WINTER HAVEN
THE CHAIN OF LAKES CITY

CITY COMMISSION MEETING

DATE: Monday, July 14, 2025, 6:00 p.m.

LOCATION: City Hall - John Fuller Auditorium
451 Third Street NW
Winter Haven, FL 33881

---

1. **CALL TO ORDER** - Nathaniel J. Birdsong, Jr., Mayor

2. **ROLL CALL** - LaTonya Harris, CMC, FCRM, Deputy City Clerk

3. **INVOCATION** - Father Paul Head, St. Paul's Episcopal Church

4. **PLEDGE OF ALLEGIANCE** - LaTonya Harris, CMC, FCRM, Deputy City Clerk

5. **PRESENTATIONS**

   5.A **"Lakes Appreciation Month" Proclamation - Frances Coleman, Lakes Advisory Committee & Dustin Everitt, Natural Resources Division Manager**

   Staff Contact: *Dustin Everitt, Natural Resources Division Manager, deveritt@mywinterhaven.com*

   Proclamation

   5.B **"Parks and Recreation Month" Proclamation - City of Winter Haven Parks, Recreation & Culture Department**

   Staff Contact: *Julie Adams, Director - Parks, Recreation & Culture , jadams@mywinterhaven.com*

   Proclamation

6. **DEVELOPMENTS OF NOTE**

7. **MINUTES**

   7.A **June 4, 2025, Special City Commission Workshop Meeting Minutes**

   Staff Contact: *LaTonya Harris, City Historian & Archivist | Deputy City Clerk , lharris@mywinterhaven.com*

   2025-06-04 DRAFT Special City Commission Workshop Meeting Minutes

   7.B **June 4, 2025, City Commission Agenda Review Session Meeting Minutes**

   Staff Contact: *LaTonya Harris, City Historian & Archivist | Deputy City Clerk , lharris@mywinterhaven.com*

   2025-06-04 DRAFT City Commission Agenda Review Session Minutes

7.C **June 9, 2025, Regular City Commission Meeting Minutes**

Staff Contact: *Vanessa Castillo, MMC, City Clerk, vcastillo@mywinterhaven.com*

2025-06-09 DRAFT Regular City Commission Meeting Minutes with Link

7.D **June 18, 2025, Special City Commission Workshop Meeting Minutes**

Staff Contact: *Vanessa Castillo, MMC, City Clerk, vcastillo@mywinterhaven.com*

2025-06-18 DRAFT Special City Commission Workshop Minutes with Link

7.E **June 18, 2025, City Commission Agenda Review Session Meeting Minutes**

Staff Contact: *Vanessa Castillo, MMC, City Clerk `, vcastillo@mywinterhaven.com*

2025-06-18 DRAFT Agenda Review Session Minutes with Link

8. COMMENTS FROM THE AUDIENCE

9. ORDINANCE(S) - SECOND READING - PUBLIC HEARING

9.A **O-25-21 - Request by Ark Industries, Inc. to amend the 2035 Future Land Use on a parcel from Neighborhood Suburban Future Land Use to Neighborhood Mixed Use Hub Future Land Use and to assign Neighborhood Mixed Use Hub Future Land Use to an annexed parcel. General Location - 807 Snively Avenue**

Staff Contact: *Sean Byers, Planning Manager, sbyers@mywinterhaven.com*

Summary - Ordinance O-25-21
O-25-21

9.B **O-25-22 - Request by Ark Industries, Inc. to assign Commercial- Highway (C-3) zoning district to two annexed parcels. General Location - 807 Snively Avenue**

Staff Contact: *Sean Byers, Planning Manager, sbyers@mywinterhaven.com*

Summary - Ordinance O-25-22
O-25-22

10. CONSENT AGENDA

10.A **Acceptance and Acknowledgement of Assignment of Development Agreement - 750 Ave C SW, LLC**

Staff Contact: *Angie Hibbard, CRA Manager, ahibbard@mywinterhaven.com*

Summary - Assignment of Development Agreement - 750 Ave C SW, LLC Apartments
Assignment of Development Agreement - 750 Ave C SW, LLC Apartments

10.B **Authorization for Travel & Training: Florida Regional Councils Association (FRCA) Policy Board meeting (Birdsong)**

Staff Contact: *A J Nicholson, Assistant to the City Manager, anicholson@mywinterhaven.com*

Summary - FRCA Board Meeting August 2025

10.C **Authorization for Travel & Training - Florida League of Cities (FLC) Annual Conference (Birdsong, Yates, Mercer, Dollison, Dantzler, Stavres & Hill)**

Staff Contact: *T. Michael Stavres, City Manager, mstavres@mywinterhaven.com*

Summary - Travel & Training FLC 2025 Conference

2025 FLC Conference information

10.D **Authorization for Travel & Training - International City/County Manager's Association (ICMA) Annual Conference (Stavres & Carnevale)**

Staff Contact: *T. Michael Stavres, City Manager, mstavres@mywinterhaven.com*

Summary - Travel Training ICMA 2025 Conference
2025 ICMA Annual Conference Information

10.E **Drinking Water Asset Management Plan - Florida Department of Environmental Protection (FDEP) SRF Compliance Planning**

Staff Contact: *Gary M. Hubbard, Water Department Director, ghubbard@mywinterhaven.com*

Summary - Drinking Water Asset Management Plan - FDEP SRF Compliance Planning
Drinking Water Asset Management Plan, Jones Edmunds Task Order 95300-209-25

10.F **Recommendation of Award ITB-25-23, Reclaimed Water Transmission Main Extension on CR653**

Staff Contact: *Gary M. Hubbard, Water Department Director, ghubbard@mywinterhaven.com*

Summary - Recommendation of Award ITB-25-23, Reclaimed Water Transmission Main Extension on CR653
ITB-25-23 Bid Tab Sheet
ITB-25-23 Recommendation of Award
Location Map

10.G **Hadronex, Inc., (SmartCover System) annual maintenance agreement renewal (2025/2026)**

Staff Contact: *Gary M. Hubbard, Water Department Director, ghubbard@mywinterhaven.com*

Summary - Hadronex, Inc., (SmartCover System) annual maintenance agreement renewal, 2025/2026
SmartCover Maintenance Agreement, Quote 3441
SmartCover Renewal Services
SmartCover - Price Change letter 2025
Hadronex - SmartCover Sole Source Certificate

10.H **Astute Financial Corporation Property Acquisition**

Staff Contact: *Brittany Hart, Public Works Director, bhart@mywinterhaven.com*

Summary - Astute Financial Corporation Property Acquisition
Appraisal from Tod Marr Appraisal Group, including map of parcel boundaries and locations
Appraisal from String Appraisal Service
Commercial Contract with Astute Financial
Letter of Support from Polk County

11. RESOLUTION(S)

11.A **R-25-35 - Request by TBHG, Inc. confirming acceptance of a portion of the improvements, infrastructure, and dedications in favor of the Public/City of Winter Haven for the Lake Deer Townhomes Subdivision and retaining a subdivision Performance Bond to guarantee completion of remaining improvements**

Staff Contact: *Eric Labbe, Director of Economic Opportunity & Community Investment, elabbe@mywinterhaven.com*

Summary - Resolution R-25-35
Resolution R-25-35

11.B **R-25-36 - Adopting the 2024 Annual Lakes Report**

Staff Contact: *Dustin Everitt, Natural Resources Manager, deveritt@mywinterhaven.com*

Summary - R-25-36 Adopting the Annual Lakes Report
R-25-36
Exhibit A - 2024 Annual Lakes Report
Lakes Report In Brief 2024

12. ORDINANCE(S) - FIRST READING

12.A O-25-19 - Request by Timothy F. Campbell to amend a portion of Planned Unit Development Ordinance O-22-23

Staff Contact: *Heather Reuter, Senior Planner, hreuter@mywinterhaven.com*

Summary - Ordinance O-25-19
O-25-19

12.B O-25-20 - Request by Sharon M. Watson to rezone a parcel from Mixed-Use (MX) zoning district to Commercial-Highway (C-3) zoning district

Staff Contact: *Chris Young, Senior Planner, cyoung@mywinterhaven.com*

Summary - Ordinance O-25-20
O-25-20

12.C O-25-26 - Voluntary annexation of a parcel located at the southwest corner of the intersection of 8th Street, NW/US Highway 17 and Avenue X, NW

Staff Contact: *Heather Reuter, Senior Planner, hreuter@mywinterhaven.com*

Summary - Ordinance O-25-26
O-25-26

13. NEW BUSINESS

13.A Developer's Agreement - LWG Florida Properties, LLC

Staff Contact: *Eric Labbe, Director of Economic Opportunity and Community Investment, elabbe@mywinterhaven.com*

Summary - Developers Agreement LWG Florida Properties, LLC
Developer's Agreement - LWG Florida Properties, LLC

14. CITY COMMISSIONERS/LIAISON REPORTS

15. CITY ATTORNEY REPORT

16. CITY MANAGER REPORT

17. DEPUTY CITY MANAGER REPORT

18. CITY CLERK REPORT

19. EMERGENCY MATTERS NOT RECEIVED FOR THE AGENDA

20. ADJOURNMENT

If a person decides to appeal any decision made by the Commission with respect to any matter considered at such meeting or hearing, they will need a record of the proceedings, and that, for such purpose, they may need to ensure that a verbatim record of the proceeding is made which record includes the testimony and evidence upon which the appeal is to be based (FS 286.0105). In accordance with the Americans with Disabilities Act and Florida Statutes, Section 286.26, persons with disabilities needing special accommodations to participate in this proceeding,

should contact the City Clerk's Office, 451 Third Street, NW, Winter Haven, Florida 33881, in writing, not later than 48 hours prior to the proceeding; if not in writing, then not later than four (4) days prior to the proceeding at (863) 291-5600. Vision or hearing impaired please call (800) 955-8771 for assistance.

WINTER HAVEN
THE CHAIN OF LAKES CITY

Proclamation

WHEREAS, Winter Haven, Florida as part of a global community, desires to take action to create positive environmental change; and

WHEREAS, 50 lakes are contiguous to the City of Winter Haven including the Northern and Southern Chain of Lakes; and

WHEREAS, lakes are an important part of Winter Haven's way of life, providing social, economic, and ecological benefits; and

WHEREAS, the City of Winter Haven has taken the lead in protecting and restoring water quality to its lakes; and

WHEREAS, in working towards a sustainable future for our children, we must also provide them the tools and experiences they need to solve the environmental problems of the future; and

WHEREAS, through constant and friendly communication about environmental issues, citizens will tend to be more creative, sensitive, experimental, and flexible in resolving the challenges faced; and

WHEREAS, *Lakes Appreciation Month* can draw people together in appreciation of Winter Haven's lakes and recognize the need to protect them for future generations.

NOW, THEREFORE, I, Nathaniel J. Birdsong Jr., Mayor of the City of Winter Haven, Florida, do hereby recognize July 2025 as

"Lakes Appreciation Month"

in the City of Winter Haven and urge all citizens to visit a lake and consider what they can do to contribute to a healthy and sustainable future.

IN WITNESS WHEREOF, I have hereunto set my hand and cause the Seal of the City of Winter Haven, Florida, to be affixed this 14th day of July, 2025.



Nathaniel J. Birdsong, Jr.
Nathaniel J. Birdsong Jr., Mayor

ATTEST:
Vanessa Castillo
Vanessa Castillo, MMC, City Clerk

WINTER HAVEN
THE CHAIN OF LAKES CITY

Proclamation

WHEREAS, *Parks and Recreation Month* has been celebrated nationally since 1985, and this year marks the 40th anniversary of recognizing the vital role parks and recreation play in enhancing the quality of life in communities across the country; and

WHEREAS, the City of Winter Haven is home to a vibrant and growing network of parks, trails, lakes, and recreational spaces that serve residents of all ages and abilities, offering places to gather, play, exercise, learn, and connect; and

WHEREAS, our City's parks and recreation professionals, along with part-time staff and volunteers, provide high-quality programs, and maintain beautiful public spaces, through their dedication and service; and

WHEREAS, parks and recreation are essential to the health and wellness, social connection, environmental stewardship, and economic vitality by contributing to stronger, more resilient communities; and

WHEREAS, the 2025 theme, "Build Together, Play Together," reflects how parks and recreation departments nationwide are working hand-in-hand with residents to build inclusive, sustainable, and accessible spaces that serve current and future generations; and

WHEREAS, the City of Winter Haven recognizes the lasting impact of park and recreation opportunities, which help foster lifelong memories, family bonds, and a shared sense of community pride.

