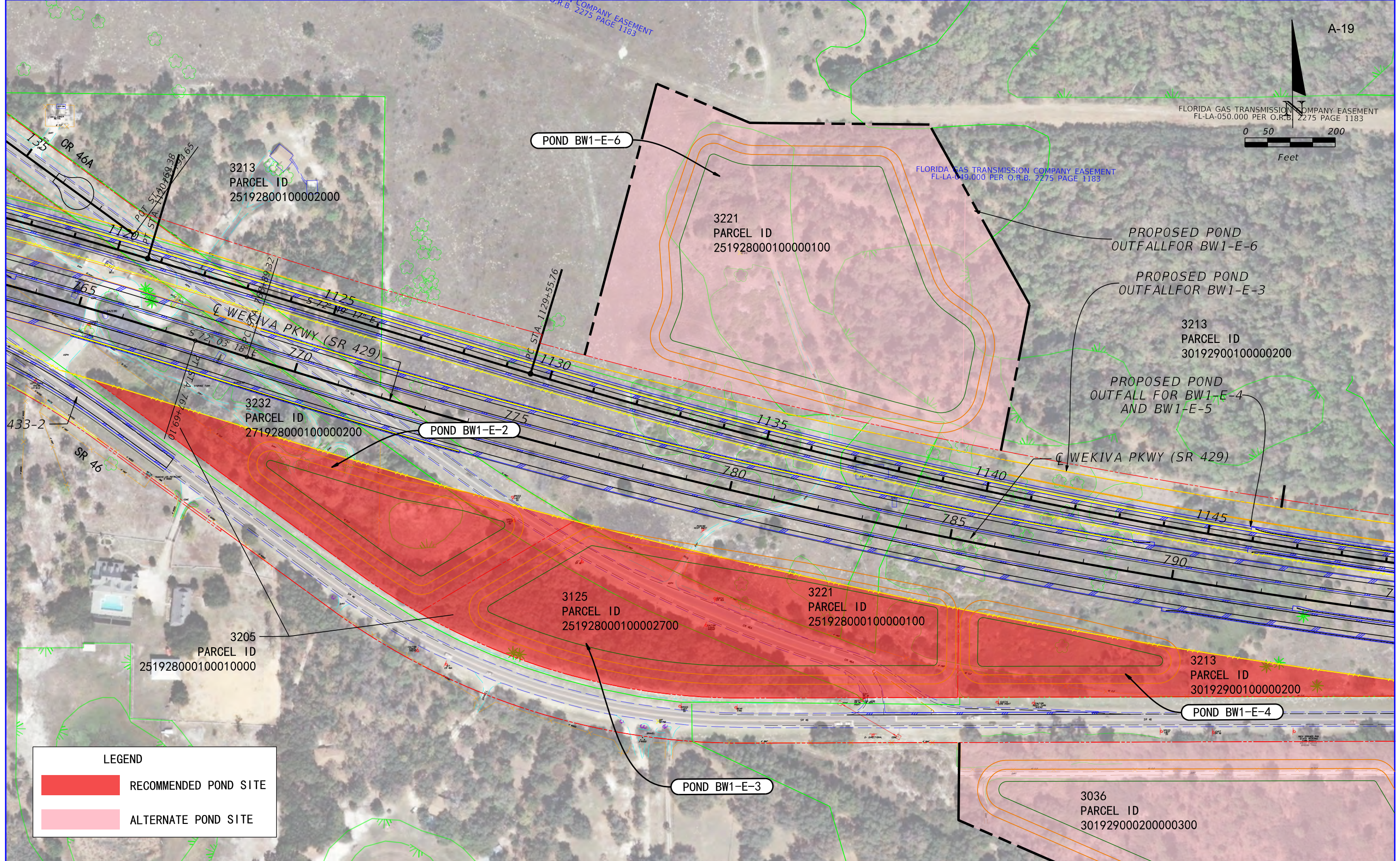
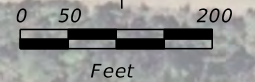
J. ALEXANDER GEORGE, P.E.
P.E. LICENSE NUMBER 59006
BCC ENGINEERING, INC.
160 N. WESTMONTE DRIVE, SUITE 2000
ALTAMONTE SPRINGS, FLORIDA 32714
CERTIFICATE OF AUTHORIZATION NO. 7184

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
POND ALTERNATIVES**

SHEET NO.
4 OF 11

FLORIDA GAS TRANSMISSION COMPANY EASEMENT
FL-LA-050.000 PER O.R.B. 2275 PAGE 1183



3213
PARCEL ID
25192800100002000

3221
PARCEL ID
251928000100000100

3232
PARCEL ID
271928000100000200

POND BW1-E-2

3125
PARCEL ID
251928000100002700

POND BW1-E-3

3221
PARCEL ID
251928000100000100

3213
PARCEL ID
30192900100000200

POND BW1-E-4

PROPOSED POND
OUTFALL FOR BW1-E-6

PROPOSED POND
OUTFALL FOR BW1-E-3

PROPOSED POND
OUTFALL FOR BW1-E-4
AND BW1-E-5

WEKIVA PKWY (SR 429)

3036
PARCEL ID
301929000200000300

LEGEND	
	RECOMMENDED POND SITE
	ALTERNATE POND SITE

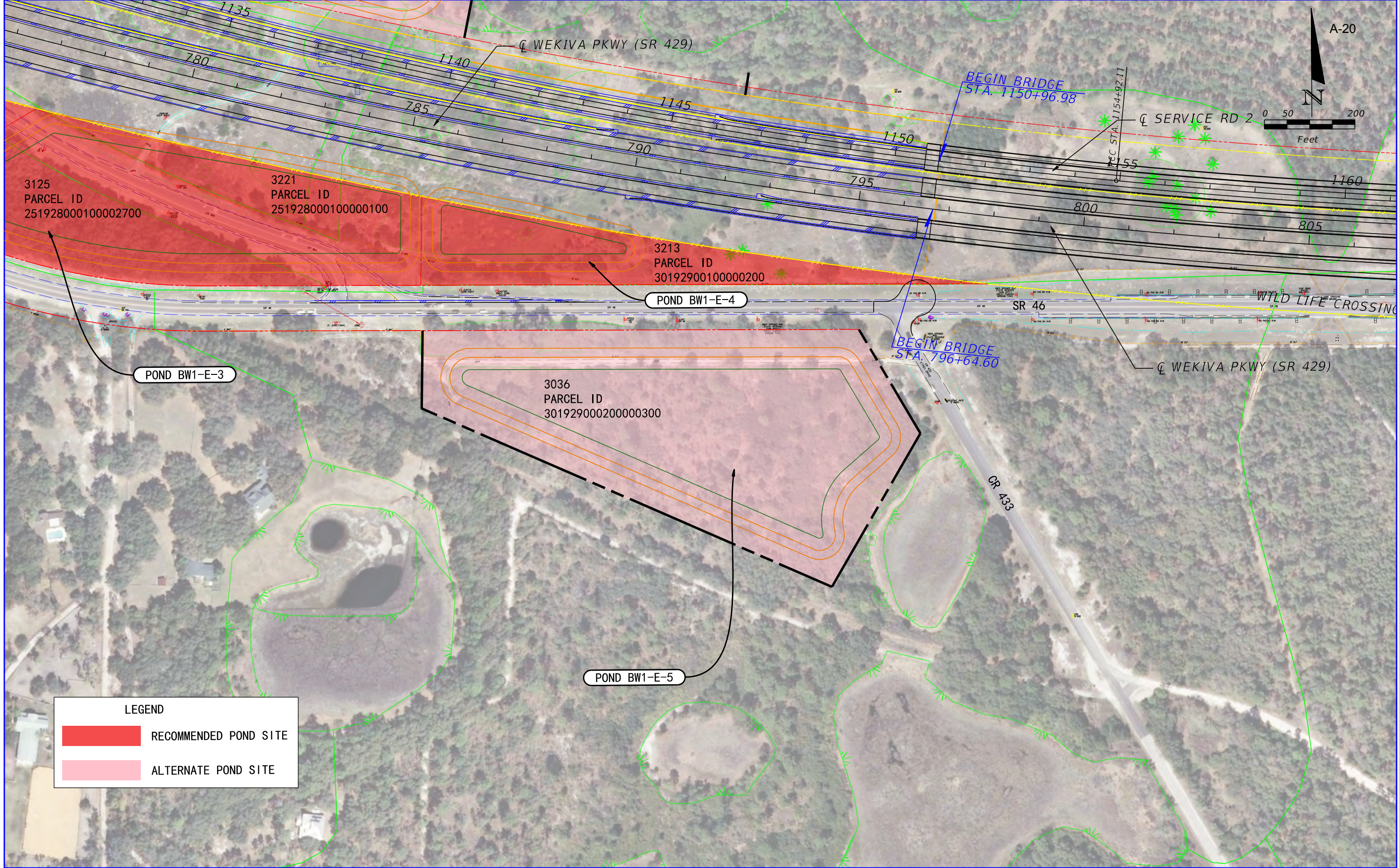
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

J. ALEXANDER GEORGE, P.E.
P.E. LICENSE NUMBER 59006
BCC ENGINEERING, INC.
160 N. WESTMONTE DRIVE, SUITE 2000
ALTAMONTE SPRINGS, FLORIDA 32714
CERTIFICATE OF AUTHORIZATION NO. 7184

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
POND ALTERNATIVES**

SHEET NO.
6 OF 11



LEGEND	
	RECOMMENDED POND SITE
	ALTERNATE POND SITE

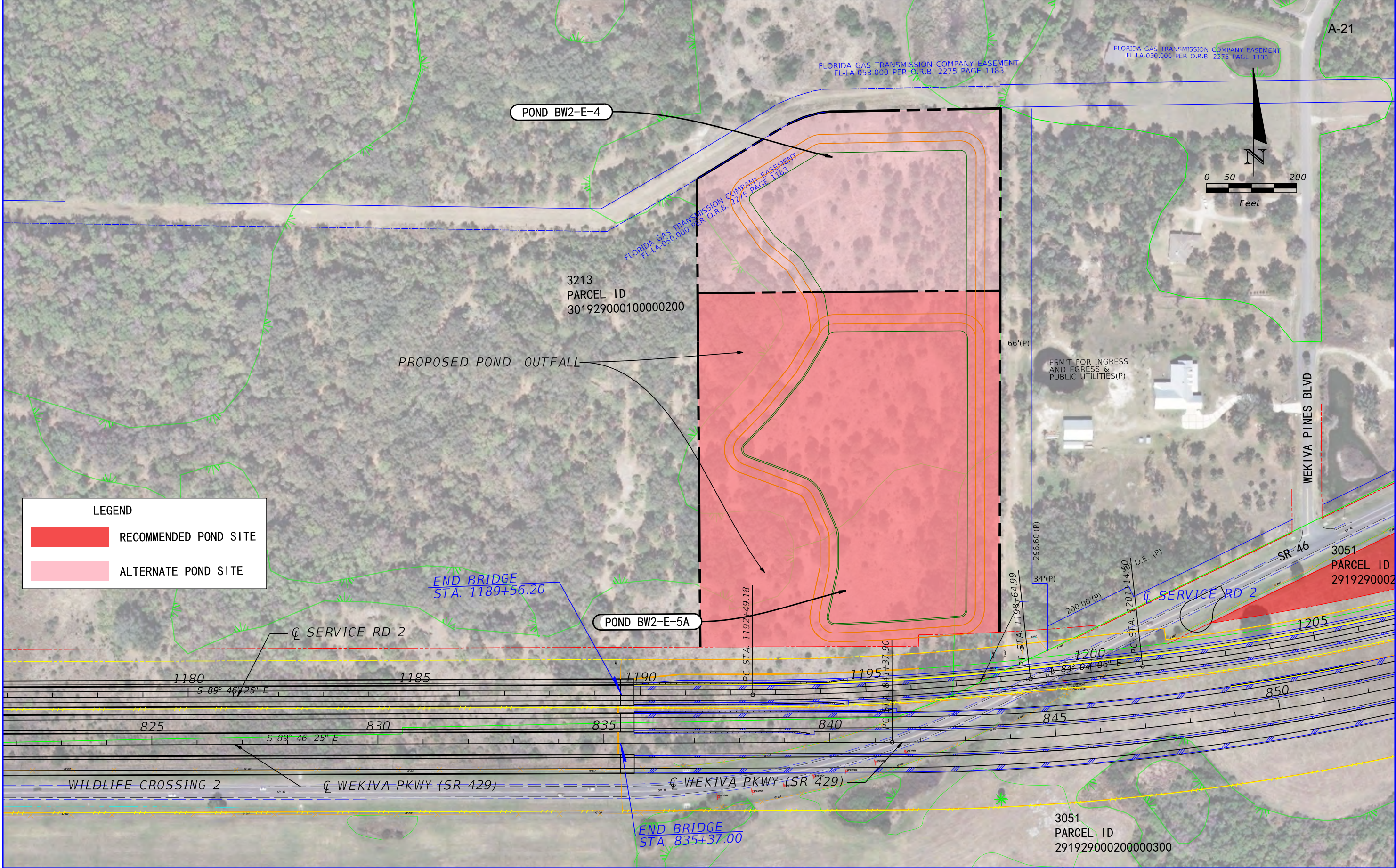
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

J. ALEXANDER GEORGE, P.E.
P.E. LICENSE NUMBER 59006
BCC ENGINEERING, INC.
160 N. WESTMONTE DRIVE, SUITE 2000
ALTAMONTE SPRINGS, FLORIDA 32714
CERTIFICATE OF AUTHORIZATION NO. 7184

