BLUE LAKE
COMMUNITY DEVELOPMENT DISTRICT

LEE COUNTY

REGULAR BOARD MEETING
JULY 9, 2024
3:00 P.M.

Special District Services, Inc.
The Oaks Center
2501A Burns Road
Palm Beach Gardens, FL 33410

www.bluelakecdd.org
561.630.4922 Telephone
877.SDS.4922 Toll Free
561.630.4923 Facsimile

AGENDA
BLUE LAKE
COMMUNITY DEVELOPMENT DISTRICT
WildBlue Social Building
18721 WildBlue Boulevard
Fort Myers, Florida 33913
REGULAR BOARD MEETING
July 9, 2024
3:00 P.M.

A. Call to Order
B. Proof of Publication……..Page 1
C. Consider Appointment to Board Vacancy in Seat 4…….Page 2
D. Administer Oath of Office and Review Board Member Duties and Responsibilities
E. Establish Quorum
F. Additions or Deletions to Agenda
G. Comments from the Public for Items Not on the Agenda
H. Approval of Minutes
    1. June 11, 2024 Regular Board Meeting……Page 6
I. Old Business
J. New Business
    1. Presentation of Cummins Cederberg Lake Bank Repair Report…….Page 11
K. Administrative Matters
    1. Manager's Report
        - Financials……...Page 52
    2. Engineer's Report
    3. Attorney's Report
L. Board Members Comments
M. Adjourn

Publication Date
2024-07-01

Subcategory
Miscellaneous Notices

BLUE LAKE COMMUNITY DEVELOPMENT DISTRICT
NOTICE OF REGULAR BOARD MEETING
NOTICE IS HEREBY GIVEN that the Board of Supervisors of the Blue Lake Community Development District will hold a Regular Board Meeting in the WildBlue Social Building located at 18721 WildBlue Boulevard, Fort Myers, Florida 33913 at 3:00 p.m. on July 9, 2024.
The purpose of the meeting is to address any business to properly come before the Board. The meeting is open to the public and will be conducted in accordance with the provisions of Florida law. A copy of the agenda for this meeting may be obtained from the Districts website or by contacting the District Manager at 239-444-5790 and/or toll free at 1-877-737-4922 prior to the date of the meeting.
From time to time one or two Supervisors may participate by telephone; therefore, a speaker telephone will be present at the meeting location so that Supervisors may be fully informed of the discussions taking place. Said meeting may be continued as found necessary to a time and place specified on the record.
If any person decides to appeal any decision made with respect to any matter considered at this meeting, such person will need a record of the proceedings and such person may need to ensure that a verbatim record of the proceedings is made at his or her own expense and which record includes the testimony and evidence on which the appeal is based.
In accordance with the provisions of the Americans with Disabilities Act, any person requiring special accommodations or an interpreter to participate at this meeting should contact the District Manager at 239-444-5790 and/or toll free at 1-877-737-4922 at least seven (7) days prior to the date of the meeting.
Meetings may be cancelled from time to time without advertised notice.
BLUE LAKE COMMUNITY DEVELOPMENT DISTRICT
www.bluelakecdd.org
No.10318961 July 1, 2024

June 24, 2024

To Whom It May Concern:

Please accept this cover letter and resume in application for the vacant seat #4 on the Blue Lake CDD.

As you will see on the included resume, I believe there are 5 reasons I would be an ideal fit for this vacancy:

1. I have a degree in engineering with more than 10 years experience working for some of the most highly regarded companies in the world.
2. I have an MBA and more than 15 years experience in finance and accounting. For example, as CEO of Fair Wind Sailing I was responsible for developing and managing annual operating budgets. I also developed annual capital budgets and acquired the necessary funding to meet those requirements. Moreover, I was tasked with tax compliance in multiple taxing jurisdictions.
3. As a licensed US Coast Guard Master Captain, I have more than 20 years experience in the marine industry. From this work, I possess detailed knowledge regarding hurricane and storm preparation (in fact have been aboard vessels for 2 hurricanes), storm recovery, and wave forecasting. I am currently utilizing this knowledge as part of the Wild Blue Amenities Lake Management Committee.
4. I have a long history of public service. This includes serving as both Treasurer and CFO of Michigan Swimming. Also, I was on the Board of Education in Ridgefield, CT where we successful placed public bond issues for both new technology purchases and new school construction. While of the Board of Atlantis Swimming, I was responsible for capacity planning and management as well as asset management.
5. I am running unopposed for this seat in November.

I thank you for your consideration and look forward to hearing from you.

Sincerely,

Captain David Bello

13685 Blue Bay Circle
248-563-5413
Captdave@fairwindsailing.com

CAPTAIN DAVID C. BELLO
13685 Blue Bay Circle
Ft Myers, FL 33913
(248) 563-5413
captdave@fairwindsailing.com

PROFESSIONAL EXPERIENCE SUMMARY

- *10+ years engineering experience*
  - Process and Quality Control Engineer, Exxon Office Systems, Lionville, PA –responsible for product quality and manufacturing process improvement
  - Operations Manager, General Electric Aerospace, Mullica Hill, NJ – Member of start-up team for greenfield manufacturing plant followed by manufacturing operations management
  - Program Manager / Material Manager, Flextronics Inc., Great Falls, SC – Managed multi-million dollar inventory, led client relationships
  - Vice President Corp Development, CMGI Solutions, Andover, MA – Identified acquisition targets, negotiated deals and acquired assets to grow start-up company

- *20+ years executive leadership*
  - Founded and led Fair Wind Sailing Inc., Bingham Farms, MI. Performed all aspects of executive leadership for international sailing company. Responsible for all financials requirements across multiple taxing jurisdictions. Hired Captains, mechanics, etc. Acquired competing business in BVI.
  - Captained voyages over 15,000 nautical miles, including open ocean voyages from St Thomas, USVI – Annapolis, MD and Abaco, Bahamas – St Thomas, USVI (double-handed)
  - Extensive sailing on the US East Coast from Maine to Florida, Great Lakes, Bahamas, Caribbean and Chesapeake Bay and Atlantic ICW
  - Completed capacity planning , asset acquisitions, asset maintenance and asset financing

- *5 Years management consulting experience*
  - Principle at Booz, Allen and Hamilton, New York, NY
  - Managed multi-million dollar, international consulting engagements

EDUCATION HISTORY

MBA , Columbia University – New York, New York
Dean's List, Statistics Teaching Assistant

BS - Engineering, University of Pennsylvania – Philadelphia, Pennsylvania

GOVERNMENT AND VOLUNTEER HISTORY

- Member -- Wild Blue Amenities Lake Management Committee – Current
- Member -- Wild Blue Amenities Hearing Committee – Current
- CFO – Michigan Swimming, Lansing, MI
- Treasurer – Michigan Swimming, Lansing, MI
- Board Member – Planning Commission, Bingham Farms, MI
- Board Member – Cable Regulatory Board, Birmingham MI
- Board of Directors – Furniture Bank of Oakland County, Pontiac, MI
- Board of Directors – Atlantis Swimming, Birmingham, MI
- Board of Education – Ridgefield, CT

From: Karla Rapponotti <karlarapponotti@gmail.com>
Sent: Wednesday, June 12, 2024 9:23 AM
To: Kathleen Meneely <kmeneely@sdsinc.org>
Cc: Markrapponotti@aol.com
Subject: Blue Lake CCD Board

Ms. Kathleen Meneely
District Manager
Board of Supervisors
Blue Lake Community Development District

Re Candidacy for Land Owner Seat #4

Good afternoon Kathleen

Please accept this letter and the attached resume regarding my candidacy for Seat #4 on the Blue Lake CDD Board. Beyond my experience regarding insurance coverage matters and complex architects & engineers litigation, I also served on the Board of Directors of 653 North Kingsbury. It is a 125 unit condominium association in Chicago. I am a full time resident of the Vista Blue community having relocated here in May 2023.

I am confident that I have the background and experience to be an addition to the current board regarding challenges that face the community.

I look forward to hearing from you

Regards

Mark

Mark S. Rapponotti
14667 Blue Bay Circle
Ft. Myers, Fl 33913

(312) 805-2433

BLUE LAKE COMMUNITY DEVELOPMENT DISTRICT
REGULAR BOARD MEETING
JUNE 11, 2024

A. CALL TO ORDER

The June 11, 2024, Regular Board Meeting of the Blue Lake Community Development District (the "District") was called to order at 3:02 p.m. in the WildBlue Social Building located at 18721 WildBlue Boulevard, Fort Myers, Florida 33966.

Ms. Meneely advised that she had received a resignation from Tommy Dean of Seat #5.

A **motion** was made by Mr. Edwards, seconded by Mr. Hasty and passed on a vote of 2 to 0 accepting the resignation of Tommy Dean.

Mr. Haber stated that in order to have a meeting, 3 Supervisors would need to be present so the remaining Board Members would need to appoint a third member.

Mr. Edwards made a **motion**, seconded by Mr./Hasty and passed unanimously appointing Matthew Shorey to Seat #5.

Ms. Meneely then administered the oath of office to Mr. Shorey and Mr. Haber went over the responsibilities and laws concerning Board membership.

B. PROOF OF PUBLICATION

Proof of publication was presented which showed that notice of the Regular Board Meeting had been published in the *Naples Daily News* on May 31, 2024, as legally required.

C. ESTABLISH A QUORUM

It was determined that the attendance of the following Board Members constituted a quorum:

Chairman	Chris Hasty	Present
Vice Chairman	Scott Edwards	Present
Supervisor	Matthew Shorey	Present
Supervisor	Vacant	
Supervisor	Vacant	

Also present were the following Staff Members:

District Manager	Kathleen Meneely	Special District Services, Inc.
District Counsel	Wes Haber (via phone)	Kutak Rock LLP
District Engineer	Frank Savage	Barraco and Associates, Inc.