NOW, THEREFORE, I, Nathaniel J. Birdsong, Jr., Mayor of the City of Winter Haven, Florida, do hereby proclaim July 2025, as

"Parks and Recreation Month"

in the City of Winter Haven and encourage the entire Winter Haven community to celebrate by visiting a park, participating in a recreation program, and acknowledging the dedicated individuals who make these services possible.

IN WITNESS WHEREOF, I have hereunto set my hand and cause the Seal of the City of Winter Haven, Florida, to be affixed this 14th day of July, 2025.



Nathaniel J. Birdsong, Jr.

Nathaniel J. Birdsong Jr., Mayor

ATTEST:

Vanessa Castillo

Vanessa Castillo, MMC, City Clerk

WINTER HAVEN
THE CHAIN OF LAKES CITY

SPECIAL CITY COMMISSION WORKSHOP MEETING MINUTES

DATE: Wednesday, June 4, 2025, 5:30 p.m.

LOCATION: City Hall – John Fuller Auditorium
451 Third Street NW, Winter Haven, FL 33881

NOTE:
PowerPoint slides of certain agenda items were also presented during this meeting. Link to PowerPoint here:
https://acrobat.adobe.com/id/urn:aaid:sc:VA6C2:0d568141-19fb-47fa-bce7-35a59b2f43e3
A hard copy of the PowerPoint will be attached to the original signed minutes.

1. CALL TO ORDER - Mayor Birdsong called the meeting to order at 5:30 p.m.

2. ROLL CALL – LaTonya Harris, CMC, FCRM, Deputy City Clerk

Commissioners Present: Mayor Nathaniel J. Birdsong, Jr.; Mayor Pro Tem Brian Yates; Commissioner Tracy Mercer; and Commissioner Clifton E. Dollison.

Commissioners Absent: Commissioner Bradley T. Dantzler

Staff Present: City Manager T. Michael Stavres; Deputy City Manager Michael "M.J." Carnevale; City Attorney John Murphy; Deputy City Clerk LaTonya Harris; Assistant City Manager for Public Safety Charlie Bird; Police Chief Vance Monroe; Economic Opportunity and Community Investment Director Eric Labbe; Public Works Director Brittany Hart; Chief Financial Officer Colleen "C.J." Scott; Winter Haven Regional Airport Director Troy Heidel; and Parks, Recreation and Culture Director Julie Adams.

3. DISCUSSION – MUNICIPAL IMPACT FEES WORKSHOP

A. First meeting to discuss Ordinance O-25-25 and the extraordinary circumstances based on a demonstrated need study prepared by Raftelis Financial Consultants, Inc. for the City's Municipal Services Impact Fees (Police, Fire, Parks and Recreation, and Library Impact Fees) necessitating the need to exceed Phase-In and Fee increase Limitations in Florida Statute relating to updating and adjusting the City's Municipal Services Impact Fees (Police, Fire, Parks and Recreation, and Library Impact Fees).

City Manager Stavres gave an overview of this item and explained the reason for the Special City Commission Workshop Meeting which was to discuss Ordinance O-25-25 and the extraordinary circumstances necessitating the need to exceed Phase-In and Fee increase Limitations in Florida Statute relating to updating and adjusting the City's Municipal Services Impact Fees (Police, Fire, Parks and Recreation, and Library Impact Fees), if applicable, based on a recent Study performed by Raftelis Financial Consultants, Inc. ("Raftelis") dated May 29, 2025 ("Raftelis Impact Fee Study") which was commenced approximately February/March 2025. He said that Joe Williams from Raftelis had worked with the City on many impact fees and rate studies mostly with the Winter Haven Water department and would be presenting this evening. He noted that City water and sewer connection fees were not necessarily considered impact fees and that Transportation was in progress and would be presented at a later date.

Mr. Williams showed a *Municipal Fee Workshop* PowerPoint *(see link/attached)* and went over each of the slides in more detail.

EXTRAORDINARY CIRCUMSTANCE WORKSHOPS (slide)

Mr. Williams explained this slide in more detail.

DRAFT

IMPACT FEE STUDY OBJECTIVES (slide)

Mr. Williams explained this slide in more detail.

IMPACT FEE BASICS (slide)

Mr. Williams explained this slide in more detail.

KEY PHRASES FROM FLORIDA IMPACT FEE ACT (slide)

Mr. Williams explained this slide in more detail.

IMPACT FEE METHODOLOGY (slide)

Mr. Williams explained this slide in more detail.

FIRE IMPACT FEES (slide)

Mr. Williams explained this slide in more detail.

PARKS AND RECREATION IMPACT FEES (slide)

Mr. Williams explained this slide in more detail.

City Manager Stavres asked the Commission to be mindful of the various land uses. He clarified that Police, Fire and Transportation impact fees applied to residential and non-residential properties. He explained that Parks and Recreation and Library impact fees applied to residential properties only and do not apply to commercial-retail properties. Mr. Williams said that it was a nation-wide standard practice throughout most states.

LIBRARY IMPACT FEES (slide)

Mr. Williams explained this slide in more detail.

MUNICIPAL IMPACT FEE SUMMARY – SINGLE FAMILY (slide)

Mr. Williams explained this slide in more detail.

MUNICIPAL FEE COMPARISON (slide)

Mr. Williams explained this slide in more detail.

UTILITY AND MUNICIPAL FEE COMPARISON (slide)

Mr. Williams explained this slide in more detail.

NEXT STEPS (slide)

Mr. Williams went over the future meeting dates on this slide in detail.

City Manager Stavres said that the date for the First Reading of Ordinance O-25-25 should be noted as June 9, 2025. He talked about fiscal responsibility in regard to growth demands, 2006 impact fee implementation, cost increases, bonds, new investment financial obligations as a result of growth, water-related costs, municipal fee comparisons and the possible impact fees effect on the developer and buyer. He mentioned the affordable housing issue and ability of the City to provide affordable housing projects impact fee exemptions and density bonuses.

Mayor Birdsong asked how current the listed municipalities data was on the *Municipal Fee Comparison* slide. City Manager Stavres answered that some were current, others were older and some had not yet conducted a study and that he could not provide an exact date on when the studies were completed. Mr. Williams said that most of the municipalities had updated their study within the past five years with the Town of Dundee being older than five years and a few he was uncertain about. He also noted various ones that were currently updated. Discussion ensued.

City Manager Stavres discussed the negative effect of impact fees in regard to the timing of implementation and their last implementation in the City of Winter Haven. Mr. Williams talked about indexing, annual increases of impact fees and statute parameters.

DRAFT

Commissioner Dollison inquired if an impact study fee was being considered for the next four years. Mr. Williams responded it was after five years if there was major capital and growth changes. He said if all went according to the plan within the four-year period, then there could be a wait on another for a few years.

Commissioner Dollison asked for confirmation of when utility connection fees were implemented. City Manager Stavres explained that the water and sewer connection fees were approved late last summer and took effect January 2025. He said that "the delta between where they are today and the proposed would be less" if the impact fees would have been adjusted consistently over time. He said that the proposed municipal fee of $5,821 would not have been different due to a look at future investments, capital, and anticipated costs. He discussed review of fees within five to six years with environmental considerations, growth effects, facility costs, capital investments, and review of the capital improvement plan (CIP) on an ongoing basis.

Commissioner Mercer noted that Polk County updated their administration and utility connection fees on September 17, 2024, and that they took effect on January 1, 2025. City Manager Stavres said that he thought they had to adhere to the same 90-day wait requirements.

Mayor Pro Tem Yates inquired what balancing number of homes was used in the equation to determine proposed fees and how many homes would have to be built. Mr. Williams answered that it was approximately 10,000 new single and multi-family units.

Mayor Pro Tem Yates asked about the timeframe. Mr. Williams responded that it was ten years. City Manager Stavres said that there were 800 to 1,000 single-family permits issued annually.

Mayor Pro Tem Yates inquired about the number of current approved site plans for single and multi-family homes. Economic Opportunity and Community Investment Director Labbe answered that he could not provide an exact amount, but that there were remaining new construction in the Harmony at Lake Eloise subdivision and three to four developments on County Road 653. He anticipated that over the next three to five years, the City would continue to issue permits for 800 to 900 homes annually pending the market.

Mayor Pro Tem Yates asked if there was a correlation between existing values and immediate realized value to existing residents. Mr. Williams said that he did not specialize in the matter, but talked about home sales prices, industry markers, amenities and home values.

Mayor Pro Tem Yates inquired if the size of the home made a difference. Mr. Williams responded it did not.

Mayor Pro Tem Yates asked if the fees would take effect if passed under the proposed timeline. City Manager Stavres answered that it would take effect October 1, 2025, if approved on second reading at the Regular City Commission meeting on June 23, 2025 with the 90-day requirement.

City Manager Stavres inquired about the 90-day timeframe specifications. City Attorney Murphy clarified the timeframe was at least 90 days. Discussion ensued about implementation timing, current permits, statutory provision of permit rates, permit expiration, and police impact fee implementation.

(Mayor Birdsong left the room at 6:08 pm.)

(Mayor Birdsong returned at 6:10 pm.)

Mayor Pro Tem Yates asked if the transportation impact fees comparisons could be included. City Manager Stavres responded that they were included. Mr. Williams confirmed that it was included in the $17, 854. City Manager Stavres referenced the *Municipal Impact Fee Summary – Single Family* slide that listed the Roads category and its estimates. He also said that the transportation impact fees data was not available yet.

Mayor Pro Tem Yates requested an additional explanation on the Police impact fee reduction. Mr. Williams explained in detail about certain aspects that contributed to the reduction to include: the date when the Winter Haven Police Department was built, no planned major upgrades or expansions, available space for Police personnel placed in public safety complexes, and how it had exceeded the expectation of the initial plan that was included in the fee calculation 19 years ago. He said that there could be a significant increase if, after five years, there was a major upgrade or rebuild needed.

Mayor Pro Tem Yates inquired if substation-like facilities were being built within the new fire departments or if there was a need for Police standalone substations. Assistant City Manager for Public Safety Bird said a space for law enforcement has been placed within new fire departments based on growth and a possibility for substations in the future. City Manager Stavres talked about Polk County Sheriff's Office inability to centralize based on the size of the County, their district substations, officer patrol zones, change in the police and fire models, and differences between police and fire operations. He reiterated that there was a footprint for Police in the fire stations new builds to include stations 4, 5 and 6.

DRAFT

Mayor Pro Tem Yates asked about motion options in regard to this item. City Attorney Murphy recommended to view the information presented by experts (like Mr. Joe Williams with Raftelis) as providing competent substantial evidence for the basis of the Commissions' legislative acts. He provided further advice and said that these actions needed to be supported by the studies and report and that he was "very reluctant to recommend" to the Commission to "vary or not accept the recommendations" of the experts. He advised further in greater detail. Discussion ensued.

Mayor Pro Tem Yates inquired if factors such as new vehicles, handcuffs, tasers guns and all officer necessities were considered. Mr. Williams responded that vehicles and vehicle equipment had been considered, but that the legislature had removed the others as factors to be able to consider. City Manager Stavres reiterated those items that were considered and those that were not. Discussion ensued.

(Mayor Birdsong left the room at 6:30 pm.)

Commissioner Mercer discussed the rationale of impact fees in regard to new facilities, future services and infrastructure being paid by new people. She noted the various aspects that were studied to include usage of the Institute of Transportation Engineers (ITE) Parking and Trip Generation manuals. She talked about how the fees were one-time for new residents to relieve burden on the older residents who had already paid for the services.

4. ADJOURNMENT – 6:32 p.m.

Mayor Pro Tem Yates said this Special Workshop Meeting would be adjourned, there would be a 5-minute recess and then we would reconvene for the City Commission Agenda Review Session Meeting.

ATTEST: **CITY OF WINTER HAVEN, FLORIDA**

_____ _____

LaTonya Harris, CMC, FCRM
Deputy City Clerk

Nathaniel J. Birdsong, Jr.
Mayor

DRAFT

WINTER HAVEN
THE CHAIN OF LAKES CITY

CITY COMMISSION AGENDA REVIEW SESSION MINUTES

DATE: Wednesday, June 4, 2025, 6:00 p.m.

LOCATION: City Hall – John Fuller Auditorium
451 Third Street NW, Winter Haven, FL 33881

NOTE:
PowerPoint slides of certain agenda items were also presented during this meeting. Link to PowerPoint here:
https://acrobat.adobe.com/id/urn:aaid:sc:VA6C2:aff5f17a-861d-4075-b3ea-c73e1996d6c4
A hard copy of the PowerPoint will be attached to the original signed minutes.

1. CALL TO ORDER - Mayor Birdsong called the meeting to order at 6:41 p.m.

2. ROLL CALL – LaTonya Harris, CMC, FCRM, Deputy City Clerk

Commissioners Present: Mayor Nathaniel J. Birdsong, Jr.; Mayor Pro Tem Brian Yates; Commissioner Tracy Mercer; and Commissioner Clifton E. Dollison.