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
POND ALTERNATIVES**

SHEET
NO.
7 OF 11



LEGEND

- RECOMMENDED POND SITE
- ALTERNATE POND SITE

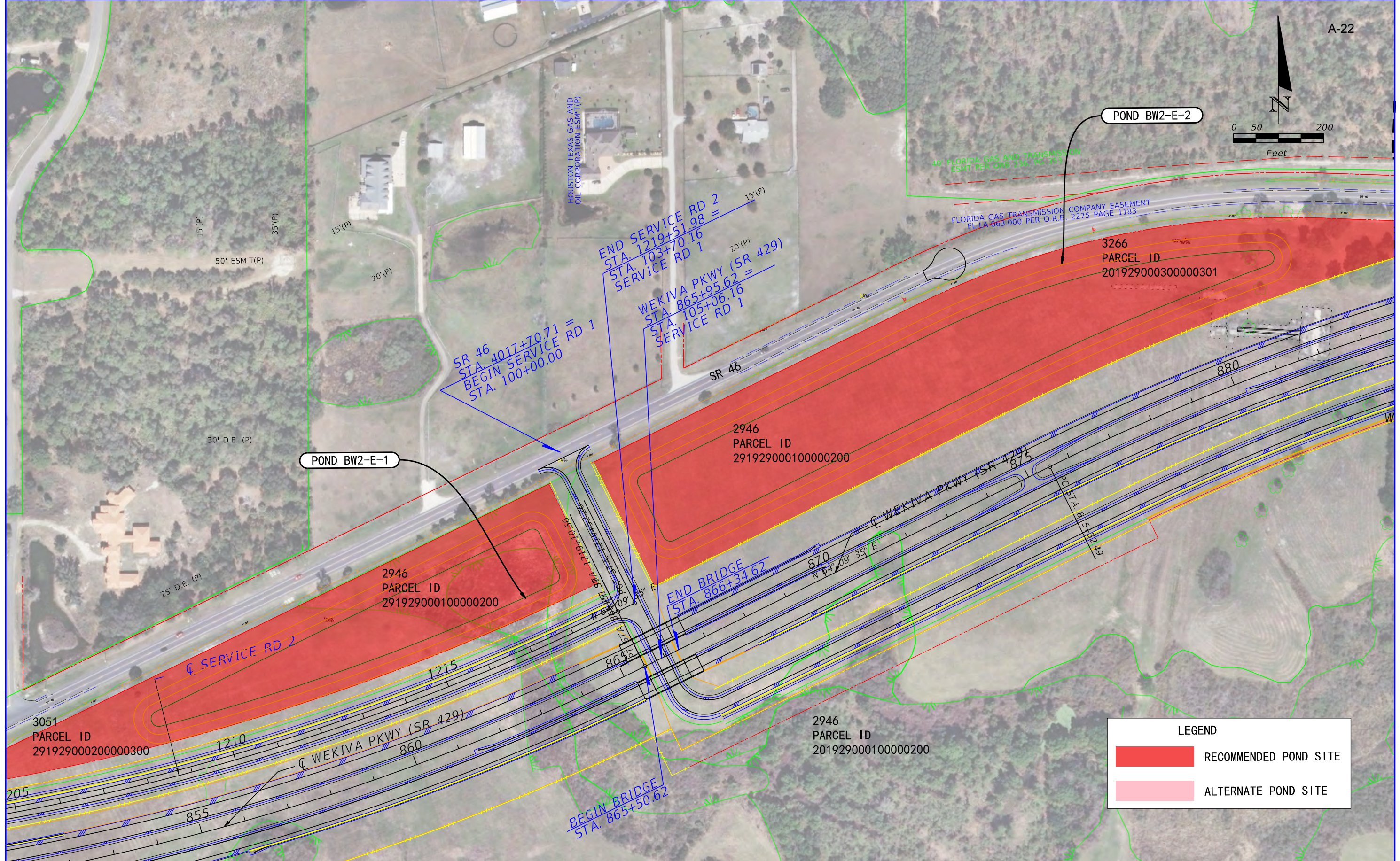
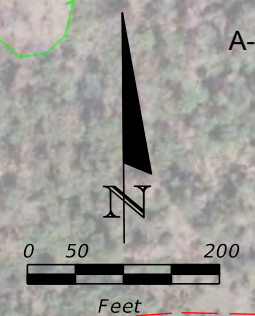
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

J. ALEXANDER GEORGE, P.E.
 P.E. LICENSE NUMBER 59006
 BCC ENGINEERING, INC.
 160 N. WESTMONTE DRIVE, SUITE 2000
 ALTAMONTE SPRINGS, FLORIDA 32714
 CERTIFICATE OF AUTHORIZATION NO. 7184

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
POND ALTERNATIVES**

SHEET NO.
8 OF 11



LEGEND

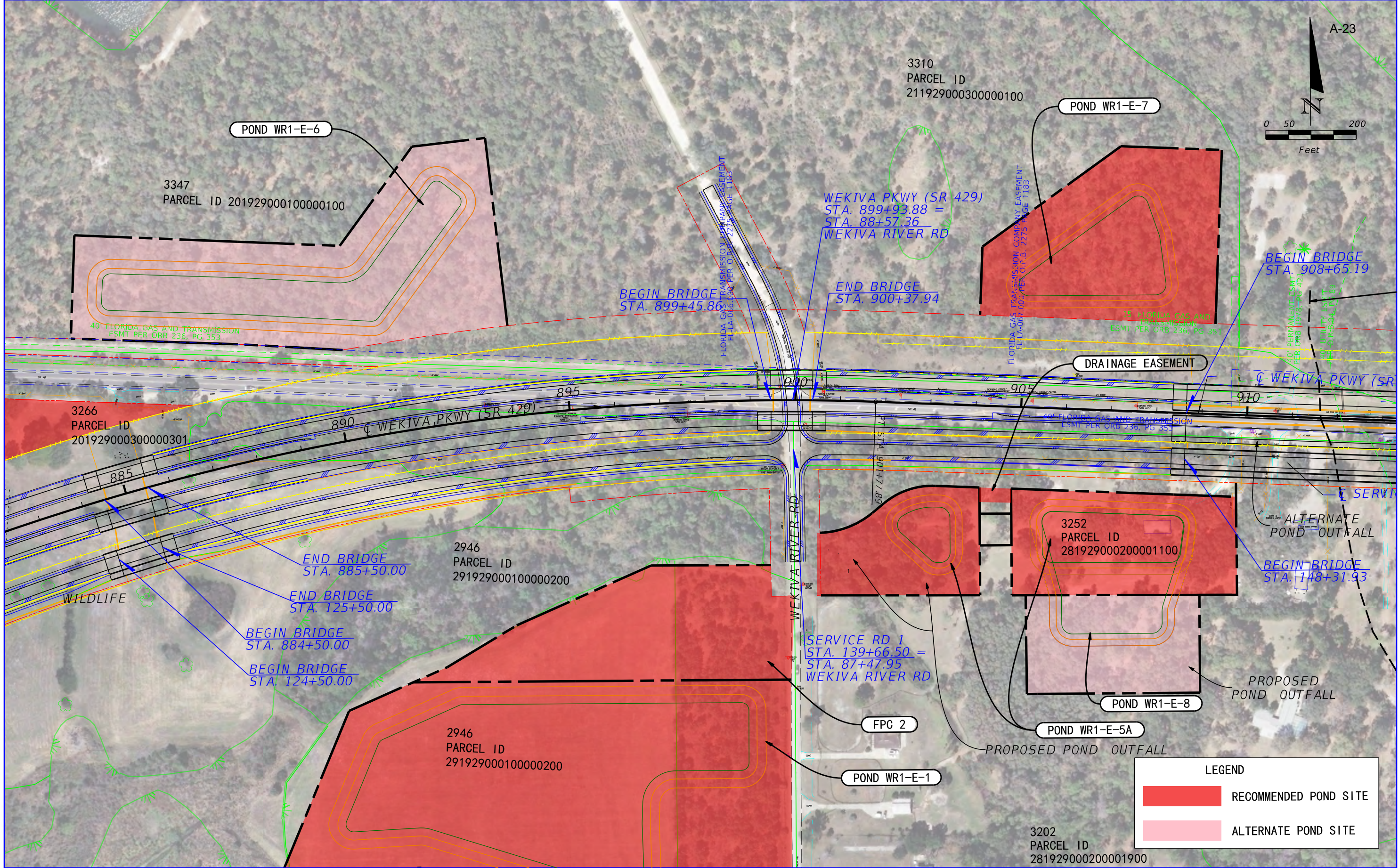
- RECOMMENDED POND SITE
- ALTERNATE POND SITE

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

J. ALEXANDER GEORGE, P.E.
 P.E. LICENSE NUMBER 59006
 BCC ENGINEERING, INC.
 160 N. WESTMONTE DRIVE, SUITE 2000
 ALTAMONTE SPRINGS, FLORIDA 32714
 CERTIFICATE OF AUTHORIZATION NO. 7184

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
POND ALTERNATIVES**



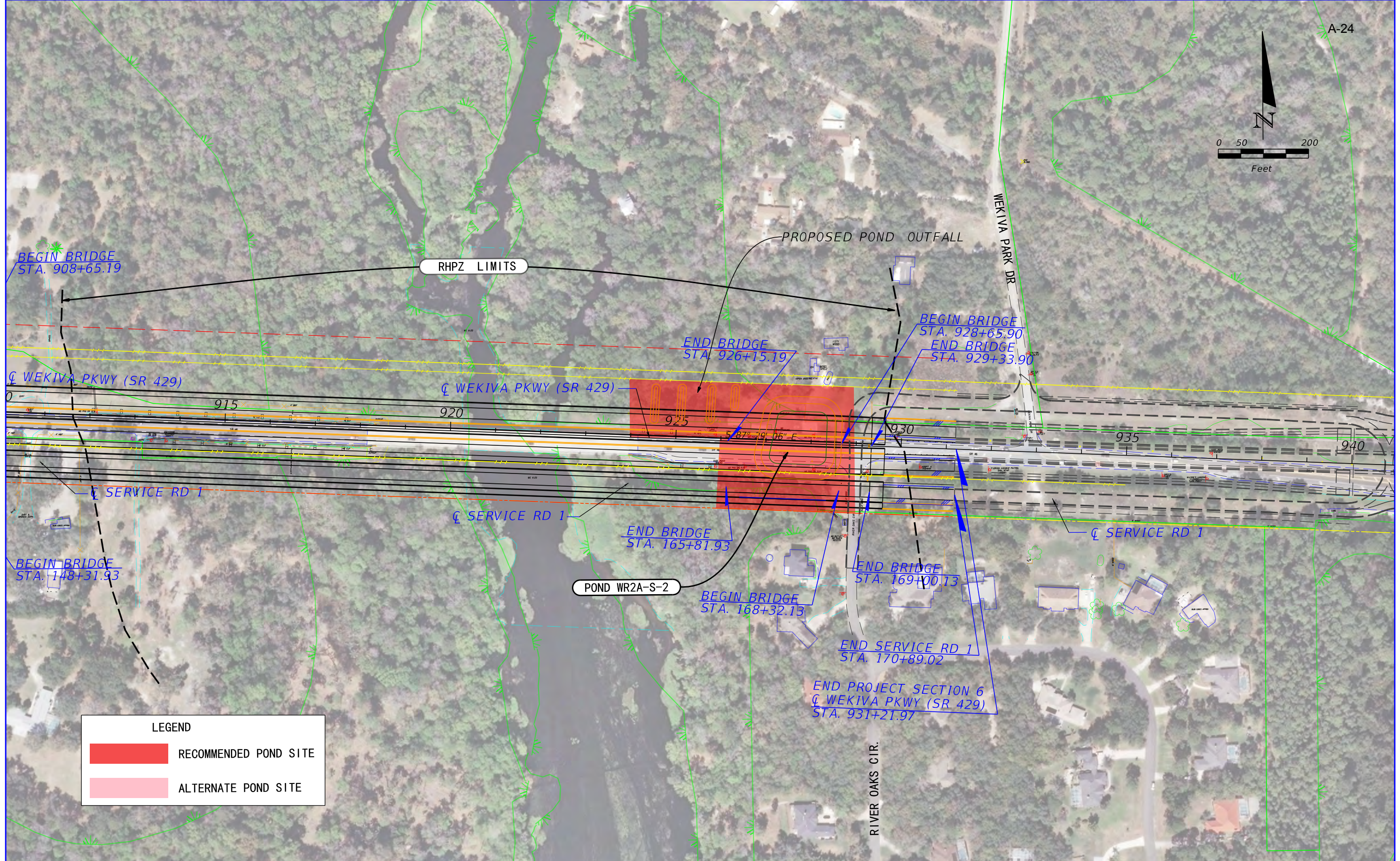
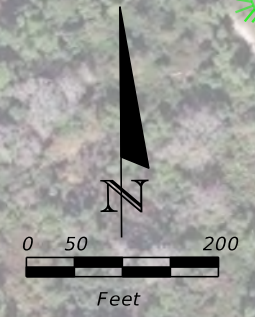
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

J. ALEXANDER GEORGE, P.E.
P.E. LICENSE NUMBER 59006
BCC ENGINEERING, INC.
160 N. WESTMONTE DRIVE, SUITE 2000
ALTAMONTE SPRINGS, FLORIDA 32714
CERTIFICATE OF AUTHORIZATION NO. 7184

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
POND ALTERNATIVES**

SHEET NO.
10 OF 11



BEGIN BRIDGE
STA. 908+65.19

RHPZ LIMITS

PROPOSED POND OUTFALL

END BRIDGE
STA. 926+15.19

BEGIN BRIDGE
STA. 928+65.90
END BRIDGE
STA. 929+33.90

☐ WEKIVA PKWY (SR 429)

☐ WEKIVA PKWY (SR 429)

925

5.87° 29' 06" E

930

935

940

☐ SERVICE RD 1

☐ SERVICE RD 1

END BRIDGE
STA. 165+81.93

BEGIN BRIDGE
STA. 148+31.93

POND WR2A-S-2

BEGIN BRIDGE
STA. 168+32.13

END BRIDGE
STA. 169+00.13

END SERVICE RD 1
STA. 170+89.02

☐ SERVICE RD 1

END PROJECT SECTION 6
☐ WEKIVA PKWY (SR 429)
STA. 931+21.97

RIVER OAKS CIR.