Also present were Chris Fiore & David Furley of Gurley Fant (via phone) and Jeff Walker of Special District Services, Inc. (also present via phone).

Also present were the following District residents: Mark Rapponotti, Bob McCormick, Janine Black, Marc & Sydell Nusbaum, Robert Kudlacik, Chad Culvahouse, Paul Thell, Steve Hamburger, Jim Spaulding, Lisa Tilson, Stephanie Vitron and Linda Jones.

District residents present via phone were Amy Leach, Greg Miholic, Dave Bello and others.

D. ADDITIONS OR DELETIONS TO AGENDA

Ms. Meneely asked that Mr. Shorey be designated as an Assistant Secretary.

A **motion** was made by Mr. Edwards, seconded by Mr. Hasty and passed unanimously designating Mr. Shorey as Assistant Secretary.

Ms. Meneely requested that the presentation from Gurley Fant (H1) be considered first and it was the consensus of the Board to do so.

E. COMMENTS FROM THE PUBLIC FOR ITEMS NOT ON THE AGENDA

Mr. McCormick asked who was in charge of taking out fish, as he saw residents shocking and putting fish back into the lake, assuming they were trying to get trophy fish. He stated that someone in a fishing group told the club to do this by an environmental group. Mr. Hasty stated that neither this Board nor Wild Blue CDD had been asked about stocking or shocking fish in the lake. Mr. McCormick asked if this would need to go through the CDD and if the lake is a catch and release body to which Mr. Edwards responded in the affirmative to both questions. Dr. Hamburger stated that he thought it was against Florida law to move fish from one lake to another.

F. APPROVAL OF MINUTES

1. May 14, 2024, Regular Board Meeting

The minutes of the May 14, 2024, Regular Board Meeting were presented for consideration.

Mr. Hasty noted that on Page 3 of the minutes, item I1, Cederberg Cummins should be Cummins Cederberg.

A **motion** was then made by Mr. Edwards, seconded by Mr. Hasty and passed unanimously approving the minutes of the May 14, 2024, Regular Board Meeting, as amended.

G. OLD BUSINESS

There were no Old Business items to come before the Board.

H. NEW BUSINESS

1. Gurley Fant Construction Litigation Attorney Research Update

Mr. Gurley presented their preliminary opinion as to the statute of limitations for claims based on alleged defects in the retaining wall and littoral shelf within the District. He stated his opinion, based on the review of documents, plans, e-mails and photos that the courts would interpret the wall's failure during Hurricane Ian as a latent defect, meaning the CDD would not have discovered any defect prior to the

storm. He continued that the stature of limitations for a latent defect runs from the time the defect is discovered which would be the September 2022 storm or later, when the engineer reports were obtained. Mr. Haber stated that there had been discussion on plat versus deed and Gurley Fant will have a real estate attorney brought in to research this area under their Gurley Fant's umbrella. Mr. Gurley explained that they were construction attorneys and the opinion on this issue would come from a real estate lawyer.

2. Update on Cummins Cederberg Lake Bank Repair Report

Mr. Edwards advised that there was no formal update as the report had yet to be received by the District. Mr. Savage stated that Cummins Cederberg was working with the Blue Lake CDD as well as Wild Blue CDD. He added that Wild Blue CDD had received a draft and he anticipated similarities in the two reports. Mr. Hasty added that in Wild Blue, the report included seven different options, each varying in harding and the wave energy that could be handled. He continued that in Wild Blue's report, the proposed costs assumed 100% replacement at a cost of $50 Million or $2,000 per linear foot. Mr. Hasty stated that he believed this is too high, as it does not make sense to make repairs or replace where not necessary. He added that he intends to challenge the engineer when he is back in the office from an overseas trip. He also stated that the CDD's engineer, Barraco & Associates, were working with Cummins Cederberg and sending cross sections to contractors to get an idea what they would charge for that type of repair. Mr. Edwards indicated that it sounded like the Wild Blue report was based on repairs to the entire lake and at the most extreme cost and Mr. Hasty agreed. Mr. Savage opined that he had reviewed the Wild Blue draft report and did not believe 100% replacement was an appropriate solution and he hopes to see changes incorporated into the Blue Lake CDD report once completed.

Ms. Vitron asked about fetch and if a storm could come from the other direction. Mr. Edwards responded that the fetch was being looked at overall, no matter what the wind direction is. Mr. Hasty added that where the area is located in the State, it makes it difficult to get wind in a different direction, explaining the way storms hit the area. Dr. Hamburger asked how many linear feet there were in Vista Blue and Mr. Savage responded 3,500 feet whereas Wild Blue has 12,000 feet so Blue Lake CDD is a quarter of the Wild Blue estimate.

3. Consider Resolution No. 2024-04 – Adopting a Fiscal Year 2024/2025 Proposed Budget

Resolution No. 2024-04 was presented, entitled:

RESOLUTION 2024-04

A RESOLUTION OF THE BOARD OF SUPERVISORS OF THE BLUE LAKE COMMUNITY DEVELOPMENT DISTRICT APPROVING A PROPOSED BUDGET FOR FISCAL YEAR 2024/2025 AND SETTING A PUBLIC HEARING THEREON PURSUANT TO FLORIDA LAW; ADDRESSING TRANSMITTAL, POSTING AND PUBLICATION REQUIREMENTS; ADDRESSING SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

Mr. Walker stated that an assessment increase was required primarily due to the creation of a maintenance reserve in the amount of $50,000 and addressing deficit funding from last year. Ms. Meneely added that Supervisor stipends were added in case the new resident Board Members want to receive them. She continued that legal services were also increasing, not for day-to-day legal expenses, but if Gurley Fant or other outside legal opinions are necessary. Mr. Haber went over the budgeting process, noting that the budget could be lowered at the public hearing, but not raised. Mr. Hasty stated

that the net increase was $270 per unit for O&M and an audience member stated it came to 8.7%. Mr. Edwards added that the increase was the same for every lot size.

Ms. Leach asked if it ends up that Lennar is responsible for the wall, will expenses will be reimbursed. Mr. Haber stated that any party in litigation can ask to recover amounts and use funds to offset future assessments. He added that settlement discussions on damages would be taken into consideration.

A **motion** was made by Mr. Edwards, seconded by Mr. Hasty and passed unanimously adopting Resolution No. 2024-04, as presented, setting the Public Hearing for August 13, 2024, at 3:00 p.m.

I. ADMINISTRATIVE MATTERS

1. Manager's Report

- **Financials**

Ms. Meneely went over the financials. Mr. Hasty asked if all revenue was in to which Mr. Walker responded that close to 100% had been received.

Ms. Meneely advised that the Board vacancy announcement had been sent to the HOA and she anticipated presenting applications at the July meeting.

Ms. Meneely reminded the Board that their next meeting was scheduled for July 9, 2024, at 3:00 p.m.

2. Engineer's Report

Mr. Savage had nothing further to report at this time.

3. Attorney's Report

Mr. Haber stated that he received a question from Mr. Miholic regarding land ownership for purposes of the landowner election. He added that the lake and preserve property was greater than the number of lots so the landowner controls the outcome of that election.

J. BOARD MEMBER COMMENTS

There were no further comments from Board Members.

K. ADJOURNMENT

There being no further business to come before the Board, a **motion** was made by Mr. Shorey, seconded by Mr. Edwards and passed unanimously adjourning the Regular Board Meeting at 4:11 p.m.

ATTESTED BY:

_____	_____
Secretary/Assistant Secretary	Chairperson/Vice-Chair

CUMMINS | CEDERBERG
Coastal & Marine Engineering

Alternatives Analysis Report

Blue Lake Shoreline Stabilization

Lee County, Florida

June 2024

Prepared for:
Blue Lake Community Development District
Attn: Ms. Kathleen Meneely
27499 Riverview Center Blvd. #253
Bonita Springs, FL 34134

DRAFT

Prepared by:
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CumminsCederberg.com

Alternatives Analysis Report
Blue Lake Shoreline Stabilization

18701/18731 WildBlue Blvd,
Fort Myers, FL 33913

June 2024

Prepared for:
Blue Lake Community Development District
Attn: Ms. Kathleen Meneely
27499 Riverview Center Blvd., #253
Bonita Springs, Florida 34134

Prepared by:

Stokes Patterson	Jordon Cheifet, PE

Document Status

Version	Doc type	Reviewed by	Approved by	Date issued
V01	DRAFT	Rebecah Delp	Jordon Cheifet, PE	6/24/2024

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CUMMINS | CEDERBERG
Coastal & Marine Engineering

Blue Lake Shoreline Stabilization Alternatives Analysis

Fort Myers, Florida

June 28, 2024

1 INTRODUCTION

1.1 General

The Blue Lake Community Development District (Blue Lake CDD) engaged Cummins Cederberg, Inc. (Cummins Cederberg) to investigate a retaining wall that experienced damage during Hurricane Ian and to conduct an alternatives analysis to evaluate various options to restore shoreline stabilization along the Blue Lake development's waterfront. A cursory inspection of the existing shoreline was conducted by a Cummins Cederberg coastal engineer on March 5th, 2024. Concurrently, a Cummins Cederberg marine biologist documented the existing environmental conditions at the site. Cummins Cederberg was also tasked by the Blue Lake CDD (Client) to conduct an in-depth assessment of different shoreline stabilization options based on the inspections and subsequent discussions with the Client to provide a baseline document (i.e., alternatives analysis) to support the Client's strategy and decision process on which option to move forward with. This alternatives analysis report provides a summary of the due diligence completed by Cummins Cederberg relative to the environmental permitting and engineering feasibility of different shoreline stabilization options for the existing hardened shoreline on Blue Lake located at 18701/18731 WildBlue Blvd, Fort Myers, FL 33913 (Project).