Commissioners Absent: Commissioner Bradley T. Dantzler

Staff Present: City Manager T. Michael Stavres; Deputy City Manager Michael "M.J." Carnevale; City Attorney John Murphy; Deputy City Clerk LaTonya Harris; Assistant City Manager for Public Safety Charlie Bird; Economic Opportunity and Community Investment Director Eric Labbe; Public Affairs and Communications Director Katrina Hill; Chief Financial Officer Colleen "C.J." Scott; Public Works Director Brittany Hart; Police Chief Vance Monroe; Parks, Recreation and Culture Director Julie Adams; Winter Haven Regional Airport Director Troy Heidel and Smart City Officer Hiep Nguyen.

5. PRESENTATION(S)

A. "Juneteenth Day" Proclamation – Juneteenth Planning Committee

B. "Maralee Thompson Day" Proclamation – Maralee Thompson, Miss Winter Haven 2025

C. "LGBTQ+ Pride Month" Proclamation - Danielle Valente, Volunteer and Dawn Schiller, Volunteer - Polk Pride FL

D. "Waste and Recycling Workers Week" Proclamation - Clyde Carson, Superintendent, Public Works

E. * AGENDA REVIEW ONLY *** Strategic Plan Presentation: Quality of Life**

City Manager Stavres said item 5E would be presented at the end of this meeting.

There were no questions or discussion on items 5A through 5D.

6. DEVELOPMENTS OF NOTE - None

7. MINUTES

A. May 7, 2025, City Commission Agenda Review Session Meeting Minutes

DRAFT

B. April 28, 2025, Regular City Commission Meeting Minutes

There were no questions or discussion for items 7A and 7B.

8. COMMENTS FROM THE AUDIENCE – N/A

9. ORDINANCE(S) – SECOND READING – PUBLIC HEARING

A. O-25-14- Administrative request to amend the 2035 Winter Haven Comprehensive Plan by amending the Future Land Use Element, Transportation Element, and the Transportation Map Series to assist in preserving transportation corridors

City Manager Stavres gave an overview of this item.

There were no questions or discussion.

B. O-25-18 - Amending O-24-44 appropriating surplus funds for Construction projects

City Manager Stavres gave an overview of this item.

There were no questions or discussion.

10. CONSENT AGENDA - None

11. RESOLUTION(S)

A. R-25-27 – Approval of a Public Transportation Grant Agreement with the Florida Department of Transportation (FDOT) for Rehabilitation of the T-Hangar Taxilanes

Winter Haven Regional Airport Director Heidel gave an overview of this item.

City Manager Stavres asked for an explanation of the colors indicated on the map (*see slide*). Director Heidel explained the current pavement condition index (PCI) colors on the map in detail.

Mayor Pro Tem Yates inquired if T-hangar taxi lanes numbered 35, 31 and 49 on the map (*see slide)* would be addressed. Director Heidel clarified that taxi lanes 35, 49, 54, 55, 62 and 82 noted on the map would be addressed (*see slide*).

B. R-25-28 - Approval of Grant Agreement for Local Government Cybersecurity Grant Program

Smart City Officer Nguyen gave an overview of this item. City Manager Stavres added that it would assure protection and mitigate risk.

There were no questions or discussion.

12. ORDINANCE(S) - FIRST READING

A. O-25-24 - Voluntary annexation of 500 4th Street East Wahneta and an adjacent unimproved right-of-way

Economic Opportunity and Community Investment Director Labbe gave an overview of this item.

There were no questions or discussion.

B. O-25-25 - Updating and Adjusting City's Municipal Services Impact Fees

Mayor Pro Tem Yates informed the Commission that he would be absent from the second meeting and wondered if it should be postponed due to supermajority requirement concerns. City Manager Stavres said he would report back about the proposed postponement after further research and review.

Mayor Birdsong asked if there were provisions to consider as done with other ordinance first readings that involved transmittals. City Attorney Murphy responded that there were not.

Mayor Birdsong inquired if there any other action that could be taken. City Attorney Murphy answered there were options. Mayor Pro Tem Yates gave his availability. City Manager Stavres said that they would review it.

13. NEW BUSINESS - None

14. CITY COMMISSIONERS/LIAISON REPORTS – No report

15. CITY ATTORNEY REPORT – No report

16. CITY MANAGER REPORT

A. Assign a City Commission Liaison to Request for Proposal (RFP) for Employee Assistance Program (EAP) Services

City Manager Stavres gave an overview of this item and requested a Commission liaison. He noted that the bid was near completion.

Commissioner Dollison agreed to serve.

City Manager Stavres said that they would let Procurement Manager Bethany Owen know.

B. Assign a City Commission Liaison to Request for Qualifications (RFQ) for Airport Engineering Services

City Manager Stavres gave an overview of this item and requested a Commission liaison.

Mayor Pro Tem Yates agreed to serve.

City Manager Stavres said that they would let Procurement Manager Owen know.

City Manager Stavres provided an update about several items:

- Jack Hitchcock from the office of Senator Rick Scott had contacted him today about ongoing communications with the Federal Communications Commission (FCC) and would share information when finalized and received. He said the himself, Director Heidel, and Major General H. D. "Jake" Polumbo Jr. would take a one-day flight to Atlantic City [New Jersey] to observe a remote air traffic control tower operation, that was under study, in about two weeks.

- He and some members of leadership, including Police Chief Monroe and Director Labbe, met with Talbot House Ministries yesterday who shared a progress update with them. He said the shelter would tentatively open August 1, 2025 and the "save the date" to their grand opening was July 31, 2025. He said it was a shelter for women and children that had 62 permanent beds with space for 20 additional emergency placements and gave additional information about the program and their wraparound services.

  Mayor Pro Tem Yates asked if single mothers have priority over single women. City Manager Stavres said he believed it was first come first serve with unique bedding arrangements and housing systems, but would get more information. He reiterated that it was not a shelter for men and mentioned it had 24- hour staffing.

- He said that a copy of a letter at each Commissioner's place on the dais was addressed to Governor Ron DeSantis regarding a request for veto of Senate Bill (sb) 180 (emergency preparedness and response). He discussed what would happen if the bill passed and requested those who were favorable to execute their signature on the original letter that Deputy City Clerk Harris had prior to their departure that evening.

❖

...Continued from Presentations

E. * AGENDA REVIEW ONLY *** Strategic Plan Presentation: Quality of Life**

City Manager Stavres gave an overview of this item and thanked the Commission for the lesson on impact fees.

DRAFT

Aquatics Recreation Supervisor I Chase Hogue showed PowerPoint slides (*see attached*/link) and gave an overview of the agenda.

Swim Lessons

Supervisor Hogue presented this slide in detail and shared the story of each child overcoming their fear of water through the encouragement, instruction and support provided to them during swim lessons from City Aquatic team members. She talked about the number of participants from last year, age range, importance of water safety, drowning facts, levels of water safety, where lessons are provided and growing partnerships with Kiwanis Club of Winter Haven, American Red Cross Centennial, and Polk County Public Schools (PCPS).

Mayor Birdsong inquired if the lessons were year-round or just for the summer. Supervisor Hogue answered that they were available during the summer months of June and July and also during the spring months of March and April.

Summer Camp – Camp Off the Chain

Recreation Supervisor Tanisha Duncan presented this slide in detail and gave an update about an increase in campers. She reported the camp dates, hours, age limitations and that the Polk County School Board (PCSB) had provided lunch. She thanked the Library, Airport, Police and Fire departments for their assistance. City Manager Stavres pointed out the addition of a third location this year at the Jewett School of the Arts and said they were looking at ways to further their relationship with the PCSB.

Mayor Birdsong asked if the summer school lunches were distributed in the cafeteria of Jewett School of the Arts. Supervisor Duncan replied that they were. Commissioner Dollison commented that he liked the name of the camp and noted his family involvement.

Digital Memory Project

Librarian II Rebecca Player presented this slide in great detail and thanked the Commission for their acknowledgement of the "important role that the library plays in supporting" the *Quality of Life* for the community. She mentioned that the summer reading program had begun and she was working on a digital archive project to preserve the history of the City. She talked about her acceptance into the Florida Department of State Division of Library and Information Services Sunshine State Library Leadership Institute and gave information about the program. She discussed the refreshment of the current digital history collection, streamlined search capabilities and implementation of content that fostered an invitation for community engagement. She talked about her collaboration with the Museum of Winter Haven to merge some of their digital collection and joining Public Affairs and Communications team as they conducted interviews at the Neighborhood Service Center in Florence Villa to collect photographs and documents residents brought with them. She noted the next steps and a sample of what was in the collection (*see slide)*. Mayor Birdsong applauded her efforts.

Mayor Pro Tem Yates commented that this was what he had been in search of so that he could decorate a room with old pictures of Winter Haven and thanked her. Librarian Player also explained that there was a download and search function.

Mayor Birdsong inquired if it was in operation. Librarian Player said it was, shared how to access it on the City website under the Library department page and location of the link.

Commissioner Dollison asked how much digitization of the Winter Haven News Chief had taken place. Librarian Player answered that only the one from 1964 from the University of Florida and none of the collection from the Museum of Winter Haven had been.

Commissioner Dollison inquired how far in the past did the Winter Haven News Chief go. Librarian Player responded that it was back to the 1920s and an estimate of 210, 000 pages that would have to be digitized on large format printers.

Commissioner Dollison asked if the Florence Villa Community News newspaper shown on the slide was from 1964. Librarian Player said it was from July 1964 to December of 1964 with a total of about 24 pages.

City Manager Stavres inquired how many years of the Winter Haven High School (WHHS) yearbook had been scanned. Librarian Player answered it was 1922 to 2012 through a prisoner program and added that she scanned a 1967 Jewett High School yearbook. Mayor Birdsong said he had a 1964 Jewett High School yearbook she could use to add to the digital collection. Librarian Player said the Commission could contact her if they wanted to contribute.

Mayor Pro Tem Yates asked if she could obtain the newer WHHS yearbooks digitally to add to the collection. Librarian Player responded that she would look into it.

DRAFT

City Manager Stavres inquired when Mayor Pro Tem graduated. Mayor Pro Tem Yates said he graduated in 2000.

Rockin' Freedom Fest – July 3rd

Special Events Coordinator Natalie Wilson presented this slide in detail and invited the Commission to join in the celebration. She shared information about the event to include date, time, location and scheduled features. She also noted the fireworks show and thanked the Commission for their continued support.

Project Lake Elbert Update

Parks Planning and Strategic Initiatives Manager Andy Palmer provided a brief update on the progress of the project and drone video footage of a birds-eye view (*see slide*). He discussed the process of the 50-year vision coming into fruition. He talked about obtaining surveys, master planning, voluntary property acquisitions, design, dig once approach implementation, new water, sewer, stormwater lines, traffic calming, and the trail. He said the completed trail would be about 2.4 miles. He said the project began in 2024 with underground work being done for the past year and mentioned the replacement of lines to include those at the intersection of College Grove Circle Northeast and North Lake Elbert Drive Northeast. He talked about the removal of 3,600 linear feet of asbestos and replacement with new water main. He shared the progress of the trail and underground work as well as an expected two-week timeframe of completion for final paving of the trail and roadway pending weather conditions. He estimated completion of project as late July 2025 pending weather conditions. He noted traffic pattern would be the same for about three weeks and that ribbon cutting would take place around late summer or early fall.

Mayor Birdsong asked if there would be improvements on the intersection of 11th Street Northeast and North Lake Elbert Drive Northeast. Manager Palmer said that it would and explained the new configuration.

Mayor Birdsong inquired of the timeframe. Manager Palmer answered that it would be paved late June and completion by late July 2025.

State Housing Initiatives Partnership (SHIP) Summary Budget FY 24/25

Economic Opportunity and Community Investment Assistant Director Cedric Cox presented this slide in detail and provided a brief summary update. He shared information about funding received, funds encumbered, rollover funding, the remaining balance, total of completed projects, and projected SHIP distribution for fiscal year 2025/ 2026. He gave an overview recap of the *Quality of Life* agenda. City Manager Stavres commended Assistant Director Cox on his leadership and diligence as well as his team on how they administered nearly all of the funds. He anticipated the projected funding would be dispersed quickly to waiting applicants.

Commissioner Dollison asked if the program was funded by the State or Federal government. Assistant Director Cox explained the flow of the program from federal level to local city government. Commissioner Dollison commented on funding cuts in regard to this type of program and Assistant Director Cox said he received weekly call updates on Sadowski State and Local housing trust funds from the Sadowski Housing Coalition. Commissioner Dollison commented about the hope for continuity of the program in the City. City Manager Stavres said their focus was on the federal budget bill due to the impact it had on community development block grant (CDBG) funding. He thanked the Commission and said the next Strategic Plan Update presentation would take place in July on the *Environmental Stewardship* Pillar.