LEGEND			
	RECOMMENDED POND SITE		
	ALTERNATE POND SITE		

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

J. ALEXANDER GEORGE, P.E.
P.E. LICENSE NUMBER 59006
BCC ENGINEERING, INC.
160 N. WESTMONTE DRIVE, SUITE 2000
ALTAMONTE SPRINGS, FLORIDA 32714
CERTIFICATE OF AUTHORIZATION NO. 7184

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE SEMINOLE	238275-7-52-01

**SR 429 SECTION 6
POND ALTERNATIVES**

SHEET NO.
11 OF 11

EXHIBITS
VERIFIED IMPAIRED WBIDs

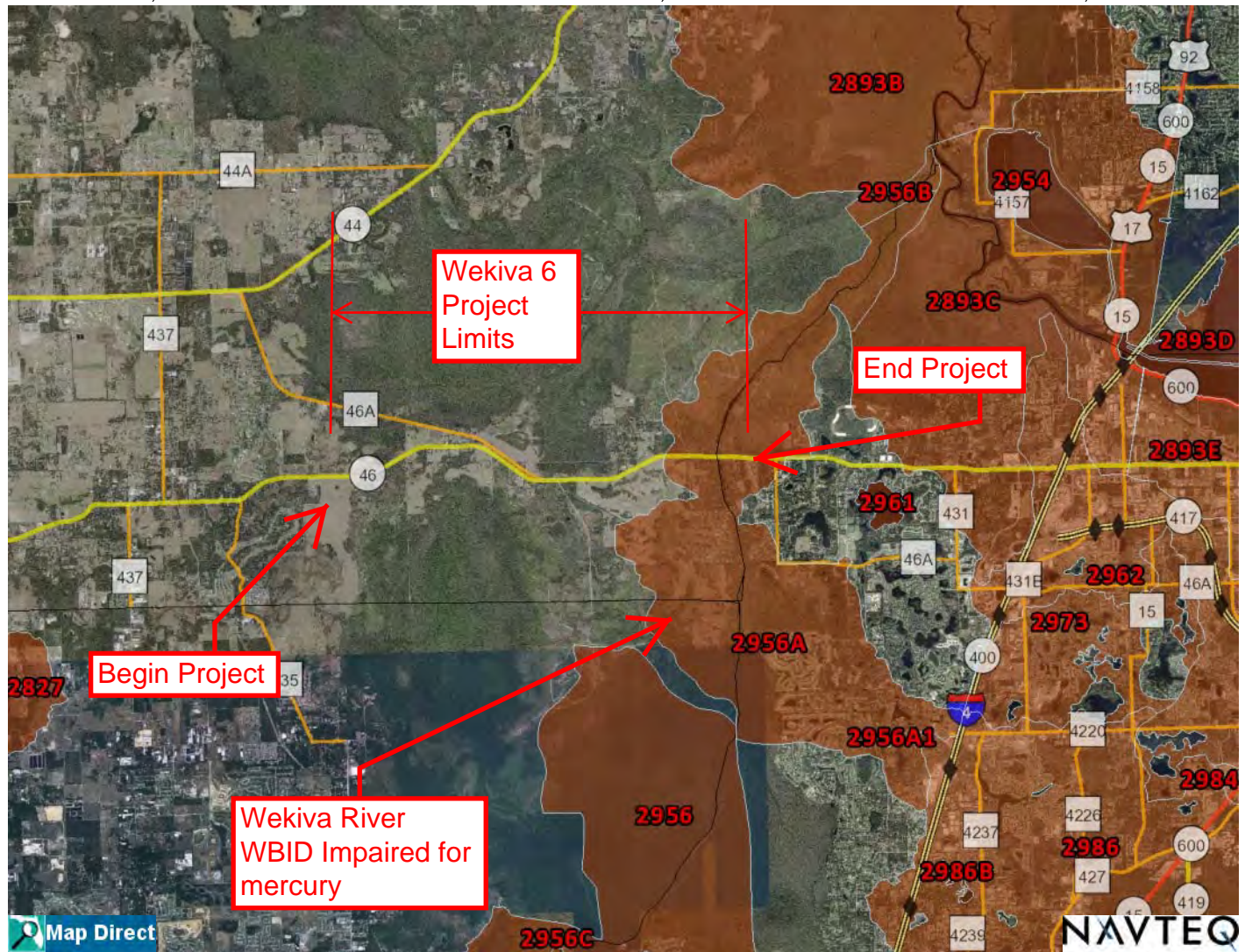


Wekiva 6 - Verified Impaired WBIDs

28°54'45.0427", -81°35'10.9554"

Scale 1:153,922

28°54'25.8199", -81°17'34.7881"



28°42'52.2761", -81°35'26.8459"

1 inch = 2 miles

28°42'33.0891", -81°17'52.6090"



- Aerial Imagery 2004-2009
- Counties
- Aerial Imagery Flight Dates 2004-2009
- Verified Impaired WBIDs

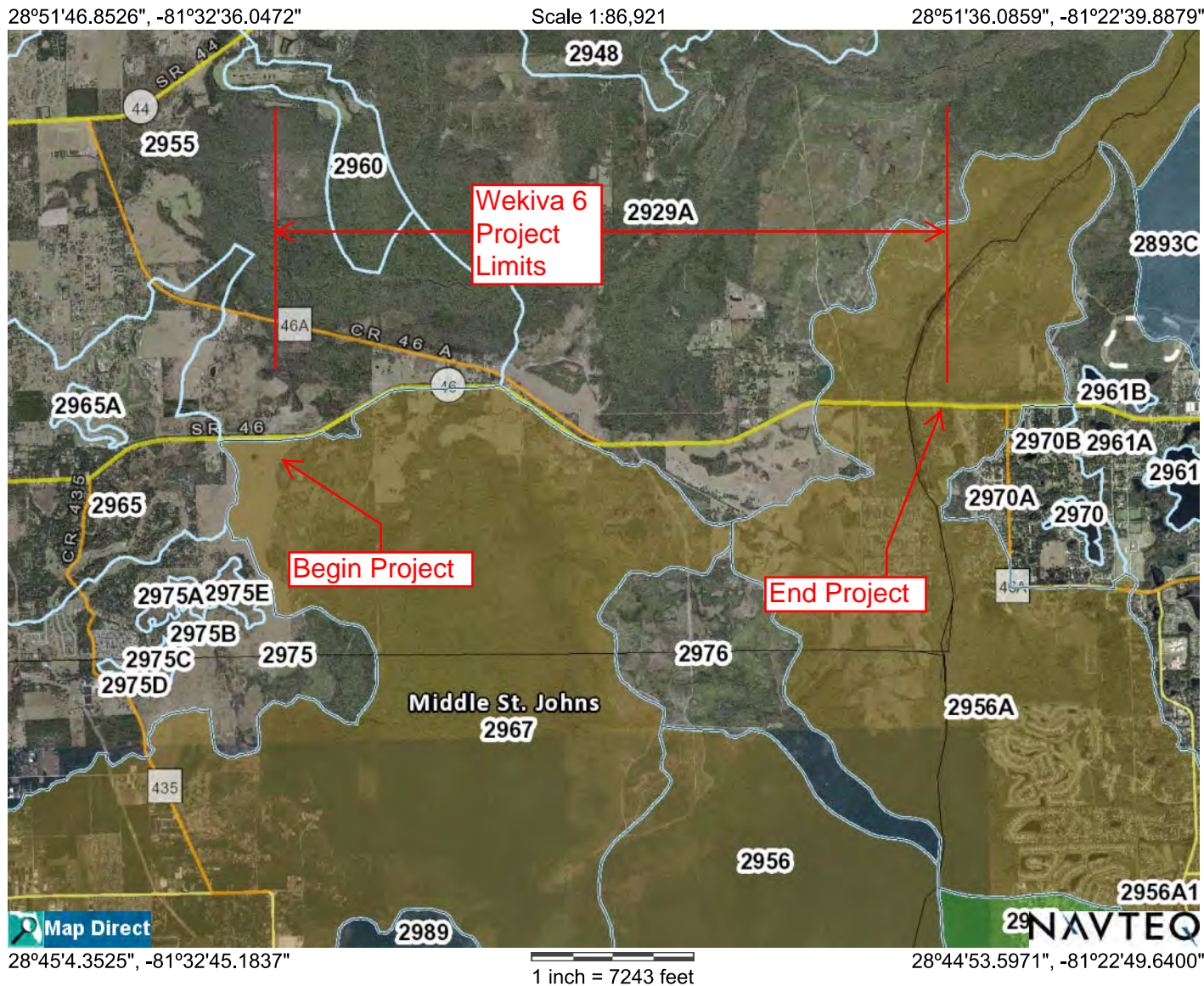
Florida Department of Environmental Protection Disclaimer: This map created in Map Direct on Thu, 15 Aug 2013 15:10:38 GMT is intended for display purposes only. It was created using data from different sources collected at different scales, with different levels of accuracy, and/or covering different periods of time. NAVTEQ road data is provided "AS IS" and without warranties of any kind, either express or implied, including, but not limited to, the implied warranties of merchantability, fitness for a particular purpose, satisfactory quality and non-infringement. YOU SHOULD THEREFORE VERIFY ANY INFORMATION OBTAINED FROM THE SITE BEFORE ACTING ON IT.

Wekiva River (WBID 2956A) is verified impaired for mercury

EXHIBITS
FLORIDA ADOPTED TMDLs



Wekiva 6 - Florida Adopted TMDLs



Aerial Imagery 2004-2009

- Waterbody Ids (WBIDs)
- Counties
- Aerial Imagery Flight Dates 2004-2009
- Florida Adopted TMDLs
- Dissolved Oxygen
- Fecal Coliform
- Iron
- Lead
- Nutrients

Florida Department of Environmental Protection Disclaimer: This map created in Map Direct on Thu, 15 Aug 2013 15:20:58 GMT is intended for display purposes only. It was created using data from different sources collected at different scales, with different levels of accuracy, and/or covering different periods of time. NAVTEQ road data is provided "AS IS" and without warranties of any kind, either express or implied, including, but not limited to, the implied warranties of merchantability, fitness for a particular purpose, satisfactory quality and non-infringement. YOU SHOULD THEREFORE VERIFY ANY INFORMATION OBTAINED FROM THE SITE BEFORE ACTING ON IT.

Rock Springs Run (WBID 2967) and Wekiva River (WBID 2956A) - TMDLs for nutrients

EXHIBITS
TYPICAL SECTIONS

PROJECT IDENTIFICATION

A-30

FINANCIAL PROJECT ID 238275-7-52-01 COUNTY (SECTION) LAKE (11)
 PROJECT DESCRIPTION WEKIVA PKWY FROM 0.051 MI EAST OF OLD McDONALD RD ON SR 46 TO 0.053 MI EAST OF WEKIVA PARK DRIVE, EAST OF WEKIVA RIVER

PROJECT CONTROLS

FUNCTIONAL CLASSIFICATION

- (X) RURAL
 () URBAN
 (X) FREEWAY/EXPWY. () MAJOR COLL.
 () PRINCIPAL ART. () MINOR COLL.
 () MINOR ART. () LOCAL

HIGHWAY SYSTEM

- Yes No
 () (X) NATIONAL HIGHWAY SYSTEM
 () (X) FLORIDA INTRASTATE HIGHWAY SYSTEM
 () (X) STRATEGIC INTERMODAL SYSTEM
 (X) () STATE HIGHWAY SYSTEM
 () (X) OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- (X) 1 - FREEWAY
 () 2 - RESTRICTIVE w/Service Roads
 () 3 - RESTRICTIVE w/660 ft. Connection Spacing
 () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
 () 5 - RESTRICTIVE w/440 ft. Connection Spacing
 () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
 () 7 - BOTH MEDIAN TYPES

TRAFFIC

	YEAR	AADT	<u>DISTRIBUTION</u>	
CURRENT	<u>2013</u>	<u>25000</u>		
OPENING	<u>2020</u>	<u>37500</u>		
DESIGN	<u>2040</u>	<u>73000</u>		
DESIGN SPEED	<u>70 MPH</u>		K	9.0%
POSTED SPEED	<u>70 MPH</u>		D	56.4%
			T ₂₄	10.1%

CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
 () RRR INTERSTATE / FREEWAY
 () RRR NON-INTERSTATE / FREEWAY
 () TDLC / NEW CONSTRUCTION / RECONSTRUCTION
 () TDLC / RRR
 () MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY)

DESIGN SPEED APPROVALS

 DISTRICT DESIGN ENGINEER DATE

 DISTRICT TRAFFIC OPERATIONS ENGINEER DATE

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

BORDER WIDTH

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

- SR 429 OVER WILD LIFE CROSSINGS 1,2 & 3
 SR 429 OVER SERVICE RD
 SR 429 OVER WEKIVA RIVER RD
 SR 429 OVER WEKIVA RIVER
 SR 429 OVER RIVER OAKS CIRCLE

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:

26" FGT GAS PIPE LINE RUNNING ALONG THE NORTH SIDE OF CORRIDOR. CONFLICTS ARE WEST OF OLD McDONALD RD. AND AT THE WEKIVA RIVER CROSSING AREA. SEE PLANS FOR DETAILS.

LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

PROJECT IDENTIFICATION

A-31

FINANCIAL PROJECT ID 238275-7-52-01 COUNTY (SECTION) LAKE (11)
 PROJECT DESCRIPTION SERVICE RD FROM 0.051 MI EAST OF OLD McDONALD RD ON SR 46 TO 0.053 MI EAST OF WEKIVA PARK DRIVE, EAST OF WEKIVA RIVER

PROJECT CONTROLS

FUNCTIONAL CLASSIFICATION

- (X) RURAL
() URBAN
- () FREEWAY/EXPWY. (X) MAJOR COLL.
 () PRINCIPAL ART. () MINOR COLL.
 () MINOR ART. () LOCAL

HIGHWAY SYSTEM

- Yes No
- () (X) NATIONAL HIGHWAY SYSTEM
 () (X) FLORIDA INTRASTATE HIGHWAY SYSTEM
 () (X) STRATEGIC INTERMODAL SYSTEM
 (X) () STATE HIGHWAY SYSTEM
 () (X) OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- () 1 - FREEWAY
 () 2 - RESTRICTIVE w/Service Roads
 () 3 - RESTRICTIVE w/660 ft. Connection Spacing
 (X) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
 () 5 - RESTRICTIVE w/440 ft. Connection Spacing
 () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
 () 7 - BOTH MEDIAN TYPES

TRAFFIC

	YEAR	AADT		
CURRENT	<u>2013</u>	<u>6700 TO 7900</u>		
OPENING	<u>2020</u>	<u>8300 TO 9600</u>		
DESIGN	<u>2040</u>	<u>13000 TO 14500</u>		
			<u>DISTRIBUTION</u>	
DESIGN SPEED	<u>50 MPH</u>	K	9.0%	
POSTED SPEED	<u>45 MPH</u>	D	56.4%	
		T ₂₄	10.1%	

CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
 () RRR INTERSTATE / FREEWAY
 () RRR NON-INTERSTATE / FREEWAY
 () TDLC / NEW CONSTRUCTION / RECONSTRUCTION
 () TDLC / RRR
 () MANUAL OF UNIFORM MINIMUM STANDARDS
 (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY)

DESIGN SPEED APPROVALS

DISTRICT DESIGN ENGINEER	DATE
DISTRICT TRAFFIC OPERATIONS ENGINEER	DATE

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

NONE

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

- SERVICE RD 2 OVER WILD LIFE CROSSINGS 1 & 2
- SERVICE RD 1 OVER WILD LIFE CROSSING 3
- SERVICE RD 1 OVER WEKIVA RIVER
- SERVICE RD 1 OVER RIVER OAKS CIRCLE

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:

26" FGT GAS PIPE LINE RUNNING ALONG THE NORTH SIDE OF CORRIDOR. CONFLICTS ARE WEST OF OLD McDONALD RD. AND AT THE WEKIVA RIVER CROSSING AREA. SEE PLANS FOR DETAILS.

LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

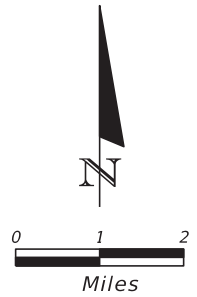
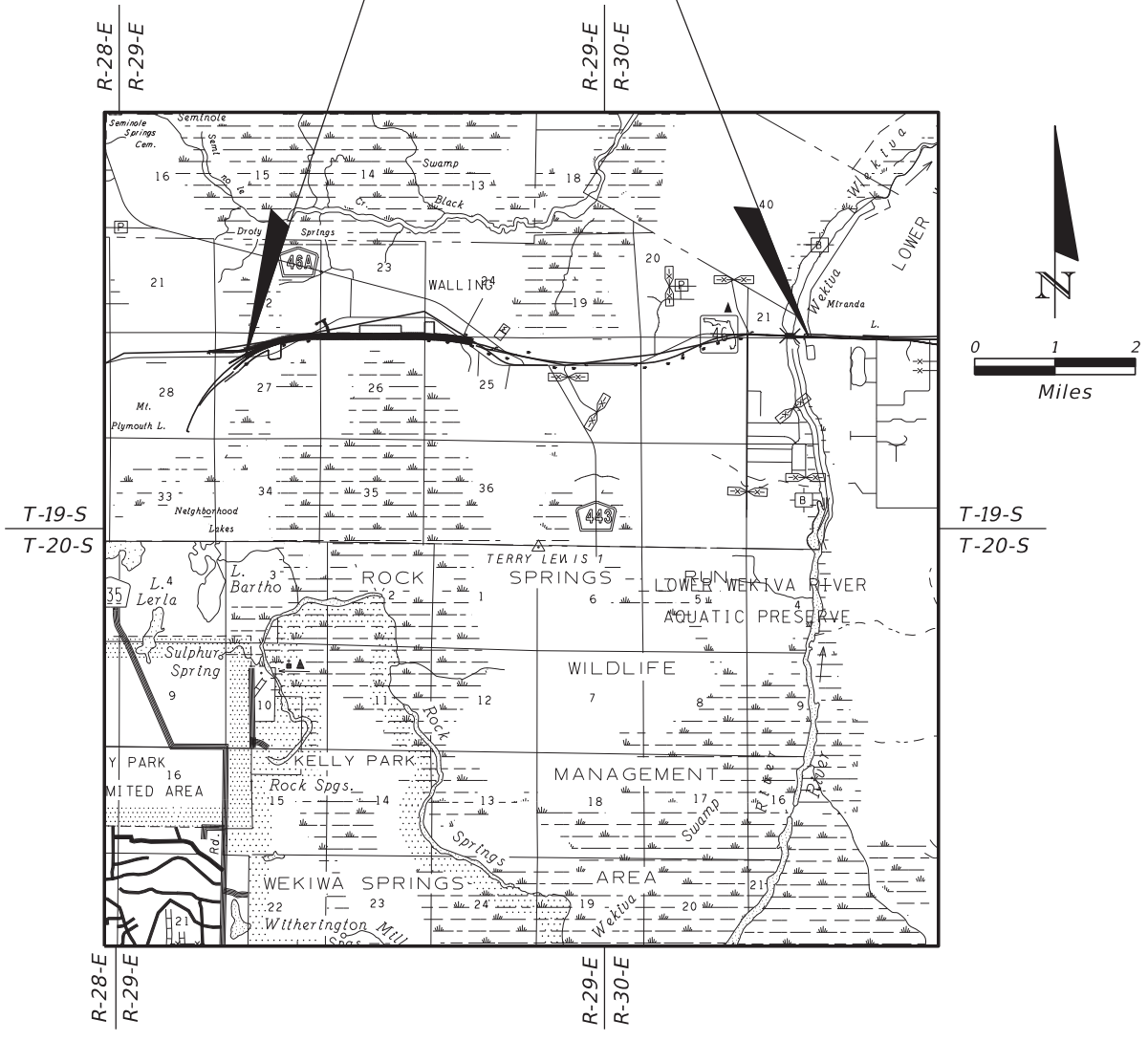
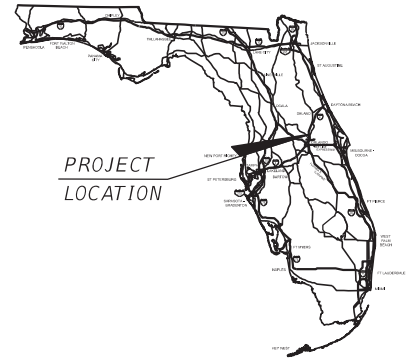
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 238275-7-52-01 COUNTY (SECTION) LAKE (11)
 PROJECT DESCRIPTION WEKIVA PKWY AND SERVICE RD FROM 0.051 MI EAST OF OLD McDONALD RD ON SR 46 TO 0.053 MI EAST OF WEKIVA PARK DRIVE, EAST OF WEKIVA RIVER

PROJECT LOCATION

END PROJECT 238275-7-52-01
 STA. 931+20.00

BEGIN PROJECT 238275-7-52-01
 STA. 640+00.00

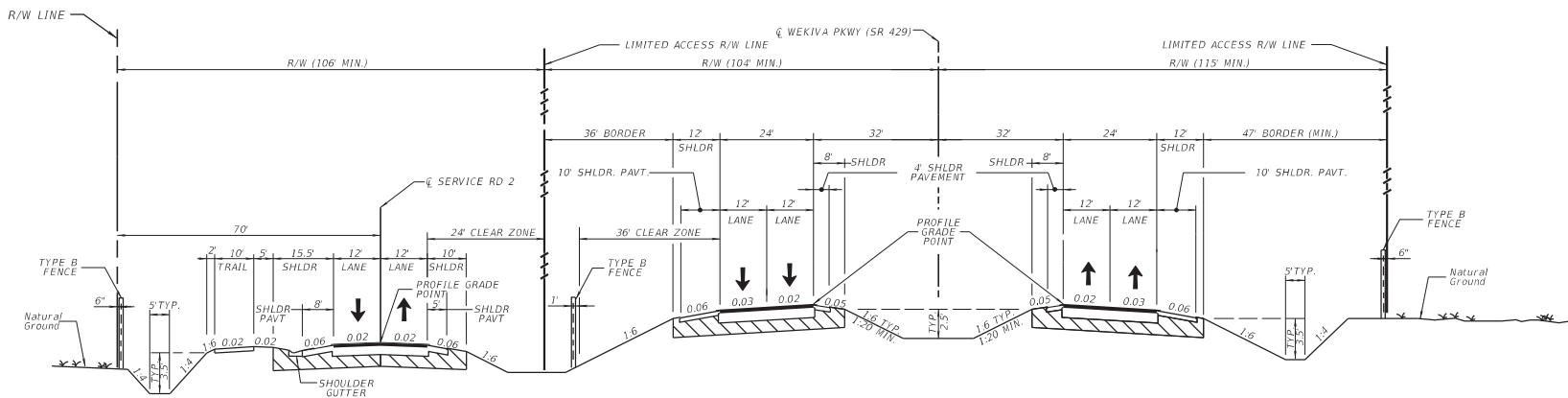


WEKIVA PARKWAY (SR 429) SECTION 6

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 238275-7-52-01 FEDERAL AID PROJECT NO. TBD
 COUNTY NAME LAKE ROAD DESIGNATION SR-429 LIMITS/MILEPOST NEW ALIGNMENT
 PROJECT DESCRIPTION WEKIVA PKWY FROM 0.051 MI EAST OF OLD McDONALD RD ON SR 46 TO 0.053 MI EAST OF WEKIVA PARK DRIVE, EAST OF WEKIVA RIVER
TWO-LANE, TWO-WAY SERVICE RD ON BOTH NORTH AND SOUTH SIDES OF WEKIVA PARKWAY (PROJ. LENGTH 4.797 MI).

PROPOSED ROADWAY TYPICAL SECTION



SERVICE RD 2
 STA. 897+66.72 TO STA. 1219+51.98
 DESIGN SPEED = 50 MPH

TYPICAL SECTION 1
WEKIVA PKWY (SR 429)
 STA. 640+00.00 TO STA. 662+00.00
 STA. 680+00.00 TO STA. 758+31.23
 STA. 759+25.11 TO STA. 796+64.60
 STA. 835+37.00 TO STA. 865+50.62

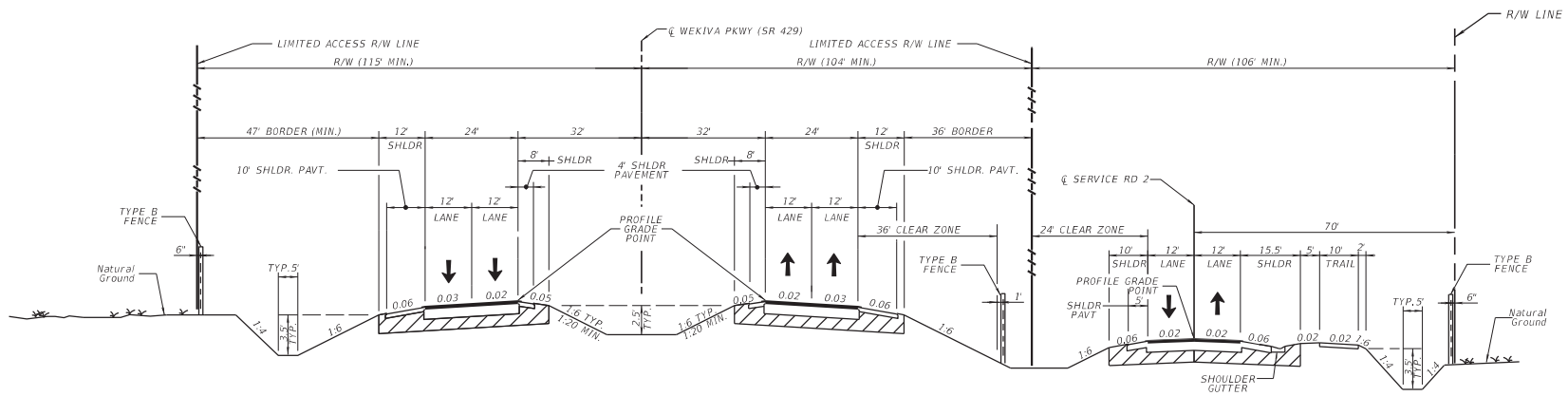
4-LANE RURAL EXPRESSWAY
 DESIGN SPEED = 70 MPH

APPROVED BY:	FDOT CONCURRENCE	FHWA CONCURRENCE
<p>_____ Stephen A. Boylan, P.E. 53137 Date Engineer Of Record</p>	<p>_____ Annette Brennan, P.E Date FDOT District Design Engineer</p>	<p>_____ N/A Date FHWA Transportation Engineer</p>

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 238275-7-52-01 FEDERAL AID PROJECT NO. TBD
 COUNTY NAME LAKE ROAD DESIGNATION SR-429 LIMITS/MILEPOST NEW ALIGNMENT
 PROJECT DESCRIPTION WEKIVA PKWY FROM 0.051 MI EAST OF OLD McDONALD RD ON SR 46 TO 0.053 MI EAST OF WEKIVA PARK DRIVE, EAST OF WEKIVA RIVER
TWO-LANE, TWO-WAY SERVICE RD ON BOTH NORTH AND SOUTH SIDES OF WEKIVA PARKWAY (PROJ. LENGTH 4.797 MI).

PROPOSED ROADWAY TYPICAL SECTION



**TYPICAL SECTION 2
WEKIVA PKWY (SR 429)**

STA. 866+34.62 TO STA. 884+50.00
STA. 885+80.00 TO STA. 889+00.00

4-LANE RURAL EXPRESSWAY
DESIGN SPEED = 70 MPH

SERVICE RD 1

STA. 100+00.00 TO STA. 139+66.50
DESIGN SPEED = 50 MPH

APPROVED BY:

FDOT CONCURRENCE

FHWA CONCURRENCE

Stephen A. Boylan P.E. 53137 Date
Engineer Of Record

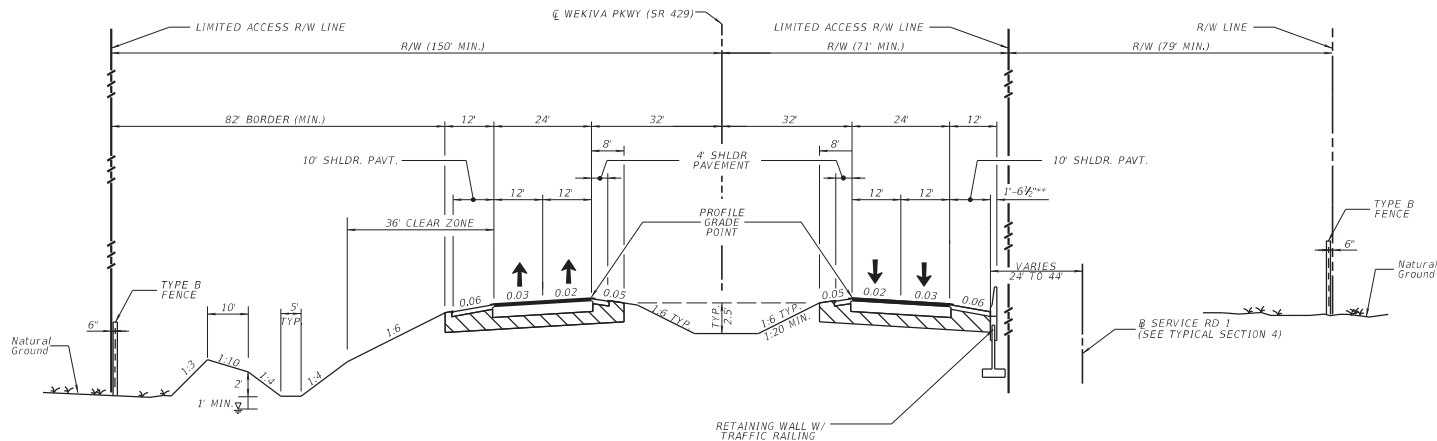
Annette Brennan, P.E Date
FDOT District Design Engineer

N/A Date
FHWA Transportation Engineer

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 238275-7-52-01 FEDERAL AID PROJECT NO. TBD
 COUNTY NAME LAKE ROAD DESIGNATION SR-429 LIMITS/MILEPOST NEW ALIGNMENT
 PROJECT DESCRIPTION WEKIVA PKWY FROM 0.051 MI EAST OF OLD McDONALD RD ON SR 46 TO 0.053 MI EAST OF WEKIVA PARK DRIVE, EAST OF WEKIVA RIVER
TWO-LANE, TWO-WAY SERVICE RD ON BOTH NORTH AND SOUTH SIDES OF WEKIVA PARKWAY (PROJ. LENGTH 4.797 MI).