1.2 Project Introduction

The Project site is located along the shoreline of Blue Lake, within the Blue Lake community, north of Corkscrew Road and south of Alico Road (**Figure 1** and **Figure 2)**. The Project site consists of approximately 18,000 linear feet of shoreline. The Project site is influenced by winds from Blue Lake itself, Estero Bay, and the Gulf of Mexico. At approximately 240 acres, the lake's fetch is large enough for wind energy to cause significant wave action, resulting in the need for proper shoreline stabilization. In addition to wind-generated waves, boat and personal watercraft wakes cause wave action likely contributing to shoreline erosion during non-storm conditions. Blue Lake is a non-tidal waterbody that was previously used for mining, filled, and developed to

create the lake front community. The surrounding area is encompassed by protected areas of wetlands, which drain into the Blue Lake community. The lake perimeter features a hardened shoreline with a shallow littoral shelf and steep drop-off depths of up to 20 feet (Hans Wilson & Associates, 2023).

Figure 1. Project location.

1.3 Objective

The primary objective of the alternatives analysis is to evaluate different shoreline stabilization methods (e.g., retaining walls, living shorelines, rock revetments) and layouts (i.e., same vs. expanding footprints) relative to engineering design and environmental permitting. Additional engineering design considerations evaluated include existing shoreline conditions, extreme events, constructability, stormwater runoff and reallocation, scour, sediment transport, and undermining. The environmental permitting factors evaluated include wetland resources (e.g., wetland and terrestrial vegetation), required regulatory authorizations, property ownership, and estimated permitting timeline and fees. General discussions of the next steps for planning, permitting, design, cost, and construction are also presented. This summary is based on Cummins Cederberg's experience, available background information, site inspections, surveys,

an initial review of pertinent regulations as they apply to this specific site, and precedent guidance; it does not constitute a legal opinion.

Figure 2. Project site, red line indicating a hardened shoreline structure.

1.4 Existing Conditions

Cummins Cederberg conducted an initial site visit on March 5, 2024, to become familiar with the Project site and needs of the Blue Lake CDD. During the site visit, general observations of existing environmental conditions were documented, including presence of wetland vegetation (e.g., emergent and aquatic vegetation), as well as upland and littoral shelf plantings.

The vast majority of Blue Lake's shoreline is protected by a vinyl sheet pile retaining wall. The lake features a short stretch of shoreline with riprap revetment placed over a failed portion of retaining wall, located on the north side of the lake (**Photo 1**). The lake also features portions of riprap armoring adjacent to a community boat ramp and lake elevation control weirs. Waterward of sections stabilized by a retaining wall, an emergent littoral shelf was observed in varying widths (with an average of 15 feet from the retaining wall face at the time of the site visit) and consisting

of a rocky substrate with limited vegetation (**Photo 2**). Landward of the retaining wall are residential lots with a raised berm directly behind the retaining wall. The berm height varied between 0.8 to 5.1 feet above the retaining wall cap elevation and were located approximately 6 to 26 feet behind the existing retaining wall. Residential structures and pools were not observed within the immediate vicinity of the retaining wall; however, minor structures including weirs, docks, and outfalls were observed along the shoreline. The retaining wall's exposed height varied between approximately 1 and 4 feet (**Photo 3**). Minor to moderate wave action from boat wake was observed to travel into the littoral shelf and impact the shoreline. Although the wave height was only approximately 1-foot, perpetual action could cause undermining and scour in front of the wall.

Photo 1. Seawall removed/encapsulated with riprap.

Photo 2. Littoral shelf exhibiting limited vegetation.

Photo 3. Seawall exposed height of approximately 1.85 feet.

The vinyl sheet-pile retaining wall was typically observed with a composite deck cap installed shore-perpendicular to form a narrow walking area. The sheet piles themselves have a typical length of 6 ft. The sheet piles are connected to tie-backs through a composite and timber beam, spanning approximately 8 ft back into concrete anchors. The condition of these walls varied throughout the Project extent. In the central sections, the vinyl sheet pile walls displayed slight waterward rotation, scour, upland depressions, and scattered cap damage (**Photo 4**). The vinyl sheet pile walls showed signs of more severe damage and wall failure towards the northern end of the lake (**Photo 5**). Sections of the wall displayed severe waterward rotation, to the point of total wall failure. In some of these sections, the wall's anchoring system was left exposed.

Shoreline vegetation has been documented to provide erosion protection within waterfront systems by lessening wind and wave energy and holding sediment in place. However, it appeared the scarce vegetation provided little protection from erosion. Estimated erosion was observed at approximately one foot of lost sediment on one of the dock pilings as it appeared to have been installed with a concrete footer (**Photo 6**).

Photo 4. Typical central retaining wall.

Photo 5. Severe waterward rotation and wall failure.

Photo 6. Sediment erosion on a dock piling.

1.5 Property Ownership

The submerged lands of the lake and immediate shoreline area or lake maintenance easement area (Parcel No. 20-46-26-L2-1100L.0000, Folio ID No. 10600511), as well as surrounding roadways and rights-of-way (various parcels), are owned by CalAtlantic Group Inc. according to Lee County Property Appraiser. There are three (3) individual community docking facility parcels along the lake's shoreline and one (1) parcel associated with a community boat ramp. One of the docking facility sites (eastern) is owned by CalAtlantic Group Inc. The remaining docking facility parcels, community boat ramp, and other common spaces are owned by the VistaBlue Homeowners Association, Inc. (i.e., operating and maintenance entity for Blue Lake CDD). Adjacent single-family residence parcels surrounding the lake are privately owned. Conservation lands owned primarily by CalAtlantic Group Inc. exist beyond the developed parcels. All parcels mentioned are included within the Blue Lake CDD, which is a local, special-purpose government entity, entirely within unincorporated Lee County, authorized by Chapter 190 of the Florida Statutes and established in August 2018 by the Lee County Board of County Commissioners under Florida Ordinance No. 18-20. The Blue Lake CDD is able to fund, plan, acquire, operate, and maintain community-wide improvements in planned communities within its designated area.

It is important to note that shoreline stabilization methods may impact structures (e.g., personal docks and floating platforms) constructed by adjacent upland homeowners **(Photo 7)** or associations. During the implementation of shoreline stabilization solutions, portions of the existing docks may be required to be temporarily removed or relocated to facilitate construction. A Memorandum of Understanding (MOU), or similar, is recommended prior to any measures being implemented and to ensure all parties potentially involved or impacted are being considered. For the purposes of this analysis, it is assumed that the upland property owners will have no objection to the shoreline improvements.

Photo 7. Single-family residential dock.

2 ENGINEERING CONSIDERATIONS

2.1 Shoreline Stabilization Alternatives

Cummins Cederberg evalutated multiple shoreline stabilization alternatives to minimize erosion and reinforce the shoreline and uplands from wave action during extreme events. The Client should consider the options presented in the following sections relative to construction materials, permitting requirements, and level of environmental impact, as each has potential benefits and drawbacks. Some alternatives can be combined to provide the preferred option based on aesthetics, budget, and functionality. Further, the selected option(s) should be implemented simultaneously along the shoreline, as materials and construction costs may increase over time and the economies of scale afforded by permitting, designing, and mobilizing for construction only once. Below is a description of each shoreline stabilization alternative to reduce further erosion from and provide upland protection against extreme events and vessel wakes. Conceptual renderings of these alternatives and their recommended locations can be found in **Appendix A.**

It is important to note that the viability of these alternatives is based on limited field measurements. Detailed topographic and bathymetric surveying and geotechnical investigations should be performed to confirm design feasibility. Each alternative listed is approximated to have a service life of over 30 years with routine monitoring and maintenance, which is standard for waterfront infrastructure. There appear to be portions of the existing wall that do not yet exhibit signs of failure. These portions could remain in place and monitored, retrofitted to increase stability, or be replaced with the shoreline stabilization alternatives listed below. It is important to note that the original design of the existing retaining wall is unknown so leaving it in place may carry increased risk of failure during extreme events. Additional stormwater management system (SWMS) components (e.g., outfalls, weirs) should be considered during shoreline stabilization efforts to maintain the system's functionality (**Photo 8**).

Photo 8. Lake level control weir.

Photo 9. Submerged stormwater outfall headwall.

2.1.1 Unstabilized Shoreline

An unstabilized shoreline (Existing Conditions) includes leaving the shoreline in its existing condition. The existing retaining wall will remain in place where intact and the shoreline will remain exposed in locations where the retaining wall has failed. In cases where the retaining wall is absent, the shoreline would be directly exposed to wave energy. Without shoreline stabilization, the effects of extreme events and vessel wakes may cause continued erosion of the shoreline. The shoreline and retaining wall should be periodically inspected by a qualified engineer with waterfront structure inspection experience and the shoreline surveyed to monitor the condition both before and after storm events. In locations where the existing retaining wall remains in place, the original design criteria, which is unknown, would remain and may lead to similar failure observed during Hurricane Ian. Restoration of the eroded shoreline with fill to the previously authorized fill template could also be considered.

2.1.2 Re-Graded Shoreline

A re-graded shoreline (Option 1) includes changing the slope upland of the footprint of the existing retaining wall. The slope will be changed from a vertical retaining wall to roughly a 2:1 slope. Decreasing the slope of the shoreline would help to reduce overall wave runup and overtopping, which likely contributed to the original failure, and dissipate wave energy caused by boat wakes and extreme events. This option would provide continued protection for the shoreline and uplands, but not as much as a more hardened shoreline approach. Implementation of this approach will likely require earthwork to be performed from the uplands along residential properties.

