

**LAKE COUNTY WATER AUTHORITY
(352) 324-6141
REGULAR MEETING ANNOUNCEMENT AND AGENDA**

**Wednesday, April 22, 2026
3:30 p.m.**

**Lake County Administration Building
2nd Floor – County Commission Chambers
315 Main Street, Tavares, FL 32778**

I. CALL TO ORDER

II. INVOCATION & PLEDGE OF ALLEGIANCE

III. AGENDA UPDATE

- Discussion regarding proposed revisions to today's Agenda.

IV. MINUTES APPROVAL (Tab 1)

Tab 1 Recommend approval of the following minutes:

- **March 25, 2026, Regular Meeting**

V. PUBLIC COMMENT

VI. CONSENT AGENDA (Tab 2)

Tab 2 Water Resources Monthly Staff Report

Marcia Bush

VII. SPECIAL RECOGNITION (Tab 3)

Tab 3 Annual Kids Fishing Clinic and Reporting at Hickory Point
Recognizing Teen Sportfishing Association Lake County Chapter

**Sean Beaudet
Dean Morris**

VIII. REGULAR AGENDA (Tabs 4-6)

Tab 4 Office of Communications Re-Branding Update

Levar Cooper

Tab 5 CRS Program Update

Karl Bursa

Tab 6 2nd Budget Workshop Presentation

Bobby Bonilla

IX. REGULAR AGENDA (Tab 7)

A. TRUSTEES

Tab 7 **Trustee Zenishek - Vice Chair and District #3**
Discussion and Direction on LCWA Legal Services

X. REPORTS

A. Legal Counsel/Executive Director

XI. BOARD MEMBER REPORTS AND ITEMS FOR FUTURE AGENDA

XII. ANNOUNCEMENT OF UPCOMING MEETINGS AND EVENTS

Regular Board Meeting

Wednesday, May 20, 2026 (3:30 p.m.)

BCC Chambers/Admin. Building

Paddling Adventure

Friday, April 24, 2026 (9:00 a.m. – 12:00 p.m.)

Double Run Preserve, Astatula Boat Ramp

Wetland Excursion

Saturday, May 2, 2026 (9:00 a.m. – 12:00 p.m.)

Pine Meadows Conservation Area

Watershed Wednesday

Wednesday, May 13, 2026 (10:00 a.m. – 12:00 p.m.)

Hickory Point Pavilion

Stories of Water

Friday, May 15, 2026 (9:00 a.m. – 12:00 p.m.)

Hidden Waters Preserve

XIII. ADJOURNMENT



**Lake County
WATER AUTHORITY**

Bobby Bonilla, Executive Director • Gary J. Cooney, Secretary - Treasurer

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TO: Lake County Water Authority Board of Trustees

THROUGH: Bobby Bonilla, Executive Director

FROM: Marcia Bush, Associate Director, Water Resources

DATE: April 17, 2026

RE: Minutes Approval

Consent Agenda – Tab 1

Approval of Meeting Minutes

Please find attached the following Minutes for Approval:

- March 25, 2026 Regular Meeting

Executive Director's Recommendation:

1. For Board Approval.

BOARD OF TRUSTEES

Gavin Rollins
District 1

Trampis Bonjorn
District 2

Birdie Zenishek
District 3

Butch Hendrick
District 4

Jonathan Germeroth
District 5

1 A REGULAR MEETING OF THE LAKE COUNTY WATER AUTHORITY BOARD

2 MARCH 25, 2026

3 The Lake County Water Authority Board met in regular session on Wednesday, March 25,
4 2026 at 3:30 p.m., in the County Commission Chambers, Lake County Administration Building,
5 Tavares, Florida. Board members present at the meeting were: Robert Hendrick, Chairman;
6 Kristan Zenishek, Vice Chairman; Gavin Rollins (arrived at 3:57 p.m.); Trampis Bonjorn; and
7 Jonathan Germeroth. Others present were: Bobby Bonilla, Assistant County Manager; Amanda
8 Boggus, LCWA Attorney; and Stephanie Cash, Deputy Clerk.

9 CALL TO ORDER/PLEDGE OF ALLEGIANCE

10 Mr. Robert Hendrick called the meeting to order.

11 Mr. Trampis Bonjorn introduced Mr. Tony Summers, and said that he would give the
12 Invocation. He stated that Mr. Summers was a local marine repair business owner for Marinete
13 Systems, a charter captain, a member of the Florida Fish and Wildlife Conservation Commission's
14 (FWC) Tactical Assistance Group (TAG) program, and a member and greeter at First Baptist
15 Church of Umatilla. He commented that even though Mr. Summers currently resided in the City
16 of Sorrento, he was raised in the City of Clermont, and that he had recently given the Invocation
17 for the 40th Coastal Conservation Association (CCA) Gala. He also introduced Chief John
18 Graczyk, with the City of Clermont Police Department, and remarked that he had served with the
19 United States (U.S.) Marine Corps for four years from 2000 to 2004, serving in Operation Iraqi
20 Freedom at Camp Lejeune. He said that after returning home to the Central Florida area, Chief
21 Graczyk attended the Police Academy in August 2004 and joined the City of Clermont Police
22 Department in April 2005. He related that Chief Gracyk had overseen the Patrol Division, Crime
23 Suppression Unit, K-9 Unit, Special Weapons and Tactics (SWAT) team, and was selected to be
24 the Police Chief in 2025; additionally, Chief Gracyk graduated the Federal Bureau of Investigation
25 (FBI) National Academy in December 2024, attended several other leadership development
26 courses, and earned a bachelor's degree in Criminal Justice from New Charter University.

27 Mr. Summers gave the Invocation, and Chief Graczyk led the Pledge of Allegiance.

28 The LCWA Board presented Chief Graczyk with a certificate.

29 AGENDA UPDATE

30 Mr. Bobby Bonilla, Executive Director for Parks and Water Resources, said that there were
31 no updates to the agenda.

32 APPROVAL OF MINUTES

33 On a motion by Mr. Germeroth, seconded by Ms. Zenishek and carried unanimously by a
34 vote of 4-0, the LCWA Board approved the minutes for the LCWA meeting February 25, 2026
35 (Regular Meeting) as presented.

36 PUBLIC COMMENT

37 No one wished to address the Board at this time.

38 CONSENT AGENDA

39 On a motion by Mr. Bonjorn, seconded by Ms. Zenishek and carried unanimously by a
40 vote of 4-0, the LCWA Board approved the Consent Agenda, Tabs 2 through 6, as follows:

1 Water Resources Monthly Staff Report
2 Hickory Point Facility Improvements
3 Approve Interlocal Agreement to Fund Lake County Distributed Wastewater Treatment
4 Program
5 Approval to Host Heartland League of Cities Meeting at Hickory Point
6 Approval of Budget Transfer for Deck Barge Purchase

7 REGULAR AGENDA

8 FRIENDS OF THE WEKIVA RIVER PRESENTATION

9 Ms. Cindy Newton, with Friends of the Wekiva River, commented that she was a board
10 member of the Friends of the Wekiva River sitting on the technical committee, co-chair of the
11 Government Affairs Committee for the Lake County Conservation Council, and an independent
12 environmental consultant with 10 years of experience. She explained that the Friends of the
13 Wekiva River was a 501(c)(3) nonprofit volunteer-based organization founded in 1982 to protect,
14 preserve, and restore the natural functions and beauty of the Wekiva River Basin, and that as a
15 result of their leadership and the cooperation of their river partners, the Wekiva River had been
16 designated a Florida Outstanding Water, a State of Florida canoe trail, an aquatic preserve, and a
17 National Wild and Scenic River with over 70,000 acres of state-protected lands within the basin.
18 She stated that their mission and purpose was to promote and protect the unique environment and
19 recreational values of the Wekiva River and its tributaries, and that they accomplished this mission
20 through educational opportunities, engagement with policymakers, and partnerships with sister
21 organizations on shared goals. She remarked that some of the main things they addressed included
22 the following: water quality by working with the Florida Department of Environmental Protection
23 (FDEP) and local governments on guidelines for improving water quality in springs and rivers in
24 the Wekiva Basin; water quantity by working with the St. Johns River Water Management District
25 (SJRWMD) on guidelines for maintaining adequate flows in the springs and rivers in the Wekiva
26 Basin; recharge projects by working with the Central Florida Water Initiative with input on
27 recharge projects, noting that these issues would often overlay each other in the different
28 departments; environmental impacts from land use changes and unsustainable development by
29 working with issues related to development projects in areas designated for protection in the
30 Wekiva Basin; and data collection by participating in events, such as the annual Christmas Bird
31 Counts, BioBlitz events, and other data capture events about biological diversity in the basin. She
32 mentioned that they were also involved with land acquisition for the Wekiva to Ocala Greenway,
33 and that this had been included in recent maps tied to \$800 million that the State had set aside for
34 the Ocala to Osceola Corridor, noting that it was also in the Florida Forever projects. She related
35 that the properties within this greenway had already been approved for acquisition, which
36 shortened the criteria determining process, and noted that even though there was still funding left
37 in this account, this allocation would soon sunset with the State's budget. She commented that
38 even though they did not know what would be in the new budget for July 1, 2026, they knew that
39 three projects were rolled over to the current year, and that they did not know how much funding
40 would be left in the fund, what could be allocated to a different project, or if there would be more

1 funding coming in. She remarked that even though previous acquisition efforts already protected
2 125,000 acres, over 21,000 acres still needed to be acquired all in Lake County, and that if there
3 were willing landowners the Board knew of who wished to be considered for the acquisition in the
4 Wekiva to Ocala Greenway, this was the time to apply before the June 30, 2026 sunset, which
5 gave it a better chance of being approved. She relayed that they were also involved in the Basin
6 Management Action Plan (BMAP), which included the following: advocating for septic to sewer;
7 partnering with the Florida Springs Council on spring health; being involved in the restoration of
8 the Little Wekiva River; and supporting Lake County and the City of Mount Dora in obtaining a
9 formal hearing with the FDEP for the Wolf Branch Sink protection. She mentioned that they had
10 some legislative priorities, and that they worked with sister organizations when their mission
11 overlapped, such as 1,000 Friends of Florida, Audubon Florida, and the Florida Springs Council.
12 She related that recharge was one of their largest issues, opining that it was not taken seriously and
13 was being largely overlooked. She commented that the Wekiva Study Area (WSA) was a critical
14 242 square mile region encompassing parts of Lake, Orange, and Seminole Counties, and that it
15 was vital for recharging the Floridan Aquifer and supporting the Wekiva River. She opined that
16 some Counties protected the recharge better than others, and said that one of the issues they had
17 with Lake County was the combining of the stormwater retention ponds with recharge. She
18 elaborated that even though the stormwater ponds worked great for stormwater, they were not as
19 good for recharge, as the open space usually was in areas that were not good for recharge, noting
20 that high recharge soils were often in residential areas with impervious surfaces, which greatly
21 reduced the recharge in Lake County. She stated that a summary of their activities included the
22 following: protecting water quality, water quantity, and recharge to preserve the unique
23 environmental and recreational values within the entire Wekiva Basin; partnering with various
24 sister groups; collaborating with multiple government entities on all levels; and advocating for
25 better government rules and oversights. She also commented that they would be willing to help
26 the LCWA with anything they could.

27 Ms. Kristan Zenishek expressed appreciation to Ms. Newton for the presentation, and said
28 that she wanted to ensure that the Board knew about this partner, especially as the LCWA moved
29 forward with legislative priorities and other activities. She relayed her understanding that the
30 LCWA and the Friends of the Wekiva River were involved in many of the same things, such as
31 stormwater, floodplains, and healthy lakes, opining that this was a great partner to have.

32 Mr. Bonjorn indicated appreciation for the presentation, and noted that he learned some
33 things, opining that there could be opportunities for a partnership on certain projects.

34 Mr. Hendrick asked if the issue of retention being in recharge areas was due to the
35 developer bringing in fill dirt.

36 Ms. Newton opined that the regulations needed to be adjusted, and pointed out that some
37 Counties did not allow open space to be condensed and were keeping more of the recharge
38 separated from the stormwater ponds, noting that she would like to see that more in Lake County.
39 She mentioned that in Seminole County, recharge areas were often brought up by their committee
40 during the pre-stage of development projects, and that it was in the land development regulations

1 (LDR) and Comprehensive Plan (Comp Plan). She opined that even though it was required by
2 Florida Statute to protect the recharge, it was sometimes overlooked.

3 Mr. Hendrick questioned if this was done in Lake County.

4 Ms. Amanda Boggus, LCWA Attorney, replied that the Comp Plan was going through an
5 update currently, and opined that this would be a good time to give feedback to the BCC. She
6 mentioned that a more restrictive LDR could be queued up for the expiration of Senate Bill (SB)
7 180, and that they could be made ready to move forward with more intensive LDR.

8 Mr. Hendrick opined that the LCWA and the Friends of the Wekiva River should work
9 together going forward.

10 Ms. Boggus inquired if Ms. Newton was working with the Public Lands and Trails
11 Acquisition Advisory Committee (PLTAAC), opining that this was another board that they
12 overlapped with.

13 Ms. Newton answered that they had done a presentation to the PLTAAC at their previous
14 meeting.

15 RESILIENT FLORIDA PROGRAM ELIGIBILITY

16 Mr. Sean Beaudet, Grants Program Manager for the Office of Water Resources, mentioned
17 that this item came about during the legislative priority meetings in the City of Tallahassee, and
18 that this program was mentioned both by legislative staff and the LCWA government relations
19 team, Continental Strategy. He commented that he was somewhat familiar with this program, as
20 the Office of Emergency Management (OEM) had applied for this program in August 2022 to
21 conduct a countywide survey, and that the County was awarded a grant and entered into an
22 agreement in October 2023, which was ongoing. He explained that the Resilient Florida program
23 was established in 2021 under Section 380.093, Florida Statutes, and was administered by FDEP;
24 additionally, the program provided grants to Counties, municipalities, regional resilience entities,
25 and special districts with specific responsibilities such as managing and maintaining coastal inlets,
26 intracoastal waterways, potable water facilities, wastewater facilities, and airport or seaport
27 facilities. He related that for these qualifying entities, there was a two-step process, and that the
28 first phase was to apply for a planning project. He mentioned that they provided funding to that
29 entity to conduct a vulnerability assessment (VA), and that once this step was complete, the entity
30 was then eligible to apply for implementation grants which allowed entities to make modifications
31 or improvements to critical assets already in place to reduce the risk of coastal sea-level rise. He
32 stated that the program had four categories of critical assets that were eligible to receive funding,
33 including the following: transportation assets and evacuation routes, such as airports, bridges,
34 ports, and major roadways; critical infrastructure, such as wastewater treatment facilities,
35 stormwater treatment facilities, electric production and supply facilities, and water control
36 structures; community and emergency facilities, such as schools, fire stations, and law enforcement
37 facilities; and natural, cultural, and historical resources, such as conservation lands, parks, and
38 historical sites. He commented that the program was guaranteed by Florida Statute to have a
39 minimum annual allocation of \$100 million per year with an annual deadline of September 1, 2026,
40 and that it required a local match or contribution of 50 percent for each project. He mentioned that

1 for Fiscal Year (FY) 2027, the State budget was tentative, and that the House Bill (HB) allocated
2 \$120 million while the SB allocated \$110 million, noting that the State Legislature would
3 reconvene in the following month to procure a final budget. He showed a program dashboard, and
4 said that there was approximately \$1.7 billion statewide that had been awarded to 783 projects
5 since the inception of this program, noting that there had been significant investments statewide
6 as it was a priority of the current administration. He remarked that \$3.1 million had been awarded
7 for eight projects in Lake County, and that there were seven planning grants, including the BCC
8 award over \$500,000, along with one implementation grant with the Town of Montverde for the
9 infrastructure flooding mitigation program. He commented that even though the LCWA was not
10 identified as one of the special districts, there were three ways the LCWA could qualify for this
11 program, including the following: applying as a drainage district; applying after the BCC VA was
12 complete; and utilizing the statewide VA. He remarked that the Florida Statute noted that special
13 districts that managed water supplies or water resources and had assets identified in the statewide
14 VA could qualify, and that after reviewing the responsibilities and purposes, the FDEP determined
15 that the LCWA was eligible as a drainage district. He mentioned that the second qualifier was to
16 have assets identified in the BCC countywide VA, which was currently underway, and that after
17 working diligently with the OEM and Geosyntec Consultants providing files and assets, the
18 LCWA assets would now be incorporated in the countywide reports. He related that the benefit
19 of this qualifier was that it could save the LCWA \$100,000 or more by not having to conduct the
20 initial VA assessment, and that once the County VA was complete, additional assets would be
21 included for future considerations. He commented that the final qualifier was that communities
22 and organizations could apply for implementation grants if assets were included in the initial
23 comprehensive statewide VA, and that the State's consultants held data from the national inventory
24 of dams, which included all six of the LCWA's water control structures, noting that Cherry Lake
25 dam and M-6 received a high-risk rating and were eligible immediately. He displayed an example
26 of the State dashboard, and said that this showed that Cherry Lake dam was susceptible to rainfall
27 induced flooding risk at different intervals. He concluded that the LCWA qualified for the
28 Resilient Florida program through multiple avenues, and that this provided an additional
29 opportunity to seek financial assistance to enhance critical infrastructure, making it more resilient
30 to future flooding and storm events.

31 Mr. Bonjorn opined that this was very exciting considering some of the new responsibilities
32 the LCWA had, and that it would be very helpful, especially with the stormwater opportunities.

33 Mr. Hendrick relayed his understanding that the Cherry Lake dam qualified immediately.

34 Mr. Beaudet commented that if the LCWA had the funding, then they could apply on
35 September 1, 2026.

36 Mr. Hendrick opined that they should do that.

37 STORMWATER PROGRAM PRESENTATION

38 Ms. Blanche Hardy, Hydrogeologist for the Office of Water Resources, recalled that in
39 August 2025, Mr. Bonilla spoke to the Board about partnering with the BCC for a stormwater
40 program, and that in the interim, staff had worked on recommendations for what that program

1 should look like, which she opined would be different than the Board had seen in the past. She
2 commented that the existing stormwater management conditions included the following: it was
3 implemented on an as-needed basis, such as putting in swales when roads were built and approving
4 stormwater ponds when doing a development; there was no planning for a unified network,
5 resulting in structures and facilities that were not maintained or mapped; because of people retiring
6 or leaving, there was inconsistent or absent construction and maintenance records, which needed
7 to be brought into a recorded system for tracking; there was no comprehensive map of the
8 stormwater systems; it was traditionally focused on code compliance by inspectors that looked at
9 grading or a landscaping plan instead of impacts of developments on the basins, flow-ways,
10 navigable waterways, or how they related to each other, such as a development in one area
11 impacting a development in another area by reducing or increasing the water supply or flooding
12 risk; and repairs were limited to addressing failures, such as the failures all over the county after
13 the large rainstorm event in October 2025.

14 Mr. Gavin Rollins arrived at 3:57 p.m.

15 Ms. Hardy opined that a real stormwater program was needed, and that with a better system,
16 the LCWA could predict and help prevent those kinds of failures in the future. She stated that the
17 recommended program included the following: mapping and integrating the entire network, which
18 the Public Works Department had been working on, noting that there were currently four separate
19 maps that were all incomplete; establishing a level of service (LOS) criteria, as there was currently
20 no criteria for what was good and bad; prioritizing action areas and priority projects, such as flow-
21 ways, navigable waterways, conservation lands that were being impacted by development, areas
22 consistently impacted by flooding, or roadways being lost due to flooding; implementing short and
23 long term improvement plans, such as a five and ten year construction improvement program;
24 having a scheduled maintenance program, which there was none currently, noting that the County
25 maintained it when a citizen called because of a large issue, such as a large tree growing in the
26 County's stormwater pond that could potentially damage a person's roof, noting that even though
27 the County cut the tree, there was still work to bring this pond back; providing uniform guidance,
28 such as low-impact development criteria beyond just stormwater ponds and swales, as they were
29 attractive, created a better community, preserved native plants, and could be part of the stormwater
30 program; and doing a basin-wide consideration for water quality, flooding, storage, and recharge.
31 She commented that the first step was to identify, which included the following: mapping existing
32 conveyances, structures, and stormwater and flood compensation storage areas; creating a
33 countywide stormwater geographic information systems (GIS) layer on the map; determining the
34 current and future LOS needs so that they could use this to map the areas that were failing and
35 needed to be priority areas; initiating agency coordination, such as partnering with FDEP and the
36 water management districts to provide input, advice, and access to their experts, ensuring that this
37 system was something they agreed would work when reporting to them and pursuing their permit
38 renewals from them; and creating field record procedures and reporting forms, such as those used
39 when staff went out to execute a cleanup, cut some trees, or restore a flow-way. She remarked
40 that everything would be recorded on that form, such as the date, time, name, what they did, and a

1 photograph, and would be digitally recorded so that when the LCWA did reporting to State every
2 year, it was a matter of putting it on a transferrable material and sending it to the State showing
3 the many projects that were done in the current year and the plan for the following year, noting
4 that in the prior year they reported just what the LCWA had done and not what the stormwater
5 program was about. She mentioned that the second phase was to explore additional funding
6 sources to support long-term drainage infrastructure funding, which included the following:
7 evaluating current LOS, as well as future LOS and the cost, and analyzing how a rate model and
8 goals for the LOS could be implemented; finalizing data; engaging in community outreach; listing
9 priority projects; revisiting the fee schedule and proposing a final rate structure to meet LOS goals,
10 which would come before the Board and then to the BCC for approval; initiating clear, precise,
11 and engaged public outreach, which was the best way to support a program that involved funding
12 by taxpayers, such as letting them know what this would do for them in their backyard, at their
13 retention pond, and for their mitigation of flooding; and creating municipal and agency
14 memorandums of understanding (MOUs) for contracting LCWA equipment and personnel for
15 stormwater maintenance, design, and other related support services. She mentioned that in
16 October 2025, half of the work was with the Cities, and opined that staff did a tremendous service
17 to the county residents within the cities; however, if there was going to be County equipment and
18 personnel out there, then there needed to be a discussion about rate schedules and cost sharing as
19 it was a large increase in what they had currently. She relayed that the third phase was to act, and
20 that this included the following: completing a countywide stormwater vulnerability study;
21 identifying critical assets that may be at risk during different flood scenarios; identifying priority
22 action areas; identifying water quality data needs, such as expanding the services of the lab;
23 creating a stormwater master plan and a five and 10 year construction improvement program so
24 that one could see what kind of funding and programs had been done; identifying funding sources;
25 establishing operation and maintenance guidelines using schedules and operation manuals,
26 allowing them to train people as they came in so that everybody was on the same page and had the
27 same skillsets; and providing monitoring guidance, which was what the executive management
28 staff would do. She commented that since there was much that the LCWA was responsible for,
29 they would do the following: create design and management criteria; create a drainage manual;
30 establish a predictive flood modeling system for proactive storm response, which was a priority as
31 they would like to see what would happen when there was flooding; and establish a low impact
32 development program. She related that since they had been working with the Office of Planning
33 and Zoning on low impact development guidelines, they had made numerous comments for the
34 Comp Plan, such as protecting the Wekiva River area and the Green Swamp, and that they had
35 simplified language to say that all developments that came in had to protect basins, flow-ways,
36 navigable waters, and conservation lands. She opined that the County could not continue to claim
37 that flooding only happened within the boundaries of the roadway project or the development, and
38 that if their Comp Plan comments were taken into account, then everything that happened in the
39 system would be taken into consideration, such as how that development was going to help
40 recharge. She mentioned that the fourth phase also included the following: determining how to

1 assess sites and related site constraints; determining Lake County and the State of Florida
2 applicable design details, as there were engineering details that the County had to comply with,
3 creating a system where they could share those details with people, such as FDEP and water
4 management district guidance; incorporating programs into the National Pollutant Discharge
5 Elimination System (NPDES) permitting program, which was also where the Municipal Separate
6 Storm Sewer Systems (MS4) program was, as this would allow them to take care of permits with
7 the State without any question that they were taking care of their stormwater systems; and
8 providing input to update ordinances to improve stormwater and floodplain management, as they
9 were already working closely with the Office of Planning and Zoning. She commented that the
10 proposed projects included the following: beginning the restoration of ditches and swales in
11 priority areas; excavating and retrofitting major channels; mowing and vegetation removal from
12 ponds; investigating the use of abandoned mines in the southwest area of the county for emergency
13 stormwater flood storage and other areas to determine how to control the stormwater generated
14 under the umbrella of the LCWA; maintaining stormwater facilities on the GIS map layer and
15 database, which would require a staff member to do that; and other projects presented in the
16 legislative priority list. She mentioned that they were requesting approval to develop and
17 implement a formal stormwater and floodplain management program, and that they would like to
18 get started as soon as possible.

19 Mr. Jonathan Germeroth indicated appreciation for Ms. Hardy, and asked if she had been
20 in strategic planning before coming to Lake County. He pointed out that she had found the issue,
21 found the resolution, included the funding, and planned the maintenance, which he opined had
22 been lacking.

23 Ms. Hardy mentioned that she had come from Orange County government.

24 Mr. Germeroth remarked that she had identified the issues with drainage and had found a
25 way to fund the resolutions.

26 Ms. Hardy expressed appreciation, and stated that Mr. Justin Elkins, Director for the Office
27 of Water Resources, and Mr. Beaudet had also worked on this with staff. She said that this was a
28 team effort, and that she was just the spokesperson.

29 Mr. Rollins opined that there was nothing more pressing in Lake County, and said that
30 issues had been seen in several high-profile events, such as the sinkhole in the City of Groveland
31 and the flooding in the City of Mount Dora, opining that the LCWA could lead the way and help
32 provide solutions to this very critical issue. He opined that it was a very thorough presentation,
33 and said that he was excited about it.

34 Mr. Bonjorn opined that they did a great job with a major undertaking, and that it was
35 impressive how it was laid out. He opined that it had been neglected for a long time, and that after
36 the historic flooding event in the previous year, it was needed.

37 Mr. Hendrick inquired who would write the guide to follow.

38 Ms. Hardy answered that it would be written together with staff, and that part of her job
39 was to do the outlines. She opined that it would take the entire team, and said that she had talked

1 to staff about the equipment and personnel needed, opining that she, Mr. Elkins, and Mr. Beaudet
2 would lead that effort and pull everybody in.

3 Mr. Hendrick opined that it was good that the LCWA could write its own guide, and
4 indicated his understanding that it did not need to be approved by anyone else. He wondered if
5 the projects mentioned could be done right away without having the guide done first.

6 Ms. Hardy commented that they were already doing some of those projects; however, they
7 did not have the equipment to do many of them right away, and that Mr. Bonilla would address
8 the equipment and personnel needed in his presentation. She mentioned that they would need
9 equipment to do the Hicks Ditch project, and that it would require much funding. She opined that
10 if staff had their own teams and equipment, they could reduce the costs of contracting the projects
11 out, and that this would be a cost savings over time.

12 Mr. Hendrick relayed his understanding that they did not need the guide to follow, and that
13 this was ready to go as soon as there was funding and equipment. He questioned how long this
14 would take to implement.

15 Ms. Hardy answered that they would like to get the system identified as soon as it was
16 approved, and that this would require them to use one of the existing contractors for GIS mapping,
17 which was the first step. She remarked that if this was approved on the current day, then she would
18 provide the fees to Mr. Bonilla to get the system mapped.

19 Mr. Bonjorn pointed out that permitting had been mentioned, and that in the past, Mr.
20 Bonilla had found some unique ways to do some piggybacking. He asked if there were any
21 opportunities in this to move things along, and Mr. Bonilla indicated that there would be.

22 Ms. Zenishek opined that this was the most actionable presentation she had ever seen, and
23 said that the Board had been in discussion about Hicks Ditch, as it was one of their legislative
24 priorities. She stated that she was excited to finally get this going and to have accountability and
25 continuity for the longevity of Lake County.

26 On a motion by Ms. Zenishek, seconded by Mr. Germeroth and carried unanimously by a
27 vote of 5-0, the LCWA Board approved the development and implementation of a formal
28 stormwater and floodplain management program.

29 FIRST BUDGET WORKSHOP PRESENTATION

30 Mr. Bonilla indicated appreciation to the Board for their support in hiring key staff into the
31 team, and mentioned that a second tower had been approved by the BCC for the Green Mountain
32 Scenic Byway in the Lake Apopka area, which was being done through the Office of Parks and
33 Trails, noting that the map showed the proximity to the Nutrient Reduction Facility (NuRF)
34 location. He commented that the Office of Parks and Trails had recently completed a large trail
35 system, with a paved trail over County Road (CR) 561 into CR 455 connecting to the Green
36 Mountain Scenic Byway, and that they had received about \$2 million for this project through a
37 legislative priority; additionally, the tower had some grant funding. He related that this gave an
38 overview of the types of facilities and amenities the County was bringing to the Lake Apopka area.
39 He stated that another project was currently under construction through the Office of Parks and
40 Trails near the Ferndale Preserve on the west shore of Lake Apopka, and that eventually, the

1 blueway system would tie into the future vision of the NuRF allowing opportunities for the
2 residents and visitors to navigate from one location to another by water. He pointed out that there
3 were many recreational opportunities throughout the Harris Chain of Lakes, Lake Apopka, and
4 south Lake County that would be tied into the multi-phase regional trail system, opining that it
5 was good for the Board to know what was happening through the other offices. He also stated that
6 he would present to the Board the first of three meetings regarding the FY 2027 budget, and noted
7 that the second budget workshop would be on April 22, 2027. He remarked that at the May 20,
8 2027 LCWA meeting, he would ask the Board to recommend a millage rate for FY 2027, which
9 would be presented to the BCC on June 9, 2027, and he displayed a schedule of meetings that
10 would be taking place up to September 22, 2027, which was the final public hearing to adopt the
11 FY 2027 budget. He showed the current organizational chart, and relayed that it was based on the
12 goals and priorities that the Board adopted. He displayed a map showing the current property
13 inventory for the LCWA, including some of the new properties that were added as part of the
14 transfer and the blueway system; additionally, he showed a list of properties that were open to the
15 public, including the Pine Meadows Conservation Area and the Pasture Reserve, which were part
16 of the transfer. He showed a map listing the blueway system, which was now under the supervision
17 and management of the LCWA, and noted that he had included a brochure in the packet regarding
18 the Lake Apopka Run blueway trail. He displayed a graph showing a history of the revenues,
19 expenditures, and ad valorem taxes over the previous four years as well as a graph of the interest
20 earned over the previous few years, and pointed out that staff had changed the direction of the
21 interest earned for the LCWA, noting that they were maximizing the return on investment as much
22 as possible. He displayed a list of some of the programs the Board adopted in 2026, and
23 commented that they were included in the annual report to the State Legislature. He mentioned
24 that there would be several meetings, including a follow up to the discussion regarding the
25 stormwater and floodplain management from the Public Works Department, and noted that at the
26 August 27, 2025 meeting, the LCWA approved to work in partnership with the County to provide
27 management and oversight to that program, which included the MS4, NPDES, BMAP, and
28 floodplain management. He remarked that since the County received municipal services taxing
29 unit (MSTU) funding for stormwater, which was a separate funding source received by the County,
30 he had been working for the previous several months to adjust the budget and staff, allowing them
31 to manage these funds to accomplish what Ms. Hardy had spoken about earlier, and that with the
32 MSTU, the millage, grant funding, and legislative priority funding, they could bundle this funding
33 to accomplish much and use as leverage to provide a match for legislative priority funding. He
34 related that the requested action included moving two staff members under the LCWA millage,
35 allowing the LCWA to have the \$2.8 million MSTU fund to navigate.

36 On a motion by Ms. Zenishek, seconded by Mr. Bonjorn and carried unanimously by a
37 vote of 5-0, the LCWA Board approved to fund two stormwater positions.

38 Mr. Bonilla commented that the next item was the NuRF, noting that the project started in
39 2007 and opened in 2009. He stated that over 61,000 pounds of phosphorus had been removed,
40 and that on September 1, 2022, the LCWA entered into an operation and maintenance agreement

1 with Woodard and Curran. He pointed out that since that time, the operation had evolved in
2 responsibilities, goals, and objectives, and that they were currently in the process of trying new
3 ideas and solutions. He remarked that the Board had approved a conceptual master plan, which
4 was connected to the Green Mountain Scenic Byway and the Lake Apopka Loop Trail, and that
5 there was a potential to use this for education, passive recreation, ecotourism, and leverage to
6 obtain additional funding through working together with other stakeholders. He mentioned that
7 the project had evolved over the years with many accomplishments, and he expressed appreciation
8 to their partners, contractors, and vendors, including Woodard and Curran. He related that every
9 contract was reviewed and changed as needed, and he requested that the Board authorize the
10 LCWA Attorney to provide Woodard and Curran with a written notice to terminate the operations
11 and maintenance agreement effective September 30, 2026. He also requested that the Board allow
12 a separate addition of employees not to exceed \$500,000, as the LCWA was currently budgeted
13 for about \$833,000 with Woodard and Curran, and pointed out that this would save about \$300,000
14 which could be used as leverage for other projects as needed for legislative priorities and grant
15 funding. He commented that the LCWA also needed equipment, which would allow them to do
16 much inhouse, noting that there was much expertise in the organization and the potential to hire
17 experts where needed, which was all within budget and would provide a savings to the LCWA.
18 He said that there was a large project that would take place at the NuRF site while still operating
19 the NuRF.

20 Mr. Rollins questioned if there was an estimate for the purchase of equipment over time.

21 Mr. Bonilla replied that they would like to purchase equipment over a period of at least
22 three years, and noted that the Public Works Department also had equipment and staff that could
23 be utilized on this site.

24 Mr. Rollins commented that he was in favor of this idea, as it could save funding; however,
25 he opined that the LCWA would not want to save funding in one area and lose that savings by
26 purchasing additional equipment. He opined that using a phased approach and economies of scale
27 by utilizing equipment from the Public Works Department would be fine.

28 Mr. Germeroth opined that there was about \$1.5 million in equipment needs.

29 Mr. Bonilla clarified that there was about \$3 million worth of equipment listed in the
30 presentation that would be phased in, and that they would share resources with the County.

31 Mr. Germeroth indicated that he was in favor of this.

32 Ms. Zenishek opined that this was similar to the process of revamping the stormwater
33 management, and that even though it may require a large initial capital investment, it could
34 possibly amount to a savings of millions of dollars in the long run.

35 Mr. Bonjorn opined that there should be opportunities, if all parties agreed, that some of
36 the existing employees there could stay with the NuRF; furthermore, he wanted to ensure that the
37 LCWA would continue to implement safety procedures, as this had been an important priority at
38 the beginning of the project.

39 Mr. Hendrick opined that in 2019 the NuRF was in disarray, there were safety issues, and
40 the LCWA was spending too much funding with not much return on investment, which was why

1 he wanted to privatize it and bring in Woodard and Curran. He opined that they had done a great
2 job, and he indicated appreciation to them for doing what they did. He pointed out that the NuRF
3 had evolved and was heading in a different direction, and opined that the LCWA did not need to
4 purchase all the fancy equipment they had.

5 Mr. Germeroth inquired about the scroll for the NuRF.

6 Mr. Bonilla answered that it was scheduled to be received by April 2, 2026. He commented
7 that staff would be introduced to the LCWA and key properties, such as the Lake Denham property
8 and other potential properties along the Harris Chain of Lakes. He opined that the LCWA wanted
9 to get ahead of the issues, and that it would require large projects. He mentioned that they had
10 been reaching out the State Legislature and the Federal Government for funding, and that this was
11 a more comprehensive strategic plan working both inhouse and with external partners as needed,
12 opining that this was a wholistic team effort and would entail plenty of work.

13 Mr. Scott Rowland, with Woodard and Curran, stated that the scroll was coming, and that
14 once it cleared customs, it would be transported to the project, noting that they were currently
15 coordinating with GEA for the installation, which could possibly be in the second week of April
16 2026.

17 Mr. Hendrick asked how long it would take to get it running once it arrived, and Mr.
18 Rowland indicated that it would take one week.

19 On a motion by Ms. Zenishek, seconded by Mr. Rollins and carried unanimously by a vote
20 of 5-0, the LCWA Board approved the following: to authorize the LCWA Attorney to provide
21 Woodard and Curran with written notice of the LCWA's intention to terminate the operations and
22 maintenance agreement effective September 30, 2026; to fund four new positions for the
23 operations and management of the NuRF facility and other LCWA properties; and to purchase the
24 necessary equipment in phases.

25 Mr. Bonilla commented that the Board would receive more information at the following
26 budget presentation, such as funds for the programs, operations, multi-phase priority projects, and
27 other legislative priorities. He recalled that in January 2026, the Board approved hiring
28 Continental Strategy for lobbying, and noted that they had been providing updates. He mentioned
29 that out of the 2026 legislative priority projects, two of the three projects had been partially funded
30 at the Florida House level, and that they expected that these projects would be funded at a higher
31 level. He pointed out that according to the math, the LCWA was receiving over \$400,000, opining
32 that this was a good return on the investment of about \$50,000. He remarked that this was the first
33 time the LCWA had opened the doors at the State level, and that they would do the same at the
34 Federal level.

35 Mr. Hendrick opined that Continental Strategy was great, as they put the LCWA request
36 together quickly and presented it to the State Legislature, noting that he enjoyed the updates.

37 Mr. Bonilla displayed a list of 15 legislative priority projects, and hoped that it would be
38 reduced to 10 at the following meeting and five by the main meeting. He commented that they
39 would like to have the prepared package no later than the middle of June 2026 so that they would
40 have time to review it and send it to the lobbyist in the City of Tallahassee. He requested that the

1 Board choose the top 10, which could be chosen at the current meeting or sent to him via email,
2 and that they would then work accordingly. He mentioned that there were a couple of projects that
3 were countywide, including projects that tied to what Ms. Hardy presented, and that there were
4 many phases to each of the projects, such as Hicks Ditch and the NuRF, noting that since these
5 projects had some traction and momentum, staff wanted to follow up and obtain additional
6 funding. He remarked that regarding rebranding, the Office of Communications could come back
7 at the April 22, 2026 LCWA meeting, and he showed a list of possible names. He asked that the
8 Board would each send him the top five or six choices, and that staff would put together a
9 presentation for consensus at the following meeting.

10 Ms. Zenishek inquired if something different could be submitted if a member of the Board
11 thought of a different name.

12 Mr. Bonilla answered that this could be sent to him, and that he would ensure that all the
13 Trustees had that information.

14 Mr. Hendrick questioned where the current list came from.

15 Mr. Bonilla replied that it came from staff based on conversations and research, and opined
16 that they reflected existing programs and goals of the LCWA. He commented that the annual
17 report going to the City of Tallahassee would look different than in the current year, as there was
18 more being added to the LCWA. He mentioned that in the packet there was a brief description of
19 each legislative priority project, and that even though it was not a complete summary, it gave an
20 idea of what each one represented.

21 Mr. Rollins commented that he liked the overall budget and direction, and he inquired if
22 the current projected budget was based on keeping the millage the same.

23 Mr. Bonilla stated that they would be bringing those numbers of 0.2940 mills as the current
24 millage rate, and pointed out that in the staff report, it showed that the adopted budget included
25 over \$13 million, noting that year to date, the LCWA had only received about \$10 million. He
26 said that they would bring before the Board potentially the same millage rate of 0.2940 mills to
27 discuss and make recommendations for any adjustments, and noted that this would be presented
28 to the BCC at the June 9, 2026 BCC meeting for consideration.

29 Mr. Hendrick indicated his understanding that the LCWA would not receive anything back
30 from the Lake County Property Appraiser until July 2026.

31 Mr. Bonilla said that this was correct, and mentioned that in September 2026 the LCWA
32 would weigh in with the BCC via a letter explaining what the LCWA Board would like to see
33 happen before the September 2026 public hearing.

34 FWC CONTRACT RENEWAL/AMENDMENT

35 Ms. Boggus stated that they had been asked to try to negotiate different rates with the FWC,
36 which they were actively doing, and noted that they had a proposed letter that they would like
37 approval on.

38 Mr. Bonilla recalled that the Board had considered this contract in the previous year, and
39 that the FWC came before the Board and spoke about the great job staff was doing; however, staff
40 felt that it was time to renegotiate the rates with the FWC. He commented that since the contract

1 expired in June 2026, they had sent the FWC this letter to see if there were going to be any changes
2 to the rates, and that the Board could consider whether the LCWA staff, equipment, and resources
3 should be used on what was the responsibility of the FWC.

4 Mr. Hendrick inquired if Mr. Bonilla was going to bring back a number to decide on.

5 Mr. Bonilla commented that staff would invite FWC to meet before the following LCWA
6 meeting to get more information so that it could be decided whether or not to get a contract in
7 place.

8 Ms. Zenishek asked if there had been any information received back from the public
9 records request in May 2025.

10 Ms. Boggus answered that they had not received anything yet, and said that she had
11 submitted another public records request. She remarked that the FWC was going to do a rate study
12 to determine what their new rates would be; however, this would not be completed prior to the
13 contract ending. She explained that they were trying to negotiate something until the FWC came
14 out with their new rates, which would be in the following year.

15 Ms. Zenishek relayed her understanding that the FWC rates had been the same for about
16 10 to 15 years.

17 Ms. Boggus commented that the FWC was currently doing a rate study; however, they
18 would not issue the new rates until after the LCWA contract expired. She remarked that before
19 the LCWA renewed the contract at the same rates or potentially the new rates, they wanted to see
20 if they could negotiate first.

21 Mr. Bonilla pointed out that the LCWA did much to support several of the FWC programs,
22 including funding the creel survey, and that it had been noted how great of a job staff did. He
23 mentioned that the LCWA wanted to be compensated fairly, and that it was not feasible to continue
24 to operate at the same rate that had been in place for many years, as everything cost more, including
25 equipment that needed to be repaired or replaced and fuel cost increases, opining that it was only
26 fair that the FWC should raise their rates. He commented that they would present the numbers at
27 the following meeting.

28 REPORTS

29 LEGAL COUNSEL REPORT

30 Ms. Boggus mentioned that it was her birthday.

31 Mr. Hendrick asked if there had been any response to the letters sent to the City of Mount
32 Dora.

33 Mr. Bonilla answered that regarding the Thrill Hill property, he had received an email from
34 the Mount Dora City Manager saying that the property was under contract.

35 Mr. Hendrick wondered who would have control of that, opining that it needed much work
36 to bring it up to standard.

37 Ms. Zenishek opined that it may be discussed at the following City Council meeting.

1 BOARD MEMBER COMMENTS AND ITEMS FOR FUTURE AGENDA

2 JONATHAN GERMEROTH – DISTRICT 5

3 LAKE DENHAM PROJECT

4 Mr. Germeroth commented that he visited Lake Denham, and asked Mr. Carl Salafrio, with
5 Barge Design Solutions, to give an update, opining that it looked great.

6 Mr. Salafrio stated that Mr. Matt Biegler, President of Southeast Soils, Inc., had retired,
7 and that Mr. Anthony Hatz, with Southeast Soils, was their new contact, noting that he would
8 provide that contact information to the LCWA. He showed some pictures, and related that they
9 were progressing more quickly than was expected. He elaborated that they were done with cell
10 one and were in the middle of cell two, and opined that by the end of the year, the whole bottom
11 half of the site would be excavated and done. He explained that they excavated down to the clay,
12 which was what was left once the hydric soil with the nutrients was out, and that they would
13 probably spread some material on what would be the marsh bottom and use that to grow the plants.
14 He displayed a picture of the road, and commented that they had done a good job managing the
15 site and keeping the roads open with lime rock on them, noting that the berms were all intact so
16 that there was no intrusion from the lake. He mentioned that they had brought electricity in to
17 power the pumps instead of using diesel fuel, and that they were still operating the alum tank,
18 noting that whenever they discharged at certain volumes, they injected the alum into the waste
19 stream. He relayed that he checked on it once a month and kept pump logs so that they knew how
20 much was being pumped offsite.

21 Mr. Bonjorn indicated his understanding that the roads were good, opining that it was very
22 difficult to navigate at the start.

23 Mr. Salafrio reiterated that the roads and berms were intact, and that they had brought in
24 many truckloads of lime rock.

25 Mr. Germeroth asked if they had to pump since it had been very dry.

26 Mr. Salafrio remarked that they had not pumped in a while, and noted that when it was this
27 dry, they could get much done without pumping.

28 Mr. Hendrick opined that because of the dry weather and the cold, the invasive species
29 would not be as bad to deal with.

30 Mr. Salafrio pointed out that they had been mowing the property, and that this kept the
31 invasive species down without the use of chemicals; however, he opined that eventually it would
32 have to be dealt with.

33 KRISTAN ZENISHEK – DISTRICT 3

34 STORMWATER AND THE MS4

35 Ms. Zenishek said that with all the work staff was doing with the stormwater and the MS4,
36 there was also a very important meeting with the U.S. Army Corps of Engineers Silver Jackets
37 Team working on emergency action plans, opining that it was very fruitful.

38 ECO EXPO

39 Ms. Zenishek opined that the Eco Expo was great, and said that she was glad to see many
40 participants and vendors, including Friends of the Wekiva River.

1 LEADERSHIP LAKE COUNTY

2 Ms. Zenishek remarked that staff hosted and presented to Leadership Lake County, and
3 that the County was partnering with different agencies.

4 HEARTLAND LEAGUE OF CITIES

5 Ms. Zenishek relayed that since the LCWA approved the Heartland League of Cities
6 meeting to be at Hickory Point Park, staff would be able to do a presentation there, become more
7 acquainted with the Cities, and build relationships, and she hoped that it would result in a smoother
8 way forward.

9 Mr. Hendrick wondered how often this would be held there.

10 Mr. Bonilla relayed his understanding that there could be one and potentially two per year,
11 and that the LCWA would host it and provide an overview of what the LCWA did, noting that
12 there would be representation from all of the Cities and stakeholders.

13 DROUGHT

14 Ms. Zenishek mentioned that on the LCWA social media page, Lake County was in phase
15 two of the severe shortage of water because of the drought, noting that there were instructions
16 posted there. She commented that even though south Lake County had different regulations
17 because it was in a more advanced level of drought, the Lake County local standards included the
18 following: nonresidential watering was only for once a week on Tuesdays; odd numbered
19 residential addresses watered once a week on Saturday and even numbered addresses watered once
20 a week on Sunday; and the first violation was a written warning and the second violation was a
21 \$50 fine, noting that it would double each time.

22 GAVIN ROLLINS – DISTRICT 1

23 PRESENTATIONS

24 Mr. Rollins expressed appreciation to staff for the presentations, opining that the
25 stormwater strategy was exciting.

26 TRAMPIS BONJORN – DISTRICT 2

27 GREAT JOB

28 Mr. Bonjorn opined that staff was doing a great job, and that what was being done was
29 very impressive. He opined that there were many opportunities ahead and exciting work to do,
30 and he indicated appreciation for all the hard work.

31 ROBERT HENDRICK – DISTRICT 4

32 WOODARD AND CURRAN

33 Mr. Hendrick expressed appreciation to Woodard and Curran for getting the NuRF back
34 into shape and keeping it going until the current time, noting that there was currently a different
35 situation.

36 ANNOUNCEMENT OF UPCOMING MEETINGS AND EVENTS

37 Regular Board Meeting Including 2nd Budget Workshop, Wednesday, April 22, 2026
38 (3:30 p.m.), BCC Chambers/Admin. Building

39 Stories of Water, Friday, March 27, 2026 (9:00 a.m. – 12:00 p.m.), Sawgrass Preserve

1 Wetland Excursion, Saturday, April 4, 2026 (9:00 a.m. – 12:00 p.m.), Hidden Waters
2 Preserve

3 Watershed Wednesday, Wednesday, April 8, 2026 (10:00 a.m. – 12:00 p.m.), Hickory
4 Point Pavilion

5 Stories of Water, Friday, April 17, 2026 (9:00 a.m. – 12:00 p.m.), Bourlay Historic Nature
6 Park

7 Paddling Adventure, Friday, April 24, 2026 (9:00 a.m. – 12:00 p.m.), Double Run Preserve,
8 Astatula Boat Ramp

9 ADJOURNMENT

10 There being no further business to be brought to the attention of the Board, the meeting
11 was adjourned at 4:56 p.m.

12
13
14
15
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17
18
19 _____
20 ROBERT HENDRICK, CHAIRMAN

21
22 ATTEST:

23
24
25 _____
26 GARY J COONEY, CLERK



**Lake County
WATER AUTHORITY**

Bobby Bonilla, Executive Director • Gary J. Cooney, Secretary - Treasurer

27351 SR 19 • Tavares, Florida 32778-4251 • (352) 324-6141 • Fax (352) 324-6364 • email: info@lcwa.org • www.lcwa.org

TO: Lake County Water Authority Board of Trustees

THROUGH: Bobby Bonilla, Executive Director

FROM: Marcia Bush, Associate Director, Water Resources

DATE: April 17, 2026

RE: Water Resources Monthly Staff Report

Consent Agenda – Tab 2

Water Resources Monthly Staff Report

Staff have prepared the monthly report to provide an informational update to the Board for activities conducted during the month of March. The report aligns with the programs, activities, goals and objectives adopted by the Board & provides a detailed overview of activities that have been performed by Water Resources staff throughout the month.

Executive Director's Recommendation:

1. For Informational Purposes Only.

BOARD OF TRUSTEES

Gavin Rollins
District 1

Trampis Bonjorn
District 2

Birdie Zenishek
District 3

Butch Hendrick
District 4

Jonathan Germeroth
District 5



Lake County
WATER AUTHORITY

MONTHLY REPORT

March 2026

MONTHLY REPORT OVERVIEW

The monthly staff report covers the LCWA activities for each Water Authority Program and its related activities and objectives

- Water Quality
- Storm Water
- Development Reviews
- Aquatic Plant Management & Waterway Maintenance
- Water Control Structures & Waterway Safety
- Land Management
- Conservation & Acquisition
- Community Engagement



Lake County
WATER AUTHORITY

WATER QUALITY

Wildfire Management Coordination Emergency Management Meeting

On Monday March 2, 2026 staff attended a Wildfire Management coordination meeting hosted at the Lake County Emergency Communications and Operations Center (ECOC). The meeting brought together representatives from Lake County departments, municipal governments, and partner agencies to improve interdepartmental understanding of policies, practices, and procedures related to brushfire prevention, preparedness, and emergency response. Participants reviewed coordination protocols, communication pathways, and resource-sharing strategies to ensure an effective and unified response during wildfire events.

Representatives from the Florida Fish and Wildlife Conservation Commission and the Florida Forest Service also participated, outlining procedures for requesting and mobilizing state assistance during local wildfire emergencies. Discussions emphasized the importance of regional coordination, situational awareness, and proactive planning to help reduce wildfire risks and protect natural resources, infrastructure, and communities across Lake County.

Jones Ave & McDonald Canal Meeting & Discussion with SJRWMD

On Tuesday March 3, 2026, staff participated in a coordination meeting with representatives from the St. Johns River Water Management District to discuss ongoing and potential projects related to stormwater management and drainage conditions in the areas surrounding Jones Road/Duda Road, the McDonald Canal, and the Yale-County Road 452/First Federal Pump area.

The meeting focused on reviewing existing infrastructure, identifying drainage concerns, and discussing opportunities for improved stormwater conveyance and water quality protection within the watershed. Staff and District representatives also discussed coordination on future planning, data sharing, and potential project partnerships to support long-term watershed management objectives in the surrounding area.

Meeting with Township of Howey-In-The-Hills

Staff met with representatives from the township of Howey in the Hills regarding their current and upcoming development plans. The goal of this meeting was to ensure that water related needs were being appropriately addressed in the development review and approval processes.

In particular, the stormwater relationship between municipalities and the surrounding County regulated areas were reviewed. Staff emphasized that measures need to be taken at all levels to ensure that flood risks are evaluated beyond independent developments and into surrounding areas.

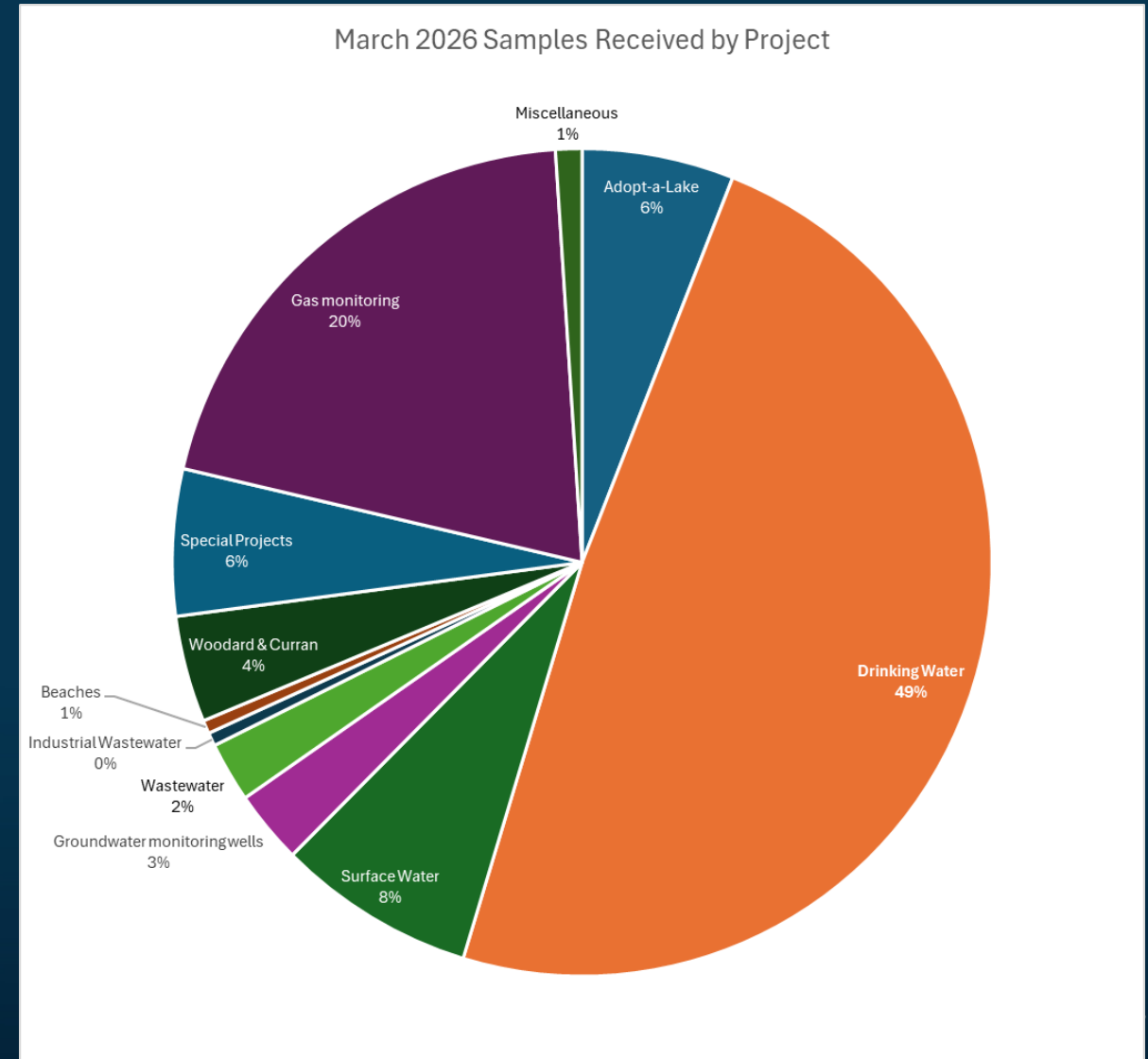
WATER QUALITY MONITORING

The Water Quality Lab received/collected a total of 384 water samples and performed a total of 2,080 analyses in March.

A breakdown by sample type is provided on the following slide.

Number of Samples: 384

Analyses Performed: 2,080



WATER QUALITY MONITORING

	#of samples	Sample Type	Typical Analytes/Project
Adopt-a-Lake	23		Field (Secchi,temperature, pH), E.coli, alkalinity, chlorophyll, color, total nitrogen (TN), total phosphorus (TP), turbidity, total suspended solids (TSS)
Drinking Water	187	LC wells, residents, Health Dept., Well companies, Home Inspectors, realtors	Bacteria (total coliform/E.coli), nitrate, nitrite, lead, iron hardness, copper, arsenic
Surface Water	30	LC and external collectors	Field (secchi, temperature, pH, dissolved oxygen (DO), conductivity), E.coli, alkalinity, chlorophyll, color, ortho phosphorus, total nitrogen (TN), total phosphorus (TP), turbidity, total suspended solids (TSS), metals
Springs	0		Field (temperature, pH, dissolved oxygen (DO), conductivity), alkalinity, color, ortho phosphorus, total nitrogen (TN), total phosphorus (TP), turbidity, total suspended solids (TSS), total dissolved solids (TDS), ammonia, sodium
Groundwater Monitoring Wells	11	LC Landfill and City of Eustis	Field (temperature, pH, dissolved oxygen (DO), conductivity, depth, purge rate/time), turbidity, total dissolved solids (TDS), ammonia, metals, chloride, nitrate, subcontract (organics, mercury)
Wastewater	9	City of Eustis	Nitrate, Total Kjeldahl Nitrogen (TKN), total phosphorus (TP)
Industrial Wastewater	2	Leesburg Regional Hospital, AdventHealth Waterman, Power Technology, Universal Beverage, North Campus Rehab and Nursing, Vermeer	Field (pH), chloride, metals, subcontract (organics, mercury, cyanide, oil & grease)
Beaches	2	Hickory Point, Exploria Resorts, ACA Camp	Fecal coliform
Woodard & Curran	16	NuRF	Total phosphorus, aluminum
Special Projects	22	AB Canal area, Yale area (including Marsh Park wells), Denham Muck Farm, Wolfbranch, Pine Meadows	Field (secchi, temperature, pH, dissolved oxygen (DO), conductivity), E.coli, alkalinity, chlorophyll, color, ortho phosphorus, total nitrogen (TN), total phosphorus (TP), turbidity, total suspended solids (TSS), metals
Gas Monitoring	78	Landfill	Methane
Miscellaneous	4	Quality Control, Certification, citrus maturity, out of state, farm water	Varies

Total Number of Samples: 384, Analyses Performed: 2,080

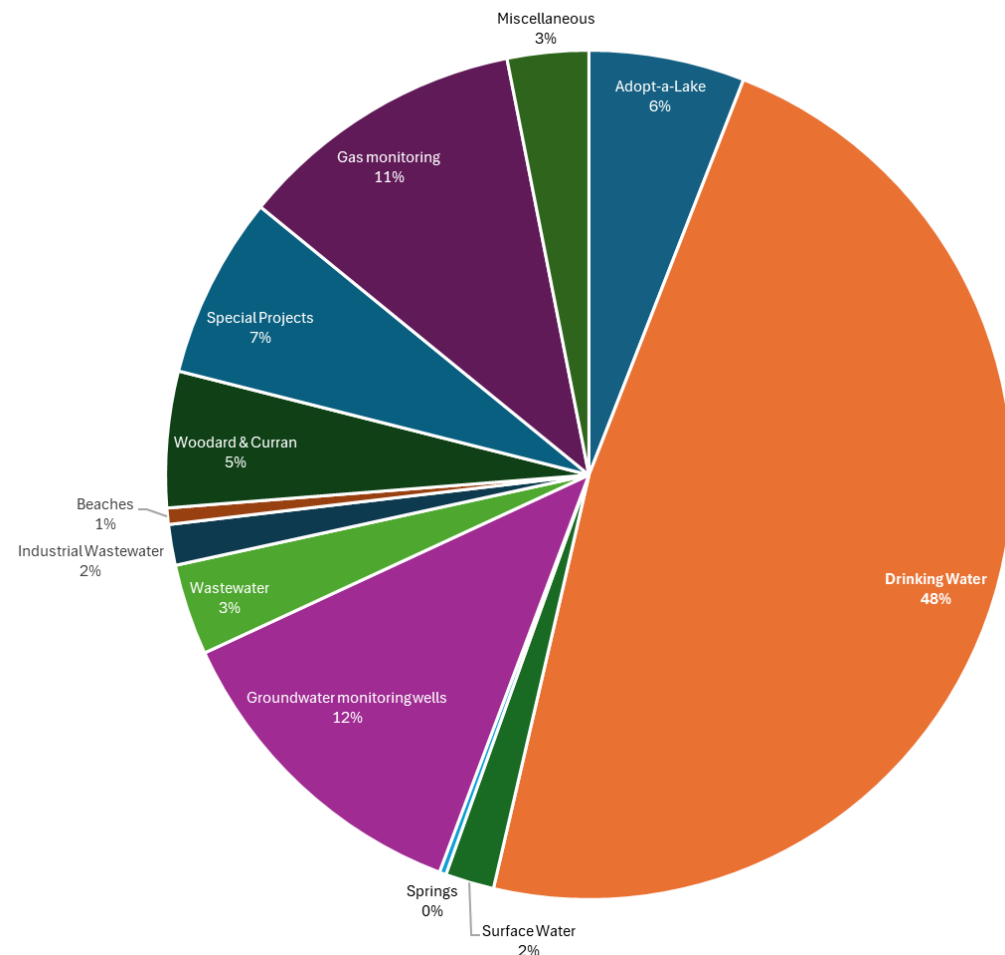
FYTD WATER QUALITY MONITORING

This fiscal year to date (FYTD), October 2025 through March 2026, the Water Quality Lab received/collected a total of **1,932** water samples and performed a total of **10,390** analyses

Number of Samples: 1,932
Analyses Performed: 10,390

Project	#samples
AAL	115
Drinking Water	921
Surface Water	36
Springs	5
Groundwater Monitoring Wells	239
Wastewater	67
Ind. Wastewater	30
Beaches	12
NuRF	100
Special Projects	134
Gas Monitoring	213
Misc.	60
Total	1,932

Cumulative October 2025 through March 2026 - Samples Received by Project



WATER QUALITY PROJECTS

Nutrient Reduction Facility

- 151 Pounds of Phosphorus was removed for the month of March.
- The new scroll has been received and installed
- Any phosphorus removal is attributed to residual alum inside of the NuRF holding ponds

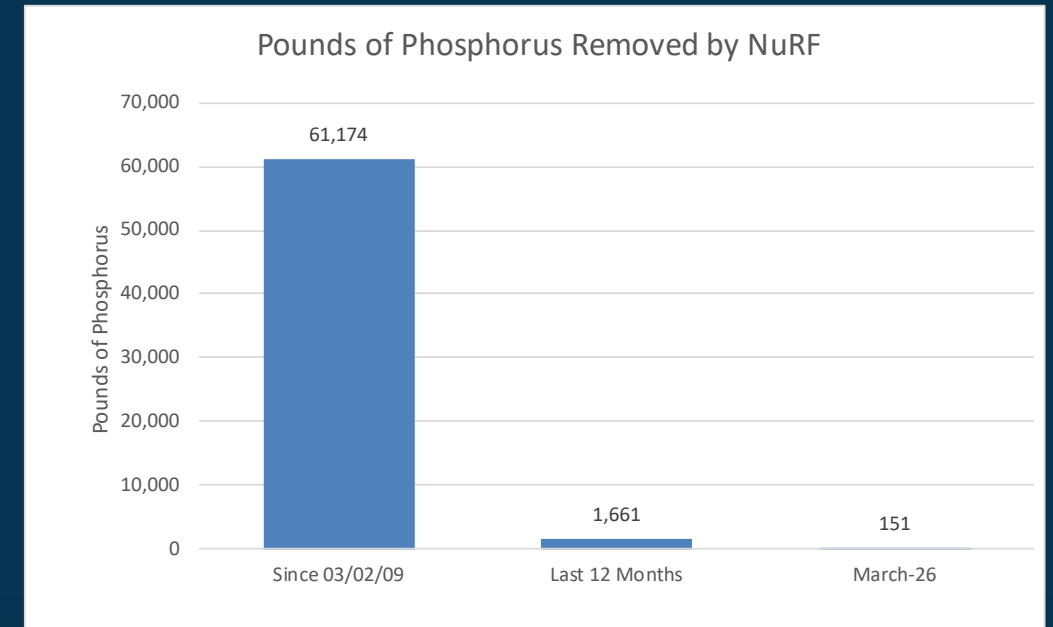


Figure 3. The NuRF's facility's total phosphorus reduction is based on the concentration and flow since the NuRF went into production, for the last 12 months and the month of March 2026.

Water Quality – NuRF Inflow/Outflow Monitoring

The NuRF received below average flow throughout March. Flows through the NuRF averaged 12.7 cfs and ranged from 2.4 to 36.5 cfs. No water was released through the Apopka/Beauclair dam during March.

Average (non-flow weighted) inflow total phosphorus concentration to date is 112.5 ppb (Figure 2). The NuRF has removed 55% of the incoming total phosphorus mass to date. The removal percentage does not consider the fact that not all phosphorus exiting the facility is bioavailable. Average (non-flow weighted) total phosphorus concentration in the NuRF discharge to date is 50.1 ppb, which is above Lake Beauclair's TMDL of 32.0ppb. The average phosphorus discharged (not bioavailable) from the NuRF during March was 98.8 ppb and the average total phosphorus discharged from the NuRF during the last 12 months was 94.0 ppb (Figure 2). Total phosphorus levels coming from the Apopka-Beauclair Canal for the last 12 months averaged 152.8 ppb. The NuRF has removed 38% of the total phosphorus during the last 12 months.

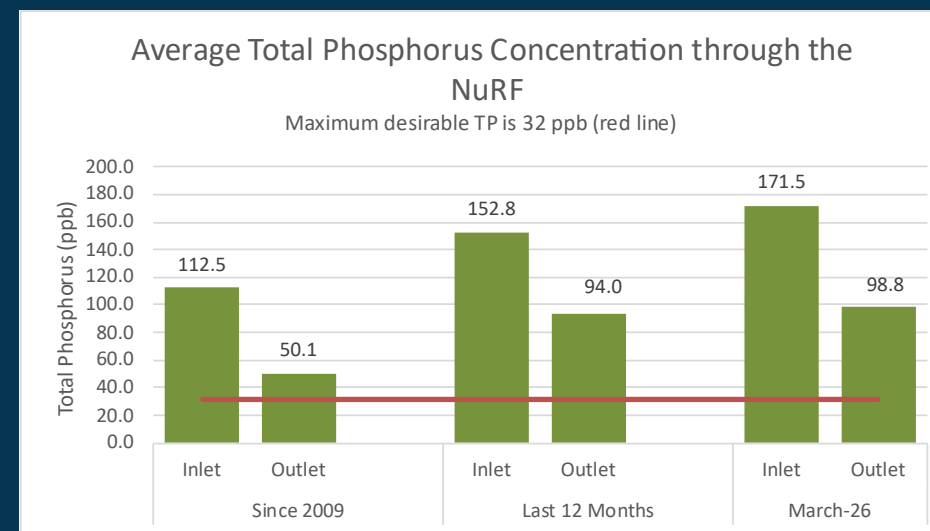


Figure 2. Total phosphorus concentration, based on average flow rate reported by SJRWMD and weekly total phosphorus data, estimated into and out of the facility since the NuRF went into production, during the past 12 months, and during March 2026.



Lake County
WATER AUTHORITY

STORMWATER

- Staff worked with the Association of State Floodplain Managers and Florida Floodplain Manager's Association to garner support for reinstatement and refunding of CRS Program contract
- Attended 1000 Friends of Florida Legislative Wrap-up to discuss bills impacting planning, development, and environmental law in this legislative session
- Worked with Building and Planning to complete SB 180 documentation compliance
- Attended 5 Development Review Services meetings with applicants regarding projects in progress

- Staff Attended 1 Floodplain class on Floodplain Design, Construction, and Impacts on Flood Insurance
- Staff responded to 7 complaints during the month
 - 3 Road Ops is addressing
 - 1 was referred to SJRWMD
 - 2 were not in the county's jurisdiction
 - 1 was referred to be a civil matter
 - 1 Follow up meeting is scheduled on Complaint in the Hawthorne community





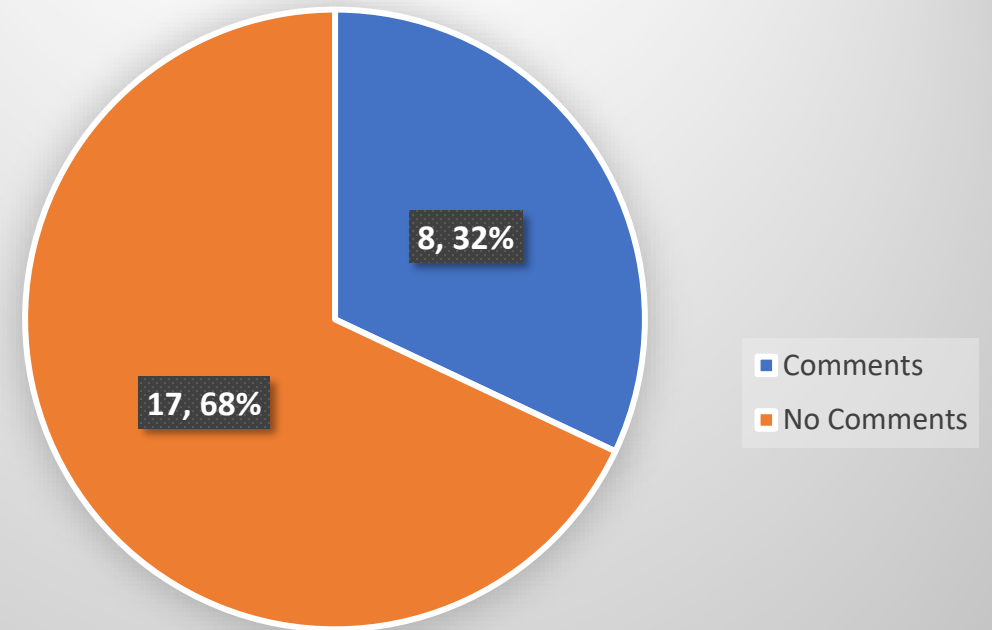
Lake County
WATER AUTHORITY

DEVELOPMENT REVIEWS

DEVELOPMENT REVIEWS

Staff Completed 25
Development Reviews
Completed In March and
provided comments on 8
reviews

March Completed Development Reviews





Lake County
WATER AUTHORITY

AQUATIC PLANT MANAGEMENT & WATERWAY MAINTENANCE

AQUATIC PLANT MANAGEMENT & WATERWAY MAINTENANCE

Aquatic Treatments

During the month of March staff conducted aquatic plant management across multiple water bodies, focusing on noxious invasive plant species including Water Hyacinth, Hydrilla, Water Lettuce, Salvinia, and others.