PROPOSED ROADWAY TYPICAL SECTION



**TYPICAL SECTION 3
WEKIVA PKWY (SR 429)**

STA. 889+00.00 TO STA. 899+45.86
 STA. 900+37.94 TO STA. 908+65.19
 STA. 929+33.90 TO STA. 931+20.00

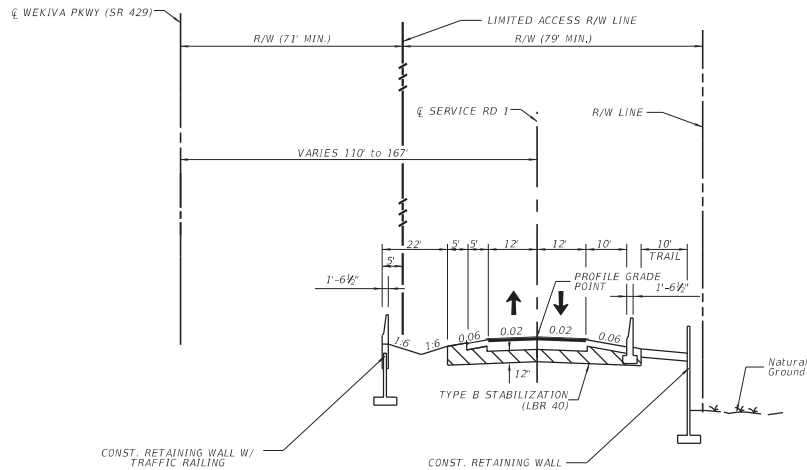
4-LANE RURAL EXPRESSWAY
 DESIGN SPEED = 70 MPH

APPROVED BY:	FDOT CONCURRENCE	FHWA CONCURRENCE
<p>_____ Stephen A. Boylan P.E. 53137 Date Engineer Of Record</p>	<p>_____ Annette Brennan, P.E Date FDOT District Design Engineer</p>	<p>_____ N/A Date FHWA Transportation Engineer</p>

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 238275-7-52-01 FEDERAL AID PROJECT NO. TBD
 COUNTY NAME LAKE ROAD DESIGNATION SR-429 LIMITS/MILEPOST NEW ALIGNMENT
 PROJECT DESCRIPTION WEKIVA PKWY FROM 0.051 MI EAST OF OLD McDONALD RD ON SR 46 TO 0.053 MI EAST OF WEKIVA PARK DRIVE, EAST OF WEKIVA RIVER
TWO-LANE, TWO-WAY SERVICE RD ON BOTH NORTH AND SOUTH SIDES OF WEKIVA PARKWAY (PROJ. LENGTH 4.797 MI).

PROPOSED ROADWAY TYPICAL SECTION



TYPICAL SECTION 4 SERVICE RD 1

STA. 139+66.50 TO STA. 148+31.93
 STA. 165+81.93 TO STA. 170+89.02

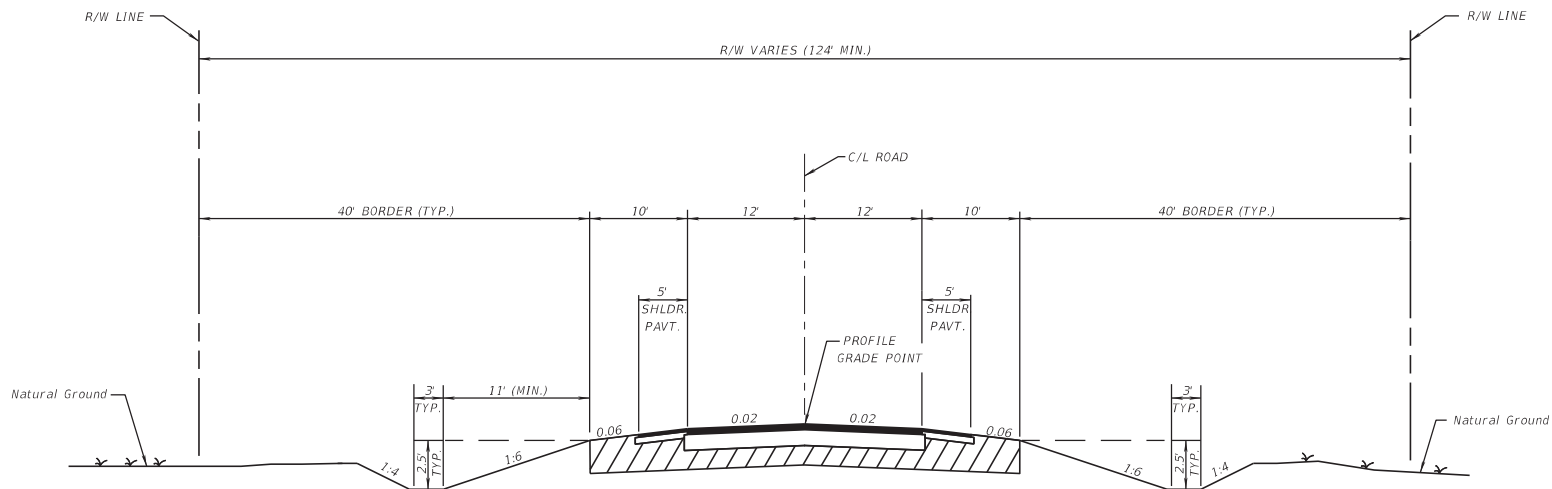
2-LANE RURAL COLLECTOR
 DESIGN SPEED = 50 MPH

APPROVED BY:	FDOT CONCURRENCE	FHWA CONCURRENCE
<p>_____ Stephen A. Boylan P.E. 53137 Date Engineer Of Record</p>	<p>_____ Annette Brennan, P.E Date FDOT District Design Engineer</p>	<p>_____ N/A Date FHWA Transportation Engineer</p>

PROJECT IDENTIFICATION

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TWO-LANE, TWO-WAY SERVICE RD ON BOTH NORTH AND SOUTH SIDES OF WEKIVA PARKWAY (PROJ. LENGTH 4.797 MI).

PROPOSED ROADWAY TYPICAL SECTION



TYPICAL SECTION 5

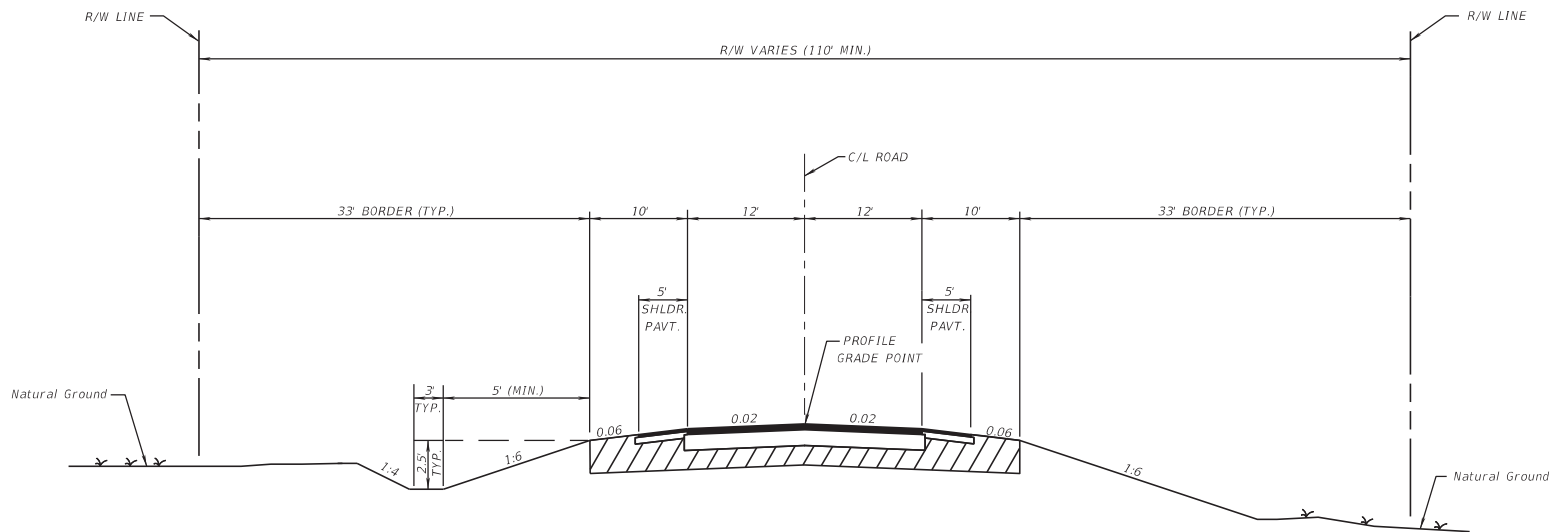
<p>CR 46A</p> <p>STA 101+29.23 TO STA 106+18.69 STA 126+00.00 TO 136+63.53</p> <p>TREE FROG COURT</p> <p>STA 51+00.00 TO STA 58+51.41</p> <p>WEKIVA RIVER ROAD</p> <p>STA 85+00.00 TO STA 90+93.27</p> <p>DESIGN SPEED = 50 MPH</p>	<p>SR 46</p> <p>STA 1011+20.31 TO STA 1017+00.00 STA 2004+20.27 TO STA 2010+74.70 STA 100+00 TO STA 107+69.59</p>
---	--

APPROVED BY:	FDOT CONCURRENCE	FHWA CONCURRENCE
<p>_____ Stephen A. Boylan, P.E. 53137 Date Engineer Of Record</p>	<p>_____ Annette Brennan, P.E. Date FDOT District Design Engineer</p>	<p>_____ N/A Date FHWA Transportation Engineer</p>

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 238275-7-52-01 FEDERAL AID PROJECT NO. TBD
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TWO-LANE, TWO-WAY SERVICE RD ON BOTH NORTH AND SOUTH SIDES OF WEKIVA PARKWAY (PROJ. LENGTH 4.797 MI).

PROPOSED ROADWAY TYPICAL SECTION



TYPICAL SECTION 6

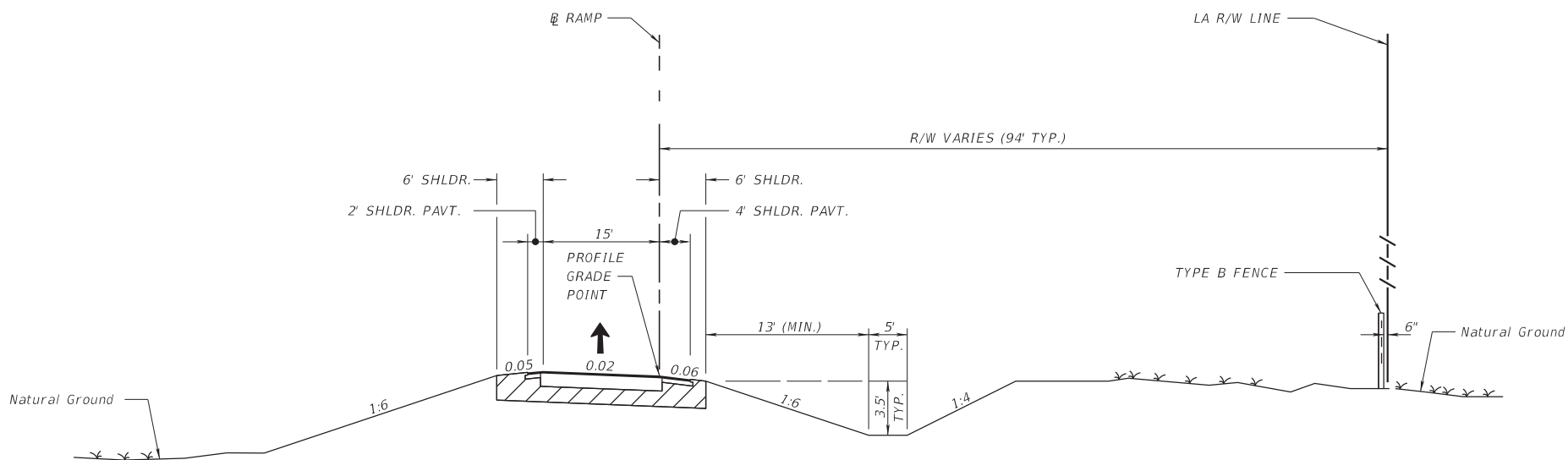
ACCESS ROAD 1
 STA 1+00.00 TO STA 9+12.29
 CONNECTOR ROAD
 STA 50+00.00 TO STA 57+91.53
 DESIGN SPEED = 25 MPH

APPROVED BY:	FDOT CONCURRENCE	FHWA CONCURRENCE
<p>_____ Stephen A. Boylan, P.E. 53137 Date Engineer Of Record</p>	<p>_____ Annette Brennan, P.E Date FDOT District Design Engineer</p>	<p>_____ N/A FHWA Transportation Engineer Date</p>

PROJECT IDENTIFICATION

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TWO-LANE, TWO-WAY SERVICE RD ON BOTH NORTH AND SOUTH SIDES OF WEKIVA PARKWAY (PROJ. LENGTH 4.797 MI).