2.1.3 Added Fill Shoreline

An added fill shoreline (Option 2) involves increasing the upward slope of the shoreline, seaward of the retaining wall footprint to limit reclamation of upland area. Similar to Option 1, the slope will be changed from a vertical retaining wall to roughly a 2:1 slope. Decreasing the slope of the shoreline would help to reduce overall wave runup and overtopping, which likely contributed to the original failure, and dissipate wave energy caused by boat wakes and extreme events. The shoreline would be graded to a roughly 2:1 slope along approximately half of the exposed littoral shelf with the rest planted with native vegetation. The vegetation holds onto sediment, helping to reduce erosion while providing a natural aesthetic.

It is important to note that this option would provide continued protection for the shoreline and uplands, but not as much as a more hardened shoreline approach as vegetation provides a low level of sediment stabilization during extreme events; however, this option should be considered for use in areas that are sheltered.

2.1.4 Erosion Control Mats

An erosion control mat (Option 3) is a flexible shoreline stabilization product made to adapt to the existing landscape and rest on grade. These mats are typically used along shorelines or in runoff control areas to minimize erosion and retain a specific topographic shape or as boat/kayak ramps. A common form of erosion control mat consists of a series of precast concrete blocks connected

by steel cables to form a mat. The blocks can be open or closed-faced, and different products can have complete coverage of the soil in between the blocks, or the blocks can be spaced to allow vegetation to grow through the mat to limit exposed concrete and have a more natural green appearance (**Photo 10**). It is important to note the erosion control mats will likely require the excavation of existing vegetation, re-grading of the existing embankment, and addition of fill material to prepare the slope.

Photo 10. Vegetation growing through a concrete erosion control mat.

2.1.5 Geocells

Similar to an erosion control mat, Geocells (Option 3 – Alt. 1[1]) are an at-grade, interconnected honeycomb-like network that confines and stabilizes soils that would otherwise be unstable under loading. Geocells are an efficient and economical product used for fast-built unpaved roadways and retaining walls, erosion control of slopes, and stormwater control in channels. Made from robust high-density polyethylene (HDPE), geocells offer a robust, durable solution to address shoreline stabilization. The individual cells range from 3” to 9” deep and would require minor excavation to be installed on the existing slope. The geocells are anchored down using proprietary pins. A geotextile fabric would be installed between the soil and Geocells to control soil losses through the voids. The individual cells would be backfilled with crushed stone below water to account for scour. The individual cells above water could be backfilled with soil and sodded to restore the existing grassy slope (**Photo 11**).

[1] No concept drawing provided; Geocells are expected to be similar in profile and footprint to concrete erosion control mats (Option 3).

It is important to note that while this option would provide more protection than Option 1 and Option 2, the level of protection would still be less than a more hardened shoreline approach as the Geocells still allow direct interaction between the waves and soil; however, this option should be considered for use in areas that are sheltered.

Photo 11. Geocells with vegetation.

2.1.6 Erosion Control Socks

Similar to erosion control mats and Geocells (Option 3 – Alt. 2[2]), erosion control socks are installed at grade and feature a polyethylene mesh that is placed on the existing shoreline. The top of the mesh is anchored upland, into the shoreline, while the bottom is located waterside, often past the waterline. Erosion control socks are folded in half landward to create a pocket. Sediment is then filled into the gap, which is anchored once again, further upland. The socks are able to keep the filled sediment inside, while providing a stabilizing barrier to the existing shoreline. Once installed, erosion control socks can be seeded, sodded, or planted, with vegetation growing up through the mesh (**Photo 12**). Erosion control mats could be effective in regions where wave energy is relatively low, providing protection against shoreline recession and an added barrier to the uplands.

[2] No concept drawing provided. Erosion control socks are expected to be similar in profile and footprint to concrete erosion control mats (Option 3).

Before

During

After

Photo 12. Erosion control socks.

2.1.7 Modular Block Wall

Modular block walls (Option 4) are typically precast concrete slabs that can be stacked to form a nearly vertical retaining wall (**Photo 13**). The blocks can be simply stacked upon each other and connected into grooves designed in the precast mold, or the blocks can be reinforced through various anchoring measures extending into the soil that the wall retains. Reinforcement is typically only required for walls of elevations multiple stories high or containing heavy loading such as emergency vehicles adjacent to the blocks. The molds often have stamping templates to create a rock appearance, as well as multiple color options to look like limestone, granite, or other types of material. The blocks can also be cast to allow for planting space within a concrete pocket to facilitate vegetation growth and a more natural green aesthetic.

It is important to note that these walls appear to lack adequate scour protection when installed traditionally and are prone to undermining or potential rotation. In order to prevent damage from wave action, these walls would have to be partially buried or armored with a rip-rap toe along the mudline, both of which would increase the overall project cost. Further, the individual units are generally required to be brought in by flatbed or boom truck (Redi-Rock International, LLC, 2020) and would require multiple deliveries to provide enough blocks for the required wall section along the shoreline. Further discussion with local contractors to determine the feasibility of a large-scale installation by barge should be completed prior to selecting this option.

Photo 13. Modular block retaining wall.

2.1.8 Retaining Wall with Toe Stone

A retaining wall with toe stone (Option 5) is typically a sheet pile wall constructed to retain upland soil and create a vertical face along the shoreline (**Photo 14**). The sheet piles help mitigate incoming wave action and cause waves to reflect back into open water. Many different sheet pile materials could be used to reinforce the shoreline including wood, fiber-reinforced polymer (FRP), vinyl, aluminum, concrete, and steel, and each has its own benefits and drawbacks with regards to price, strength, installation methods, durability, and aesthetic. Depending on the amount of loading on the wall, additional reinforcement measures such as tie backs or batter piles may be required to limit cracking, deflection, and overturning of the wall.

Retaining walls would be effective across all areas of the Project shoreline, especially in open areas where the littoral shelf width is particularly narrow or the fetch is large. Wooden retaining walls generally have the shortest service life out of the retaining wall materials and may be difficult to install with the shallow rock layer. Aluminum retaining walls are more brittle compared to FRP, vinyl, concrete, and steel and more prone to bending during normal service with higher retained heights. Steel and concrete retaining walls generally will provide the most robust shoreline stabilization for high retained heights and more extreme service conditions; however, they are not recommended due to their high price and maintenance requirements. A properly designed FRP or vinyl retaining wall with a concrete cap and bead of riprap toe scour protection is more suitable to the Project site's shoreline.

It is our understanding that the Project site has a thick limestone layer located near the surface of the shoreline. The presence of this layer could make the installation of the FRP and vinyl retaining walls more difficult without pre-punching or trenching and should be further evaluated based on a pre-design geotechnical investigation. An option that could also be considered is the use of pin

piles to “toe” the sheet pile into the underlying rock to prevent toe kickout. Truline® manufactures a vinyl retaining wall that incorporates the pin pile into the wall as shown in **Figure 3**.

Photo 14. FRP retaining wall with toe riprap for scour protection.

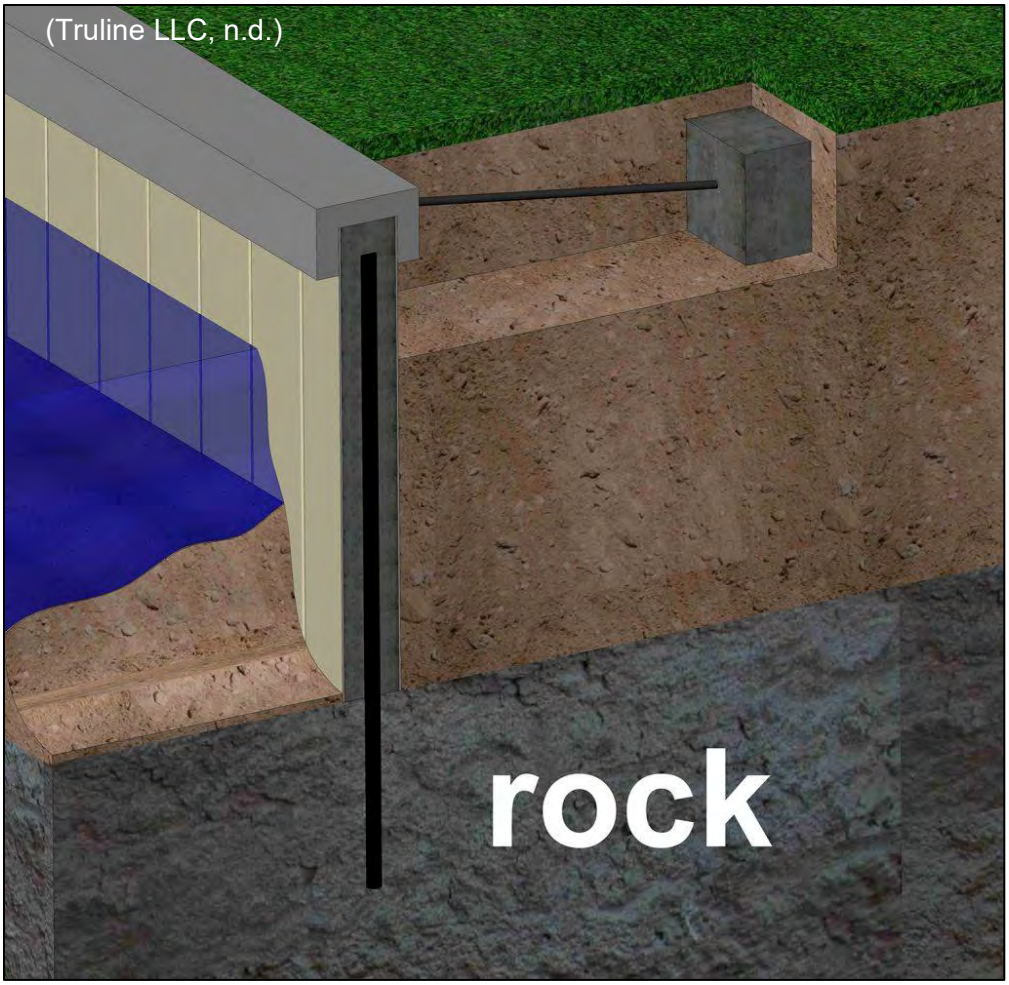

Figure 3. Pin Pile Retaining Wall.