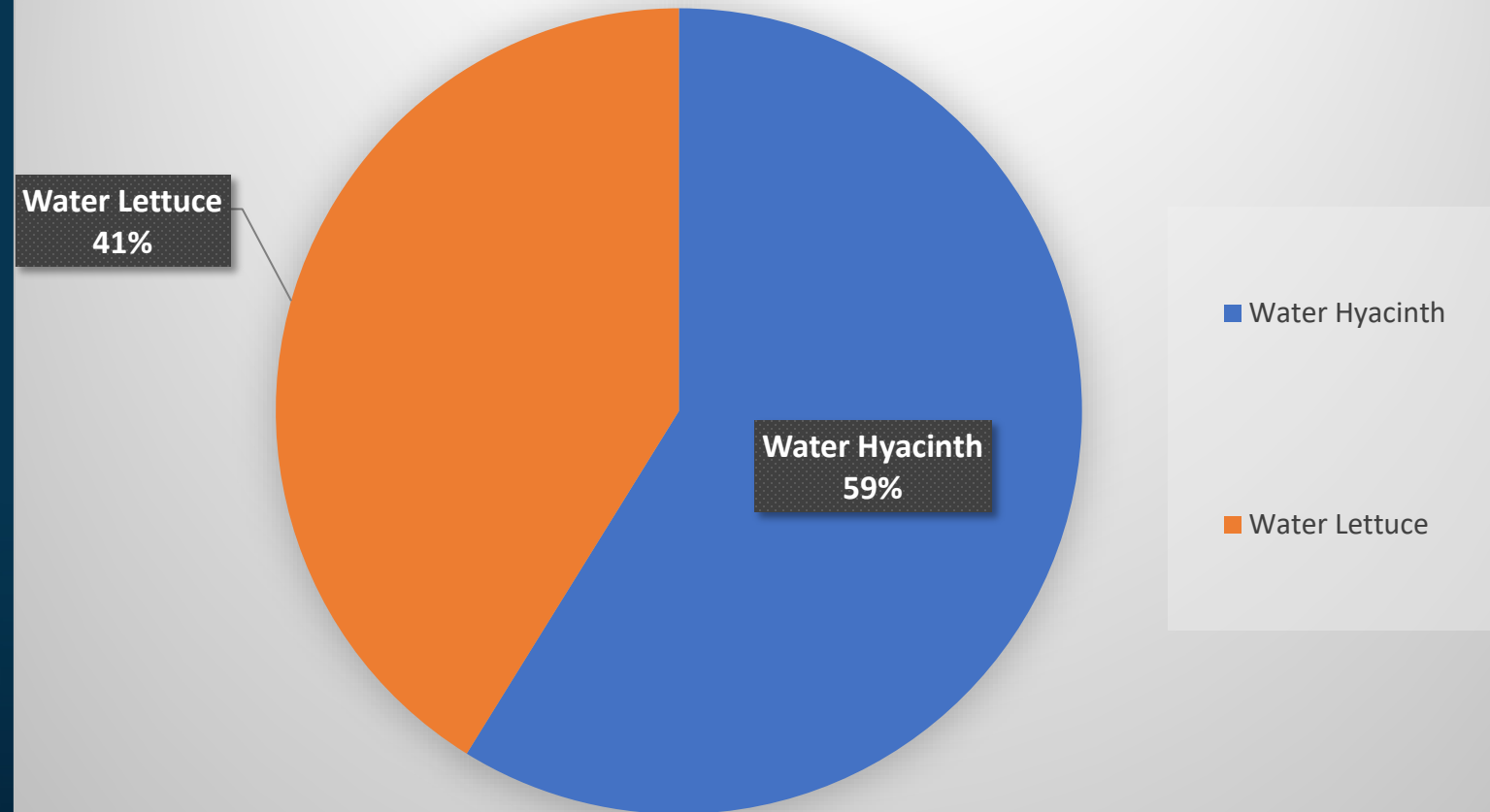
Staff responded to 27 service requests during the month



AQUATIC PLANT MANAGEMENT & WATERWAY MAINTENANCE

Staff applied
treatments
to **4.25** acres
on the Harris Chain of
Lakes during the
month of March

**March Treatments
Harris Chain of Lakes**



AQUATIC PLANT MANAGEMENT & WATERWAY MAINTENANCE

Waterway Maintenance

**AB Canal – Tree Removal Maintenance, Monday,
March 16, 2026**

As part of LCWA's Aquatic Plant Management and Waterway Maintenance Program, staff conducted preventative maintenance at AB Canal, which included the removal of a dead oak tree obstructing the waterway.

This effort was necessary to maintain safe and efficient water flow, reduce potential hazards, and prevent future debris accumulation. Proactive removal of large woody material helps preserve canal function and supports overall ecosystem health.



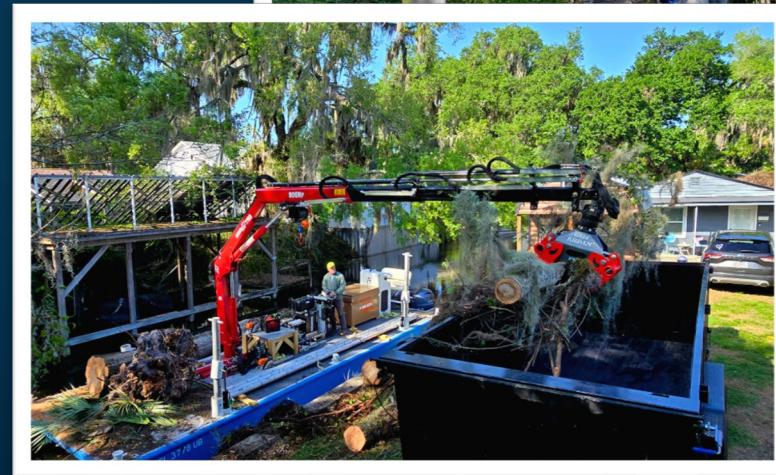
AQUATIC PLANT MANAGEMENT & WATERWAY MAINTENANCE

Waterway Maintenance

Orange Blossom Estates Canal (Dead River) – Obstruction Removal, Tuesday, March 17, 2026

In response to a customer request, staff addressed multiple tree obstructions within the Orange Blossom Estates Canal (Dead River), removing three trees that were impeding water flow.

This work improved navigability and reduced the risk of localized flooding or additional debris buildup. Addressing these concerns in a timely manner supports both community needs and the long-term functionality of the canal system.



AQUATIC PLANT MANAGEMENT & WATERWAY MAINTENANCE

Waterway Maintenance

**Lake Dalhousie – Access Gate Installation,
Friday, March 20, 2026**

As part of routine preventative maintenance, staff installed a secured access gate at Lake Dalhousie to improve site security and control entry to sensitive operational areas. This enhancement helps protect infrastructure, limit unauthorized access, and support safe and efficient maintenance activities.

Maintaining secure access points is an important component of preserving waterway assets and ensuring long-term management effectiveness.



AQUATIC PLANT MANAGEMENT & WATERWAY MAINTENANCE

Waterway Signage

Staff replaced aging and damaged regulatory signs on Little Lake Harris to improve navigation and boating safety

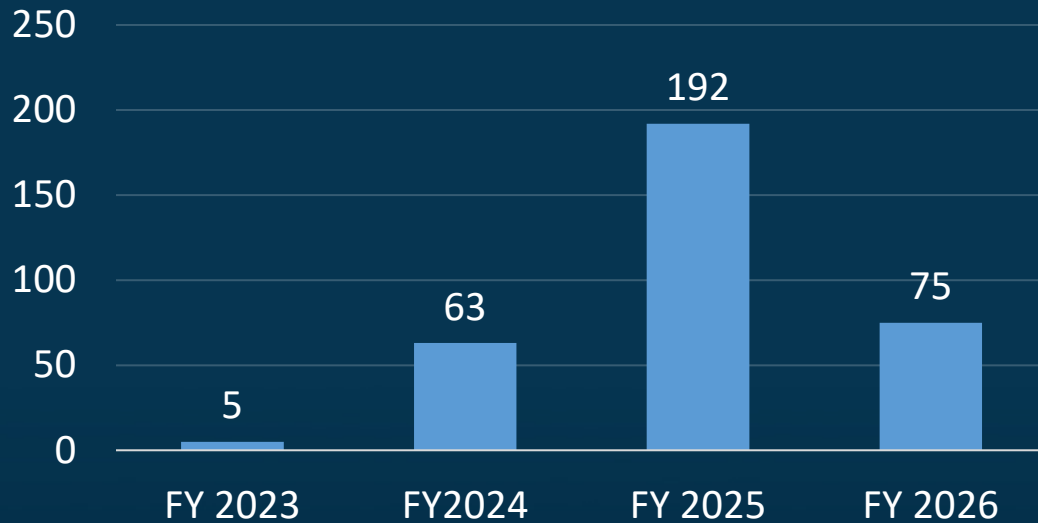
Updating signage enhances visibility, reinforces idle speed and safe operation zones, and supports safer recreational use of Lake County Waterways



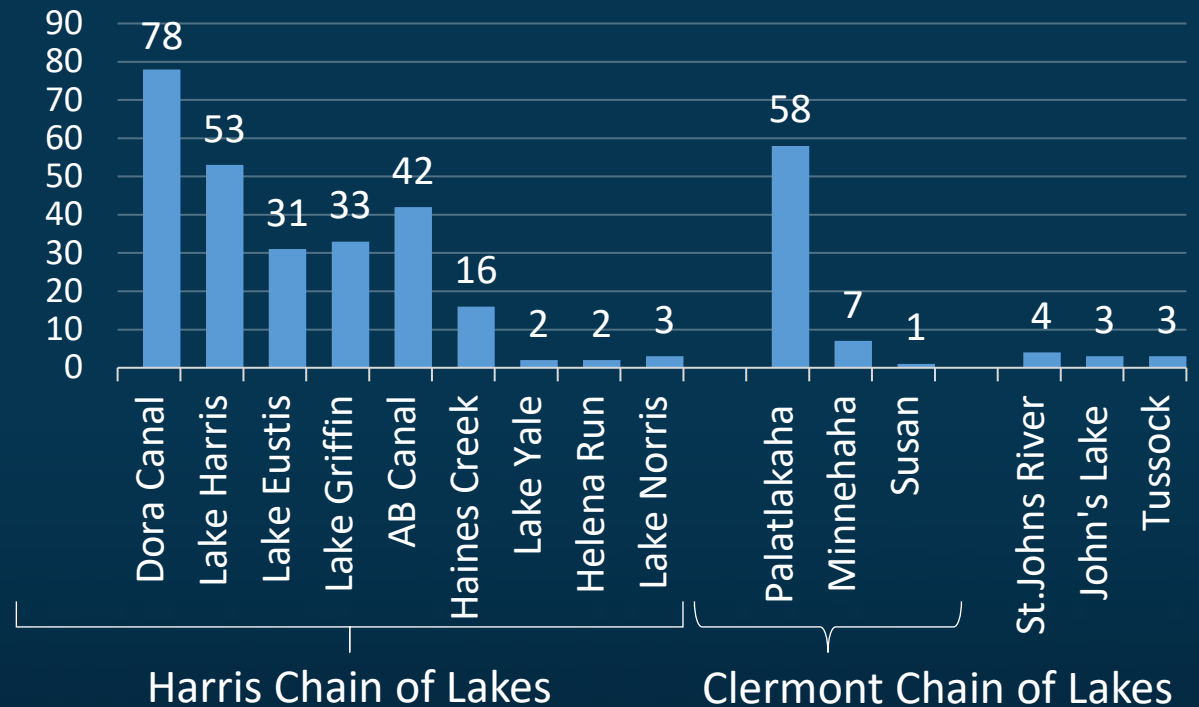
WATERWAY MAINTENANCE PROGRAM ACCOMPLISHMENTS

Navigational Impediments & Tree Removal

Tree Removal By Fiscal Year



Total Tree Removal By Waterway





Lake County
WATER AUTHORITY

WATER CONTROL STRUCTURES & WATERWAY SAFETY

EMERGENCY ACTION PLAN & FLOOD MODELING

Project Kickoff Meeting with USACE “Silver Jackets”

Staff had a meeting with the USACE Silver Jackets on the Flood Modeling and Emergency Action Plan development project funded through a grant provided by the Floodplain Management Services Program.

This multiagency project will provide vital information regarding the ongoing management of water control structures along the Palatlakaha.



US Army Corps
of Engineers®



WATERSHED MODELING

SJRWMD Palatlakaha Tour

Staff toured members of the St. Johns Water Management District along the Palatlakaha visiting all the water control structures and water storage areas from Cherry Lake to the M1 weir.

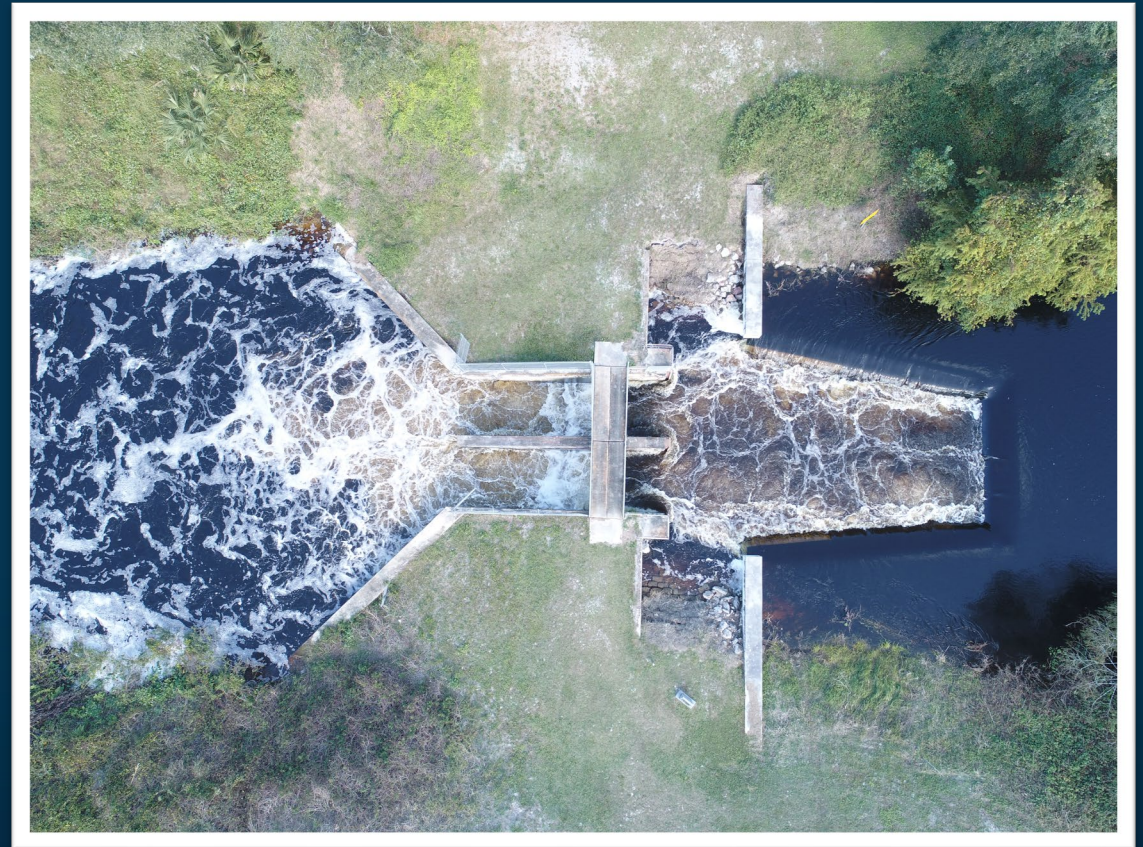
The District is cooperating with County staff on a modeling project that will help provide insight into the behavior of incoming and settling waters across the basin.



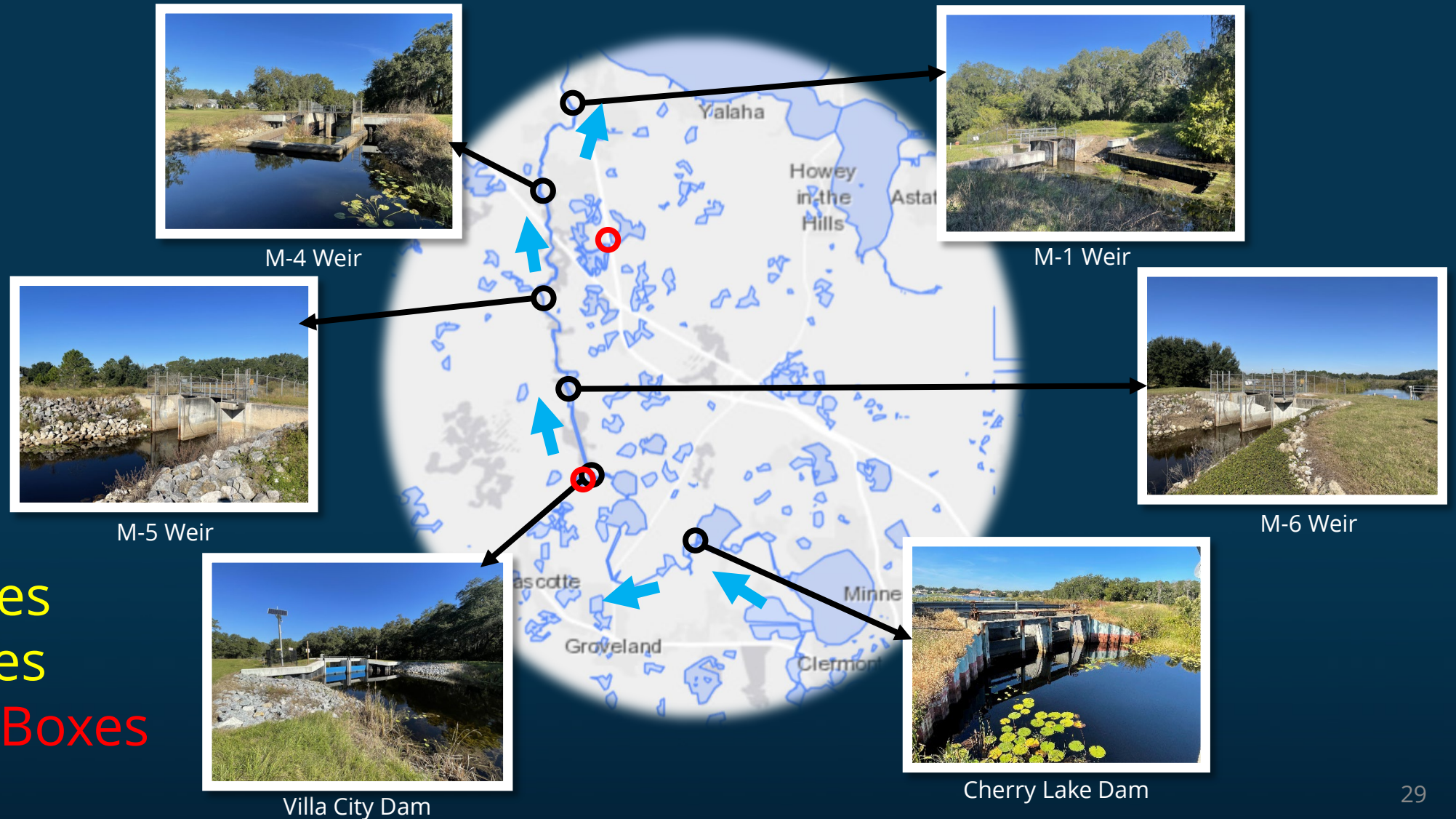
WATER CONTROL STRUCTURES

M1 Dam Site Pre-Bid Meeting

Wednesday, March 11, 2026, Staff conducted a pre-bid meeting with contractors at the M1 water control structure in Leesburg to discuss final permanent repairs. These repairs, partially funded by FEMA following Hurricane Milton, will address significant washout areas and replace missing riprap. Upon completion of this project, the M1 structure will be fully restored, and staff will initiate the final reimbursement process with FEMA.



WATER CONTROL LOCATIONS



- 2 Dam Sites
- 4 Weir Sites
- 2 Control Boxes
- Flow ←

DAM & WEIR INSPECTION

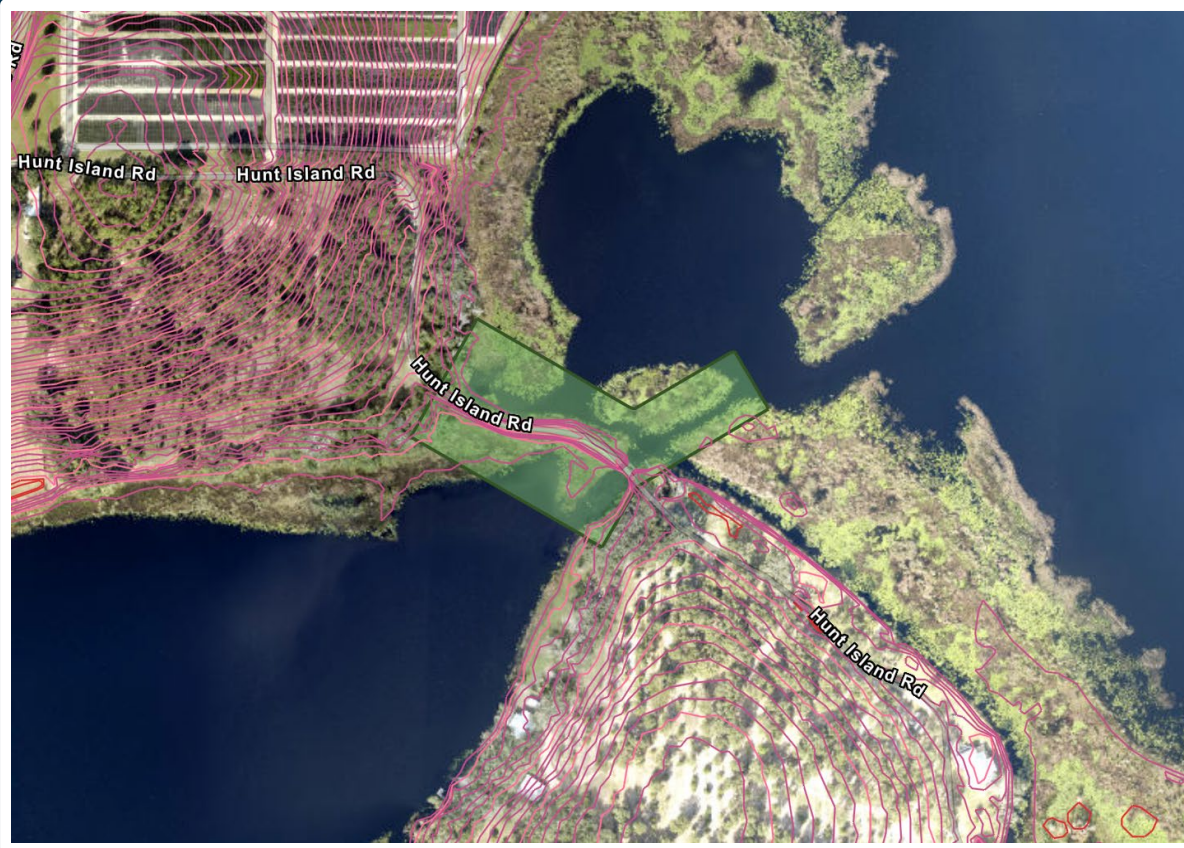
Cherry Lake Dam

Regulatory Vertical Datum
96.00 – 97.50

March Ending: 94.67'

Tasks Performed

- Below Water Site Inspection
- Water Data Collection & Monitoring
- Floating Debris/Obstruction Removal
- Vegetation Management
- Signs and Grounds Cleaning
- Site Resident Communications
- Continued USACE,
FEMA, and FDEP Emergency Action
Plan Creation and modeling



DAM & WEIR INSPECTION

Villa City Dam

Regulatory Vertical Datum

94.00 – 95.50

March Ending: **93.92'**

Tasks Performed

- Continued USACE, FEMA, FDEP Emergency Action Plan Creation and monitoring
- Data Collection & Monitoring
- Maintenance and Inspections
- Floating Debris/Obstruction Removal
- Vegetation Management
- Surveying and Acquisitions
- Adjustments



DAM & WEIR INSPECTION

M-6

Regulatory Vertical Datum

91.00 – 92.00

March Ending: **89.78'**



Tasks Performed

- Site Inspections
- Vegetation Management
- Grounds and Fence Maintenance
- Floating Debris/Obstruction Removal
- Water Data Collection & Monitor
- Continued USACE, FEMA,
and FDEP Emergency Action Plan Creation
and modeling

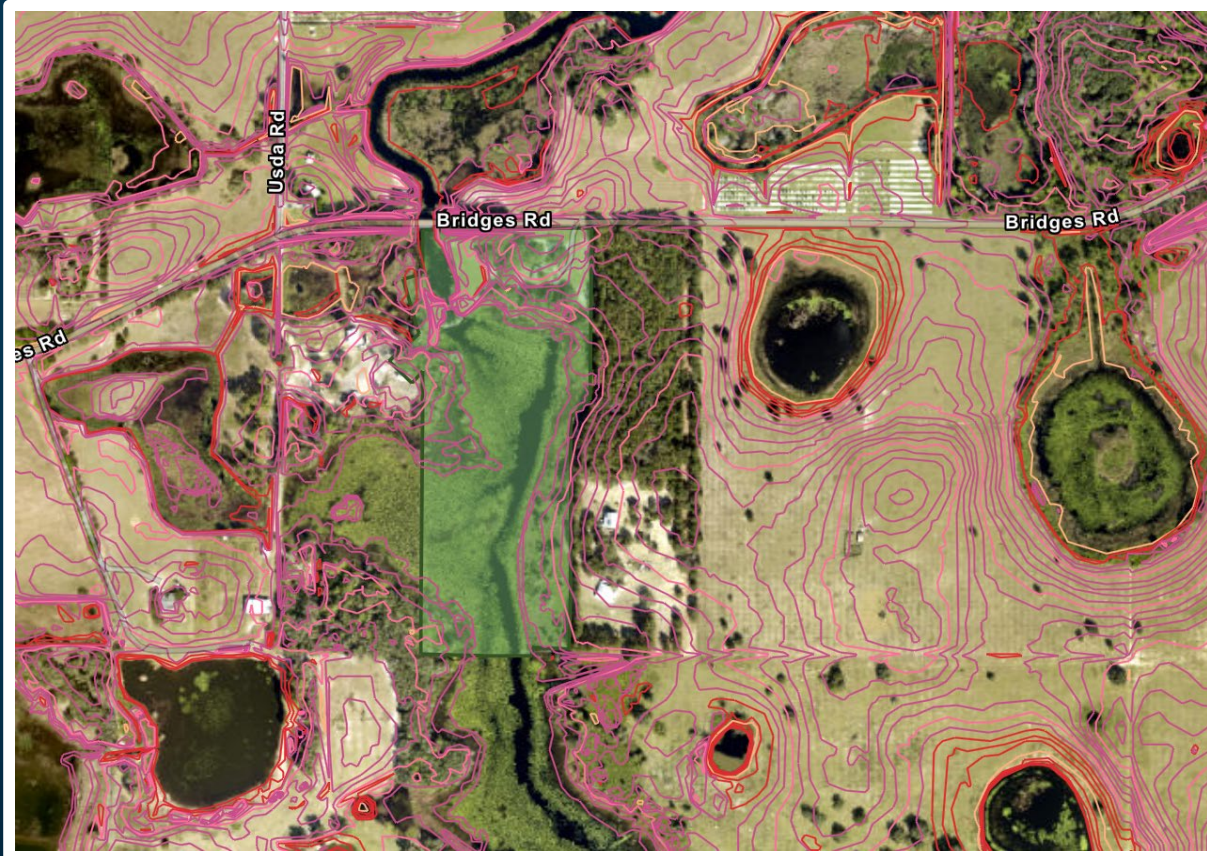
DAM & WEIR INSPECTION

M-5

Regulatory Vertical Datum

88.25 – 89.50

March Ending: **85.74'**



Tasks Performed

- Grounds Maintenance & Upkeep
- Mechanical Vegetation Management
- Chemical Vegetation Management
- Floating Debris/Obstruction Removal
- Water Data Collection & Monitoring
- Continued USACE, FEMA, FDEP Emergency Action Plan Creation and Modeling

DAM & WEIR INSPECTION

M-4

Regulatory Vertical Datum

83.75 – 85.00

March Ending: **81.71'**

Tasks Performed



- Site Inspections
- Vegetation Management
- Signs and Grounds Cleaning
- Floating Debris/Obstruction Removal
- Water Data Collection & Monitor
- Continued USACE, FEMA, FDEP Emergency Action Plan Creation and Modeling

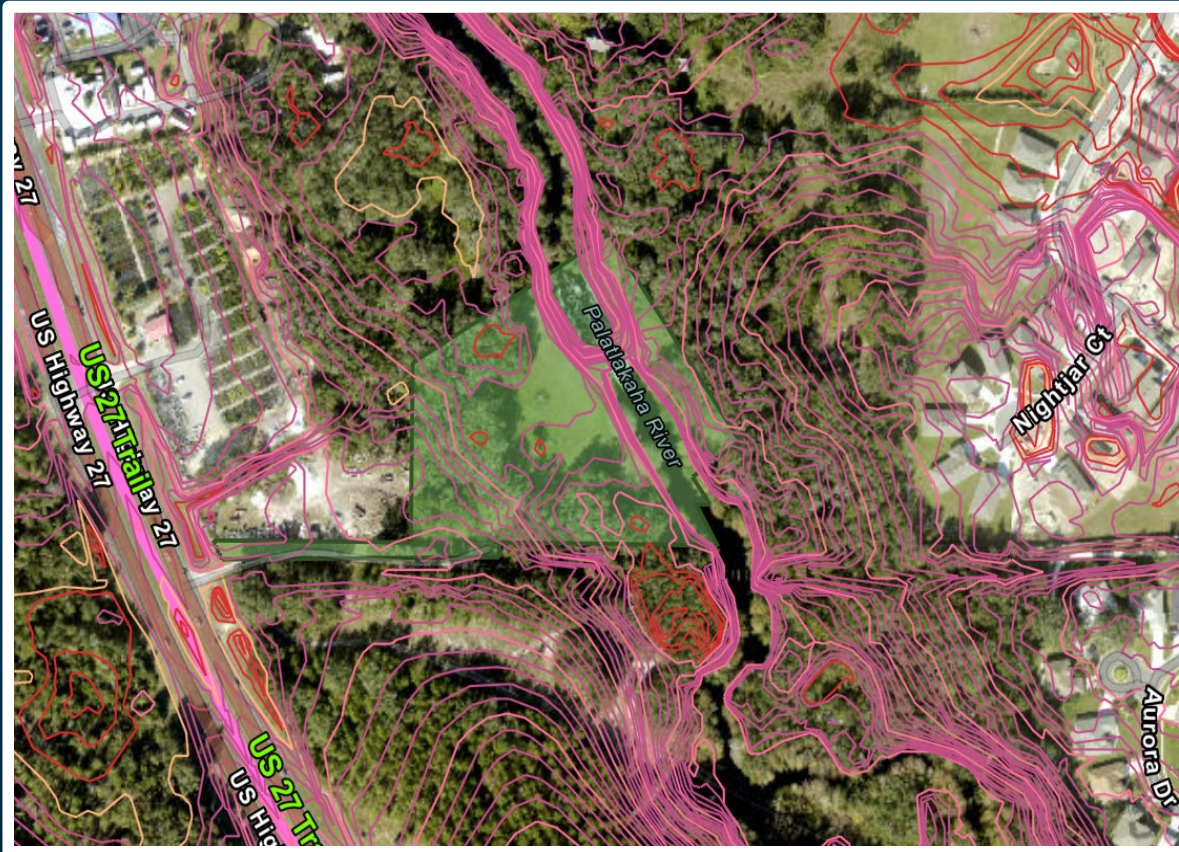
DAM & WEIR INSPECTION

M-1

Regulatory Vertical Datum

68.00 – 73.00

March Ending: 70.66'



Tasks Performed

- Continued USACE, FEMA, FDEP Emergency Action Plan Creation & Modeling, and funding assistance
- Grounds Maintenance
- Site Inspections
- FEMA Public Assistance – Permanent Repairs – Published formal RFQ
- Floating Debris/Obstruction Removal
- Water Data Collection & Monitoring

WATER CONTROL STRUCTURES

Water Control Structures Report

Water Control Structure Report –Average water level during March in Lake Minnehaha was 95.17 ft NGVD 1929, which is 0.19 ft less than the previous month. The March combined flow of Big and Little Creeks averaged 0.22 cfs into Lake Louisa. This flow rate is less than the evaporation rate of 70 cfs so the water level will decrease for the upper lakes of the chain. Both dams remain closed for the month of March. The lower pool between Cherry Lake and Villa City averaged 94.14 ft throughout March. Water levels as of April 1, 2026, and changes from the previous month are listed below. M-1 is within regulation. Minnehaha is 0.94ft below regulation. Cherry Lake is 1.33ft below regulation. Villa City is 0.08ft below regulation. M-6 is 1.22ft below regulation. M-5 is 2.51 ft below regulation. M-4 is 2.04ft below regulation.

Location	Regulatory Range	Upper (ft)	Lower (ft)	Change (upper)
Minnehaha	96.00-97.50	95.06	N/A	-0.21
Cherry Lake	96.00-97.50	94.67	94.00	-0.24
Villa City	94.00-95.50	93.92	89.56	-0.31
M-6A	91.00-92.00	89.78	87.13	-0.38
M-5A	88.25-89.50	85.74	83.08	-0.55
M-4A	83.75-85.00	81.71	77.88	-0.52
M-1	68.00-73.00	70.66	N/A	+0.00

Water levels outside of regulatory range are highlighted in Red.

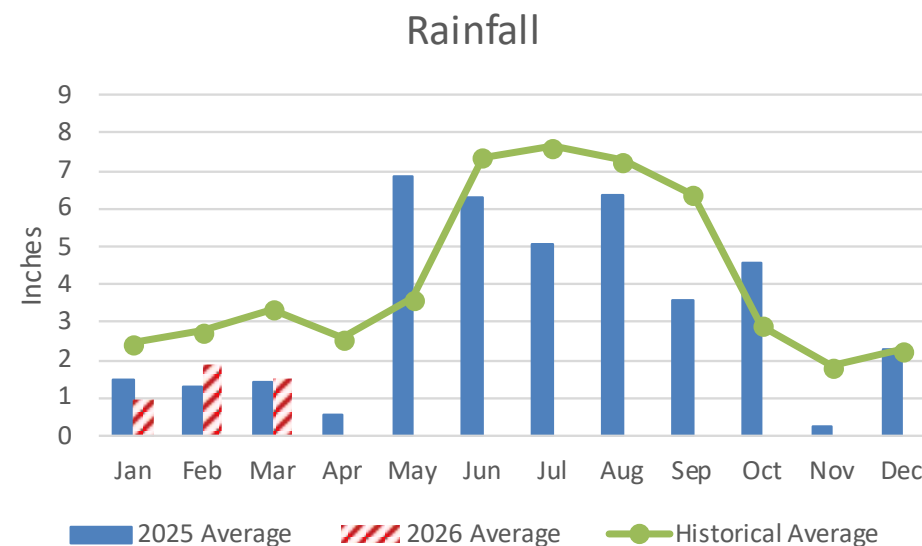
Peak/Current Palatlakaha River Flows and Levels

- Big and Little Creek Combined Flow = 1.65 cfs / 0.03 cfs
- Cherry Lake Dam Flow = 0.33 cfs / 0.00 cfs
- M-1 Flow = 1.02 cfs / 1.02 cfs
- Lake Minnehaha Water Level – 96.00-97.5; 95.27 / 95.02
- Lower Chain Water Level – 94.00-95.5; 94.27 / 93.98
- M-6 (near Indigo Rd) – 91.00-92.00; 90.16 / 88.8
- M-4 (Plantation) – 83.75-85.00; 82.23 / 81.74

Palatlakaha River Basin

A. Rainfall – Average rainfall (1.50 inches) for the western side of the county was 1.86 inches less than normal for March (3.36 inches). The average cumulative rainfall for the six stations over the last 12 months was 40.25 inches, which is 10.24 inches less than the historical cumulative average of 50.49 inches. This is 80% of the expected year-to-date rainfall. The 12-month rainfall for the two locations that are in the headwaters of the Clermont Chain (474 and Brown Shinn) was 37.82 inches – 12.68 inches *less than* average.

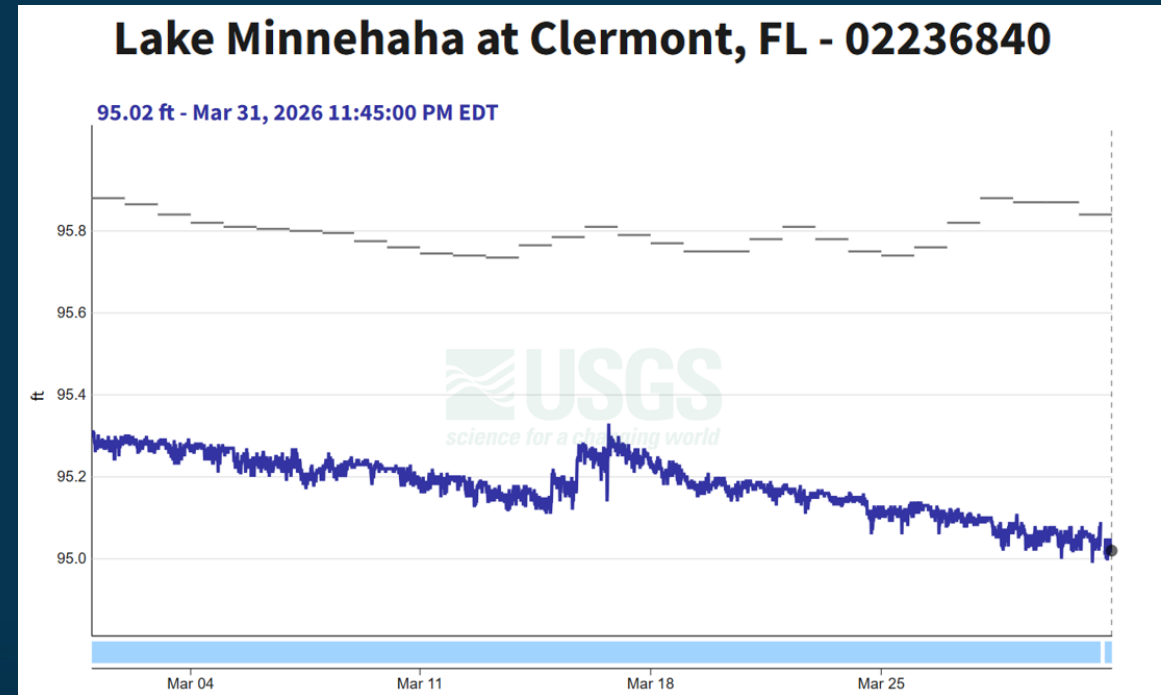
<u>Location</u>	<u>March (inches)</u>	<u>12 Month Running Total</u>	<u>12 Month Surplus/Deficit</u>
474	2.31	40.85	-9.64
Brown Shinn Road	0.98	34.78	-15.71
Villa City	1.61	39.55	-10.94
M-1	1.27	43.92	-6.57
Emeralda	1.60	44.21	-6.28
Tavares	1.25	38.20	-12.29



RAINFALL & USGS DATA

Lake Minnehaha Reporting

The maximum desired water level is 97.5ft and the minimum desired water level is 96ft. On the final day of the month in March 2026 the water level was 95.02 ft. This means that at the end of the month the water levels were below regulation for Lake Minnehaha. The gates to the dams were closed on February 13th, 2025.





Lake County
WATER AUTHORITY

CONSERVATION & ACQUISITION
LAND MANAGEMENT ACTIVITIES

CONSERVATION & ACQUISITION

Wildfire Management Coordination Emergency Management Meeting

On Monday March 2, 2026 staff attended a Wildfire Management coordination meeting hosted at the Lake County Emergency Communications and Operations Center (ECOC). The meeting brought together representatives from Lake County departments, municipal governments, and partner agencies to improve interdepartmental understanding of policies, practices, and procedures related to brushfire prevention, preparedness, and emergency response. Participants reviewed coordination protocols, communication pathways, and resource-sharing strategies to ensure an effective and unified response during wildfire events.

Representatives from the Florida Fish and Wildlife Conservation Commission and the Florida Forest Service also participated, outlining procedures for requesting and mobilizing state assistance during local wildfire emergencies. Discussions emphasized the importance of regional coordination, situational awareness, and proactive planning to help reduce wildfire risks and protect natural resources, infrastructure, and communities across Lake County.

CONSERVATION & ACQUISITION

Installation of New Kiosk Stations & Brochures at LCWA Preserves

Staff have reached a major milestone with the upcoming completion of a capital improvement project focused on enhancing visitor experience and educational outreach across all LCWA preserves. Starting in October of 2025, staff have successfully led this project from the initial concept through procurement, coordination, and final production. The effort included formal bidding and award process, followed by extensive collaboration with the Lake County Communications Department to develop a unified and modern design for preserve signage and educational materials.

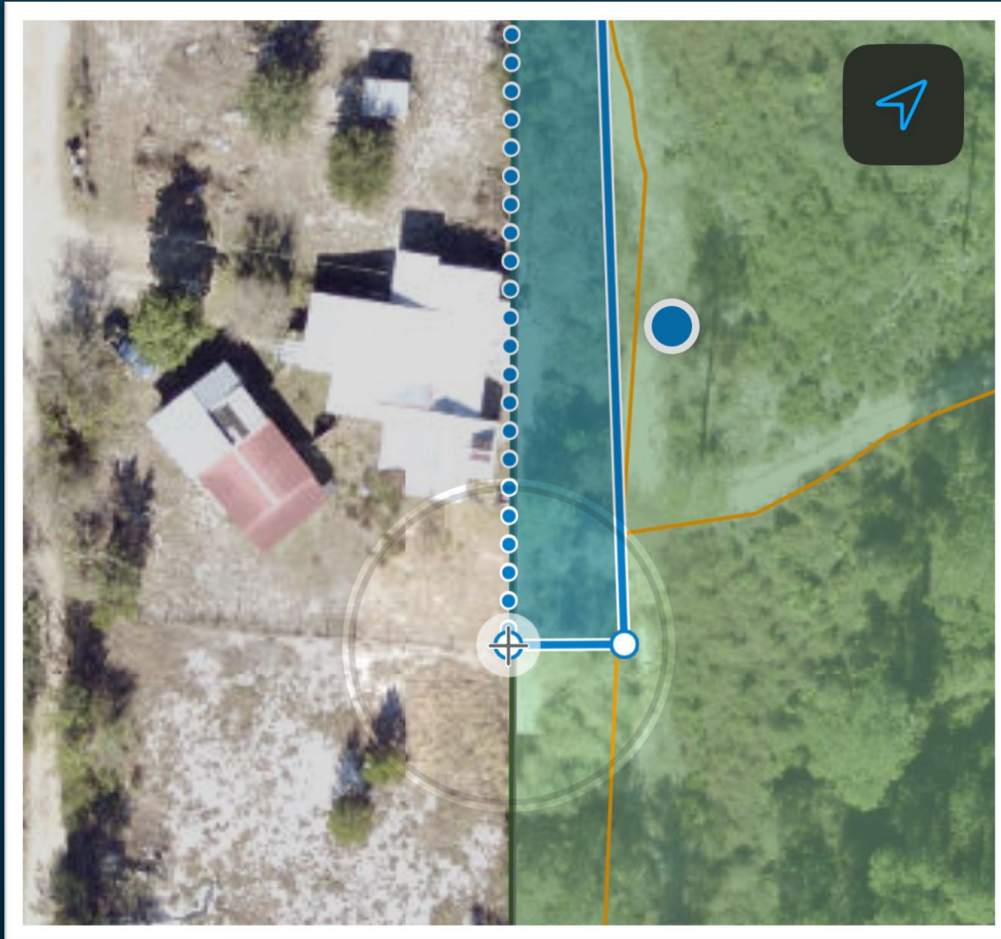
Staff are actively coordinating with contractors to finish the installation of new kiosk stations and brochures at all LCWA preserve locations. Each kiosk will feature custom-designed educational panels that highlight the unique environmental and water resource value of each site. In addition, newly designed preserve brochures - aligned with the kiosk content - will be available on-site, providing visitors with accessible preserve information.

This initiative represents an advancement in LCWA's commitment to public engagement, environmental education, and improving the overall visitor experience across its conservation lands.



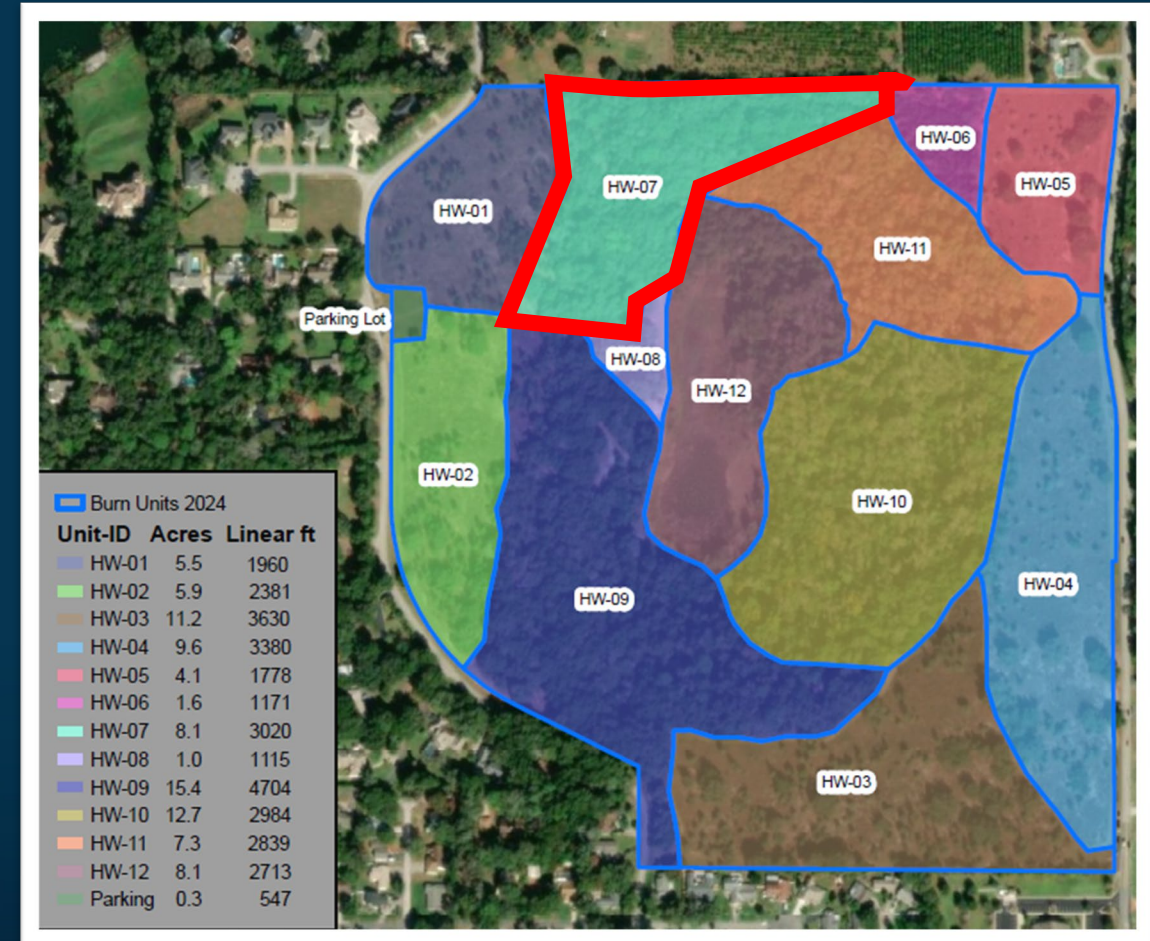
FERN PRAIRIE PRESERVE

Invasive Species Treatment



HIDDEN WATERS PRESERVE

Invasive Species Treatment



HIDDEN WATERS PRESERVE

Before

After



Before



Graffiti Removal

After



LADY LAKE PRESERVE

Invasive Species Treatment

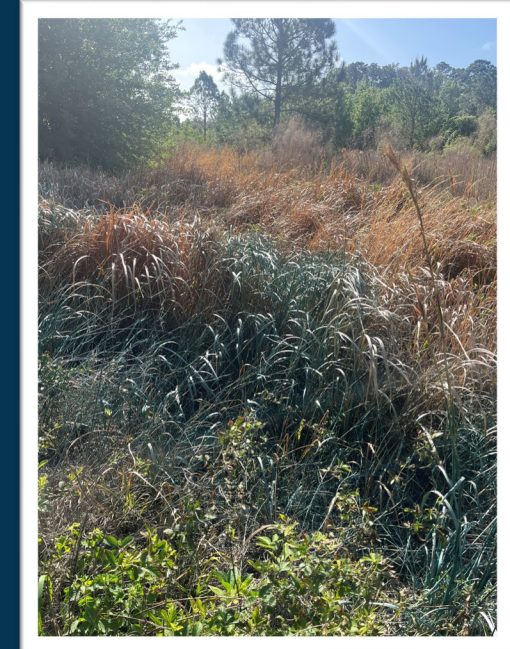
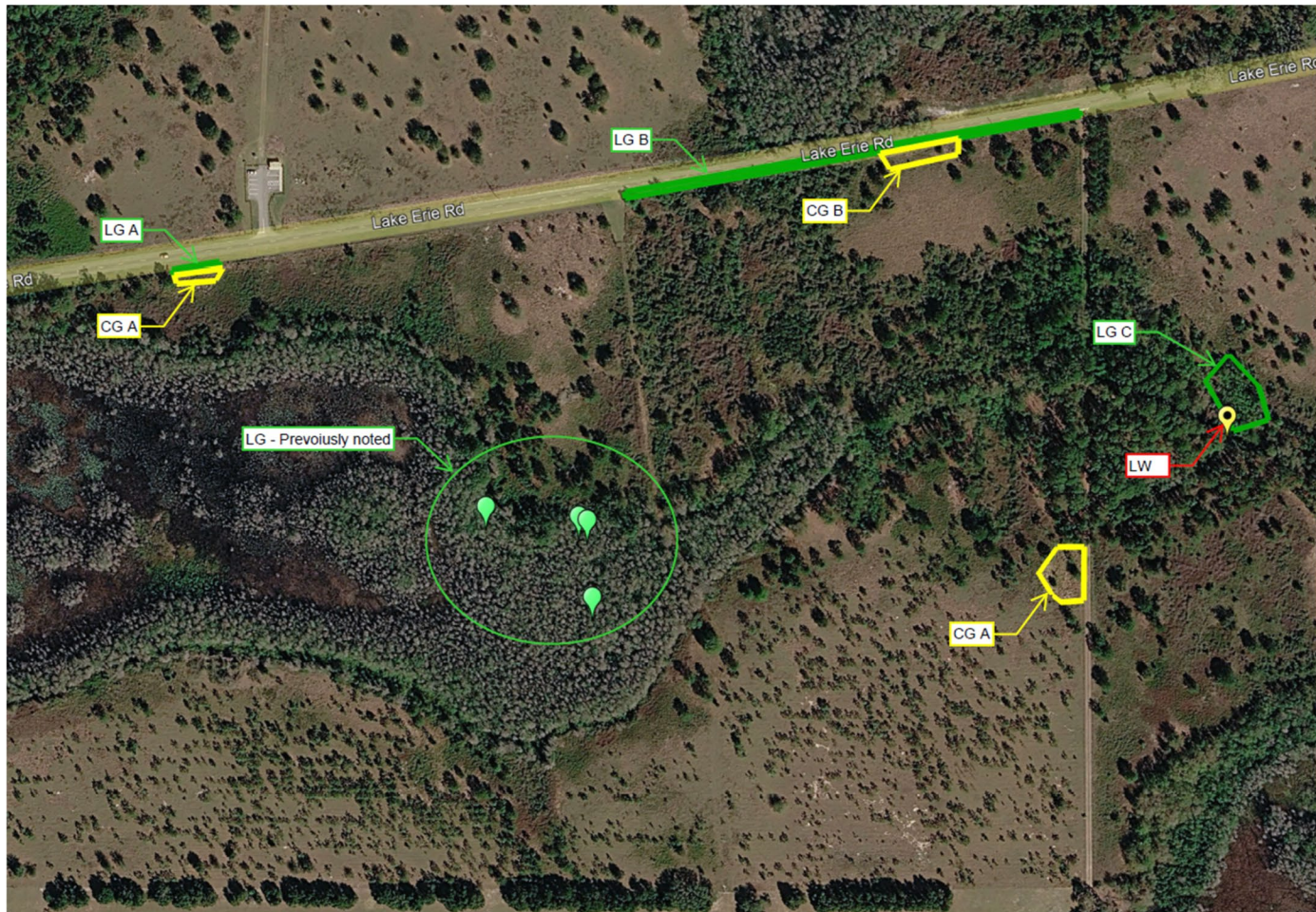


Trash Removal



PASTURE RESERVE

Invasive Species Treatment



TANNER PRESERVE

Invasive Species Treatment



Trash Removal



WOLF BRANCH PRESERVE

Invasive Species Treatment



Mulching



EAGLES RIDGE PRESERVE

No Trespassing Signage

Before



After



PRESERVE MAINTENANCE TOTALS

Preserves visited:

- Bourlay Historic Nature Park
- Crooked River Preserve
- Eagles Ride Preserve
- Fern Prairie Preserve
- Flat Island Preserve
- Hidden Waters Preserve
- Lady Lake Preserve
- Lake Norris Conservation Area
- Pasture Reserve
- Sabal Bluff Preserve
- Sawgrass Island Preserve
- Scrub Point Preserve
- Tanner Preserve
- Wolf Branch Preserve

Totals:

- Total Acres of Invasive Plants Treated: **8.97 ac.**
- Miles of Trails Maintained: **26.97 miles**
- Feet of Fence Repair: **3 ft.**
- Feet of Trash Pickup: **700 ft.**



Lake County
WATER AUTHORITY

COMMUNITY ENGAGEMENT

COMMUNITY ENGAGEMENT

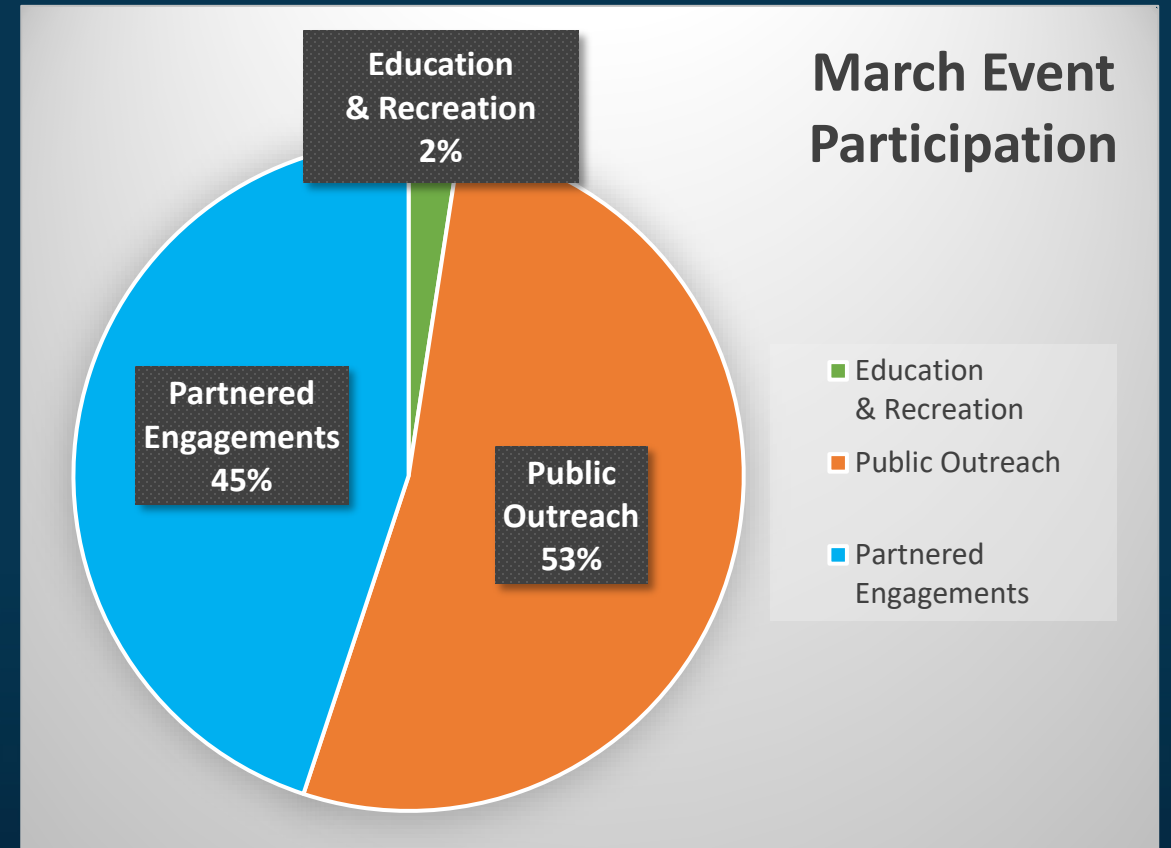
During the month of March, staff provided the following services through Education & Recreation, Partnered Engagements, and Public Outreach Programs

Event & Participant Summary:

Educational & Recreational	4 Events	12 Participants
Public Outreach	3 Events	259 Participants
Partnered Engagements	7 Event	221 Participants

Total Events: 14

Total Engagement: 492



Calendar Events

During the month staff & educators hosted the following calendar events

Wetland Excursion, March 7, 2026

- Educational Hike at Scrub Point Preserve

Watershed Wednesday, March 11, 2026

- What is a BMAP?

Paddling Adventure, March 14, 2026

- Blue Creek Run

Stories of Water, March 27, 2026

- Educational Hike at Sawgrass Island Preserve



PARTNERED ENGAGEMENTS

Sunday Funday at Trout Lake Nature Center March 8, 2026

On March 8, 2026, Educators participated in “Sunday Funday – Reptile Day” at Trout Lake Nature Center, engaging 27 community members, including families and children. The event featured interactive stations highlighting Florida’s native reptiles, their habitats, and conservation.

LCWA’s station focused on the gopher tortoise as a keystone species, using a crawl-through burrow activity to demonstrate how over 300 species rely on tortoise burrows for shelter. Hands-on experiences helped participants understand the tortoise’s ecological importance and fostered discussions on habitat protection and wildlife conservation.

Featured Partnership: Trout Lake Nature Center



PARTNERED ENGAGEMENTS

Leadership Lake March 12, 2026

Staff hosted and delivered a water quality presentation to the Leadership Lake County class held at Hickory Point, providing participants with an overview of local water resources, monitoring programs, and key factors affecting lake health.

The presentation highlighted current water quality initiatives, including nutrient management, sampling techniques, and ongoing restoration efforts, while also emphasizing the importance of community involvement and informed decision-making in protecting regional waterways.

Featured Partnership: Leadership Lake County



PARTNERED ENGAGEMENTS

Adopt-A-Lake Cleanup at Lake Eustis March - 2026

Volunteers conducted one cleanup event at Lake Eustis, engaging 40 participants who collectively removed approximately 160 pounds of trash from the shoreline and surrounding areas.

The cleanup effort contributed to improved lake conditions and reinforced the program's role in fostering community stewardship and hands-on environmental engagement.

Featured Partnership: Adopt-A-Lake



PARTNERED ENGAGEMENTS

Nature Tales Presentation at Eustis Library, Monday, March 16, 2026

Staff delivered an interactive Florida Turtles program to 33 participants, providing a hands-on learning experience focused on native turtle species and their ecological importance.

Attendees explored turtle artifacts such as shells and replica skulls and engaged with both fiction and nonfiction books that highlighted turtle habitats and behaviors. Conservation messaging emphasized habitat protection, nesting awareness, and the role turtles play in maintaining healthy ecosystems.

Featured Partnership: Eustis Library



PARTNERED ENGAGEMENTS

Wetland Wonders Presentation at Leesburg Library, Thursday, March 19, 2026

Staff delivered the inaugural “Wetland Wonders” presentation at the Leesburg Library, engaging 18 attendees with an educational program focused on native turtles of Lake County. The presentation covered key topics including turtle anatomy, distinguishing characteristics, local species, and conservation. Participants learned practical ways to support turtle populations, such as protecting nests, recognizing signs of disease, and safely assisting turtles crossing roadways.

Attendees were highly engaged, asking questions throughout and after the presentation, and expressed interest in where turtles can be observed locally. Staff also provided additional information on Lake County parks and natural areas where these species may be found, reinforcing connections between the community and local ecosystems.



Featured Partnership: Leesburg Library

PARTNERED ENGAGEMENTS

Sunshine State Connections High School Field Trip to Hickory Point, Friday, March 20, 2026

Educators led a homeschool field trip at Hickory Point with 18 participants, combining a guided wetland boardwalk hike with a hands-on dip netting investigation. Participants collected and identified aquatic macroinvertebrates, including dragonfly nymphs, beetles, and shrimp, and learned how these organisms serve as bioindicators of water quality.

The activity introduced key concepts related to aquatic food webs and ecosystem health. The program also included an interpretive boardwalk hike highlighting wetland functions such as water filtration and flood protection, along with native plant and wildlife identification. Students were highly engaged throughout the experience and demonstrated increased awareness of water quality, conservation practices, and the importance of protecting wetland habitats.



STEAM Night Watershed Education Outreach – Windy Hill Middle School, Wednesday, March 25, 2026

Staff & educators participated in Windy Hill Middle School's STEAM Night, engaging 119 students, families, and community members through an interactive watershed education booth featuring the Enviroscape model.

The hands-on demonstration illustrated how water moves across various surfaces and carries common pollutants such as fertilizer, pet waste, litter, and oil into local waterways



Lake Louisa Nature Fest, Saturday, March 28, 2026

Staff & educators participated in the Lake Louisa Nature Fest on March 28, 2026, connecting with 132 community members through an outreach booth and native tree giveaway initiative.

Staff promoted local parks, preserves, trails, and blue ways while providing educational materials and personalized recommendations to encourage exploration of Lake County's natural resources.



Umatilla High School FFA Event, Friday, March 27, 2026

Staff participated in an agricultural education event at Umatilla High School, engaging over 150 attendees through a collaborative outreach effort with local organizations.

The event highlighted the intersection of agriculture, water quality, and environmental stewardship, utilizing the Enviroscope watershed model to demonstrate how land use and farming practices influence water resources. Interactive discussions emphasized best management practices to reduce pollution and protect waterways.





Lake County
WATER AUTHORITY

HICKORY POINT RECREATION COMPLEX - UPDATES

March Events at Hickory Point

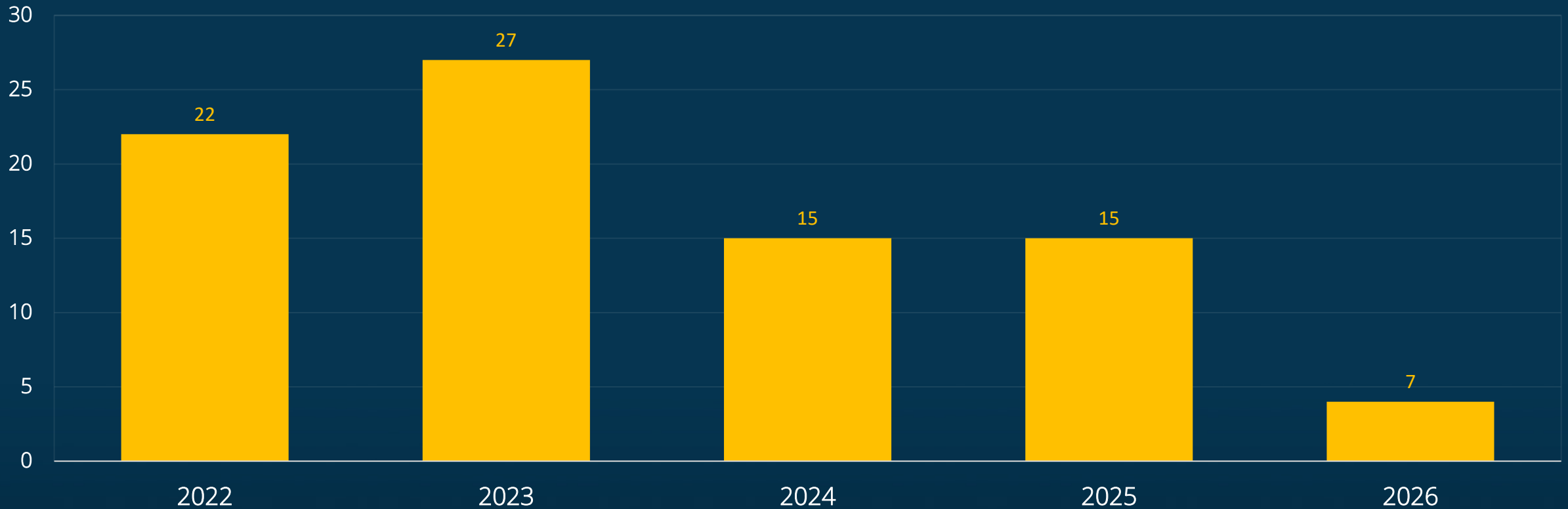
Parks & Trails staff at Hickory Point Recreation Complex over saw several sporting events. These included Tavares Middle School Soccer hosting their first home game of the season, CFU Soccer held two games 7 vs. 7 and 9 vs.9 players, SOL Soccer had one game of 11 vs. 11 players and Beach Tennis Orlando held a men's and women's tournament with players ranging in age from 10-70 with 48 total participants which brought over 100 spectators.

Participants included players from Florida, Brazil, Venezuela, and Puerto Rico. Staff's commitment to maintaining a world class facility shows through ongoing use of the facility for organizers from across Florida and beyond.



HICKORY POINT FISHING TOURNAMENTS

Tournaments By Year



*Hickory Point Boat Ramps were under construction during 2024-2025, resulting in reduced annual tournaments



Lake County
WATER AUTHORITY

FINANCIAL REPORTING

Bank Balances

FY 2025-2026
LCWA Monthly Financial Report
Bank Account Balances as of March 31, 2026

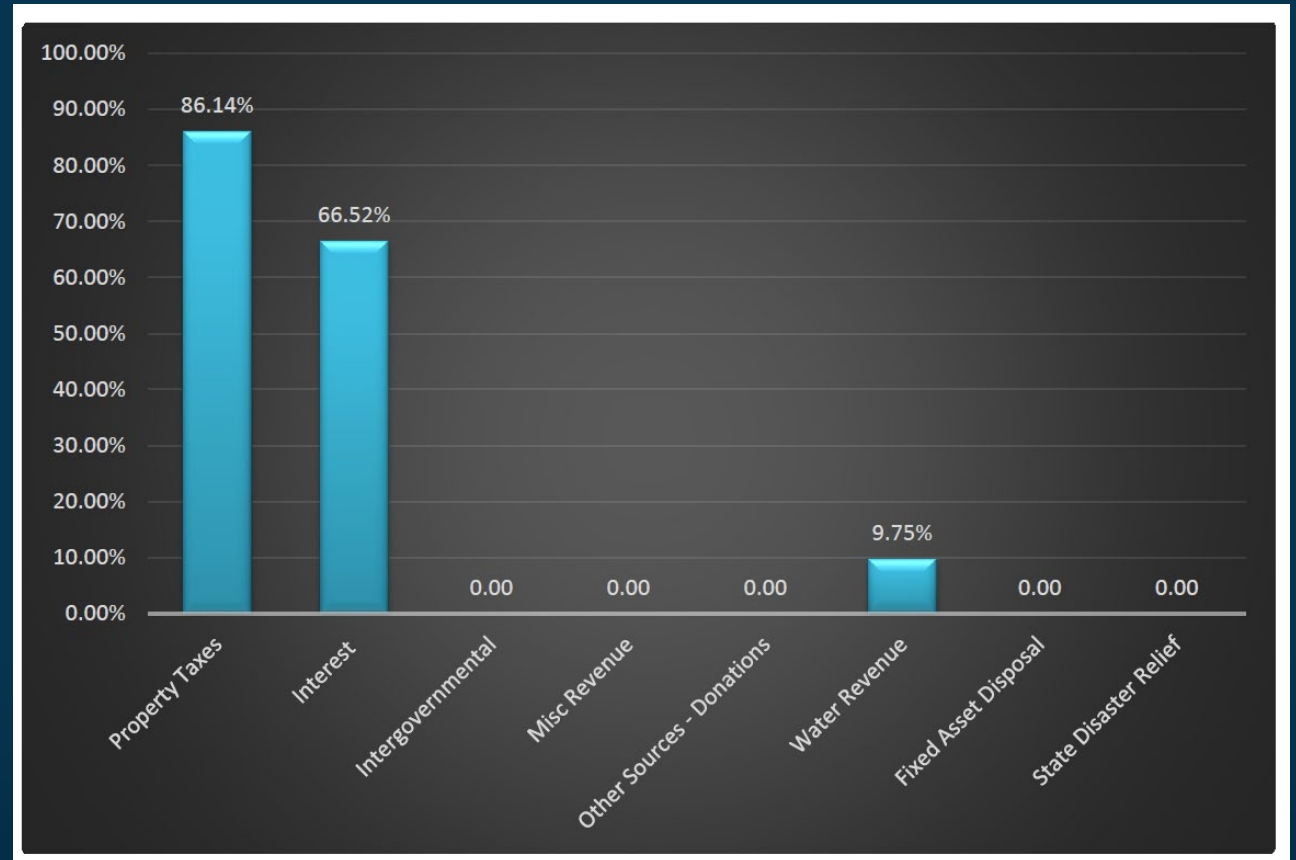
	Truist	BankUnited	Balance
Ending Balance as of 2/28/2026	\$ 7,410,984.98	\$15,542,020.35	\$ 22,953,005.33
Deposits	\$ 716,679.57	\$ -	\$ 716,679.57
Net Interest	\$ 8,521.71	\$43,560.21	\$ 52,081.92
Withdrawals	\$ (465,537.05)	\$0.00	\$ (465,537.05)
Ending Balance as of 03/31/2026	\$ 7,670,649.21	\$ 15,585,580.56	\$ 23,256,229.77

FINANCIAL REPORTING

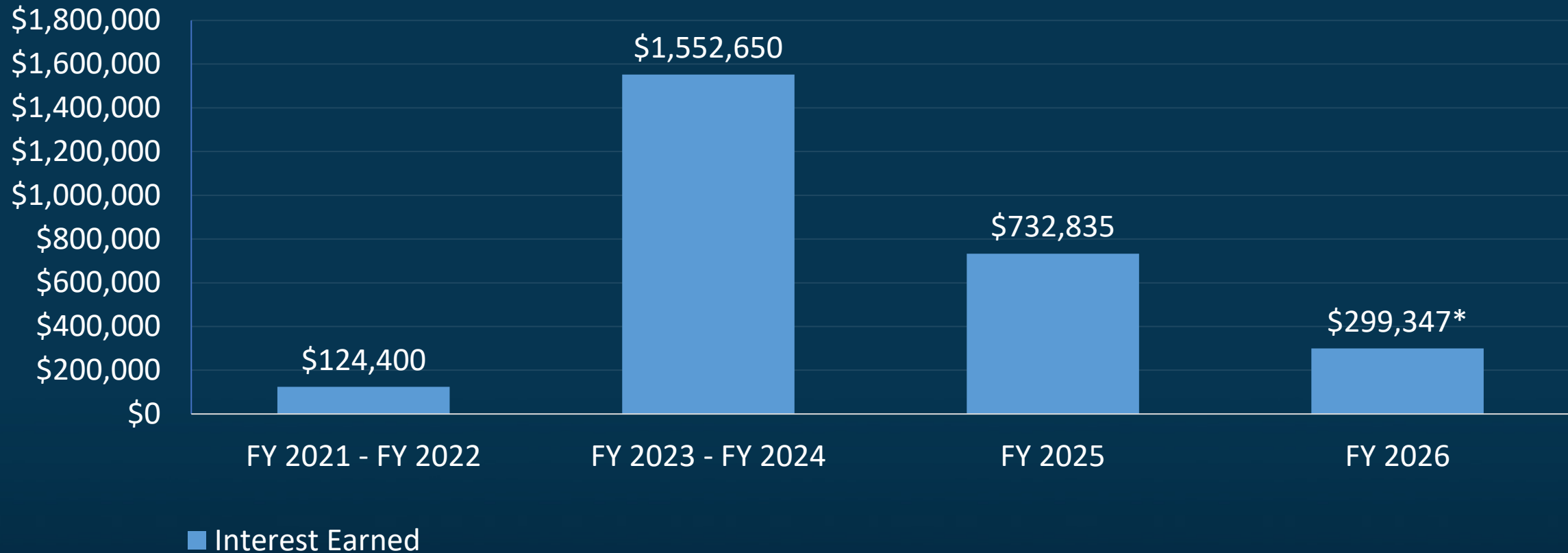
Revenue Balances

FY 2025-2026
LCWA Monthly Financial Report
Revenue Balances as of March 31, 2026

Fund	Adopted Budget (Revenue)	Year to Date Actual	Percentage
Property Taxes	\$ 13,197,495	\$ 11,368,590	86.14%
Interest	\$ 450,000	\$ 299,347	66.52%
Intergovernmental	\$ 669,143	\$ -	0.00%
Misc Revenue	\$ -	\$ 88	0.00%
Other Sources - Donations	\$ -	\$ 42,500	0.00%
Water Revenue	\$ 275,000	\$ 26,799	9.75%
Fixed Asset Disposal	\$ -	\$ -	0.00%
State Disaster Relief	\$ -	\$ -	0.00%
TOTAL:	\$14,591,638	\$11,737,324	80.44%



LAKE COUNTY WATER AUTHORITY INTEREST EARNED



*FY 2026 as of 3/31/26



Lake County
WATER AUTHORITY

THANK YOU



TO: Lake County Water Authority Board of Trustees

THROUGH: Bobby Bonilla, Executive Director

FROM: Marcia Bush, Associate Director, Water Resources

DATE: April 17, 2026

RE: Annual Kids Fishing Clinic and Reporting at Hickory Point Recognizing Teen Sportfishing Association Lake County Chapter

Special Recognition – Tab 3

Annual Kids Fishing Clinic and Reporting at Hickory Point Recognizing Teen Sportfishing Association Lake County Chapter

On April 11, 2026, LCWA hosted its annual Kids Fishing Clinic at Hickory Point. This free community event provided youth ages 4 and older with hands-on fishing instruction, environmental education, and outdoor recreation opportunities.