PROPOSED ROADWAY TYPICAL SECTION



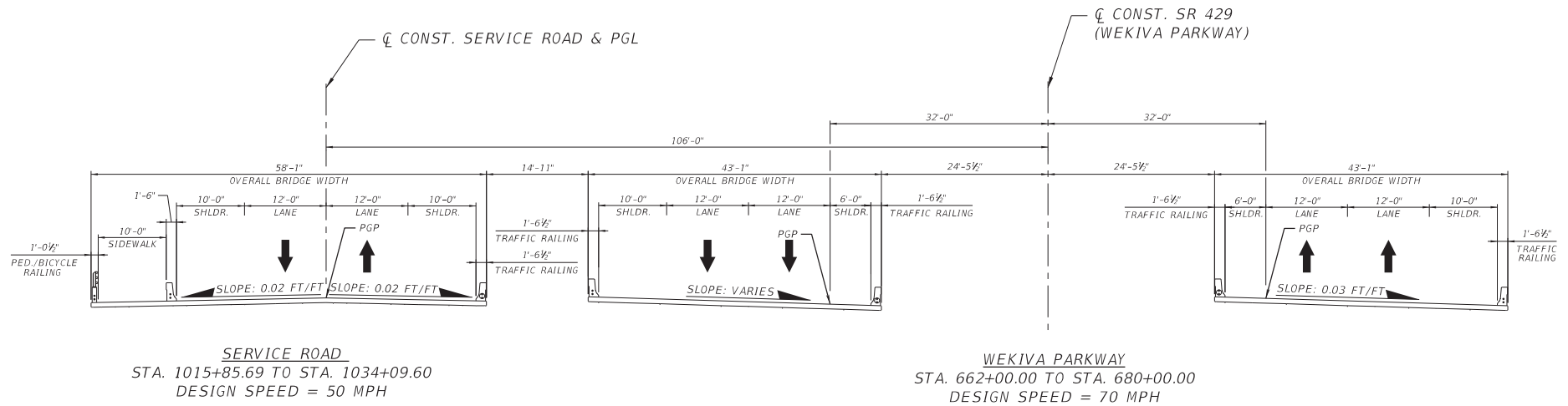
TYPICAL SECTION 7
 RAMP "P" "Q"
 SINGLE LANE RAMP
 DESIGN SPEED = 50 MPH

APPROVED BY:	FDOT CONCURRENCE	FHWA CONCURRENCE
<p>_____ Stephen A. Boylan, P.E. 53137 Date Engineer Of Record</p>	<p>_____ Annette Brennan, P.E Date FDOT District Design Engineer</p>	<p>_____ N/A Date FHWA Transportation Engineer</p>

PROJECT IDENTIFICATION

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TWO-LANE, TWO-WAY SERVICE RD ON BOTH NORTH AND SOUTH SIDES OF WEKIVA PARKWAY (PROJ. LENGTH 4.797 MI).

PROPOSED STRUCTURE TYPICAL SECTION



TYPICAL SECTION

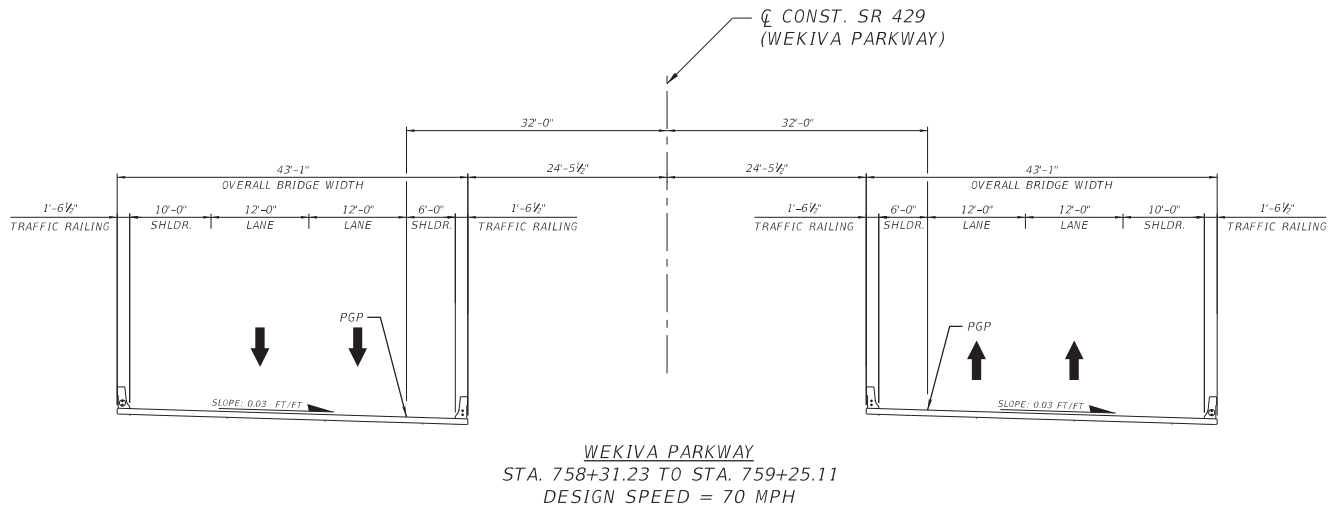
TYPICAL SECTION WEKIVA PARKWAY AND SERVICE ROAD OVER WILDLIFE CROSSING NO. 1

APPROVED BY:	FDOT CONCURRENCE	FHWA CONCURRENCE
<p>_____ Stephen A. Boylan, P.E. 53137 Date Engineer Of Record</p>	<p>_____ Annette Brennan, P.E Date FDOT District Design Engineer</p>	<p>_____ N/A Date FHWA Transportation Engineer</p>

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PROPOSED STRUCTURE TYPICAL SECTION



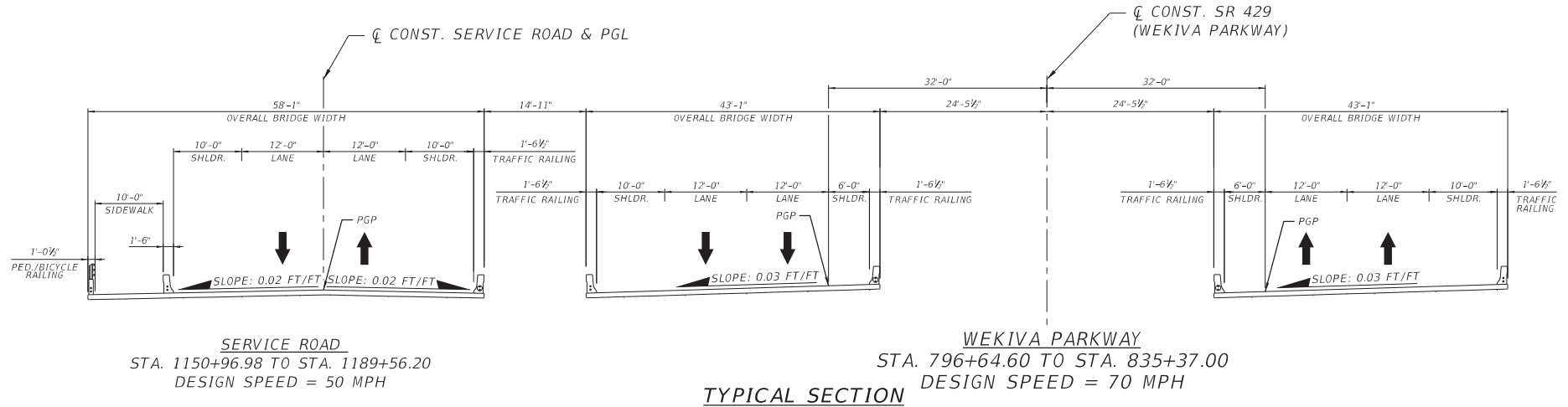
TYPICAL SECTION WEKIVA PARKWAY OVER TREE FROG CT

APPROVED BY:	FDOT CONCURRENCE	FHWA CONCURRENCE
_____ Stephen A. Boylan, P.E. 53137 Date Engineer Of Record	_____ Annette Brennan, P.E Date FDOT District Design Engineer	_____ N/A Date FHWA Transportation Engineer

PROJECT IDENTIFICATION

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PROPOSED STRUCTURE TYPICAL SECTION



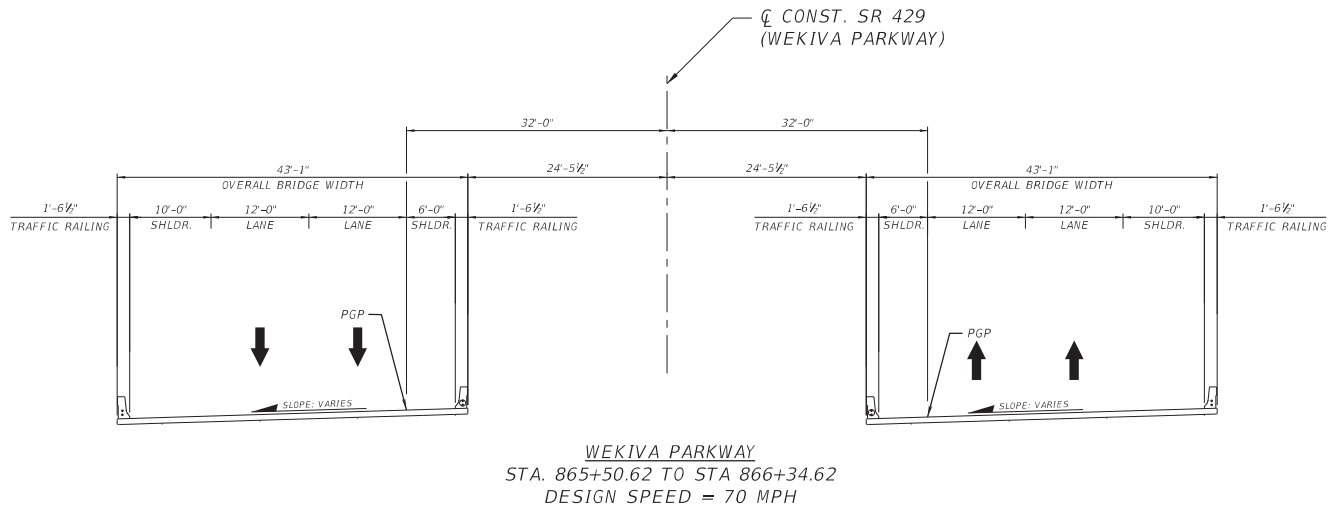
TYPICAL SECTION WEKIVA PARKWAY AND SERVICE ROAD OVER WILDLIFE CROSSING NO. 2

APPROVED BY:	FDOT CONCURRENCE	FHWA CONCURRENCE
<p>_____ Stephen A. Boylan, P.E. 53137 Date Engineer Of Record</p>	<p>_____ Annette Brennan, P.E Date FDOT District Design Engineer</p>	<p>_____ N/A Date FHWA Transportation Engineer</p>

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PROPOSED STRUCTURE TYPICAL SECTION



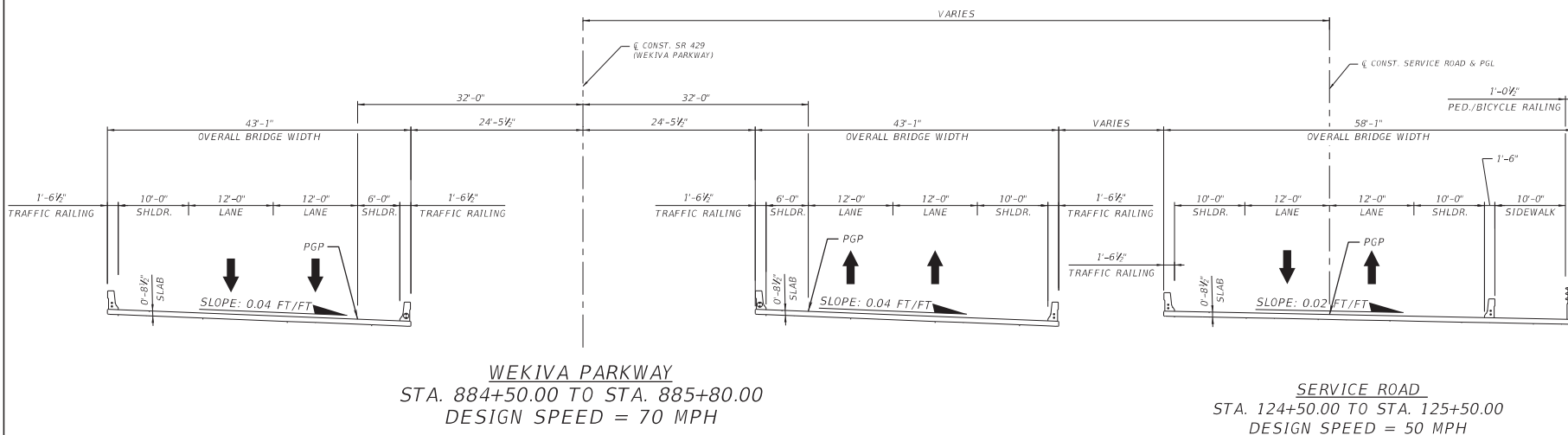
TYPICAL SECTION WEKIVA PARKWAY OVER SERVICE RD

APPROVED BY:	FDOT CONCURRENCE	FHWA CONCURRENCE
<p>_____ Stephen A. Boylan, P.E. 53137 Date Engineer Of Record</p>	<p>_____ Annette Brennan, P.E Date FDOT District Design Engineer</p>	<p>_____ N/A Date FHWA Transportation Engineer</p>

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PROPOSED STRUCTURE TYPICAL SECTION



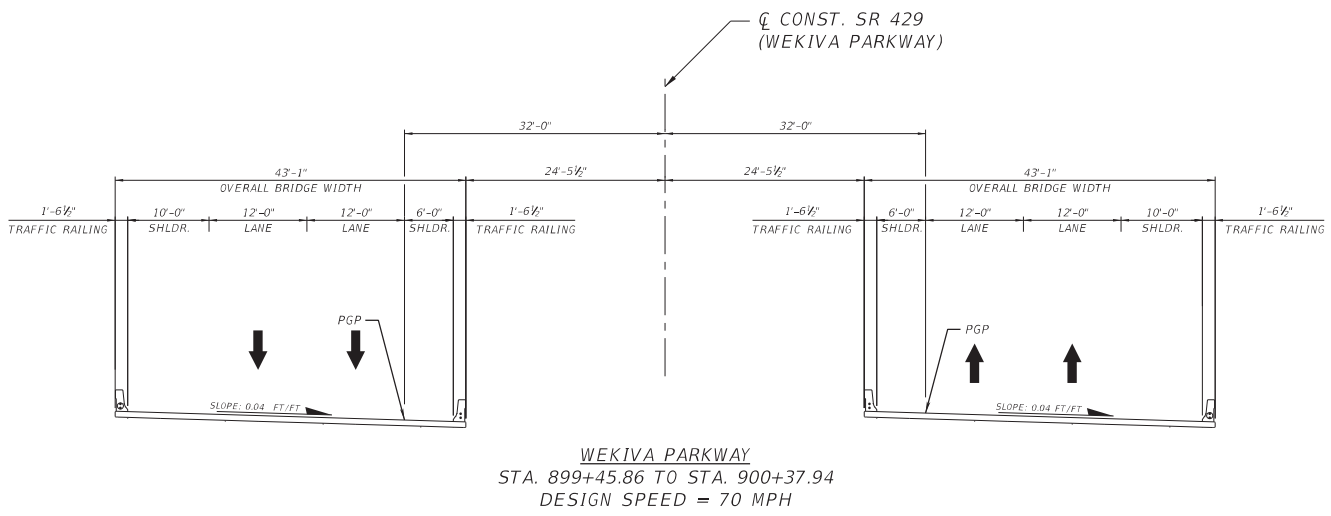
TYPICAL SECTION WEKIVA PARKWAY AND SERVICE ROAD OVER WILDLIFE CROSSING NO. 3

APPROVED BY:	FDOT CONCURRENCE	FHWA CONCURRENCE
<p>_____ Stephen A. Boylan, P.E. 53137 Date Engineer Of Record</p>	<p>_____ Annette Brennan, P.E Date FDOT District Design Engineer</p>	<p>_____ N/A Date FHWA Transportation Engineer</p>