Coordinator Wilson shared an update on the Juneteenth celebration and movie night. City Manager Stavres assured that the dates and times would be sent to the Commission calendars. Mayor Birdsong suggested that the Juneteenth information be shared during the "Juneteenth Day" proclamation presentation at the Regular City Commission meeting on June 9, 2025. Coordinator Wilson said it would and that the proclamation would be accepted by the Juneteenth committee.

17. DEPUTY CITY MANAGER REPORT – No report

18. CITY CLERK REPORT – No report

19. EMERGENCY MATTERS NOT RECEIVED FOR THE AGENDA – None

20. ADJOURNMENT – 7:39 p.m.

DRAFT

ATTEST:

LaTonya Harris, CMC, FCRM
Deputy City Clerk

CITY OF WINTER HAVEN, FLORIDA

Nathaniel J. Birdsong, Jr.
Mayor

DRAFT

WINTER HAVEN
THE CHAIN OF LAKES CITY

REGULAR CITY COMMISSION MEETING MINUTES

DATE: Monday, June 9, 2025 6:00 p.m.

LOCATION: City Hall – John Fuller Auditorium
451 Third Street NW, Winter Haven, FL 33881

NOTE:
PowerPoint slides of certain agenda items were also presented during this meeting. Link to PowerPoint here: https://acrobat.adobe.com/id/urn:aaid:sc:VA6C2:b9065e5f-6bcb-472c-837d-fe0921df274e?viewer%21megaVerb=group-discover A hard copy of the PowerPoint will be attached to the original signed minutes.

1. **CALL TO ORDER -** Mayor Birdsong called the regular meeting to order at 6:24 p.m.

2. **ROLL CALL -** Vanessa Castillo, MMC, City Clerk

Commissioners Present: Mayor Nathaniel Birdsong; Mayor Pro Tem Brian Yates; Commissioner Tracy Mercer; and Commissioner Clifton Dollison.

Commissioners Absent: Commissioner Brad Dantzler

Staff Present: City Manager T. Michael Stavres; Deputy City Manager Michael "M.J." Carnevale; Assistant City Attorney Drew Crawford; City Clerk Vanessa Castillo; Assistant City Manager for Public Safety Charlie Bird; Economic Opportunity and Community Investment Director Eric Labbe; Winter Haven Water Director Gary Hubbard; Parks, Recreation and Culture Director Julie Adams; Public Affairs and Communications Director Katrina Hill; Public Works Director Brittany Hart; Police Chief Vance Monroe; and Fire Chief Drew Neubrand.

3. **INVOCATION** – Minister Abdul Al-khatib, First Missionary Baptist Church

4. **PLEDGE OF ALLEGIANCE** – Vanessa Castillo, MMC, City Clerk

5. **PRESENTATION(S)**

A. "Juneteenth Day" Proclamation - Juneteenth Planning Committee

City Manager Stavres read a proclamation aloud recognizing "Juneteenth Day" in the City of Winter Haven. Ms. Zanjia Zow accepted the proclamation, along with the Juneteenth Planning Committee, and thanked the City Commission.

B. "Maralee Thompson Day" Proclamation - Maralee Thompson, Miss Winter Haven 2025

Deputy City Manager Carnevale read a proclamation aloud recognizing "Maralee Thompson Day" in the City of Winter Haven. Ms. Thompson accepted the proclamation and thanked the City Commission.

C. "LGBTQ+ Pride Month" Proclamation - Danielle Valente, Volunteer and Dawn Schiller, Volunteer - Polk Pride FL

City Manager Stavres read a proclamation aloud recognizing "LGBTQ+ Pride Month" in the City of Winter Haven. Ms. Valente, along with Ms. Schiller, accepted the proclamation and thanked the City Commission.

DRAFT

D. "Waste and Recycling Workers Week" Proclamation - Clyde Carson, Superintendent, Public Works

Deputy City Manager Carnevale read a proclamation aloud recognizing "Waste and Recycling Workers Week" in the City of Winter Haven. Superintendent Carson, along with members of the Solid Waste Division team, accepted the proclamation and thanked the City Commission.

6. DEVELOPMENTS OF NOTE – None

7. MINUTES

A. May 7, 2025, City Commission Agenda Review Session Meeting Minutes

B. May 12, 2025, Regular City Commission Meeting Minutes

Motion by Mayor Pro Tem Yates to approve the minutes as presented.

Mayor Birdsong stated that anyone wishing to speak to the minutes could make comments now by coming to the podium and stating their name and address for the record and make comments. No one spoke for or against.

Motion carried 4:0.

8. COMMENTS FROM THE AUDIENCE

Brandy Wells, 183 Conch Drive in Poinciana, requested a $2,500 sponsorship for the Youth Majorette Dance Group competition coming up soon at Polk State College. City Manager Stavres said staff would get her in contact with staff that handled grant and aid for future requests and encouraged her to contact Polk County Tourism and Sports Marketing (PCTSM) since people from outside the area would be attending the event.

9. ORDINANCE(S) – SECOND READING – PUBLIC HEARING

A. O-25-14- Administrative request to amend the 2035 Winter Haven Comprehensive Plan by amending the Future Land Use Element, Transportation Element, and the Transportation Map Series to assist in preserving transportation corridors

Assistant City Attorney Crawford read Ordinance O-25-14 by title only. City Manager Stavres said there had been no changes since first reading.

Motion by Commissioner Mercer to approve Ordinance O-25-14 on second reading – public hearing.

Mayor Birdsong closed the Regular City Commission Meeting and opened a Public Hearing stating anyone wishing to speak to this Ordinance may come to the podium and state their name and address for the record. No one spoke for or against.

Mayor Birdsong closed the Public Hearing and reopened the Regular Commission Meeting.

Motion carried 4:0.

B. O-25-18 - Amending O-24-44 appropriating surplus funds for Construction projects

Assistant City Attorney Crawford read Ordinance O-25-14 by title only. City Manager Stavres said there had been no changes since first reading.

Motion by Commissioner Mercer to approve Ordinance O-25-18 on second reading – public hearing.

Mayor Birdsong closed the Regular City Commission Meeting and opened a Public Hearing stating anyone wishing to speak to this Ordinance may come to the podium and state their name and address for the record. No one spoke for or against.

Mayor Birdsong closed the Public Hearing and reopened the Regular Commission Meeting.

Motion carried 4:0.

10. CONSENT AGENDA – None

11. RESOLUTION(S)

A. R-25-27 - Approval of a Public Transportation Grant Agreement with the Florida Department of Transportation (FDOT) for Rehabilitation of the T-Hangar Taxilanes

Assistant City Attorney Crawford read Resolution R-25-27 by title only and City Manager Stavres presented.

Motion by Mayor Pro Tem Yates to approve Resolution R-25-27.

Mayor Birdsong closed the Regular City Commission Meeting and opened a Public Hearing stating anyone wishing to speak to this Resolution may come to the podium and state their name and address for the record. No one spoke for or against.

Mayor Birdsong closed the Public Hearing and reopened the Regular Commission Meeting.

Motion carried 4:0.

B. R-25-28 - Approval of Grant Agreement for Local Government Cybersecurity Grant Program

Assistant City Attorney Crawford read Resolution R-25-28 by title only and City Manager Stavres presented.

Motion by Mayor Pro Tem Yates to approve Resolution R-25-28.

Mayor Birdsong closed the Regular City Commission Meeting and opened a Public Hearing stating anyone wishing to speak to this Resolution may come to the podium and state their name and address for the record. No one spoke for or against.

Mayor Birdsong closed the Public Hearing and reopened the Regular Commission Meeting.

Motion carried 4:0.

12. ORDINANCE(S) - FIRST READING

A. O-25-24 - Voluntary annexation of 500 4th Street East Wahneta and an adjacent unimproved right-of-way

Assistant City Attorney Crawford read Ordinance O-25-24 by title only and City Manager Stavres presented.

Mayor Birdsong reported this item would come back for a second reading and public hearing at the June 23, 2025, Regular City Commission Meeting.

B. O-25-25 - Updating and Adjusting City's Municipal Services Impact Fees

Assistant City Attorney Crawford read Ordinance O-25-25 by title only. City Manager Stavres presented and said that Joe Williams, Senior Manager from Raftelis Financial Consultants, Inc. was present to answer any questions. He added that there would be another [Special City Commission] workshop on this to be held Wednesday, June 18, 2025. Mr. Williams noted there had been an update that was presented at last Wednesday, [Special City Commission] Workshop. Discussion ensued.

Mayor Birdsong reported this item would come back for a second reading and public hearing at the June 23, 2025, Regular City Commission Meeting. Discussion ensued.

13. NEW BUSINESS – None

14. CITY COMMISSIONERS/LIAISON REPORTS

Commissioner Mercer reported the following: attended a Risk Management Teams Meeting; attended a Polk Regional Water Cooperative (PRWC) Tech Teams Meeting; and attended a PRWC Conservation Teams Meeting.

Commissioner Dollison reported the following: attended a Planning Commission Meeting; attended the Winter Haven Rotary Club *Celebrates 100 Years of Service Gala*; attended the LEGOLAND *Sea Life* Grand Opening; celebrated the Day of Pentecost; and celebrated Betty Smothers birthday who was in the audience but also a faithful Commission meeting and First Missionary Baptist Church (FMBC) attendee.

Mayor Pro Tem Yates reported the following: attended the Winter Haven Rotary Club *Celebrates 100 Years of Service Gala* and attended the LEGOLAND *Sea Life* Grand Opening, which his young son loved.

Mayor Birdsong reported the following: attended the LEGOLAND *Sea Life* Grand Opening; attended the Winter Haven Rotary Club *Celebrates 100 Years of Service Gala* and did greetings; attended the retirement of a City employee [Jamie Dudley] and wished him well. Lastly, he asked about several bills in Tallahassee they were concerned about. City Manager Stavres reported they were still watching closely the signature of bills that went forward to the Governor, which he explained further, and said staff would report back. He explained that they receive updates on bills that were being presented, which they would review and identify those bills they were watching and wait to see if they were signed off on. He added that following the June 4, 2025, City Commission Agenda Review Meeting, staff had forwarded a letter the Commission had signed to Governor [Ron] DeSantis requesting he veto Senate Bill 180 Emergency Response Bill because while the bill strengthens emergency response and recovery, it simply went too far in terms of limiting action by local government on matters pertaining to normal development.

Mayor Birdsong also mentioned that they were praying for City Attorney Murphy's mother, who was almost 96 years old.

Commissioner Dantzler was absent.

15. CITY ATTORNEY REPORT – None

16. CITY MANAGER REPORT

City Manager Stavres reminded the Commission of the Juneteenth events, with the first one being June 13, 2025 at the [Historic] Ritz Theatre and the Juneteenth 2025 Annual Celebration being held Saturday, June 14 from 11:00 a.m. to 4:00 p.m.

17. DEPUTY CITY MANAGER REPORT – None

18. CITY CLERK REPORT – None

19. EMERGENCY MATTERS NOT RECEIVED FOR THE AGENDA – None

20. ADJOURNMENT – 7:19 p.m.

ATTEST:

_____
Vanessa Castillo, MMC
City Clerk

CITY OF WINTER HAVEN, FLORIDA

_____
Nathaniel J. Birdsong, Jr.
Mayor

WINTER HAVEN
THE CHAIN OF LAKES CITY

SPECIAL CITY COMMISSION WORKSHOP MEETING MINUTES

DATE: Wednesday, June 18, 2025, 5:30 p.m.

LOCATION: City Hall – John Fuller Auditorium
451 Third Street NW, Winter Haven, FL 33881

NOTE:
PowerPoint slides of certain agenda items were also presented during this meeting. Link to PowerPoint here:
https://acrobat.adobe.com/id/urn:aaid:sc:VA6C2:4a3e755d-b0db-44a6-bb2d-9c89658eeb45
A hard copy of the PowerPoint will be attached to the original signed minutes.

1. CALL TO ORDER - Mayor Birdsong called the meeting to order at 5:30 p.m.

2. ROLL CALL – Vanessa Castillo, MMC, City Clerk

Commissioners Present: Mayor Nathaniel J. Birdsong, Jr.; Mayor Pro Tem Brian Yates; Commissioner Tracy Mercer; and Commissioner Bradley T. Dantzler.