2.1.9 Revetment

A revetment (Option 6) is a sloped shoreline stabilization method typically consisting of larger armor stone and smaller bedding or core stone resting on geotextile (**Photo 15**). Like the erosion control mats, revetments are sloped and used to dissipate incoming wave action and reduce erosion. The size and quantity of rock depends on the slope and available land perpendicular to the shoreline between the water level and upland infrastructure. Revetments are generally sloped on regraded soil ranging on a vertical to horizontal ratio of 1V:1.5H to 1V:3H.

This alternative would be particularly effective in exposed, open areas of shoreline capable of receiving higher wave energy. A revetment is a more horizontal structure and would require a large footprint than a retaining wall. Due to the presence of limestone mines in the area, shipping costs are expected to be lower; however, the length of shoreline would require large quantities of rock for construction. The service life of a revetment is generally longer than manufactured materials as the only damage typically seen by revetments on inland lakes is settlement or displacement of rocks during extreme events, which can easily be put back in place.

Photo 15. Limestone revetment.

2.1.10 Living Shoreline

Living shorelines (Option 7) are a green infrastructure technique using native vegetation alone or in combination with hard armoring to stabilize the shoreline (**Photo 16**). The original design of the Project site's shoreline was proposed as a living shoreline with native plantings. Living shorelines require proper design, construction, and maintenance and typically work best in areas with relatively low wave energy. The soil conditions, plant species, and bed elevations are critical for a successful living shoreline. Typical elements in Florida suitable for this site include upland thrush with rock revetments or sills. Successful strategies are reflective of the general site characteristics such as proximity to development, shoreline condition, bathymetry, and wave energy. Plantings, rocks, and other natural materials are successfully used along shorelines in low to moderate wave energy environments with gradual slopes, such as salt marshes, beaches, bays, and other areas. Moderate wave energy environments typically require some level of armoring to sufficiently absorb wave energy and prevent erosion while allowing for habitat conducive to vegetation growth. It should be noted that living shorelines cannot generally be designed for extreme (i.e., hurricane) conditions and some level of damage after these events should be expected.

This alternative could be utilized throughout the Project site, where littoral shelves are approximately 18 feet wide. The living shoreline proposed for the Project features the use of large armor stones installed as an offshore breakwater to prevent erosion and withstand wave energy, even during storm events. Where put in place, this alternative will likely have lower overall costs,

compared to hardened shoreline options but would require adequate sill width. Living shorelines display an aesthetic appeal with local flora and increase the likelihood of animal presence along the shoreline.

Photo 16. Living shoreline without rock breakwater.

2.2 Additional Considerations

2.2.1 Extreme Events

Water levels, overtopping, and wave action during extreme events should be considered in the final design of the shoreline stabilization to minimize impacts. It is understood that the Project site was damaged by extreme events in the past, such as Hurricane Ian. Prior to initiating the design process, the Client should decide on an acceptable level of risk relative to the robustness of the design to extreme events, as construction cost may increase with additional durability. Typically, waterfront structures at similar sites are designed for the 25-year or 50-year event, which is a storm with a 4% and 2% chance of occurring during any given year respectively. It should be noted that while each shoreline treatment could be installed anywhere along the shoreline, the performance (i.e., durability) of each will vary.

For context, a preliminary analysis of wind speed during Hurricane Ian was completed. The maximum sustained 1-minute wind speed during the storm was 150 mph upon landfall at Cayo Costa (NOAA, 2022). Wave generation is calculated using the 1-hour wind speed to allow for a fully developed sea state. Using methods in the U.S. Army Corps of Engineers Coastal Engineering Manual, the 1-minute wind speed was converted to the 1-hour wind speed. A 150-mph sustained 1-minute wind speed is equivalent to a 120-mph sustained 1-hour wind speed,

which is greater than a 100-year event. It should be noted that the fastest verified wind speed at Ft. Myers Airport was a 110-mph 3-second gust. A similar analysis shows this wind speed to be equivalent to a 73-mph sustained 1-hour wind speed, which corresponds to an approximate 25-year event. The actual wind speed at the Project site is unknown and shows how much variation in wind speed can be observed within a storm.

2.2.2 Wildlife Safety

Being such a large lake with neighboring nature preserves, it is understood that Blue Lake is home to many species of animals, including alligators. The shoreline stabilization alternatives including a nature-based approach, such as re-grading of the shoreline and living shorelines, provide protection for the shoreline and uplands while also creating habitat for local animals. It is important that the Client consider the possibility of wildlife encounters and employ safety measures for residents accordingly.

2.2.3 Constructability

The constructability of each shoreline stabilization method should be considered. Mobilization of materials and equipment between houses may result in damage to personal property to reach the maintenance easement. Requiring a contractor to work from a barge would be preferable but may slow down construction as the barge will have to return to a boat ramp or open space frequently to deliver materials. Also, this restriction may limit the number of contractors that have the resources to perform in-water work. Early coordination between the Owners, Client, Engineer, and Contractor are critical to ensure a smooth construction phase. It is recommended that both upland and water-based work be allowed during the bid process to get the most competitive bid from as many contractors as possible. The Contractor should specify their preferred method so the Client can evaluate bids based on both cost, schedule, and impacts.

2.2.4 Wind Fetch

Blue Lake features relatively large open distances between coastlines for an inland lake. The overwater distance along which wind generates waves is called the fetch. Areas exposed to large fetches are particularly vulnerable, as winds generate larger waves over longer distances given enough time during a storm event. A fetch analysis was performed for Blue Lake, which can be found illustrated below in **Figure 4**. Lines drawn depict the areas with the largest fetch exposure. Where fetch is rather long, it is recommended to utilize a more robust shoreline alternative to withstand wave impacts. It is important to note that Line 6 depicts a narrow fetch, which generally is not conducive to wave generation compared to more open areas. As a result, wave generation in the southern section of the lake from east/west winds is expected to be less than the wider areas of the northern part of the lake. A Proposed Site Plan (**Appendix A: Sheet F-2)**, illustrates the recommended locations and types of shoreline treatments for each section.

Figure 4. Fetch analysis.

Table 1. Preliminary wave conditions.

Fetch ID	Distance (ft)	25-Year Storm (4% Chance Per Year)		50-Year Storm (2% Chance Per Year)		100-Year Storm (1% Chance Per Year)	
		Wave Height (ft)	Wave Period (s)	Wave Height (ft)	Wave Period (s)	Wave Height (ft)	Wave Period (s)
1	5,895	1.56	2.26	1.56	2.40	1.56	2.55
2	5,224	1.56	2.17	1.56	2.31	1.56	2.45
3	5,220	1.56	2.17	1.56	2.31	1.56	2.45
4	2,870	1.56	1.78	1.56	1.89	1.56	2.01
5	1,724	1.44	1.50	1.56	1.59	1.56	1.69
6	2,673	1.56	1.73	1.56	1.84	1.56	1.96
7	3,124	1.56	1.83	1.56	1.94	1.56	2.07

Table 2. Extreme wind speeds (1-hr sustained).

Return Period, Years	Wind Speed (mph)
25 (4% Chance Per Year)	69.53
50 (2% Chance Per Year)	80.59
100 (1% Chance Per Year)	93.10

3 ENVIRONMENTAL PERMITTING CONSIDERATIONS

3.1 Existing Resources

The assessment of on-site environmental resources was conducted during a site visit on March 5, 2024, by a Cummins Cederberg biologist. The characteristics and location of resources are important in evaluating the potential impacts associated with future construction activities regulated by the environmental agencies.

During the site visit, shoreline vegetation, with specific attention to wetland vegetation, was identified at the Project site. American Bulrush (*Schoenoplectus americanus*) and softstem bulrush (*Schoenoplectus tabernaemontani*) (**Photo 17**) were observed along the shoreline, primarily within the littoral shelf area, and comprised the majority of the observed vegetation. Other intermixed wetland vegetation, although less common, included pickerelweed (*Pontederia cordata*) (**Photo 18**) and pond cypress (*Taxodium ascendens)*. **Table 3** provides a summary of all shoreline vegetation species observed on site. An in-water assessment was not conducted; however, it appears that water depths increase drastically immediately waterward of the emergent littoral shelf. It is anticipated that there is no benthic community of significance that will be a concern within the Project footprint.

Photo 17. Soft rush and bulrush along the project shoreline.

Photo 18. Native pickerel weed and soft rush on the project shoreline.

Table 3. Observed species during site visit.

Scientific Name	Common Name	Location
Schoenoplectus americanus	Bulrush	Emergent zone
Juncus effusus	Soft rush	Littoral zone
Pontederia cordata	Purple pickerel weed	Emergent zone
Ludwigia leptocarpa	Primrose willow	Littoral zone (sparse)
Typha latifolia	Common cat tail	Littoral zone (sparse)
Taxodium ascendens	Pond Cypress	Littoral zone (sparse)
Phyla nodiflora	Turkey tangle frogfruit	Upland (sparse)
Myrica cerifera	Wax myrtle	Littoral zone (sparse)
Salix caroliniana	Carolina Willow	Littoral zone (sparse)
Eupatorium capillifolium	Dog fennel	Littoral zone (sparse)
Nephrolepis exaltata	Boston fern	Littoral zone (sparse)
Cladium jamaicense	Sawgrass	Upland
Stenotaphrum secundatum	Saint Augustine grass	Upland
Paspalum notatum	Bahiagrass	Upland
Spirogyra spp.	Unidentified algae	Submerged

The area surrounding the Blue Lake Community has been deemed conservation lands by regulatory permitting agencies (**Figure 5**). As such, no impacts will be able to be authorized to these areas (not anticipated as a result of the proposed Project).