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PROPOSED STRUCTURE TYPICAL SECTION



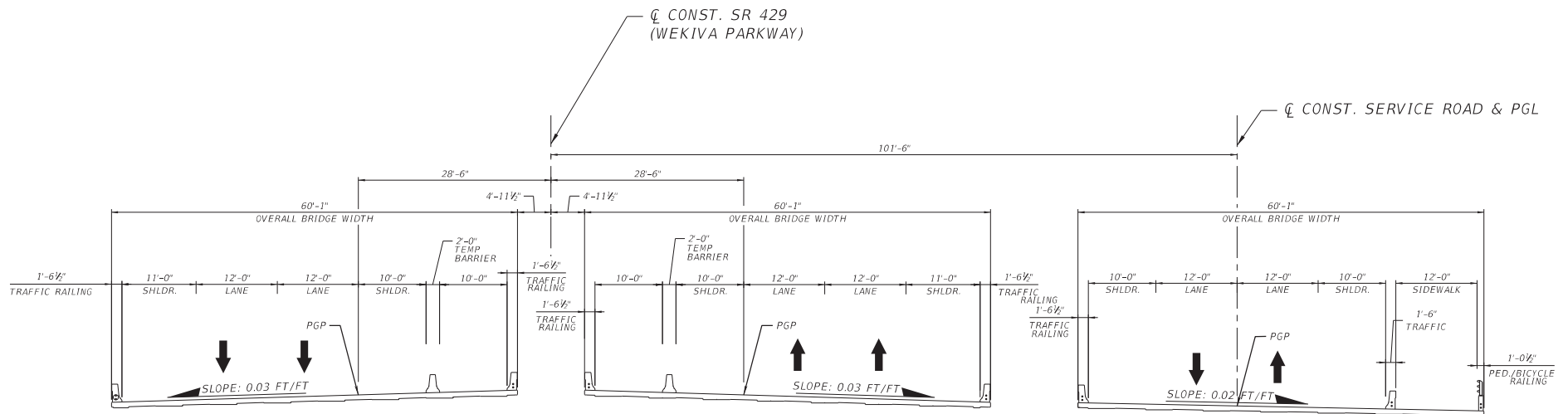
TYPICAL SECTION WEKIVA PARKWAY OVER WEKIVA RIVER RD

APPROVED BY:	FDOT CONCURRENCE	FHWA CONCURRENCE
_____ Stephen A. Boylan, P.E. 53137 Date Engineer Of Record	_____ Annette Brennan, P.E Date FDOT District Design Engineer	_____ N/A Date FHWA Transportation Engineer

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TWO-LANE, TWO-WAY SERVICE RD ON BOTH NORTH AND SOUTH SIDES OF WEKIVA PARKWAY (PROJ. LENGTH 4.797 MI).

PROPOSED STRUCTURE TYPICAL SECTION



WEKIVA PARKWAY
 STA. 908+65.19 TO STA. 929+33.90
 DESIGN SPEED = 70 MPH

SERVICE ROAD
 STA. 148+31.93 TO STA. 169+00.13
 DESIGN SPEED = 50 MPH

TYPICAL SECTION WEKIVA PARKWAY AND SERVICE RD 1 OVER WEKIVA RIVER

APPROVED BY:	FDOT CONCURRENCE	FHWA CONCURRENCE
<p>_____ Stephen A. Boylan, P.E. 53137 Date Engineer Of Record</p>	<p>_____ Annette Brennan, P.E Date FDOT District Design Engineer</p>	<p>_____ N/A Date FHWA Transportation Engineer</p>

EXHIBITS

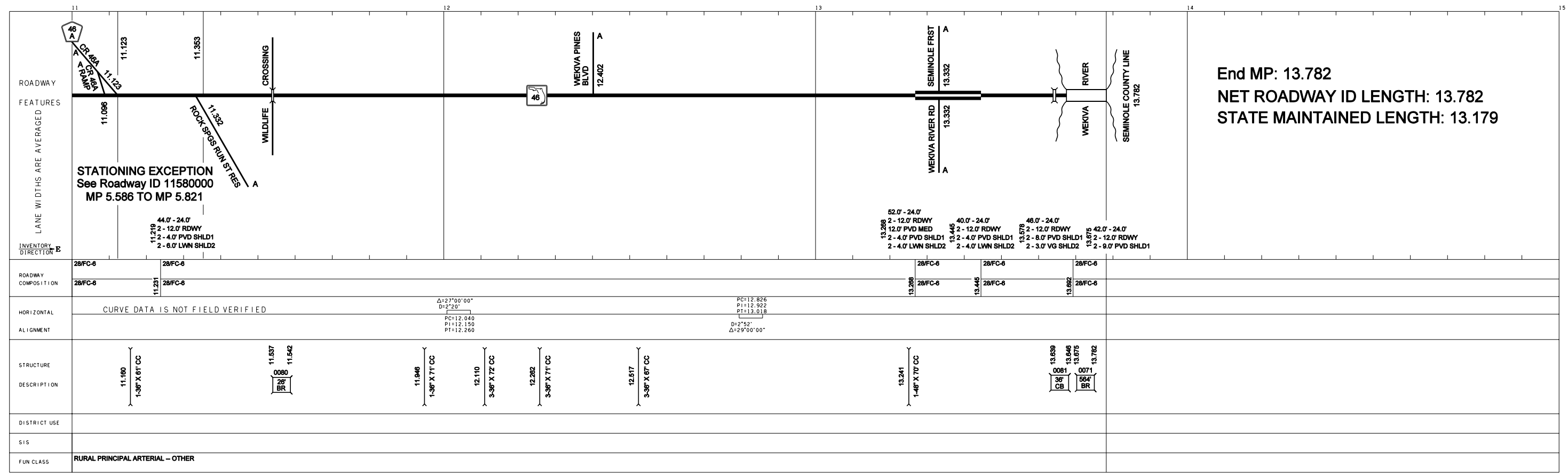
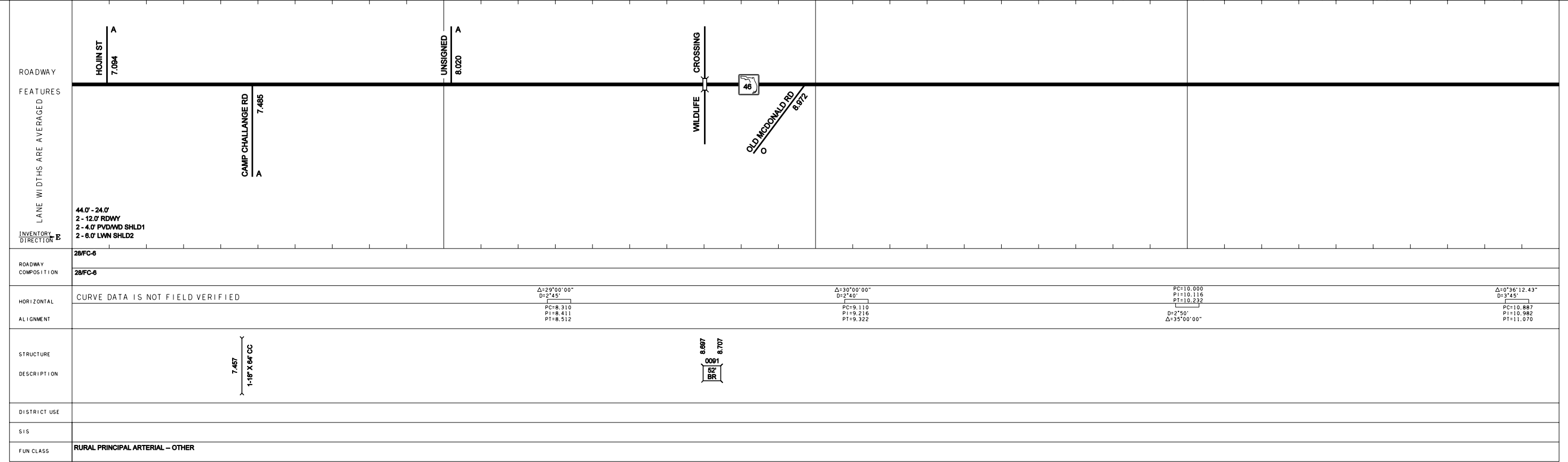
SR 46 STRAIGHT LINE DIAGRAM

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

FLORIDA DEPARTMENT OF TRANSPORTATION

INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO.:
	SR 46	LAKE	5	11 130 000	2 of 2

		INTERIM REVISIONS					
DATE	BY	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
07/29/05	JF/BF		12/12/05	000.000	013.782	08/11/09 JF	08/19/09 MR
			URS	000.000	013.782	04/15/09 JF	05/20/09 URS
				000.603	004.583	01/29/08 JF	02/27/08 URS



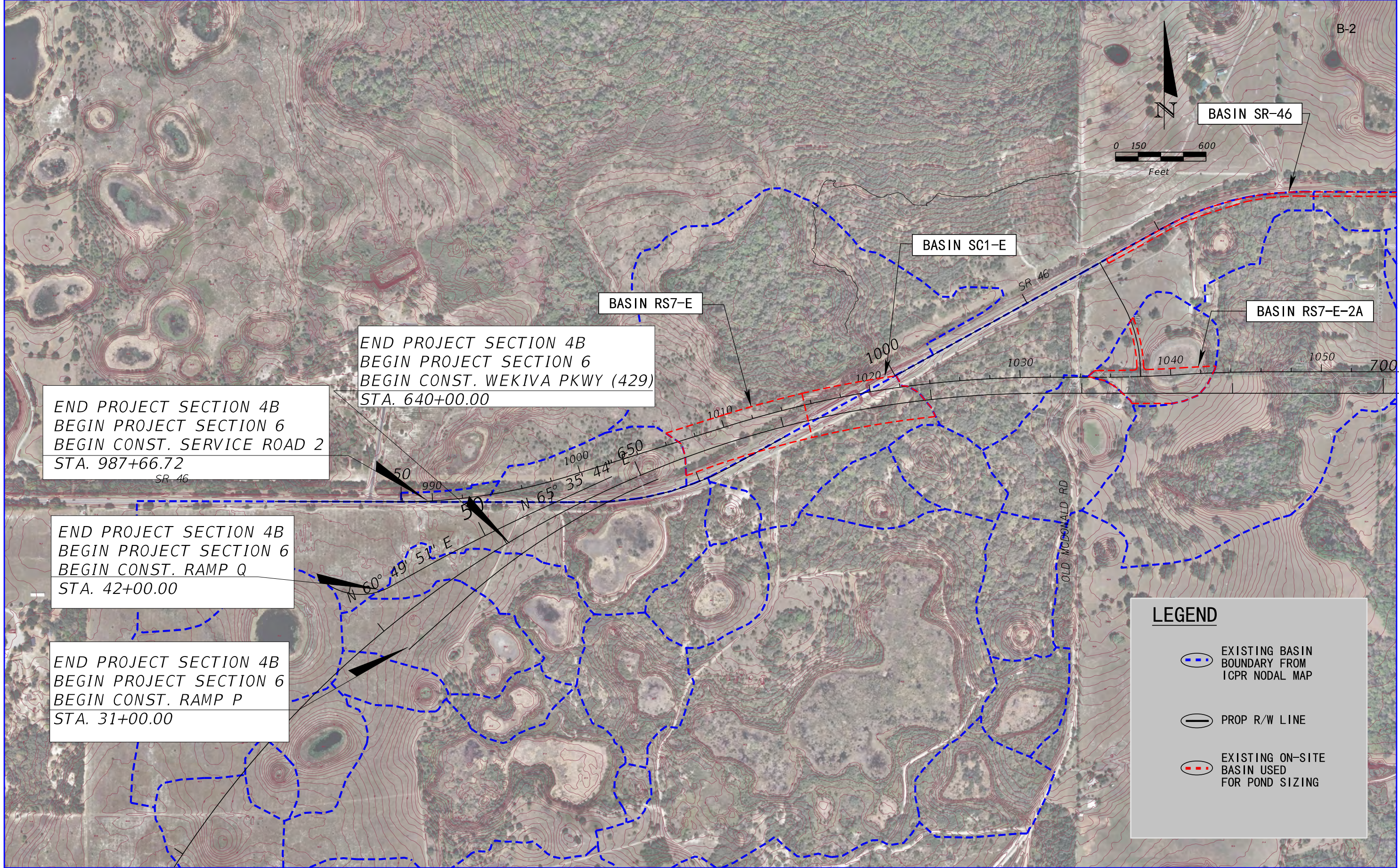
EXHIBITS
WEKIVA PARKWAY SECTIONS

SR 429 (Wekiva Parkway) from West of Old McDonald Rd to
East of the Lake /Seminole County Line
FPID 238275-7
Final Pond Siting Report