Commissioners Absent: Commissioner Clifton E. Dollison

Staff Present: City Manager T. Michael Stavres; Deputy City Manager Michael "M.J." Carnevale; City Attorney John Murphy; City Clerk Vanessa Castillo; Assistant City Manager for Public Safety Charlie Bird; Police Chief Vance Monroe; Economic Opportunity and Community Investment Director Eric Labbe; Winter Haven Water Director Gary Hubbard; Public Works Director Brittany Hart; Chief Financial Officer Colleen "C.J." Scott; Parks, Recreation and Culture Director Julie Adams; and Fire Chief Drew Neubrand.

3. DISCUSSION – MUNICIPAL IMPACT FEES WORKSHOP

A. <u>Second meeting</u> to discuss Ordinance O-25-25 and the extraordinary circumstances based on a demonstrated need study prepared by Raftelis Financial Consultants, Inc. for the City's Municipal Services Impact Fees (Police, Fire, Parks and Recreation, and Library Impact Fees) necessitating the need to exceed Phase-In and Fee increase Limitations in Florida Statute relating to updating and adjusting the City's Municipal Services Impact Fees (Police, Fire, Parks and Recreation, and Library Impact Fees)

City Manager Stavres gave an overview of this item and explained the reason for the Special City Commission Workshop Meeting which was to discuss Ordinance O-25-25 and the extraordinary circumstances, which they have verified through the Raftelis Financial Consultants, Inc. ("Raftelis") study which was commenced approximately February/March 2025, and the recommendations for exceeding Phase-In and Fee increase Limitations in Florida" Impact Fee Act by increasing the City's municipal services impact fees pertaining to impact fees that were assessed on new construction one-time fees that pertain to police, fire, parks and recreation and libraries. He noted that Commissioner Dantzler had been out [last week] so they had sent him information. He introduced consultant Joe Williams from Raftelis.

Mr. Williams noted that the second reading for this Ordinance would be June 23, 2025. He also showed a *Municipal Fee Impact Fee Study* PowerPoint *(see link/attached)* and went over each of the slides in more detail.

<u>EXTRAORDINARY CIRCUMSTANCE WORKSHOPS (slide)</u>

Mr. Williams explained this slide in more detail.

DRAFT

IMPACT FEE STUDY OBJECTIVES (slide)

Mr. Williams explained this slide in more detail.

IMPACT FEE BASICS (slide)

Mr. Williams explained this slide in more detail.

KEY PHRASES FROM FLORIDA IMPACT FEE ACT (slide)

Mr. Williams explained this slide in more detail.

IMPACT FEE METHODOLOGY (slide)

Mr. Williams explained this slide in more detail.

FIRE IMPACT FEES (slides)

Mr. Williams explained these slides in more detail.

POLICE IMPACT FEES (slides)

Mr. Williams explained these slides in more detail. He said that it was not a major need to have additional police facilities and that the existing building would be sufficient for the time period looked at and thus the recommendation was for a reduction in the City's police impact fees.

PARKS & RECREATION IMPACT FEES (slides)

Mr. Williams explained this slide in more detail and said it was a very significant need to provide facilities for growth. He noted that the cost of acquiring lands and building would be much more than in previous years

LIBRARY IMPACT FEES (slides)

Mr. Williams explained these slides in more detail.

MUNICIPAL IMPACT FEE SUMMARY – SINGLE FAMILY (slide)

Mr. Williams explained this slide in more detail.

MUNICIPAL FEE COMPARISON (slide)

Mr. Williams explained this slide in more detail.

UTILITY & MUNICIPAL FEE COMPARISON (slide)

Mr. Williams explained this slide in more detail.

City Manager Stavres said that when looking at this particular chart, the City had done a significant adjustment to our utility, water, sewer connections fees in August 2024. Much of that was tied back to improvements that were needed associated with the Polk Regional Water Cooperative (PRWC) and the future of water putting that cost of growth back on growth. Other municipalities, who are also members of the PRWC, are looking at this and their connection fees. He also made fee comparisons with other municipalities listed on the chart.

City Attorney Murphy explained that the focus on this particular meeting is on a discussion of the extraordinary circumstances and the reason was because the Florida Statute that Mr. Williams referenced required the Commission to consider such matters in two special workshop meetings, with this being the second of those meetings and the first one on June 4, 2025. He added that the reason this was important was because the recommendation from the consultant Mr. Williams and the City Manager was that the Commission adopt an ordinance that did not phase in these increases, but adopt them all at once now and exceed the 50 % limitation on an amount of fee increase and that such increased fees would be approved now but not implemented until October 1, 2025, which he explained further. Lastly, he commented that Mayor Pro Tem Yates had made a very good observation at the June 9, 2025, Regular City Commission Meeting as to why we were recommending a reduction in police [impact fees]. This was due to what the study recommended now, however, in 2-4 years, the recommendation could be to increase it so that would be reevaluated and reviewed within the 10-year window so that we don't miss another opportunity to have growth pay for itself, which he discussed in more detail. City Manager Stavres added that in 2006 when the fees were implemented, they could be indexed, however, now they

DRAFT

could not, which he explained in more detail. He agreed that they would likely look at these again in three years and do another study to ensure the City was on target with where they need to be and if an adjustment needed to be made at that time and bring back for Commission consideration. He noted that if favorably considered by 4 of 5 Commissioners at the June 23, 2025, Regular City Commission Meeting, the recommendation to lower police impact fees would take effect for the permits pulled the next day because it was a decrease. Conversely, for the increase in parks and recreation, fire, and library fees, although effective as of June 23, 2025, a 90-day window was required and the increased fees would not be assessed until October 1, 2025. City Attorney Murphy noted that there would need to be a supermajority to approve this in its current form. He also noted that any pending permits or if a building permit was issued or requested prior to October 1, 2025, the charge would be the old rates, which he explained in more detail. Discussion ensued.

NEXT STEPS (slide)

❖

Mayor Pro Tem Yates asked Mr. Williams if all that Raftelis had done and studied met all of the requirements for extraordinary circumstances. Mr. Williams said yes, but extraordinary circumstances was not defined in the statute. City Attorney Murphy said that to his knowledge the extraordinary circumstances had not been judicially determined or interpreted yet. He added that a definition of this would need to come from the Florida Legislature, which had not been forthcoming yet, or from decisional case law from a court applying the law to specific facts which he explained in more detail. Lastly, he said that the large population increases and significant inflationary pressures [the City's extraordinary circumstances] were supportable by the Raftelis Study.

Mayor Pro Tem Yates reported that through conversations after the June 9, 2025 Regular City Commission Meeting, he either received no opposition from citizens or if there was opposition, it was due to a lack of understanding of what an impact fee was and when it was charged so he tried to educate in such instances. He added that the Commission had discussed this topic a little, however, he wished they would have done so in 2020 or 2021. He also reported that he would not be in attendance at the June 23, 2025, Regular City Commission Meeting due to a vacation planned two years ago, but supported this item. City Manager Stavres reminded the Commission that when they looked at impact fees, police and fire addressed new development in all of the City's zoning districts, Commercial, industrial and residential all had impact on police and fire. However, parks and recreation and the library only pertained to residential and not nonresidential, which he explained further.

Commissioner Dantzler expressed that he disliked raising fees but said he understood it was a necessary for growth. He questioned what kind of input the City was getting from the public and if there had been any opposition. City Manager Stavres explained that he had done three television interviews last week and that it ran in local print media. He added that the people he had spoken with were already here and that the City wanted to make sure that those that were coming in the future paid their fair share of new investments, which he explained further, and that the response from those interviewed in the community was favorable towards making growth pay for growth.

Commissioner Dantzler asked where road impact fees were going, what they were being used for and requested examples. City Manager Stavres said transportation impact fees were those that applied to all types of development. The fees would go towards the development of new roads and improvements. He explained how anytime impact fees were used those dollars were set aside and specifically accounted for in an impact fee fund only to be used for investments into projects that expand service capacities. Examples were the unfunded Willowbrook Road project (Martin Luther King, Jr. Boulevard and Buckeye Loop Road area), and Logistics Parkway, which he discussed in more detail. Deputy City Manager noted that he believed that the City had estimated $10 million in grant applications that staff had submitted to the state and federal level.

Commissioner Dantzler recommended that the City come up with "low hanging fruit" (readily achievable goals), such as new pickleball courts, another splash pad, Sage Road improvements, so that the City could show what was being paid for anytime fees were raised. City Manager Stavres agreed and discussed the need to acquire land for parks and that staff was exploring where it could be done. Commissioner Dantzler added that anytime they raised fees, they should point to readily achievable goals and another study should not be necessary.

Discussion ensued regarding how the [impact fees for the] City of Winter Haven were relatively low.

4. ADJOURNMENT – 6:07 p.m.

Mayor Birdsong said there would be a 5-minute recess and then City Commission Agenda Review Session Meeting would reconvene at 6:11 p.m.

ATTEST:

Vanessa Castillo, MMC
City Clerk

CITY OF WINTER HAVEN, FLORIDA

Nathaniel J. Birdsong, Jr.
Mayor

DRAFT

WINTER HAVEN
THE CHAIN OF LAKES CITY

CITY COMMISSION AGENDA REVIEW SESSION MINUTES

DATE: Wednesday, June 18, 2025, 5:30 p.m.

LOCATION: City Hall – John Fuller Auditorium
451 Third Street NW, Winter Haven, FL 33881

NOTE:
PowerPoint slides of certain agenda items were also presented during this meeting. Link to PowerPoint here: https://acrobat.adobe.com/id/urn:aaid:sc:VA6C2:b22d8ebc-04d4-4118-9eac-c35a06fbaf57?viewer%21megaVerb=group-discover A hard copy of the PowerPoint will be attached to the original signed minutes.

1. CALL TO ORDER - Mayor Birdsong called the meeting to order at 6:11 p.m.

2. ROLL CALL - Vanessa Castillo, MMC, City Clerk

Commissioners Present: Mayor Nathaniel J. Birdsong, Jr.; Mayor Pro Tem Brian Yates; Commissioner Bradley T. Dantzler; and Commissioner Tracy Mercer

Commissioners Absent: Commissioner Clifton E. Dollison

Staff Present: City Manager T. Michael Stavres; Deputy City Manager Michael "M.J." Carnevale; City Attorney John Murphy; City Clerk Vanessa Castillo; Assistant City Manager for Public Safety Charlie Bird; Economic Opportunity and Community Investment Director Eric Labbe; Winter Haven Water Director Gary Hubbard; Chief Financial Officer Colleen "C.J." Scott; Parks, Recreation and Culture Director Julie Adams; Public Works Director Brittany Hart; Police Chief Vance Monroe; and Fire Chief Drew Neubrand.

5. PRESENTATION(S)

A. "Ernestine Davis Day" Proclamation - Ernestine Davis

B. "Thomas Robert Cooney Day" Proclamation - Thomas Cooney

Mayor Birdsong said that items 5A and 5B would be presented on at the June 23, Regular City Commission Meeting.

There were no questions or discussion.

6. DEVELOPMENTS OF NOTE - None

7. MINUTES

A. May 21, 2025, City Commission Agenda Review Session Meeting Minutes

B. May 27, 2025, Regular City Commission Meeting Minutes

There were no questions or discussion for items 7A and 7B.

8. COMMENTS FROM THE AUDIENCE – N/A

DRAFT

9. ORDINANCE(S) – SECOND READING – PUBLIC HEARING

A. O-25-15 - Request by Cassidy Land Development, LLC to assign Neighborhood Suburban Future Land Use to four (4) annexed parcels

B. O-25-16 - Request by Cassidy Land Development, LLC to assign Multi-Family Residential- Low Density (R-3) zoning district to four (4) annexed parcels

City Manager Stavres gave an overview of companion items 9A and 9B.

There were no questions or discussion.

C. O-25-24 - Voluntary annexation of 500 4th Street East Wahneta and an adjacent unimproved right-of-way

City Manager Stavres gave an overview of this item.

There were no questions or discussion.

D. O-25-25 - Updating and Adjusting City's Municipal Services Impact Fees

City Manager Stavres gave an overview of this item.

There were no questions or discussion.

10. CONSENT AGENDA

A. Purchase of UpGuard Vendor Risk Management Subscription (Mountain View, CA)

Business Tech Support Manager Robert van Druten of Technology Services gave an overview of this item.

City Manager Stavres added that this item was for cybersecurity.

Commissioner Dantzler inquired if this item had been vetted with the National League of Cities (NLC). Manager van Druten said that he would check on this. Commissioner Dantzler said that the NLC had a list of what municipalities needed to do in the area of cybersecurity.

Commissioner Mercer asked for an example of a risk in the software. Manager van Druten explained how when the City used third-party vendors it gave them a security score and posture so we could evaluate and grade them, which he explained in more detail.