Figure 5. Conservation lands (green).

3.2 Environmental Permitting

The following section describes the environmental permitting requirements and potential design considerations associated with future construction activities. Publicly available environmental permitting history was also reviewed for the Project site.

In addition to the local building department, shoreline alterations and other in-water improvements are typically regulated by the Florida Department of Environmental Protection (FDEP) or the South Florida Water Management District (SFWMD) at the state level, and by the U.S. Army Corps of Engineers (USACE) at the federal level. These agencies review and regulate the impacts proposed construction may have on the environment (e.g., water quality) and significant wetland

or benthic resources. Regulatory requirements that will apply to proposed work at the Project site are summarized below.

3.2.1 Federal Permitting

The USACE regulates construction, excavation, and fill in, over, or under navigable waters pursuant to Section 10 of the Rivers and Harbors Act of 1899. Additionally, the USACE regulates the discharge of dredged or fill material into waters of the United States, including wetlands, pursuant to Section 404 of the Clean Water Act of 1972. If adverse impacts to marine or wetland resources of significance (endangered or threatened species or designated critical habitat) are proposed, further consultation under Section 7 of the Endangered Species Act (ESA) with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) may be required.

Authorization for the Blue Lake Community was issued under USACE Permit No. SAJ-2003-10995 on January 28, 2016. This permit authorized placement of fill within, and excavation of, jurisdictional wetlands to develop the upland community and establish the Blue Lake boundaries. Impacts to wetlands were offset with compensatory mitigation by converting the surrounding lands to a conservation easement, as previously depicted in **Figure 5.** These lands are to remain in their natural state in perpetuity.

The Project site is not located within tidal waters and impacts to jurisdictional wetlands for the community have already been authorized and mitigated for. Therefore, further authorization from the USACE for shoreline stabilization along the lake is not anticipated to be required for the proposed Project as long as there are no impacts to the conservation easement area.

3.2.2 State Permitting

The State (FDEP or SFWMD) regulates activities in, upon, and over surface waters and wetlands per Part IV of Chapter 373, Florida Statute (F.S.) and Chapter 62-330, Florida Administrative Code (F.A.C.). As prior permitting history exists with SFWMD, they will act as the lead agency for future permitting authorizations.

The Blue Lake Community[3] and associated stormwater management system was authorized under SFWMD Permit No. 36-05075-P, originally issued in 2004, and later updated to Permit No. 36-05075-P-02 for this specific development. There have been various modification and conceptual approval requests and approvals, as well as ownership changes, throughout the permitting history of the development project, which has been constructed in multiple phases. Evident from the permitting history, Blue Lake is a water management system that is being viewed as a wet retention area and is subject to the State's Environmental Resource Permit Applicant Handbook Volume II, Part 5: Water Management System Design and Construction Criteria.

[3] Referred to as the VistaBlue development in the SFWMD permit. VistaBlue is the operating and maintenance entity.

Certain parameters must be met or a deviation must be obtained; key design specifications relevant to the Project are listed below.

- The minimum shallow, littoral area shall be the lesser of 20% of the wet retention area or 2.5% of the total of the retention area (including side slopes) plus the basin contributing area.

- All wet retention area side slopes shall be designed with side slopes no steeper than 4:1 horizontal to vertical (HV) from top of bank out to a minimum depth of two feet below the control elevation, or an equivalent substitute. Side slopes shall be topsoiled and stabilized through seeding or planting from 2 feet below to 1 foot above the control elevation to promote vegetative growth.

- Retaining walls shall be allowed for no more than 40 percent of the shoreline length; compensating littoral zone must be provided.

- Minimum perimeter maintenance and operation easements of 20 feet width at slopes no steeper than 4:1 HV shall be provided beyond the control elevation water line. Public access for operation and maintenance to/from the easement area must be available.

The latest modification approval letter, dated January 17, 2019 (**Appendix B**), authorized the retaining wall currently stabilizing the Blue Lake shoreline along residential lots, in lieu of the originally proposed riprap breakwater stabilization. The littoral area on Blue Lake is delineated from the existing retaining wall to the shear edge of the lake and equates to approximately 2.95% of the lake area, per the SFWMD permit drawings.

Pursuant to Section 12.4 of the Applicant's Handbook Volume II, all stormwater management systems must be operated and maintained in perpetuity in accordance with the approved design and specifications. If the existing retaining wall is proposed to be replaced within the same footprint as previously authorized, and there are no deviations from the approved drawings in the January 2019 modification, additional authorization from SFWMD is not anticipated to be required. Any deviations (i.e., alternate designs or regrading of the shoreline) will likely require a permit modification request. Depending on the order of magnitude of the modification, permit modification processing time may vary (i.e., minor vs. major modifications). Further coordination with SFWMD to confirm which level of modification will be required is recommended following selection of stabilization methods and prior to initiating modification request submittals.

To secure SFWMD authorization, the applicant will need to provide 1) a cover letter detailing the modification request, 2) modification fee (varies based on modification type), 3) and permit sketches depicting the existing and proposed conditions.

3.2.3 Lee County

Blue Lake is situated within Lee County (County), which has specific local regulations for lake reclamation and surface water management systems. Reclamation of lakes from mining activities

must follow Section 12-119 of the Count's Land Development Code (LDC) – Mining and Excavation Reclamation Requirements. These criteria were met as mining was completed and the lake then reclaimed. The lake is now viewed as a surface water management lake and the mining reclamation criteria no longer applies. Any improvements to the lake's shoreline will need to adhere to Section 10 of the LDC. Some key design standards pertinent to this Project from this section include:

- A minimum lake maintenance easement of 20 ft is required [Sec. 10-328(a)].
- Banks of excavations must be sloped at a ratio not greater than 6:1 HV from the top of bank to a water depth of two feet below the dry season water table. The slopes must be no greater than 2:1 HV thereafter [Sec. 10-329(d)(4)].
- Shorelines must be sinuous in configuration [Sec. 10-418(1)].
- A planted littoral shelf is required with a length of 25% of the total linear feet of lake at the control elevation [Sec. 10-418(2)].
    - The littoral shelf must be designed to include a minimum of a 20-foot-wide littoral shelf extending waterward of the control elevation at a depth of no greater than two feet below the control elevation.
    - Littoral shelf areas must be planted with at least four different native herbaceous plant species.
    - The owner is responsible for maintaining the required landscaping in a healthy and vigorous condition at all times.
- Retaining walls, geo-textile tubes, riprap revetments or other similar hardened shoreline structures may comprise up to 20% of the individual lake shoreline but cannot be used adjacent to single-family residential uses [Sec. 10-418(3)].

Notably, the existing retaining wall stabilizes more than 20% of the lake's shoreline and is currently situated adjacent to single-family residences. There are also other slight deviations from the above criteria and others noted in the LDC. Various Development Orders[4] (DO) and Administrative Amendments (ADD) were approved through Lee County to allow for these deviations. Final ADD documents (i.e., ADD2018-10053, inclusive of 2017 ADD's as attachments) are provided in **Appendix C**.

Major deviations approved include the following:

- Shoreline hardening on 100 percent of the developed shoreline and hardened shoreline adjacent to single-family residential development where shoreline hardening is restricted to a maximum of 20 percent of individual shorelines and where such hardening is typically prohibited adjacent to single-family residential uses.
- Planted littoral shelves ranging between four (4) feet and 18 feet in width where a minimum planted littoral shelf width of 20 feet is typically required.

[4] DOS2017-00103, DOS2018-00007, DOS2019-00120; DO Case File Documents can be located here with the DO number: https://docsearch.leegov.com/Home/Index/customSearch/DevReview.

- A minimum lake maintenance easement width of six (6) feet, whereas a lake maintenance easement width of 20 feet is typically required.
- The use of vertical retaining walls as an alternative to the originally proposed riprap breakwater.

The Project team engaged with Lee County on April 18, 2024, to clarify future works relative to authorization that will be required for alternative shoreline stabilization methods. The conversations were specific to the adjacent WildBlue Lake development, however, it is anticipated that County feedback and concerns will be the same for Blue Lake. The County confirmed that replacement within the same footprint as previously authorized will not require a new deviation process; any deviation from the approved cross-sections in prior authorizations will require zoning action and a new land DO. Once Project design has advanced, it is recommended that additional pre-app discussions with the County be conducted with any proposed cross-sections. Any improvements will require the re-establishment of the littoral shelf plantings and maintenance in perpetuity. This includes reinstalling a retaining wall, the installation of riprap, or further improvements along the Project shoreline. The County's primary concerns are with the establishment/maintenance of littoral shelf plantings and ensuring access is prohibited beyond a safe stabilized slope (6:1 HV); the existing retaining wall currently acts as barrier between the 6:1 HV slope on site and the variable, ungraded slop beyond that (**Figure 6**). Further options may be explored to consider rope rail or fencing options if riprap or another form of shoreline is selected.