APPENDIX B

Pond Calculations

**POND ALTERNATIVES
EXISTING ON-SITE BASIN MAPS**



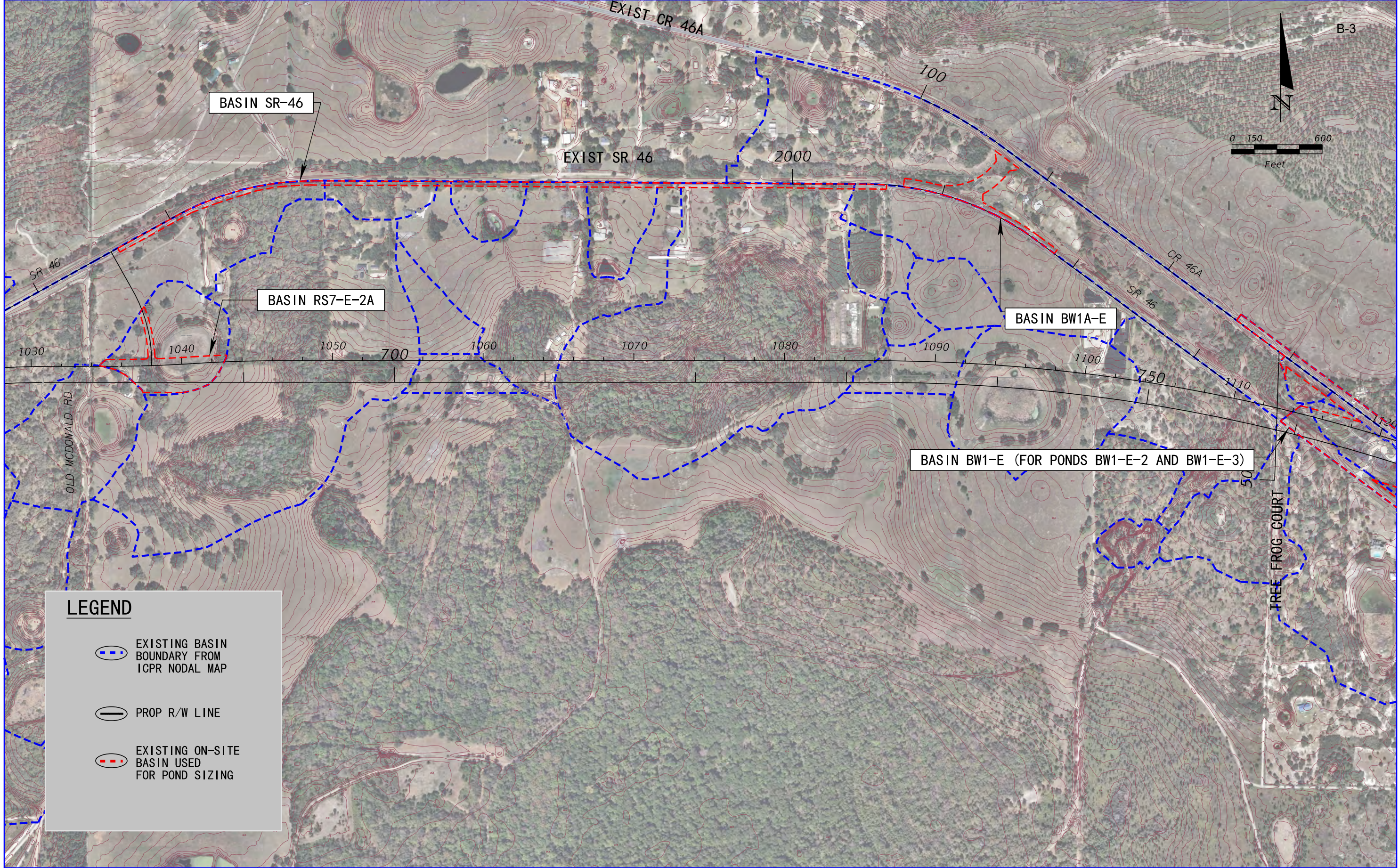
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

J. ALEXANDER GEORGE, P.E.
 P.E. LICENSE NUMBER 59006
 160 N. WESTMONTE DRIVE, SUITE 2000
 ALTAMONTE SPRINGS, FLORIDA 32714
 MAITLAND, FLORIDA 32751
 CERTIFICATE OF AUTHORIZATION NO. 7184




STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE	238275-7-52-01

**EXISTING
ON-SITE BASIN MAP (1)**

SHEET NO.
1 OF 5



LEGEND

-  EXISTING BASIN BOUNDARY FROM ICPR NODAL MAP
-  PROP R/W LINE
-  EXISTING ON-SITE BASIN USED FOR POND SIZING

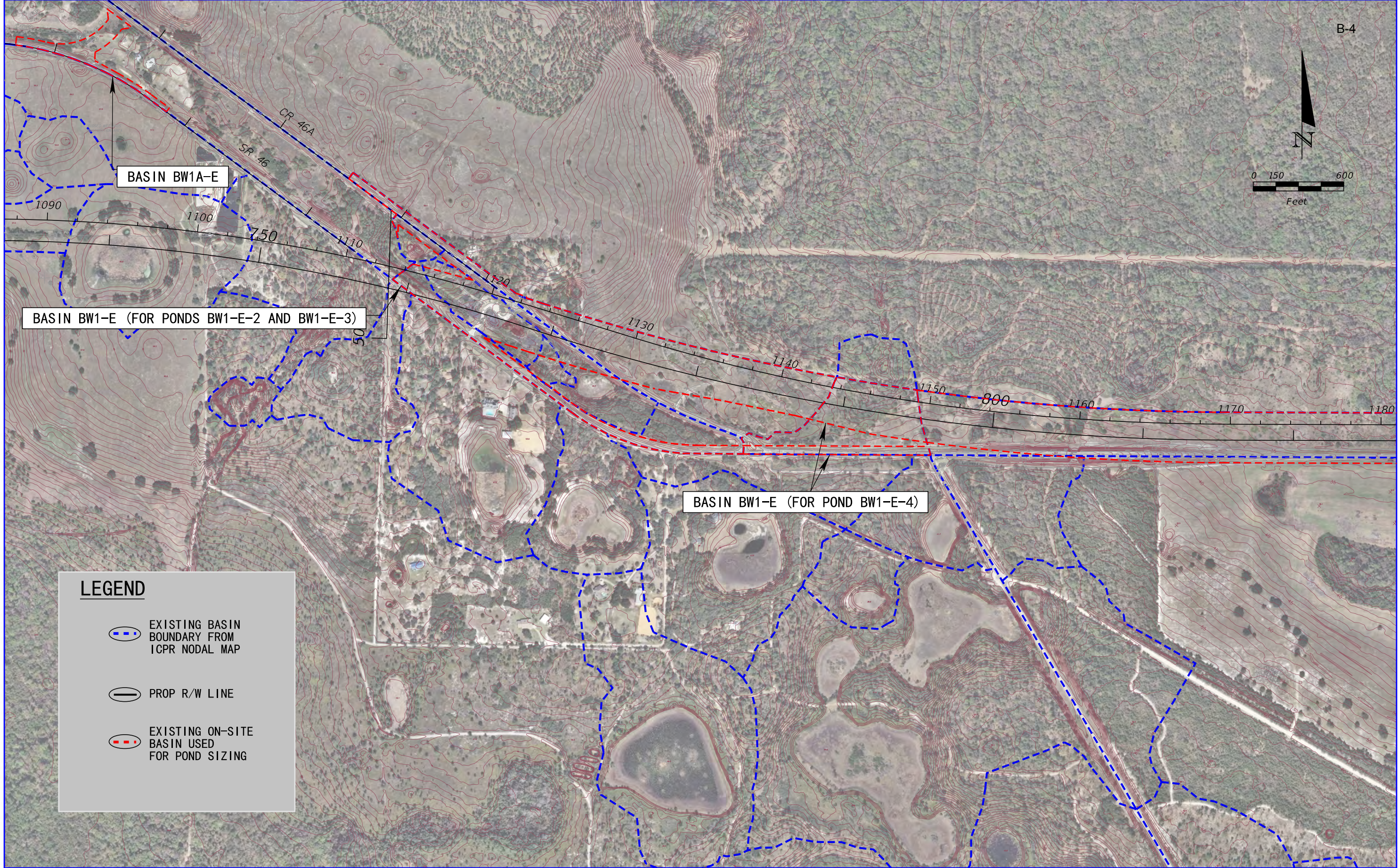
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

J. ALEXANDER GEORGE, P.E.
P.E. LICENSE NUMBER 59006
BCC ENGINEERING, INC.
160 N. WESTMONTE DRIVE, SUITE 2000
ALTAMONTE SPRINGS, FLORIDA 32714
CERTIFICATE OF AUTHORIZATION NO. 7184




STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE	238275-7-52-01

**EXISTING
ON-SITE BASIN MAP (2)**

SHEET NO.
2 OF 5



LEGEND

-  EXISTING BASIN BOUNDARY FROM ICPR NODAL MAP
-  PROP R/W LINE
-  EXISTING ON-SITE BASIN USED FOR POND SIZING

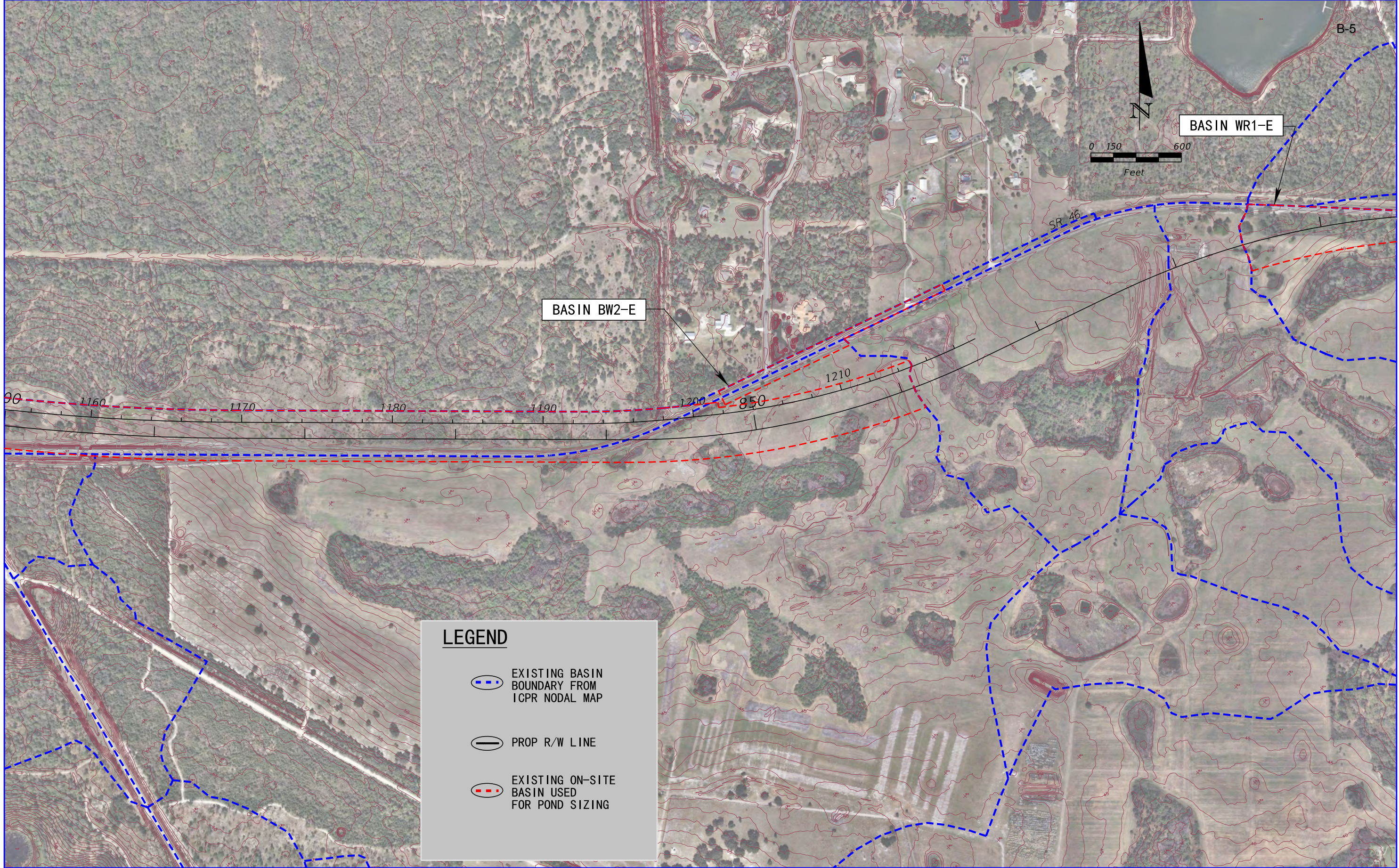
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

J. ALEXANDER GEORGE, P.E.
 P.E. LICENSE NUMBER 59006
 BCC ENGINEERING, INC.
 160 N. WESTMONTE DRIVE, SUITE 2000
 ALTAMONTE SPRINGS, FLORIDA 32714
 CERTIFICATE OF AUTHORIZATION NO. 7184




STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE	238275-7-52-01

**EXISTING
ON-SITE BASIN MAP (3)**

SHEET NO.
3 OF 5



LEGEND

-  EXISTING BASIN BOUNDARY FROM ICPR NODAL MAP
-  PROP R/W LINE
-  EXISTING ON-SITE BASIN USED FOR POND SIZING

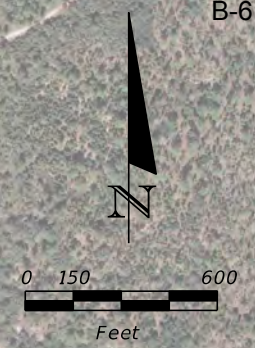
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

J. ALEXANDER GEORGE, P.E.
 P.E. LICENSE NUMBER 59006
 BCC ENGINEERING, INC.
 160 N. WESTMONTE DRIVE, SUITE 2000
 ALTAMONTE SPRINGS, FLORIDA 32714
 CERTIFICATE OF AUTHORIZATION NO. 7184

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE	238275-7-52-01

**EXISTING
ON-SITE BASIN MAP (A)**

SHEET NO.
4 OF 5



LEGEND

- EXISTING BASIN BOUNDARY FROM ICPR NODAL MAP
- PROP R/W LINE
- EXISTING ON-SITE BASIN USED FOR POND SIZING

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

J. ALEXANDER GEORGE, P.E.
 P.E. LICENSE NUMBER 59006
 BCC ENGINEERING, INC.
 160 N. WESTMONTE DRIVE, SUITE 2000
 ALTAMONTE SPRINGS, FLORIDA 32714
 CERTIFICATE OF AUTHORIZATION NO. 7184

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 429	LAKE	238275-7-52-01

**EXISTING
ON-SITE BASIN MAP (5)**

SHEET NO.
5 OF 5