Mayor Pro Tem Yates commented that there was nothing more important in a municipality or in the finance field than cybersecurity. He asked if the software systems of various City departments communicated with one another for streamlining purposes and questioned if those systems were efficient. City Manager Stavres explained the importance of integration when acquiring new software. He gave the City's New World / Tyler Technologies enterprise resource platform (ERP) for financials and UKG timekeeping software working together as an example of software working together. Discussion ensued.

B. Award of RFQ 25-15 - Design-Build Services for DiamondPlex Softball Improvements & Pickleball Complex

Parks Planning and Strategic Initiatives Manager Andy Palmer gave an overview of this item.

City Manager Stavres said that this item was about taking a 30-year-old heavily utilized facility and making the repair and maintenance improvements to that, such as fencing, lighting, etc. He said he could not use impact fees for this since it was normal "wear and tear" and no expanding of services or creating more fields. He added that he and Commissioner Dantzler had engaged in discussions with Polk State College regarding pickleball to see if there was an opportunity for the City to build actual courts, which would need to be vetted further. Since these would be new facilities with amenities not available to residents today, they could be funded through impact fees.

There were no questions or discussion.

DRAFT

C. Authorization for Travel & Training - Winter Haven Chamber Board of Directors Strategic Planning Retreat (Stavres)

City Manager Stavres gave an overview of this item.

There were no questions or discussion.

D. Developer's Agreement - Grand Central Cooperative, LLC

Economic Opportunity and Community Investment Director Labbe gave an overview of this item.

City Manager Stavres explained that the preservation allocation the City would do was contingent upon performance, attainment, or achievement of very specific metrics outlined in the Developer's Agreement. He also clarified that it was a reimbursement and not an outright payment.

Mayor Pro Tem Yates inquired if this would fall on the City Manager to make that call if the developer came with monies they had spent so far, which he explained in more detail. Director Labbe explained the language in the agreement regarding the payment #1 being contingent upon $500,000 being paid for construction expenses related to Phase 1A and Phase 1B, which was not the development of plans or soft costs, which he explained further. He added that it also included that the City Manager had the authority to approve the project and the progress of the project and the Developer's material compliance with the terms of the agreement. Discussion ensued.

Commissioner Dantzler asked about the status of the parking lot highlighted in red [on the slide]. City Manager Stavres said that they had retained ownership of it as part of the Onicx [Group – a private real estate firm] deal that was terminated in December 2023, and that it would stay a public parking lot. He added that it had nothing to do with this project.

Commissioner Dantzler inquired if they had limited the City Manager as to what he could approve. City Manager Stavres said that $400,000 [per year] was the reimbursable amount for the preservation portion of this over a period of five years, which he explained in more detail. Discussion ensued.

Director Labbe noted that the developer would not be eligible to receive payments #3, #4, and #5 as contemplated in the agreement until they completely finished the exterior rehab of all four buildings, even if something happened to cause a delay. Discussion ensued.

City Manager Stavres discussed past efforts made to revitalize these buildings, the City needing to have some involvement to make them productive, and that he felt confident that between the Building and Permitting Division, CRA staff, Director Labbe and Assistant Director Cedric Cox, they could effectively as a team evaluate all of the work that had been done in consideration of what is outlined within the Developer's Agreement and take necessary steps relating to same. Discussion ensued.

Commissioner Dantzler said he believed that requests should be approved by the City Commission as protection in case something went wrong. Attorney Murphy said this could be done, however, it was not [currently] in the agreement and that the agreement if approved by the Commission would allow the delegation of that authority to the City Manager. In addition, the agreement had already been approved by the Community Redevelopment Agency (CRA) Board, therefore, it would have to be taken back to the CRA Board if it were modified now. Discussion ensued.

Commissioner Dantzler commented that this corner [of Third Street SW and West Central Avenue] needed to be fixed (i.e. redeveloped).

E. Agreement for Transfer of Public Roads - McClean Road

City Manager Stavres gave an overview of this item.

There were no questions or discussion.

F. Florida Senate Bill 2c Compliance: Immigration Task Force 287(g) Memorandum of Agreement (MOA)

City Manager Stavres introduced this item and said it went back to the 2025 Special Session of the Florida Legislature that occurred before the opening of the regular session. Immigration was the only topic discussed during that which resulted in the passage of Senate Bill 2C [regarding immigration] and this [item] was the City's requirement in compliance with that.

Police Chief Monroe gave an overview of this item.

DRAFT

City Manager Stavres added that with the passage of the Senate Bill 2C, what it required the City to do was no different than if an officer stopped an individual and checked their history and found out there was a warrant out for their arrest, which was required to be reported. He explained further in greater detail and also noted that the memorandum of agreement (MOA) between the City of Winter Haven Police Department and ICE and how it was set up was the same MOA that was in place with other local law enforcement jurisdictions to include the sheriff's office. Discussion ensued.

Mayor Pro Tem Yates questioned if "participate" was the right wording in the description or if it was better to read "to meet the standards required". City Manager Stavres concurred and commented that he never thought the City would be voting on such an item.

Commissioner Dantzler inquired if everyone [stopped by an officer] would be asked their [immigration] status regardless of look or age. Police Chief Monroe said yes, however, there would be no profiling and everyone would be treated equally. City Manager Stavres concurred and said that if the City did not do this, we risked losing federal and state funding. Discussion ensued that this was nothing new and would preserve funding.

G. Florida Department of Environmental Protection, LPA0443 Grant, Amendment #1

Winter Haven Water Director Hubbard gave an overview of this item.

There were no questions or discussion.

H. Wastewater Treatment Plant #2 Lift Station Emergency By-Pass Pump

Winter Haven Water Director Hubbard gave an overview of this item.

There were no questions or discussion.

I. Anoxic tank grit and debris removal WWTP#3 – US Submergent Technologies

Winter Haven Water Director Hubbard gave an overview of this item.

Commissioner Mercer said that this would provide more capacity in our tanks as well. Director Hubbard agreed and noted that it was timely considering the work that they were headed towards this coming year.

J. Lake Elbert Drive NE Emergency Sewer Repair

City Manager Stavres gave an overview of this item.

Mayor Pro Tem Yates asked how long the solution would last. Director Hubbard said that the solution of lining the pipe was probably a 15 to 20-year solution.

Mayor Pro Tem Yates inquired if the City had already put the new road in that area. City Manager Stavres said that they were working on that right now and had done all of the inside lane around the lake. They were also milling and paving the outside of that road today and would likely finish into the week, which he explained in more detail.

Mayor Pro Tem Yates asked if realignment would be needed in fifteen years. Director Hubbard said that they would evaluate the pipe again in the future and determine if they needed to mend and replace. City Manager Stavres noted that it was a relatively small section.

11. RESOLUTION(S)

A. R-25-29 - Acceptance of Warranty Deed from Gary M. Bennett

City Manager Stavres gave an overview of this item.

There were no questions or discussion.

B. R-25-30 - Assigning the name Willowbrook Drive to an unnamed north/south running City right-of-way extending between the Lake Smart/Lake Fannie Canal on the south to Lucerne Park Road (State Road 544) to the north

City Manager Stavres gave an overview of this item.

Commissioner Dantzler asked for clarification if this was a road or drive.

DRAFT

C. R-25-31 - Request by VMAR DEV, LLC to release the subdivision Performance Bond and confirming acceptance of improvements, infrastructure, and dedication in favor of the Public/City of Winter Haven for the Villamar Phase 7 Subdivision

City Manager Stavres gave an overview of this item.

Commissioner Dantzler inquired if they could come back and ask for building permits all at one time. Director Labbe said yes and explained further. Discussion ensued about impact fees.

D. R-25-32 - Logistics Parkway, Florida Department of Transportation G2F94 grant, Amendment #2

City Manager Stavres gave an overview of this item.

There were no questions or discussion.

12. ORDINANCE(S) - FIRST READING

A. O-25-21- Request by Ark Industries, Inc. to amend the 2035 Future Land Use on a parcel from Neighborhood Suburban Future Land Use to Neighborhood Mixed Use Hub Future Land Use and to assign Neighborhood Mixed Use Hub Future Land Use to an annexed parcel. General Location- 807 Snively Avenue

B. O-25-22 - Request by Ark Industries, Inc. to assign Commercial- Highway (C-3) zoning district to two annexed parcels. General Location- 807 Snively Avenue

City Manager Stavres gave an overview of companion items 12A and 12B.

(Mayor Pro Tem Yates left the room at 6:59 p.m. He did not re-enter the room.)

Commissioner Dantzler inquired on the exact location. City Manager Stavres explained and showed the slide with the aerial map. He noted that it was basically in the area where Eloise Loop used to flood, which was the southern end on the map.

Commissioner Dantzler asked about the size of the property. City Manager Stavres said it was two parcels and that it was 33 ± acres.

13. NEW BUSINESS

A. Agreement for Purchase & Sale of Real Property - 801 Cypress Gardens Boulevard

City Manager Stavres gave an overview of this item and showed a slide on how the alignment would look.

There were no questions or discussion.

B. Florida Department of Environmental Protection (FDEP) Hurricane Relief Funding

Winter Haven Water Director Hubbard gave an overview of this item.

There were no questions or discussion.

C. Avenue C SW and 3rd Street - Installation of All Way Stop Control

Public Works Director Hart gave an overview of this item.

Commissioner Dantzler asked if the light was being removed for a 4-way stop. Director Hart said yes. City Manager Stavres explained further.

Discussion ensued regarding parking concerns and that the City would be exploring parking facilities.

14. CITY COMMISSIONERS/LIAISON REPORTS – No report

15. CITY ATTORNEY REPORT – No report

16. CITY MANAGER REPORT

A. 2025 Florida League of Cities (FLC) Voting Delegate Designation

City Manager Stavres gave an overview of this item and requested a delegate to vote on behalf of the City.

Mayor Birdsong commented that he was the voting delegate last year and would do it this year. City Manager Stavres said that this item would be discussed at the Regular City Commission Meeting on Monday.

17. DEPUTY CITY MANAGER REPORT

Deputy City Manager Carnevale reported that the Commission received a notice that Technology Services would be making a hardware transition, therefore some of the City's computer systems would be offline starting at 6:00 p.m. on Friday, June 20, 2025 through sometime around midday on Saturday. It was a planned outage so critical systems such as police, fire, water operations, and traffic signals should not be impacted, however, email, local files, etc. would be unavailable during that timeframe.

18. CITY CLERK REPORT

City Clerk Castillo congratulated Deputy City Clerk LaTonya Harris for receiving her Florida Certified Records Manager (FCRM) designation [from the Florida Records Management Association (FRMA)] and that very few clerks from municipalities within Polk County, had this designation. Only the City Clerks for Eagle Lake, Bartow, and Haines City had this designation.

19. EMERGENCY MATTERS NOT RECEIVED FOR THE AGENDA – None

20. ADJOURNMENT – 7:16 p.m.

ATTEST:

Vanessa Castillo, MMC
City Clerk

CITY OF WINTER HAVEN, FLORIDA

Nathaniel J. Birdsong, Jr.
Mayor

DRAFT

DATE: June 4, 2025

TO: Honorable Mayor and City Commissioners

VIA: T. Michael Stavres, City Manager
Michael Carnevale, Deputy City Manager
Eric Labbe, Economic Opportunity & Community Investment Director

FROM: Sean Byers, Planning Manager

SUBJECT: **Ordinance O-25-21:** Request by Ark Industries, Inc. to amend the 2035 Future Land Use on a parcel from Neighborhood Suburban Future Land Use to Neighborhood Mixed Use Hub Future Land Use and to assign Neighborhood Mixed Use Hub Future Land Use to an annexed parcel. **General Location:** 807 Snively Avenue (The northeast corner of Snively Avenue and Eloise Loop Road). The area covered by this request is 33.0± acres; and

Ordinance O-25-22: Request by Ark Industries, Inc. to assign Commercial-Highway (C-3) zoning district to two annexed parcels. **General Location:** 807 Snively Avenue (The northeast corner of Snively Avenue and Eloise Loop Road). The area covered by these requests is 33.0 ± acres.

BACKGROUND

Ark Industries, Inc., petitioner, requests the City amend the 2035 Future Land Use on a 0.64-acre parcel from Neighborhood Suburban Future Land Use to Neighborhood Mixed Use Hub Future Land Use, to assign Neighborhood Mixed Use Hub Future Land Use to a 32.4-acre annexed parcel, and to assign Commercial- Highway (C-3) zoning district to two annexed parcels. The area subject to this request is located along the east side of Snively Avenue, between Croton Road and Eloise Loop Road, and contains 33.0± acres consisting of a former citrus grove and a 5,500-square foot maintenance building. While a small portion of the subject area has been in the City since 2007, the majority of the property was annexed into the City February 24, 2025.