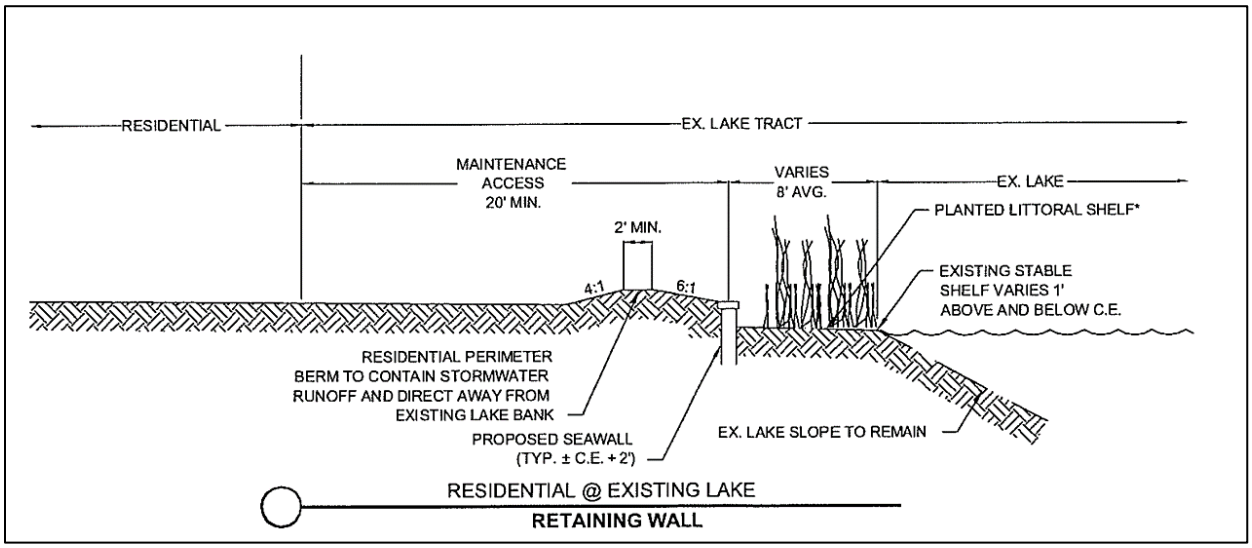

Figure 6. County-approved cross-section from administrative amendment ADD2018-10053.

It may be worth noting that the existing littoral plantings do not appear to be faring well, as evident from the March 2024 site visit. It is not clear from preliminary investigations whether this is due to wave action impacting stabilization and survivorship of the plants, or if soil nutrients of the historically mined lake are not adequate for the selected plantings. Innovative planting options that provide protection and/or additional nutrient-rich soil for the proposed vegetation via planters

may be worth discussing with the permitting agencies to ensure success and reduce replanting needs.

3.2.4 Permitting Timelines

Environmental permitting timelines can vary and will be dependent on final design selection and the extent of each application. It is estimated that any deviation from the previously authorized footprint will take 6 to 8 months or more for application review and processing. The greater the number of deviations from the regulatory codes and previously authorized footprints, the lengthier the permitting timeline will be. During pre-application discussions, the permitting agencies seemed receptive to the fact that the Project site does not meet “typical” criteria for wet retention lakes and that deviations may be required and be able to be accepted as long as adequate and sound justification is provided, to be reviewed on a case-by-case basis. Replacing the existing retaining wall within the same footprint as existing will likely provide for the most expeditious permitting timeline and can be phased out to be completed in advance of other alternative solutions if preferred. However, contractor mobilization/demobilization fees should also be considered.

4 OPINION OF PROBABLE COST

A conceptual opinion of probable cost (OPC) is included for each of the concepts for direct comparison of each option. The costs are based on the conceptual designs and limited survey/geotechnical data available at this conceptual stage; final quantities and unit costs may vary as the design is refined. Further, actual cost may vary due to the final scope/limit of work (i.e., economies of scale), environmental permit requirements, market prices at the time of bidding, and a competitive bid process. It is important to note that these costs only include materials and installation. Mobilization, demolition, environmental compliance, layout/as-built surveys, and other associated soft costs (e.g., permitting, design, construction oversight) are not included. A contingency of 25% and 30% is included to reflect the conceptual phase of the project. As the design progresses, the contingency can be lowered to reflect a more accurate cost.

In general, only the modular block wall, retaining wall with stone, rock revetment, and living shoreline options could be designed for different return period storms. As the wave conditions calculated in Section 2.2.4 are similar for each return period storm, the construction cost difference is estimated to be less than 10% between a solution designed for the 25-year storm event versus the 100-year storm event as the cross-section will only vary slightly.

A range of estimated costs for each alternative per linear foot of treatment is summarized in **Table 4.** The total cost is dependent on the selected shoreline treatment for specific areas and whether the Client elects to remove the existing wall, replace the entire wall, or only replace the failed sections of wall. The total cost of the recommended shoreline treatment presented in the Proposed Site Plan (**Appendix A: Sheet F-2**) ranges from approximately $33.3M to $35.0M. An estimated production rate for construction is included. The actual rate will vary based on contractor capability, final design, environmental permit requirements, and existing conditions.

Table 4. Estimated alternative costs per linear foot.

Option	Stabilization Method	Cost (Per LF)	Production Rate (LF/Week)
Existing Conditions	Unstabilized Shoreline	$0	N/A
1	Re-Graded Shoreline	$40 - $45	400-500
2	Added Fill Shoreline	$65 - $70	300-400
3	Pre-Cast Concrete Erosion Control Mat	$370 - $380	200-300
3 (Alt. 1)	Geocells	$270 - $370	100-200
3 (Alt. 2)	Erosion Control Socks	$180 – $190	100-200
4	Modular Block Wall	$2,000 - $2,100	50-100
5	Vinyl Retaining Wall	$2,200 - $2,300	25-50
6	Rock Revetment	$170 - $180	50-100
7	Living Shoreline	$190 - $200	100-200

Table 5. Total cost based on recommendations.

Stabilization Method	Extent of Application (LF)	Total Cost
Vinyl Retaining Wall	14,583	$32.1M – $33.6M
Rock Revetment	1,288	$220K – $235K
Any Option	2,182	$985K – $1.1M

5 CONCLUSIONS AND RECOMMENDATIONS

Based on coastal engineering experience, environmental permitting requirements, cost, design life, and aesthetic appeal, the following recommendations are made:

1. A vinyl sheet pile retaining wall with a concrete cap and a rip-rap toe is recommended to stabilize the shoreline in residential areas, where the wave exposure is high and the littoral shelf is narrow. This alternative provides protection against large waves, while minimizing the effects of erosion and scour. Retaining walls have a minimal project footprint and can be installed in the previously permitted footprint with no additional environmental permitting.

2. A rock revetment is recommended to stabilize the shoreline in areas where the upland development is non-residential due to the wider footprint required. Rock revetment is feasible in areas where the wave exposure is high and the littoral shelf is relatively wide. This option provides a high degree of protection against scour and waves. Rock revetments are ideal for use in community held areas to provide a natural look at a lower cost.

3. Any of the proposed options could be utilized in areas that are not exposed to large fetches as the wave energy is less. Similarly, any of the solutions could be installed along the entire shoreline but the performance (i.e., durability) would be reduced for the non-hardened treatments in more exposed areas.

4. Upon selecting and installing a solution, the Client should continue to monitor shoreline for erosion along the entire Project site. This may include engaging a licensed surveyor or be as simple as installing a PVC or wooden stake to observe changes prior to a significant capital outlay.

5. A planned waterfront inspection assessment program should be considered to regularly monitor the condition of the shoreline. Based on industry standards, the frequency of said inspection should be no more than 4-5 years, or after a severe coastal storm event. Over time, the Owner may need to consider more frequent assessments due to potential damage, displacement, and/or failure to components of the shoreline stabilization structures or upland infrastructure should there be instances of localized or widespread failure either due to additional deterioration or the effects of a severe coastal storm event.

6. The Client should consider the available budget, permitting timeline, maintenance requirements, service life, construction timeline, and logistics when selecting their preferred alternative. It is also recommended to establish stakeholder involvement prior to making a selection to ensure resident feedback is taken into account.

7. The Client should engage a coastal engineer with experience in permitting and designing waterfront structures. This will help ensure the permitting process is expedited to the

greatest extent practicable and optimize design. Next steps include surveying, and geotechnical investigations of the Project site to support the environmental permitting and engineering design. The final engineering design should consider design loads during extreme events. It is recommended the Client design future shoreline stabilization structures for the 50-year return period storm event to provide the most robust, cost-effective solution for the site.

8. A licensed contractor with experience in shoreline stabilization should perform a site visit to confirm constructability of the shoreline stabilization methods presented herein. Similarly, the Client should select a qualified contractor for the construction phase to ensure the proposed works are constructed per industry standards. Cummins Cederberg is available to meet with potential contractors to discuss the constructability of the proposed project, support the bidding process, and oversee construction to ensure the contractor completes the work in accordance with the construction documents.

A summary of the considerations for each shoreline stabilization option is presented below in **Table 6**.

Table 6. Shoreline stabilization concepts summary.

Method	Benefits	Drawbacks
Existing Conditions	▪ No permitting required ▪ Minimal impacts to vegetation/upland ▪ Mobilization of construction equipment not required	▪ Offers less protection than other options ▪ Upland properties likely to be affected by erosion and shoreline recession ▪ Better performance in protected areas
Re-graded Shoreline	▪ Decreased wave impacts ▪ Aesthetically pleasing with native grasses ▪ Native grasses will stabilize sediments ▪ Slope provides safety as opposed to drop-off with retaining wall ▪ Low cost ▪ Quick construction	▪ Offers less protection than other options ▪ Requires regrading and fill to maintain ▪ Permitting challenges ▪ Better performance in protected areas
Added Fill Shoreline	▪ Decreased wave impacts ▪ Aesthetically pleasing with native grasses ▪ Native grasses will stabilize sediments ▪ Slope provides safety as opposed to drop-off with retaining wall ▪ Low cost ▪ Quick construction ▪ Maintains upland profile	▪ Offers less protection than other options ▪ Requires regrading and fill to maintain ▪ Permitting challenges ▪ Better performance in protected areas

Table 6. Shoreline stabilization concepts summary (cont'd).