The event was made possible through a collaborative effort between Lake County and the Lake County Water Authority (LCWA), and community partners. The Fish Florida Foundation provided fishing equipment for participants, while volunteers from the Lake County Teen Sportfishing Association delivered direct, hands-on instruction to attending youth.

The clinic was well attended and successfully introduced children to the fundamentals of fishing, waterway stewardship, and conservation practices in an engaging, family-friendly environment.

Mr. Dean Morris, representing the Lake County Teen Sportfishing Association, Lake County Chapter, will be in attendance to receive special recognition from the Board.

Executive Director's Recommendation:

1. For Informational Purposes Only.

BOARD OF TRUSTEES

**Lake County Water Authority &
Lake County Board of County
Commissioners**

**Kids Fishing Clinic
April 11, 2026**

**Post Event Report for the
Fish Florida Foundation
Fishing Equipment Program**

Special Acknowledgement

The Lake County Water Authority (LCWA) & the Lake County Board of County Commissioners (LCBCC) extends our appreciation to the Fish Florida Foundation for providing the fishing equipment for our annual Kids Free Fishing Clinic. We would also like to extend similar appreciation to the Lake County Teen Sportfishing club volunteers who provided invaluable, hands-on instruction to the children attending the event. The fishing clinic was well attended and a fun event for all who participated!

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Event Infographic

JOIN US FOR THE KIDS FISHING CLINIC

April 11, 2026 🐟 9 a.m. – noon

at Hickory Point Recreational Complex
27341 State Road 19, Tavares, FL 32778

For children ages 4+

Free Event

Space is limited

RSVP Today! (352) 253-4950



Media Release

Lake County hosts annual kids' fishing clinic

LAKE COUNTY (March 25, 2026) — Lake County's Office of Parks and Water Resources invites children ages 4 and older to participate in a free kids' fishing clinic on Saturday, April 11. The event will run from 9 a.m. to noon at Hickory Point Recreational Complex (27341 State Road 19, Tavares). The kids' fishing clinic is designed to teach youth about the county's waterways, conservation, and fishing.

The first 50 participants who sign up will have the opportunity to take home a free fishing pole and tackle box. Children must be accompanied by a chaperone. Lake County staff will be on site to assist with baiting hooks, removing fish, species identification, and other environmental & educational components.

For more information or to sign up, please email the Parks and Water Resources Office at info@lcwa.org or call (352) 253-4950.

Social Media Posts

Lake County Parks and Water Resources is hosting a FREE Kids Fishing Clinic at the Hickory Point Recreational Complex! 🎣👦👧

The first 50 kids who sign up will receive a fishing pole and tackle box just for attending!

📅 Date: April 11, 2026

🕒 Time: 9 a.m. to noon

📍 Location: 27341 State Road 19, Tavares

We are so excited to see the Lake County community for a day of fishing, learning about our waterways, and so much more! 🐟👉















**Lake County
WATER AUTHORITY**

Bobby Bonilla, Executive Director • Gary J. Cooney, Secretary - Treasurer

27351 SR 19 • Tavares, Florida 32778-4251 • (352) 324-6141 • Fax (352) 324-6364 • email: info@lcwa.org • www.lcwa.org

TO: Lake County Water Authority Board of Trustees

THROUGH: Bobby Bonilla, Executive Director

FROM: Marcia Bush, Associate Director, Water Resources

DATE: April 17, 2026

RE: Office of Communications Re-Branding Update

Regular Agenda – Tab 4

Office of Communications Re-Branding Update

At the March 25, 2026, Regular Meeting the Board was provided with a listing of potential names in consideration of Re-Branding the LCWA. Levar Cooper, Director of the Office of Communications, will be present for discussion and direction.

Executive Director’s Recommendation:

1. For Board Discussion & Direction.

BOARD OF TRUSTEES

Gavin Rollins
District 1

Trampis Bonjorn
District 2

Birdie Zenishek
District 3

Butch Hendrick
District 4

Jonathan Germeroth
District 5

RE-BRANDING BOARD DISCUSSION & DIRECTION

RE-BRANDING

- Lake County Water Authority (LCWA) – Keeps name the same
- Lake County Water Improvement District (LCWID)
- Lake County Water Resources District (LCWRD)
- Lake County Land & Water Resources District (LCLWRD)
- Lake County Water Agency (LCWA)
- Lake County Water Protection (LCWP)
- Lake County Waterways & Stormwater Management District (LCWSMD)
- Lake County Water Management District (LCWMD)
- Lake County Water Resources & Navigation Control District (LCWRNCD)
- Surface Water Improvement and Management Authority of Lake County (SWIMA)
- Lake County Surface Water Improvement and Management (SWIM)
- Lake County Watershed Innovation District (LCWID)
- Floodplain Lake and Outfall Watershed Management District (FLOW)
- Lake County Water District (LCWD)



TO: Lake County Water Authority Board of Trustees

THROUGH: Bobby Bonilla, Executive Director

FROM: Marcia Bush, Associate Director, Water Resources

DATE: April 17, 2026

RE: CRS Program Update Memo

Regular Agenda – Tab 5

CRS Program Update and Approve Letters of Support Advocating for Restoration of Federal Funding

On April 14, 2026, staff presented an update on the National Flood Insurance Program (NFIP) Community Rating System (CRS) to the Board of County Commissioners (BCC), including the program's benefits to residents and the potential impacts of recent federal funding reductions.

The CRS Program provides direct financial benefits to property owners through reduced flood insurance premiums while supporting local efforts in floodplain management, stormwater improvements, public outreach, and hazard mitigation. Lake County currently maintains a CRS Class 7 rating, resulting in a 15% reduction in flood insurance premiums for policyholders in unincorporated areas, with progress underway toward Class 6 rating that would increase savings to 20%.

Recent federal actions have resulted in the discontinuation of funding for CRS program management, placing the program in an inactive status. As a result, key program functions are currently halted.

The Association of State Floodplain Managers (ASFPM), in coordination with the Florida Floodplain Managers Association (FFMA), is requesting impacted communities to submit letters of support to federal representatives and FEMA leadership advocating for restoration of this funding.

Staff have prepared letters of support for Board consideration that advocate for the immediate restoration of CRS Program Funding.

Executive Director's Recommendation:

1. Authorize the Chairman to execute the prepared letters of support consistent with Lake County advocacy efforts.

BOARD OF TRUSTEES



LAKE COUNTY CRS PROGRAM UPDATE



PURPOSE

NFIP Insurance

CRS Program

Benefits of Flood Insurance

Lake County's CRS Status

Current CRS Program Status

Discussion

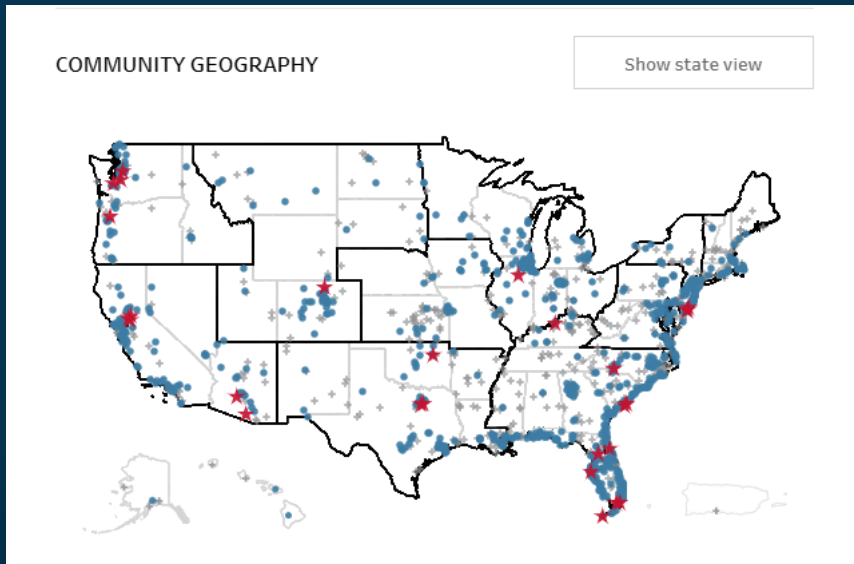
National Flood Insurance Program (NFIP)

- Established in 1968
- Requires participants to follow Federal Floodplain Management regulations
- Based on Flood Insurance Rate Maps (FIRMs)
- Lake County joined the NFIP and received its first FIRMs in April of 1982
- Current FIRMs have been in place since 2012

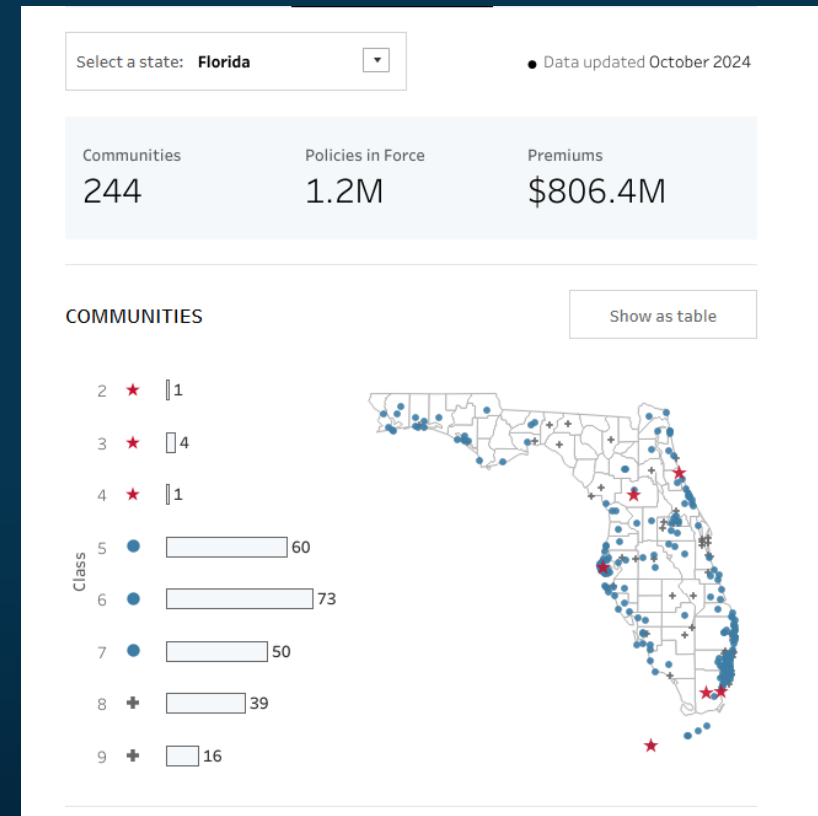
National Flood Insurance Program (NFIP)

- Publicly available in all participating communities for compliant or legal nonconforming (Pre-FIRM) structures
- NOT INCLUDED IN BASIC HOMEOWNERS INSURANCE
- Must be purchased separately

1502 Participating Communities Nationwide



244 Participating Communities in FL



- Lake County is currently a CRS Class 7 Community
- 5-year cycle visit successfully completed in August of 2025
- Results of cycle visit are that Lake County will be promoted to CRS Class 6 Community
- Total Savings on all NFIP-Backed Flood Insurance Policies will increase from 15% to 20%



CRS PROGRAM CURRENT ISSUES

- Current contract for company managing the CRS Program has been placed into “Inactive” status
- This means the management of the program is now “Inactive” as well
- Due to this change, no movement can occur in the CRS Program



WHAT DOES THIS MEAN FOR LAKE COUNTY?

- Lake County's Class Improvement, Scheduled to be Implemented 10/1/26, is On Hold
- All further supplemental submittals to improve Class Rating are on hold
- The program remains in effect, and all reporting requirements remain



STAFF RECOMMENDATIONS

- Staff requests approval of the prepared Letters of Support from LCWA to our Federal Legislative Delegation and FEMA to resume funding for the CRS Program.

REQUESTED ACTION

The Association of State Floodplain Managers (ASFPM) in cooperation with the Florida Floodplain Manager's Association (FFMA) is requesting outreach from impacted communities to federal representatives

- Requesting letters of support for the restoration of (CRS) program funding

Questions and Discussion





**Lake County
WATER AUTHORITY**

Bobby Bonilla, Executive Director • Gary J. Cooney, Secretary - Treasurer

27351 SR 19 • Tavares, Florida 32778-4251 • (352) 324-6141 • Fax (352) 324-6364 • email: info@lcwa.org • www.lcwa.org

TO: Lake County Water Authority Board of Trustees

THROUGH: Bobby Bonilla, Executive Director

FROM: Marcia Bush, Associate Director, Water Resources

DATE: April 17, 2026

RE: 2nd Budget Workshop Presentation

Regular Agenda – Tab 6

2nd Budget Workshop Presentation

Executive Director Bobby Bonilla has prepared the FY 2027 2nd budget workshop presentation outlining the Lake County Water Authority's Accomplishments, Efficiencies, Land Acquisition Opportunity, Multi-Phase Priority Projects, and Budget History.

Executive Director's Recommendation:

1. For information and Board discussion.
2. Recommends approval of the requested actions as included in the presentation.

BOARD OF TRUSTEES

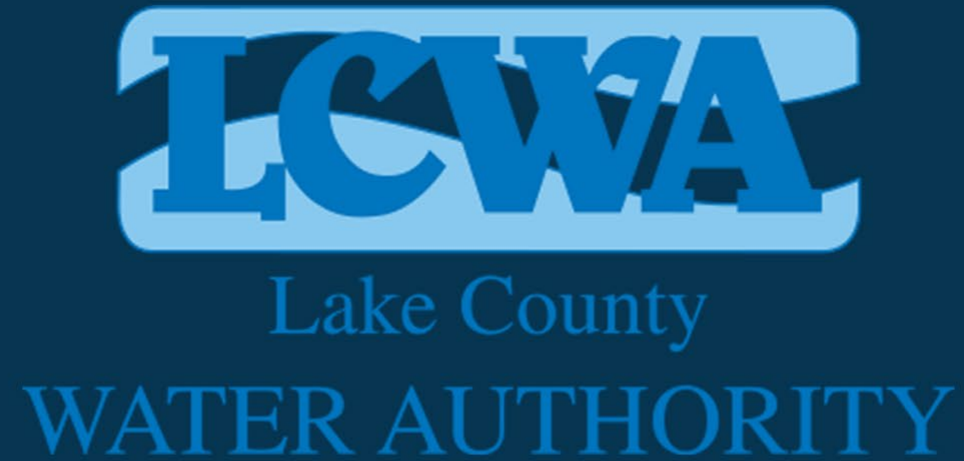
Gavin Rollins
District 1

Trampis Bonjorn
District 2

Birdie Zenishek
District 3

Butch Hendrick
District 4

Jonathan Germeroth
District 5



FY 2027 BUDGET WORKSHOP

April 22, 2026

- 2026 Budget Calendar
- Organizational Chart
- Overview
- Accomplishments
- Efficiencies
- Conservation and Acquisition Program
- Hurley Farm Property Requested Action
- FY 2027 Project Summary
- Budget History

FISCAL YEAR 2026 BUDGET CALENDAR

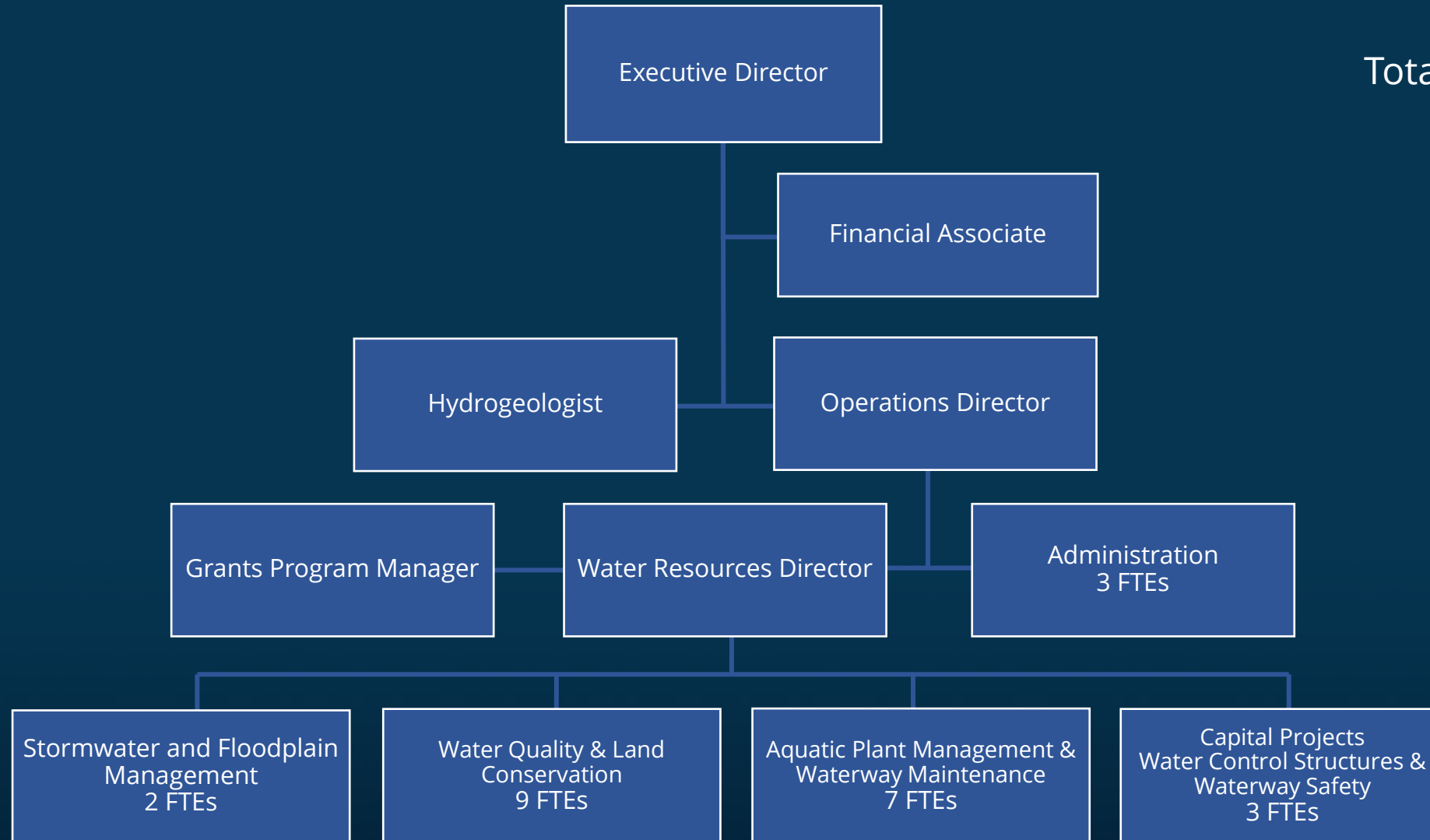
Lake County Water Authority Presentation Schedule

- March 25, 2026 – First Budget Workshop
- April 22, 2026 – Second Budget Workshop
- May 20, 2026 – FY 2027 LCWA Budget Summary and Recommended Millage Rate

Board of County Commissioners Presentation Schedule

- June 9, 2026 – LCWA Preliminary Budget Summary
- July 1, 2026 – Certification of Taxable Values by Property Appraiser
- July 28, 2026 – Recommended Budget (Adopt tentative millage)
- September 8, 2026 – Public Hearing – FY 2026 Tentative Budget (5:05 pm)
- September 22, 2026 – Public Hearing – FY 2026 Final Budget (5:05 pm)

LAKE COUNTY WATER AUTHORITY ORGANIZATIONAL CHART



To conserve and restore the freshwater resources of Lake County for future generations, encourage stewardship of our natural resources, inspire awareness and engagement through educational and recreational opportunities, and promote innovative technology projects to support water quality improvements

OVERVIEW (2)

- Hickory Point Recreation Complex
- Nutrient Reduction Facility (NuRF)
- Lake Denham Muck Farm Restoration
- Dam sites
- Weir sites

Preserves:

- 15 properties

Wetland Properties:

- 22 properties

Blueways:

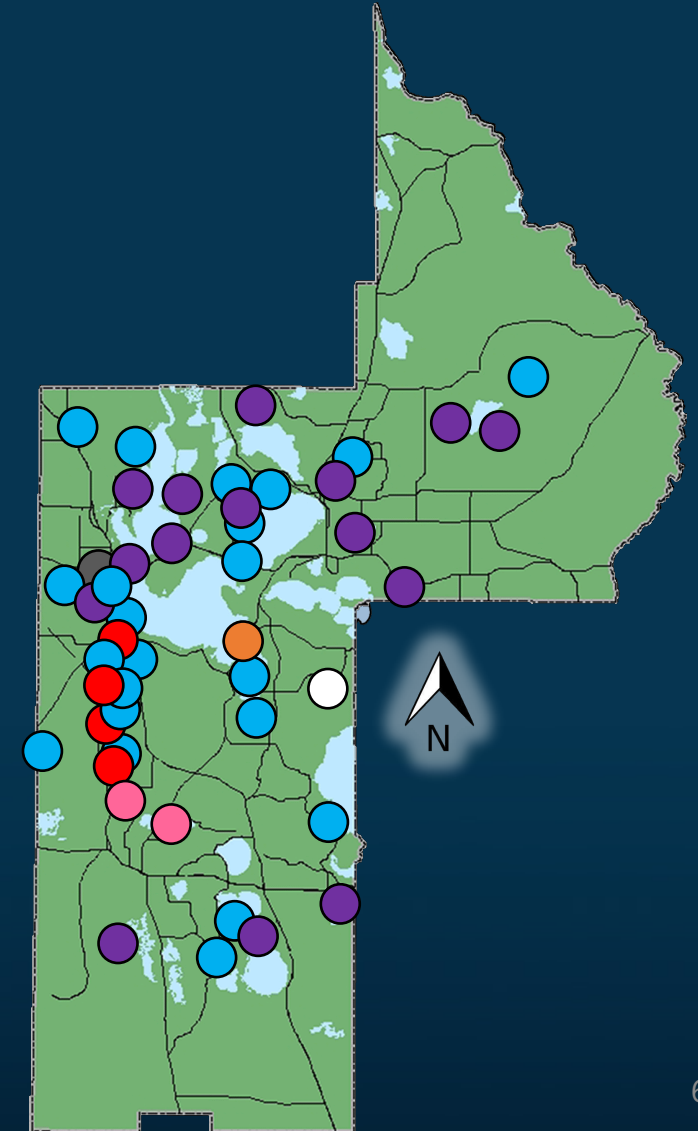
Total Acres: 10,193

1,323 acres

6,647 acres

2,223 acres

199 Miles

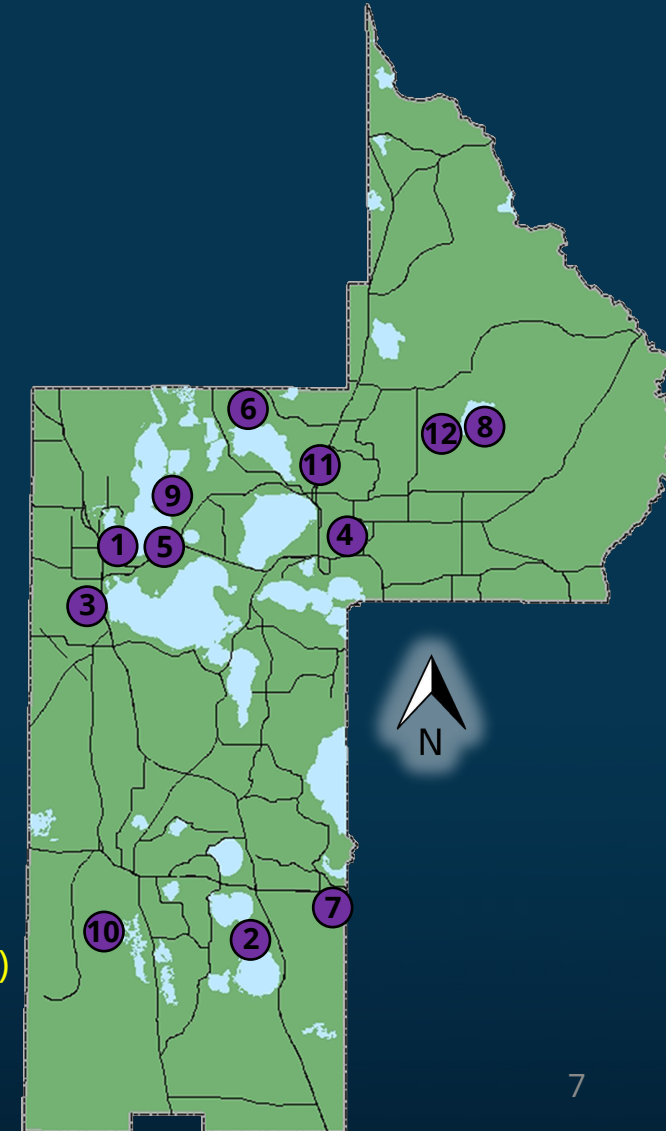


LCWA MANAGED PROPERTIES

Preserves Currently Open to the Public

1. Bourlay Historic Nature Park
2. Crooked River Preserve (Offers canoeing and kayaking)
3. Flat Island Preserve (Offers canoeing and primitive camping)
4. Hidden Waters Preserve
5. Sabal Bluff Preserve
6. Sawgrass Island Preserve (Offers primitive camping)
7. Scrub Point Preserve (Offers kayaking)
8. Bear Track Preserve
9. Treasure Island Preserve
10. Pasture Reserve
11. Pine Meadows Conservation Area (Offers canoeing and kayaking)
12. Lake Norris Conservation Area (Offers canoeing, kayaking and primitive camping)

Total Acres: 5,010 (Does not include LNCA)



BLUEWAY TRAIL SYSTEM



Florida's Designated Paddling Trails



Blueway Trails

- ① Blue Creek Run
 - ② Stagger Mud Lake Run
 - ③ St. Francis / Dead River Run
 - ④ Lake Eustis Run
 - ⑤ Lake Griffin Run
 - ⑥ Golden Triangle Run
 - ⑦ Helena Run
 - ⑧ Lake Harris Run
 - ⑨ Palatlakaha Run
 - ⑩ Lake Apopka Run
- Project Underway

Total miles: 199



Land Management and Ecological Restoration

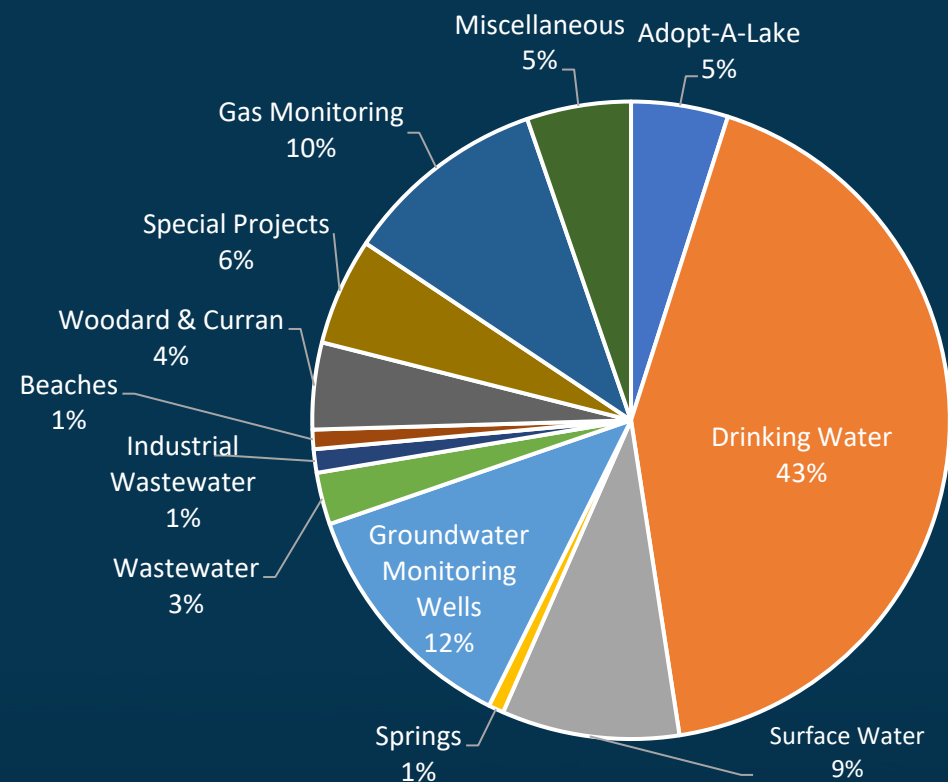
Staff and contracted services performed restoration efforts including hiking trail maintenance, surveys, inspections, plantings, Rx fire applications, chemical and mechanical control of noxious weeds, and various other activities across the LCWA Preserves



ACCOMPLISHMENTS (2)

Water Quality Lab

- October 2025 through May 2026
 - Number of Samples: 3,213
 - Analyses Performed: 18,509
- FY 2025
 - Number of Samples: 4,523
 - Analyses Performed: 25,112



- | | |
|--|--|
|  Adopt-A-Lake |  Drinking Water |
|  Surface Water |  Springs |
|  Groundwater Monitoring Wells |  Wastewater |
|  Industrial Wastewater |  Beaches |
|  Woodard & Curran |  Special Projects |
|  Gas Monitoring |  Miscellaneous |

ACCOMPLISHMENTS (3)

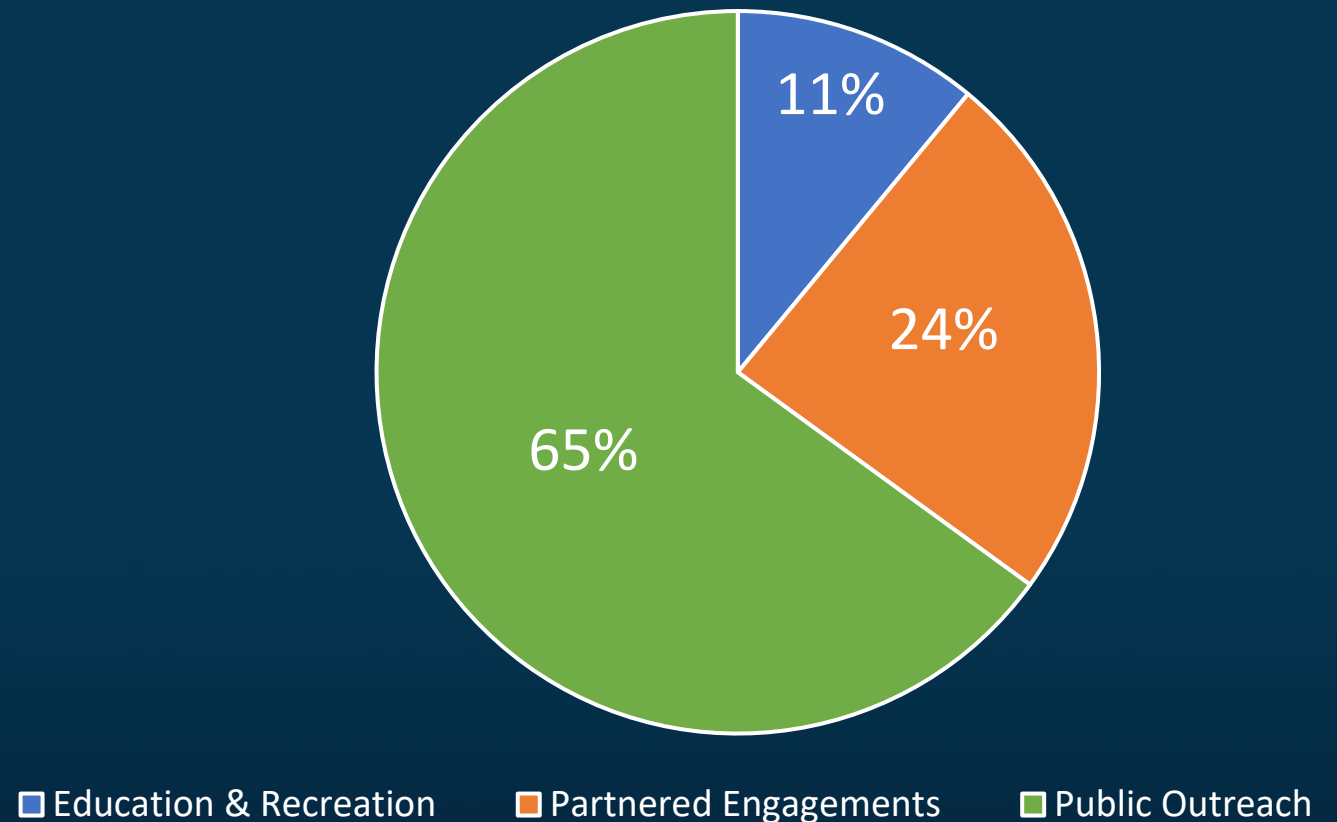
- **3,975** water samples collected by volunteers for analysis at the Lake County Lab
- **20,778** pounds of litter removed by volunteers (over 3,870 volunteer hours)
- **78** miles of fishing line removed from the environment
- **19,000** people reached by educational events/materials



ACCOMPLISHMENTS (4)

- **98** Events across the county
- **1,837+** Individuals Reached
- **44** Calendar Events
- **22** Guided Educational Hikes
- **9** Adventure Paddle Trips

Community Engagement Program



ACCOMPLISHMENTS (5)



ACCOMPLISHMENTS (6)

New Program Library



Vital Wetlands

Our Vital Wetlands Series

Our Vital Wetlands Series provides an in-depth exploration of Florida Wetlands, focusing on their ecological significance, common inhabitants, and conservation challenges. Through lectures and engaging activities, participants will gain a deeper understanding of wetland ecosystems.



ECO-WISE

Eco-Wise Series

Sustainable Living in Lake County

Our Eco-Wise Series offers homeowners and community associations essential knowledge on stewardship practices that protect our environment. Through these engaging presentations, participants will learn about best practices for landscapes, the importance of healthy watersheds, and how to support Basin Management Action Plans. Join us in making a positive impact on water quality, conservation and environmental stewardship in Lake County. Let's work together to ensure a sustainable and water-wise community



WETLAND WONDERS

Wetland Wonders Series

Exploring Wetland Diversity

Our Wetland Wonders Series is a captivating five-part series dedicated to exploring Florida's rich biodiversity focusing on our wetland friends: Turtles, Frogs, Mollusk's, Reptiles and Macroinvertebrates. Through these engaging presentations, participants gain an understanding of their roles in the eco-system, behaviors, traits, habitats, and the conservation efforts needed to protect them. Join us to discover the incredible wildlife that call Florida home and learn how we can contribute to their preservation.



SPRINGBOARD SERIES

Springboard Series

Florida's Aquifers and Geological Wonders

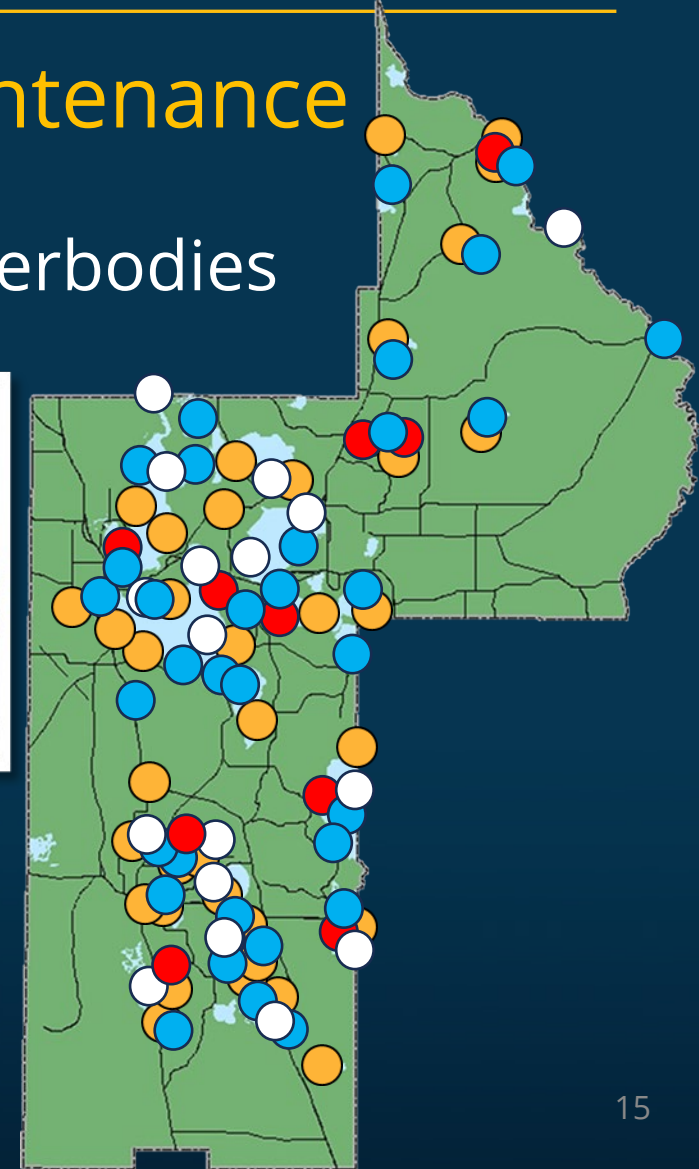
Our Springboard Series dives into the fascinating world of Florida's springs, aquifer systems, and geological history. This series of educational presentations aims to enlighten Lake County Residents about the natural wonders beneath our feet and the critical role they play in our water supply. Learn about the formation of our springs, the intricacies of our aquifers, and geological processes that have shaped Florida's unique landscape. Join us to discover how we can protect these vital resources and ensure their preservation for future generations.

ACCOMPLISHMENTS (7)

Aquatic Plant Management & Waterway Maintenance

Treated **4,305** acres of non-native plants across **47** waterbodies

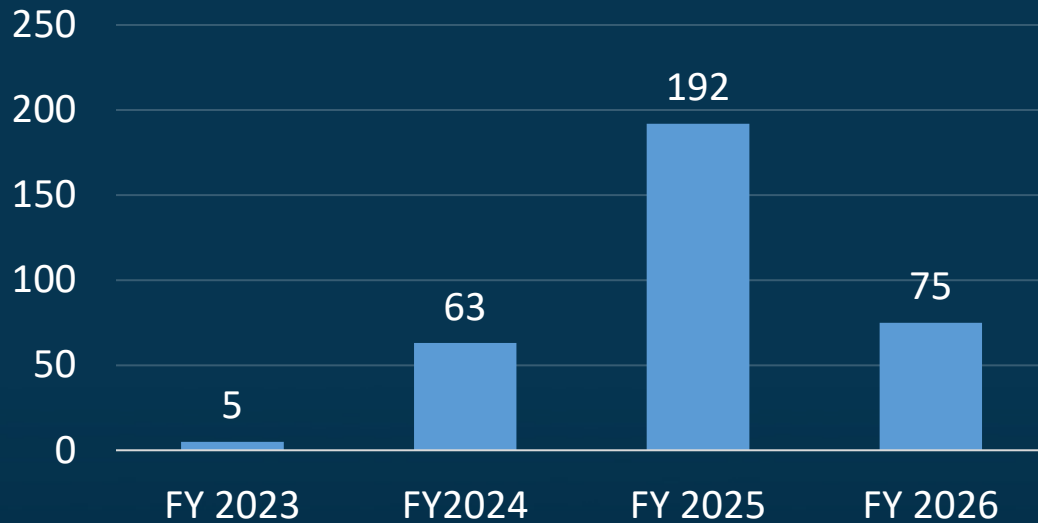
- **3,253** Acres of Hydrilla
- **589** Acres of Floating Plants
- **133** Acres of Misc. Invasive Plants
- **330** Service Requests (resident requested)
- **37** Acres of Residential Canals (resident requested)



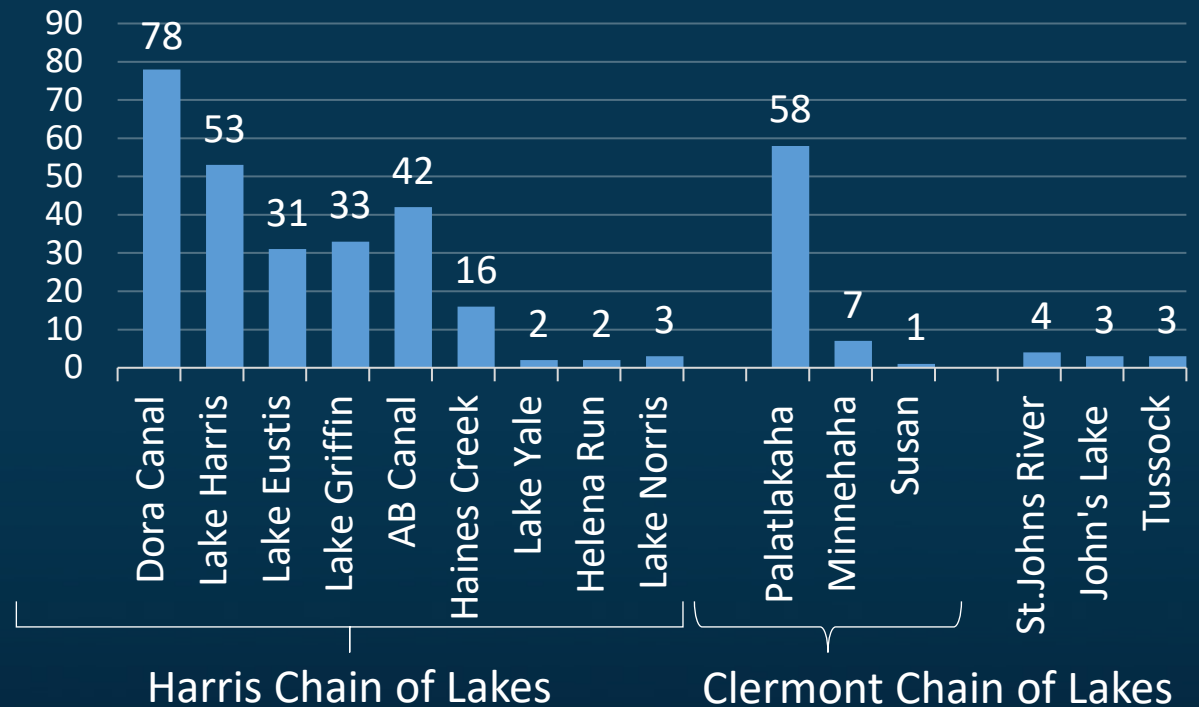
ACCOMPLISHMENTS (8)

Navigational Impediments & Tree Removal

Tree Removal By Fiscal Year



Total Tree Removal By Waterway



ACCOMPLISHMENTS (9)



ACCOMPLISHMENTS (10)

Waterway Signage

Staff replaced aging and damaged regulatory signs on Little Lake Harris to improve navigation and boating safety

Updating signage enhances visibility, reinforces idle speed and safe operation zones, and supports safer recreational use of Lake County Waterways



Nutrient Reduction Facility (NurF)

- Conceptual plan approved, design underway
- Enhances flood protection and restores natural hydrologic flowways
- Reduces nutrient loading to the Harris Chain of Lakes, supporting regional water quality goals
- Supports habitat restoration and ecological resilience
- Provides opportunities for passive recreation and public access
- 2026 LCWA legislative priority project



ACCOMPLISHMENTS (12)

Lake Denham Muck Farm Restoration

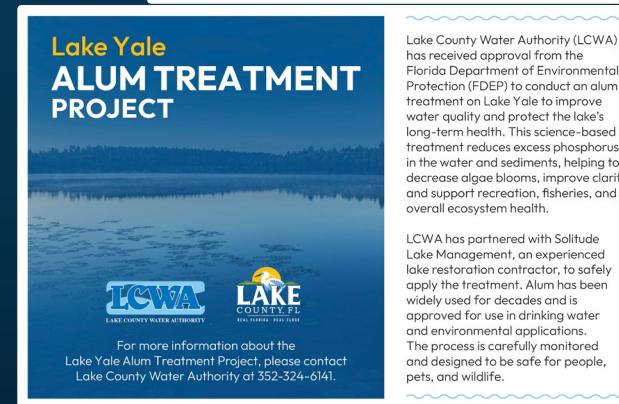
- Board approved moving forward with conceptual master site planning
- Ongoing operations include:
 - Agreement with Southeast Soil, Inc.
 - Site Preparation
 - Peat Harvesting
 - Water Treatment
 - Water Sampling
- Proposed 2027 legislative priority project
 - Design, Engineering and Permitting



ACCOMPLISHMENTS (13)

Lake Yale Alum Treatment Project

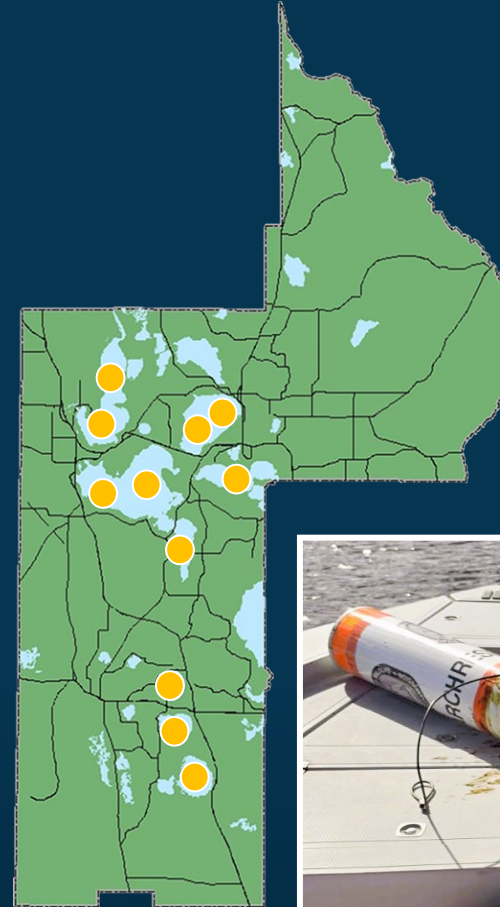
- Partnership with SOLitude Lake Management
- 4-year project
- Alum treatment to reduce nutrient loading (phosphorus)
- Will improve water quality, fish and wildlife biodiversity
- Scientific Study Partnership with University of FL, FWC, and LakeWatch
- Phase 1 complete



ACCOMPLISHMENTS (14)

Water Quality Monitoring Partnership with FWC and SJRWMD

- 11 SONDES monitoring units placed throughout the Harris and Clermont Chain-of-Lakes
- Units across the chains are monitored by both County and FWC staff
- Collecting key data for the ongoing understanding of water health
- Data used in conjunction with other information such as creel surveys and water/benthic sampling



ACCOMPLISHMENTS (15)

Joint-Use Marine Building & Pole Barn Design



FRONT PERSPECTIVE ELEVATION



REAR PERSPECTIVE ELEVATION

- Designs for the Joint Use Marine Building and Pole Barn Expansion are complete
- Provides ample office space for the LCSO Marine Unit and related enforcement entities to collaborate.
- Provides additional storage and maintenance space for both LCWA and the LCSO needs

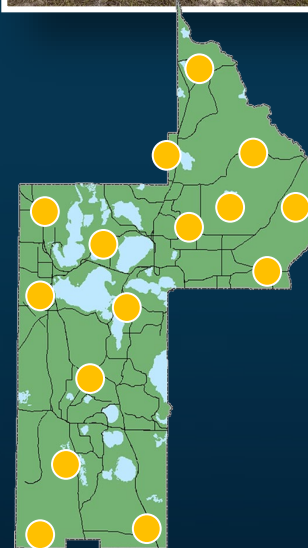
ACCOMPLISHMENTS (16)

Rain Station Monitoring Upgrades

- Previous rain stations were old, outdated and failing
- Increased the number of rain stations positioned around the County from 4 stations to 15
- Provides County-wide broad spectrum data collection
- Will help in evaluating stormwater and surface water behavior



Old Rain Stations

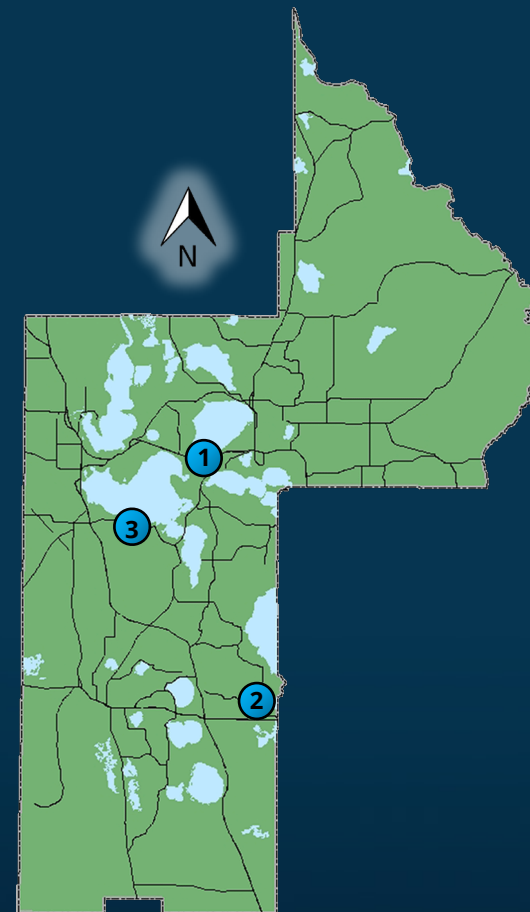


New Rain Stations

ACCOMPLISHMENTS (17)

Assisting local governments in treating of Stormwater Runoff

Stormwater Grant Projects – \$742k	
1	Tavares N. St. Clair Abrams Treatment Pond
2	Montverde Boat Ramp Improvements
3	Lake County Sun Eden Water Quality Retrofits



- Clermont – Basin 12-A Stormwater Improvement - Completed - \$212,615
- Howey-in-the-Hills – Lakeside Capture – Completed - \$140,974
- Mascotte – Stormwater Improvements – Partially Completed - \$149,400
- Montverde – Stormwater Improvements - Partially Completed - \$38,588
- Tavares – CRA Basin EE (Aesop's Park) - Complete \$280,000
- Tavares – Public Works Project – Stormwater Ponds - Completed - \$105,000

Successfully completion of the FY 2025 Annual Report

A SPECIAL DISTRICT WITH A SPECIAL PURPOSE

Mission & Purpose

The mission of the Lake County Water Authority is to conserve and restore the freshwater resources of Lake County for future generations, encourage stewardship of our natural resources, inspire awareness and engagement through educational and recreational opportunities, and promote innovative technology projects to support water quality improvements. This Mission was approved on December 18, 2024, at the Lake County Water Authority Board Regular Meeting.

The Lake County Water Authority, established under Chapter 24 of the Lake County Code, is charged with the control, conservation, and improvement of Lake County's freshwater resources. Its legislative purposes include managing and protecting streams, lakes, and canals; enhancing aquatic habitats and wildlife; promoting recreational access consistent with water resource stewardship; and assisting local governments in addressing stormwater runoff to safeguard water quality and quantity.



Annual Report FY 2025




Lake County
WATER AUTHORITY

Approved by LCWA
on October 22, 2025

Approved by the
Lake County Board
of County Commissioners
on November 18, 2025

ACCOMPLISHMENTS (19)

LCWA Legislative Priorities

Leadership met with key stakeholders to advance the 2026 Legislative Priority Projects



PROPOSED 2027 LEGISLATIVE PRIORITIES

Board Discussion and Direction
Shortlist to Top 5

PROPOSED 2027 LEGISLATIVE PRIORITIES (2)

- Nutrient Reduction Facility (NuRF) – Phase 1 construction
- Cherry Lake Dam Replacement
- Lake Denham Property Master Planning and Restoration Strategy
- Canal System Dredging and Navigation Restoration
- Countywide MS-4 Stormwater Conveyance System
- Lake County Stormwater Master Plan Development
- Palatlakaha River Navigation and Obstruction Removal Project
- Pine Meadows Conservation Area Master Planning and Restoration Strategy
- Hicks Ditch Canal & Flow-way Restoration for Flood Risk Reduction – PHASE II
- Lake Apopka Rehabilitation in Lake County

- Utilizing grant funding assistance when applicable
- LCWA established with Lake County Emergency Management ESF-12
- Evaluating and cross training staff in multiple disciplines
- Stormwater and Floodplain Program Re-alignment
- Assists with the Development Review Process
- Sharing equipment, resources and key personnel at remote locations
- Supplementing staff, land management, maintenance and repair operations through outsourcing
- Coordination with SJRWMD – Basin Management Program
- Identifying needs and opportunities to connect with our municipal partners

- Purchase of new barge - increased savings to taxpayers
- Rain Station monitoring Upgrades
- Sampling and analysis for special project areas with data to be used to support future water quality improvements
- Purchase of additional discrete analyzer for surface water, groundwater and drinking water analysis
- Purchased an additional automatic sampler for use on industrial waste sampling projects

Land Acquisition Update

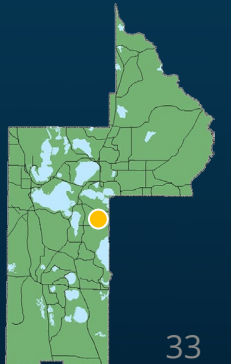
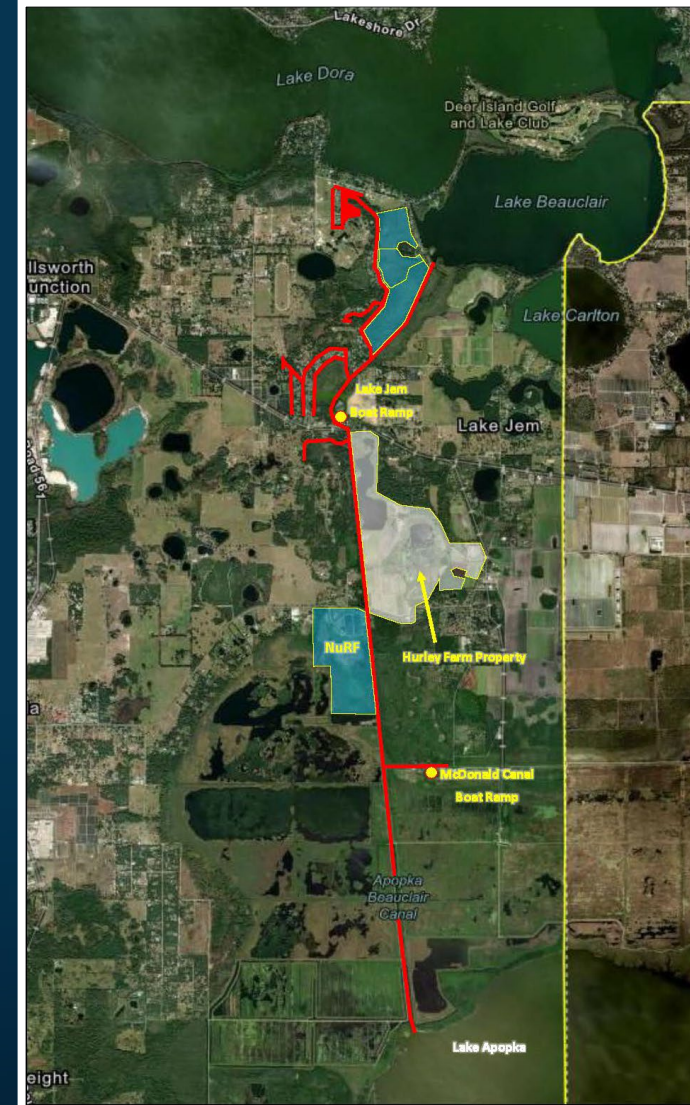
At the November 19, 2025, Regular Board Meeting, the LCWA Board was presented with three properties:

- Hurley Farm Property – 504 acres
- Blandford Property – 354 acres
- Thrill Hill Property – 35 acres

All three represented potential acquisition opportunities consistent with LCWA's adopted Conservation and Acquisition Core Program (December 2024)

March 2026 – Blandford Property and Thrill Hill Property under contract by others

CONSERVATION AND ACQUISITION PROGRAM (2)



CONSERVATION AND ACQUISITION PROGRAM (3)

Background and historical information provided to the LCWA Board

- March 2017
 - Amec Foster Wheeler conducted a six-month Apopka Beauclair Canal Nutrient Loading Study
- September 18, 2024
 - Water quality data confirms elevated nutrient and sediment concentrations entering the Harris Chain downstream of the NuRF
- November 19, 2025
 - Water quality data confirms elevated nutrient and sediment concentrations entering the Harris Chain downstream of the NuRF
- February 25, 2026
 - Hurley Farm Property potential use: addressing mass loading from the study basin, storage, water treatment, nutrient reduction and flood control
- April 16, 2026
 - Received Letter of Intent for the Sale and Purchase of the Hurley Farm Property

Hurley Farm Property

Board Discussion and Direction

- If the Board wishes to move forward; Next steps are:

Requested Action

1. Approval to execute the Letter of Intent ("Letter")

- "Letter is non-binding in all respects except as expressly provided herein, and nothing herein shall be construed to create any legally binding obligation on the part of Buyer to acquire the Property unless and until a definitive agreement is executed and approved as set forth herein."

2. Approve the Executive Director to work with LCWA Legal Counsel to perform due diligence

LAKE COUNTY WATER AUTHORITY FY 2027 PROJECT SUMMARY

Operations

- Funds Lake County Water Authority operations and legal services
- Funds the Management Services Agreement with Lake County
- Funds the operation of the NuRF
- Funds Land Management and Ecological Restoration

LCWA Grants and Aids

- \$742k Stormwater Projects (3 Carryforward Projects)
- \$1M for Distributed Wastewater Treatment System (Carryforward)
- \$1M for Water Resources Improvement Grant Program including education
- \$100,000 for Healthy Shoreline Grant Program
- \$80,000 for Trout Lake Nature Center
- Fully funds 5 Marine units for Sheriff's Office and 2 Marine units for City of Clermont

LAKE COUNTY WATER AUTHORITY FY 2027 MULTI-PHASE PRIORITY PROJECTS

Projects

- Lake Yale Alum Treatment Project - Phase Two
- Transformation of the Nutrient Reduction Facility (NuRF) - Design underway
- Hickory Point Improvements
 - Joint-Use Marine Building – Design completed and bid plans under review
 - Pole Barn Expansion – Design substantially completed and bid plans under review
 - Water Quality Lab Building – Planning phase
 - Administration Building and other site improvements in phases
- Harris Chain of Lakes Ecosystem and Recreation Enhancements - ongoing
- Clermont Chain of Lakes Ecosystem and Recreation Enhancements - ongoing

LAKE COUNTY WATER AUTHORITY

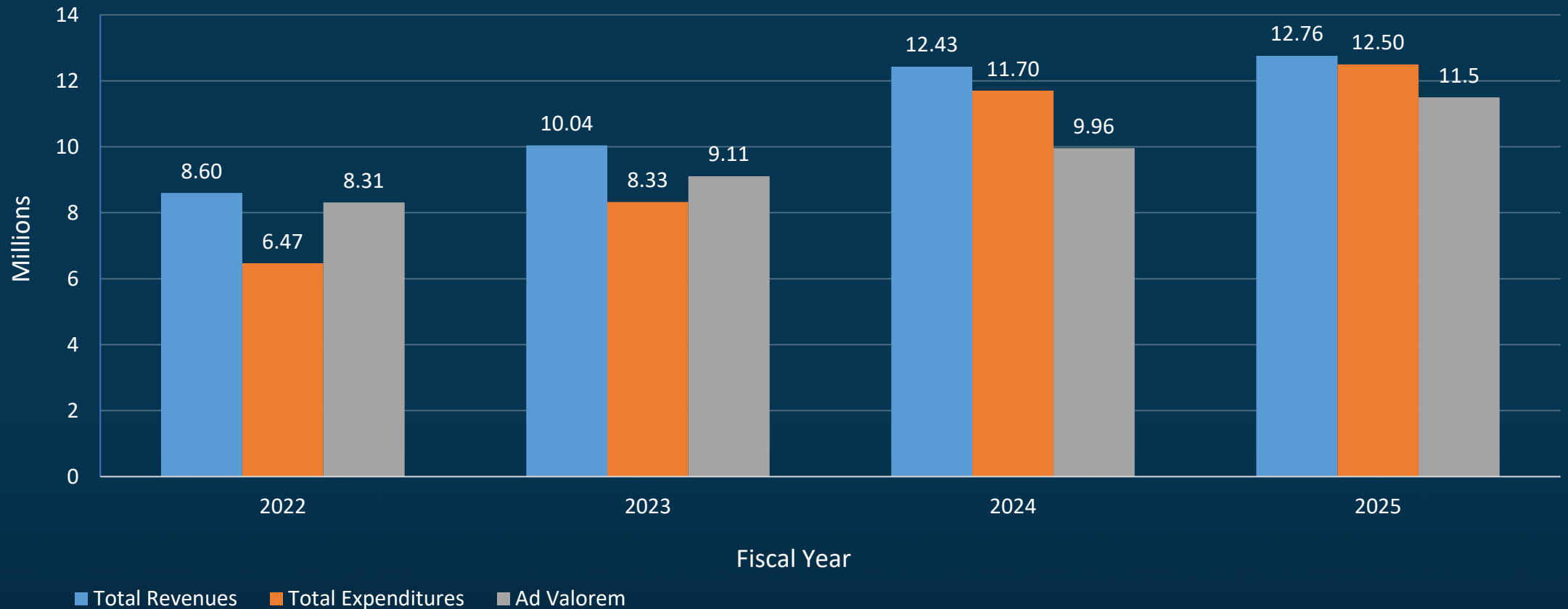
FY 2027 MULTI-PHASE PRIORITY PROJECTS

Projects

- Lake Denham Muck Farm Restoration - ongoing
- Land Management and Ecological Restoration - ongoing
- Hydro-Geotechnical Assessment and Related Water Quality Studies
- Flood discharge, Sediment controls, Tussocks, Dredging and Related operations
 - Management of aquatic vegetation is critical and key to keeping low levels of invasive aquatic vegetation to sustain navigational, flood control and recreation, while also protecting native plant habitats for fish and wildlife
- Property Transfer and Land Acquisition Opportunities under review
- Other projects under review and consideration

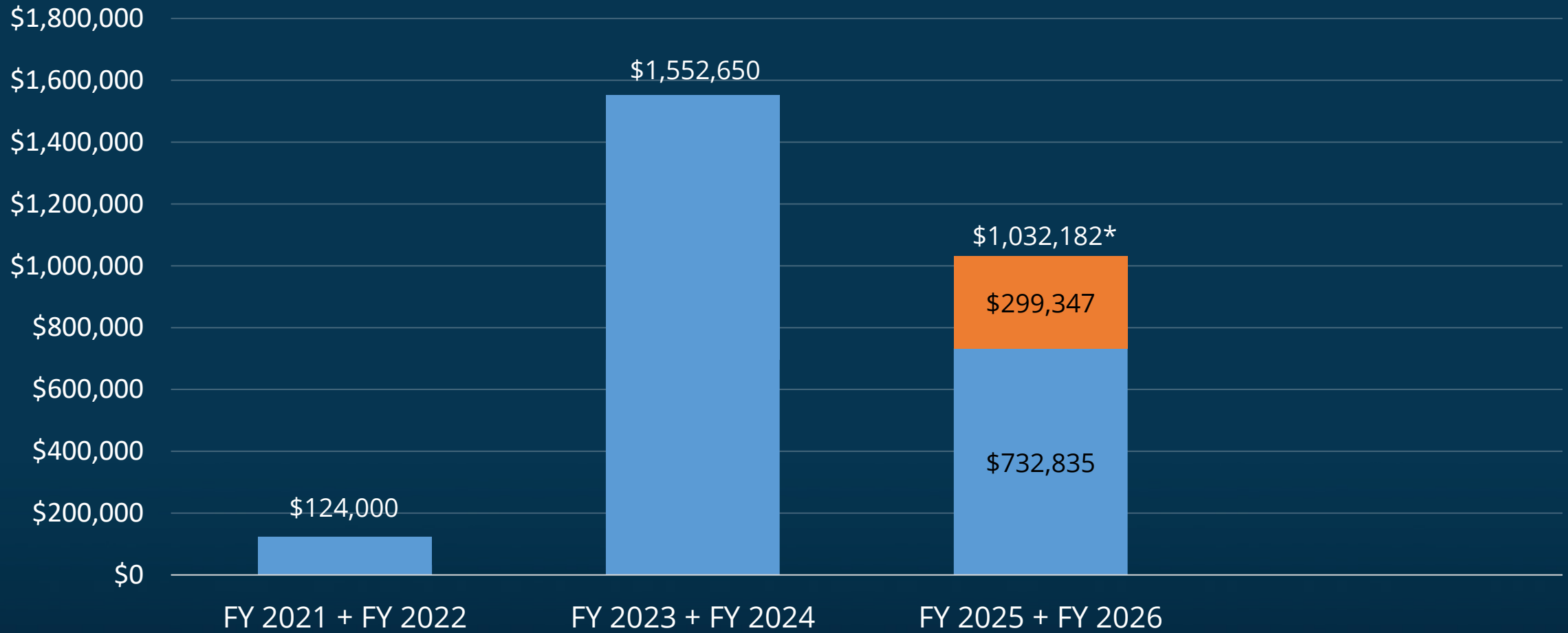
BUDGET HISTORY

Lake County Water Authority Taxing District Revenues / Expenditures



Total Revenues include: Ad Valorem Tax, Grant and/or FEMA Reimbursement, Interest Revenue, and Miscellaneous Revenue

LAKE COUNTY WATER AUTHORITY INTEREST EARNED



*FY 2026 as of 3/31/26

Note: Orange color for FY 2026



Lake County
WATER AUTHORITY

THANK YOU



Apopka-Beauclair Canal Pollutant Loading Study
DRAFT

Prepared for



Lake County Water Authority
Tavares, FL

Prepared by

Amec Foster Wheeler Environment & Infrastructure, Inc.

Amec Foster Wheeler Project No. 600391.2

March 2017

Executive Summary

Amec Foster Wheeler conducted a six-month study involving the contributing basin for two outfall ditches on the north and south sides of the Lake Jem Sod Farm immediately downstream of the Lake County Water Authority's Nutrient Reduction Facility on the Apopka-Beauclair Canal. This basin is important because it likely represents the most significant remaining source of untreated pollutant loading to the Apopka-Beauclair Canal and Lake Beauclair.

Base flow was evaluated every three weeks from July 28th, 2016 through January 12th, 2017 for flow and water quality at four locations including the two ditch outfalls and two points further upstream in the basin adjacent to culvert crossings under CR448A. Stormwater runoff was evaluated for two wet season and two dry season rain events at the upstream CR448A locations.

Base flow at the south ditch indicated significant total phosphorus loading of 1,574 pounds per year and total nitrogen loading of 6,628 pounds per year with an average flow of 2.4 cubic feet per second, or 1,766 acre-feet per year. The majority of phosphorus was in the bioavailable orthophosphate form. Base flow loading from the north ditch was not as significant but still contributes an estimated 429 pounds of total phosphorus per year and 6,125 pounds of total nitrogen per year with an average flow of 2.3 cubic feet per second, or 1,629 acre-feet per year.



Stormwater discharge was estimated to contribute approximately 931 acre-feet of discharge through the ABC North and South ditches each year. Stormwater contributes approximately 705 pounds of total phosphorus per year and 4,133 pounds of total nitrogen. Total phosphorus and total nitrogen concentrations in the monitored locations were similar for stormwater and base flow.

Amec Foster Wheeler developed five alternatives to address loading from the study basin as detailed below. All alternatives have comparable pollutant removal efficiencies because they are all capable of removing significant mass loads. Alternative 5 is recommended for additional consideration to negotiate potential land acquisition terms and proceed with project design.

Summary of Alternatives for Study Basin

Alternative	Summary	lb TP removed per year	\$/lb TP removed
1- Diversion to NuRF	This alternative provides the ability to utilize available capacity at the NuRF facility to treat the ABC South discharge and requires only a small area to construct a staging pond.	1,836	97
2- ABC South Treatment Pond	This alternative provides for conventional stormwater treatment of the ABC South discharge but requires a significant amount of land.	1,156	104
3- ABC North Treatment Pond	This alternative provides for conventional stormwater treatment of the ABC South and North discharge but requires a significant amount of land.	1,519	86
4- ABC North Treatment Pond with Alum	This alternative is the most expensive and provides both conventional stormwater treatment coupled with alum injection to remove the maximum amount of pollutant load from the ABC South and North discharge.	2,437	161
5- Diversion to Mine Pit	This alternative is the least expensive and provides conventional stormwater treatment for both the ABC South and North discharge by repurposing an existing mine pit.	1,809	20

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Appendix A-	Lake County Water Laboratory Reports
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List of acronyms and abbreviations

ABC	Apopka Beauclair Canal
ac-ft	acre-foot
ADV	acoustic Doppler velocimeter
Amec Foster Wheeler	Amec Foster Wheeler Environment &Infrastructure, Inc.
BMAP	Basin Management Action Plan
BMP	Best Management Practice
cm	centimeter
cfs	cubic feet per second
EMC	event mean concentrations
FDEP	Florida Department of Environmental Protection
ft	feet
ft/s	feet per second
GIS	Geographic Information System
HSG	Hydrologic Soil Groups
ICPR®	Interconnected Channel and Pond Routing model
in/yr	inches per year
kg	kilogram
LCWA	Lake County Water Authority
LOD	limit-of-detection
m	meter
mg/L	milligrams per liter
ml	milliliter
NAVD88	North American Vertical Datum of 1988
NOAA	National Oceanic and Atmospheric Administration
NOx	Nitrate plus nitrite nitrogen
NRCS	National Resource Conservation Service
NuRF	Nutrient Reduction Facility
OP	Orthophosphate
PCU	platinum cobalt units
RCN	runoff curve number
SCS	Soil Conservation Service
SJRWMD	St. Johns River Water Management District
TMDLs	Total Maximum Daily Loads
TKN	total kjeldahl nitrogen
TAN	total ammonia nitrogen
TN	total nitrogen
TP	total phosphorus
TSI	Trophic State Indices
TSS	total suspended solids
µg/L	micrograms per liter
µS/cm ²	microSiemens per square centimeter
USDA	US Department of Agriculture
USEPA	US Environmental Protection Agency
WBID	Water Body Identification
WLM	Water Level Model

1.0 Introduction

1.1 General Description

Amec Foster Wheeler Environment & Infrastructure (Amec Foster Wheeler) developed this report for the Lake County Water Authority (LCWA). The purpose of this study was to estimate nutrient loading and develop at least three load reduction alternatives for two drainage ditches discharging to the Apopka Beauclair Canal (ABC) downstream of the LCWA's Nutrient Reduction Facility (NuRF). These ditches form a rim around the Lake Jem Sod Farm and facilitate drainage from both the sod farm and additional agricultural areas to the east.