The petitioner is looking to develop the northern 12 to 14 acres of the subject area with a new campus for Cypress Junction Montessori School, a public charter school. Construction on Phase One of the school is expected to begin later this summer with a scheduled opening date for the 2026/2027 school year. Construction on Phase Two is planned for 2028/2029. There are no immediate development plans for the remaining 19± acres of the property.

The Future Land Use request is considered a small-scale Future Land Use amendment and will not require review by FloridaCommerce and other state and local agencies.

SURROUNDING USES

Uses surrounding the subject area include warehousing across Croton Road to the north; the Harmony at Lake Eloise Subdivision to the east across the CSX railroad tracks; a mixture of single-family, manufactured homes, and agricultural buildings to the south across Eloise Loop Road; and undeveloped land to the west across Snively Avenue.

INFRASTRUCTURE

City potable water and wastewater infrastructure is located near the area subject to these requests and will be extended to the property by the petitioner, or their successors, at the time of development. At this time, the only known development proposed for the subject area is an approximate 1,400-student public charter school to be developed on the northern 14 acres of the subject area. There currently are no other identified development plans for the remainder of the property subject to these requests. The table below illustrates the potential impacts of the proposed public charter school on supporting infrastructure.

Potable Water and Wastewater Utilities (as of April 30, 2025)
Measured in gallons per day (gpd)

Type of Infrastructure	24-month Average Capacity	Projected Demands from This Request	Remaining Capacity (If Request Permitted Today)	Projected Future Demands for Prior Approved Projects*	Potential Remaining Capacity *if* All Approved Projects are Constructed
Potable Water	2,330,000	21,000	2,309,000	2,165,100	143,900
Wastewater Plant 3	2,968,000	18,480	2,949,520	1,093,200	1,856,320

Transportation (Background Data from Polk TPO)
Measured in PM Peak-Hour Trips

Roadway	3-year Average Capacity	Projected Demands from this Request	Remaining Capacity (If Request Permitted Today)	Projected Future Demands for Prior Approved Projects*	Potential Remaining Capacity *if* All Approved Projects are Constructed
Eloise Loop Rd EB	572	26	546	138	408
Eloise Loop Rd WB	569	25	544	133	411
Snively Avenue NB	187	26	161	0	161
Snively Avenue SB	178	25	153	0	153

**Projected Future Demands includes platted residential subdivisions, approved multi-family residential site plans, and approved commercial site plans. Approved multi-family or commercial site plans are approved for up to a maximum of 30 months. If a permit is not issued within this time period, the approved site plan becomes null and void and any reserved capacity assigned to that project is returned to the available capacity.*

The above evaluation of water, wastewater, and transportation concurrency for a specific property or project at the Future Land Use or zoning stage should simply be viewed as a "snapshot in time" with regards to available capacity. Between the time when a particular Future Land Use designation and/or zoning district is assigned to a property, and the point in time when an actual development project is submitted for approval, there are many factors which may affect the amount of available water, wastewater, or transportation capacity required for issuing final concurrency approval. These factors may include increased or decreased allocations in available capacities, approved projects not being constructed, unforeseen projects being constructed, and constructed projects using more or less than their projected demands.

COMPREHENSIVE PLAN

The subject area is designated as Residential Suburban by Polk County's Future Land Use Map. The requested Neighborhood Mixed Use Hub Future Land Use is consistent with the subject area's location at the intersection of two collector roadways and the mixed use character of the Snively Avenue/Rifle Range Road corridor. Additionally, the requested C-3 zoning district is consistent with the requested Neighborhood Mixed Use Hub Future Land Use.

NOTIFICATION

All notification requirements for these requests were met.

FINANCIAL IMPACT

There is no direct financial impact to the City with these requests.

These are requests initiated by an application by a private party. In accordance with Chapter 2024-145, Laws of Fla. (CS/CS/SB 1628 (2024)), ordinances initiated by an application by a private party are exempt from providing Business Impact Estimates.

STRATEGIC PLAN ALIGNMENT

This is a routine land use and zoning assignment associated with normal operations of the City not specifically defined as a goal or strategy within the Strategic Plan. However, it is aligned with the Responsible Government Strategic Pillar.

PLANNING COMMISSION RECOMMENDATION

The Planning Commission, at its June 3, 2025 regular meeting, voted to recommend approval of these requests. No members of the public spoke.

CONCLUSION

Staff's review of these requests yields the following conclusions:

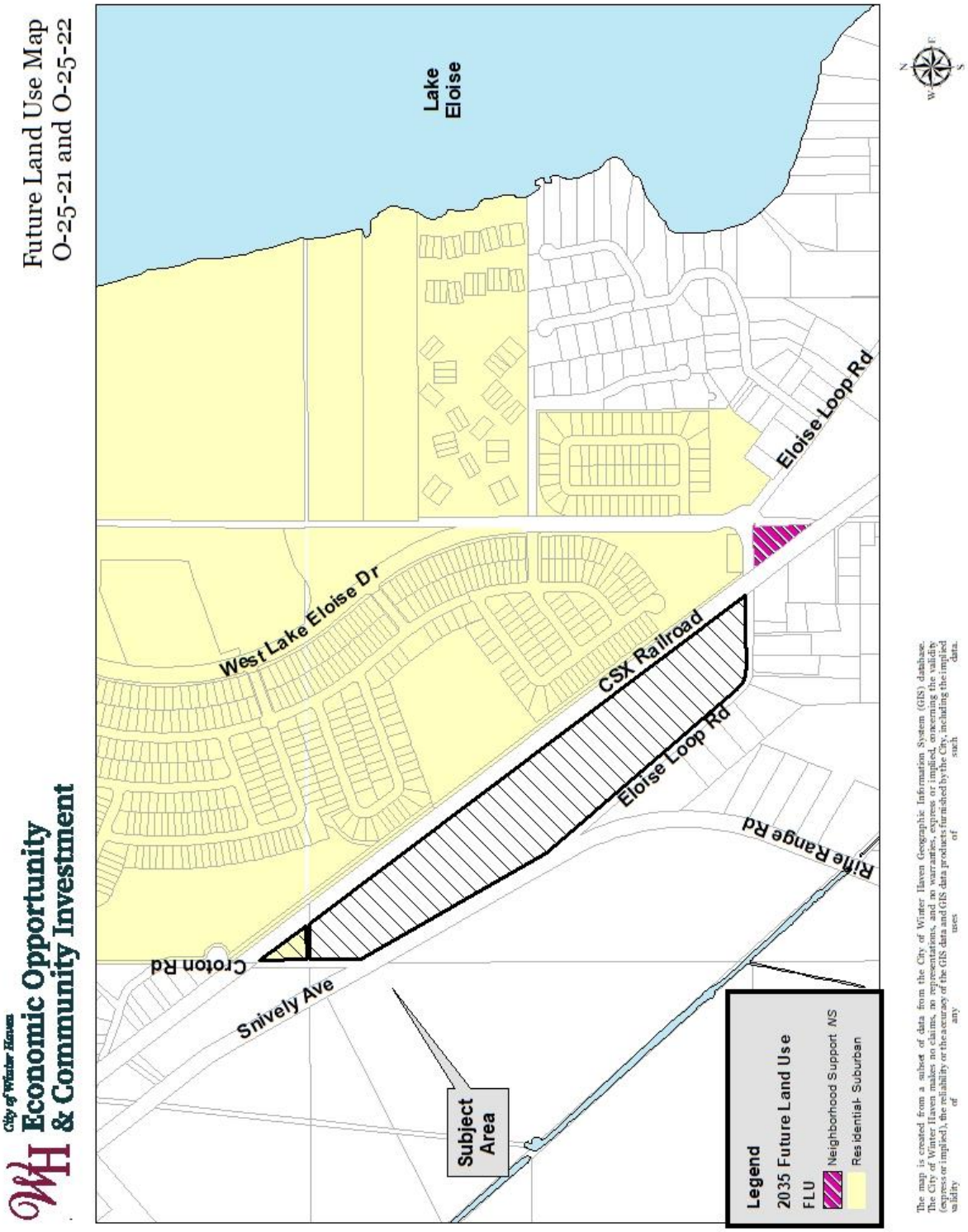
- The amendment to and assignment of Neighborhood Mixed Use Hub Future Land Use is consistent with Future Land Use Policy 1.3.5 (E) as the area is located adjacent two intersecting collector roadways;
- The assignment of C-3 zoning is consistent with the requested Neighborhood Mixed Use Hub Future Land Use;
- The long, shallow nature of the subject area, along with its significant frontage with the CSX railroad tracks, does not support the development of lower density residential uses as constructing an internal roadway network is impractical;
- The proposed use of a portion of the subject area as a public charter school is permitted within the requested Neighborhood Mixed Use Hub Future Land Use and the C-3 zoning district; and
- At this time, there is sufficient water, wastewater, and roadway capacity to support development of the proposed school; however, future development of the remaining portion of the subject area will be subject to sufficient available water, wastewater, roadway, and possibly public school capacity at the time development activities are proposed.

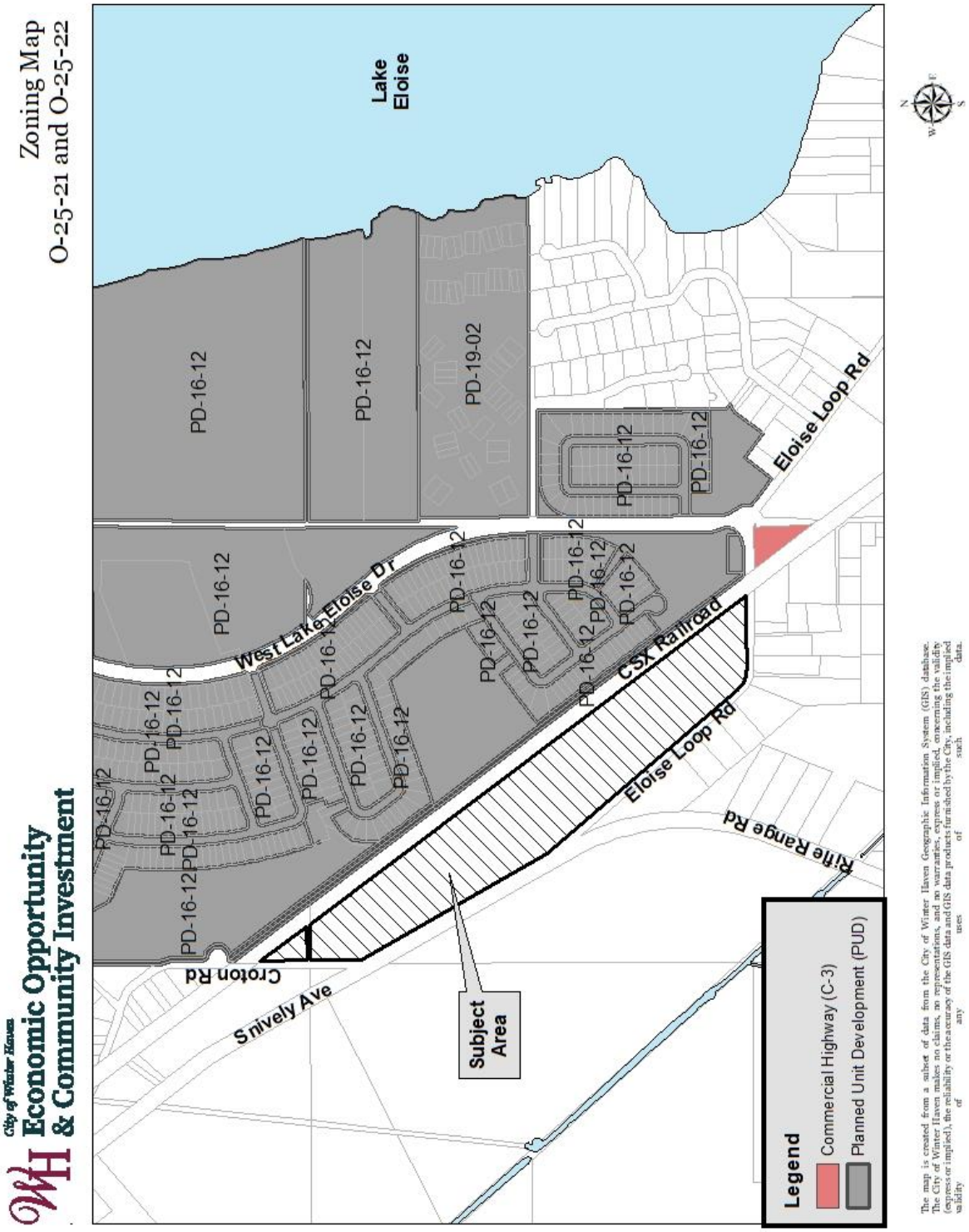
RECOMMENDATION

Staff recommends the City Commission approve Ordinances O-25-21 and O-25-22.