Method	Benefits	Drawbacks
Concrete Erosion Control Mat	▪ Hardens the shoreline to reduce erosion ▪ Resistant to wave action and currents ▪ Common practice along canals and embankments ▪ Can have vegetation come through precast blocks ▪ Minimal maintenance	▪ Aesthetics until vegetation established ▪ Requires grading and fill of upland property ▪ Permitting challenges
Geocells	▪ Stabilize the shoreline to reduce erosion ▪ Common practice along canals and embankments ▪ Can be covered by vegetation on top ▪ Low cost ▪ Quick to install	▪ Requires grading and fill of upland property ▪ Permitting challenges ▪ Offers less protection than other options ▪ Better performance in protected areas
Erosion Control Socks	▪ Stabilize the shoreline to reduce erosion ▪ Resistant to wave action ▪ Can be sodded or planted to conceal ▪ Elevate the shoreline to protect uplands ▪ Low cost ▪ Quick to install	▪ Requires grading and fill of upland property ▪ Permitting challenges ▪ Offers less protection than other options ▪ Better performance in protected areas
Living Shoreline	▪ Hardens the shoreline to reduce erosion ▪ Aesthetics ▪ Minimal maintenance (self-healing) ▪ Provides animal habitat	▪ Better performance in sheltered areas ▪ Will likely require environmental monitoring and restoration ▪ May increase animal encounters
Modular Block Wall	▪ Hardens the shoreline to reduce erosion ▪ Vertical structure with smaller impacts to lakebed ▪ Resistant to wave action and currents ▪ Can have vegetation planted within blocks ▪ Different types of stamps for concrete aesthetics	▪ Long construction duration ▪ Prone to settlement without proper embedment ▪ Costly
Retaining Wall	▪ Hardens the shoreline to reduce erosion ▪ Vertical structure with smaller impacts to lakebed ▪ Resistant to wave action and currents ▪ Common practice along waterways	▪ Sheets will have to be backfilled ▪ Will likely require a tie back or other anchoring system ▪ Costly ▪ Maintenance of sheet and cap degradation ▪ Potential damage from impacts

Table 6. Shoreline stabilization concepts summary (cont'd).

Method	Benefits	Drawbacks
Rock Revetment	▪ Hardens shoreline to reduce erosion ▪ Resistant to wave action and currents ▪ Cost-effective hardened shoreline approach ▪ Can be modified after installation ▪ Minimal maintenance	▪ Can reduce shoreline accessibility, as rocks are difficult to walk over ▪ Could provide habitat for animals between rocks

The assessment and recommendations presented are based on the data obtained from the field observations and discussions with the Client. This report may not account for unseen variations that may exist in the current conditions or background documents provided. The services performed by Cummins Cederberg are consistent with the degree of care and skill ordinarily exercised by, and consistent with, the standards of the engineering profession practicing at the same time, under similar circumstances, and in a similar location as the Project. No other warranty, expressed or implied, is herewith made.

Blue Lake
Community Development District

Financial Report For
June 2024

BLUE LAKE COMMUNITY DEVELOPMENT DISTRICT
MONTHLY FINANCIAL REPORT
JUNE 2024

REVENUES	Annual Budget 10/1/23 - 9/30/24	Actual Jun-24	Year To Date Actual 10/1/23 - 6/30/24
O & M Assessments	466,833	0	466,835
Debt Assessments	661,941	0	661,941
Other Revenues	240	0	0
Interest Income	0	0	7,474
Total Revenues	**$ 1,129,014**	**$ -**	**$ 1,136,250**
EXPENDITURES			
Administrative Expenditures			
Supervisor Fees	0	0	0
Payroll Taxes (Employer)	0	0	0
Management	29,688	2,474	22,266
Legal	14,000	0	3,900
Legal Extraordinary - Retaining Wall	0	0	9,486
Assessment Roll	4,000	0	0
Audit Fees	4,000	0	0
Arbitrage Rebate Fee	650	650	650
Insurance	6,700	0	12,219
Legal Advertisements	3,500	0	1,211
Miscellaneous	950	832	2,674
Postage	300	32	352
Office Supplies	1,050	46	387
Dues & Subscriptions	175	0	175
Trustee Fee	4,050	0	4,031
Continuing Disclosure Fee	1,000	0	0
Total Administrative Expenditures	**70,063**	**4,034**	**57,351**
Maintenance Expenditures			
Engineering/Inspections	29,500	0	10,725
Mitigation Monitoring	138,500	0	19,242
Lake Maintenance	60,000	2,782	26,591
Flow Way Inspection Certification	5,000	0	0
Vista Dry Retention Area	45,000	0	4,400
Detention Area Maintenance	36,000	2,895	25,391
Miscellaneous Maintenance (Fence Repairs, etc.)	55,000	0	34,397
Preserve Area	0	7,561	7,561
Total Maintenance Expenditures	**369,000**	**13,238**	**128,307**
Total Expenditures	**$ 439,063**	**$ 17,272**	**$ 185,658**
REVENUES LESS EXPENDITURES	**$ 689,951**	**$ (17,272)**	**$ 950,592**
Bond Payments	(623,875)	0	(636,392)
BALANCE	**$ 66,076**	**$ (17,272)**	**$ 314,200**
County Appraiser & Tax Collector Fee	(22,025)	0	(1,201)
Discounts For Early Payments	(44,051)	0	(42,791)
EXCESS/ (SHORTFALL)	**$ -**	**$ (17,272)**	**$ 270,208**
Carryover From Prior Year	0	0	0
NET EXCESS/ (SHORTFALL)	**$ -**	**$ (17,272)**	**$ 270,208**

Note: Operating Fund Balance As Of 9/30/23: ($41,373.08) - Deficit

Bank Balance As Of 6/30/24	**$ 267,680.13**
Accounts Payable As Of 6/30/24	**$ 38,845.45**
Accounts Receivable As Of 6/30/24	**$ -**
Available Funds As Of 6/30/24	**$ 228,834.68**

BLUE LAKE CDD
TAX COLLECTIONS
2023/2024

#	ID#	PAYMENT FROM	DATE	FOR	Tax Collect Receipts	Interest Received	Commissions Paid	Discount	Net From Tax Collector	O & M Assessment Income (Before Discounts & Fee)	Debt Assessment Income (Before Discounts & Fee)	O & M Assessment Income (After Discounts & Fee)	Debt Assessment Income (After Discounts & Fee)	Debt Assessments Paid to Trustee
									$1,128,776.00	**$466,835.00**	**$ 661,941.00**	**$466,835.00**	**$ 661,941.00**	
									$1,062,698.00	**$438,823.00**	**$ 623,875.00**	**$438,823.00**	**$ 623,875.00**	**$ 623,875.00**
1		Paid to Lee County Prop Appraiser	11/07/23	Fees			$ (423.00)		$ (423.00)			$ (423.00)		$ -
2	1	Lee County Tax Collector	11/15/23	NAV Taxes	$ 2,457.16		$ (778.32)	$ (129.00)	$ 1,549.84	$ 1,016.26	$ 1,440.90	$ 640.99	$ 908.85	$ 908.85
3	2	Lee County Tax Collector	11/29/23	NAV Taxes	$ 197,033.36			$ (7,881.42)	$ 189,151.94	$ 81,492.96	$ 115,540.40	$ 78,233.19	$ 110,918.75	$ 110,918.75
4	3	Lee County Tax Collector	12/13/23	NAV Taxes	$ 771,016.07			$ (30,840.84)	$ 740,175.23	$ 318,892.22	$ 452,123.85	$ 306,136.43	$ 434,038.80	$ 434,038.80
5	4	Lee County Tax Collector	12/28/23	NAV Taxes	$ 66,700.86			$ (2,452.37)	$ 64,248.49	$ 27,587.46	$ 39,113.40	$ 26,573.14	$ 37,675.35	$ 37,675.35
6	5	Lee County Tax Collector	01/12/24	NAV Taxes	$ 27,168.87			$ (815.08)	$ 26,353.79	$ 11,237.02	$ 15,931.85	$ 10,899.89	$ 15,453.90	$ 15,453.90
7	6	Lee County Tax Collector	02/15/24	NAV Taxes	$ 26,597.30			$ (614.25)	$ 25,983.05	$ 11,000.60	$ 15,596.70	$ 10,746.55	$ 15,236.50	$ 15,236.50
8	7	Lee County Tax Collector	03/13/24	NAV Taxes	$ 5,798.26			$ (57.99)	$ 5,740.27	$ 2,398.16	$ 3,400.10	$ 2,374.17	$ 3,366.10	$ 3,366.10
9	8	Lee County Tax Collector	04/15/24	NAV Taxes	$ 24,038.72				$ 24,038.72	$ 9,942.37	$ 14,096.35	$ 9,942.37	$ 14,096.35	$ 14,096.35
10	9	Lee County Tax Collector	05/14/24	NAV Taxes	$ 7,965.89				$ 7,965.89	$ 3,268.44	$ 4,697.45	$ 3,268.44	$ 4,697.45	$ 4,697.45
11									$ -					$ -
12									$ -					$ -
13	Int	Lee County Tax Collector		Interest					$ -					$ -
14	URE	Lee County Tax Collector		Unused Revenue Fees					$ -					$ -
15									$ -					$ -
					$ 1,128,776.49	$ -	$ (1,201.32)	$ (42,790.95)	$ 1,084,784.22	$ 466,835.49	**$ 661,941.00**	$ 448,392.17	$ 636,392.05	$ 636,392.05

Assessment Roll	
O&M	466,835.49
Debt	661,941.00
	1,128,776.49

Collections
100.00%

Note: $1,128,776, $466,833 and $661,941 are 2023/2024 Budgeted assessments before discounts and fees.
$1,062,698, $438,823 and $623,875 are 2023/2024 Budgeted assessments after discounts and fees.

$ 1,128,776.49	
$ -	$ 1,084,784.22
$ (466,835.49)	$ (448,392.17)
$ (661,941.00)	$ (636,392.05)
$ -	$ -