Tasks included development of hydrologic and nutrient budgets, determination of site-specific event mean concentrations (EMCs) for stormwater runoff, and measurement of base flow contribution. Water quality and flow data collected as part of this project have been utilized to provide recommendations for additional loading reduction to Lake Beauclair.



1.2 Impaired Waters Determination

Section 303(d) of the Clean Water Act requires states to submit lists of surface waterbodies that do not meet applicable water quality standards. These waterbodies are defined as “impaired waters” and Total Maximum Daily Loads (TMDLs) must be established for these waters on a prioritized schedule. The TMDL process quantifies the amount of a pollutant that can be assimilated in a waterbody, identifies the sources of the pollutant, and recommends regulatory or other actions to be taken to achieve compliance with applicable water quality standards based on the relationship between pollution sources and in-stream water quality conditions. The Florida Department of Environmental Protection (FDEP) has established a series of guidelines to identify impaired waters that may require the establishment of TMDLs.

FDEP divides the ABC into an upper segment Water Body Identification (WBID) 2835A1 and a lower segment (WBID 2835A2) separated by the ABC Lock and Dam. Based on the 2013 Final Verified List of Impaired Waters for the Ocklawaha Basin both segments are categorized as impaired due to excessive nutrient and low dissolved oxygen levels. The two drainage ditches addressed in this study discharge into the lower segment downstream of the Lock and Dam and the NuRF. The ABC drains into Lake Beauclair (WBID 2834C) which is also an impaired for nutrients.

1.3 Work Efforts Performed by Amec Foster Wheeler

This report presents results of a hydrologic and nutrient loading evaluation along with conceptual alternatives for projects capable of reducing loading from the two drainage ditches surrounding the Lake Jem sod farm immediately downstream of the NuRF. Baseflow loading analysis consisted of nine flow monitoring and water quality sampling events over six months during wet and dry periods. Stormwater inputs were characterized for areas upstream of the sampling locations during four storm events (two wet season and two dry season) using automated stormwater sampling equipment. Current literature-based runoff characterizations were utilized for the remaining land use types within the basin.

2.0 Drainage Basin Characteristics

2.1 Basin Delineation

The overall objectives for this project were to quantify the hydrologic and nutrient inputs from two ditches surrounding the Lake Jem Sod Farm and to provide at least three alternatives for reducing loading to the ABC and Lake Beauclair.

The 1,631-acre contributing area draining to the two ditches was determined using the ArcGIS Arc Hydro tool along with field verification. The study basin is shown in **Figure 2-1**.

Amec Foster Wheeler located the accessible drainage structures shown in **Figure 2-2** as part of Phase I of this study. Much of the area has undergone significant ditching and draining to facilitate agricultural activities. The east side of the watershed consists primarily of active agricultural areas producing row crops. Drainage from these areas flows to ditches on the north and south side of Duda Road, also known as Jones Avenue in northwestern Orange County. The ditches running along Duda Road cross under CR448A and traverse several properties in the central part of the basin before reaching the Lake Jem farm rim ditch. The central portion of the basin is dominated by low-density residential, forested areas, and pasture with some sod farming activity. The western portion of the watershed is characterized almost exclusively by sod farming and peat mining activities with some forested areas present.

2.2 Topography

One-foot contour LiDAR data (2008) was obtained from the St. Johns River Water Management District (SJRWMD) and a digital elevation model (DEM) was generated for the basin (**Figure 2-3**). The land elevation within the basin ranges between 102.5 ft and 57.0 ft NAVD88. The highest elevations are located at the northeast corner of the basin while the lowest elevations are on the east side within the Lake Jem sod farm. The basin contains a network of agricultural ditches generally providing drainage from east to west. All of the agricultural ditches within the basin culminate at a rim ditch surrounding the majority of the Lake Jem sod farm. Because most of the Lake Jem sod farm sits at or near the groundwater elevation, an internal pumping system provides drainage for the active portions. Water is pumped from the sod farm to an adjacent staging pond which outfalls to the rim ditch as shown in **Figure 2-2**. Water within the rim ditch is carried either through the north or south outfall to the ABC.

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2.3 Soils

Information on soil types within the study basin was obtained from GIS Online Imagery based on the Natural Resources Conservation Service (NRCS) Soil Survey Geographic database for Orange County, Florida and the St. Johns River Water Management District (SJRWMD) soil database for Lake Counties, Florida (**Figure 2-4**). The NRCS mapped 24 soil types within the Lake County portion of the basin while SJRWMD mapped 13 soil types (**Table 2-1**). Most of the sandy, well-drained soils are located at the higher elevations on the north side of the basin.

The NRCS Soil Survey classifies soils into Hydrologic Soil Groups (HSG) with respect to runoff-producing characteristics, which is an input for stormwater models. HSG A soils comprise 24.5 percent of the soils within the study basin and are found at the higher elevations that have been developed for agricultural use (**Table 2-2**). The remainder of the site is mapped as D and dual A/D, B/D, and C/D soil with a limited amount of B and C soils (**Figure 2-4**).

The chief consideration in each of the soil group types is the inherent capacity of the soil to permit infiltration. A summary of the characteristics of each hydrologic soil group is presented below.

- **Group A:** Soils having low runoff potential and high infiltration rates even when thoroughly saturated. These soils consist primarily of deep, well to excessively drained sands or gravels and have a high rate of water transmission.
- **Group B:** Soils having moderate infiltration rates when thoroughly saturated and consist primarily of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.
- **Group C:** Soils having low infiltration rates when thoroughly saturated and consist primarily of soils with a layer that impedes downward movement of water and soils with moderately fine to fine texture. These soils have a low rate of water transmission.
- **Group D:** Soils having high runoff potential: These soils have low infiltration rates when thoroughly saturated and consist primarily of clay soils with high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface and shallow soils over nearly impervious material. These soils have a very low rate of water transmission.
- **Dual Hydrologic Soil Groups (Group X/D):** Soils located in areas where the average water table is within 60 centimeters (cm) of the surface: In their saturated state, these soils still have a hydraulic conductivity that may be favorable for water transmission. If these soils can be adequately drained, they are assigned a dual hydrologic soil group (A/D, B/D, and C/D). The first letter applies to the drained condition and the second to the undrained condition.
- **Group W:** Soils are categorized as wetland or hydric soils

2.4 Land Use

Land use information for the basin was obtained from the SJRWMD 2012 Land Use and Land Cover (**Figure 2-5**). Characteristics of regional land uses were compiled in Geographic Information System (GIS) and categorized for further analysis. Within the basin, land use was divided into 27 categories represented in **Table 2-3** in order of descending acreages. Agriculture is the dominant land use within the basin boundary and accounts for approximately 65.4% of the total land area. Residential land use accounts for 9.4% of the total land area and the balance is comprised primarily of natural areas and lakes.

2.5 Base flow and Stormwater Sampling Locations

Four sampling locations were selected based on preliminary site reconnaissance and flow monitoring performed during the first phase of this project. Initially, two locations were selected within a portion of the Lake Jem sod farm property immediately upstream of the rim ditch and two locations were selected at the north and south ends of the rim ditch prior to their confluence with the ABC (**Figure 2-6**). However, access through the sod farm property was restricted after the first base flow monitoring event. The two sampling locations upstream of the rim ditch were relocated further east to the right-of-way along County Road 448A and the sampling locations near the north and south ends of the rim ditch were relocated to their confluence with the ABC (**Figure 2-6**). Although the new locations were not as secure or easy to access, they provided the same pollutant source information as originally planned. All four locations were monitored for base flow and water quality conditions once every three weeks. Stormwater runoff was collected at the two upstream locations using automated stormwater samplers programmed to collect flow-weighted stormwater runoff (**Figures 2-7 and 2-8**).

3.0 Base Flow Analysis

Discharge from the study basin to the ABC consists of both base flow and stormwater runoff components. This section addresses base flow contribution while stormwater contribution is discussed in **Section 4**. As discussed above, Amec Foster Wheeler identified four locations for monitoring base flow based on the major conveyance structures and outfalls within the basin. Sample locations CR448A at Duda and CR448A at Long & Scott convey flows from areas within the basin east of CR448A (**Figure 2-6**). ABC North and ABC South convey flow from the two CR448A locations and from portions of the basin within and adjacent to the sod farm (**Figure 2-6**).

Amec Foster Wheeler collected nine surface water quality samples and flow measurements every three weeks at sites “CR448A at Duda”, “CR448A at Long & Scott”, “ABC North”, and “ABC South” for six months between July 28, 2016 through January 12, 2017. The results are discussed below.

3.1 Base Flow Discharge

The six-month base flow sampling period included portions of both normally wet and normally dry seasons. Base flow was measured at each location using a Sontek® acoustic Doppler velocimeter (ADV). For the CR448A at Duda and CR448A at Long & Scott stations, velocity and depth at pipe invert were recorded. Flow was determined at these locations based on the cross sectional pipe area at the measured depth. Flow rates at ABC North and ABC South were determined by measuring depth and velocity at 60 percent of the depth along a cross-section of the channel. Because ABC South could not be measured directly due to dense vegetation, cross sectional flow was measured upstream and downstream of the ditch confluence with the ABC. Flow in the south ditch was reported as the difference between the downstream and upstream flow values. Measured flows are shown in **Figure 3-1**. Average base flow at the ABC North and ABC South stations is shown in **Figure 3-2**.

Base flow was evident at all locations except for CR448A at Duda throughout the duration of the sampling period. Base flow and stormwater sampling event dates are presented in **Figure 3-3**. Base flow sample event dates are represented in the figure by green boxes and stormwater sample event dates are represented by blue diamonds. Daily rainfall is shown in the figure using a blue line. Stormwater sampling is discussed in **Section 4** below.

Mean discharge at the ABC North location was 2.3 cubic feet per second (cfs) and ranged from 0.3 to 13.0 cfs. Mean discharge at the ABC South location was 2.4 cfs and ranged from 0.2 to 5.3 cfs. Annual base flow volume from ABC North and ABC South was 1,629 acre-feet (ac-ft) and 1,766 ac-ft, respectively.

3.2 Water Quality

Base flow water quality samples were collected at each location every three weeks concurrent with base flow measurements (**Figure 3-3**). All base flow sampling events were included in the analysis as they occurred primarily during periods of dry weather and are likely to reflect primarily base flow conditions. Hurricane Matthew likely had some influence on the 10/20/2016 base flow conditions. However, the effect was minimized since the sampling event took place two weeks after the hurricane passed.

Parameters included for monitoring are provided in **Table 3-1**. Field data including temperature, pH, dissolved oxygen, and turbidity were collected using a YSI® multimeter and grab samples

were collected for laboratory nutrient analysis. Laboratory data includes total phosphorus (TP), orthophosphate (OP), total nitrogen (TN), nitrite/nitrate (NO_x), total Kjeldahl nitrogen (TKN), and total ammonia nitrogen (TAN). Results from field and laboratory data are summarized in **Table 3-2**. Laboratory analyses were provided by the Lake County Water Laboratory and laboratory reports are provided in **Appendix A**.

3.2.1 CR448A at Duda

Mean base flow TP concentration at the CR448A at Duda location was 0.519 mg/L. Maximum TP concentration measured for this location was 0.887 mg/L. This location consistently had the highest TP concentration of any location throughout the study period. Mean OP concentration was 0.298 mg/L. OP concentration in all but one base flow sample at this location was greater than 50 percent of TP and ranged between 25 and 68 percent of TP.

Mean base flow TN concentration was 1.39 mg/L. The mean TKN fraction represented 90 percent of the mean TN and mean TAN represented 16 percent of mean TKN. Mean NO_x concentration was 0.13 mg/L and comprised between 0.9 and 22 percent of mean TN.

Field sampling parameters at the CR448A at Duda location were typical of ditch drainage systems receiving groundwater seepage with low dissolved oxygen (DO), low pH, and relatively high specific conductance (**Table 3-2**). Mean DO was 2.3 mg/L, mean pH was 6.3, and mean specific conductance was 300 µS/cm². Mean turbidity was relatively low at 3.7 NTU.

3.2.2 CR448A at Long & Scott

Mean base flow TP concentration at the CR448A at Long & Scott location was 0.265 mg/L. Maximum TP concentration measured for this location was 0.589 mg/L. Mean OP concentration was 0.188 mg/L. OP concentration in all but two base flow samples at this location was greater than 50 percent of TP and ranged between 43 and 95 percent of TP.

Mean base flow TN concentration was 1.47 mg/L. The mean TKN fraction represented 59 percent of the mean TN and mean TAN represented 16 percent of mean TKN. Mean NO_x concentration was 0.65 mg/L and comprised between 10 and 64 percent of mean TN.

Similar to the CR448A at Duda location, field parameters were typical of ditch drainage systems receiving groundwater seepage with low DO, low pH, and relatively high specific conductance. (**Table 3-2**). Mean DO was 3.8 mg/L, mean pH was 6.7, and mean specific conductance was 287 µS/cm². Mean turbidity was relatively low at 3.8 NTU.

3.2.3 ABC North

Mean base flow TP concentration at the ABC North location was 0.097 mg/L. Maximum TP concentration measured for this location was 0.162 mg/L. Mean OP concentration was 0.086 mg/L. OP concentration ranged between 15 and 67 percent of TP. The result of the 9/8/2016 OP analysis was not included in the data set because it was nearly three times that of the TP.

Mean base flow TN concentration was 1.38 mg/L. The mean TKN fraction represented 97 percent of the mean TN and mean TAN represented 8 percent of mean TKN. Mean NO_x concentration was 0.04 mg/L and comprised between 1 and 6 percent of mean TN.

Field parameters were typical of the upstream ditch drainage systems with low DO. This location exhibited slightly higher pH and specific conductance than the upstream locations. (**Table 3-2**). Mean DO was 3.5 mg/L, mean pH was 7.04, and mean specific conductance was 389 $\mu\text{S}/\text{cm}^2$. The mean turbidity of 1.9 NTU was lower than the upstream locations.

3.2.4 ABC South

Mean base flow TP concentration at the ABC South location was 0.328 mg/L. Maximum TP concentration measured for this location was 0.705 mg/L. Mean OP concentration was 0.213 mg/L. OP concentration in all but two base flow samples at this location was greater than 50 percent of TP and ranged between 13 and 99 percent of TP. The result of the 12/22/2016 OP analysis was not included in the data set because it was 10 percent greater than the TP concentration.

Mean base flow TN concentration was 1.38 mg/L. The mean TKN fraction represented 87 percent of the mean TN and mean TAN represented 7 percent of mean TKN. Mean NO_x concentration was 0.20 mg/L and comprised between 2 and 42 percent of mean TN.

Field sampling parameters at the ABC South location were typical of the upstream ditch drainage systems receiving groundwater seepage with low DO. (**Table 3-2**). Like the ABC North location, this location exhibited slightly higher pH and specific conductance than the upstream locations. Mean DO was 2.7 mg/L, mean pH was 7.06, and mean specific conductance was 324 $\mu\text{S}/\text{cm}^2$. The mean turbidity of 1.0 NTU was the lowest of all the base flow sampling locations.

3.3 Base Flow Nutrient Load

Annual base flow nutrient loading to the ABC from the study basin was estimated using the combined flow and nutrient concentration data from the ABC North and ABC South locations. Annual base flow from ABC North was estimated to be 1,629 ac-ft (**Table 3-3**). Mean TP concentration was 0.097 mg/L and the mean TN concentration was 1.38 mg/L. Annual base flow from ABC South was estimated to be 1,766 ac-ft (**Table 3-4**). Mean TP concentration was 0.328 mg/L and the mean TN concentration was 1.38 mg/L.

Base flow loading from the ABC North ditch is estimated to be 429 lb/yr of TP and 6,125 lb/yr of TN (**Table 3-3**). Base flow loading from the ABC South ditch is estimated to be 1575 lb/yr of TP and 6,628 lb/yr of TN (**Table 3-4**). The combined annual base flow loading from the study basin is approximately 2004 lb/yr TP and 12,753 lb/yr TN. Base flow in the south ditch contributed 1,575 lb/yr of TP or approximately 79 percent of the total TP base flow load.

4.0 Stormwater Water Quality Analysis

Stormwater runoff contribution from critical areas of the study basin was also determined as part of this study. Site-specific nutrient concentrations from stormwater samples were used with stormwater volume estimates to determine pollutant loading to the ABC from stormwater. Amec Foster Wheeler used a continuous simulation ICPR[®] model to quantify stormwater runoff volume for a 52-inch rainfall year. Calculation of runoff volume for each catchment within study area is discussed later in **Section 5**.

Stormwater loading inputs were combined with base flow loading inputs to determine the overall loading to the ABC from the study basin as explained below.

4.1 Stormwater Sample Sites

Amec Foster Wheeler installed automated telemetry-based stormwater sampling units at two locations upstream of the rim ditch (**Figure 2-6**). Automated stormwater samplers were programmed to activate following a rain event of 0.25-inches over two hours. The locations of sites CR448A at Duda and CR448A at Long & Scott were selected based on accessibility and presence of conveyance structures. These two locations convey most of the agricultural runoff on the north and south sides of Duda Road. Stormwater runoff was not sampled within the rim ditch because discharge from the Lake Jem Sod Farm is controlled by a pumping system and operation depends largely on antecedent conditions, groundwater elevation, or management activities within the farm. Stormwater runoff parameters were modeled for the Lake Jem Sod Farm using literature values as explained in **Section 5.0**.

4.1.1 CR448A at Duda

The automated stormwater sampler at CR448A at Duda was positioned immediately north of the intersection of CR448A and Duda Road (**Figure 2-7**). The sampler, rain gauge, and level sensing equipment were positioned at the headwall of the upstream side of three 36-inch reinforced concrete pipes providing conveyance of drainage under CR448A.

4.1.2 CR448A at Long & Scott

The automated stormwater sampler at CR448A at Long & Scott was positioned south of the intersection of CR448A and Duda Road near the entrance to the Long & Scott farm (**Figure 2-8**). The sampler and level sensing equipment were positioned at the headwall of the upstream side of a single 48-inch reinforced concrete pipe providing conveyance of drainage under CR448A.

4.2 Stormwater Sample Methods

Automated stormwater samplers were programmed to begin sampling after rainfall events of 0.25 inches within a two-hour period. Automated stormwater samplers were filled with ice prior to each expected rain event. Once triggered, the samplers collected 120 mL sample aliquots for every 4,000 cubic feet discharged.

Automated stormwater samplers were inspected within twelve hours following the completion of a sampling event. All available sample bottles were composited, filtered as necessary, placed on ice, and delivered to the laboratory for analysis within 24 hours.

4.3 Stormwater Sample Results

Samples from four discrete rain events shown in **Figure 3-3** were collected during the study period. Summary data for the stormwater analyses are presented in **Table 4-1**. Complete laboratory reports are provided in **Appendix A**. No flow was present at the 448 at Duda site following the 1/8/2017 rain event so no sample was collected.

4.3.1 Water Quality Indicators

Water quality indicators measured include TAN, TKN, TN, TP, OP, turbidity, and TSS. Laboratory analysis was provided by the Lake County Water Laboratory. Most values were similar to those observed in base flow.

4.3.2 Total Suspended Solids (TSS) and Turbidity

Mean TSS was 10.4 mg/L and mean turbidity was 9.0 NTU. These parameters were generally low within stormwater and the 10/2/16 rainfall event exhibited the highest TSS of 21 mg/L and turbidity of 16.7 NTU.

4.3.3 Total Nitrogen (TN)

Mean TN concentration was 1.31 mg/L and was similar for both locations ranging from 1.74 mg/L to 1.06 mg/L. TAN ranged from the 0.01 mg/L detection limit to 0.24 mg/L. Mean NO_x concentration contributed between 21 and 46 percent of the mean total nitrogen concentration with a mean concentration of 0.48 mg/L.

4.3.4 Total Phosphorus (TP)

Mean TP concentration for both stations was 0.298 mg/L. Mean orthophosphate concentration contributed between 44 and 81 percent of the mean stormwater TP concentration.

5.0 Hydrologic and Loading Inputs to the Apopka Beauclair Canal

Amec Foster Wheeler evaluated the study basin using a detailed hydrodynamic model, historic rainfall data, and drainage basin characteristics. Approximately 53 years of rainfall data (1958-2011) were obtained from a Lisbon, FL rainfall station operated by the National Oceanic and Atmospheric Association (NOAA). This station is approximately 12 miles from the study area. Hourly rainfall data was broken down into individual storm events when more than 3 hours of no rainfall (<0.1") fell between recorded events. The rainfall data was summarized based on depth categories and is shown in **Table 5-1**. The approach used during this project to predict the rainfall/runoff pattern is described below.

Using **Table 5-1**, an "average" storm for each rainfall depth category was assumed. The average storm was assigned the calculated average rainfall volume. The duration of the storm used in the model was taken as the average rainfall (in)/ maximum recorded intensity (in/hr) as documented in **Table 5-1**. The purpose for reducing the average storm event duration is to attempt to account for those storms and storm event segments that had high rainfall intensities and therefore represent a greater capacity demand on the system. Therefore, as an example, for the rainfall depth range of 0.1 to 0.2 inches, the average rainfall depth used is 0.19 inches, the maximum recorded intensity is 0.2 in/hr and the duration used is 0.95 inches/hour (0.19/0.20). The number of rain events within each storm event range was adjusted under the **Table 5-1** column heading "Adjusted Number of Rain Events for Average Year" to simulate an average rainfall of 52 inches.

Hydrologic outputs and nutrient loads from the study basin were calculated using an ICPR® model that incorporates the function of the surface water features that are found throughout the study area. The ICPR® model was selected because it provides the ability to calculate outflows at various nodes within the basin for estimation of potential load reductions at any given point. The model also provides a convenient way to discuss overall hydrologic output at the furthest downstream nodes, which are the north and south outfall ditches. All elevation data used in this analysis were determined from existing sources and no surveys were conducted. Additional survey work will be required for detailed modeling as part of potential future engineering efforts.

5.1 ICPR® Modeled Catchments

Figure 5-1 shows the model network developed for determining the stormwater runoff component of the basin study. Twenty three sub-basins were set up for the model but most of the area is contained within sub-basins B0, B4, B5, B9, B10, B13, B19, B21, and B22.

Each catchment was characterized based on a composite curve number derived using the methodology outlined in the TR-55 document and times of concentration as shown in **Table 5-2**. This methodology should provide a conservative estimate for stormwater runoff volume.

The modeled catchments are discussed below:

5.1.1 Sub-Basin B0 and B12

The B0 sub-basin contains the majority of the Lake Jem sod farm and active peat mining areas. A network of ditches that flow to a central pumping system supports drainage in this sub-basin. The pumping system discharges to a six-acre staging and treatment pond (shown as Sub-Basin B12) that overflows to the ABC North ditch segment approximately one mile prior to its confluence with the ABC. For the modeling purposes, all estimated stormwater runoff was assumed to be pumped out of Sub-Basin B0.

5.1.2 Sub-Basin B1, B6, B7

Sub-basins B1, B6, and B7 are located at the north end of the study basin adjacent to the Florida Central Railroad right-of-way. Lake Bell is located within Sub-Basin B6. These sub-basins contain a mixture of agricultural and residential land uses.

5.1.3 Sub-basin B4

The B4 sub-basin contains approximately 200 acres of agricultural property or roughly two thirds of its total area. Most of the sub-basin is located on the north side of Duda Rd. Drainage from this sub-basin is either through a set of three 36-inch RCP pipes under CR448A or, during low water stage, under Duda Rd. where it connects with the ditch on the south side of Duda Rd and drains through the B19 discharge structure.

5.1.4 Sub-basin B5

The B5 sub-basin contains a mixture of low-density residential and agricultural land uses. Most of the drainage from this area flow to Lake Lena. Lake Lena drains to the southwest through a culvert under Lake Lena Lane to sub-basin B9.

5.1.5 Sub-basin B9

Approximately fifty percent of Sub-Basin B9 is currently utilized to cultivate sod. The remaining portion is undeveloped. The west side of this sub-basin borders the rim ditch surrounding the Lake Jem sod farm. The southern end of this sub-basin abuts one of two main ditches conveying drainage from the east side of the study area.

5.1.6 Sub-basins B10, B21, B22

Sub-basins B10, B21, and B22 all contain active portions of the Lake Jem sod farm although a significant portion of the B10 sub-basin is undeveloped or supports minimal development. These sub-basins surround the two main ditches conveying drainage from the east. Several structures along the ditches within these sub-basins provide the ability to control water elevation within the ditch and allow pumping for farm irrigation.

5.1.7 Sub-basin B13

Sub-basin B13 has been mined for peat and is not permitted to discharge. This 100-acre area runs parallel with the ABC and the ABC North ditch joins the ABC at the northwest corner.

5.1.8 Sub-basin B19

Sub-basin B19 includes agricultural property and commercial land uses. Drainage is provided by one 48-inch culvert under CR448A near the entrance to the Long & Scott Farm, or by a 24-inch culvert under CR448A further to the south.

5.1.9 Sub-basin B2, B14, B15, B16, B17, B18, B20

This cluster of sub-basins is located on the north end of the study basin. Land use is primarily forested with some residential. Sub-basins B15, B17, B20, and B14 all adjoin the ABC North ditch.

5.2 Runoff and Discharge from Modeled Catchments

Each catchment was analyzed using ICPR[®] for daily runoff and discharge volume based on a 52-inch rainfall year as discussed in **Section 6.0**. Local runoff characteristics were based on sub-basin area, hydrologic soil group (**Figure 2-4**), and land use data (**Figure 2-5**).

The annual hydrologic output determined by the stormwater runoff model totaled 931 ac-ft. Runoff from Sub-Basins B0, B10, B4/B22, and B19/B21 represented 75 percent of the cumulative runoff total. Detailed information for each catchment is provided in **Table 5-2**. Annual discharge outputs are calculated as the total amount of water leaving each of the modeled nodes.

5.3 Modeled Cumulative Discharge

The cumulative annual discharge of 4,326 ac-ft was calculated as the sum of base flow and stormwater discharge from the study basin (**Table 5-3**). This equates to an average flow of 6 cfs or roughly ten percent of the annual average design flow treated by the NuRF. This is also approximately the same as the typical minimum discharge historically released from Lake Apopka.

Annual base flow (3,395 ac-ft) accounted for 78 percent of the total basin discharge to the ABC. Annual base flow at the ABC North location was approximately 1,629 ac-ft and was slightly lower than the estimated base flow of 1,766 ac-ft at the ABC South location. Stormwater runoff to the ABC accounts for approximately 22 percent of the total annual discharge from both ABC North and South locations using a 52-inch rainfall.

5.4 Total Loading to the ABC

Total stormwater loading from the study basin was determined using two approaches. Site-specific mean TP and TN concentrations were determined for sub-basins upstream of the automated stormwater samplers using the data discussed in **Section 4**. Loading for sub-basins with available water quality data was determined by multiplying the site-specific EMC and annual stormwater discharge volume estimated by the ICPR[®] model. EMC values for sub-basins with no site-specific water quality data were obtained from literature values and loading was estimated by multiplying the literature-based EMC and stormwater discharge volume estimated by the ICPR[®] model.

Annual base flow loading was calculated as described in **Section 4.3**. Cumulative TP and TN loading inputs from base flow and stormwater flow are presented in **Table 5-4**. Total TP loading to the ABC from the study basin was 2,709 lb/yr. Total TN loading from the ABC study basin was 16,886 lb/yr. Stormwater contributed 705 lb/yr of TP and 4,133 lb/yr of TN to the ABC while base flow contributed 2,004 lb/yr of TP and 12,753 lb/yr of TN. Base flow represented 74 percent of the TP load and 76 percent of the TN load entering the ABC from the rim ditches surrounding the Lake Jem Sod Farm.

6.0 Water Quality Improvement Alternatives

The ABC North and South ditches have been the subject of pollutant loading discussions for many years. Prior to this study, flow and loading contribution from these sources had not been quantified. Based on the information provided in this study, base flow from the ABC South ditch contributed 58 percent of the TP load and 39 percent of the TN load.

Amec Foster Wheeler developed five alternative projects to improve water quality of stormwater runoff and base flow from the study area to the ABC. **Alternative 1** proposes to install diversion weirs to direct water to a small staging pond near the south outfall ditch where it would be pumped to the inflow of the NuRF. **Alternative 1** would make use of available treatment capacity within the NuRF, particularly when no discharge is being released from Lake Apopka. **Alternative 2** would involve installation of diversion weirs and construction of a treatment pond near the south outfall ditch to provide treatment. Water would discharge downstream of the ABC Lock & Dam. **Alternative 3** would involve construction of diversion weirs and a treatment pond near the north outfall ditch. Alternative 3 proposes to capture the majority of discharge currently draining through both the north and south ditches. **Alternative 4** involves additional alum injection equipment to enhance pollutant removal at the **Alternative 3** treatment pond. **Alternative 5** involves construction of diversion weirs and use of the peat mine pit as a pond to treat the majority of discharge currently draining through the north and south ditches.

6.1 Alternative 1 – Diversion to NuRF

Alternative 1 proposes construction of two diversion weirs to direct discharge through the ABC South ditch into a staging pond where it can be pumped to the inlet of the NuRF for treatment (**Figure 6-1**). One weir would be placed just south of the Lake Jem Sod Farm staging pond outfall and the other would be placed near the end of the ABC South ditch. It is assumed that this alternative would capture 100 percent of the current base flow and stormwater discharge through the ABC South ditch. Additional modeling will need to be conducted to determine the amount of flow that must be bypassed following significant rain events and to assure there are no upstream flooding impacts.

6.1.1 Description

Weir locations shown in **Figure 6-1** are approximate and serve to divert flow to a 1-acre staging pond proposed for the SJRWMD property east of the NuRF. The staging pond shown in **Figure 6-1** could also potentially be located on a portion of the Lake Jem Farm property on the opposite side of CR48. The current configuration requires jack-and-bore installation of a 48-inch culvert under CR48. Water from the ditch would be diverted to the staging pond through the 48-inch culvert. A variable frequency drive 15-HP electric pump capable of up to 4,600 gpm (approximately 10 cfs) then pumps water entering the staging pond to the inflow of the NuRF. The 15-inch water line from the staging pond to the NuRF would require directional drilling under the ABC.

Diversion of the ABC South ditch base flow and stormwater flow to the NuRF could provide treatment of 2,304 ac-ft and a 90 percent reduction in total phosphorus and a 20 percent reduction in total nitrogen using the typical NuRF reduction efficiencies that are comparable to other alum treatment facilities. As indicated in **Sections 3 and 4**, most of the phosphorus is in the bioavailable orthophosphate form, which is ideal for alum treatment, which in turn can inactivate

orthophosphate before it enters the biological phosphorus cycle. Alternative 1 provides for annual reduction of approximately 1,837 pounds of TP and 3,432 of TN.

6.1.2 Conceptual Design Cost Estimate

Conceptual costs for **Alternative 1** are presented in **Table 6-1** and assume that no land acquisition is required. Design and permitting is expected to be approximately \$120,000 that would include detailed survey and flood impact analysis. Routine maintenance involves pump monitoring and servicing and annual inspection of the weirs to ensure the structures are free of debris and operating as designed. Maintenance tasks could be assumed by the NuRF operator for approximately \$15,000 per year. Additional annual alum cost would be approximately \$100,300.

The 20-year annualized project life cycle cost for this alternative is expected to be \$179,300. The annual cost of nutrient removal based on implementation of **Alternative 1** is expected to be \$97 per pound of TP, and \$52 per pound of TN. **Table 6-6** provides a comparison of the costs associated with this alternative and the other alternatives discussed below. Typical TP reduction efficiencies for stormwater Best Management Practices (BMP) in central Florida are highly variable and can range between \$150 and \$4,000 per pound removed.

6.1.3 Additional Considerations

The current configuration to treat only discharge through the ABC South ditch is a conservative estimate of the potential load reduction from this alternative. Depending on the outcome of additional flood modeling, it may be possible to treat a portion of the ABC North ditch by locating the weir downstream of the staging pond outfall. Other options for pond location may be available as well.

6.2 Alternative 2 – ABC South Treatment Pond

Alternative 2 involves the construction of an 8-acre treatment pond south of the study basin on available SJRWMD land (**Figure 6-2**). This would involve a similar set of weir structures discussed in **Alternative 1** but would not require additional electrical or mechanical infrastructure since water would be returned downstream of the ABC Lock & Dam. Similar to Alternative 1, a 48-inch culvert would be installed using jack-and-bore methods to cross under CR48.

6.2.1 Description

Like **Alternative 1**, this alternative provides annual treatment of up to 2,304 ac-ft. The available 64 ac-ft of storage in the pond is expected to result in a 10-day retention time within the pond. Treatment increases with increasing retention time as discussed below.

The annual nutrient reduction provided by **Alternative 2** was calculated using the combined base flow and stormwater loads described in **Sections 4** and **5** and nutrient reduction efficiencies calculated from the formula described below for wet detention ponds that relate reduction efficiency (%) to retention time (t_d) (ERD 2007).

$$TP \text{ Reduction Efficiency} = 0.145 \ln(t_d)^2 + 6.146 \ln(t_d) + 44.53 \quad R^2=0.90$$

$$TN \text{ Reduction Efficiency} = (43.75 t_d) / (4.38+t_d) \quad R^2=0.80$$

Based on a residence time of 10 days, the calculated reduction efficiencies assigned to the Alternative 2 pond are 60 percent for TP and 31 percent for TN. Assuming 100 percent treatment, **Alternative 2** would reduce the annual nutrient load from the ABC South ditch by 1,156 lb of TP and 2,649 lb of TN.

6.2.2 Conceptual Cost Estimate

Conceptual costs for **Alternative 2** are presented in **Table 6-2** and assume that no land acquisition is required. Design and permitting is expected to be approximately \$120,000 that would include detailed survey and flood impact analysis. Routine maintenance involves inspection of the weirs and structures to ensure they are free of debris and operating as designed. Maintenance tasks could be assumed by the NuRF operator for approximately \$10,000 per year.

The 20-year annualized project life cycle cost for this alternative is expected to be \$121,100. The annual cost of nutrient removal based on implementation of **Alternative 2** is expected to be \$45 per pound of TN, and \$104 per pound of TP. **Table 6-6** provides a comparison of the costs associated with this alternative and the other alternatives discussed below. Typical TP reduction efficiencies for stormwater BMPs in central Florida are highly variable and can range between \$150 and \$4,000 per pound removed.

6.2.3 Other Considerations

The treatment pond is currently shown in **Figure 6-2** on SJRWMD property, but it could also be constructed on a portion of the Lake Jem Sod Farm property on the opposite side of CR48. Similar to **Alternative 1**, the current configuration to treat only discharge through the ABC South ditch is a conservative estimate of the potential load reduction from this alternative. Depending on the outcome of additional flood modeling, some flow may need to be bypassed, but it may also be possible to treat a portion of the ABC North ditch by locating the weir downstream of the staging pond outfall.

6.3 Alternative 3 – ABC North Treatment Pond

Alternative 3 proposes the construction of a 9-acre treatment pond on private land near the ABC North ditch outfall downstream of the Lake Jem Sod Farm discharge (**Figure 6-3**). This would involve a similar set of weir structures discussed in the previous alternatives but the north weir would be relocated downstream of the Lake Jem Sod Farm discharge structure. Relocating the north weir would provide the opportunity to capture and treat discharge from the Lake Jem Sod Farm. This alternative would not require additional electrical or mechanical infrastructure since water would be returned to the rim ditch approximately 1,500 ft downstream of the diversion weir. Because the property is adjacent to the rim ditch, no jack-and-bore would be necessary as in **Alternatives 1** and **2**.

6.3.1 Description

Alternative 3 is estimated to treat a total of 4,323 ac-ft of per year. The available 72 ac-ft of storage in the pond is expected to result in an 6-day retention time within the pond. Treatment increases with increasing retention time as discussed below.

The annual nutrient reduction provided by **Alternative 3** was calculated using the combined base flow and stormwater loads described in **Sections 4** and **5** and nutrient reduction efficiencies

calculated from the formula described below for wet detention ponds that relate reduction efficiency (%) to retention time (t_d) (ERD 2007).

$$\text{TP Reduction Efficiency} = 0.145 \ln(t_d)^2 + 6.146 \ln(t_d) + 44.53 \quad R^2=0.90$$

$$\text{TN Reduction Efficiency} = (43.75 t_d) / (4.38+t_d) \quad R^2=0.80$$

Based on a residence time of 6 days, the calculated reduction efficiencies assigned to the Alternative 2 pond are 60 percent for TP and 32 percent for TN. Assuming 100 percent treatment, **Alternative 3** would reduce the annual nutrient load from the ABC North and South ditches by 1,519 lb of TP and 4,290 lb of TN.

6.3.2 Conceptual Cost Estimate

Conceptual costs for **Alternative 3** are presented in **Table 6-3** and assume that no land acquisition is required. Design and permitting is expected to be approximately \$120,000, which would include detailed survey and flood impact analysis. Routine maintenance involves inspection of the weirs and diversion structures to ensure they are free of debris and operating as designed. Maintenance tasks could be assumed by the NuRF operator for approximately \$10,000 per year.

The 20-year annualized project life cycle cost for this alternative is expected to be \$130,600. The annual cost of nutrient removal based on implementation of **Alternative 3** is expected to be \$86 per pound of TP, and \$30 per pound of TN. **Table 6-6** provides a comparison of the costs associated with this alternative and the other alternatives discussed below. Typical TP reduction efficiencies for stormwater BMPs in central Florida are highly variable and can range between \$150 and \$4,000 per pound removed.

6.3.3 Other Considerations

Depending on the outcome of additional flood modeling, some peak flows may need to be bypassed. Because the pond is located near the midpoint of the rim ditch, upstream flooding concerns are likely less than **Alternatives 1** and **2** when collecting and treating additional flow from both ditches.

6.4 Alternative 4 – ABC North Treatment Pond with Alum

Alternative 4 includes an alum injection system to enhance the performance of the treatment pond proposed in **Alternative 3** (**Figure 6-4**).

6.4.1 Description

The alum injection component of this alternative would utilize an automated variable speed alum pump to maintain proper alum dose. The injection pump is regulated by a flow monitoring device installed at the inflow of the pond. This alternative requires a 10,000-gallon tank capable of storing alum onsite. System components, such as pumps and electrical equipment, would be housed in an onsite structure.

Alum injection would occur as water enters the inflow structure and would mix in the conveyance pipe. After mixing with water, alum binds with phosphate and other ions in the water to form a “floc” which generally settles rapidly to the pond bottom. Alum injection has been demonstrated to reduce 90 percent of the TP and 33 percent of the TN in treated water and is particularly

effective at removing orthophosphate (FDEP, 2010; LCWA, 2004). The amount of alum required depends on flow and rainfall, but conservatively assuming treatment of the combined annual base flow and stormwater volume from the ABC North and South ditches would require approximately 300,000 gallons of alum. **Alternative 4** would likely only treat a portion of this depending on the flood analysis.

Floc handling and disposal is not addressed in detail in this alternative but can be examined further in future design phases. The amount of floc handling effort required (i.e., removal) depends on the volume of the ponds and incoming flow rate. There are no sewer lines in the area so the floc would need to be dredged or excavated and periodically removed off site to maintain treatment and settling volume. The NuRF is within two miles of this location so it would likely be a suitable location for floc dewatering (if necessary) and disposal. This would also substantially reduce the cost of solids handling.

Load reduction for this alternative is estimated to be 2,437 lb/yr TP and 5,568 lb/yr TN. It should be noted that actual TP and TN removal efficiencies for alum and impacts to water chemistry should be assessed using water samples and jar tests

6.4.2 Conceptual Cost Estimate

Conceptual costs for **Alternative 4** are presented in **Table 6-4** and assume that no land acquisition is required. Design and permitting is expected to be approximately \$120,000, which would include detailed survey and flood impact analysis. Additional alum injection infrastructure is estimated at \$500,000. Routine maintenance involves operation of the alum injection equipment and inspection of the weirs and structures to ensure they are free of debris and operating as designed. Maintenance would likely require an additional part time operator and the anticipated cost is for operation and maintenance is approximately \$50,000 per year.

The 20-year annualized project life cycle cost for this alternative is expected to be \$392,700. The annual cost of nutrient removal based on implementation of **Alternative 4** is expected to be \$161 per pound of TP, and \$71 per pound of TN. **Table 6-6** provides a comparison of the costs associated with this alternative and the other alternatives discussed below. Typical TP reduction efficiencies for stormwater BMPs in central Florida are highly variable and can range between \$150 and \$4,000 per pound removed.

6.4.3 Other Considerations

Although the **Alternative 4** pond is considerably further away from the NuRF than the pond in **Alternative 1**, it may still be feasible to pump water and alum floc. Potential pipeline routes would be north along the rim ditch and down the ABC or south along the rim ditch to the ABC.

6.5 Alternative 5 – Diversion to Mine Pit

Alternative 5 involves the use of the existing mine cut on the Lake Jem Sod Farm property as a treatment pond (**Figure 6-5**). Similar to the other alternatives, two diversion weirs would be constructed within the rim ditch to move water through the treatment pond.

6.5.1 Description

Based on permit information, the mine cut would provide an estimated 340 ac-ft of storage and a 54-day retention time. Potential use of the mine cut as a water treatment area has not been discussed with regulatory agencies or the land owners.

The annual nutrient reduction provided by **Alternative 5** was calculated using the combined base flow and stormwater loads described in **Sections 4 and 5** and nutrient reduction efficiencies calculated from the formula described below for wet detention ponds that relate reduction efficiency (%) to retention time (t_d) (ERD 2007).

$$\text{TP Reduction Efficiency} = 0.145 \ln(t_d)^2 + 6.146 \ln(t_d) + 44.53 \quad R^2=0.90$$

$$\text{TN Reduction Efficiency} = (43.75 t_d) / (4.38+t_d) \quad R^2=0.80$$

Based on a residence time of 54 days, the calculated reduction efficiencies assigned to the **Alternative 5** treatment area are 71 percent for TP and 40 percent for TN. Assuming 100 percent treatment of baseflow and upstream stormwater runoff, **Alternative 5** would reduce 1,809 lb/yr of TP and 6,405 lb/yr of TN.

6.5.2 Conceptual Cost Estimate

Conceptual costs for **Alternative 5** are presented in **Table 6-5** and do not include a potential estimate for the value of the mine pit. Design and permitting is expected to be approximately \$120,000 which would include detailed survey and flood impact analysis. Routine maintenance involves inspection of the weirs and structures to ensure they are free of debris and operating as designed. The anticipated cost for operation and maintenance is approximately \$10,000 per year.

The 20-year annualized project life cycle cost for this alternative is expected to be \$35,351. The annual cost of nutrient removal based on implementation of **Alternative 5** is expected to be \$20 per pound of TP, and \$6 per pound of TN. **Table 6-6** provides a comparison of the costs associated with this alternative and the other alternatives discussed below. Typical TP reduction efficiencies for stormwater BMPs in central Florida are highly variable and can range between \$150 and \$4,000 per pound removed.

6.5.3 Other Considerations

The permit for the mine cut on the Lake Jem Sod Farm currently prohibits discharge. Like other alternatives, an Environmental Resource Permit (ERP) would be required for **Alternative 5** as well as a revision to the current zoning. Furthermore, estimated acquisition costs for this property will need to be factored if land acquisition negotiations move forward.

6.6 Summary of BMPs and Project Ranking

A summary of all proposed alternatives, including potential annual reductions and cost per pound of nutrient removed, is included in **Table 6-6**.

7.0 Conclusions

The 1,631-acre study basin includes 1,364 acres of primarily HSG A, A/D, and B/D soils along with predominantly agricultural land uses drained by a network of ditches and overland flow. Base flow contributes approximately 78 percent of the discharge and 74 percent of the overall TP mass loading. The remaining 22 percent of flow and 26 percent of TP mass loading is contributed by stormwater flow.

The study basin is the largest remaining source of nutrient loading to the ABC and Lake Beauclair. Although the Basin Management Action Plan (BMAP) for the Lake Beauclair indicates that the TMDL for Lake Beauclair will be achieved by planned or existing BMPs, the specific loading inputs from the study basin have never been evaluated on a site-specific basis. This study indicates that substantial TP loading (2,709 lb/yr) from the basin is occurring and represents almost the same TP mass load from all of Lake Apopka following NuRF treatment. Furthermore, recent lack of discharge from Lake Apopka has likely resulted in discharge from the study basin being the predominant upstream hydrologic and nutrient input to the ABC and Lake Beauclair.

Based on the data collected during the study period, the ABC South ditch base flow represents the greatest source of loading to the ABC from the study area. Because both ends of the rim ditch open to the ABC, water entering the rim ditch can potentially exit through either the north or south ends. However, during base flow, slightly higher water elevation at the discharge of the Lake Jem Sod Farm staging pond outfall likely directs most of the upstream rim ditch discharges through the ABC South ditch. This is supported by similarity of the water quality between the ABC South ditch and the upstream CR448A at Duda and CR448A at Long & Scott monitoring locations.

Significant loading reduction may be possible by implementation of any of the five treatment alternatives proposed in **Section 6** and as a result, all alternatives are relatively efficient. All alternatives treat both base flow and stormwater flow. Both base flow and stormwater flow exhibited similar nutrient concentration but base flow represented the largest source of nutrient mass loading from the study basin. For simplicity, all alternatives are assumed to treat 100 percent of the upstream flows. Flood modeling will need to be performed as a part of future design efforts to verify the maximum stormwater treatment capacity that prevents upstream flooding impacts.

TP reduction provided by the alternatives ranges from 1,156 to 2,137 lb/yr with removal efficiency between \$20 and \$161 per pound. TN reduction by the alternatives ranges between 2,650 and 6,828 lb/yr with removal efficiency between \$6 and \$71 per pound.

Alternatives 1 and 2 are proposed to treat discharges currently draining through the south ditch. Because it proposes to utilize the excess alum treatment capacity of the existing NuRF, **Alternative 1** has the second highest TP load reduction and the fourth highest TN load reduction. This alternative assumes that a 1-acre portion of SJRWMD land can be utilized at no cost as a staging pond. **Alternative 2** is located in the same area, but involves a 10-acre treatment area and is ranked fifth for both TP and TN load reduction.

Alternatives 3 and 4 require acquisition of private property near the north ditch outfall. **Alternative 3** involves standard stormwater pond construction and is ranked fourth for TP load reduction and third for TN load reduction. **Alternative 4** was the most expensive alternative involving land acquisition and construction of alum injection components. However, it also

removes the most nutrient load of any alternative and is still a relatively efficient pollutant reduction project at the lower cost range of typical stormwater projects.

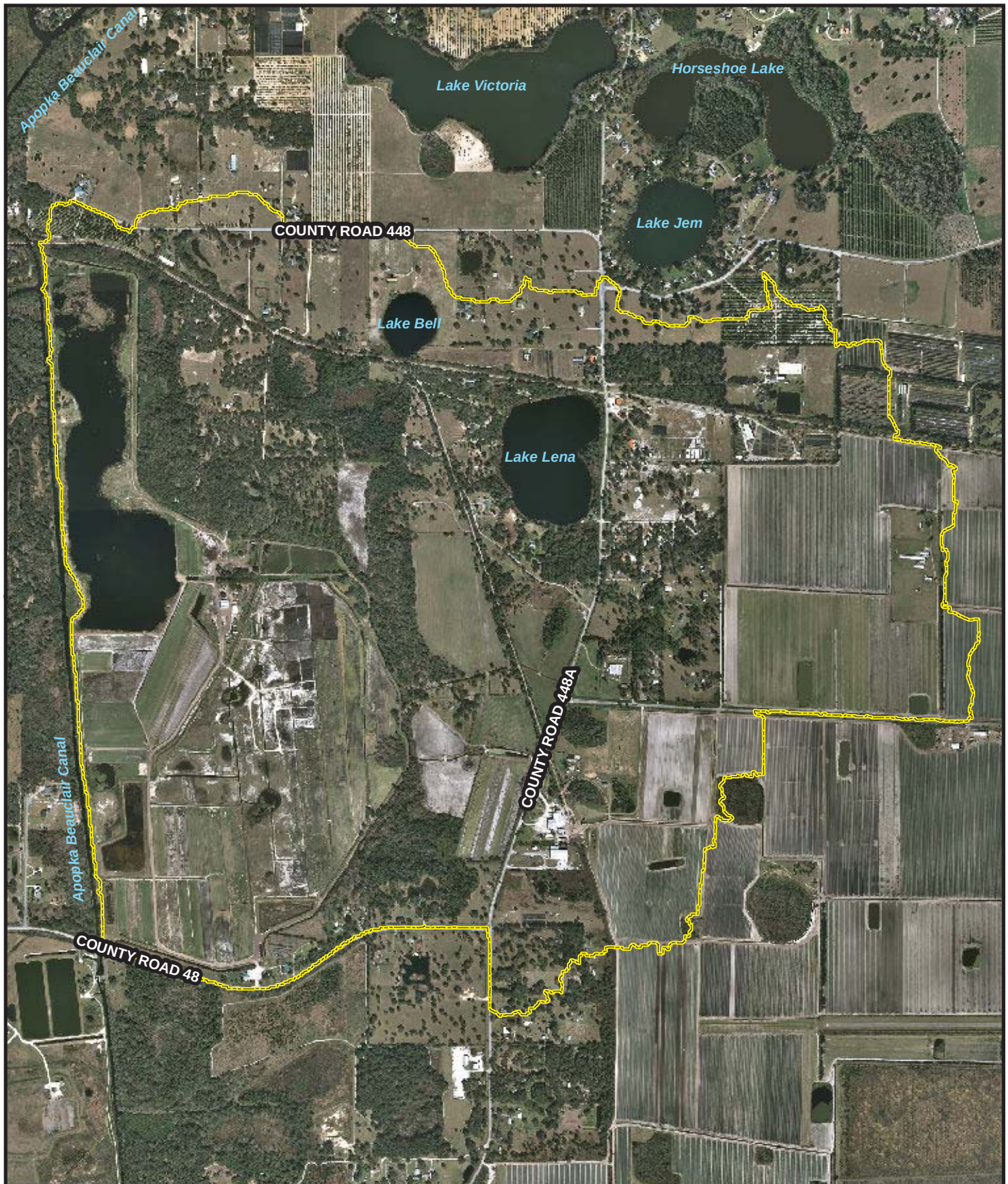
Alternative 5 is the most efficient of all alternatives primarily because the proposed treatment pond has already been constructed, it can be used to treat both north and south ditches, and minimal operation and maintenance would be required. Due to its long retention time, this alternative removes the most TN of any alternative and is ranked third for overall TP reduction. Although ranked third for TP reduction, **Alternative 5** still removes 75 percent of the highest TP load reduction achieved by **Alternative 4** and is only 20 percent of the per pound load removal cost of the second most efficient option.

While all alternatives are relatively inexpensive compared to other stormwater projects, **Alternative 5** represents the highest ranked alternative based on cost per pound of both TP and TN load reduction. Although **Alternative 5** does not remove the greatest pollutant mass, load reduction performance may be enhanced with an alum injection system similar to **Alternative 4** if desired.

8.0 References

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Figures



Notes:

- 1- Project No.: 600391.1
- 2- Data Source -
FDOT 2014 Imagery
AFW
- 3- This map is intended to be
used for planning purposes
only. It is not a survey.

Date: 02/23/2016
Revised:
Checked By: LL

Explanation of Features



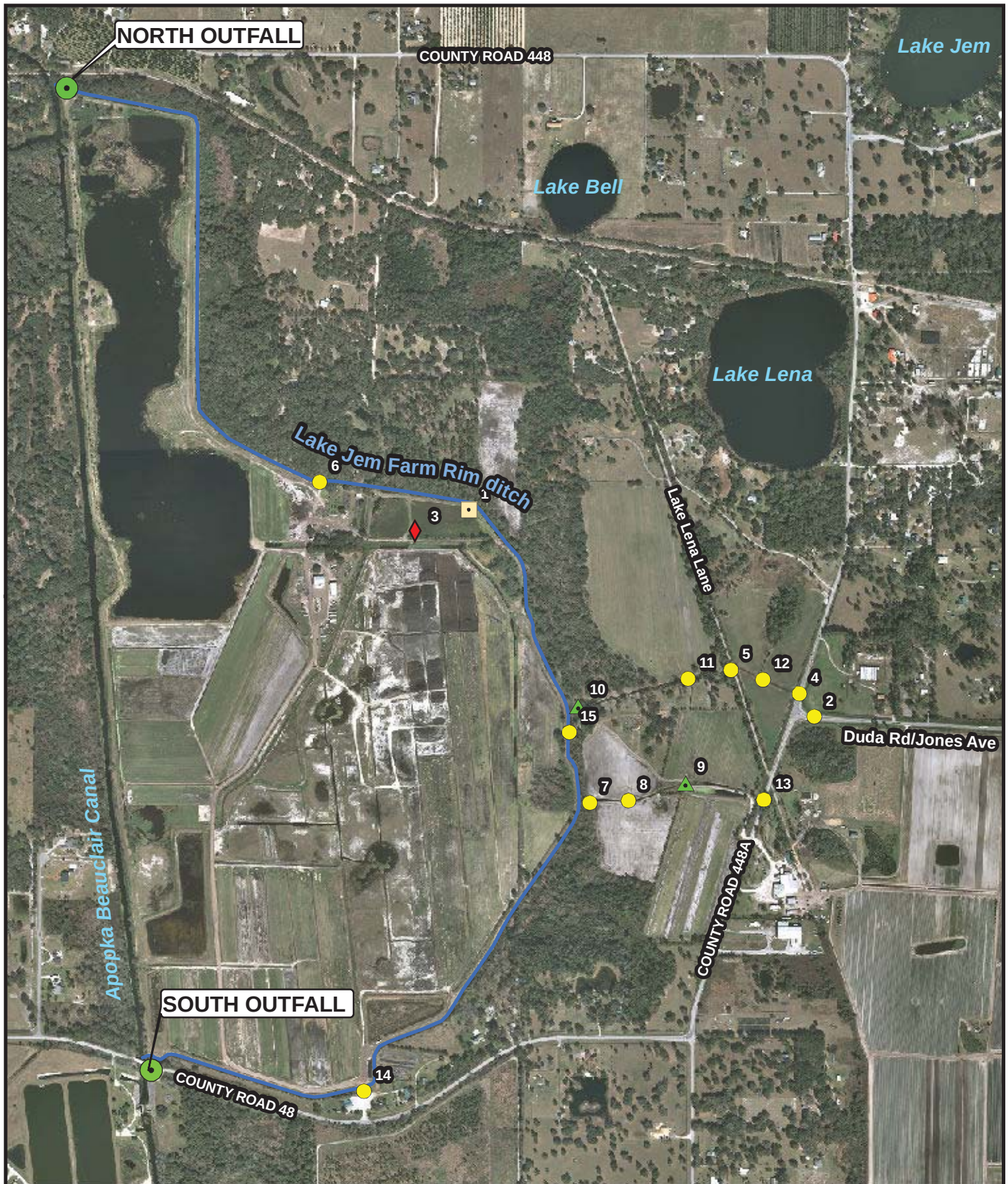
Basin Delineation

0 1,500
1" = 1,500 Feet



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**Figure 2-1
Aerial Map
LCWA Pollutant Loading
Apopka-Beaclair Canal
Lake County, FL**



Notes:

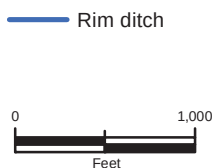
- 1- Project No.: 600391.1
- 2- Data Source - FDOT 2014 Imagery AFW
- 3- This map is intended to be used for planning purposes only. It is not a survey.

Date: 03/15/2016
 Revised:
 Checked By: LL

Explanation of Features

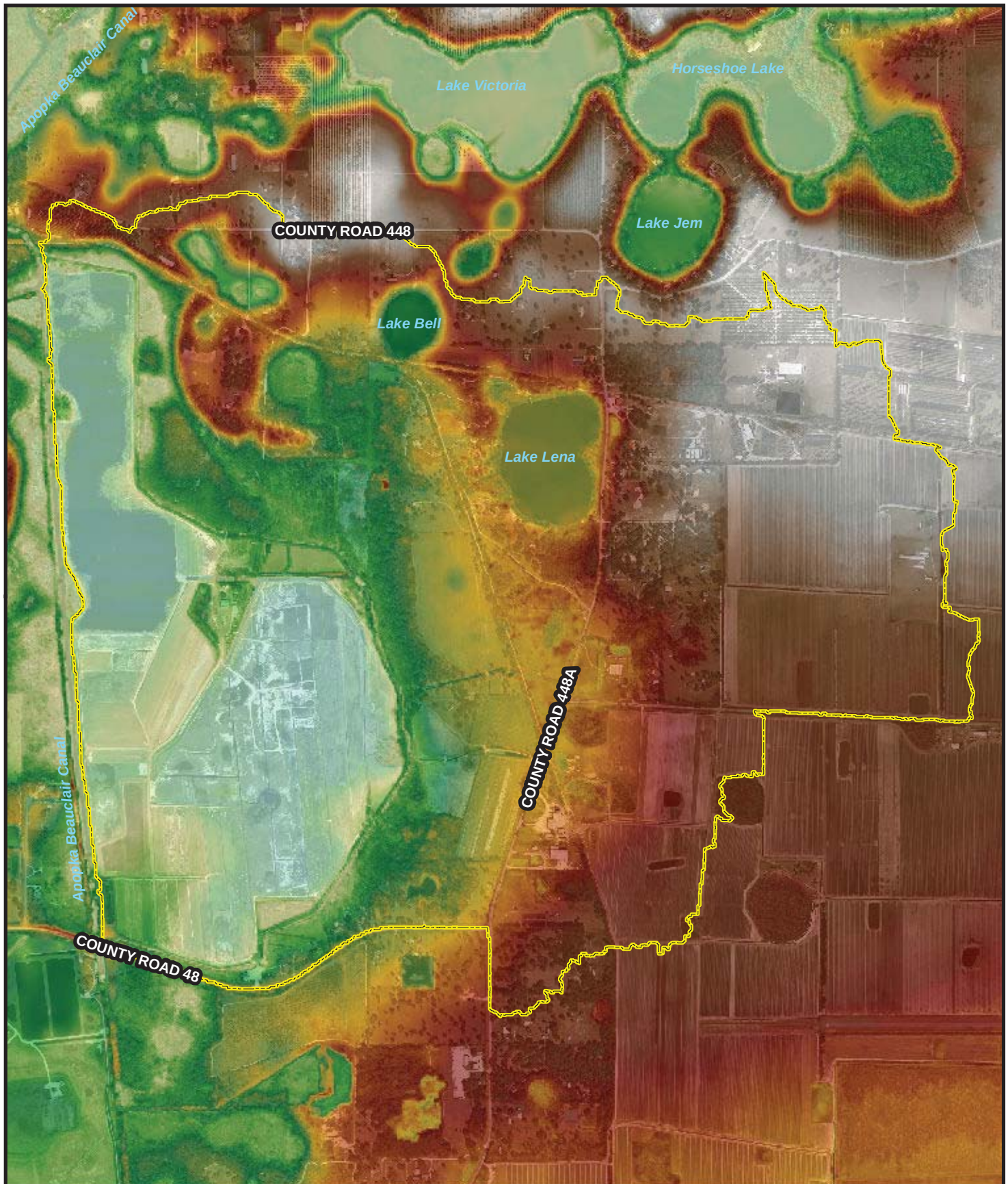


- ▲ Control Structures
- Culvert
- Staging Pond Discharge
- ◆ Staging Ponds



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Figure 2-2
Ditches Connected to
ABC Outfalls
LCWA Pollutant Loading
Apopka-Beaclair Canal
Lake County, FL



Notes:

- 1- Project No.: 600391.1
- 2- Data Source -
FDOT 2014 Imagery
2008 LIDAR (NAVD88)
AFW
- 3- This map is intended to be
used for planning purposes
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Date: 02/23/2016
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Explanation of Features

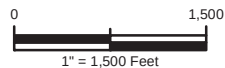
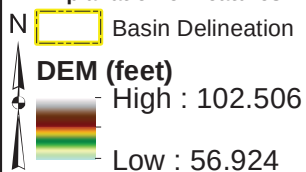
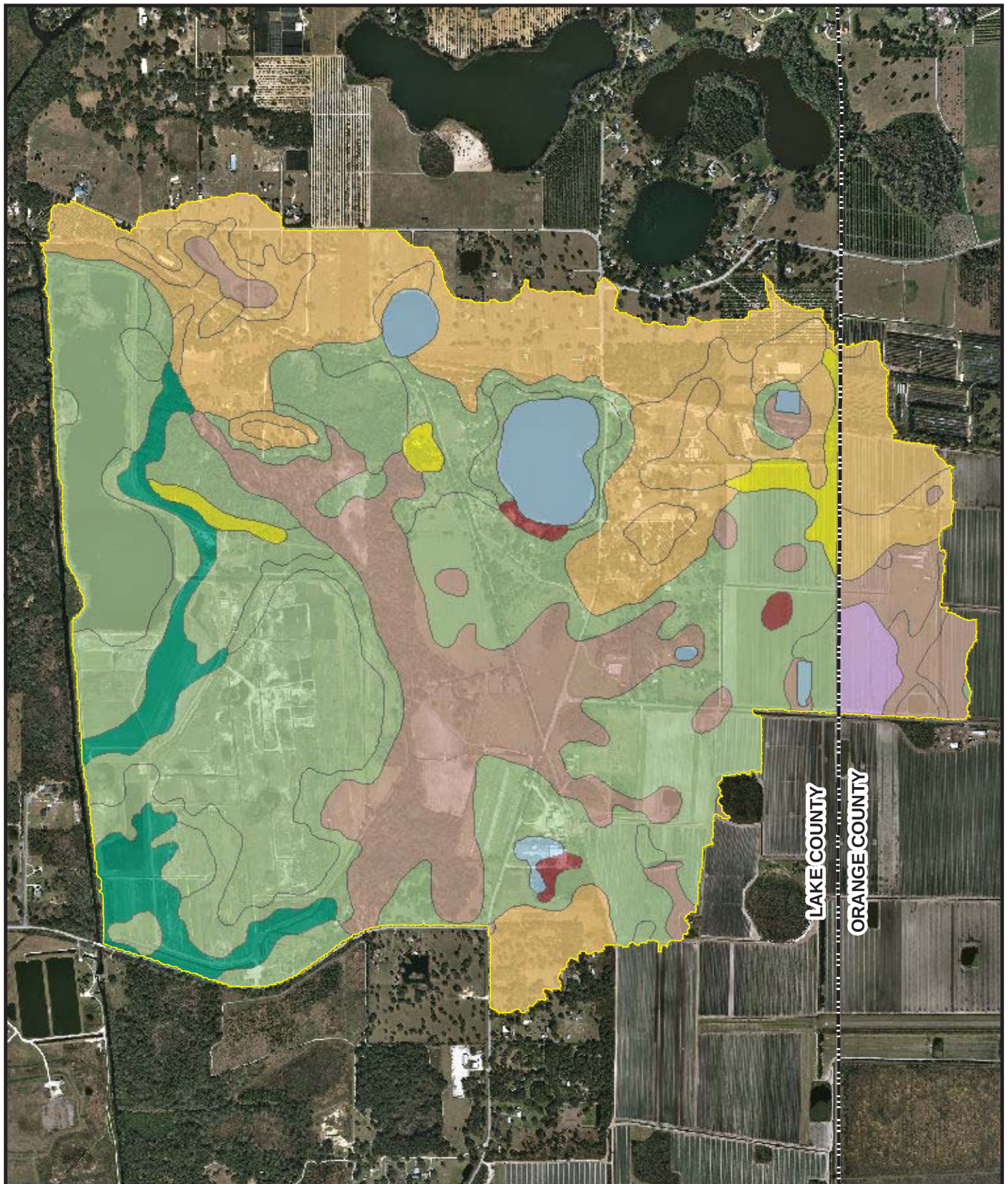


Figure 2-3
Topographic Map
LCWA Pollutant Loading
Apopka-Beaclair Canal
Lake County, FL



Notes:

- 1- Project No.: 600391.1
- 2- Data Source -
FDOT 2014 Imagery
SJRWD, NRCS
AFW
- 3- This map is intended to be
used for planning purposes
only. It is not a survey.
Date: 02/23/2016
Revised:
Checked By: LL

Explanation of Features

Soils (Hydro Grp)	
Water	B/D
A	C
A/D	C/D
B	D

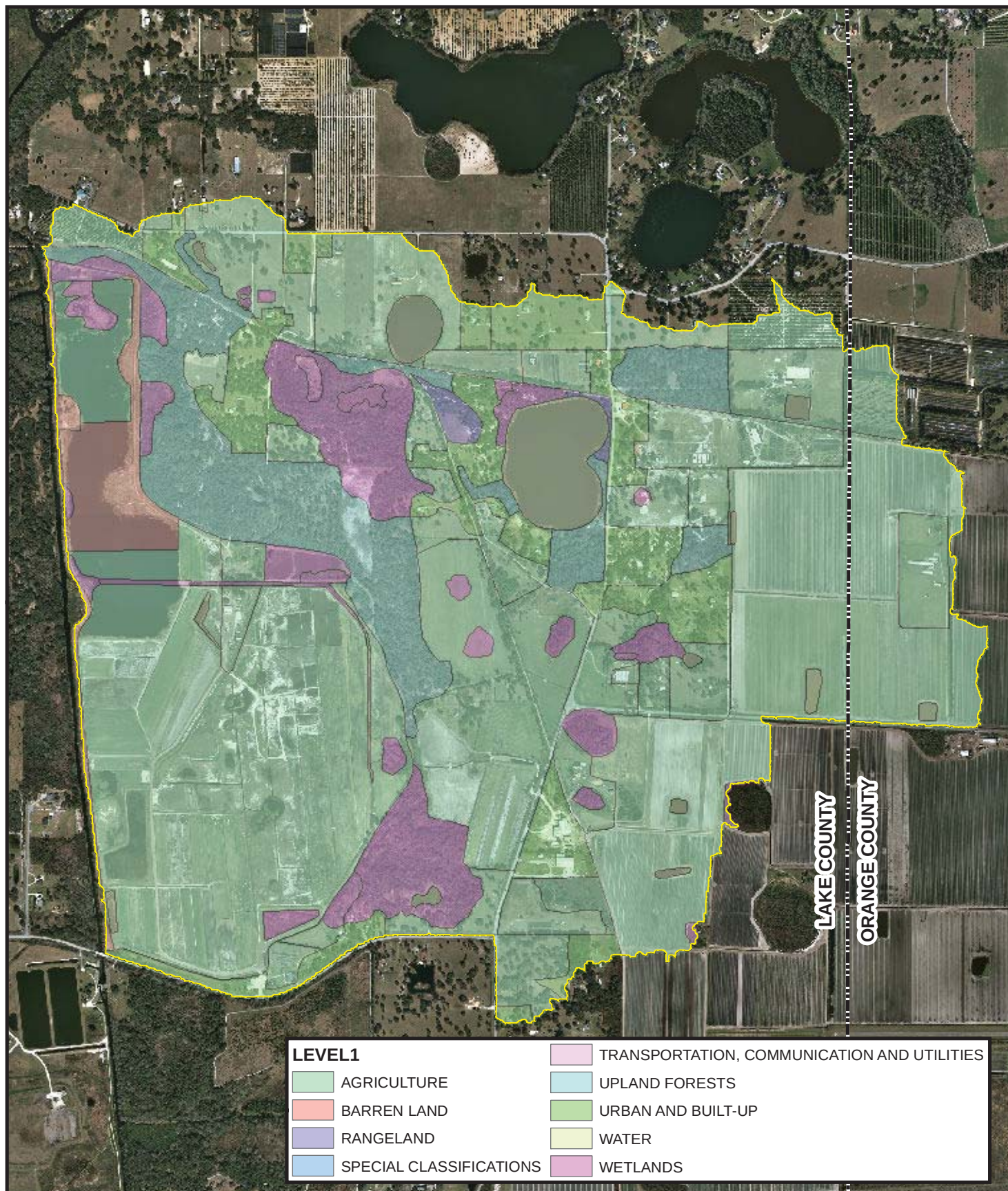
County Boundaries
 Basin Delineation

0 1,500
1" = 1,500 Feet



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Figure 2-4
Soils Map
LCWA Pollutant Loading
Apopka-Beaclair Canal
Lake County, FL



Notes:

- 1- Project No.: 600391.1
- 2- Data Source -
FDOT 2014 Imagery
2009 SJRWMD
- 3- This map is intended to be
used for planning purposes
only. It is not a survey.
Date: 02/23/2016
Revised:
Checked By: LL

Explanation of Features

- N
- County Boundaries
- Basin Delineation

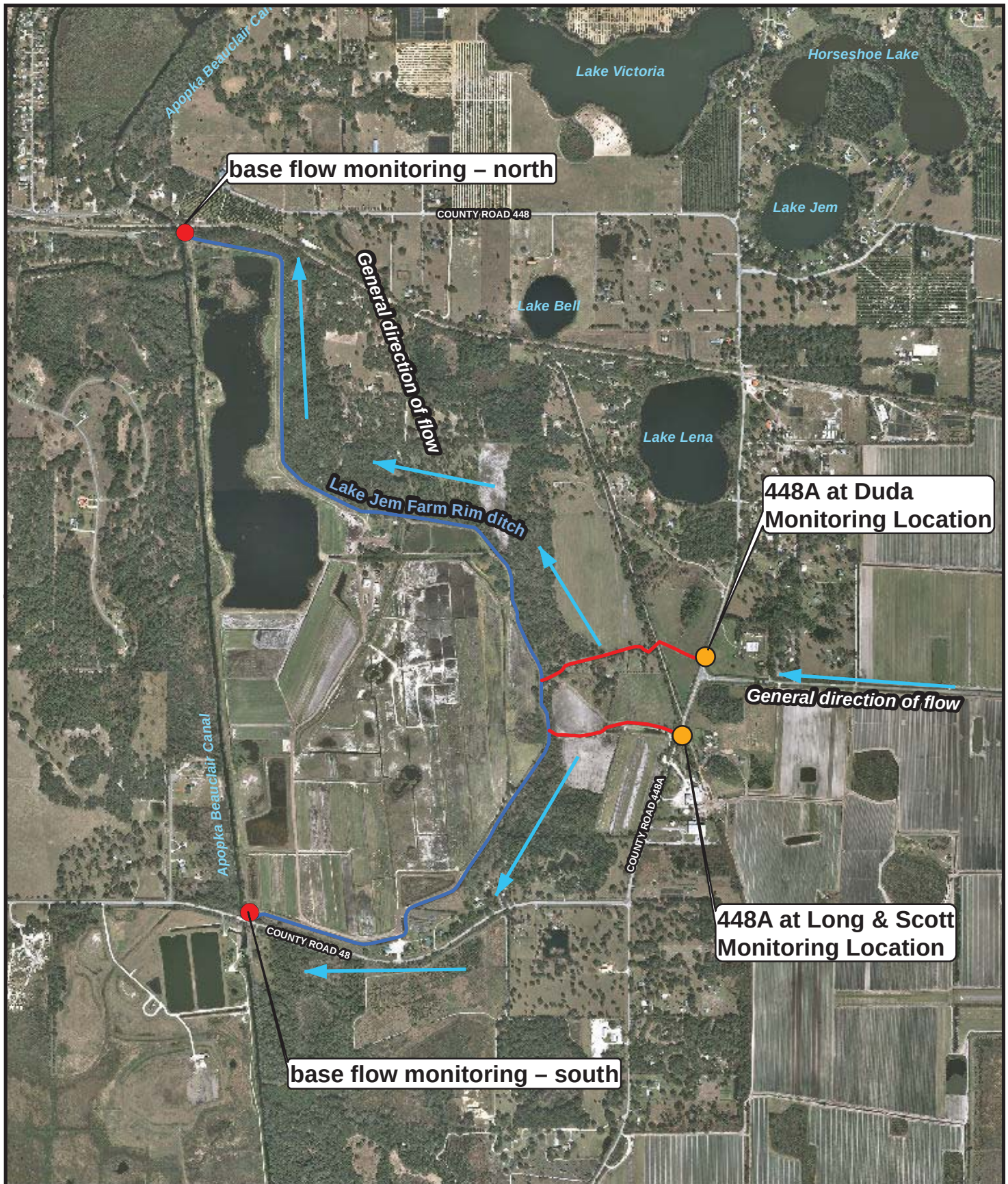
0 1,500

1" = 1,500 Feet



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Figure 2-5
Land Use Map
LCWA Pollutant Loading
Apopka-Beaclair Canal
Lake County, FL



Notes:

- 1- Project No.: 600391.1
- 2- Data Source - FDOT 2014 Imagery AFW
- 3- This map is intended to be used for planning purposes only. It is not a survey.

Date: 03/15/2016
Revised:
Checked By: LL

Explanation of Features

- Rim ditch
- Ditch Conveyances from Duda Road



0 1,500
Feet



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Figure 2-6
Surface Water
Monitoring Locations
LCWA Pollutant Loading
Apopka-Beaclair Canal
Lake County, FL

Figure 2-6
CR448A at Duda sample location



Figure 2-7
CR448A at Long & Scott



Figure 3-1
ABC Base Flow Monitoring Results

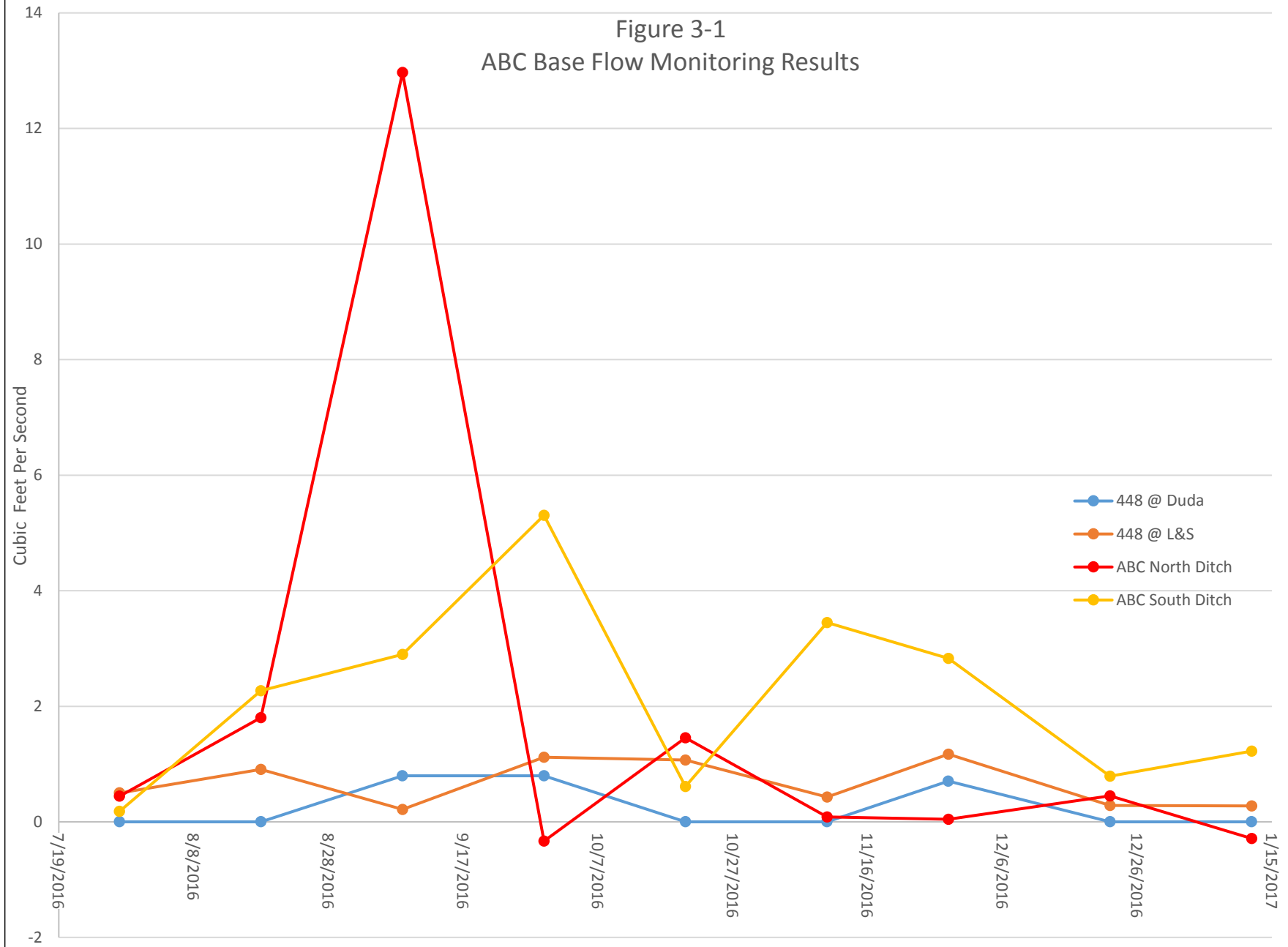


Figure 3-2
Average Base Flow at Monitoring Locations

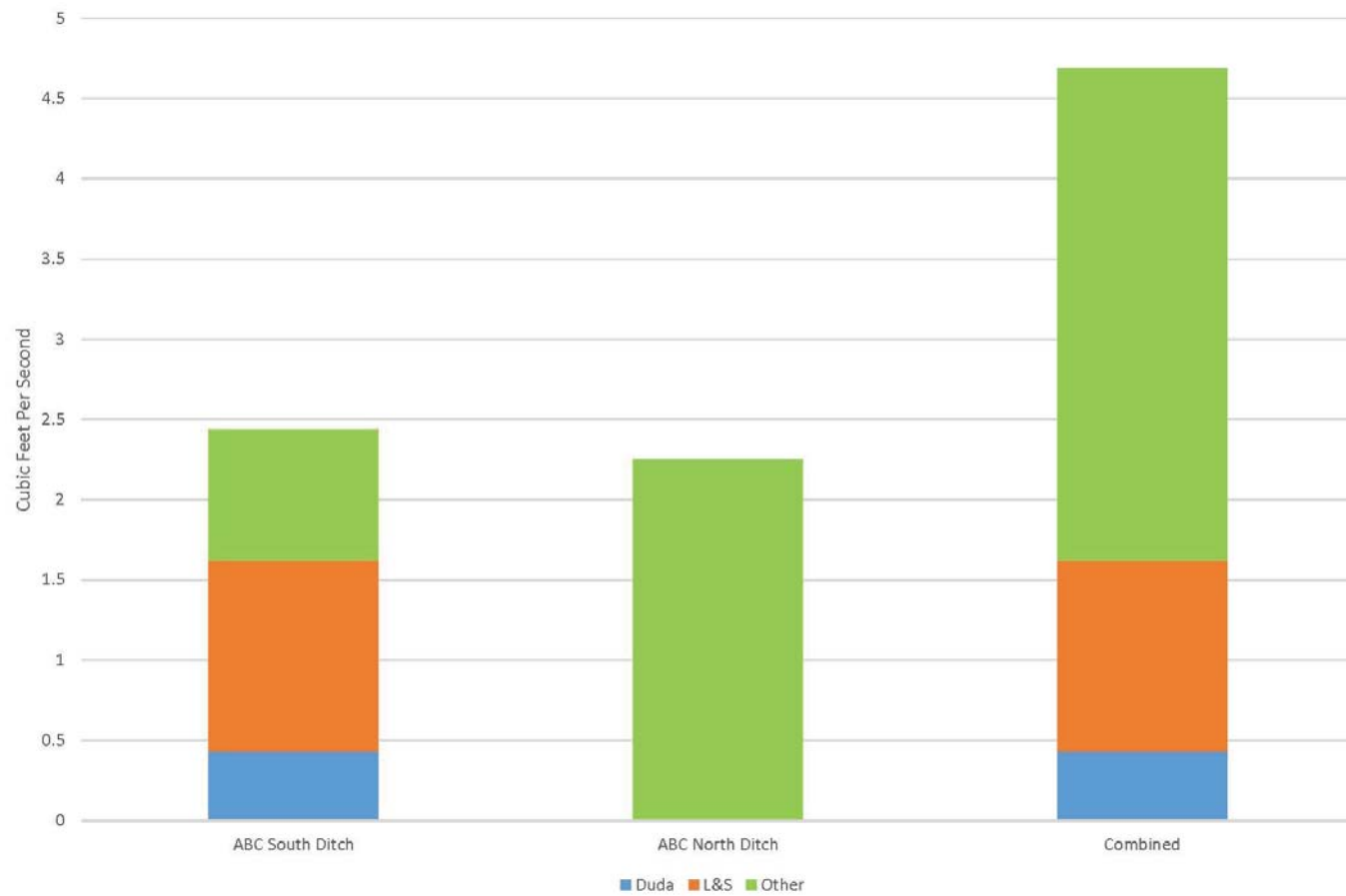
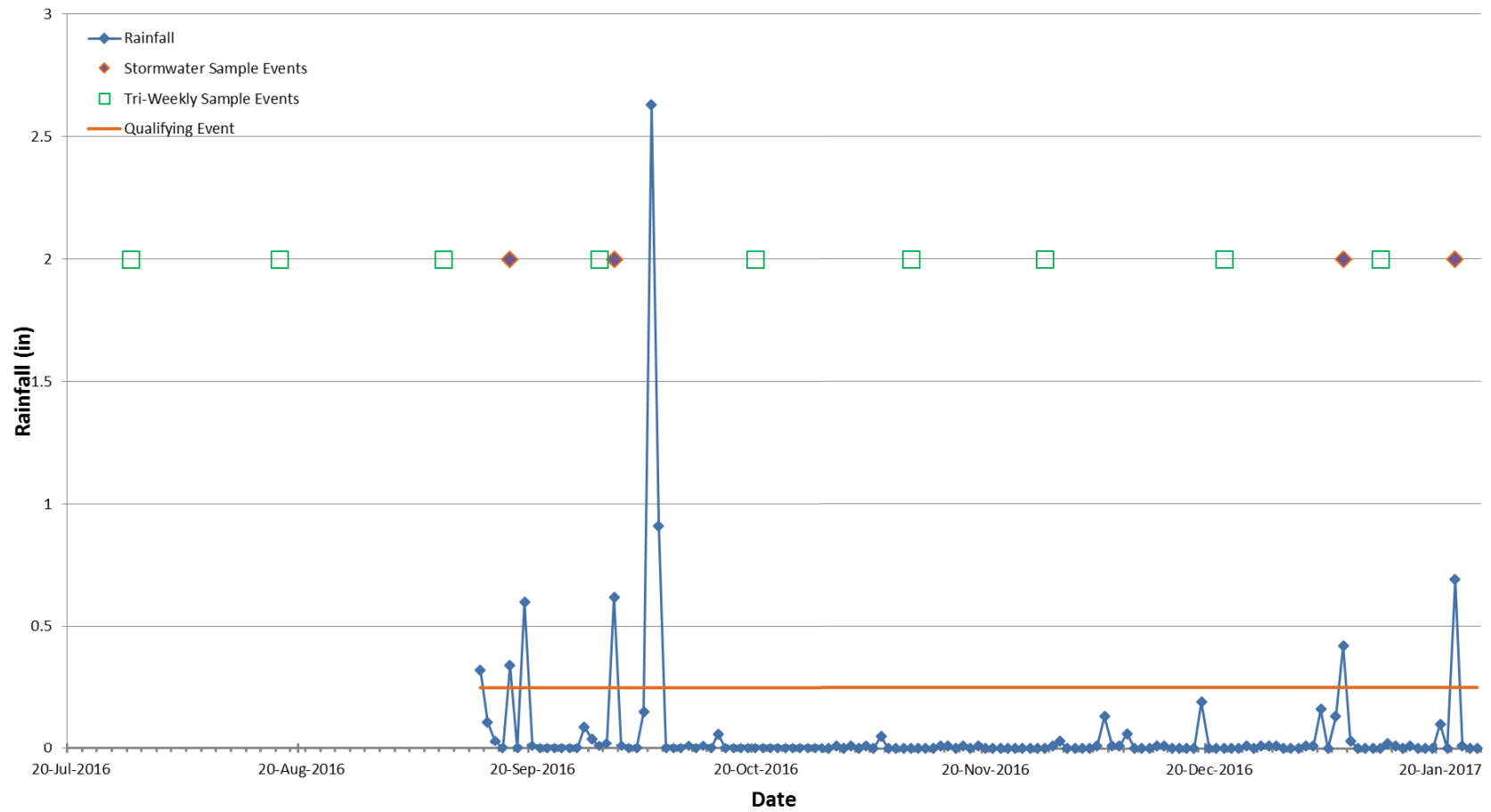
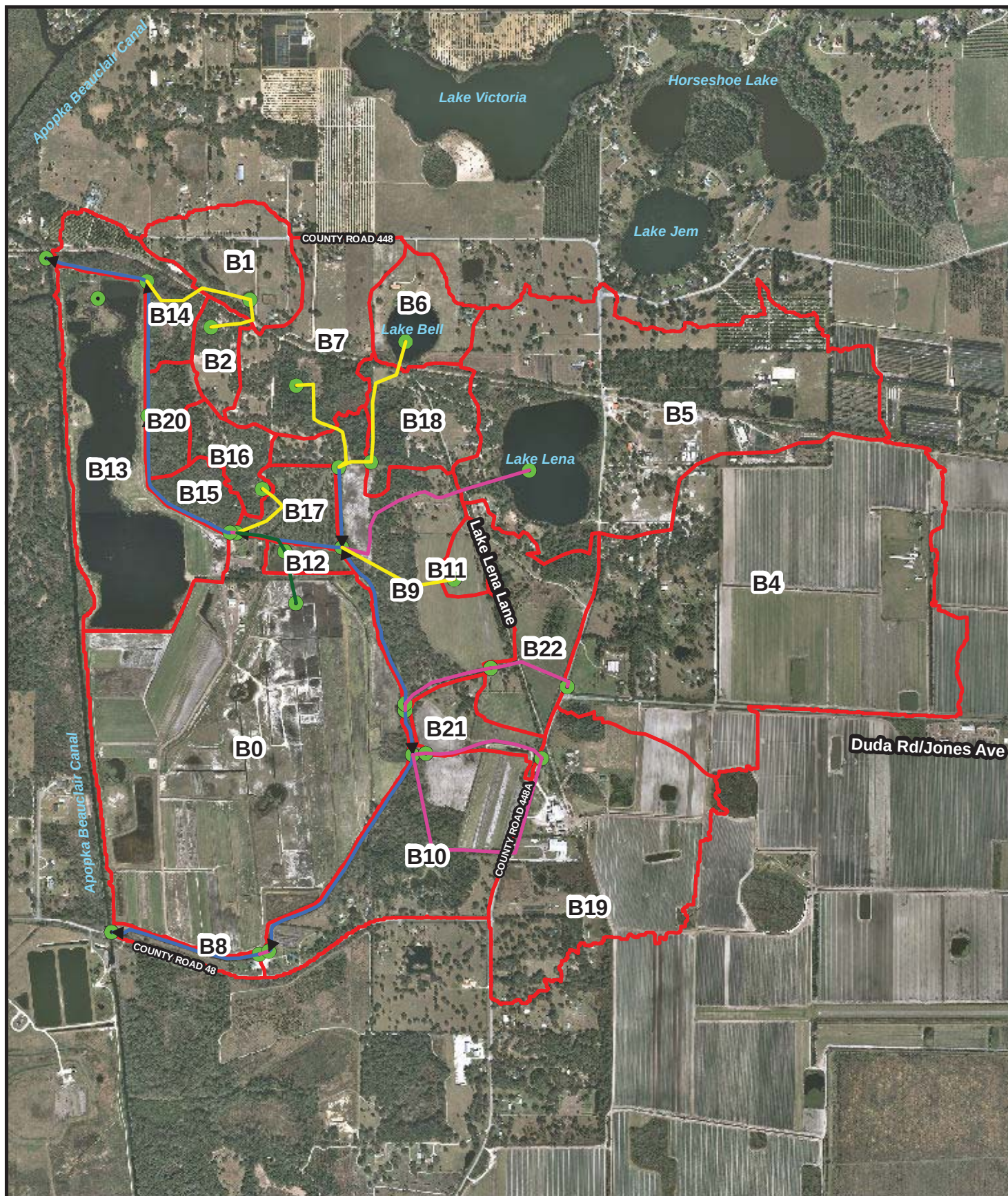


Figure 3-3
Base Flow and Stormwater Sample Dates and Rainfall





Notes:

- 1- Project No.: 600391.1
- 2- Data Source - FDOT 2014 Imagery AFW
- 3- This map is intended to be used for planning purposes only. It is not a survey.

Date: 03/15/2016
Revised:
Checked By: LL

Explanation of Features

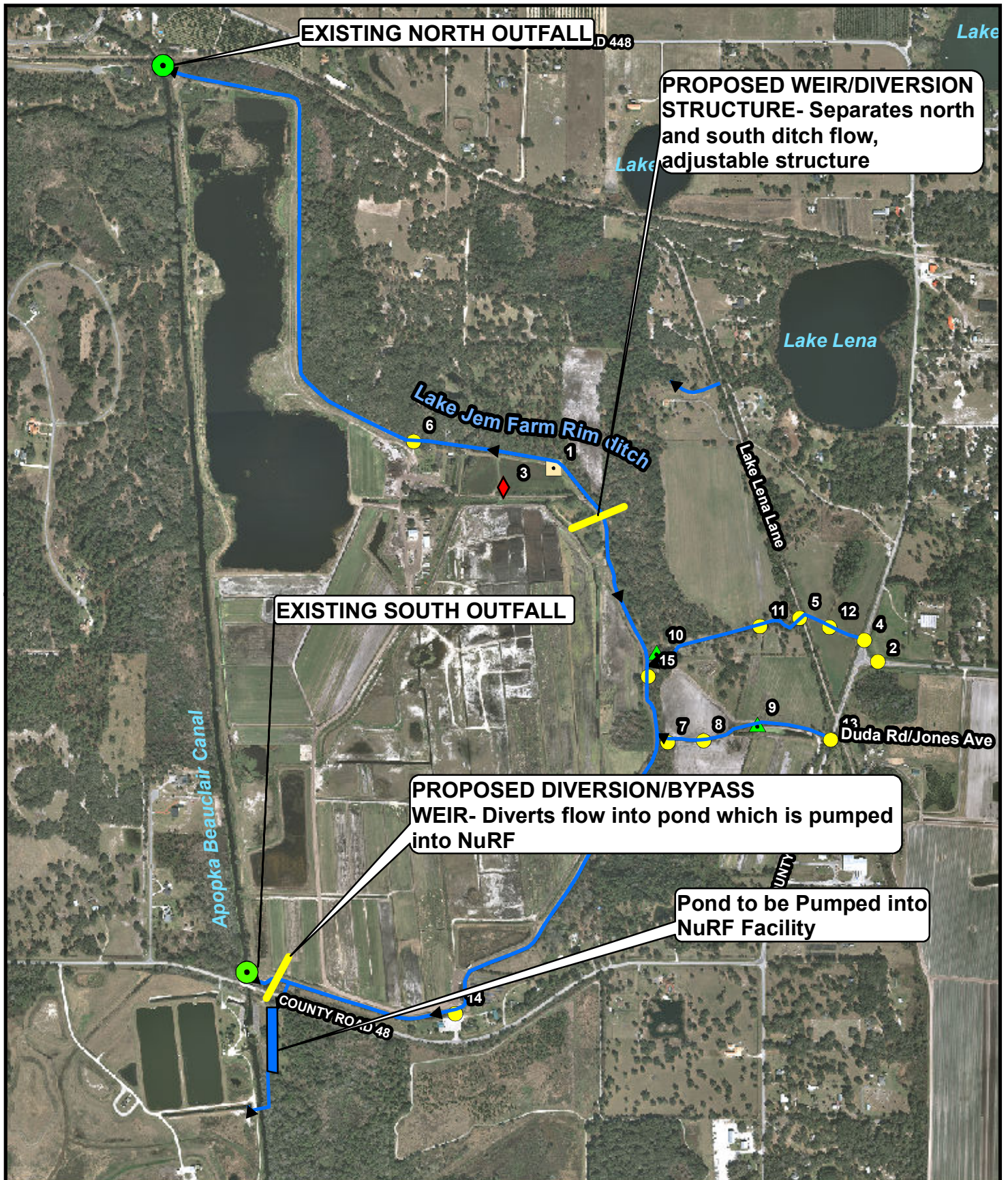
- | | | |
|-------------|--------|-----------------|
| N | ● Node | — Overland Weir |
| □ Sub-Basin | — Pipe | |
| → Reach | — Pump | |
| → Channel | | |

0 1,000
Feet



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Figure 5-1
Model Network
Apopka-Beauclair Canal
Lake County, FL



Notes:

- 1- Project No.: 600391.1
- 2- Data Source - FDOT 2014 Imagery AFW
- 3- This map is intended to be used for planning purposes only. It is not a survey.

Date: 03/15/2016
Revised:
Checked By: LL

Explanation of Features



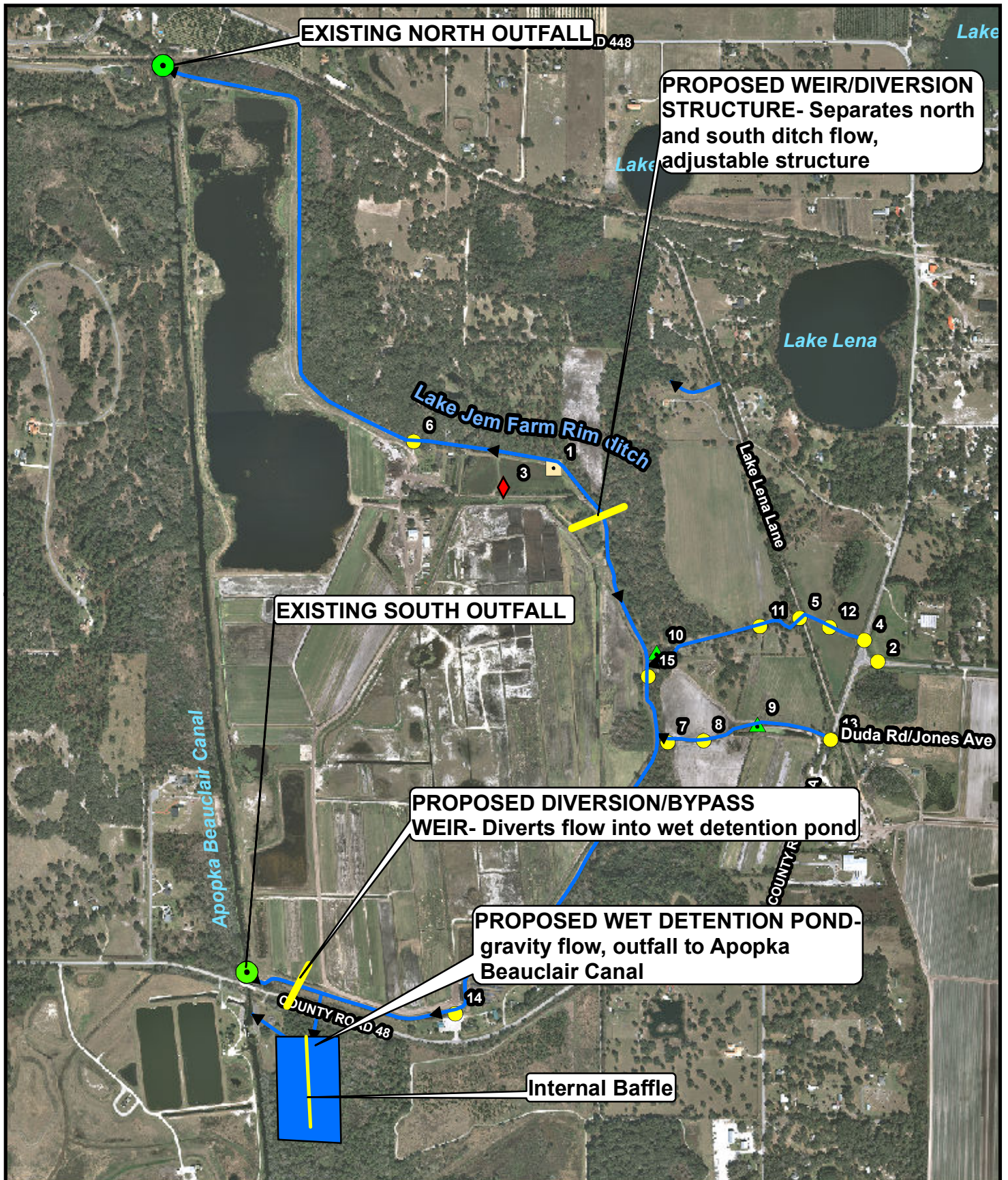
- Control Structures
- Culvert
- Staging Pond Discharge
- Staging Ponds

- Rim ditch
 - FLOWLINES
- 0 1,000
Feet



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Figure 6-1
Alternative 1
Load Reduction Strategy
Apopka-Beaclair Canal
Lake County, FL



Notes:

- 1- Project No.: 600391.1
- 2- Data Source - FDOT 2014 Imagery AFW
- 3- This map is intended to be used for planning purposes only. It is not a survey.

Date: 03/15/2016
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Explanation of Features



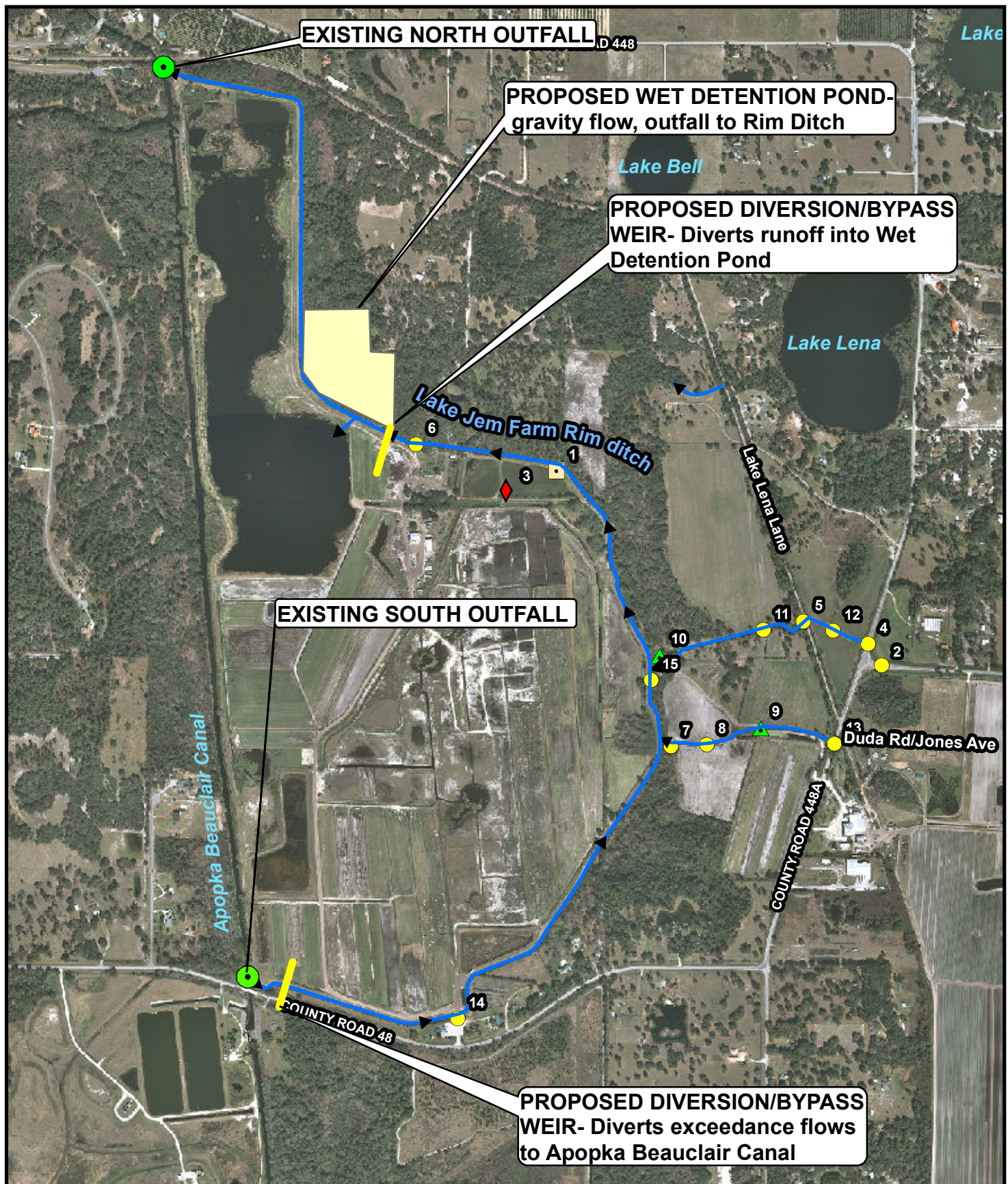
- Control Structures
- Culvert
- Staging Pond Discharge
- Staging Ponds

- Rim ditch
 - FLOWLINES
- 0 1,000
Feet



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Figure 6-2
Alternative 2
Load Reduction Strategy
Apopka-Beaclair Canal
Lake County, FL



Notes:

- 1- Project No.: 600391.1
- 2- Data Source - FDOT 2014 Imagery AFW
- 3- This map is intended to be used for planning purposes only. It is not a survey.

Date: 03/15/2016
Revised:
Checked By: LL

Explanation of Features



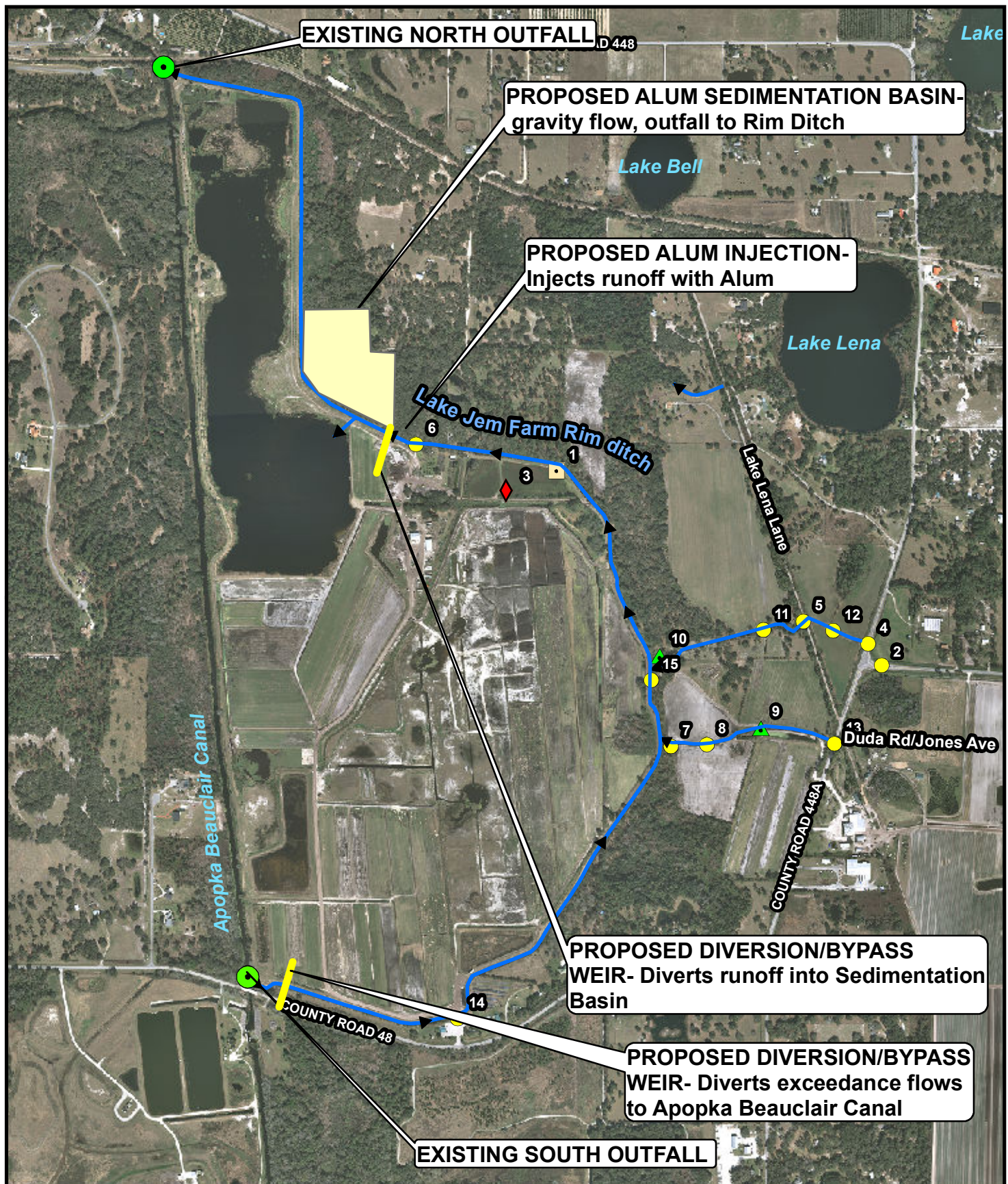
- Control Structures
- Culvert
- Staging Pond Discharge
- Staging Ponds

- Rim ditch
 - FLOWLINES
- 0 1,000
Feet



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Figure 6-3
Alternative 3
Load Reduction Strategy
Apopka-Beauclair Canal
Lake County, FL



Notes:

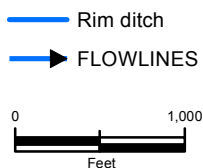
- 1- Project No.: 600391.1
- 2- Data Source - FDOT 2014 Imagery AFW
- 3- This map is intended to be used for planning purposes only. It is not a survey.

Date: 03/15/2016
Revised:
Checked By: LL

Explanation of Features

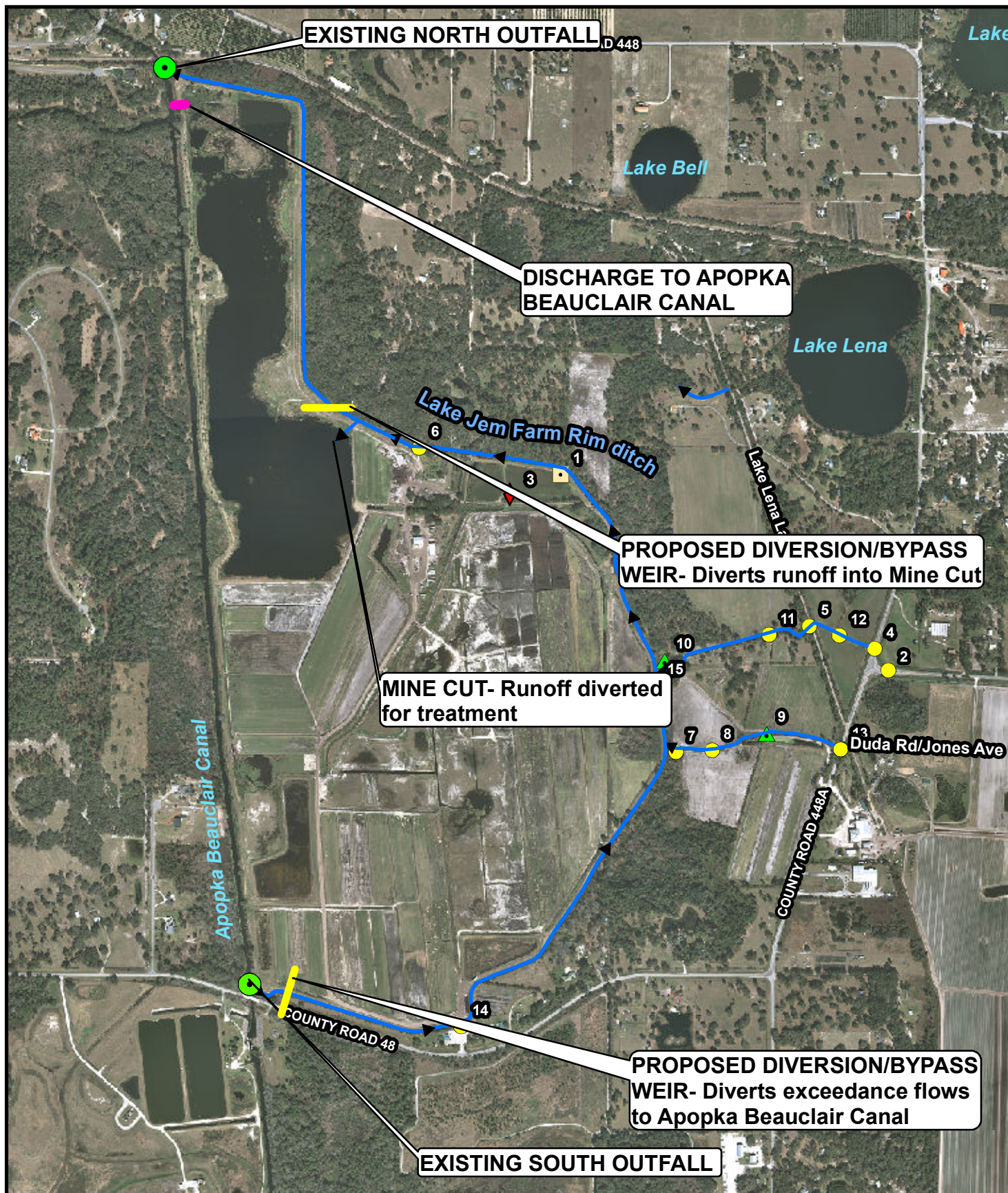


- Control Structures
- Culvert
- Staging Pond Discharge
- Staging Ponds



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Figure 6-4
Alternative 4
Load Reduction Strategy
Apopka-Beauclair Canal
Lake County, FL



Notes:

- 1- Project No.: 600391.1
- 2- Data Source - FDOT 2014 Imagery AFW
- 3- This map is intended to be used for planning purposes only. It is not a survey.

Date: 03/15/2016
Revised:
Checked By: LL

Explanation of Features



- Control Structures
- Culvert
- Staging Pond Discharge
- Staging Ponds

- Rim ditch
 - FLOWLINES
- 0 1,000
Feet



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Figure 6-5
Alternative 5
Load Reduction Strategy
Apopka-Beauclair Canal
Lake County, FL

Tables

Table 2-1 - Mapped Soil Units

Lake County	
Soil ID	Soils Description
8	Candler sand, 0 to 5 percent slopes
9	Candler sand, 5 to 12 percent slopes
13	Emeralda fine sand
15	Felda fine sand
16	Fellowship fine sandy loam, depressional
17	Arents
20	Immokalee sand
21	Lake sand, 0 to 5 percent slopes
26	Manatee fine sand, depressional
27	Everglades muck, depressional
28	Myakka sand
32	Oklawaha muck
33	Ona fine sand
34	Orlando fine sand, 0 to 5 percent slopes
37	Ellzey sand
38	Placid sand, depressional
40	Placid and Myakka sands, depressional
41	Pomello sand, 0 to 5 percent slopes
42	Pompano sand
43	St. Lucie sand, 0 to 5 percent slopes
44	Swamp
45	Tavares sand, 0 to 5 percent slopes
49	Wauchula sand
50	Borrow Pits
99	Water
Source SWFWMD	

Orange County	
Soil ID	Soils Description
3	BASINGER FINE SAND, DEPRESSIONAL
4	CANDLER FINE SAND, 0 TO 5 PERCENT SLOPES
20	IMMOKALEE FINE SAND
26	ONA FINE SAND
28	FLORAHOME FINE SAND, 0 TO 5 PERCENT SLOPES
34	POMELLO FINE SAND, 0 TO 5 PERCENT SLOPES
37	ST. JOHNS FINE SAND
40	SAMSULA MUCK
41	SAMSULA-HONTOON-BASINGER ASSOCIATION, DEPRESSIONAL
42	SANIBEL MUCK
44	SMYRNA FINE SAND
46	TAVARES FINE SAND, 0 TO 5 PERCENT SLOPES
51	WABASSO FINE SAND
54	ZOLFO FINE SAND
99	WATER
Source NRCS	

Table 2-2 - Hydrologic Soil Groups in Study Basin

Hydrologic Soil Group	Total Acres
A	399.08
A/D	276.63
B	8.60
B/D	687.83
C	26.98
C/D	18.12
D	69.68
W	144.10

Data Source: NRCS Soil Survey Geographic Database for Orange County, FL, 2010

Table 2-3 - Land Use

FLUCCS	Land Use Description	Area
2420	SOD FARMS	273.5
2140	ROW CROPS	251.1
4340	HARDWOOD - CONIFEROUS MIXED	160.7
2150	FIELD CROPS	122.9
1100	RESIDENTIAL, LOW DENSITY (LESS THAN 2 DWELLING UNITS/ACRE)	115.8
2110	IMPROVED PASTURES	114.8
6300	WETLAND FORESTED MIXED	95.8
5300	RESERVOIRS	89.0
2430	ORNAMENTALS	77.0
2510	HORSE FARMS	57.6
5200	LAKES	43.3
1180	RURAL RESIDENTIAL	37.1
2130	WOODLAND PASTURES	25.5
2210	CITRUS GROVES	20.8
7430	SPOIL AREAS	19.0
6460	TREELESS HYDRIC SAVANNA	18.0
2320	POULTRY FEEDING OPERATIONS	16.5
1550	RESIDENTIAL, LOW DENSITY UNDER CONSTRUCTION (LESS THAN 2 DWELLING UNITS/ACRE)	15.2
6410	FRESHWATER MARSHES	13.9
6440	EMERGENT AQUATIC VEGETATION	13.6
2120	UNIMPROVED PASTURES	11.6
5100	STREAMS AND WATERWAYS	10.5
2500	SPECIALTY FARMS	6.4
1900	OTHER LIGHT INDUSTRIAL	6.0
6430	WET PRAIRIES	5.4
3300	MIXED RANGELAND	5.3
6170	MIXED WETLAND HARDWOODS	4.8

Data Source: SJRWMD Land Use and Land Cover 2004

Table 3-1 - Base Flow Water Quality Parameters

Parameter	Units	Sample Type
Temperature	°C	YSI
pH	Units	YSI
Conductivity	umhos/cm	YSI
Dissolved Oxygen (DO)	mg/L	YSI
Dissolved Oxygen (DO)	%	YSI
Turbidity	NTU	YSI
Total Kjeldahl Nitrogen (TKN)	mg/L	Grab
Total Ammonia Nitrogen (TAN)	mg/L	Grab
Nitrate/Nitrite (NOx)	mg/L	Grab
Total Nitrogen (TN)	mg/L	Grab
Orthophosphate (OP)	mg/L	Grab
Total Phosphorus (TP)	mg/L	Grab

Table 3-2 – Base Flow Water Quality Sample Results

Station Name	DO %	DO	pH	Specific Conductance	ORP	Temp	NH4	Nox	TKN	TN	OP	TP	Turb
		(mg/L)		(uS/cm ²)		(°C)	(mg//L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(NTU)
CR448 at Duda													
min	1.7	0.15	5.70	0.235	-162	14.9	0.01	0.02	0.65	0.79	0.115	0.196	0.66
median	22.9	2.03	6.27	0.303	-71	20.7	0.19	0.06	1.15	1.24	0.229	0.476	2.60
mean	26.8	2.33	6.34	0.300	36	20.8	0.25	0.13	1.26	1.39	0.298	0.519	3.67
max	84.5	6.90	7.41	0.382	505	26.8	0.66	0.47	2.07	2.12	0.550	0.887	7.63
CR448 at Long & Scott													
min	20.7	1.63	6.26	0.246	-120	15.9	0.01	0.08	0.50	0.80	0.066	0.109	0.30
median	34.9	3.44	6.66	0.286	122	22.0	0.10	0.66	0.75	1.53	0.156	0.200	2.07
mean	44.4	3.79	6.72	0.287	150	22.2	0.14	0.65	0.82	1.48	0.188	0.265	3.84
max	98.1	7.40	7.21	0.333	568	29.6	0.38	1.25	1.44	2.10	0.562	0.589	15.00
ABC North Ditch													
min	9.8	0.80	6.44	0.317	-91	14.9	0.01	0.01	1.03	1.05	0.007	0.016	0.25
median	40.2	3.74	7.07	0.377	116	23.8	0.10	0.04	1.32	1.35	0.037	0.091	1.25
mean	41.2	3.51	7.04	0.389	50	23.6	0.11	0.04	1.34	1.38	0.038	0.097	1.93
max	91.8	6.83	7.44	0.511	197	31.6	0.21	0.09	1.82	1.87	0.100	0.162	5.29
ABC South Ditch													
min	16.4	1.26	6.71	0.263	-140	15.4	0.01	0.03	0.61	0.77	0.053	0.069	0.30
median	31.1	2.61	7.12	0.324	116	24.7	0.07	0.13	1.18	1.21	0.116	0.224	0.77
mean	32.0	2.72	7.06	0.324	65	22.8	0.07	0.20	1.18	1.38	0.213	0.328	0.98
max	46.5	4.11	7.41	0.407	218	29.4	0.15	0.97	2.44	2.63	0.696	0.705	3.00

Table 3-3 – ABC North Base Flow and Nutrient Load to ABC

Nutrient	Discharge		Mean Concentrations	Annual Nutrient Load
	cfs	ac-ft/yr	mg/L	lb
TN	2.25	1,629	1.38	6,125
TP	2.25	1,629	0.097	429

Table 3-4 – ABC South Base Flow and Nutrient Load to ABC

Nutrient	Discharge		Mean Concentrations	Annual Nutrient Load
	cfs	ac-ft/yr	mg/L	lb
TN	2.44	1,766	0.328	6,628
TP	2.44	1,766	0.098	1,575

Table 4-1 - Stormwater Quality Sample Results

Station Name	NH4	Nox	TKN	TN	OP	TP	Turb	TSS
	(mg//L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(NTU)	(mg/L)
CR448 at Duda								
min	0.01	0.26	0.61	1.06	0.100	0.152	4.2	6.0
median	0.08	0.45	0.89	1.24	0.200	0.308	7.3	6.3
mean	0.10	0.48	0.84	1.32	0.185	0.288	7.8	11.4
max	0.24	0.76	0.98	1.74	0.242	0.382	12.5	22.0
CR448A at Long & Scott								
min	0.01	0.38	0.78	1.22	0.104	0.237	3.3	2.0
median	0.10	0.39	0.83	1.27	0.226	0.307	8.0	6.3
mean	0.10	0.48	0.83	1.31	0.193	0.311	10.7	9.4
max	0.20	0.67	0.89	1.45	0.249	0.389	20.8	20.0

Table 5-1
Rainfall Frequency Distribution Adjusted for 52-inch Rain Year^{1,2}

Storm Event Range (inches)	Average Event (inches)	No. of Events	Average Duration (hour)	Max Recorded Intensity (in/hr)	Modeled Duration (hour)	Number of Rain Events for Average Year	Typical Rainfall Generated per class per year (inches)	Adjusted Number of Rain Events for Average Year	Adjusted Rainfall Generated per class per year (inches)
0.0-0.1	0.09	2119	1.2	0.1	0.90	39.98	3.6	47.78	4.3
0.1-0.2	0.19	805	2.07	0.2	0.95	15.19	2.89	18.15	3.45
0.2-0.3	0.29	439	2.78	0.3	0.97	8.28	2.4	9.9	2.87
0.3-0.4	0.39	366	2.96	0.4	0.98	6.91	2.69	8.25	3.22
0.4-0.5	0.49	262	3.22	0.5	0.98	4.94	2.42	5.91	2.89
0.5-0.6	0.59	216	3.45	0.6	0.98	4.08	2.4	4.87	2.87
0.6-0.7	0.67	63	3.3	0.7	0.96	1.19	0.8	1.42	0.95
0.7-0.8	0.75	196	3.67	0.8	0.94	3.7	2.77	4.42	3.31
0.8-0.9	0.85	80	4.49	0.9	0.94	1.51	1.28	1.8	1.53
0.9-1.0	0.95	150	4.58	1	0.95	2.83	2.69	3.38	3.21
1.0-1.5	1.24	289	5.42	1.5	0.83	5.45	6.76	6.52	8.08
1.5-2.0	1.74	139	6.5	1.9	0.92	2.62	4.56	3.13	5.45
2.0-3.0	2.42	99	8.52	3	0.81	1.87	4.52	2.23	5.4
3.0-4.0	3.55	24	9.46	3.4	1.04	0.45	1.61	0.54	1.92
4.0-5.0	4.34	15	16.2	3.7	1.17	0.28	1.23	0.34	1.47
5.0-6.0	5.63	4	21.25	1.4	4.02	0.08	0.42	0.09	0.51
6.0-7.0	6.45	1	28	2	3.23	0.02	0.12	0.02	0.15
7.0-8.0	NA	0	NA	0	NA	0	0	0	0
> 8.0	9.05	2	43.5	1	9.05	0.04	0.34	0.05	0.41

¹ This average rainfall was applied to all drainage basin hydrographs along with the assumption that the rainfall was distributed consistent with an FDOT rainfall distribution for a similar duration event. A triangular unit hydrograph with an arbitrary shape factor of 256 was used as well.

² The average rainfall event for each rainfall depth category was modeled in Interconnected Pond Routing Software (ICPR®) from Streamline Technologies, Inc.

Table 5-2
Catchment Parameters Assignments and Runoff

Basin Name	Area (acres)	Curve Number (DCIA Included)	Time of Concentration (min.)
B0	301.61	87.04	108.8
B1	40.93	52.17	28.03
B2	14.28	41.53	60.53
B4	297.37	80.19	134.42
B5	228.14	64.24	86.02
B6	28.9	71.14	21.83
B7	65.85	66.69	55.1
B8	8.16	90.98	23.14
B9	88.81	84.56	71.04
B10	91.78	90.64	52.66
B11	8.92	88.98	55.79
B12	7.09	97.51	10
B13	107.93	97.89	10
B14	30.66	58.39	38.25
B15	13.03	78.29	67.84
B16	17.21	74.11	49.34
B17	19.7	78.75	89.17
B18	37.13	83.27	45.37
B19	136.48	80.81	75.79
B20	16.04	81.349	35
B21	19.77	89.43	47.94
B22	51.3	82.8	260.31

Table 5-3
Cumulative Discharge to ABC

Annual Rainfall	Base flow		Stormwater		Cumulative
	(ac-ft)	Percent of Total	(ac-ft)	Percent of Total	(ac-ft)
52	3,395	78	931	22	4326

Table 5-4
Annual Nutrient Load to ABC

Source	Volume (ac-ft/yr)	Concentrations		Annual Loads	
		mg/L		lb / yr	
		TP	TN	TP	TN
Stormwater ¹	931	0.298	1.32	705	4,133
North Ditch Base flow ¹	1629	0.098	1.38	429	6,125
South Ditch Base flow	1766	0.328	1.38	1,575	6,628
Cumulative	4326			2,709	16,884

¹ Concentration applies only to sub-basins upstream of automated stormwater samplers

² Annual base flow as determined by 7/2016 – 1/2017 monitoring period

Table 6-1 - Alternative 1 Cost Analysis

Item No	Description	Unit	Unit Cost	Quantity	Total Cost
0	Survey/Design/Permitting	LS	\$120,000	1	\$120,000
1	Mobilization	LS	\$88,000	1	\$88,000
2	Maintenance of Traffic	LS	\$7,500	1	\$7,500
3	Erosion & Sediment Control	LS	\$20,000	1	\$20,000
4	Clearing & Grubbing	LS	\$137,000	1	\$137,000
5	Excavation (Regular)	CY	\$16.00	12907	\$206,512
6	Jack and Bore 48" pipe	LF	\$950	45	\$42,750
7	Mitered End Section (48")	EA	\$3,800	2	\$7,600
8	Stormwater Force Main- 15" PVC	LF	\$65	600	\$39,000
9	Stormwater Pump Station	EA	\$100,000	1	\$100,000
10	VFD Control for Pump	LS	\$50,000	1	\$50,000
11	Stormwater Pond Control Structure- Drop Structure	EA	\$10,000	1	\$10,000
12	Horizontal Directional Drill HDD 15"	LF	\$110	120	\$13,200
13	Reinforced Concrete Pipe (RCP) (48")	LF	\$110	280	\$30,800
14	Slope Protection - Cellular Confinement Geotextile System	SY	\$50.00	462	\$23,100
15	Riprap (for inflow swale)	TN	\$125.00	20	\$2,500
16	Performance Turf (Sod)	SY	\$3.00	4840	\$14,520
17	Construction Survey & As-Builts	LS	\$15,000	1	\$15,000
	Estimated Sub-Total				\$927,482
	Contingency (Concept Level)			35%	\$324,619
	Estimated Implementation Total				\$1,252,101

Table 6-2 - Alternative 2 Cost Analysis

Item No	Description	Unit	Unit Cost	Quantity	Total Cost
0	Survey/Design/Permitting	LS	\$120,000	1	\$120,000
1	Mobilization	LS	\$149,640	1	\$149,640
2	Maintenance of Traffic	LS	\$7,500	1	\$7,500
3	Erosion & Sediment Control	LS	\$20,000	1	\$20,000
4	Clearing & Grubbing	LS	\$137,000	1	\$137,000
5	Excavation (Regular)	CY	\$10.00	103254	\$1,032,540
6	Jack and Bore 48" pipe	LF	\$950	45	\$42,750
7	Mitered End Section (48")	EA	\$3,800	3	\$11,400
8	Reinforced Concrete Pipe (RCP) (48")	LF	\$110	580	\$63,800
9	Drop Structure	LS	\$5,000	1	\$5,000
10	Slope Protection - Cellular Confinement Geotextile System	SY	\$50.00	462	\$23,100
11	Riprap (for inflow swale)	TN	\$125.00	20	\$2,500
12	Performance Turf (Sod)	SY	\$3.00	5275	\$15,825
13	Construction Survey & As-Builts	LS	\$15,000	1	\$15,000
	Estimated Sub-Total				\$1,646,055
	Contingency (Concept Level)			35%	\$576,119.25
	Estimated Implementation Total				\$2,222,174.25

Table 6-3 - Alternative 3 Cost Analysis

Item No	Description	Unit	Unit Cost	Quantity	Total Cost
0	Survey/Design/Permitting	LS	\$120,000	1	\$120,000
1	Mobilization	LS	\$150,000	1	\$150,000
2	Maintenance of Traffic	LS	\$5,000	1	\$5,000
3	Erosion & Sediment Control	LS	\$20,000	1	\$20,000
4	Clearing & Grubbing	LS	\$137,000	1	\$137,000
5	Excavation (Regular)	CY	\$10.00	116160	\$1,161,600
6	Mitered End Section (48")	EA	\$3,800	2	\$7,600
7	Reinforced Concrete Pipe (RCP) (48")	LF	\$110	200	\$22,000
8	Drop Structure	LS	\$5,000	1	\$5,000
9	Slope Protection - Cellular Confinement Geotextile System	SY	\$50.00	462	\$23,100
10	Riprap (for inflow swale)	TN	\$125.00	20	\$2,500
11	Performance Turf (Sod)	SY	\$3.00	4840	\$14,520
12	Procurement of Lands	LS	\$103,685.00	1	\$103,685
13	Construction Survey & As-Builts	LS	\$15,000	1	\$15,000
	Estimated Sub-Total				\$1,787,005
	Contingency (Concept Level)			35%	\$625,451.75
	Estimated Implementation Total				\$2,412,456.75

Table 6-4 - Alternative 4 Cost Analysis

Item No	Description	Unit	Unit Cost	Quantity	Total Cost
0	Survey/Design/Permitting	LS	\$120,000	1	\$120,000
1	Mobilization	LS	\$150,000	1	\$150,000
2	Maintenance of Traffic	LS	\$5,000	1	\$5,000
3	Erosion & Sediment Control	LS	\$20,000	1	\$20,000
4	Clearing & Grubbing	LS	\$137,000	1	\$137,000
5	Excavation (Regular)	CY	\$10.00	116160	\$1,161,600
6	Mitered End Section (48")	EA	\$3,800	2	\$7,600
7	Reinforced Concrete Pipe (RCP) (48")	LF	\$110	200	\$22,000
8	Drop Structure	LS	\$5,000	1	\$5,000
9	Slope Protection - Cellular Confinement Geotextile System	SY	\$50.00	462	\$23,100
10	Alum Injection System	LS	\$500,000	1	\$500,000
11	Riprap (for inflow swale)	TN	\$125.00	20	\$2,500
12	Performance Turf (Sod)	SY	\$3.00	4840	\$14,520
13	Procurement of Lands	LS	\$103,685	1	\$103,685
14	Construction Survey & As-Builts	LS	\$15,000	1	\$15,000
	Estimated Sub-Total				\$2,287,005
	Contingency (Concept Level)			35%	\$800,451.75
	Estimated Implementation Total				\$3,087,456.75

Table 6-5 - Alternative 5 Cost Analysis

Item No	Description	Unit	Unit Cost	Quantity	Total Cost
0	Survey/Design/Permitting	LS	\$120,000	1	\$120,000
1	Mobilization	LS	\$35,000	1	\$35,000
2	Maintenance of Traffic	LS	\$5,000	1	\$5,000
3	Erosion & Sediment Control	LS	\$10,000	1	\$10,000
4	Clearing & Grubbing	LS	\$137,000	1	\$137,000
5	Mitered End Section (48")	EA	\$3,800	1	\$3,800
6	Reinforced Concrete Pipe (RCP) (48")	LF	\$110	180	\$19,800
7	Drop Structure	LS	\$5,000	1	\$5,000
8	Slope Protection - Cellular Confinement Geotextile System	SY	\$50.00	462	\$23,100
9	Riprap (for inflow swale)	TN	\$125.00	15	\$1,875
10	Construction Survey & As-Builts	LS	\$15,000	1	\$15,000
	Estimated Sub-Total				\$375,575
	Contingency (Concept Level)			35%	\$131,451.25
	Estimated Implementation Total				\$507,026.25

Table 6-6 - Comparison of Costs and Removal Rates for Alternatives

Alternative	Description	Annualized Cost	Load Reduction (lb/yr)		Cost/lb	
			TN	TP	(\$)	
		\$/yr			TN	TP
1	Diversion to NuRF	179,296	3,432	1,836	52	97
2	ABC South Treatment Pond	121,109	2,649	1,156	46	104
3	ABC North Treatment Pond	130,623	4,290	1,519	30	86
4	ABC North Treatment Pond with Alum	392,704	5,568	2,437	71	161
5	Diversion to Mine Pit	35,351	6,405	1,809	6	20

Appendix A

Base Flow Lab Reports



Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2017

Your Sample ID: WABF1

Sample Type:

Report#: 7018

Sample Collect Date/Time/By: 7/28/2016 1:10:59 PM Michael Howe

Report Date: 08-Aug-16

Sample Receipt Date: 7/29/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	0.87	mg/L		0.04	0.14	8/8/2016 8:57:45 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0837	mg/L		0.0100	0.0300	8/4/2016 11:06:00 AM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.79	mg/L		0.03	0.11	8/5/2016 2:41:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.10	mg/L		0.01	0.03	8/4/2016 5:16:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.267	mg/L		0.006	0.020	8/5/2016 3:57:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.156	mg/L		0.005	0.020	7/29/2016 3:42:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	1.99	ntu		0.0100	0.0300	7/29/2016 11:20:20 AM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2017	DUP	Nox	6.4	
16-2017	MS	NH3	99	
16-2017	MS	P	92.9	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2018

Your Sample ID: WABF2

Sample Type:

Report#: 7018

Sample Collect Date/Time/By: 7/28/2016 2:30:13 PM Michael Howe

Report Date: 08-Aug-16

Sample Receipt Date: 7/29/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.87	mg/L		0.04	0.14	8/8/2016 8:57:45 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0524	mg/L		0.0100	0.0300	8/4/2016 11:06:00 AM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.82	mg/L		0.03	0.11	8/5/2016 2:41:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.16	mg/L		0.01	0.03	8/4/2016 5:16:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.097	mg/L		0.006	0.020	8/5/2016 3:57:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.029	mg/L		0.005	0.020	7/29/2016 3:42:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	5.29	ntu		0.0100	0.0300	7/29/2016 11:20:20 AM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2018	DUP	TKN	0.9	
16-2018	DUP	P	7.3	
16-2018	DUP	TURBIDITY	11.6	
16-2018	MS	Nox	95.1	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2019

Your Sample ID: WABF3

Sample Type:

Report#: 7018

Sample Collect Date/Time/By: 7/28/2016 3:30:47 PM Michael Howe

Report Date: 08-Aug-16

Sample Receipt Date: 7/29/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.39	mg/L		0.04	0.14	8/8/2016 8:57:45 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0321	mg/L		0.0100	0.0300	8/4/2016 11:06:00 AM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.36	mg/L		0.03	0.11	8/5/2016 2:41:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.05	mg/L		0.01	0.03	8/4/2016 5:16:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.224	mg/L		0.006	0.020	8/5/2016 3:57:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.118	mg/L		0.005	0.020	7/29/2016 3:42:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	0.770	ntu		0.0100	0.0300	7/29/2016 11:20:20 AM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2019	MS	TKN	94.3	
16-2019	MS	P	103	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority

107 North Lake Avenue

Tavares, FL 32778

Attn: Ron Hart

Phone: (352) 343-3777 Ext:

FAX: 352-343-4259

Our Lab#: 16-2019

Your Sample ID: WABF3

Sample Type:

Report#: 7018

Sample Collect Date/Time/By: 7/28/2016 3:30:47 PM Michael Howe

Report Date: 08-Aug-16

Sample Receipt Date: 7/29/2016

Sample Notes:

Analytical results presented in this report have been reviewed for compliance with the Lake County Quality Systems Manual and NELAP quality control criteria. The data presented in this report have met all method and compliance criteria unless otherwise noted. The results relate only to the items tested and only to samples as they were received by the Laboratory. All samples collected by this laboratory were collected using DEP SOPs. Analytical Method numbers followed by NC indicate the analysis is non-certified. Data qualifier information - "I" value is between the MDL and RDL, "U" analyte was undetected.

Cathie Catasus

08-Aug-16

Lab Manager

Date



Cathie
Catasus

Digitally signed by Cathie Catasus
DN: cn=Cathie Catasus, o=Lake
County Board of County
Commissioners, ou=Water
Resource Management
Laboratory,
email=ccatasus@lakecountyfl.gov
, c=US
Date: 2016.08.08 16:16:28 -04'00'



Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2207

Your Sample ID: CR448&Duda Rd

Sample Type:

Report#: 7103

Sample Collect Date/Time/By: 8/17/2016 10:45:00 AM LCWA Staff

Report Date: 31-Aug-16

Sample Receipt Date: 8/19/2016

Sample Notes: 448 & Duda Rd

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.38	mg/L		0.04	0.14	8/26/2016 2:55:09 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0411	mg/L		0.0100	0.0300	8/24/2016 12:35:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.34	mg/L		0.03	0.11	8/25/2016 3:21:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.29	mg/L		0.01	0.03	8/24/2016 5:08:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.866	mg/L		0.006	0.020	8/25/2016 5:33:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.539	mg/L		0.005	0.020	8/19/2016 5:02:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	0.660	ntu		0.0100	0.0300	8/19/2016 12:20:00 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2207	DUP	NH3	1.3	
16-2207	DUP	P	0.4	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2208

Your Sample ID: CR448 @ Long Scott

Sample Type:

Report#: 7103

Sample Collect Date/Time/By: 8/17/2016 11:35:00 AM LCWA Staff

Report Date: 31-Aug-16

Sample Receipt Date: 8/19/2016

Sample Notes: 448 @ Long Scott

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.53	mg/L		0.04	0.14	8/26/2016 2:55:09 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.3498	mg/L		0.0100	0.0300	8/24/2016 12:35:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.18	mg/L		0.03	0.11	8/25/2016 3:21:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.38	mg/L		0.01	0.03	8/24/2016 5:08:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.589	mg/L		0.006	0.020	8/25/2016 5:33:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.562	mg/L		0.005	0.020	8/19/2016 5:02:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	0.300	ntu		0.0100	0.0300	8/19/2016 12:20:00 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2208	DUP	Nox	0.6	
16-2208	DUP	TKN	0.7	
16-2208	DUP	P	1.1	
16-2208	MS	P	91.4	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2209

Your Sample ID: North Ditch

Sample Type:

Report#: 7103

Sample Collect Date/Time/By: 8/17/2016 1:05:00 PM LCWA Staff

Report Date: 31-Aug-16

Sample Receipt Date: 8/19/2016

Sample Notes: North Ditch

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.49	mg/L		0.04	0.14	8/26/2016 2:55:09 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0372	mg/L		0.0100	0.0300	8/24/2016 12:35:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.46	mg/L		0.03	0.11	8/25/2016 3:21:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.18	mg/L		0.01	0.03	8/24/2016 5:08:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.091	mg/L		0.006	0.020	8/25/2016 5:33:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.052	mg/L		0.005	0.020	8/19/2016 5:02:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	0.250	ntu		0.0100	0.0300	8/19/2016 12:20:00 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2209	MS	Nox	98.7	
16-2209	MS	TKN	103.4	
16-2209	MS	P	99.5	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2210 Your Sample ID: South Ditch

Sample Type:

Report#: 7103

Sample Collect Date/Time/By: 8/17/2016 4:00:00 PM LCWA Staff

Report Date: 31-Aug-16

Sample Receipt Date: 8/19/2016

Sample Notes: South Ditch

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.21	mg/L		0.04	0.14	8/26/2016 2:55:09 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0350	mg/L		0.0100	0.0300	8/24/2016 12:35:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.18	mg/L		0.03	0.11	8/25/2016 3:21:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.06	mg/L		0.01	0.03	8/24/2016 5:08:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.472	mg/L		0.006	0.020	8/25/2016 5:33:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.457	mg/L		0.005	0.020	8/19/2016 5:02:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	0.300	ntu		0.0100	0.0300	8/19/2016 12:20:00 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2210	DUP	TURBIDITY	3.3	
16-2210	MS	NH3	101.1	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catusus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority

107 North Lake Avenue

Tavares, FL 32778

Attn: Ron Hart

Phone: (352) 343-3777 Ext:

FAX: 352-343-4259

Our Lab#: 16-2210

Your Sample ID: South Ditch

Sample Type:

Report#: 7103

Sample Collect Date/Time/By: 8/17/2016 4:00:00 PM LCWA Staff

Report Date: 31-Aug-16

Sample Receipt Date: 8/19/2016

Sample Notes: South Ditch

Analytical results presented in this report have been reviewed for compliance with the Lake County Quality Systems Manual and NELAP quality control criteria. The data presented in this report have met all method and compliance criteria unless otherwise noted. The results relate only to the items tested and only to samples as they were received by the Laboratory. All samples collected by this laboratory were collected using DEP SOPs. Analytical Method numbers followed by NC indicate the analysis is non-certified. Data qualifier information - "I" value is between the MDL and RDL, "U" analyte was undetected.

Cathie Catusus

Lab Manager

31-Aug-16

Date



Cathie Catusus

Digitally signed by Cathie Catusus
DN: cn=Cathie Catusus, o=Lake
County Board of County
Commissioners, ou=Water Resource
Management Laboratory,
email=ccatusus@lakecountyfl.gov,
c=US
Date: 2016.08.31 14:21:20 -04'00'



Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2454

Your Sample ID: 448 Culvert

Sample Type:

Report#: 7291

Sample Collect Date/Time/By: 9/8/2016 10:15:00 AM Foster Wheeler AMEC

Report Date: 06-Oct-16

Sample Receipt Date: 9/8/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	2.10	mg/L		0.04	0.14	9/21/2016 10:59:13 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.6566	mg/L		0.0100	0.0300	9/9/2016 10:24:00 AM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.44	mg/L	J	0.03	0.11	9/20/2016 2:44:27 PM	
	duplicate at 21%							
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.26	mg/L		0.01	0.03	9/28/2016 4:12:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.308	mg/L		0.005	0.020	9/9/2016 2:23:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.405	mg/L		0.006	0.020	9/20/2016 4:04:37 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	1.25	ntu	Q	0.0100	0.0300	9/13/2016 2:32:50 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2454	DUP	TKN	21.1	
16-2454	DUP	P	2	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catusus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2455 Your Sample ID: 448 Duda

Sample Type:

Report#: 7291

Sample Collect Date/Time/By: 9/8/2016 11:00:00 AM Foster Wheeler AMEC

Report Date: 06-Oct-16

Sample Receipt Date: 9/8/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	2.00	mg/L		0.04	0.14	9/21/2016 10:59:13 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.4727	mg/L		0.0100	0.0300	9/9/2016 10:24:00 AM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.53	mg/L		0.03	0.11	9/20/2016 2:44:27 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.36	mg/L		0.01	0.03	9/28/2016 4:12:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.420	mg/L		0.005	0.020	9/9/2016 2:23:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.614	mg/L		0.006	0.020	9/20/2016 4:04:37 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	2.53	ntu	Q	0.0100	0.0300	9/13/2016 2:32:50 PM	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2456

Your Sample ID: North Ditch

Sample Type:

Report#: 7291

Sample Collect Date/Time/By: 9/8/2016 11:45:00 AM Foster Wheeler AMEC

Report Date: 06-Oct-16

Sample Receipt Date: 9/8/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.49	mg/L		0.04	0.14	9/21/2016 10:59:13 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0632	mg/L		0.0100	0.0300	9/9/2016 10:24:00 AM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.43	mg/L		0.03	0.11	9/20/2016 2:44:27 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.07	mg/L		0.01	0.03	9/28/2016 4:12:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.475	mg/L		0.005	0.020	9/9/2016 2:23:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.162	mg/L		0.006	0.020	9/30/2016 5:57:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	1.25	ntu	Q	0.0100	0.0300	9/13/2016 2:32:50 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2456	DUP	NH3	19.8	
16-2456	DUP	P	0.5	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2457 Your Sample ID: South Ditch

Sample Type:

Report#: 7291

Sample Collect Date/Time/By: 9/8/2016 1:30:00 PM Foster Wheeler AMEC

Report Date: 06-Oct-16

Sample Receipt Date: 9/8/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.28	mg/L		0.04	0.14	9/21/2016 10:59:13 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0257	mg/L	I	0.0100	0.0300	9/9/2016 10:24:00 AM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.26	mg/L		0.03	0.11	9/20/2016 2:44:27 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.10	mg/L		0.01	0.03	9/28/2016 4:12:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.081	mg/L		0.005	0.020	9/9/2016 2:23:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.531	mg/L		0.006	0.020	9/20/2016 4:04:37 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	0.900	ntu	Q	0.0100	0.0300	9/13/2016 2:32:50 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2457	DUP	TURBIDITY	27.8	
16-2457	MS	NH3	100.7	
16-2457	MS	TKN	96.9	
16-2457	MS	P	91.8	
16-2457	MS	P	98.8	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catusus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority

107 North Lake Avenue

Tavares, FL 32778

Attn: Ron Hart

Phone: (352) 343-3777 Ext:

FAX: 352-343-4259

Our Lab#: 16-2457

Your Sample ID: South Ditch

Sample Type:

Report#: 7291

Sample Collect Date/Time/By: 9/8/2016 1:30:00 PM Foster Wheeler AMEC

Report Date: 06-Oct-16

Sample Receipt Date: 9/8/2016

Sample Notes:

Analytical results presented in this report have been reviewed for compliance with the Lake County Quality Systems Manual and NELAP quality control criteria. The data presented in this report have met all method and compliance criteria unless otherwise noted. The results relate only to the items tested and only to samples as they were received by the Laboratory. All samples collected by this laboratory were collected using DEP SOPs. Analytical Method numbers followed by NC indicate the analysis is non-certified. Data qualifier information - "I" value is between the MDL and RDL, "U" analyte was undetected.

Cathie Catusus

Lab Manager

06-Oct-16

Date



Cathie
Catusus

Digitally signed by Cathie Catusus
DN: cn=Cathie Catusus, o=Lake
County Board of County
Commissioners, ou=Water Resource
Management Laboratory,
email=ccatusus@lakecountyfl.gov,
c=US
Date: 2016.10.06 10:44:20 -04'00'



Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2705 **Your Sample ID:** WA448DUDA

Sample Type:

Report#: 7341

Sample Collect Date/Time/By: 9/29/2016 10:20:00 AM Michael Howe

Report Date: 18-Oct-16

Sample Receipt Date: 9/29/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.10	mg/L		0.04	0.14	10/18/2016 8:02:38 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.2393	mg/L		0.0100	0.0300	10/6/2016 11:59:00 AM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.86	mg/L	J	0.03	0.11	9/30/2016 4:07:00 PM	
	CCV 110.1%							
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.01	mg/L	UJ	0.01	0.03	10/11/2016 11:03:39 AM	
	bracketing CCVs at 113.3%							
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.365	mg/L		0.006	0.020	9/30/2016 5:57:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.192	mg/L		0.005	0.020	9/30/2016 1:51:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	2.58	ntu		0.0100	0.0300	10/3/2016 4:46:00 PM	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2706 Your Sample ID: WA448LONG

Sample Type:

Report#: 7341

Sample Collect Date/Time/By: 9/29/2016 10:45:00 AM Michael Howe

Report Date: 18-Oct-16

Sample Receipt Date: 9/29/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	0.80	mg/L		0.04	0.14	10/18/2016 8:02:38 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.1453	mg/L		0.0100	0.0300	10/5/2016 4:03:45 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.65	mg/L	J	0.03	0.11	9/30/2016 4:07:00 PM	
	CCV 110.1%							
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.01	mg/L	UJ	0.01	0.03	10/11/2016 11:03:39 AM	
	bracketing CCVs at 113.3%							
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.394	mg/L		0.006	0.020	9/30/2016 5:57:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.179	mg/L		0.005	0.020	9/30/2016 1:51:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	15.0	ntu		0.0100	0.0300	10/3/2016 4:46:00 PM	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2707 Your Sample ID: North Ditch

Sample Type:

Report#: 7341

Sample Collect Date/Time/By: 9/29/2016 11:25:00 AM Michael Howe

Report Date: 18-Oct-16

Sample Receipt Date: 9/29/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.35	mg/L		0.04	0.14	10/18/2016 8:02:38 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0554	mg/L		0.0100	0.0300	10/5/2016 4:03:45 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.30	mg/L	J	0.03	0.11	9/30/2016 4:07:00 PM	
	CCV 110.1%							
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.01	mg/L	UJ	0.01	0.03	10/11/2016 11:03:39 AM	
	bracketing CCVs at 113.3%							
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.059	mg/L		0.006	0.020	9/30/2016 5:57:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.007	mg/L	I	0.005	0.020	9/30/2016 1:51:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	2.79	ntu		0.0100	0.0300	10/3/2016 4:46:00 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2707	DUP	P	0	F

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2708 Your Sample ID: South Ditch

Sample Type:

Report#: 7341

Sample Collect Date/Time/By: 9/29/2016 2:10:00 PM Michael Howe

Report Date: 18-Oct-16

Sample Receipt Date: 9/29/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	0.77	mg/L		0.04	0.14	10/18/2016 8:02:38 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.1304	mg/L		0.0100	0.0300	10/5/2016 4:03:45 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.64	mg/L	J	0.03	0.11	9/30/2016 4:07:00 PM	
	CCV 110.1%							
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.01	mg/L	UJ	0.01	0.03	10/11/2016 11:03:39 AM	
	bracketing CCVs at 113.3%							
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.176	mg/L		0.006	0.020	9/30/2016 5:57:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.120	mg/L		0.005	0.020	9/30/2016 1:51:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	0.680	ntu		0.0100	0.0300	10/3/2016 4:46:00 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2708	MS	TKN	99.8	
16-2708	MS	P	95.8	
16-2708	MS	P	103.4	



Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 16-2920

Your Sample ID: WA448DUDA

Sample Type:

Report#: 7410

Sample Collect Date/Time/By: 10/20/2016 10:20:00 AM Michael Howe

Report Date: 03-Nov-16

Sample Receipt Date: 10/20/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	2.12	mg/L		0.04	0.14	10/27/2016 11:24:53 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0485	mg/L		0.0100	0.0300	10/26/2016 3:08:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	2.07	mg/L		0.03	0.11	10/21/2016 2:52:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.51	mg/L		0.01	0.03	10/25/2016 12:54:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.887	mg/L		0.006	0.020	10/21/2016 4:23:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.550	mg/L	J	0.005	0.020	10/21/2016 11:36:00 AM	
	Sample apparently not filtered, material seen floating in bottle							
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	1.32	ntu		0.0100	0.0300	10/24/2016 4:31:25 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2920	DUP	TURBIDITY	5.4	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2921 Your Sample ID: WA448LONG

Sample Type:

Report#: 7410

Sample Collect Date/Time/By: 10/20/2016 10:40:00 AM Michael Howe

Report Date: 03-Nov-16

Sample Receipt Date: 10/20/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.90	mg/L		0.04	0.14	10/27/2016 11:24:53 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	1.1839	mg/L		0.0100	0.0300	10/26/2016 3:08:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.71	mg/L		0.03	0.11	10/21/2016 2:52:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.10	mg/L		0.01	0.03	10/25/2016 12:54:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.200	mg/L		0.006	0.020	10/21/2016 4:23:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.166	mg/L		0.005	0.020	10/21/2016 11:36:00 AM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	0.760	ntu		0.0100	0.0300	10/24/2016 4:31:25 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2921	DUP	P	0.3	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2922

Your Sample ID: AB Canal North Ditch

Sample Type:

Report#: 7410

Sample Collect Date/Time/By: 10/20/2016 11:30:00 AM Michael Howe

Report Date: 03-Nov-16

Sample Receipt Date: 10/20/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.16	mg/L		0.04	0.14	10/27/2016 11:24:53 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0142	mg/L	I	0.0100	0.0300	10/26/2016 3:08:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.15	mg/L		0.03	0.11	10/21/2016 2:52:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.10	mg/L		0.01	0.03	10/25/2016 12:54:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.148	mg/L		0.006	0.020	10/21/2016 4:23:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.100	mg/L		0.005	0.020	10/21/2016 11:36:00 AM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	0.840	ntu		0.0100	0.0300	10/24/2016 4:31:25 PM	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

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352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2923 Your Sample ID: AB Canal South Ditch

Sample Type:

Report#: 7410

Sample Collect Date/Time/By: 10/20/2016 2:24:00 PM Michael Howe

Report Date: 03-Nov-16

Sample Receipt Date: 10/20/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	2.33	mg/L		0.04	0.14	10/27/2016 11:24:53 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.9713	mg/L		0.0100	0.0300	10/26/2016 3:08:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.36	mg/L		0.03	0.11	10/21/2016 2:52:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.07	mg/L		0.01	0.03	10/25/2016 12:54:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.705	mg/L		0.012	0.040	10/21/2016 4:23:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.696	mg/L		0.005	0.020	10/21/2016 11:36:00 AM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	0.540	ntu		0.0100	0.0300	10/24/2016 4:31:25 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2923	MS	TKN	104.3	
16-2923	MS	P	93.1	
16-2923	MS	P	108.7	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

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352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2923

Your Sample ID: AB Canal South Ditch

Sample Type:

Report#: 7410

Sample Collect Date/Time/By: 10/20/2016 2:24:00 PM Michael Howe

Report Date: 03-Nov-16

Sample Receipt Date: 10/20/2016

Sample Notes:

Analytical results presented in this report have been reviewed for compliance with the Lake County Quality Systems Manual and NELAP quality control criteria. The data presented in this report have met all method and compliance criteria unless otherwise noted. The results relate only to the items tested and only to samples as they were received by the Laboratory. All samples collected by this laboratory were collected using DEP SOPs. Analytical Method numbers followed by NC indicate the analysis is non-certified. Data qualifier information - "I" value is between the MDL and RDL, "U" analyte was undetected.

Cathie Catusus

03-Nov-16

Lab Manager

Date



Cathie
Catusus

Digitally signed by Cathie Catusus
DN: cn=Cathie Catusus, o=Lake
County Board of County
Commissioners, ou=Water
Resource Management Laboratory,
email=ccatusus@lakecountyfl.gov,
c=US
Date: 2016.11.03 14:42:17 -04'00'



Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 16-3087

Your Sample ID: WA448DUDA

Sample Type:

Report#: 7529

Sample Collect Date/Time/By: 11/10/2016 10:30:00 AM AMEC

Report Date: 05-Dec-16

Sample Receipt Date: 11/10/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.86	mg/L		0.04	0.14	11/21/2016	4:48:54 PM
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0168	mg/L	IY	0.0100	0.0300	11/16/2016	12:48:00 PM
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.84	mg/L	Y	0.03	0.11	11/18/2016	4:25:43 PM
	pH >2							
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.66	mg/L	Y	0.01	0.03	11/28/2016	5:51:00 PM
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.461	mg/L	Y	0.006	0.020	11/18/2016	6:41:08 PM
	pH >2							
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.115	mg/L		0.005	0.020	11/10/2016	5:26:00 PM
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	7.63	ntu		0.0100	0.0300	11/10/2016	4:54:21 PM

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-3087	DUP	TURBIDITY	4.7	
16-3087	MS	Nox	99.6	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 16-3088

Your Sample ID: WA448LONG

Sample Type:

Report#: 7529

Sample Collect Date/Time/By: 11/10/2016 12:15:00 PM AMEC

Report Date: 05-Dec-16

Sample Receipt Date: 11/10/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	2.01	mg/L		0.04	0.14	11/21/2016 4:48:54 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	1.2546	mg/L		0.0100	0.0300	11/16/2016 12:48:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.75	mg/L		0.03	0.11	11/18/2016 4:25:43 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.17	mg/L		0.01	0.03	11/28/2016 5:51:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.152	mg/L		0.006	0.020	11/18/2016 6:41:08 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.066	mg/L		0.005	0.020	11/10/2016 5:26:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	2.92	ntu		0.0100	0.0300	11/10/2016 4:54:21 PM	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 16-3089

Your Sample ID: North Ditch ABC

Sample Type:

Report#: 7529

Sample Collect Date/Time/By: 11/10/2016 3:00:00 PM AMEC

Report Date: 05-Dec-16

Sample Receipt Date: 11/10/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.34	mg/L		0.04	0.14	11/21/2016 4:48:54 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0143	mg/L	I	0.0100	0.0300	11/16/2016 12:48:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.32	mg/L		0.03	0.11	11/18/2016 4:25:43 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.21	mg/L		0.01	0.03	11/28/2016 5:51:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.147	mg/L		0.006	0.020	11/18/2016 6:41:08 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.052	mg/L		0.005	0.020	11/10/2016 5:26:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	3.53	ntu		0.0100	0.0300	11/10/2016 4:54:21 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-3089	MS	P	93	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 16-3090 Your Sample ID: South Ditch

Sample Type:

Report#: 7529

Sample Collect Date/Time/By: 11/10/2016 12:45:00 PM AMEC

Report Date: 05-Dec-16

Sample Receipt Date: 11/10/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	0.86	mg/L		0.04	0.14	11/21/2016 4:48:54 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0766	mg/L		0.0100	0.0300	11/16/2016 12:48:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.78	mg/L		0.03	0.11	11/18/2016 4:25:43 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.15	mg/L		0.01	0.03	11/28/2016 5:51:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.174	mg/L		0.006	0.020	11/18/2016 6:41:08 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.114	mg/L		0.005	0.020	11/10/2016 5:26:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	1.19	ntu		0.0100	0.0300	11/10/2016 4:54:21 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-3090	DUP	TKN	3.7	
16-3090	DUP	P	0.4	
16-3090	DUP	P	0.6	
16-3090	MS	Nox	102	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catusus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority

27351 State Road 19

Tavares, FL 32778

Attn: Ron Hart

Phone: (352) 324-6141 Ext:

FAX: (352) 324-6364

Our Lab#: 16-3090

Your Sample ID: South Ditch

Sample Type:

Report#: 7529

Sample Collect Date/Time/By: 11/10/2016 12:45:00 PM AMEC

Report Date: 05-Dec-16

Sample Receipt Date: 11/10/2016

Sample Notes:

Analytical results presented in this report have been reviewed for compliance with the Lake County Quality Systems Manual and NELAP quality control criteria. The data presented in this report have met all method and compliance criteria unless otherwise noted. The results relate only to the items tested and only to samples as they were received by the Laboratory. All samples collected by this laboratory were collected using DEP SOPs. Analytical Method numbers followed by NC indicate the analysis is non-certified. Data qualifier information - "I" value is between the MDL and RDL, "U" analyte was undetected.

Cathie Catusus

Lab Manager

05-Dec-16

Date



Cathie
Catusus

Digitally signed by Cathie Catusus
DN: cn=Cathie Catusus, o=Lake
County Board of County
Commissioners, ou=Water
Resource Management Laboratory,
email=ccatusus@lakecountyfl.gov,
c=US
Date: 2016.12.05 11:39:27 -05'00'



Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 16-3222

Your Sample ID: WA448DUDA

Sample Type:

Report#: 7549

Sample Collect Date/Time/By: 11/28/2016 9:00:00 AM MJH LML

Report Date: 12-Dec-16

Sample Receipt Date: 11/28/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	0.79	mg/L		0.04	0.14	12/6/2016 2:05:50 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.1423	mg/L		0.0100	0.0300	12/1/2016 4:52:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.65	mg/L		0.03	0.11	12/2/2016 3:03:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.08	mg/L		0.01	0.03	11/28/2016 5:51:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.196	mg/L		0.006	0.020	12/2/2016 4:50:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.121	mg/L		0.005	0.020	11/30/2016 3:44:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	2.62	ntu		0.0100	0.0300	11/28/2016 4:00:18 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-3222	DUP	TKN	1.9	
16-3222	DUP	P	1.8	
16-3222	DUP	P	8.5	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

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Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 16-3223 Your Sample ID: WA448LONG

Sample Type:

Report#: 7549

Sample Collect Date/Time/By: 11/28/2016 9:30:00 AM MJH LML

Report Date: 12-Dec-16

Sample Receipt Date: 11/28/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.03	mg/L		0.04	0.14	12/6/2016 2:05:50 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.4179	mg/L		0.0100	0.0300	12/1/2016 4:52:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.61	mg/L		0.03	0.11	12/2/2016 3:03:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.16	mg/L		0.01	0.03	11/28/2016 5:51:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.114	mg/L		0.006	0.020	12/2/2016 4:50:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.078	mg/L		0.005	0.020	11/30/2016 3:44:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	2.07	ntu		0.0100	0.0300	11/28/2016 4:00:18 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-3223	DUP	TURBIDITY	5.2	
16-3223	MS	P	91.2	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 16-3224

Your Sample ID: Apopka Canal North Ditch

Sample Type:

Report#: 7549

Sample Collect Date/Time/By: 11/28/2016 10:30:00 AM MJH LML

Report Date: 12-Dec-16

Sample Receipt Date: 11/28/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.24	mg/L		0.04	0.14	12/6/2016 2:05:50 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0100	mg/L	U	0.0100	0.0300	12/1/2016 4:52:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.23	mg/L		0.03	0.11	12/2/2016 3:03:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.08	mg/L		0.01	0.03	11/28/2016 5:51:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.091	mg/L		0.006	0.020	12/2/2016 4:50:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.044	mg/L		0.005	0.020	11/30/2016 3:44:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	1.25	ntu		0.0100	0.0300	11/28/2016 4:00:18 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-3224	DUP	Nox	0	F
16-3224	MS	TKN	98.3	
16-3224	MS	P	95.8	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 16-3225

Your Sample ID: Apopka Canal South Ditch

Sample Type:

Report#: 7549

Sample Collect Date/Time/By: 11/28/2016 1:00:00 PM MJH LML

Report Date: 12-Dec-16

Sample Receipt Date: 11/28/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	2.63	mg/L		0.04	0.14	12/6/2016 2:05:50 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.1997	mg/L		0.0100	0.0300	12/1/2016 4:52:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	2.44	mg/L		0.03	0.11	12/2/2016 3:03:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.07	mg/L		0.01	0.03	11/28/2016 5:51:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.516	mg/L		0.006	0.020	12/2/2016 4:50:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.066	mg/L		0.005	0.020	11/30/2016 3:44:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	0.460	ntu		0.0100	0.0300	11/28/2016 4:00:18 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-3225	MS	NH3	99.5	
16-3225	MS	Nox	106.1	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catusus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority

27351 State Road 19

Tavares, FL 32778

Attn: Ron Hart

Phone: (352) 324-6141 Ext:

FAX: (352) 324-6364

Our Lab#: 16-3225

Your Sample ID: Apopka Canal South Ditch

Sample Type:

Report#: 7549

Sample Collect Date/Time/By: 11/28/2016 1:00:00 PM MJH LML

Report Date: 12-Dec-16

Sample Receipt Date: 11/28/2016

Sample Notes:

Analytical results presented in this report have been reviewed for compliance with the Lake County Quality Systems Manual and NELAP quality control criteria. The data presented in this report have met all method and compliance criteria unless otherwise noted. The results relate only to the items tested and only to samples as they were received by the Laboratory. All samples collected by this laboratory were collected using DEP SOPs. Analytical Method numbers followed by NC indicate the analysis is non-certified. Data qualifier information - "I" value is between the MDL and RDL, "U" analyte was undetected.

Cathie Catusus

12-Dec-16

Lab Manager

Date



Cathie
Catusus

Digitally signed by Cathie Catusus
DN: cn=Cathie Catusus, o=Lake
County Board of County
Commissioners, ou=Water
Resource Management
Laboratory,
email=ccatusus@lakecountyfl.gov,
c=US
Date: 2016.12.12 15:52:15 -05'00'



Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 16-3625

Your Sample ID: WA448DUDA

Sample Type:

Report#: 7659

Sample Collect Date/Time/By: 12/22/2016 10:00:00 AM Mike Howe

Report Date: 11-Jan-17

Sample Receipt Date: 12/22/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	0.84	mg/L		0.04	0.14	1/11/2017 8:59:13 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0220	mg/L	YI	0.0100	0.0300	1/9/2017 3:35:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.81	mg/L		0.03	0.12	1/5/2017 4:03:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.06	mg/L		0.01	0.03	1/4/2017 3:52:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.491	mg/L		0.006	0.020	1/5/2017 6:02:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.265	mg/L		0.005	0.020	12/22/2016 4:27:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	6.15	ntu		0.0100	0.0300	12/22/2016 4:18:00 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-3625	DUP	NH3	3.2	
16-3625	DUP	TURBIDITY	10	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
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- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 16-3626

Your Sample ID: WA448LONG

Sample Type:

Report#: 7659

Sample Collect Date/Time/By: 12/22/2016 10:30:00 AM Mike Howe

Report Date: 11-Jan-17

Sample Receipt Date: 12/22/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.39	mg/L		0.04	0.14	1/11/2017 8:59:13 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.8939	mg/L	Y	0.0100	0.0300	1/9/2017 3:35:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.50	mg/L		0.03	0.12	1/5/2017 4:03:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.10	mg/L		0.01	0.03	1/4/2017 3:52:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.109	mg/L		0.006	0.020	1/5/2017 6:02:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.086	mg/L		0.005	0.020	12/22/2016 4:27:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	5.61	ntu		0.0100	0.0300	12/22/2016 4:18:00 PM	

Lake County Water Resource Management Laboratory

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Tavares, FL 32778

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Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 16-3627

Your Sample ID: ABC North Ditch

Sample Type:

Report#: 7659

Sample Collect Date/Time/By: 12/22/2016 1:45:00 PM Mike Howe

Report Date: 11-Jan-17

Sample Receipt Date: 12/22/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.05	mg/L		0.04	0.14	1/11/2017 8:59:13 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0213	mg/L	YI	0.0100	0.0300	1/9/2017 3:35:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.03	mg/L		0.03	0.12	1/5/2017 4:03:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.11	mg/L		0.01	0.03	1/4/2017 3:52:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.016	mg/L	I	0.006	0.020	1/5/2017 6:02:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.008	mg/L	IJ	0.005	0.020	12/22/2016 4:27:00 PM	
	spike recovery at 88%							
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	1.01	ntu		0.0100	0.0300	12/22/2016 4:18:00 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-3627	MS	P	88	*

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 16-3628

Your Sample ID: ABC South Ditch

Sample Type:

Report#: 7659

Sample Collect Date/Time/By: 12/22/2016 11:15:00 AM Mike Howe

Report Date: 11-Jan-17

Sample Receipt Date: 12/22/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	0.78	mg/L		0.04	0.14	1/11/2017 8:59:13 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.1739	mg/L	Y	0.0100	0.0300	1/9/2017 3:35:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.61	mg/L		0.03	0.12	1/5/2017 4:03:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.06	mg/L		0.01	0.03	1/4/2017 3:52:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.069	mg/L		0.006	0.020	1/5/2017 6:02:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.076	mg/L		0.005	0.020	12/22/2016 4:27:00 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	0.970	ntu		0.0100	0.0300	12/22/2016 4:18:00 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-3628	DUP	P	0	
16-3628	MS	NH3	102.3	

Lake County Water Resource Management Laboratory

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Tavares, FL 32778

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Laboratory Supervisor: Cathie Catusus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority

27351 State Road 19

Tavares, FL 32778

Attn: Ron Hart

Phone: (352) 324-6141 Ext:

FAX: (352) 324-6364

Our Lab#: 16-3628

Your Sample ID: ABC South Ditch

Sample Type:

Report#: 7659

Sample Collect Date/Time/By: 12/22/2016 11:15:00 AM Mike Howe

Report Date: 11-Jan-17

Sample Receipt Date: 12/22/2016

Sample Notes:

Analytical results presented in this report have been reviewed for compliance with the Lake County Quality Systems Manual and NELAP quality control criteria. The data presented in this report have met all method and compliance criteria unless otherwise noted. The results relate only to the items tested and only to samples as they were received by the Laboratory. All samples collected by this laboratory were collected using DEP SOPs. Analytical Method numbers followed by NC indicate the analysis is non-certified. Data qualifier information - "I" value is between the MDL and RDL, "U" analyte was undetected.

Cathie Catusus

11-Jan-17

Lab Manager

Date



Cathie
Catusus

Digitally signed by Cathie Catusus
DN: cn=Cathie Catusus, o=Lake
County Board of County
Commissioners, ou=Water
Resource Management Laboratory,
email=ccatusus@lakecountyfl.gov,
c=US
Date: 2017.01.11 09:14:37 -05'00'



Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 17-0091 Your Sample ID: WA448DUDA

Sample Type: Surface water

Report#: 7727

Sample Collect Date/Time/By: 1/12/2017 10:10:33 AM Lance Lumbard

Report Date: 31-Jan-17

Sample Receipt Date: 1/12/2017

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.02	mg/L		0.04	0.14	1/27/2017 3:38:33 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0640	mg/L		0.0100	0.0300	1/18/2017 10:05:00 AM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.96	mg/L		0.03	0.12	1/25/2017 4:06:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.05	mg/L		0.01	0.03	1/13/2017 3:03:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.269	mg/L		0.006	0.020	1/25/2017 6:07:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.178	mg/L		0.003	0.010	1/13/2017 11:15:00 AM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	5.87	ntu		0.0100	0.0300	1/12/2017 3:48:34 PM	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catusus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 17-0092 Your Sample ID: WA448LONG

Sample Type: Surface water

Report#: 7727

Sample Collect Date/Time/By: 1/12/2017 10:30:06 AM Lance Lumbard

Report Date: 31-Jan-17

Sample Receipt Date: 1/12/2017

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.65	mg/L		0.04	0.14	1/27/2017 3:38:33 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.8789	mg/L		0.0100	0.0300	1/18/2017 10:05:00 AM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.77	mg/L		0.03	0.12	1/25/2017 4:06:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.04	mg/L		0.01	0.03	1/13/2017 3:03:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.156	mg/L		0.006	0.020	1/25/2017 6:07:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.095	mg/L		0.003	0.010	1/13/2017 11:15:00 AM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	4.69	ntu		0.0100	0.0300	1/12/2017 3:48:34 PM	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 17-0093 Your Sample ID: ABC North Ditch

Sample Type: Surface water

Report#: 7727

Sample Collect Date/Time/By: 1/12/2017 11:30:43 AM Lance Lumbard

Report Date: 31-Jan-17

Sample Receipt Date: 1/12/2017

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.45	mg/L		0.04	0.14	1/27/2017 3:38:33 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.0872	mg/L		0.0100	0.0300	1/18/2017 10:05:00 AM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.36	mg/L		0.03	0.12	1/25/2017 4:06:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.08	mg/L		0.01	0.03	1/13/2017 3:03:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.061	mg/L		0.006	0.020	1/25/2017 6:07:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.009	mg/L	I	0.003	0.010	1/13/2017 11:15:00 AM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	1.19	ntu		0.0100	0.0300	1/12/2017 3:48:34 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
17-0093	DUP	P	0	F
17-0093	MS	TKN	93.3	
17-0093	MS	P	99.3	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 17-0094 Your Sample ID: ABC South Ditch

Sample Type: Surface water

Report#: 7727

Sample Collect Date/Time/By: 1/12/2017 1:30:17 PM Lance Lumbard

Report Date: 31-Jan-17

Sample Receipt Date: 1/12/2017

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.17	mg/L		0.04	0.14	1/27/2017 3:38:33 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.1643	mg/L		0.0100	0.0300	1/18/2017 10:05:00 AM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	1.00	mg/L		0.03	0.12	1/25/2017 4:06:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.07	mg/L		0.01	0.03	1/13/2017 3:03:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.084	mg/L		0.006	0.020	1/25/2017 6:07:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.053	mg/L		0.003	0.010	1/13/2017 11:15:00 AM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	3.00	ntu		0.0100	0.0300	1/12/2017 3:48:34 PM	

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
17-0094	DUP	TKN	4	
17-0094	DUP	P	1.9	
17-0094	DUP	TURBIDITY	45.6	
17-0094	MS	NH3	91.1	
17-0094	MS	P	99.1	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catusus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 17-0094

Your Sample ID: ABC South Ditch

Sample Type: Surface water

Report#: 7727

Sample Collect Date/Time/By: 1/12/2017 1:30:17 PM Lance Lumbard

Report Date: 31-Jan-17

Sample Receipt Date: 1/12/2017

Sample Notes:

Analytical results presented in this report have been reviewed for compliance with the Lake County Quality Systems Manual and NELAP quality control criteria. The data presented in this report have met all method and compliance criteria unless otherwise noted. The results relate only to the items tested and only to samples as they were received by the Laboratory. All samples collected by this laboratory were collected using DEP SOPs. Analytical Method numbers followed by NC indicate the analysis is non-certified. Data qualifier information - "I" value is between the MDL and RDL, "U" analyte was undetected.

Cathie Catusus

31-Jan-17

Lab Manager

Date



Cathie
Catusus

Digitally signed by Cathie Catusus
DN: cn=Cathie Catusus, o=Lake
County Board of County
Commissioners, ou=Water Resource
Management Laboratory,
email=ccatusus@lakecountyfl.gov,
c=US
Date: 2017.01.31 09:53:25 -05'00'

Stormwater Runoff Lab Reports



Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2545 Your Sample ID: WA448DUDA

Sample Type: AQUEOUS-Rain

Report#: 7703

Sample Collect Date/Time/By: 9/18/2016 9:00:01 AM Lance Lumbard

Report Date: 19-Jan-17

Sample Receipt Date: 9/19/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.80	mg/L		0.03	0.11	9/20/2016 2:44:27 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.4556	mg/L		0.0100	0.0300	9/22/2016 10:27:50 AM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.05	mg/L		0.01	0.03	9/28/2016 4:12:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.215	mg/L		0.005	0.020	9/19/2016 3:58:44 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.266	mg/L		0.006	0.020	9/20/2016 4:04:37 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	4.15	ntu		0.0100	0.0300		
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.26	mg/L		0.04	0.14	10/5/2016 2:58:06 PM	
PH-LAB	<u>Analytical Method: 4500H+B</u>							
	pH	7.17	S.U.		0.100		9/19/2016 2:40:07 PM	
TSS	<u>Analytical Method: 2540D</u>							
	Total Suspended Solids	6.0	mg/L		6.3	20.0	9/20/2016 8:35:52 AM	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catusus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority

107 North Lake Avenue

Tavares, FL 32778

Attn: Ron Hart

Phone: (352) 343-3777 Ext:

FAX: 352-343-4259

Our Lab#: 16-2545

Your Sample ID: WA448DUDA

Sample Type: AQUEOUS-Rain

Report#: 7703

Sample Collect Date/Time/By: 9/18/2016 9:00:01 AM Lance Lumbard

Report Date: 19-Jan-17

Sample Receipt Date: 9/19/2016

Sample Notes:

ALK auto

Analytical Method: 310.2

Alkalinity

78.3

mg/L

6.2

19.8

9/28/2016

10:04:15 AM

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2545	MS	P	92.1	
16-2545	MSD	P	92.1	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catusus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2546 Your Sample ID: WA448LONG

Sample Type: AQUEOUS-Rain

Report#: 7703

Sample Collect Date/Time/By: 9/18/2016 9:15:12 AM Lance Lumbard

Report Date: 19-Jan-17

Sample Receipt Date: 9/19/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.83	mg/L	J	0.03	0.11	9/20/2016 2:44:27 PM	
	duplicate at 21.7%							
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.3886	mg/L		0.0100	0.0300	9/22/2016 10:27:50 AM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.10	mg/L		0.01	0.03	9/28/2016 4:12:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.249	mg/L		0.005	0.020	9/19/2016 3:58:44 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.307	mg/L		0.006	0.020	9/20/2016 4:04:37 PM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	3.33	ntu		0.0100	0.0300		
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.22	mg/L		0.04	0.14	10/5/2016 2:58:06 PM	
PH-LAB	<u>Analytical Method: 4500H+B</u>							
	pH	7.07	S.U.		0.100		9/19/2016 2:40:07 PM	
TSS	<u>Analytical Method: 2540D</u>							
	Total Suspended Solids	2.0	mg/L		6.3	20.0	9/20/2016 8:35:52 AM	
ALK auto	<u>Analytical Method: 310.2</u>							
	Alkalinity	80.9	mg/L		6.2	19.8	9/28/2016 10:04:15 AM	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
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352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2546 Your Sample ID: WA448LONG

Sample Type: AQUEOUS-Rain

Report#: 7703

Sample Collect Date/Time/By: 9/18/2016 9:15:12 AM Lance Lumbard

Report Date: 19-Jan-17

Sample Receipt Date: 9/19/2016

Sample Notes:

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2546	DUP	TKN	21.7	
16-2546	DUP	P	7.8	
16-2546	DUP	TSS	0	F
16-2546	DUP	TURBIDITY	0.3	
16-2546	MS	Nox	107.1	

Analytical results presented in this report have been reviewed for compliance with the Lake County Quality Systems Manual and NELAP quality control criteria. The data presented in this report have met all method and compliance criteria unless otherwise noted. The results relate only to the items tested and only to samples as they were received by the Laboratory. All samples collected by this laboratory were collected using DEP SOPs. Analytical Method numbers followed by NC indicate the analysis is non-certified. Data qualifier information - "I" value is between the MDL and RDL, "U" analyte was undetected.

Cathie Catusus

Lab Manager

19-Jan-17

Date



Cathie
Catusus

Digitally signed by Cathie Catusus
DN: cn=Cathie Catusus, o=Lake
County Board of County
Commissioners, ou=Water
Resource Management Laboratory,
email=ccatusus@lakecountyfl.gov,
c=US
Date: 2017.01.19 14:01:32 -05'00'



Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catusus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 17-0037 **Your Sample ID:** WA448LONG

Sample Type: AQUEOUS-Other

Report#: 7705

Sample Collect Date/Time/By: 1/8/2017 8:20:41 AM Lance Lumbard

Report Date: 20-Jan-17

Sample Receipt Date: 1/9/2017

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.74	mg/L		0.04	0.14	1/18/2017 2:48:11 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.7592	mg/L		0.0100	0.0300	1/11/2017 12:38:49 AM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.98	mg/L	J	0.03	0.12	1/12/2017 3:17:00 PM	
	Original CCV contaminated with turbid material. Used prior CCV from 1/5/17							
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.24	mg/L		0.01	0.03	1/13/2017 3:03:00 PM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.152	mg/L		0.006	0.020	1/12/2017 6:09:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.100	mg/L		0.003	0.010	1/10/2017 10:34:00 AM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	4.50	ntu		0.0100	0.0300	1/9/2017 2:50:31 PM	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catusus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority

27351 State Road 19

Tavares, FL 32778

Attn: Ron Hart

Phone: (352) 324-6141 Ext:

FAX: (352) 324-6364

Our Lab#: 17-0037

Your Sample ID: WA448LONG

Sample Type: AQUEOUS-Other

Report#: 7705

Sample Collect Date/Time/By: 1/8/2017 8:20:41 AM Lance Lumbard

Report Date: 20-Jan-17

Sample Receipt Date: 1/9/2017

Sample Notes:

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
17-0037	DUP	NH3	13.8	
17-0037	DUP	TURBIDITY	8.3	
17-0037	MS	TKN	103.5	
17-0037	MS	P	0	
17-0037	MS	P	106	
17-0037	MSD	P	0	

Cathie
Catusus

Digitally signed by Cathie
Catusus
DN: cn=Cathie Catusus, o=Lake
County Board of County
Commissioners, ou=Water
Resource Management
Laboratory,
email=ccatusus@lakecountyfl.go
v, c=US
Date: 2017.01.20 09:02:15 -05'00'

Analytical results presented in this report have been reviewed for compliance with the Lake County Quality Systems Manual and NELAP quality control criteria. The data presented in this report have met all method and compliance criteria unless otherwise noted. The results relate only to the items tested and only to samples as they were received by the Laboratory. All samples collected by this laboratory were collected using DEP SOPs. Analytical Method numbers followed by NC indicate the analysis is non-certified. Data qualifier information - "I" value is between the MDL and RDL, "U" analyte was undetected.

Cathie Catusus

20-Jan-17

Lab Manager

Date





Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 17-0172

Your Sample ID: WA448LONG

Sample Type:

Report#: 7764

Sample Collect Date/Time/By: 1/23/2017 9:20:00 AM LCWA Staff

Report Date: 06-Feb-17

Sample Receipt Date: 1/23/2017

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.27	mg/L		0.04	0.14	1/27/2017 3:38:33 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.3811	mg/L		0.0100	0.0300	1/24/2017 1:12:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.89	mg/L		0.03	0.12	1/25/2017 4:06:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.20	mg/L		0.01	0.03	1/27/2017 9:48:00 AM	
	spike at 86.4%							
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.237	mg/L		0.006	0.020	1/25/2017 6:07:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.104	mg/L		0.003	0.010	1/25/2017 11:02:00 AM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	7.95	ntu		0.0100	0.0300	1/24/2017 4:17:56 PM	
TSS	<u>Analytical Method: 2540D</u>							
	Total Suspended Solids	6.3	mg/L	U	6.3	20.0	1/23/2017 11:45:00 AM	
ALK auto	<u>Analytical Method: 310.2</u>							
	Alkalinity	73.2	mg/L		6.2	19.8	2/2/2017 4:10:45 PM	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 17-0172

Your Sample ID: WA448LONG

Sample Type:

Report#: 7764

Sample Collect Date/Time/By: 1/23/2017 9:20:00 AM LCWA Staff

Report Date: 06-Feb-17

Sample Receipt Date: 1/23/2017

Sample Notes:

COND-L	<u>Analytical Method: 2510B</u>					
Conductivity	265	JMHOS/CM	1	5	1/23/2017	3:20:20 PM
PH-LAB	<u>Analytical Method: 4500H+B</u>					
pH	6.20	S.U.	0.100		1/23/2017	2:54:46 PM

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
17-0172	DUP	TURBIDITY	5.7	
17-0172	MS	NH3	86.4	
17-0172	MS	P	95.7	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catusus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 17-0173

Your Sample ID: WA448DUDA

Sample Type:

Report#: 7764

Sample Collect Date/Time/By: 1/23/2017 9:45:00 AM LCWA Staff

Report Date: 06-Feb-17

Sample Receipt Date: 1/23/2017

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.23	mg/L		0.04	0.14	1/27/2017 3:38:33 PM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.2622	mg/L		0.0100	0.0300	1/24/2017 1:12:00 PM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.97	mg/L		0.03	0.12	1/25/2017 4:06:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.10	mg/L		0.01	0.03	1/27/2017 9:48:00 AM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.382	mg/L		0.006	0.020	1/25/2017 6:07:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.242	mg/L		0.003	0.010	1/25/2017 11:02:00 AM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	10.1	ntu		0.0100	0.0300	1/24/2017 4:17:56 PM	
ALK auto	<u>Analytical Method: 310.2</u>							
	Alkalinity	82.5	mg/L		6.2	19.8	2/2/2017 4:10:45 PM	
PH-LAB	<u>Analytical Method: 4500H+B</u>							
	pH	6.62	S.U.		0.100		1/23/2017 2:54:46 PM	
COND-L	<u>Analytical Method: 2510B</u>							
	Conductivity	282	JMHOS/CN		1	5	1/23/2017 3:20:20 PM	
TSS	<u>Analytical Method: 2540D</u>							
	Total Suspended Solids	7.0	mg/L I		6.3	20.0	1/23/2017 11:45:00 AM	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catusus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
27351 State Road 19
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 324-6141 Ext:
FAX: (352) 324-6364

Our Lab#: 17-0173

Your Sample ID: WA448DUDA

Sample Type:

Report#: 7764

Sample Collect Date/Time/By: 1/23/2017 9:45:00 AM LCWA Staff

Report Date: 06-Feb-17

Sample Receipt Date: 1/23/2017

Sample Notes:

Analytical results presented in this report have been reviewed for compliance with the Lake County Quality Systems Manual and NELAP quality control criteria. The data presented in this report have met all method and compliance criteria unless otherwise noted. The results relate only to the items tested and only to samples as they were received by the Laboratory. All samples collected by this laboratory were collected using DEP SOPs. Analytical Method numbers followed by NC indicate the analysis is non-certified. Data qualifier information - "I" value is between the MDL and RDL, "U" analyte was undetected.

Cathie Catusus

06-Feb-17

Lab Manager

Date



Cathie
Catusus

Digitally signed by Cathie Catusus
DN: cn=Cathie Catusus, o=Lake
County Board of County
Commissioners, ou=Water
Resource Management
Laboratory,
email=ccatusus@lakecountyfl.gov,
c=US
Date: 2017.02.06 11:47:19 -05'00'

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2715 Your Sample ID: 448 Duda

Sample Type: AQUEOUS-Rain

Report#: 7341

Sample Collect Date/Time/By: 10/2/2016 9:00:15 AM Lance Lumbard

Report Date: 18-Oct-16

Sample Receipt Date: 10/3/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.06	mg/L		0.04	0.14	10/18/2016 8:02:38 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.4468	mg/L		0.0100	0.0300	10/6/2016 11:59:00 AM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.61	mg/L		0.03	0.11	10/12/2016 5:21:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.01	mg/L	U	0.01	0.03	10/11/2016 11:03:39 AM	
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.350	mg/L		0.006	0.020	10/12/2016 7:02:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.184	mg/L		0.005	0.020	10/4/2016 9:02:00 AM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	12.5	ntu		0.0100	0.0300	10/3/2016 4:46:00 PM	
ALK auto	<u>Analytical Method: 310.2</u>							
	Alkalinity	88.9	mg/L	QJ	6.2	19.8	10/17/2016 10:24:48 AM	
	spike recovery at 131%							
PH-LAB	<u>Analytical Method: 4500H+B</u>							
	pH	7.07	S.U.	Q			10/4/2016 2:25:35 PM	
	not read w/in 15 min of collection							
TSS	<u>Analytical Method: 2540D</u>							
	Total Suspended Solids	22.0	mg/L		6.3	20.0	10/4/2016 2:15:41 PM	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority

107 North Lake Avenue

Tavares, FL 32778

Attn: Ron Hart

Phone: (352) 343-3777 Ext:

FAX: 352-343-4259

Our Lab#: 16-2715

Your Sample ID: 448 Duda

Sample Type: AQUEOUS-Rain

Report#: 7341

Sample Collect Date/Time/By: 10/2/2016 9:00:15 AM Lance Lumbard

Report Date: 18-Oct-16

Sample Receipt Date: 10/3/2016

Sample Notes:

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2715	DUP	P	1.5	
16-2715	MS	ALK	131.8	*
16-2715	MS	NH3	89.2	*

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catasus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority
107 North Lake Avenue
Tavares, FL 32778

Attn: Ron Hart
Phone: (352) 343-3777 Ext:
FAX: 352-343-4259

Our Lab#: 16-2716 Your Sample ID: 448 Long

Sample Type: AQUEOUS-Rain

Report#: 7341

Sample Collect Date/Time/By: 10/2/2016 9:10:33 AM Lance Lumbard

Report Date: 18-Oct-16

Sample Receipt Date: 10/3/2016

Sample Notes:

Test Group	Test	Result	Units	DQ	MDL	RDL	Analysis Date/Time	Sub Code
N-TOTAL	<u>Analytical Method: EPA 353.2 + EPA 351.2</u>							
	Nitrogen, Total	1.45	mg/L		0.04	0.14	10/18/2016 8:02:38 AM	
Nox	<u>Analytical Method: 353.2 Nox</u>							
	Nitrate-Nitrite (N)	0.6745	mg/L		0.0100	0.0300	10/6/2016 11:59:00 AM	
TKN	<u>Analytical Method: 351.2</u>							
	Nitrogen, Total Kjeldahl	0.78	mg/L		0.03	0.11	10/12/2016 5:21:00 PM	
NH3	<u>Analytical Method: 350.1</u>							
	Ammonia	0.01	mg/L	UJ	0.01	0.03	10/11/2016 11:03:39 AM	
	bracketing CCVs at 113.3%							
P	<u>Analytical Method: 365.4</u>							
	Phosphorus	0.389	mg/L		0.006	0.020	10/12/2016 7:02:00 PM	
P-ORTH	<u>Analytical Method: 365.1</u>							
	Orthophosphate (P)	0.226	mg/L		0.005	0.020	10/4/2016 9:02:00 AM	
TURB	<u>Analytical Method: 2130B</u>							
	Turbidity	20.8	ntu		0.0100	0.0300	10/3/2016 4:46:00 PM	
ALK auto	<u>Analytical Method: 310.2</u>							
	Alkalinity	94.5	mg/L	Q	6.2	19.8	10/17/2016 10:24:48 AM	
PH-LAB	<u>Analytical Method: 4500H+B</u>							
	pH	7.20	S.U.	Q			10/4/2016 2:25:35 PM	
	not read w/in 15 min of collection							
TSS	<u>Analytical Method: 2540D</u>							
	Total Suspended Solids	21.0	mg/L		6.3	20.0	10/4/2016 2:15:41 PM	

Lake County Water Resource Management Laboratory

12923 County Landfill Rd.
Tavares, FL 32778

Certification Number: E43183

For questions related to this report contact
Laboratory Supervisor: Cathie Catusus
352-343-3776 Ext. 1659

- CERTIFICATE OF RESULTS -

Lake County Water Authority

107 North Lake Avenue

Tavares, FL 32778

Attn: Ron Hart

Phone: (352) 343-3777 Ext:

FAX: 352-343-4259

Our Lab#: 16-2716

Your Sample ID: 448 Long

Sample Type: AQUEOUS-Rain

Report#: 7341

Sample Collect Date/Time/By: 10/2/2016 9:10:33 AM Lance Lumbard

Report Date: 18-Oct-16

Sample Receipt Date: 10/3/2016

Sample Notes:

--- QC Related To Sample ---

QC Lab#	QC Code	Test	%R/%RPD	Flag
16-2716	DUP	ALK	1.2	
16-2716	DUP	TSS	4.9	
16-2716	DUP	TURBIDITY	1.4	
16-2716	MS	TKN	94.8	
16-2716	MS	P	98.7	
16-2716	MS	P	90.8	

Analytical results presented in this report have been reviewed for compliance with the Lake County Quality Systems Manual and NELAP quality control criteria. The data presented in this report have met all method and compliance criteria unless otherwise noted. The results relate only to the items tested and only to samples as they were received by the Laboratory. All samples collected by this laboratory were collected using DEP SOPs. Analytical Method numbers followed by NC indicate the analysis is non-certified. Data qualifier information - "I" value is between the MDL and RDL, "U" analyte was undetected.

Cathie Catusus

Lab Manager

18-Oct-16

Date





TO: Lake County Water Authority Board of Advisors

FROM: Marcia Bush, Associate Director, Water Resources

DATE: September 12, 2024

RE: Harris Chain of Lakes – Apopka Beauclair Canal Nutrient Loading Report
& Ronald Black Property Opportunity

Presentations – Tab 11

***Harris Chain of Lakes – Apopka Beauclair Canal Nutrient Loading Report
& Ronald Black Property Opportunity***

Cathie Catusus Program Manager with the Water Lab will be providing a presentation as to the water quality findings along the Apopka Beauclair Canal and will be available to answer questions. Bobby Bonilla, Executive Director, will be presenting on the Ronald Black Property Opportunity.

Executive Director’s Recommendation:

1. Approve the acquisition and purchase of the property. Authorize the Executive Director to work with LCWA Legal to execute all due diligence and documentation for the successful purchase of the property.

Legal Counsel Recommendation:

1. Approve the acquisition and purchase of the property as outlined in the seller agreement.
2. Authorize the Executive Director to work with Legal Counsel to perform all due diligence prior to close.

BOARD OF TRUSTEES

District One
Marty Proctor

District Two
Trampis BonJorn

District Three
Birdie Zenishek

District Four
Butch Hendrick

District Five
Rick Donohue

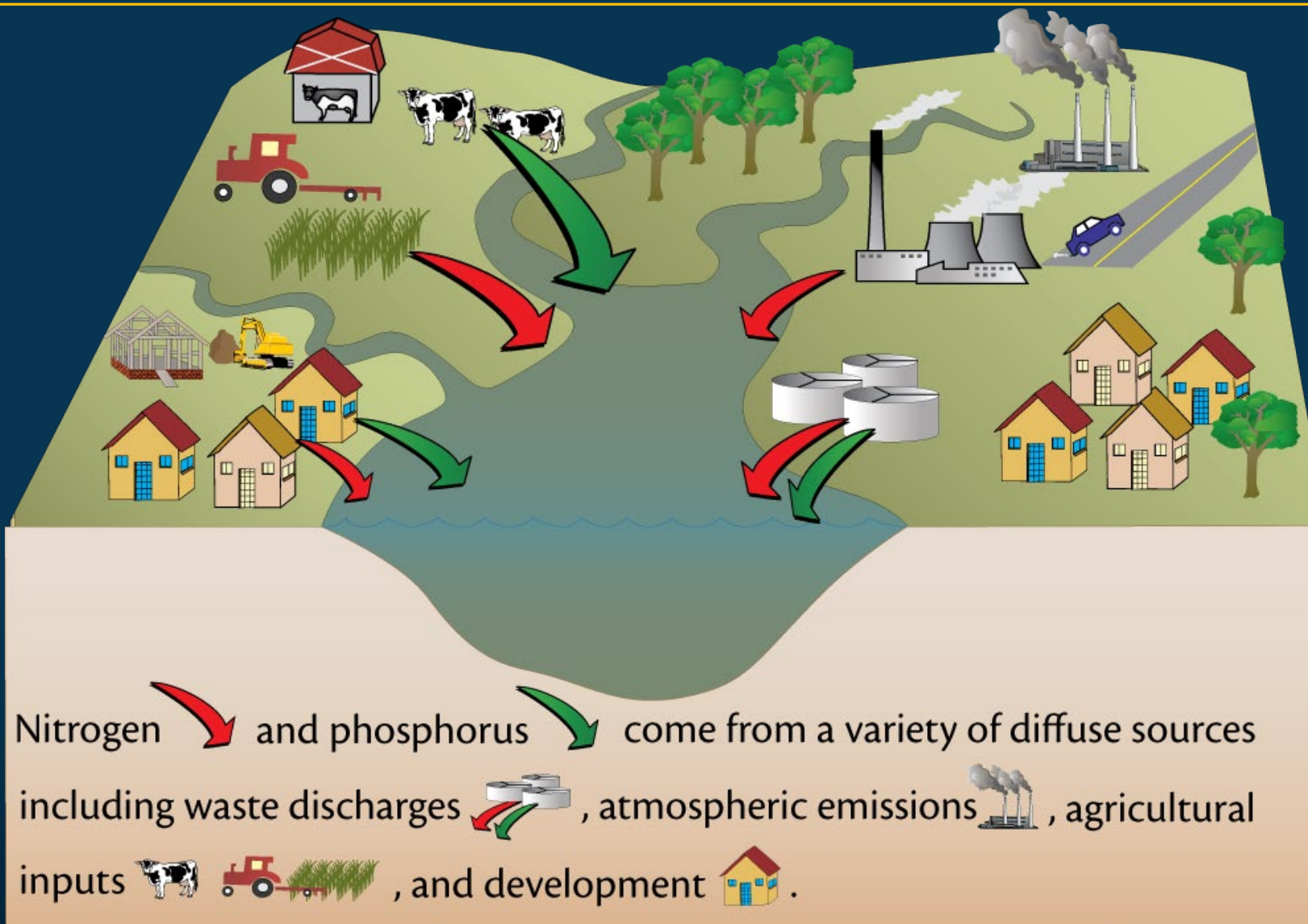


Lake County
WATER AUTHORITY

HARRIS CHAIN OF LAKES
APOPKA-BEAUCLAIR CANAL NUTRIENT LOADING REPORT

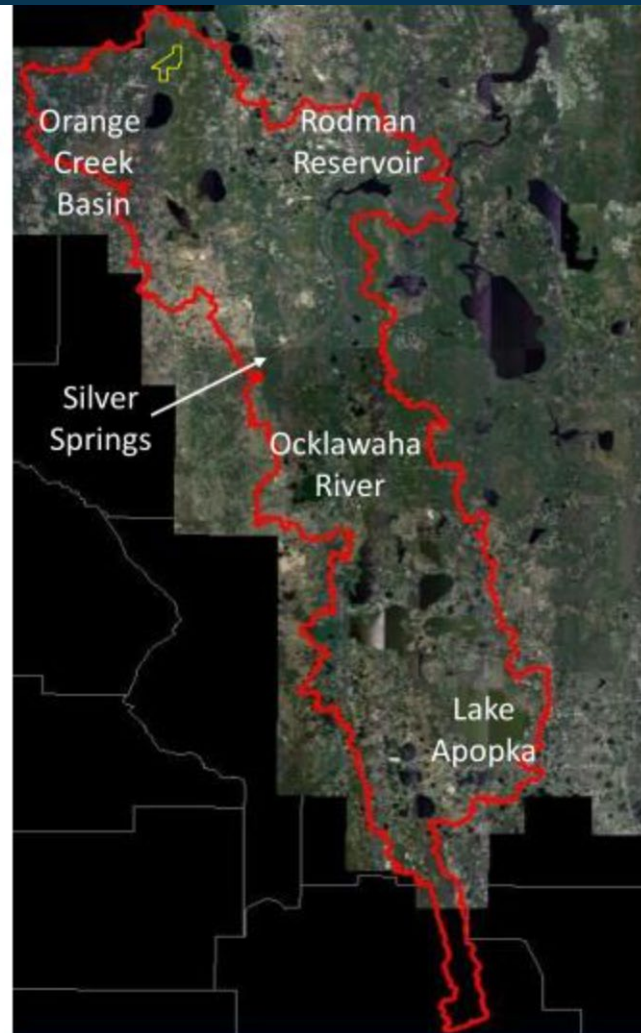
September 18, 2024

NUTRIENT LOADING SOURCES



OCKLAWAHA RIVER BASIN

Ocklawaha River Basin

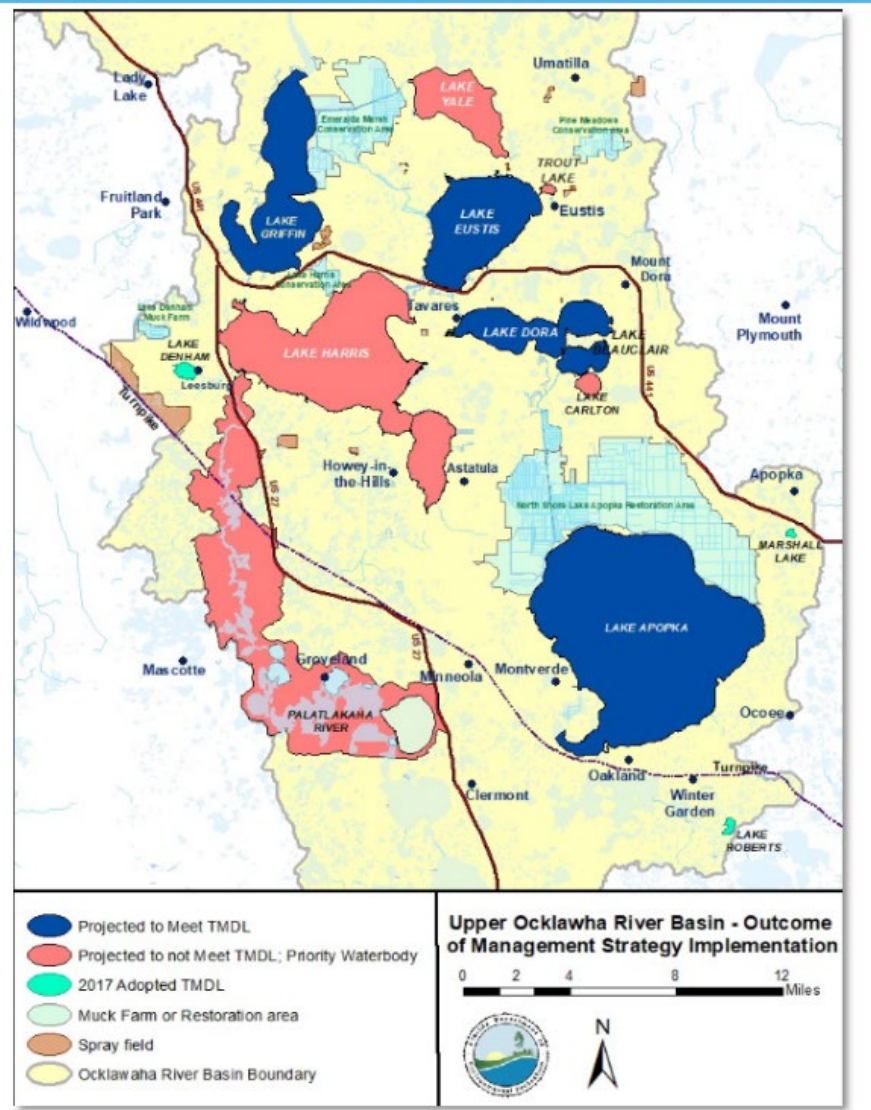


The Upper Ocklawaha River Basin Management Action Plan (BMAP) was developed by basin stakeholders. The BMAP addresses waters in the Upper Ocklawaha River Basin that the Florida Department of Environmental Protection (DEP) has identified as impaired, for which Total Maximum Daily Loads (TMDLs) have been established.

The BMAP does not address all the water quality issues in the basin but focuses on reducing total phosphorus (TP) discharges to surface waters that are identified as impaired. The BMAP documents the management actions that have been or will be undertaken by local, regional, state, or private entities to reduce the amount of TP released into the basin.

The BMAP presents a plan for reducing nutrient loadings. The BMAP should be considered a working document. It is a plan that outlines management actions, establishes a strategy to monitor implementation and water quality trends, and establishes a framework for adapting the plan when needed.

UPPER OCKLAWAHA BMAP



Upper Ocklawaha Total Phosphorus (TP) and Total Nitrogen (TN)				
Waterbody	2023 Aver. TP (mg/L)	BMAP TP target (mg/L)	2023 Aver. TN (mg/L)	BMAP TN target (mg/L)
Apopka	0.074	0.055	2.63	
Beauclair	0.037	0.032	1.25	
Carlton	0.045	0.032	1.37	
Denham	0.092	0.026	3.65	1.10
Dora	0.031	0.031	1.51	
Eustis	0.032	0.025	1.34	
Griffin	0.036	0.032	1.68	
Harris	0.028	0.026	1.37	
Trout	0.200	0.028	2.56	0.78
Yale	0.066	0.020	1.23	

*2023 data obtained from the Water Atlas for the period of record 1/1/2023 through 12/31/2023 using all data providers and all locations for that waterbody

LOADING SOURCES

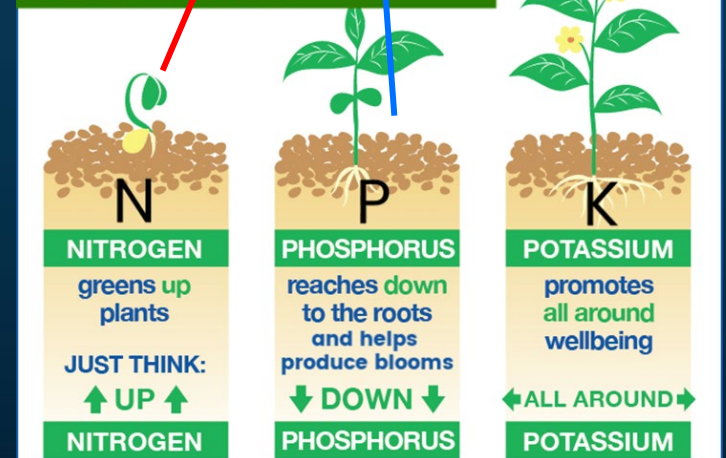
- Stormwater runoff / fertilizer (agriculture & residential)
- Atmospheric deposition
- Septic tanks
- Upstream water bodies

Top two Total Phosphorus (TP) loading sources to the Upper Ocklawaha River Basin lakes in the recent 10 years (source FDEP)

Lake	Highest loading source		2nd highest loading source	
	Source	Percent (%)	Source	Percent (%)
Apopka	Atmospheric	43	Stormwater Runoff	24
Harris	Atmospheric	34	Stormwater Runoff	31
Carlton	Stormwater Runoff	56	Atmospheric	29
Yale	Stormwater Runoff	48	Atmospheric	38
Beauclair	Upstream	75	Stormwater Runoff	16
Dora	Upstream	54	Stormwater Runoff	23
Eustis	Upstream	45	Stormwater Runoff	26
Griffin	Upstream	39	Atmospheric	27



What do the numbers on fertilizer mean?

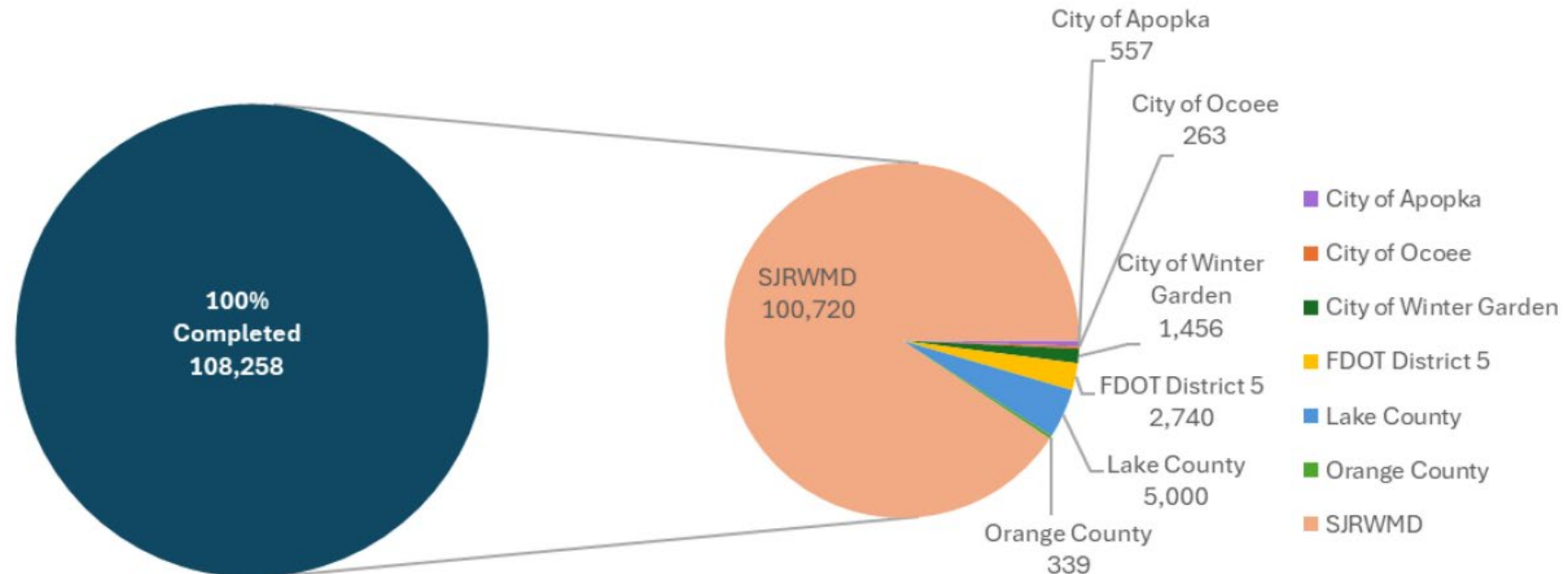


PROGRESS ON LAKE APOPKA



PROGRESS LAKE APOPKA

Lake Apopka Waterbody Required Reductions (lbs-P/yr)



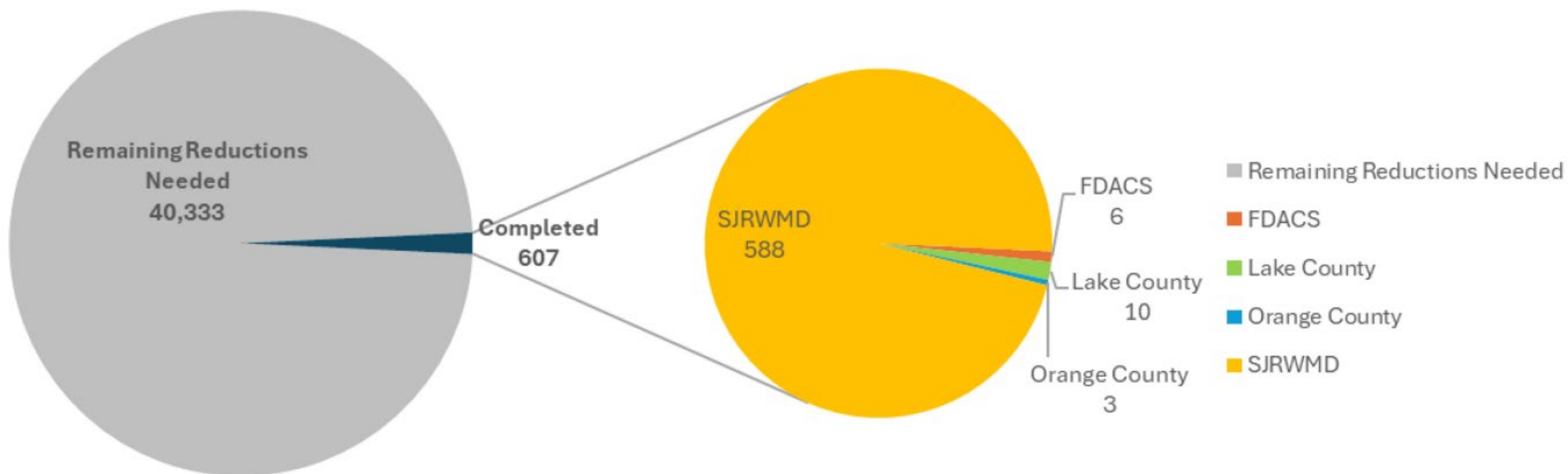
*Entities have implemented projects resulting in reductions higher than the required reductions.

PROGRESS ON LAKE BEAUCLAIR



PROGRESS LAKE BEAUCLAIR

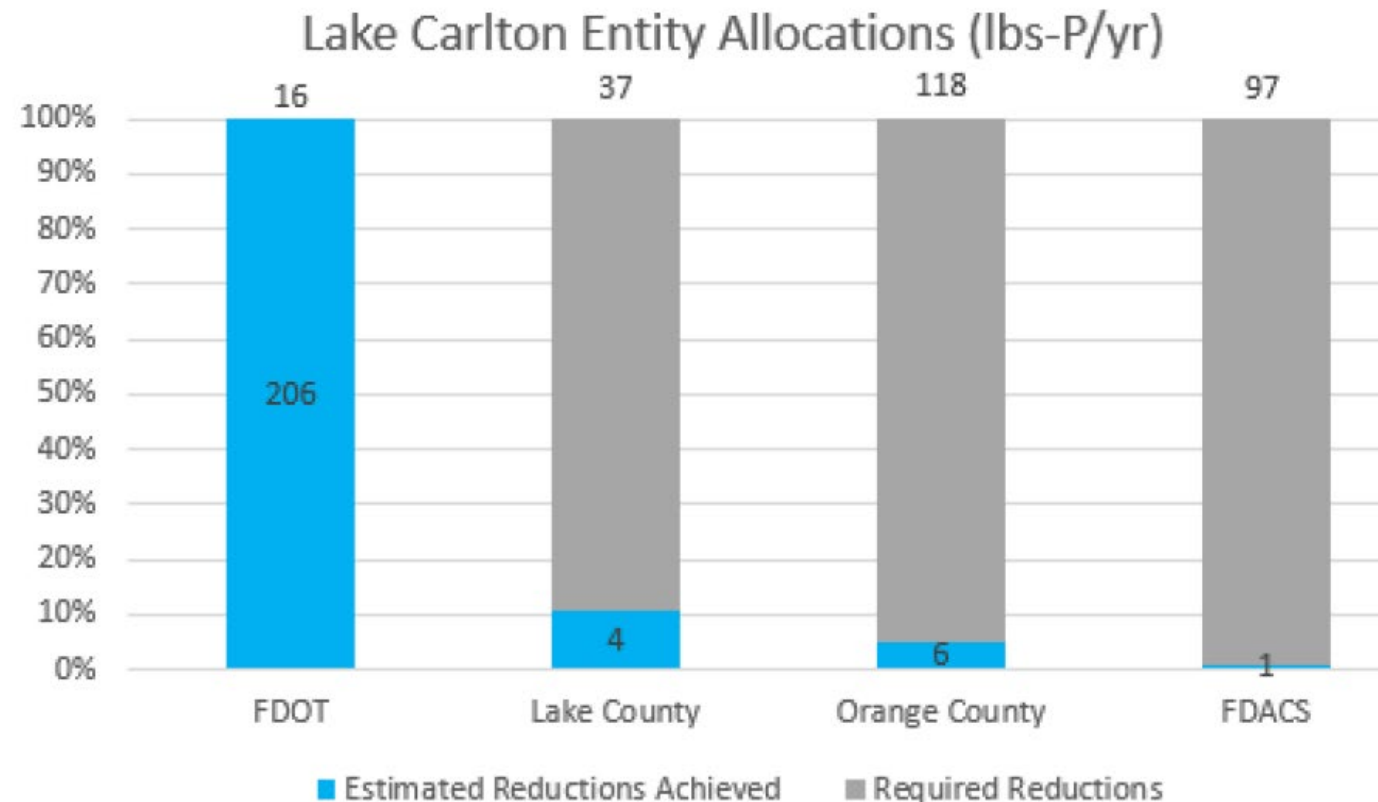
Lake Beauclair Waterbody Required Reductions (lbs-P/yr)

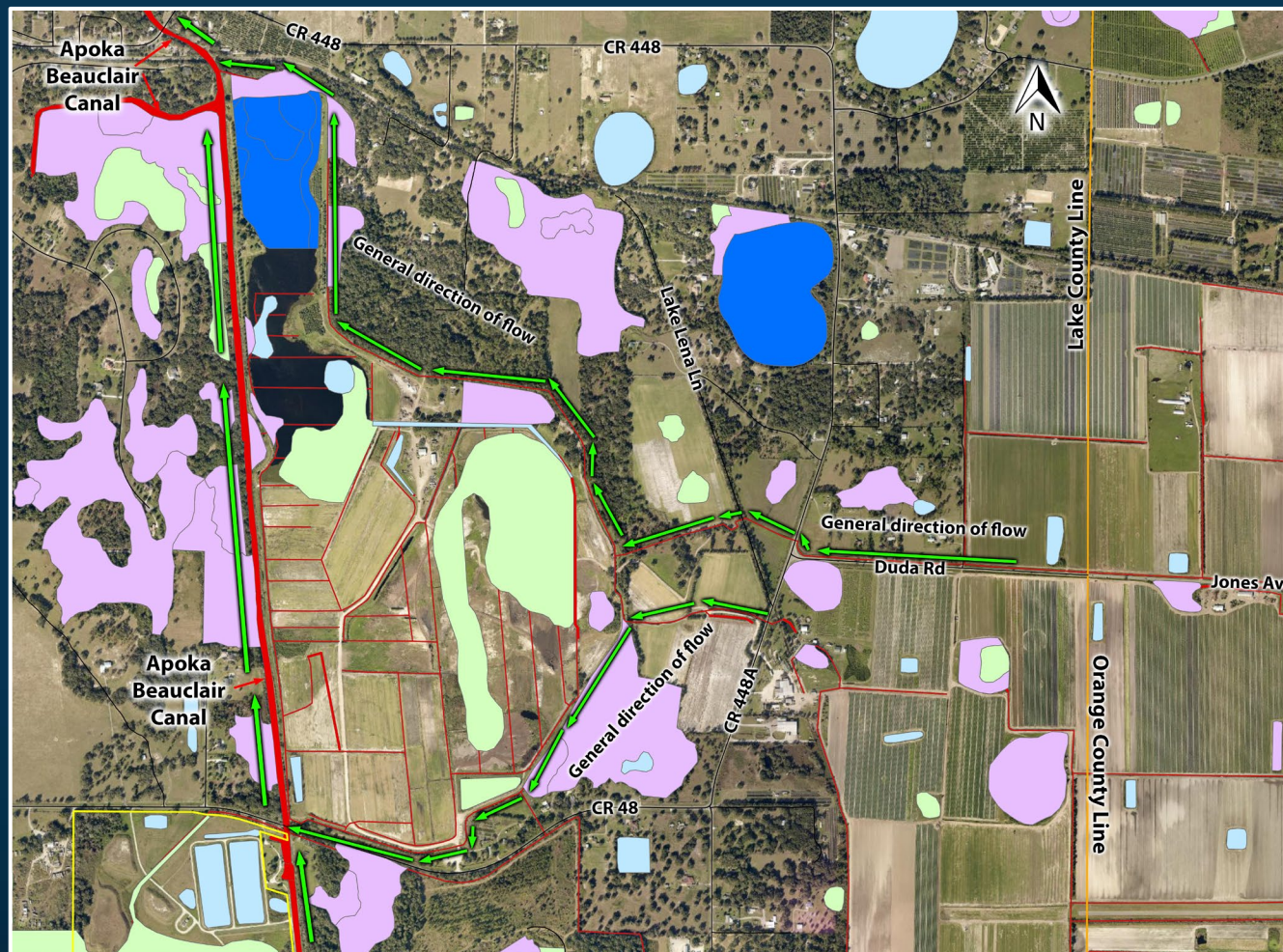
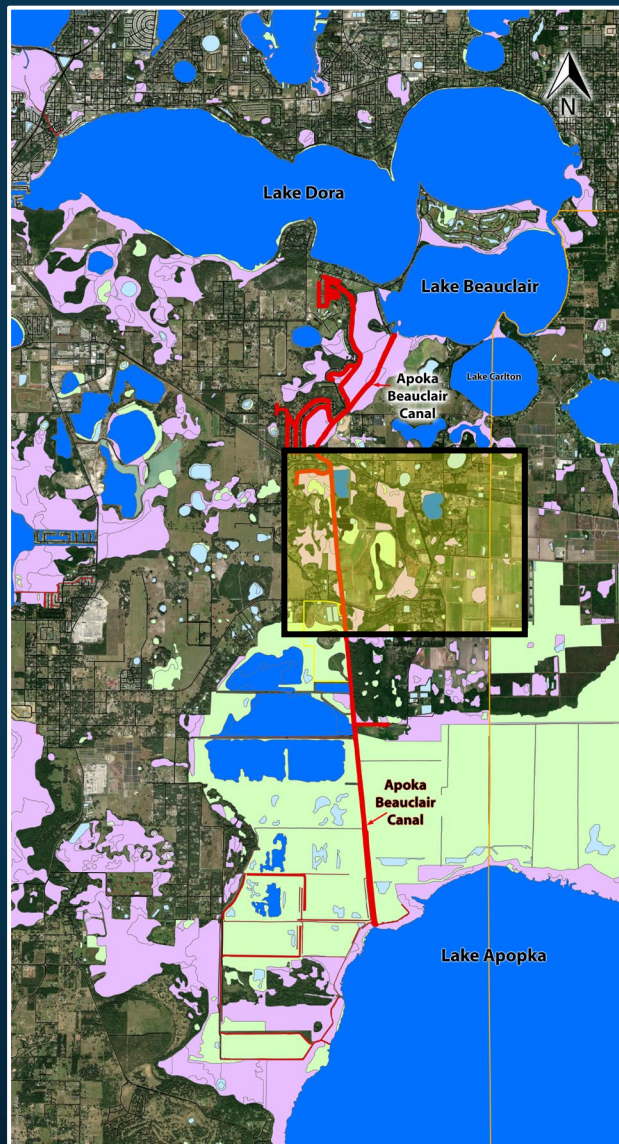


PROGRESS ON LAKE CARLTON



PROGRESS LAKE CARLTON





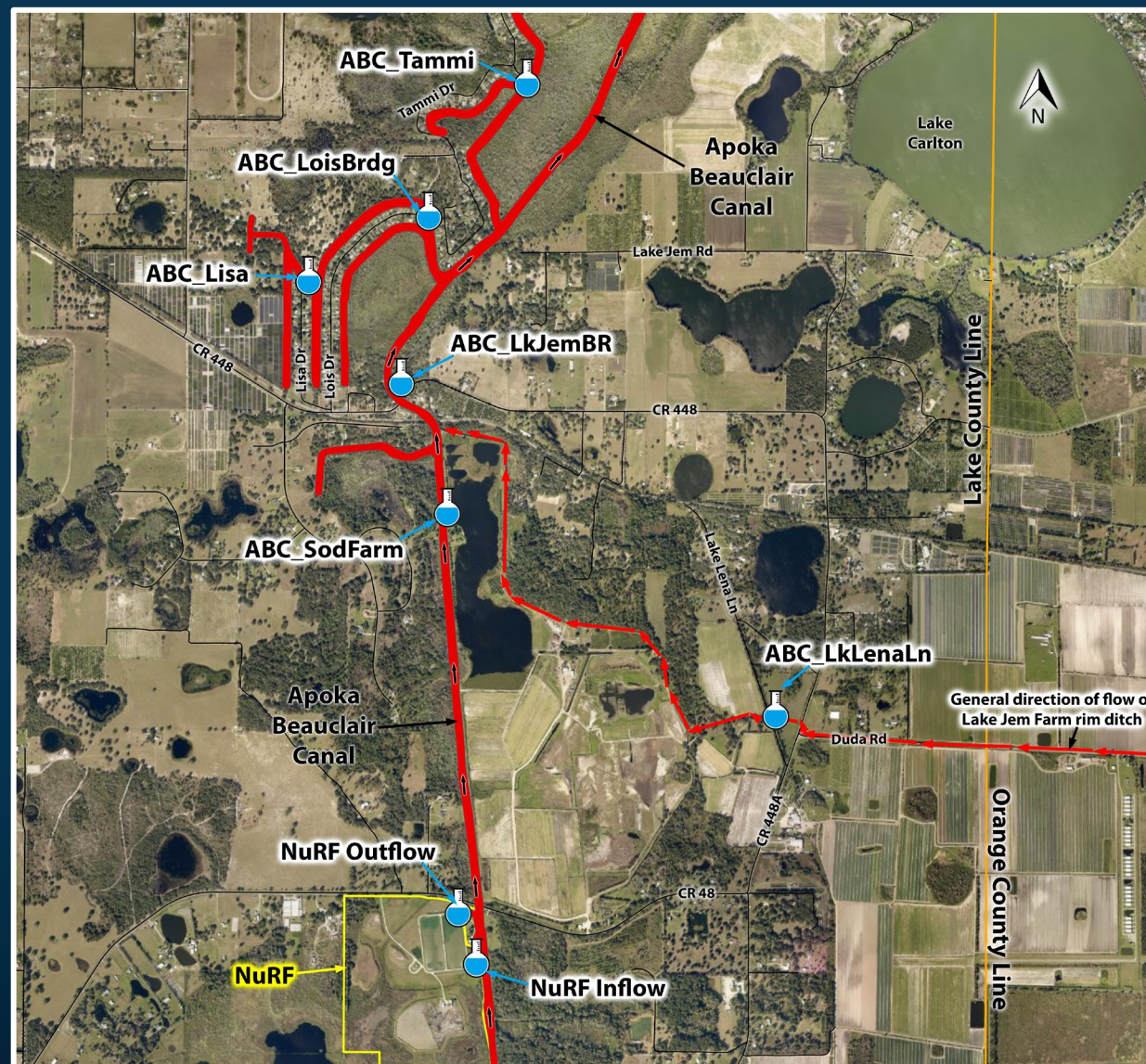
- Legend**
- █ Riverine
 - █ Estuarine and Marine Deepwater
 - █ Estuarine and Marine Wetland
 - █ Freshwater Emergent Wetland
 - █ Freshwater Forested/Shrub Wetland
 - █ Freshwater Pond
 - █ Lake

Detail showing water conveyance in the area of Duda Rd.
and the Lake Jem Sod farm property

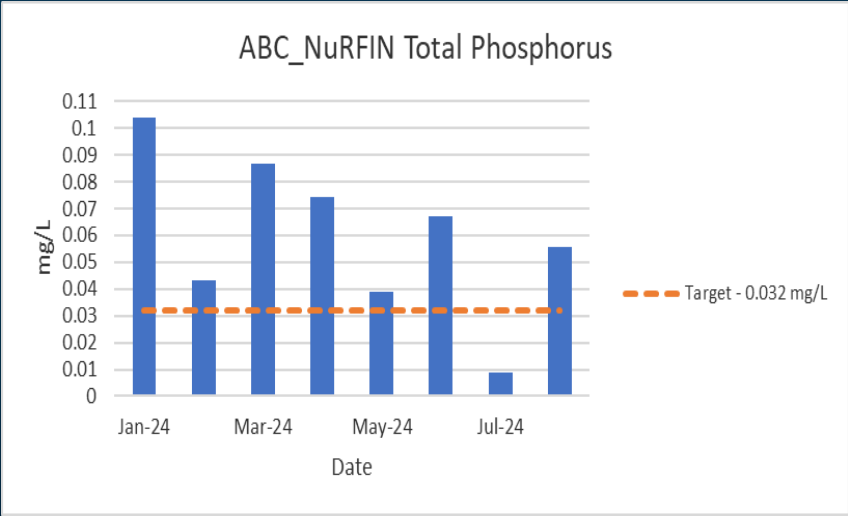
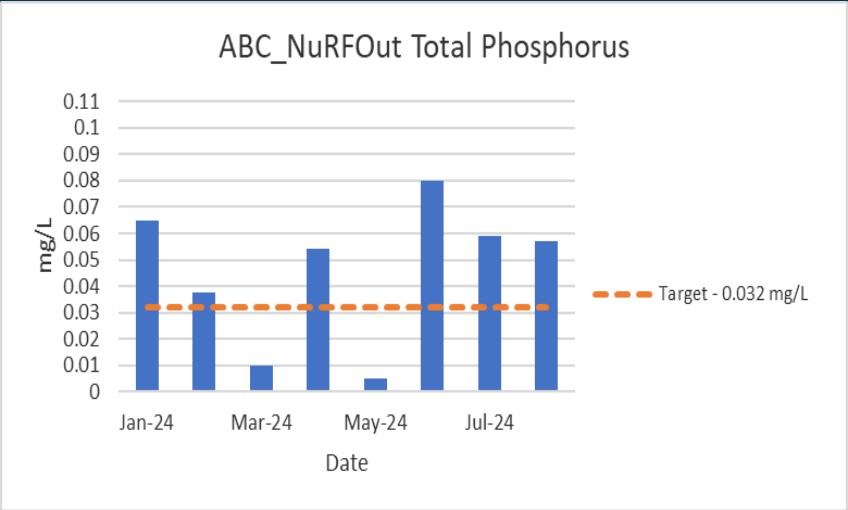
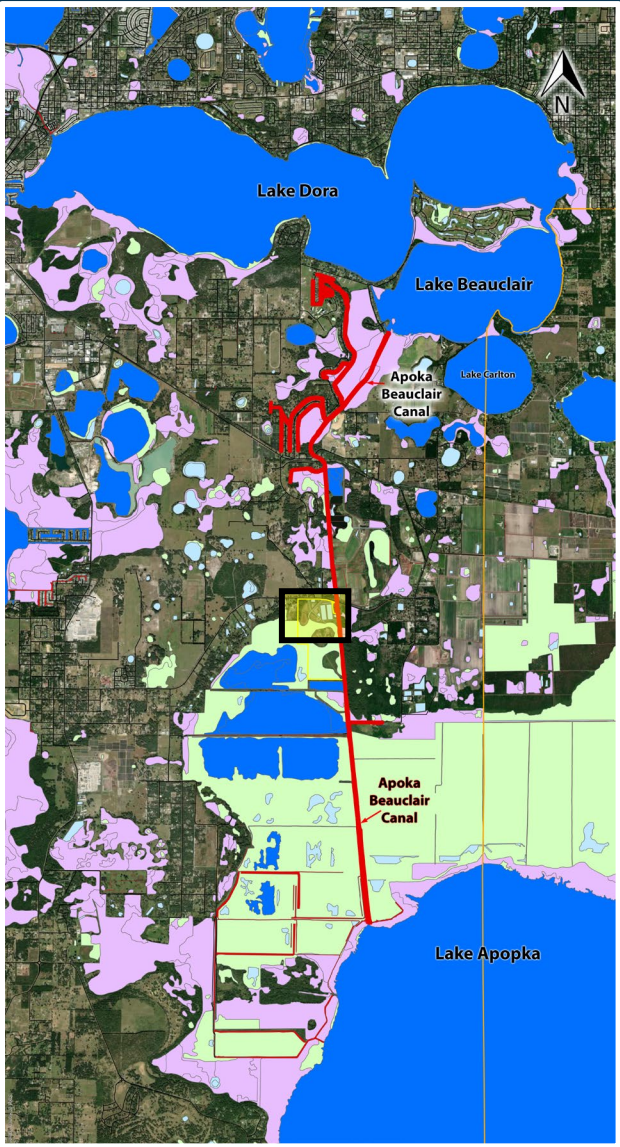
PROJECT MAP

Legend

Water Sample Location

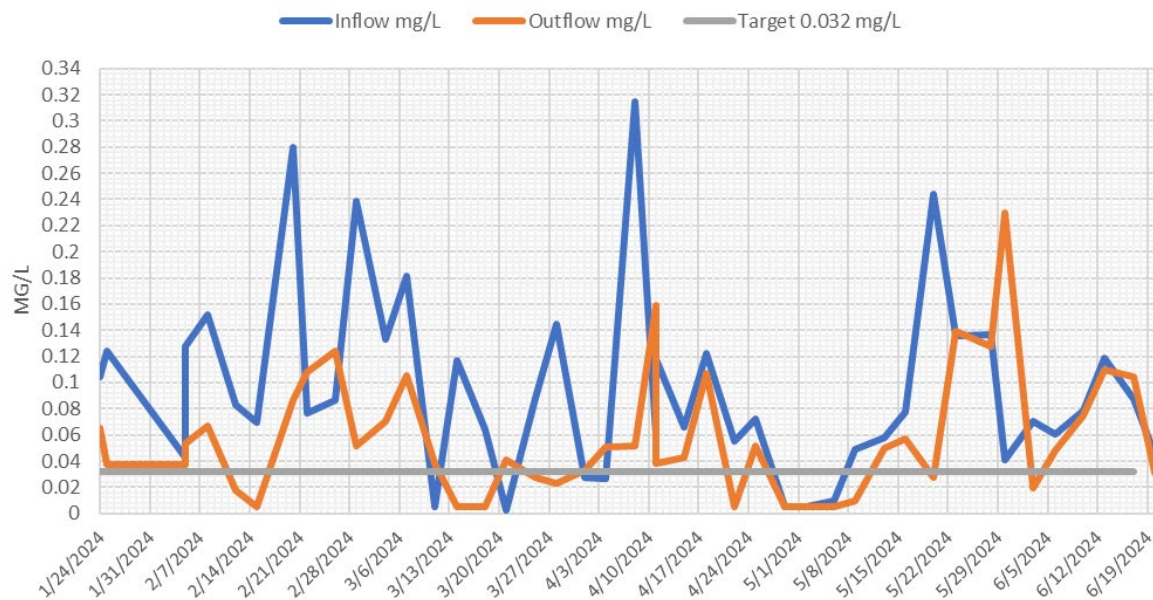


NURF INFLOW AND OUTFLOW

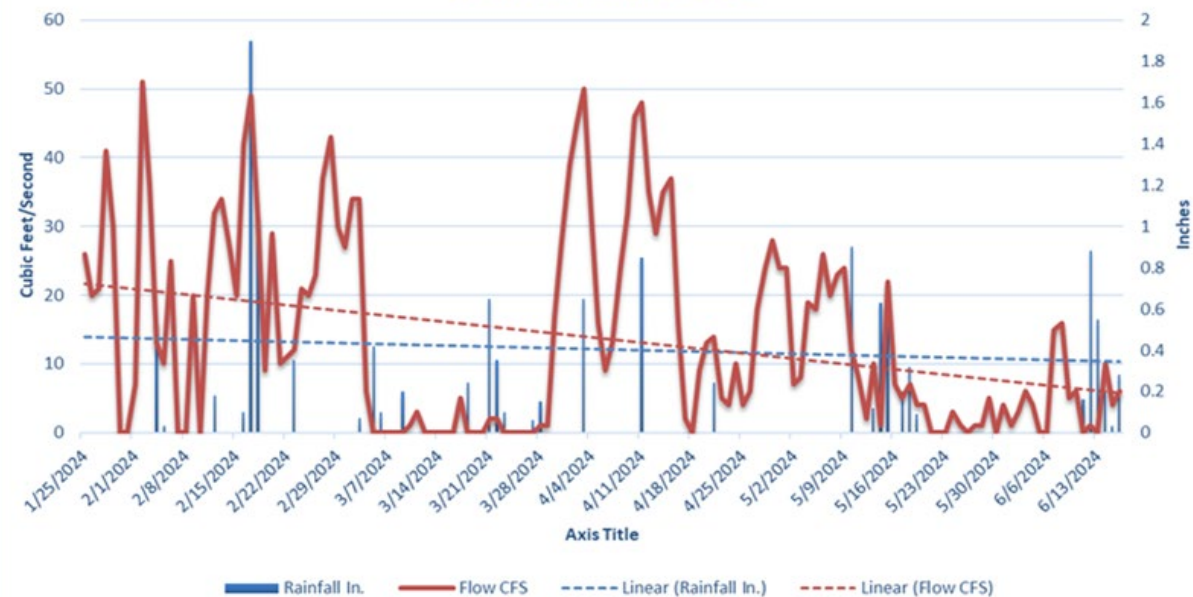


Woodard & Curran collected samples, analyzed by LC Lab

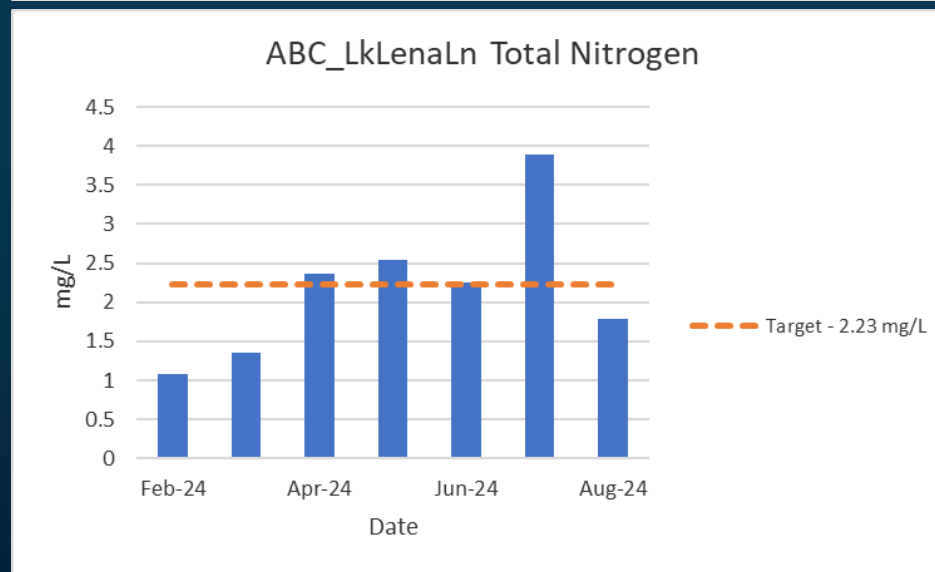
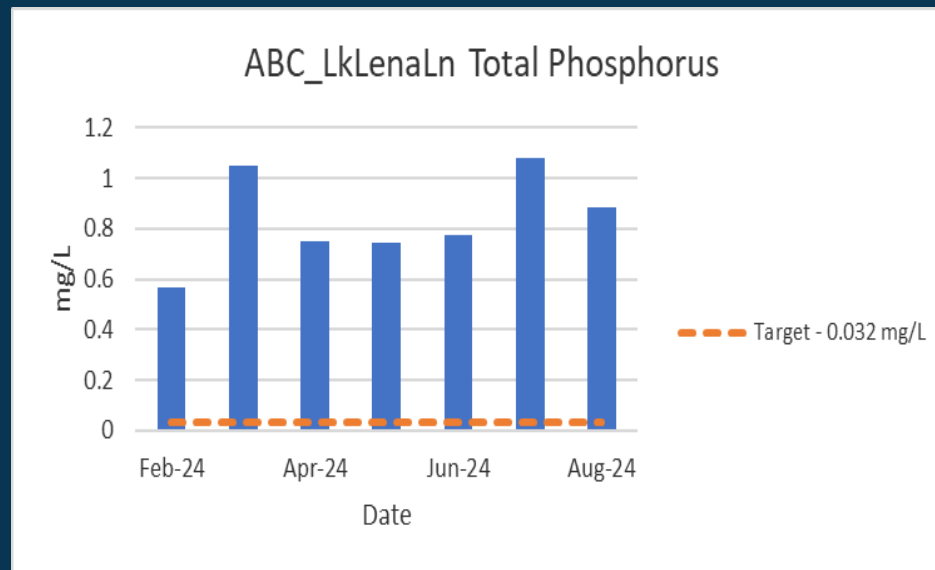
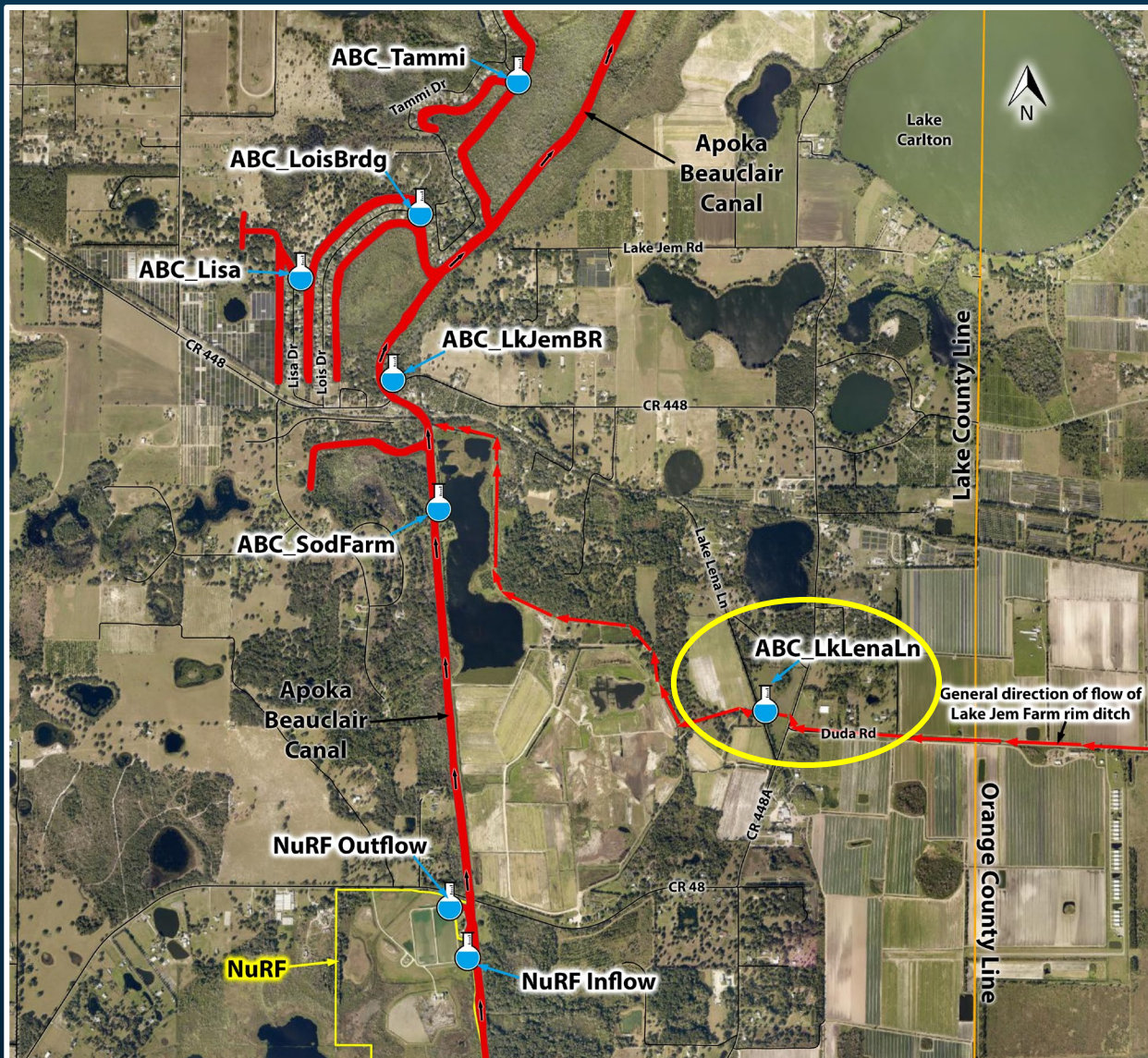
NuRF TP data mg/L



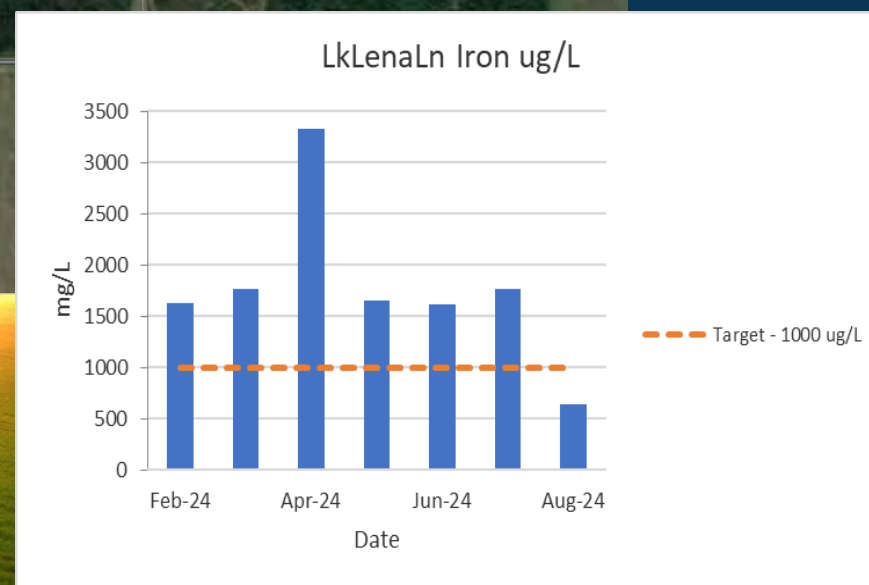
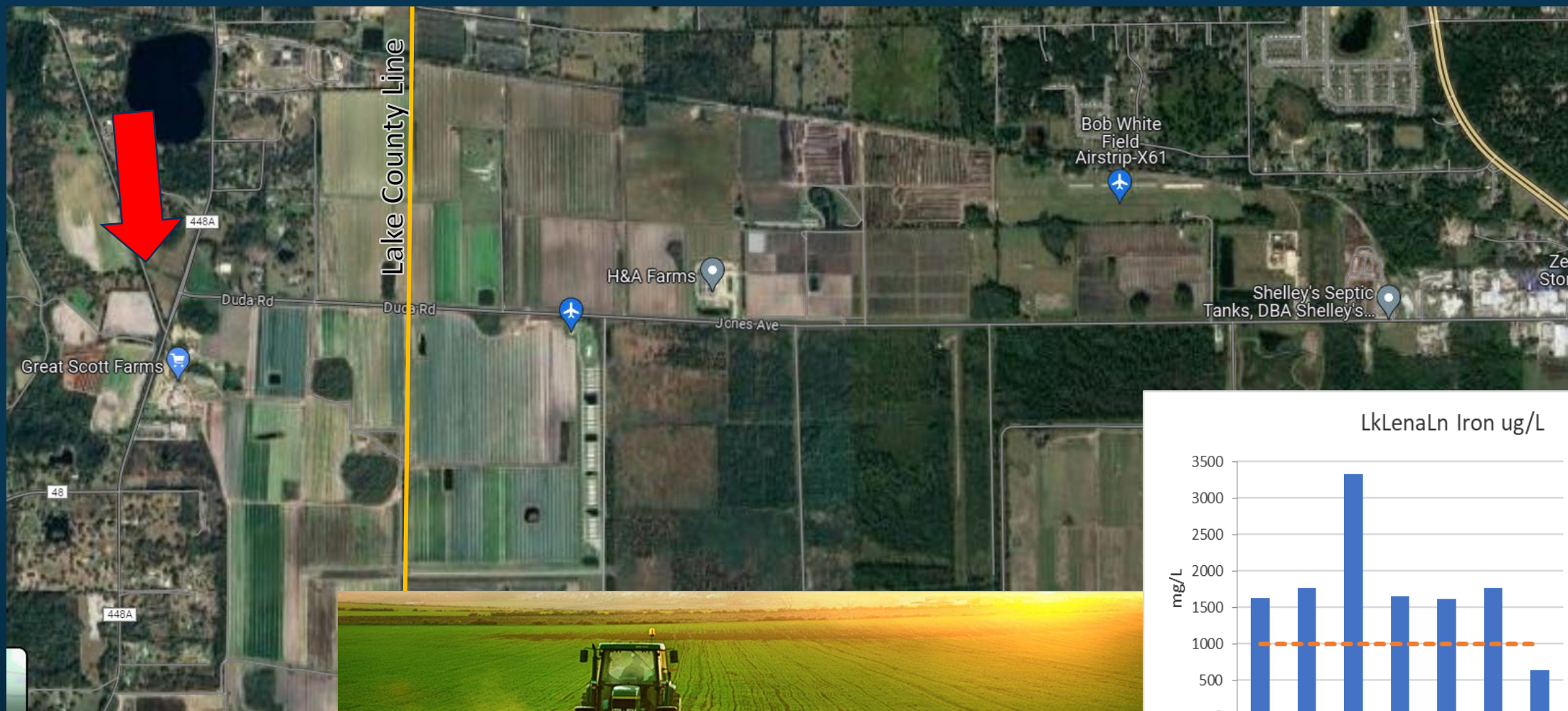
NuRF Rainfall vs Flow



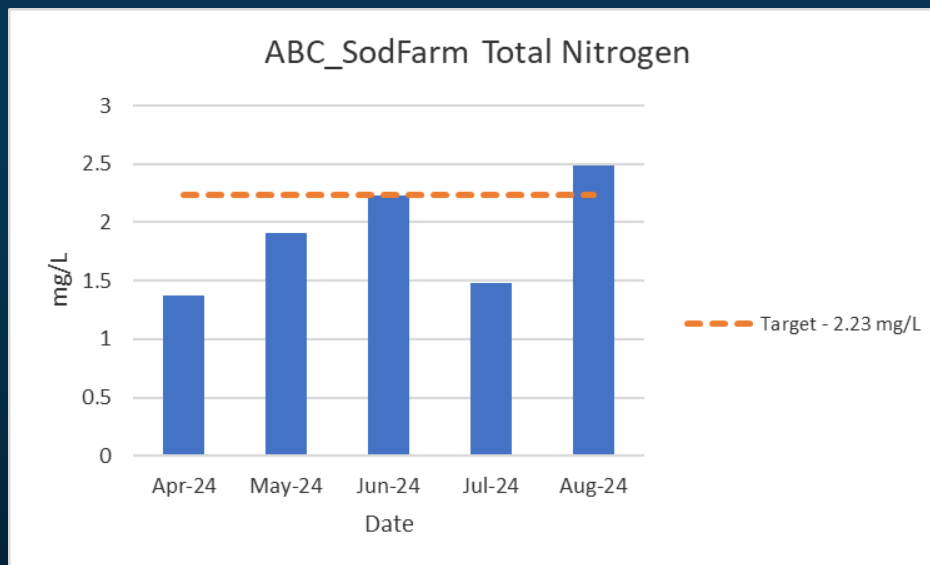
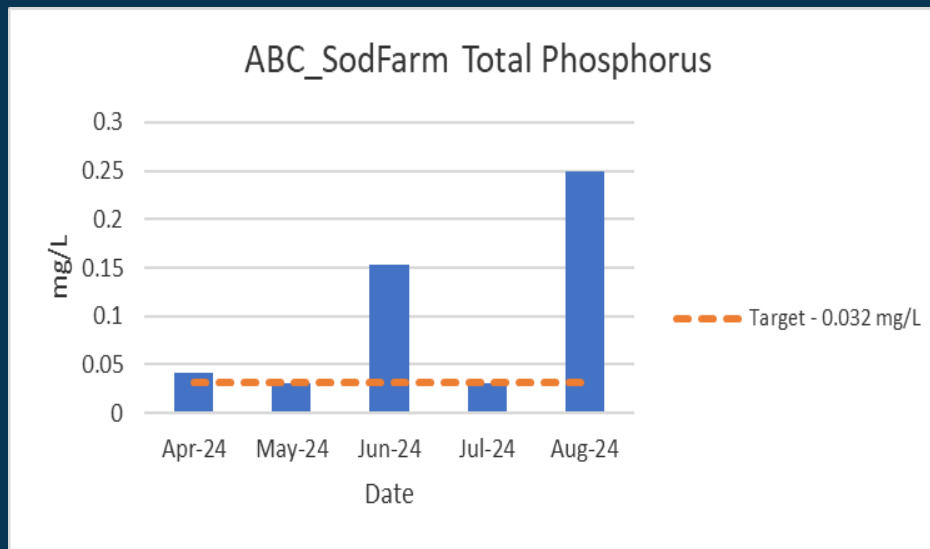
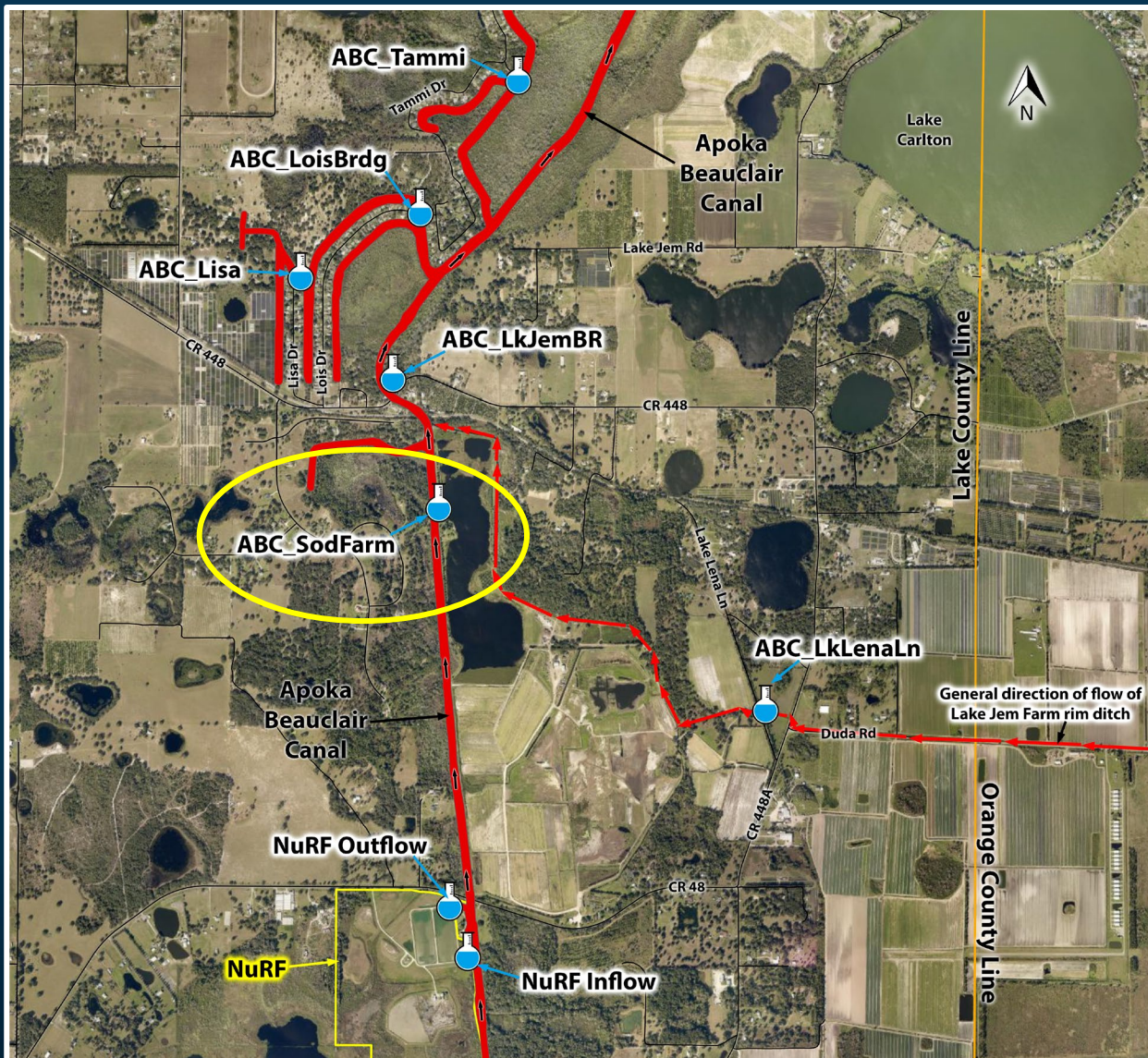
CANAL AT LAKE LENA LN



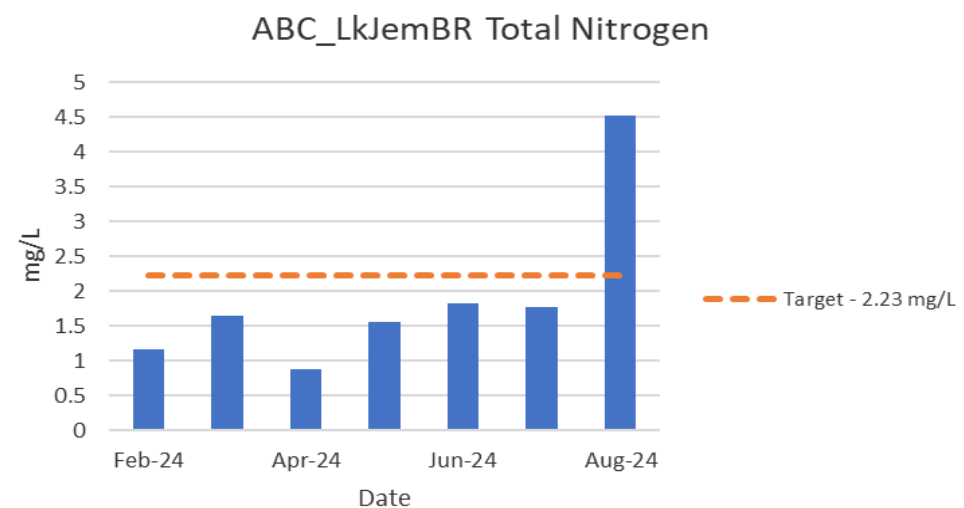
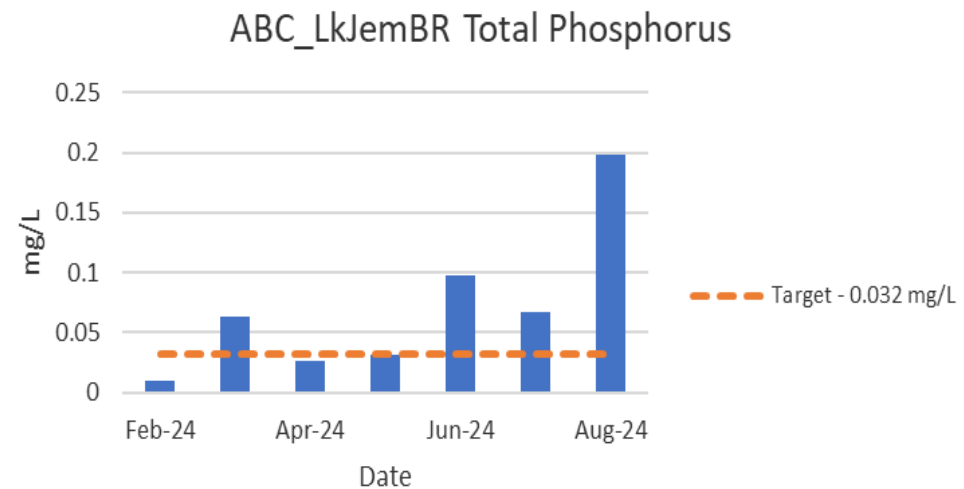
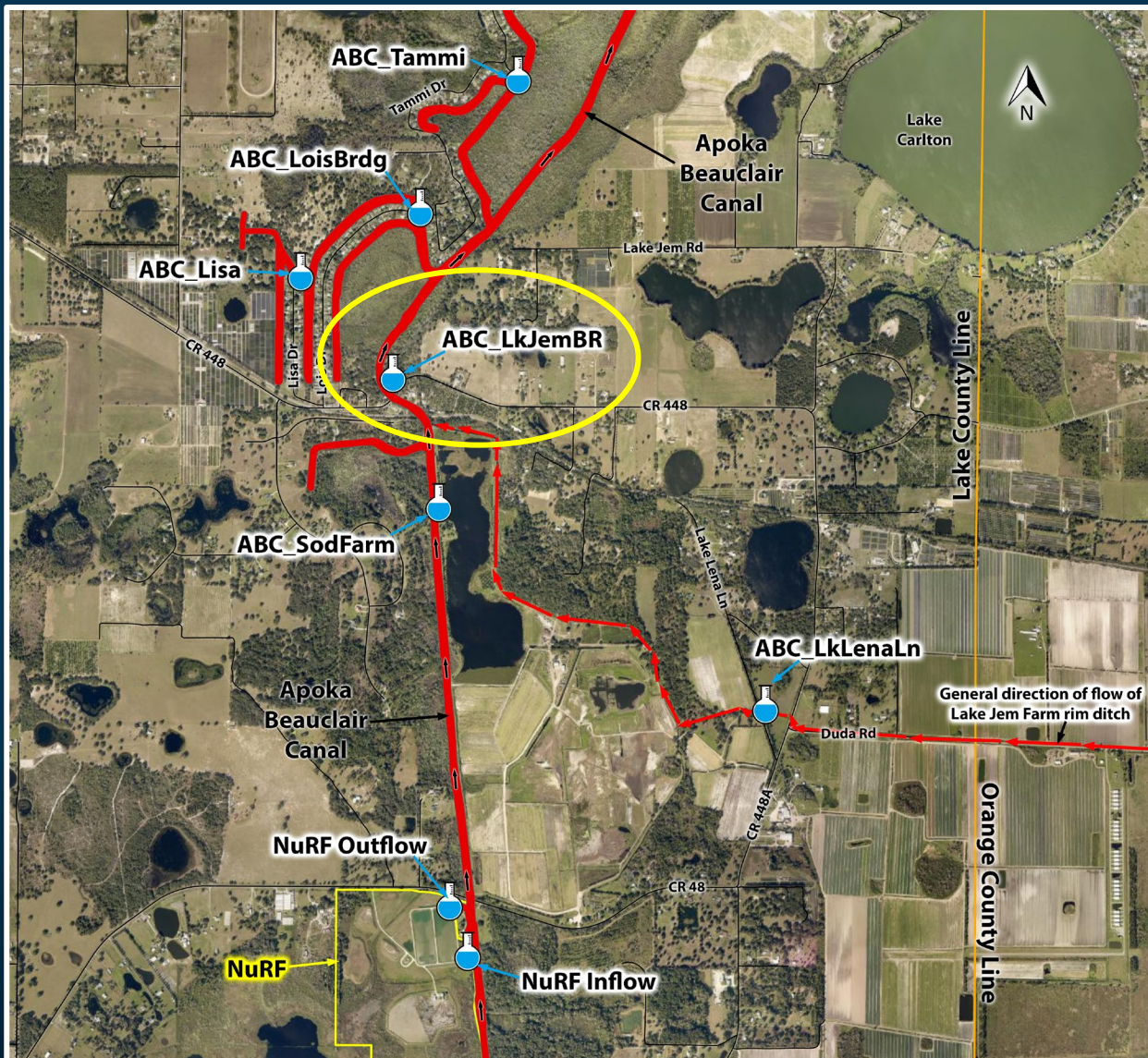
PROJECT DATA



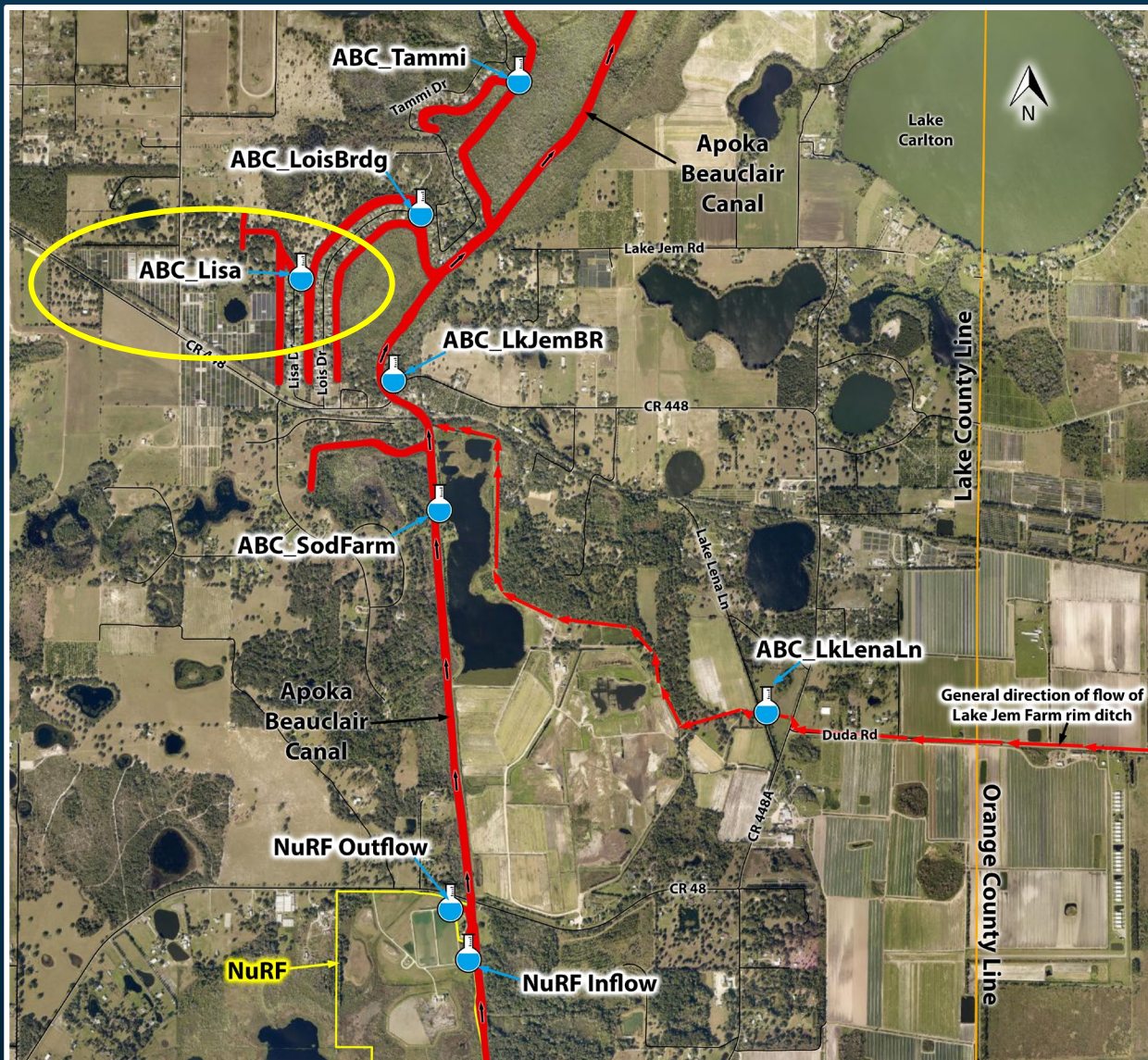
AB CANAL AT LK JEM SOD FARM



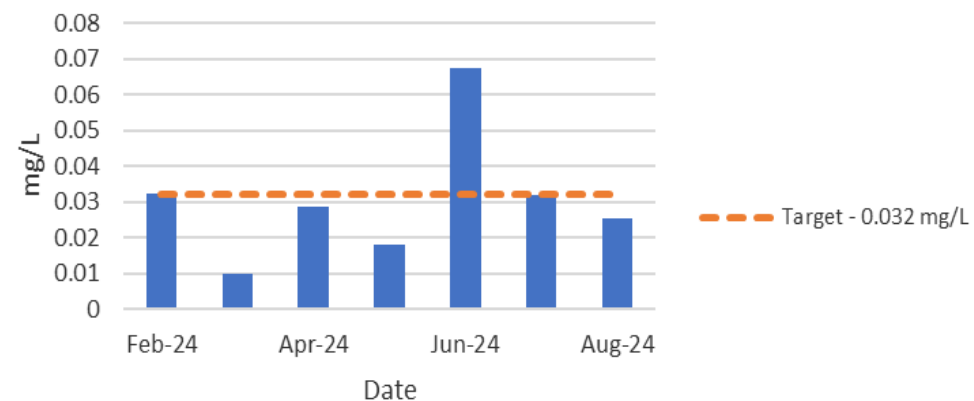
LAKE JEM BOAT RAMP



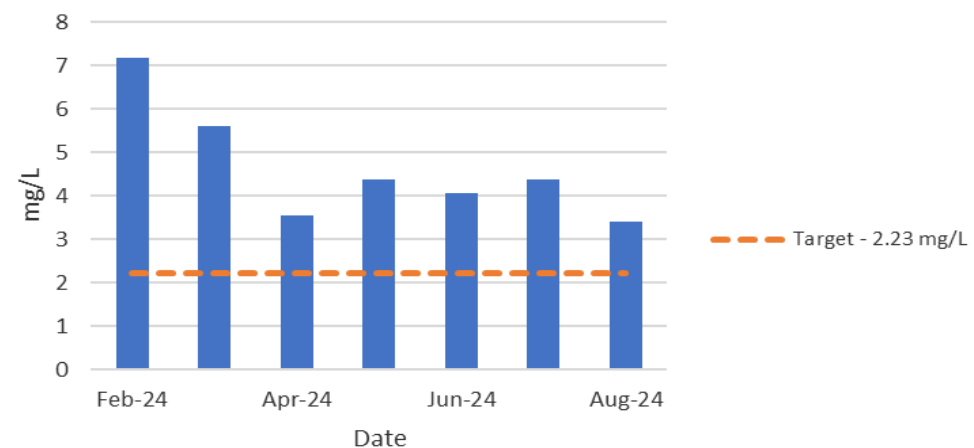
LISA CANAL



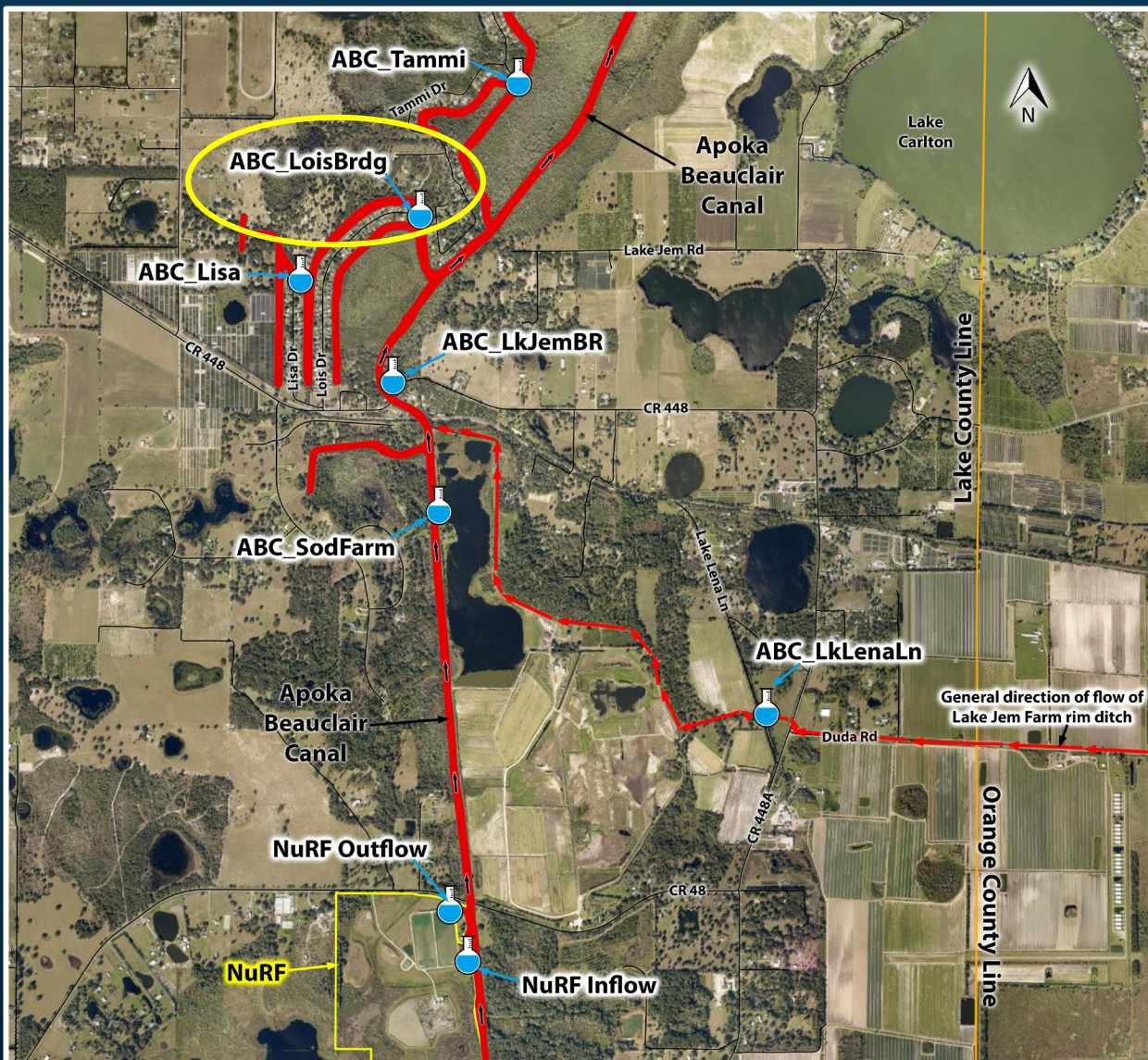
ABC_LisaTotal Phosphorus



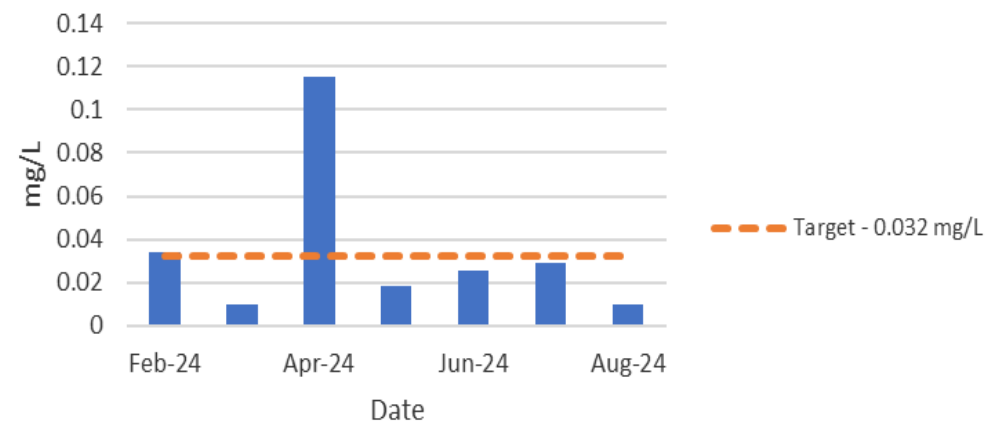
ABC_Lisa Total Nitrogen



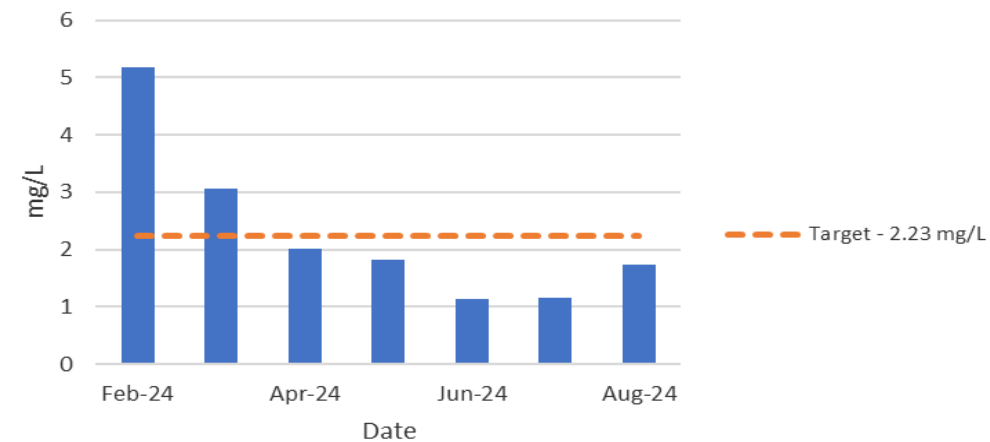
LOIS BRIDGE



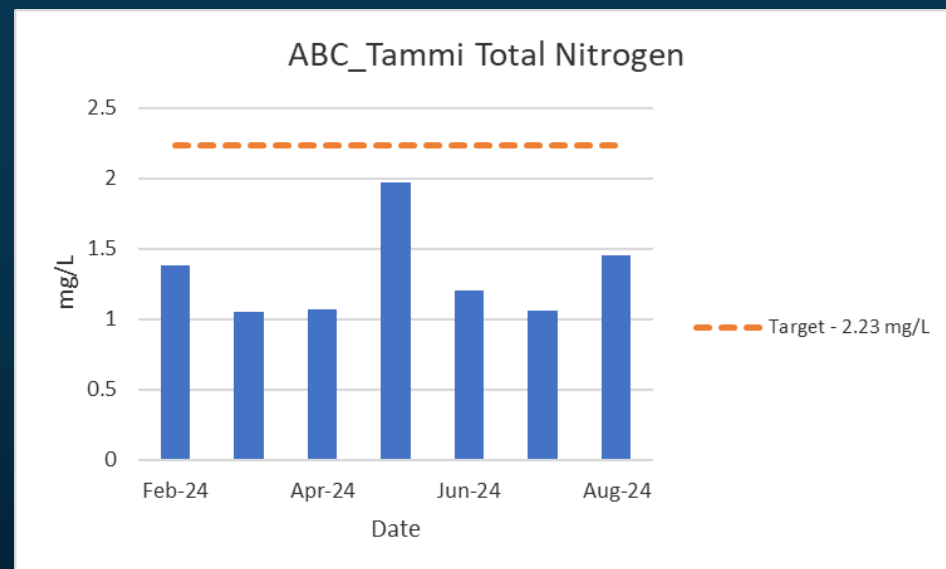
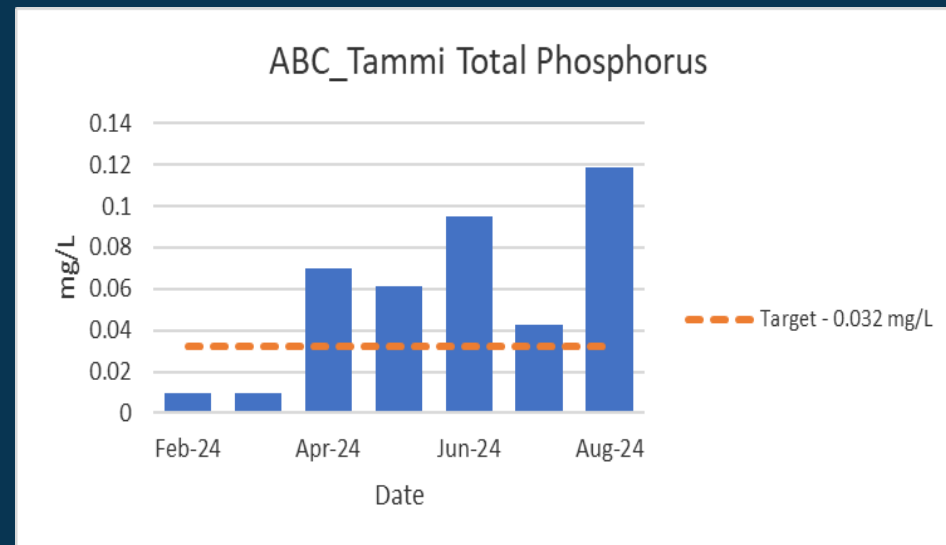
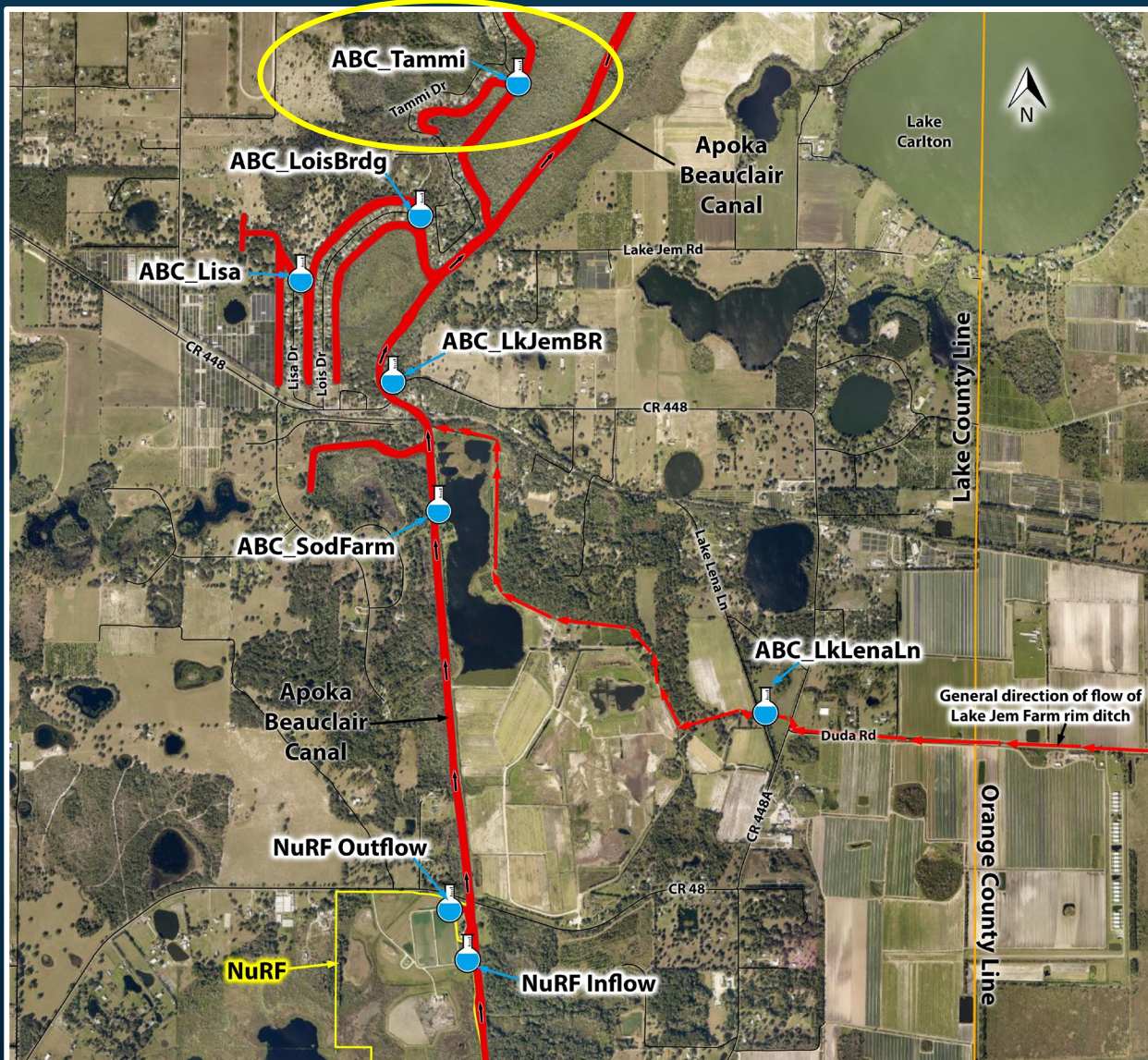
ABC_Lois Brdg Total Phosphorus



ABC_Lois Brdg Total Nitrogen



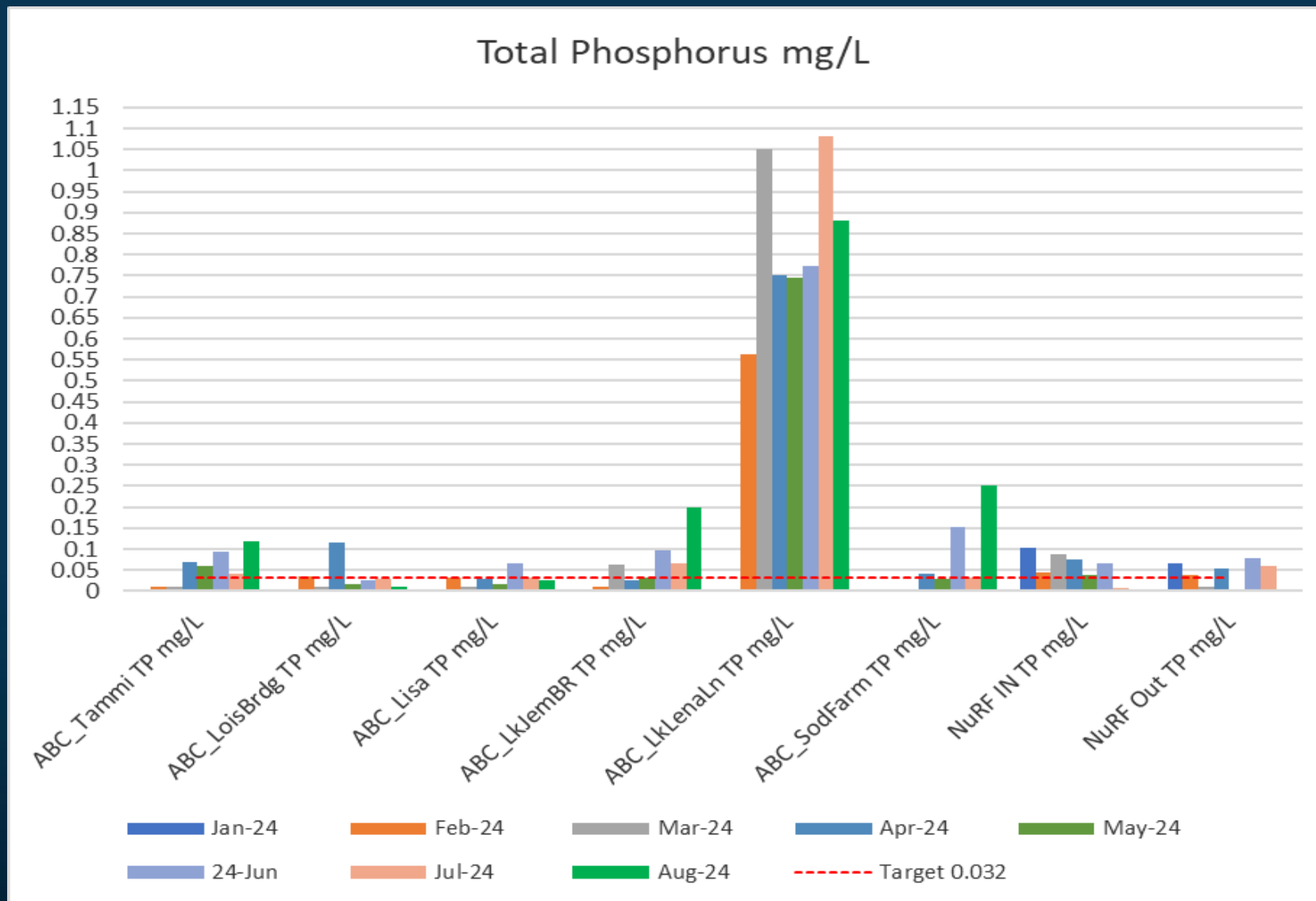
TAMMI CANAL





TOTAL PHOSPHORUS

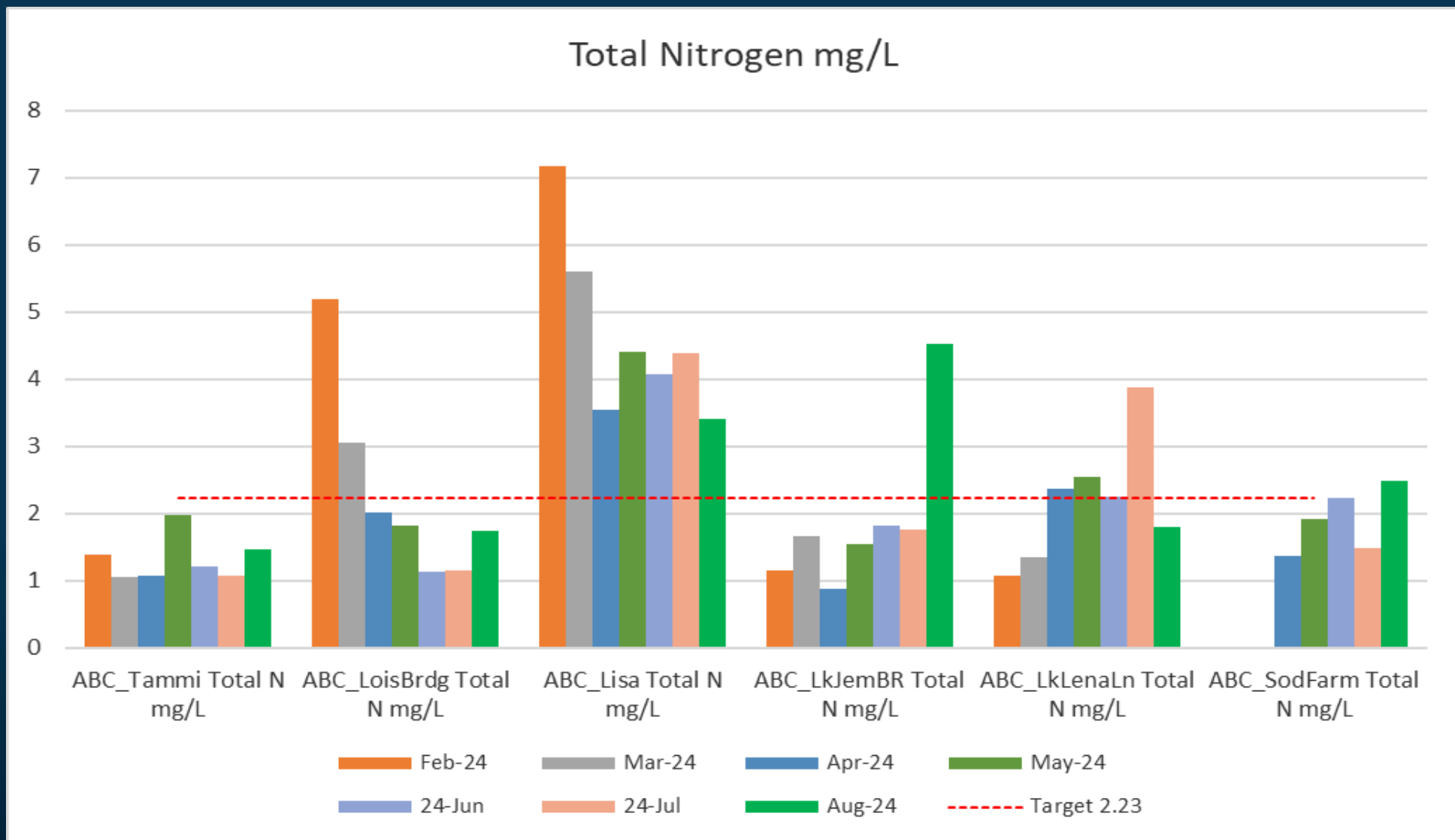
PROJECT DATA – ALL LOCATIONS





TOTAL NITROGEN

PROJECT DATA – ALL LOCATIONS





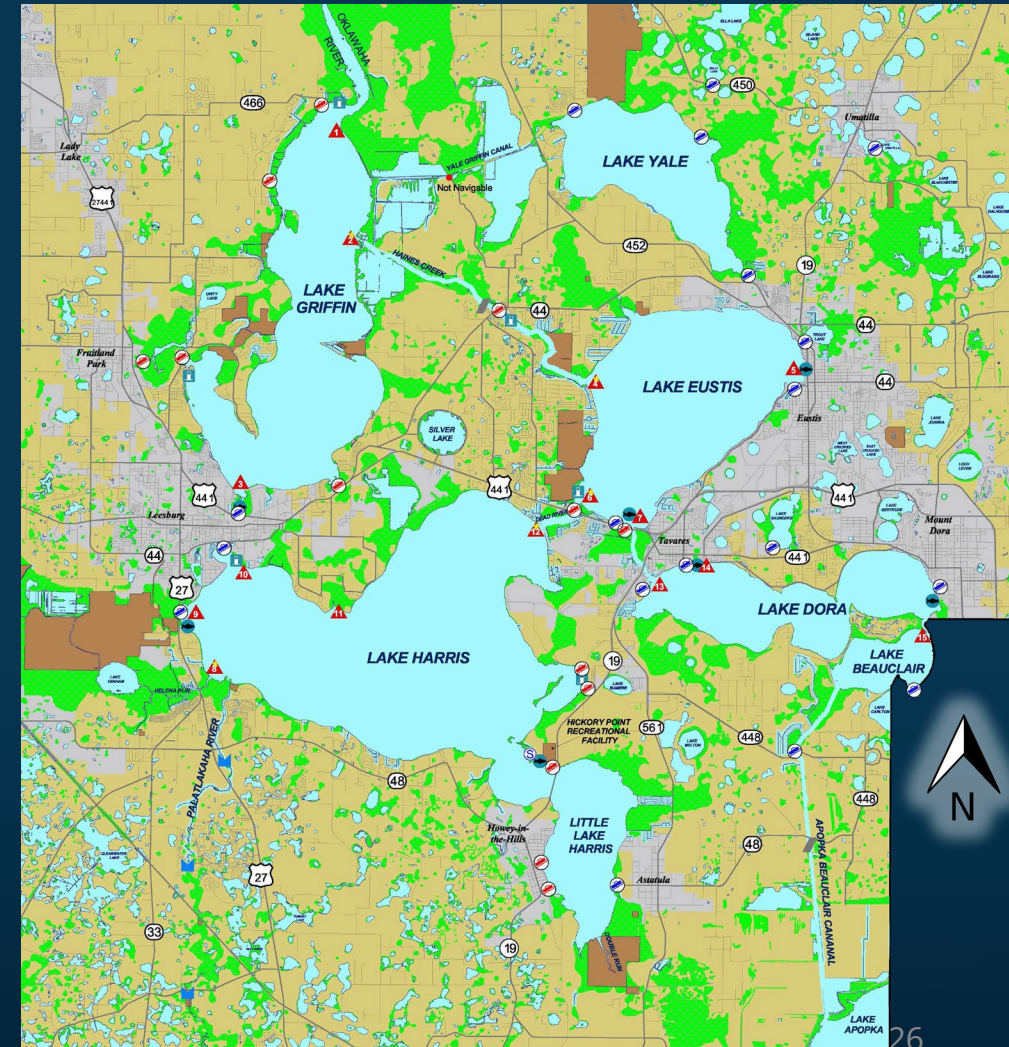
Lake County
WATER AUTHORITY

RONALD BLACK PROPERTY OPPORTUNITY

September 18, 2024

HARRIS CHAIN OF LAKES

The Harris Chain of Lakes is part of the Ocklawaha River Basin, which ultimately flows into the St. Johns River north of Lake George and eventually empties into the Atlantic Ocean near Jacksonville. The drainage area for this chain is more than 2,120 square miles



HARRIS CHAIN OF LAKES

Although rainfall is the major source of water for the Harris Chain, the lakes also receive spring water. Most of these springs are found in Lake Apopka and on the south shore of Lake Harris

Lake Apopka is considered the headwaters of the chain. It is among the top four largest lakes in Florida, with 1/3 located in Lake County and 2/3 in Orange County. Waterways that direct the water flow north include the Apopka-Beauclair Canal & Dam, Dora Canal, Dead River and Haynes Creek

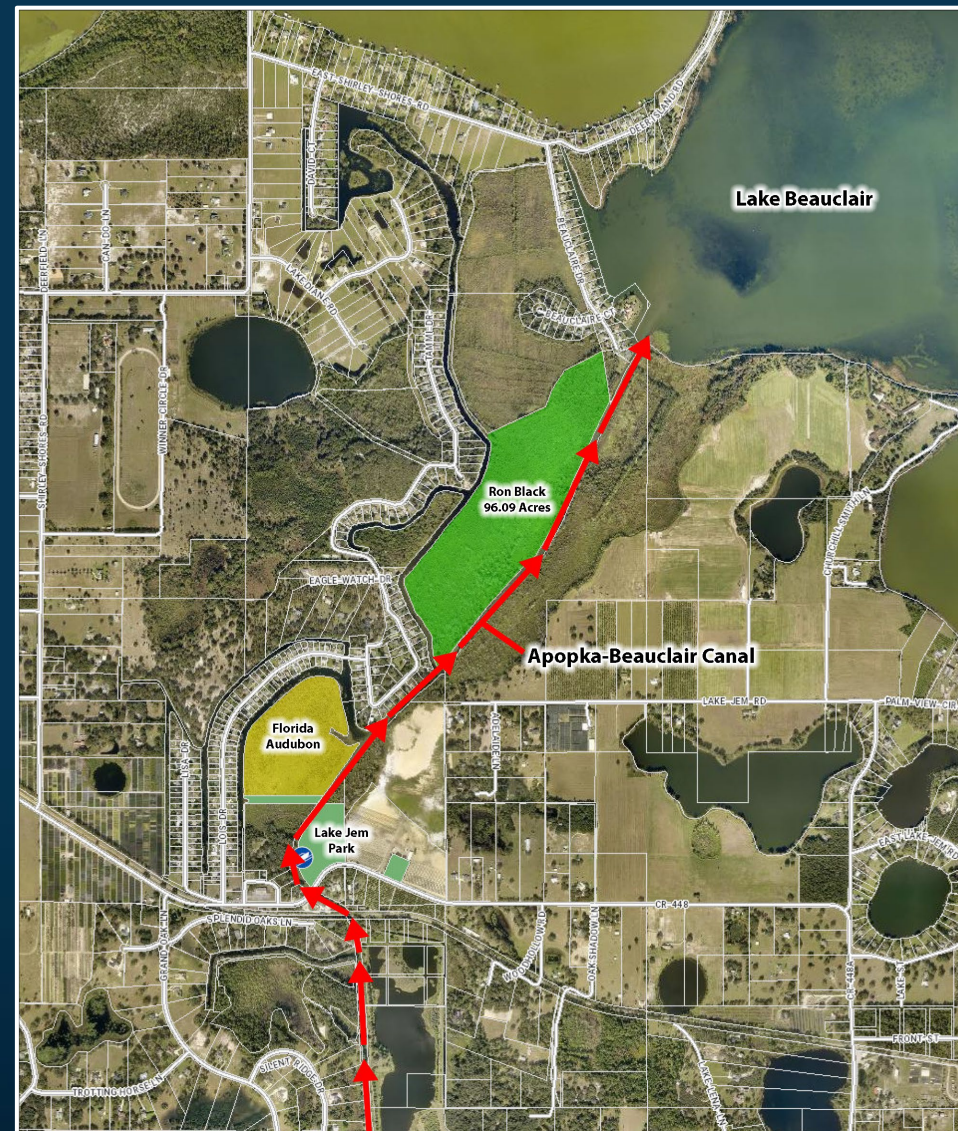


RONALD BLACK PROPERTY OPPORTUNITY

Helping to advance the LCWA's mission

- Protect and preserve water resources
- Protect plant and wildlife habitat
- Preserve the ability of floodplains, filter sediments and nutrients and provide critical wetland habitat
- Benefits are far reaching for the public and the environment

RONALD BLACK PROPERTY OPPORTUNITY



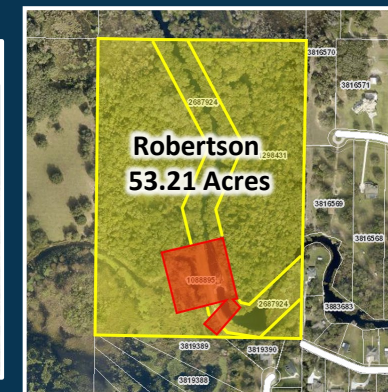
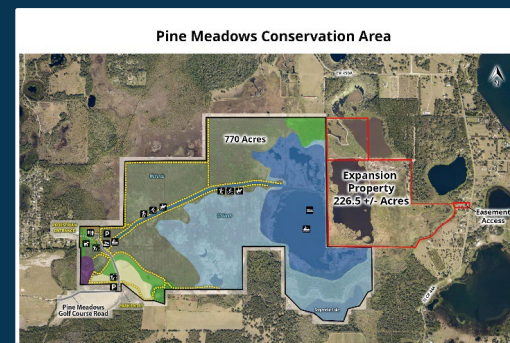
RONALD BLACK PROPERTY OPPORTUNITY

- 96.09 Acres
- 4,738 feet of canal frontage
- Ecosystem Composition
 - Mixed Wetland Hardwoods
 - Mixed Scrub – Shrub Wetland
 - Freshwater Forested / Shrub Wetland



LAND ACQUISITION

- Pine Meadows Expansion Property – 226 Acres
 - Purchased at \$4,641 per acre*
- Robertson Trust Property – 53.21 Acres
 - Estimated purchase price of \$6,765 per acre*
- Ronald Black Property – 96.09 Acres
 - Asking price: \$800,000; Renegotiated price: \$575,000
 - Estimated purchase price of \$6,348 per acre*
 - Comparable Adjacent Property - Tammi Drive – 13 Acres
 - Asking price: \$1,265,000



*All per acre prices include closing costs and surveys

REQUESTED ACTION

Approve the acquisition and purchase of the Ronald Black property

Authorize the Executive Director to work with LCWA Legal to execute all due diligence and documentation for the successful purchase of the property



**Lake County
WATER AUTHORITY**

Bobby Bonilla, Executive Director • Gary J. Cooney, Secretary - Treasurer

27351 SR 19 • Tavares, Florida 32778-4251 • (352) 324-6141 • Fax (352) 324-6364 • email: info@lcwa.org • www.lcwa.org

TO: Lake County Water Authority Board of Trustees

THROUGH: Bobby Bonilla, Executive Director

FROM: Marcia Bush, Associate Director, Water Resources

DATE: November 12, 2025

RE: Duda Road Stormwater Conveyance Area

Regular Agenda – Tab 9

Duda Road Stormwater Conveyance Area

Staff will present updated information regarding an area south of Duda Road identified as a major stormwater conveyance corridor contributing flow and nutrient loading to the Apopka-Beauclair Canal and the Harris Chain of Lakes.

Background:

This area was thoroughly documented in the 2017 Apopka-Beauclair Canal Nutrient Study funded by (LCWA), which noted that runoff from the farms and ditches near Duda Road discharged downstream of the Nutrient Reduction Facility (NuRF) and was therefore untreated before entering the canal system. Subsequent water quality monitoring confirmed that discharges from the basin carry elevated nutrient concentrations and turbidity that correlate with degraded water quality conditions downstream.

Attached:

- AMEC Foster Wheeler Final Report – Apopka Beauclair Nutrient Loading Study – Phase II Final Report

Executive Director’s Recommendation:

1. For Informational Purposes.

BOARD OF TRUSTEES

Gavin Rollins
District 1

Trampis Bonjorn
District 2

Birdie Zenishek
District 3

Butch Hendrick
District 4

Jonathan Germeroth
District 5



Lake County
WATER AUTHORITY

DUDA ROAD STORMWATER CONVEYANCE AREA

MAJOR STORMWATER CONVEYANCE CORRIDOR CONTRIBUTING FLOW AND NUTRIENT
LOADING TO THE APOPKA-BEAUCLAIR CANAL AND THE HARRIS CHAIN OF LAKES

Cathie Catasus, Water Quality Lab Manager
November 19, 2025

Background & Prior Findings

- Documented in LCWA's 2017 Apopka – Beauclair Canal Nutrient Study showing north/south rim ditches
- Area conveys stormwater runoff including agricultural flows bypassing the NuRF
- Water quality data confirms elevated nutrient and sediment concentrations entering the Harris Chain downstream of the NuRF

Lake County Water Authority
Apopka Beauclair Canal Nutrient Loading Study

Amec Foster Wheeler Project No. 600391.2
March 2017

Executive Summary

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) conducted a six-month study involving the contributing basin for two outfall ditches on the north and south sides of the Lake Jem Sod Farm immediately downstream of the Lake County Water Authority's Nutrient Reduction Facility on the Apopka-Beauclair Canal. This basin is important because it likely represents the most significant remaining source of untreated pollutant loading to the Apopka-Beauclair Canal and Lake Beauclair.

Base flow was evaluated every three weeks from July 28, 2016 through January 12, 2017 for flow and water quality at four locations including the two ditch outfalls and two points further upstream in the basin adjacent to culvert crossings under CR448A. Stormwater runoff was evaluated for two wet season and two dry season rain events at the upstream CR448A locations.

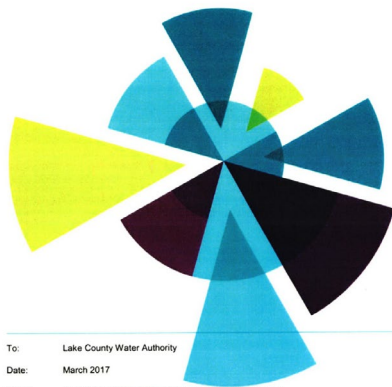
Base flow at the south ditch indicated significant total phosphorus loading of 1,574 pounds per year and total nitrogen loading of 6,628 pounds per year with an average flow of 2.4 cubic feet per second, or 1,766 acre-feet per year. The majority of phosphorus was in the bioavailable orthophosphate form. Base flow loading from the north ditch was not as significant but still contributes an estimated 429 pounds of total phosphorus per year and 6,125 pounds of total nitrogen per year with an average flow of 2.3 cubic feet per second, or 1,629 acre-feet per year.

Stormwater discharge was estimated to contribute approximately 931 acre-feet of discharge through the ABC North and South ditches each year. Stormwater contributes approximately 705 pounds of total phosphorus per year and 4,133 pounds of total nitrogen. Total phosphorus and total nitrogen concentrations in the monitored locations were similar for stormwater and base flow.

Amec Foster Wheeler developed five alternatives to address loading from the study basin as detailed below. All alternatives have comparable pollutant removal efficiencies because they are all capable of removing significant mass loads. **Alternative 5** is recommended for additional consideration to negotiate potential land acquisition terms and proceed with project design.



Apopka Beauclair Canal Nutrient Loading Study – Phase II Final Report



To: Lake County Water Authority
Date: March 2017
From: Amec Foster Wheeler Environment & Infrastructure, Inc.

Figure 2-6

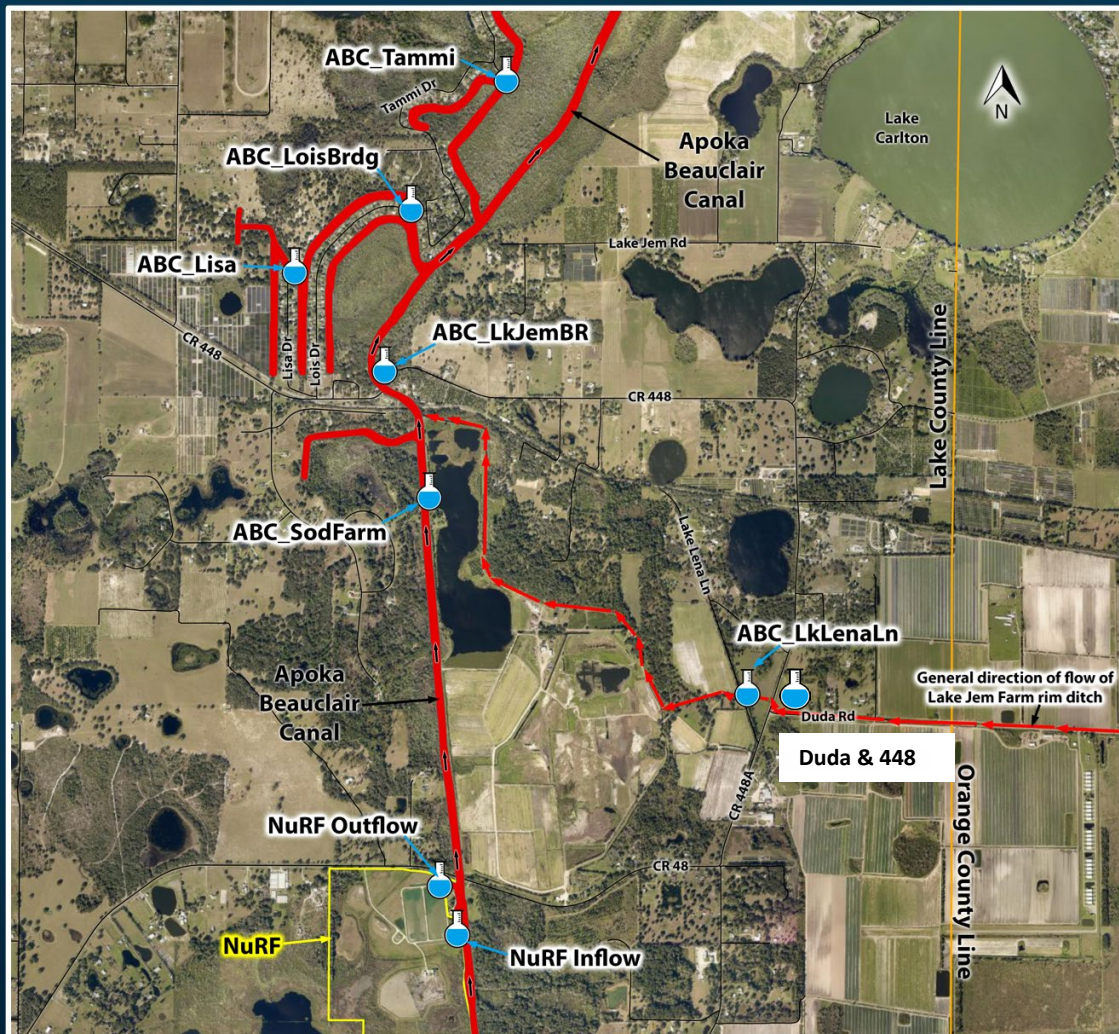


Figure 13
Proposed Monitoring
Locations
LCWA Pollutant Loading
Apopka-Beauclair Canal
Lake County, FL

CURRENT CONDITIONS

Monitoring Observations

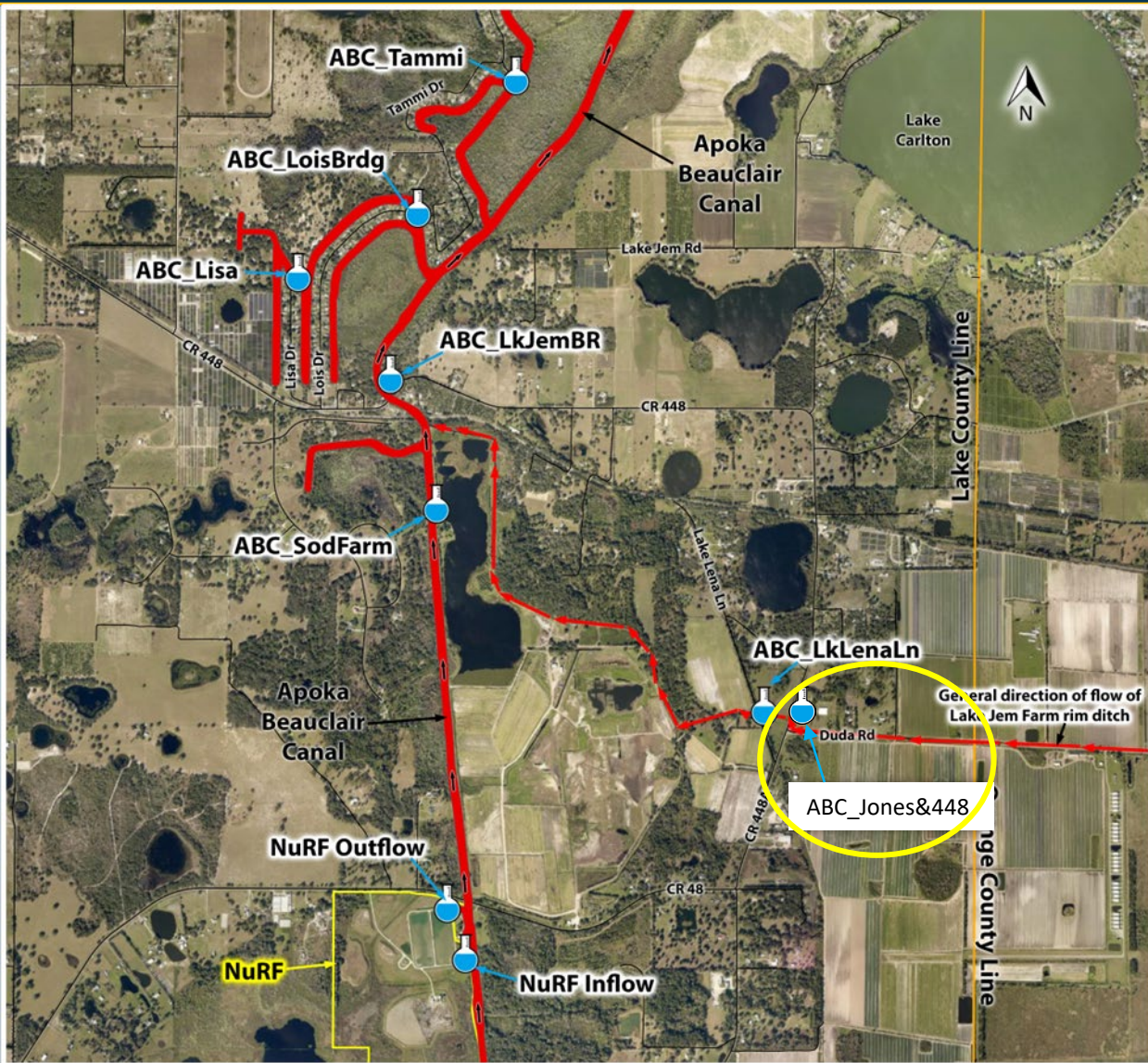
- Continued monitoring observations reflect elevated Total Phosphorus (TP) and Total Nitrogen (TN) detected at **Duda/448** and **Lake Lena Ln** locations
- Agricultural runoff and fertilizer remain dominant loading sources
- Iron levels in samples indicate ongoing soil, irrigation and/or fertilizer influences
- Modest attenuation observed downstream but overall nutrient loading remains high



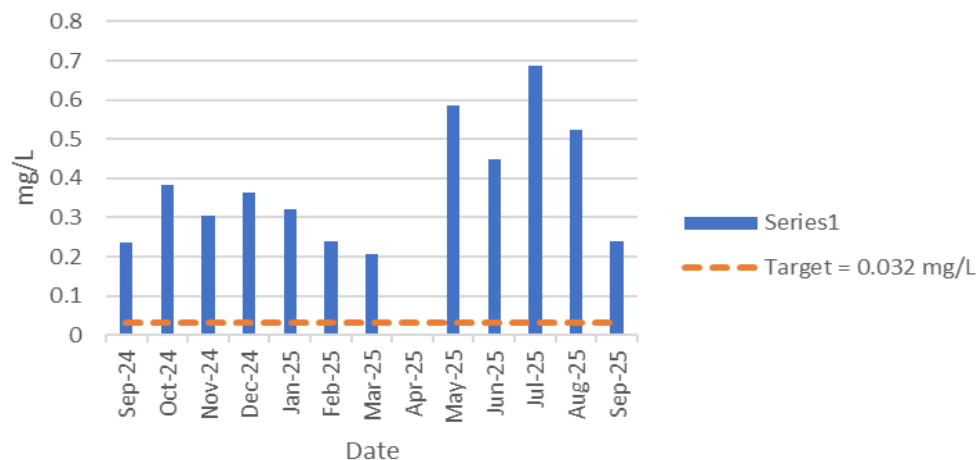
Water Sample Locations



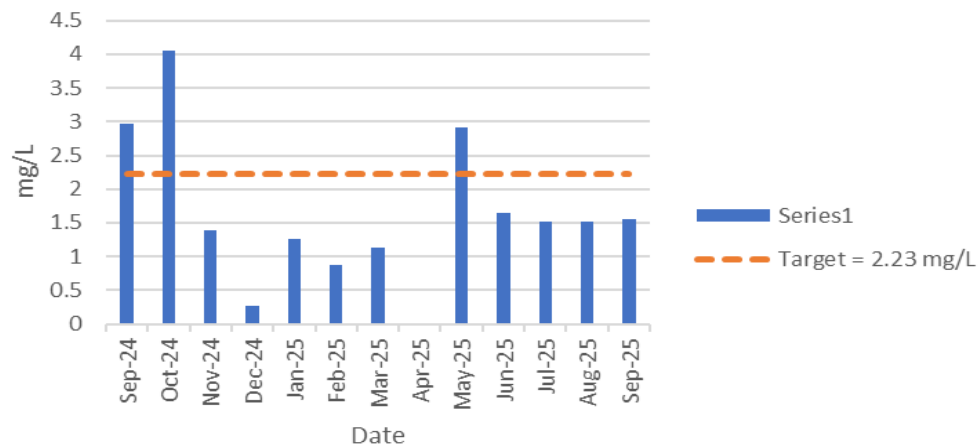
INTERSECTION @ JONES AND CR448



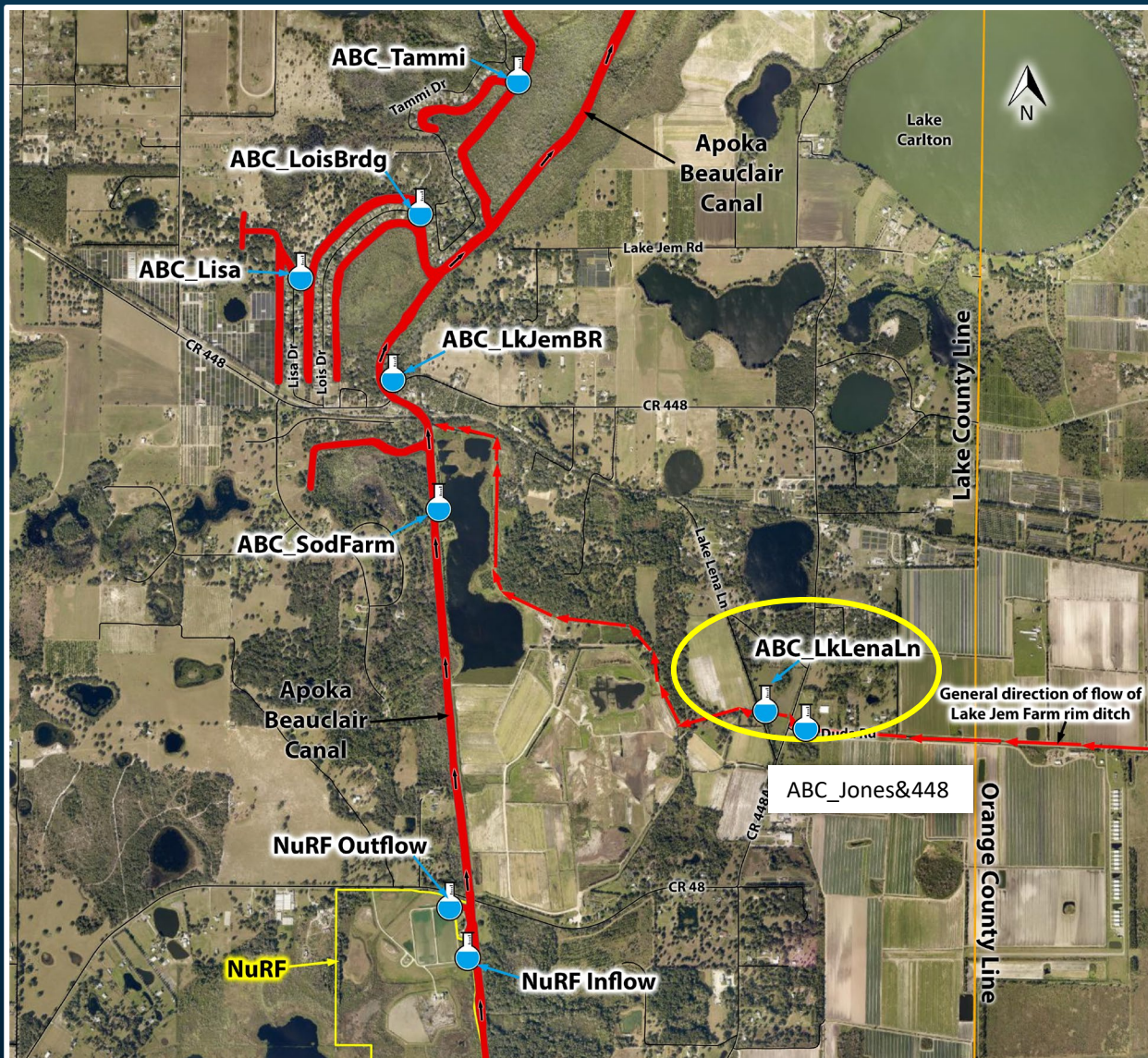
ABC_Jones & 448 Total Phosphorus



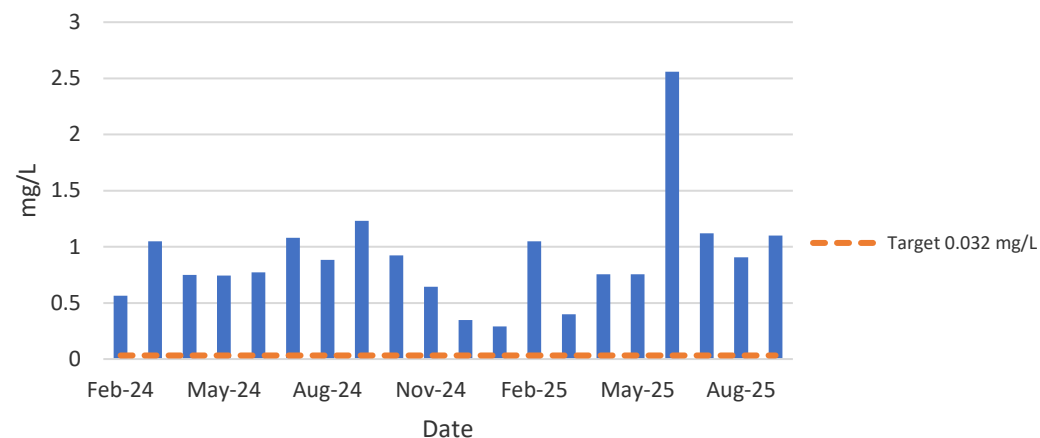
ABC_Jones & 448 Total Nitrogen



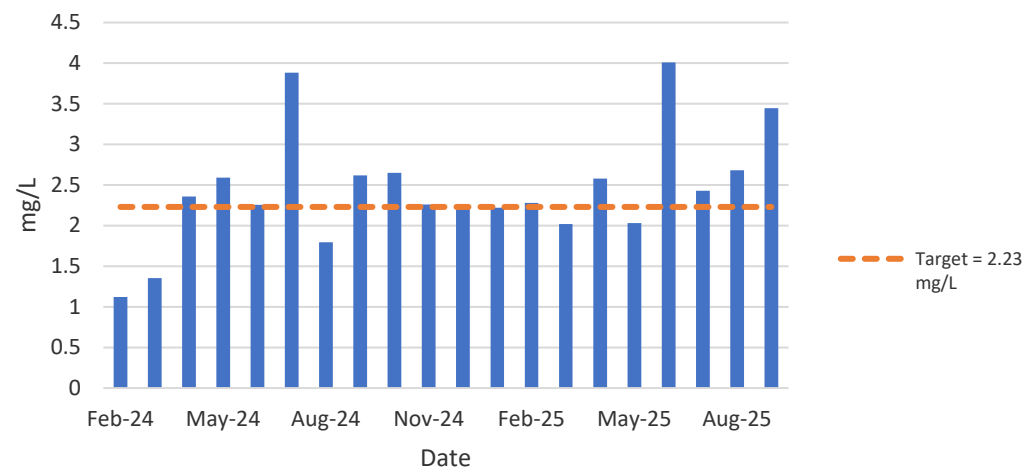
CANAL AT LAKE LENA LN



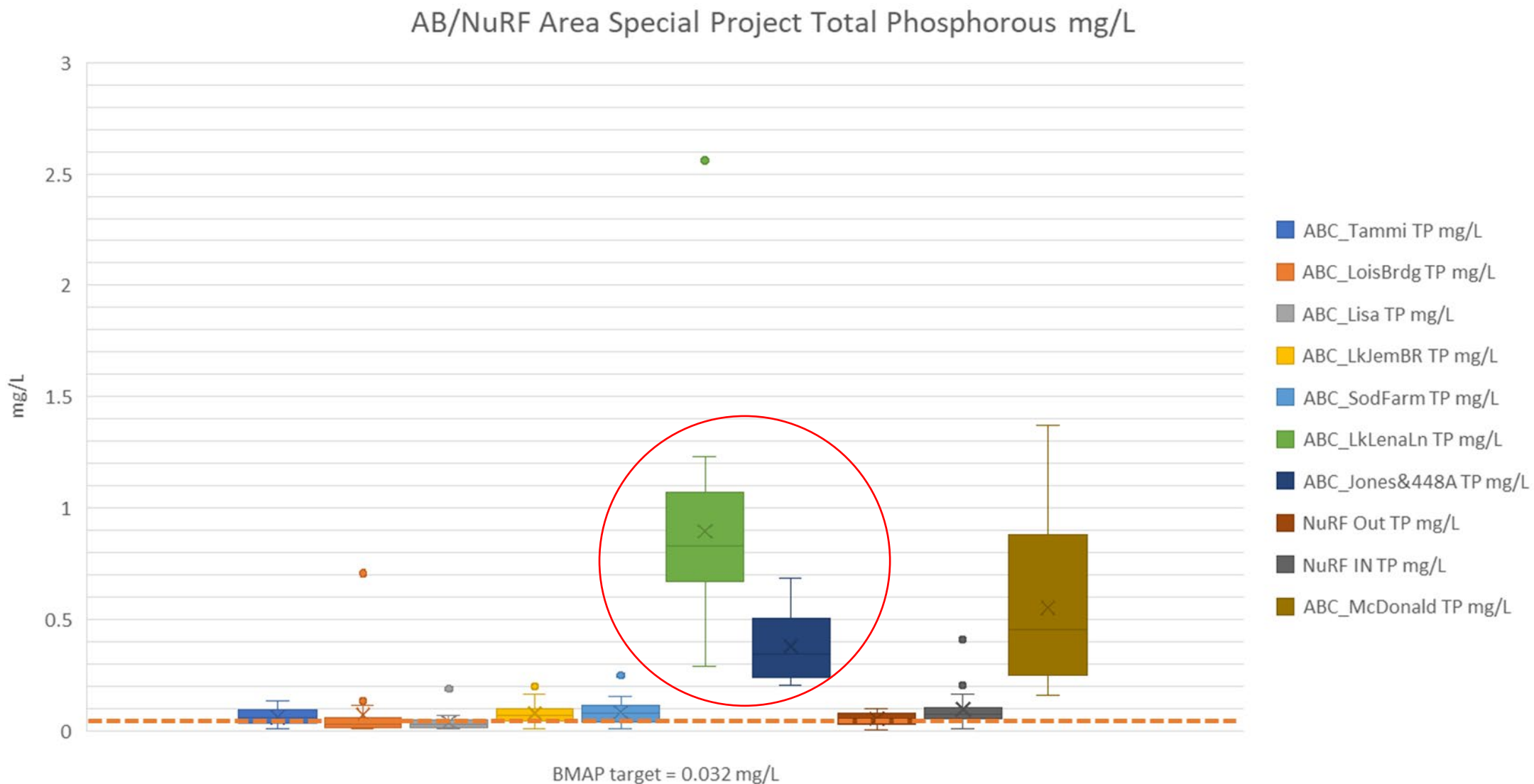
ABC_LkLenaLn Total Phosphorus



ABC_LkLenaLn Total Nitrogen

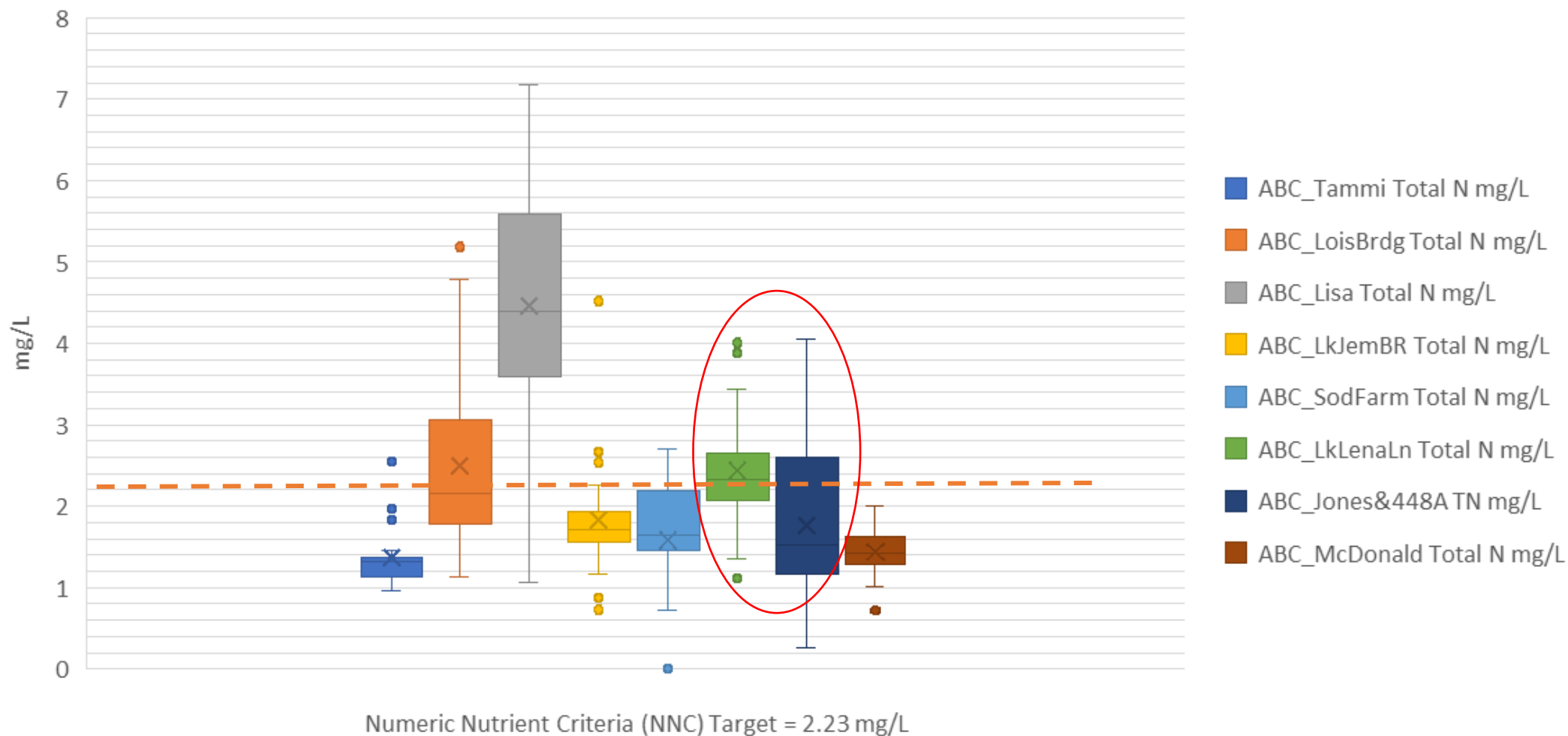


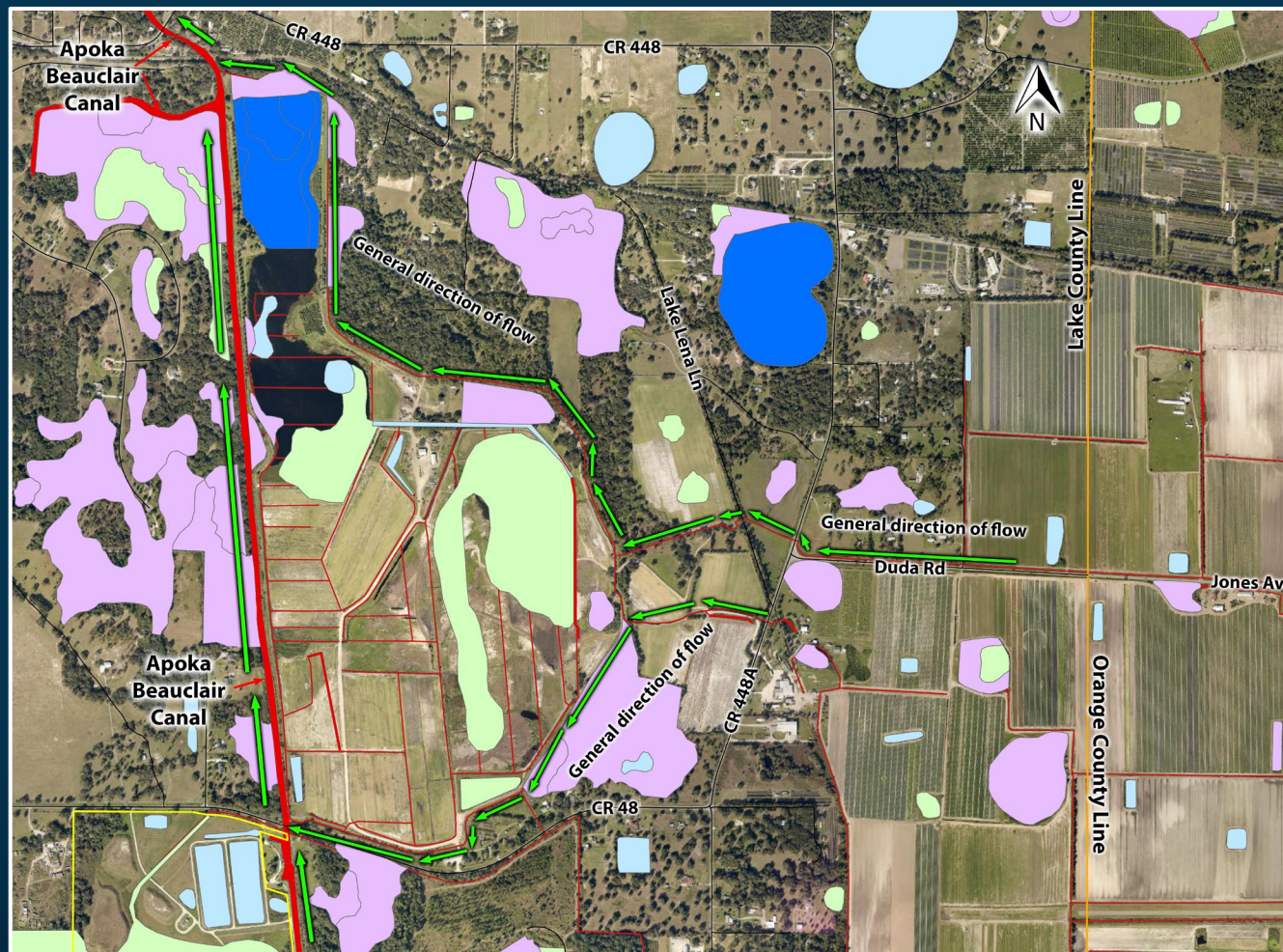
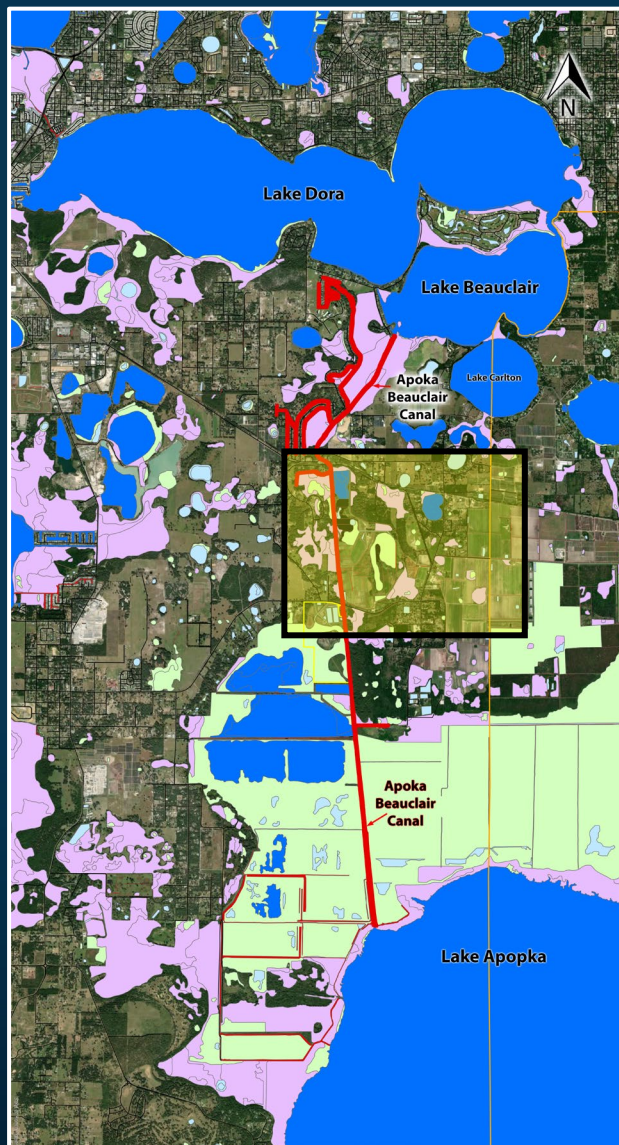
PROJECT DATA TOTAL PHOSPHORUS



PROJECT DATA TOTAL NITROGEN

AB/NuRF Area Special Project Total Nitrogen mg/L





- Legend**
- Riverine
 - Estuarine and Marine Deepwater
 - Estuarine and Marine Wetland
 - Freshwater Emergent Wetland
 - Freshwater Forested/Shrub Wetland
 - Freshwater Pond
 - Lake

Detail showing water conveyance in the area of Duda Rd.
and the Hurley property

LOADING SOURCES

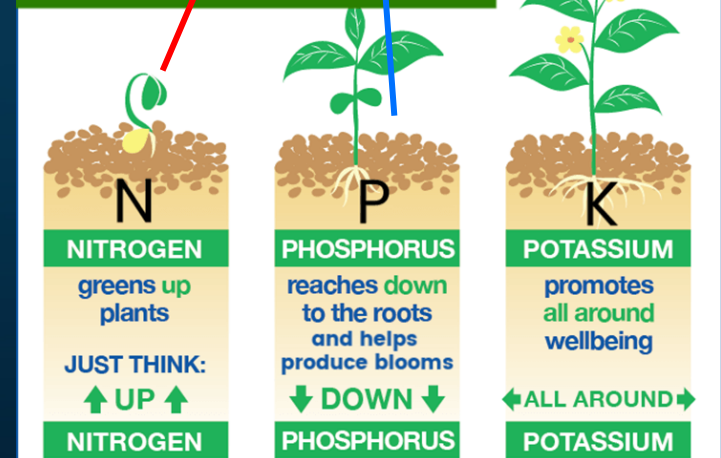
- Stormwater runoff / fertilizer (agriculture & residential)
- Atmospheric deposition
- Septic tanks
- Upstream water bodies

Top two Total Phosphorus (TP) loading sources to the Upper Ocklawaha River Basin lakes in the recent 10 years (source FDEP)

Lake	Highest loading source		2nd highest loading source	
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Eustis	Upstream	45	Stormwater Runoff	26
Griffin	Upstream	39	Atmospheric	27



What do the numbers on fertilizer mean?





Lake County
WATER AUTHORITY

THANK YOU!



Lake County
WATER AUTHORITY

HURLEY PROPERTY PRESENTATION

DISCUSSION & NEXT STEPS

- Board discussion on potential acquisition interest
- Evaluate feasibility for integrated stormwater treatment project and grant partnerships



TO: Lake County Water Authority Board of Trustees

THROUGH: Bobby Bonilla, Executive Director

FROM: Marcia Bush, Associate Director, Water Resources

DATE: February 20, 2026

RE: Land Acquisition Opportunities

Regular Agenda – Tab 11

Land Acquisition Opportunities Update

At the November 19, 2025 Regular Board Meeting, the Lake County Water Authority (LCWA) Board was presented with three separate properties:

- Hurley Property – Approximately 500 acres
- Blandford Property – Originally Approximately 354 acres but owner has recently indicated smaller parcel for sale; TBD.
- Thrill Hill Parcel (Alt. Key 1123593) – Approximately 35 acres

All three represent potential acquisition opportunities consistent with LCWA's adopted Conservation and Acquisition Core Program (December 2024). This agenda item brings the properties back before the Board to recommend formally requesting pricing proposals from willing sellers to evaluate potential direct acquisition.

Purpose:

To recommend pursuing pricing proposals from willing sellers of these three properties.

Executive Director's Recommendation:

1. Authorize the Executive Director to communicate with willing sellers of the Hurley, Blandford, and Thrill Hill properties to request pricing proposals or draft sales agreement terms, and also perform initial and limited due diligence prior to returning to the Board with findings and funding considerations.

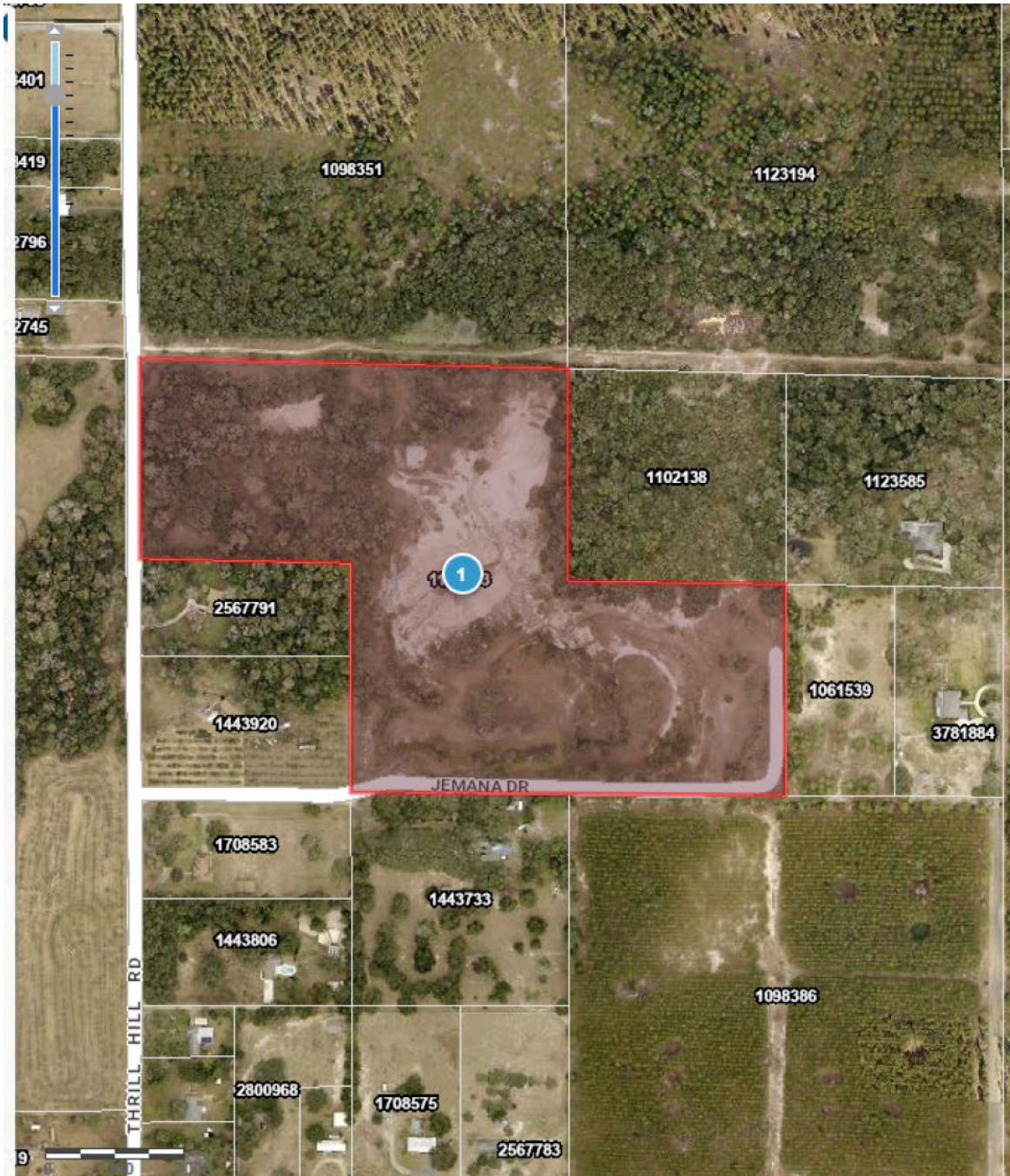
BOARD OF TRUSTEES



Hurley Property
Acreage: 500 Acres



Blandford Property Acreage: To Be Determined
(Confirmed)



Thrill Hill Parcel Acreage:
Approximately 35 Acres



**Lake County
WATER AUTHORITY**

Bobby Bonilla, Executive Director • Gary J. Cooney, Secretary - Treasurer

27351 SR 19 • Tavares, Florida 32778-4251 • (352) 324-6141 • Fax (352) 324-6364 • email: info@lcwa.org • www.lcwa.org

TO: Lake County Water Authority Board of Trustees

THROUGH: Bobby Bonilla, Executive Director

FROM: Marcia Bush, Associate Director, Water Resources

DATE: April 17, 2026

RE: Discussion and Direction on LCWA Legal Services

Regular Agenda – Trustees - Tab 7

Trustee Zenishek – Vice Chair and District #3

District 3 Trustee Zenishek requested this item be placed on the agenda for the April 22, 2026, Regular Meeting.

Executive Director’s Recommendation to the Trustees:

1. Discussion and direction.
2. Downs Aaron Attorneys & Advisors engagement letter.

BOARD OF TRUSTEES

Gavin Rollins
District 1

Trampis Bonjorn
District 2

Birdie Zenishek
District 3

Butch Hendrick
District 4

Jonathan Germeroth
District 5



Mr. Jimmy D. Crawford, Esq.
Ms. Stephanie M. Modica, Esq.
Ms. Lindsay C.T. Holt, Esq.
Ms. Freya McLain, Esq.
Matthew Black, Esq.
Amanda Boggus, Esq.

702 West Montrose Street
Clermont, Florida 34711
&
380 West Alfred Street
Tavares, Florida 32778

Phone No. 352-432-8644
Fax No. 352-432-8699

January 11, 2024

**ATTORNEY-CLIENT COMMUNICATION: THIS DOCUMENT AND
ITS CONTENTS CONSTITUTE LEGALLY PRIVILEGED INFORMATION**

Lake County Water Authority
c/o Mr. Bobby Bonilla
Executive Director
27351 State Rd. 19
Tavares, Florida 32778

Via Electronic Mail to: Roberto.Bonilla@Lakecountyfl.gov

Re: Re-engagement as Counsel

Dear Mr. Bonilla,

This letter is to describe the terms and conditions under which I am offering to continue to represent the Lake County Water Authority in connection with the following: Interim Board Attorney.

This letter is a legal contract, and the terms and conditions of my agreement with you are described in some detail. This letter not only establishes the terms of my contract with you, but it will also help to prevent any misunderstandings. When you sign and return a copy of this letter, you are agreeing to the terms and conditions of representation that are described in this letter.

It is expressly understood and agreed that no other representations have been made to you except those set out in this letter.

You agree to keep my office advised of your contact information and, if appropriate, your e-mail address so that I can locate you during the day or evening hours. You agree to promptly inform me of all changes in your contact information as soon as such changes occur.

This representation is for continuing representation of the LCWA and includes varying matters. If the matter requires negotiation, I will negotiate with the opposing party on your behalf. I will not conclude or settle the matter without your approval. Please do not communicate with any of the parties, witnesses, or attorneys in the case without my involvement.

Any title search fees, or potential court costs are additional and will need to be paid separately. The payment and all future sums paid will be credited to periodic billing as provided in this agreement.

You hereby agree that all other advanced fee agreements you have with our office are hereby amended so that (a) any default under this Agreement shall also constitute a default under all other agreements, and a default under any one of the other agreements shall constitute a default under this Agreement; and (b) funds remaining in our trust account for any matter, including funds allocated for costs, shall be applied to any outstanding balance now due, or that shall become due in the future, for the matter that is the subject of this Agreement or any other matters relative to any other agreements with our office. If, at the conclusion of all your matters, there are no outstanding balances owed for this or any other matter, any remaining advanced fees will be refunded to you.

Please be advised that any work which is not included in the flat fee, will be billed at my law office's hourly rate as follows:

Hourly Basis Fee Arrangements

Partner	\$225.00
Associate (Amanda Boggus)	\$225.00
Paralegal	\$165.00
Legal Assistant	\$100.00

We record and bill our time in .3 units. If a lawyer's or paralegal's total time on your file is less than .3 for the entire day, .3 will be billed for that day. If the lawyer's or paralegal's total time on your work is more than .3 for that day (whether done at one time or not), only the time actually spent will be billed.

The attorney's fees do not include title search, court costs, depositions, appraisal fees, mileage charges, parking expenses, long-distance telephone charges, postage, copy and certified

copy expenses, delivery charges, and any other out-of-pocket costs. These costs will be treated as additional expenses and will be included in my bill, without additional markup.

You agree to pay those reasonable expenses. If payments are not made promptly to me as requested, I reserve the right to immediately withdraw from representing you in any and all matters that the law office is handling. You agree to the withdrawal.

Costs and Expenses

We will bill you for out-of-pocket expenses that we pay on your behalf and for our internal costs. Out-of-pocket expenses generally include items such as title search, filing fees, court costs, depositions, appraisal fees, mileage charges, parking expense, long distance telephone charges, copy and certified copy expenses, delivery charges, wire fees, if applicable, and any other out-of-pocket costs. Our internal costs include, but are not limited to, photocopying, postage, and courier services. These costs will be treated as additional expenses and will be included in your bill.

Sometimes it is necessary to hire other persons to provide services for you, such as accounting or appraisal firms. Their work may have more confidentiality if we (rather than you) request their services, and so we may hire them. However, you will be responsible for paying their fees and expenses, whether paid directly to them or to us in reimbursement. You will be consulted on this matter before any outside services are requested.

Depending on the expenses anticipated in handling the matter, I may also require you to advance costs and place a deposit to cover the same. You agree to pay those reasonable expenses. If payments are not made promptly to me as requested, I reserve the right to immediately withdraw from representing you in any and all matters that the law office is handling. You agree to the withdrawal.

Your Agreement with Us

Your agreement to our representation constitutes your acceptance of these terms and conditions. If any of them is unacceptable to you, please tell us now so that we can resolve any differences and proceed with a clear understanding of our relationship.

This Agreement is performable in Lake County, Florida. All monies owed hereunder are to be paid at our office in Lake County, Florida. Jurisdiction and venue of any dispute arising hereunder are also performable in Lake County, Florida.

I shall have the right to withdraw from the case if you do not make payments required by this Agreement, if you misrepresent the facts to me, or if you fail to follow my advice. In any of these events, you will execute such necessary documents as will permit me to withdraw as your attorney.

In the event it is necessary for me to institute proceedings against you for the collection of fees and advances due me, you will pay, in addition to any expenses necessitated thereby, all costs, including a reasonable attorney's fees.

Any controversy or claim arising out of or relating to a fee charged pursuant to this Agreement shall be settled by arbitration under Chapter 682, Florida Statutes. Judgment upon the award rendered may be entered in any court having competent jurisdiction.

In the event of any dispute as a result of any provisions hereof or the interpretation hereof or otherwise or in any way arising out of our relationship as attorney/client the prevailing party shall be entitled to reasonable attorney's fees and costs.

NOTICE: This agreement contains provisions requiring arbitration of fee disputes. Before you sign this agreement, you should consider consulting with another lawyer about the advisability of making an agreement with mandatory arbitration requirements. Arbitration proceedings are ways to resolve disputes without use of the court system.

You authorize me with your power of attorney to sign court or other legal documents which may be required in the course of the case. Also, you will designate my law office as your attorney-at-law and in-fact to act in your name, sign legal pleadings on your behalf and to perform the acts necessary and appropriate to affect the above-described legal representation.

TAX DISCLOSURE AND ACKNOWLEDGMENT:

THE CLIENT IS ADVISED TO OBTAIN INDEPENDENT AND COMPETENT TAX ADVICE REGARDING LEGAL AND BUSINESS MATTERS SINCE LEGAL AND BUSINESS TRANSACTIONS CAN GIVE RISE TO TAX CONSEQUENCES.

THE UNDERSIGNED LAW OFFICE AND ATTORNEY HAVE NOT AGREED TO RENDER ANY TAX ADVICE AND ARE NOT RESPONSIBLE FOR ANY ADVICE REGARDING TAX MATTERS OR PREPARATION OF TAX RETURNS, OR OTHER FILINGS.

FURTHERMORE, THE CLIENT SHOULD OBTAIN PROFESSIONAL HELP REGARDING THE VALUATION AND LOCATION OF ALL ASSETS WHICH MAY BE THE SUBJECT OF A LEGAL MATTER INCLUDING BUT NOT LIMITED TO: REAL PROPERTY VALUES, PROPERTY OF ANY ESTATE, PENSIONS, EMPLOYMENT BENEFIT AND PROFIT-SHARING RIGHTS THAT MAY BE CONTROLLED BY ANY OTHER PARTY TO THE LEGAL MATTER.

Re-engagement of Counsel
Lake County Water Authority
Bobby Bonilla, Executive Director
January 11, 2024
Page 5 of 5

We greatly appreciate the confidence you are showing in our firm by hiring us to work on this case. We will give every reasonable effort to obtain a positive outcome. During this matter, if you have any questions or comments regarding our representation, please let us know immediately so we can work to improve our service to you and our other clients.

The term of this Agreement is for five (5) years from the final signature; however, either party may cancel this Agreement for any reason. If the attorney cancels this Agreement, ninety (90) days written notice must be provided to the LCWA.

Please sign in the space provided below so that I may continue working on your behalf. If you have any questions concerning my fees or this legal matter, please call me at (352) 432-8644.

Very truly yours,

CRAWFORD, MODICA & HOLT
CHARTERED ATTORNEYS AT LAW

JIMMY D. CRAWFORD

JIMMY D. CRAWFORD, ESQUIRE
PARTNER

MR. BOBBY BONILLA

DATE

DOWNSAARON

ATTORNEYS | ADVISORS

Jeff Aaron

Founding Shareholder

T (407) 349-3949 | D (850) 312-1559

jeff.aaron@downsaaron.com

www.DownsAaron.com

200 S. Orange Ave., Suite 2250

Orlando, Florida, 32801

April 9, 2026

VIA EMAIL & DOCUSIGN:

Lake County Water Authority

27351 SR 19

Tavares, FL 32778

c/o Roberto “Bobby” Bonilla, Assistant County Manager

roberto.bonilla@lakecountyfl.gov

Re: Engagement Letter - General Counsel to the Lake County Water Authority (the “LCWA”)

Dear Mr. Bonilla:

In accordance with the selection of me and my firm, DownsAaron, PLLC (the “Firm”), by the LCWA, this letter confirms the terms under which we are engaged to represent the LCWA as its General Counsel (“Engagement Agreement” or “Engagement”). We are pleased to serve the LCWA in this capacity and appreciate the confidence you have placed in us.

At the outset of each new engagement, it is our custom and practice to confirm in writing the terms of the professional relationship we are establishing, including the identity of our client, the scope of our professional undertaking, the legal fees and other essential business terms of our representation of the LCWA.

Scope of Representation

We are engaged to represent the LCWA as its General Counsel. This Engagement does not include representation of, and we will not represent, any other person or entity under this Engagement, except as we expressly agree in writing. We will represent the LCWA as its General Counsel and perform the legal services routinely performed by general counsels representing public agencies and special districts in Florida. I will serve as General Counsel, and will provide legal work, together with my firm. We may also retain outside counsel on behalf of the LCWA, as needed. We will oversee, coordinate and manage the services by all firms providing legal services to the LCWA, and ensure that the legal needs of the LCWA are met in a timely, competent, responsive and efficient fashion.

Billing, Fees, Expenses, and Payment of Invoices

Our Firm will charge for our professional services on an hourly basis. I will oversee all of the legal work and serve as lead attorney. Partners will bill their time at \$495.00 per hour, Of Counsel at \$450.00 per hour, Senior Associates at \$425.00 per hour, Associates at \$395.00 per hour, and Paralegals at \$150.00 per hour. We reserve the right to utilize other members of the Firm whenever, in our discretion, we deem it appropriate. If requested, we will be glad to provide you with a schedule of rates presently in effect for all individuals performing work under this Engagement. Our hourly rates vary and are subject to change in the future, generally in January of each year. As referenced above, we may also retain outside counsel on behalf of the LCWA, as needed, to ensure the LCWA has effective representation in all legal matters.

In addition to our professional services, we will bill you for all disbursements and out-of-pocket expenses made or incurred in your case. These typically include items such as document reproduction,

travel expenses, long distance telephone calls, mailing charges, facsimile charges, messenger services and filing or recording fees. We may also use computerized research or other technology services to assist in handling your matters. Those services will be used when we believe that it is appropriate to do so. Expenses incurred or advanced on your behalf will be itemized on our billing invoice. Please note, if we anticipate that substantial expenses will be incurred, we will require that the LCWA pay the vendor directly and/or we may require a deposit from you to cover such expenses.

The LCWA will be billed periodically, usually monthly. Bills are due within seven (7) days of receipt of the invoice. Before they are sent to the LCWA each month, I will personally review all invoices for our professional services to ensure that the charges for our professional services and related costs and expenses were directed by us, and are reasonable and appropriate for the services rendered. We are happy to discuss our billing invoice with you at any time and will welcome the opportunity to address any questions you may have. If the LCWA disagrees with any amount that has been charged, the LCWA agrees to communicate such disagreement to us, in writing, within thirty (30) days of the invoice date. Any disagreement with a bill or charge that is not communicated to us within that period will be deemed waived.

Our professional fees, costs and expenses for this Engagement are not predictable for many reasons and, particularly, because of circumstances that may be out of our control (or the LCWA's). This will confirm that we have made no commitment to the LCWA regarding our maximum compensation regarding this Engagement. Further, it is to be understood that the payment of our compensation for this Engagement is not contingent on the ultimate outcome of any matter arising during this Engagement.

In the event that our invoices are not timely paid, or that payment terms satisfactory to us are not established, we reserve the right to renegotiate the terms of this Engagement and/or to pursue other remedies, including the right to charge you interest of 1.5% per month for any invoice which has not been paid within thirty (30) days of the date the invoice is mailed or emailed to you. We also reserve the right to withdraw as your counsel if you fail to honor your agreement with respect to our legal fees, for any just reason as permitted or required under the Florida Code of Professional Responsibility, or as permitted by the rules of courts of the State of Florida. In the event of our withdrawal, you will promptly pay for all services rendered by us prior to the date of withdrawal.

Dispute Resolution

Should there arise any dispute concerning fees and costs earned and owed to the Firm and, if it becomes necessary for this Firm to retain an attorney or otherwise utilize the Firm's own attorneys to collect such fees and costs, the prevailing party to such dispute will be entitled to recover its attorney's fees, costs and expenses necessarily incurred. In addition, the LCWA and this Firm each hereby waive any right to a jury trial for any controversy, dispute or claim arising out of or related to this Firm's representation of the LCWA and/or this Engagement Agreement, and we further agree that venue for any lawsuit brought thereon shall be Orange County, Florida, where this Engagement Agreement is deemed made and finally executed.

Advance Waiver

It is possible that one or more of our present or future clients have or will have matters adverse to you. Our acceptance of your current representation will preclude us from accepting future representations adverse to you which involve matters substantially related to the work we perform during this Engagement. However, as a condition to our undertaking the representation described in this letter, the LCWA agrees that our acceptance of this engagement shall not preclude us from

representing other clients in the future who may have interests adverse to you with respect to matters not substantially related to the specific matter or matters for which you have engaged our services.

We agree, however, that your consent to, and waiver of, such representation shall not apply in any instance where, as a result of our representation of you, we have obtained proprietary or other confidential information of a non-public nature, that, if known to such other client, could be used in any such other matter by such client to a material or potential material disadvantage to you.

No Representation of Corporate Affiliates

This Engagement Agreement confirms that unless the LCWA and the Firm have an explicit understanding to the contrary, in writing, the Firm is engaged by and will represent the LCWA and the Firm is not engaged to represent any of your parent companies, subsidiaries, affiliated entities, officers, directors, members, partners, shareholders or employees.

Termination

Our representation of the LCWA in this Engagement will begin on _____, and continue for a term of five (5) years. The LCWA may terminate this Engagement before its end by providing thirty (30) days' prior written notice to us. The Firm may terminate this Engagement before its end by providing sixty (60) days' prior written notice to the LCWA.

Unless previously terminated, our representation under this Engagement will terminate upon sending the final invoice for general counsel services, and the attorney-client relationship will terminate completely (absent any new or subsequent engagements).

Client Review

I am happy to answer any questions you may have regarding this Engagement Agreement. Likewise, you have the right to have this Engagement Agreement reviewed by an outside party, attorney, or other professional prior to signing. You understand that the Firm is not engaged until the signed original Engagement Agreement is returned to us.

Electronic Data

This Engagement Agreement provides notice and disclosure that the Firm is presently and will continue to maintain confidential and privileged information in electronic form. This practice will be followed in our work under this Engagement. The Firm takes reasonable measures, consistent with current industry practices, to protect such confidential and privileged information.

Outcome or Result

We will strive to do our best to meet the LCWA's needs in this engagement. Either at the commencement of this engagement or during the course of representation, we may express opinions or beliefs concerning the various matters in which we provide counsel, including recommended courses of action, the anticipated results, and litigation. Any such statement made by any attorney, consultant, or employee of our Firm is intended to be an expression of opinion only, based on information available to us at the time, and should not be construed as a promise or guarantee. The Firm cannot and will not make any representations, warranties, or guarantees concerning the outcome of this or any representation we undertake. The Firm will give you our best advice, render opinions, and seek to obtain the desired result. In this regard, it is most important that we communicate regularly.

File Retention

Following the termination of this Engagement and our representation, any otherwise nonpublic information you have supplied to the Firm (unless previously removed or destroyed by specific request) will be retained by us and kept confidential in accordance with applicable rules of professional conduct, and the Firm reserves the right to send such materials to off-site storage at any time. Any retrieval of material once the file is closed may incur an expense for which The LCWA will be responsible. The Firm's retention policy provides that we retain stored and closed files for a period of ten (10) years after which they may be destroyed. Thus, if there are any documents that you need from those we possess, we recommend that you obtain them at the conclusion of our engagement on this matter. Failure to do so will waive and indemnify the Firm from any liability for the destruction of materials.

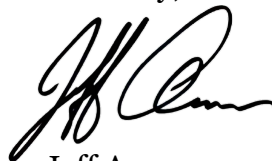
Entire Agreement

These terms constitute our entire agreement for the representation of the LCWA, as its General Counsel, under this Engagement Agreement. There are no other arrangements or agreements regarding our representation of the LCWA which are not expressed in this Engagement Agreement. Any modification of the Engagement Agreement must be in writing, by mail, fax or email. The Engagement Agreement is binding on the LCWA, and on DownsAaron PLLC, and their respective legal representatives and successors of each.

If the terms of this Engagement as set forth in this letter meet the LCWA's approval, please execute this Engagement Agreement by signing below. Once executed, kindly send to our office.

We appreciate the confidence and trust the LCWA has placed in me and DownsAaron as its General Counsel and we look forward to working closely with the LCWA, its trustees and administrators. Please do not hesitate to contact me if you have questions regarding the status or progress in any matter we are handling.

Sincerely,



Jeff Aaron

By: _____
Lake County Water Authority

Name: Roberto Bonilla

Title: Assistant County Manager