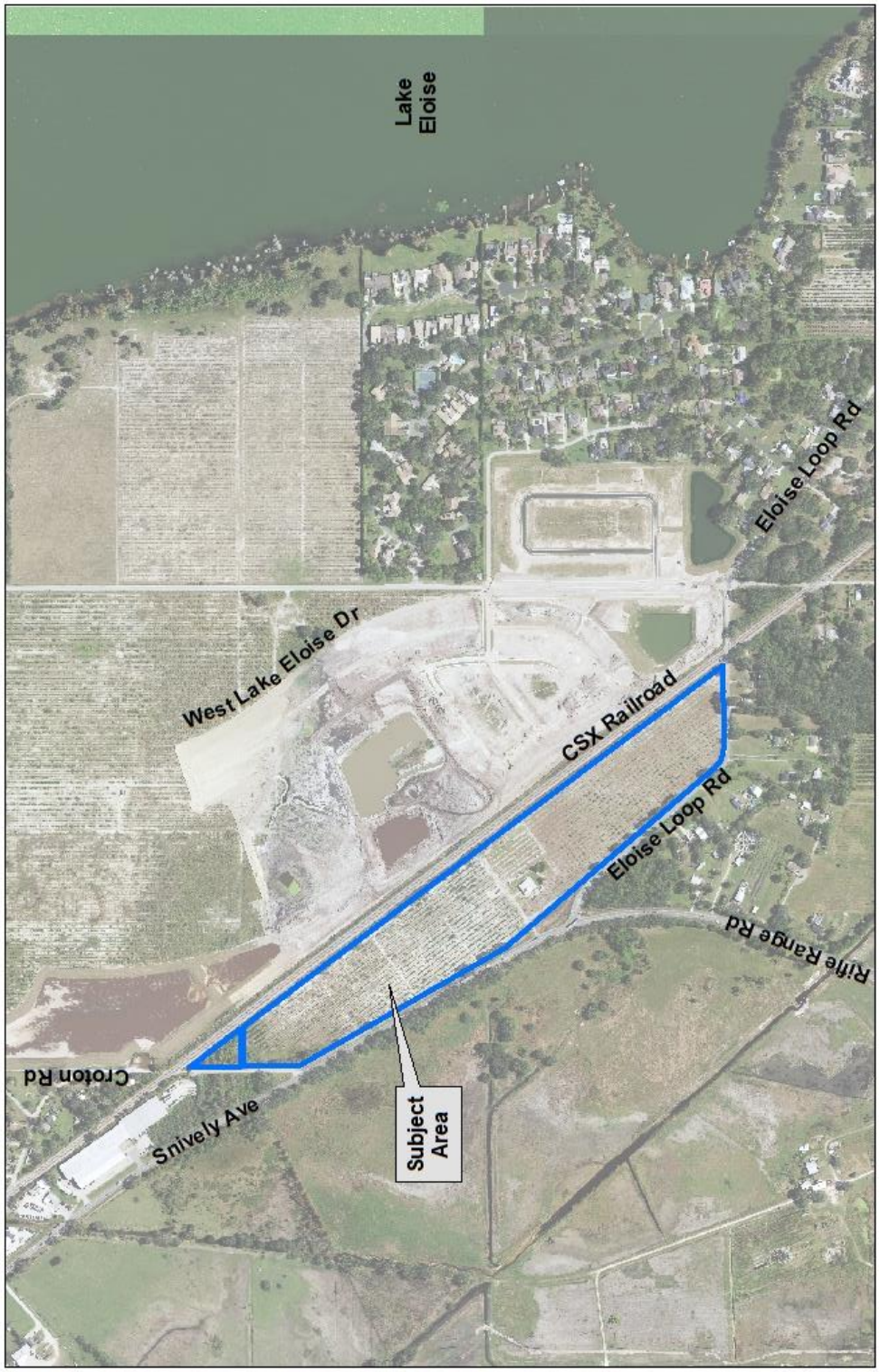
ATTACHMENTS

- Future Land Use Map
- Zoning Map
- Aerial Map
- Polk County Land Use Map
- Ordinance O-25-21 (Future Land Use)
- Ordinance O-25-22 (Zoning)


Future Land Use Map
O-25-21 and O-25-22
City of Winter Haven
Economic Opportunity
& Community Investment
Lake Eloise
Eloise Loop Rd
West Lake Eloise Dr
CSX Railroad
Eloise Loop Rd
Rifle Range Rd
Croton Rd
Snively Ave
Subject Area
Legend
2035 Future Land Use
FLU
Neighborhood Support NS
Residential- Suburban
The map is created from a subset of data from the City of Winter Haven Geographic Information System (GIS) database. The City of Winter Haven makes no claims, no representations, and no warranties, express or implied, concerning the validity (express or implied), the reliability or the accuracy of the GIS data and GIS data products furnished by the City, including the implied validity of any uses of such data.


Zoning Map
O-25-21 and O-25-22
City of Winter Haven
Economic Opportunity
& Community Investment
Lake Eloise
PD-16-12
PD-19-02
Eloise Loop Rd
West Lake Eloise Dr
CSX Railroad
Rifle Range Rd
Crotton Rd
Snively Ave
Subject Area
Legend
Commercial Highway (C-3)
Planned Unit Development (PUD)

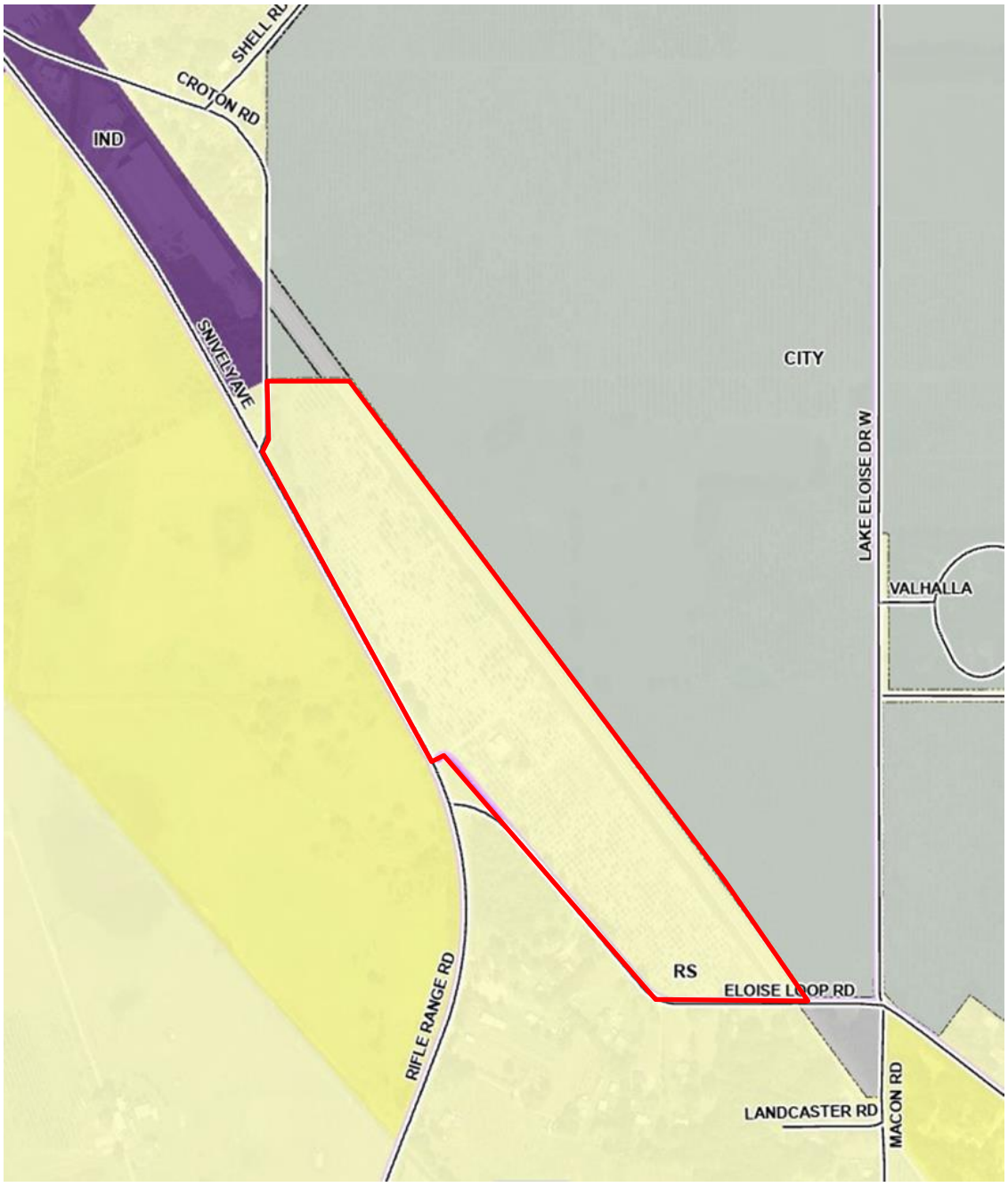
Aerial Map
O-25-21 and O-25-22



City of Winter Haven
Economic Opportunity & Community Investment

The map is created from a subset of data from the City of Winter Haven Geographic Information System (GIS) database. The City of Winter Haven makes no claims, no representations, and no warranties, express or implied, concerning the validity (express or implied), the reliability or the accuracy of the GIS data and GIS data products furnished by the City, including the implied validity of any such data.

POLK COUNTY LAND USE MAP



ORDINANCE NO. O-25-21

AN ORDINANCE AMENDING ORDINANCE 23-25, THE 2035 WINTER HAVEN COMPREHENSIVE PLAN, BY REVISING THE FUTURE LAND USE MAP SERIES BY AMENDING THE FUTURE LAND USE ON A PARCEL FROM NEIGHBORHOOD SUBURBAN FUTURE LAND USE TO NEIGHBORHOOD MIXED USE HUB FUTURE LAND USE; ASSIGNING NEIGHBORHOOD MIXED USE HUB FUTURE LAND USE TO AN ANNEXED PARCEL; REPEALING ALL ORDINANCES IN CONFLICT HEREWITH; PROVIDING FOR THE ADMINISTRATIVE CORRECTION OF SCRIVENER'S ERRORS; AND PROVIDING AN EFFECTIVE DATE. (General Location: 807 Snively Avenue (The northeast corner of Snively Avenue and Eloise Loop Road). The area covered by this request is 33± acres.)

WHEREAS, a proposed amendment to the Winter Haven Comprehensive Plan, Future Land Use Map Series, has been studied, documented, advertised, and heard by the Winter Haven Planning Commission; and

WHEREAS, the City Commission of the City of Winter Haven, Florida, deems it appropriate to amend the Comprehensive Plan in order to further the public interest and the general welfare of the citizens of the City of Winter Haven;

WHEREAS, the request implements requirements contained in Part II, Chapter 163 of Florida Statutes, and therefore is exempt from requiring a Business Impact Estimate as set forth by Chapter 2024-145, Laws of Fla. (CS/CS/SB 1628 (2024)).

NOW THEREFORE, BE IT ENACTED BY THE PEOPLE OF THE CITY OF WINTER HAVEN, FLORIDA, AS FOLLOWS:

1. That the Future Land Use Map Series of the Comprehensive Plan of the City of Winter Haven, Florida, is hereby amended by amending the Future Land use on a parcel from "Neighborhood Suburban" Future Land Use to "Neighborhood Mixed Use Hub" Future Land Use, and by assigning "Neighborhood Mixed Use Hub" Future Land Use to an annexed parcel as shown on Exhibit "A" as classified by the City of Winter Haven's Future Land Use Element.

2. This Ordinance shall not be codified, but the City Clerk shall retain this Ordinance as a permanent record of action taken by the City Commission.

3. All ordinances in conflict herewith are hereby repealed.

4. The effective date of this small-scale Comprehensive Plan amendment shall be 31 days after adoption, unless the amendment is challenged pursuant to Section 163.3187(5), F.S. If challenged, the effective date of this amendment shall be the date a final order is issued by the Department of Commerce or its functional equivalent, or the Administration Commission, finding amendment in compliance with Section 163.3184, F.S. No development orders, development permits or land use dependent on this amendment may be issued or commence before it has become effective. If a final order of noncompliance is issued by the Administration Commission, this amendment may nevertheless be made effective by adoption of a resolution affirming its effective status, a copy of the resolution shall be sent to the Department of Commerce, Bureau of Community Planning and Growth, 107 East Madison Street, Tallahassee, Florida 32399

INTRODUCED on first reading this 23rd day of June, 2025.

PASSED on second reading public hearing this 14th day of July, 2025.

CITY OF WINTER HAVEN, FLORIDA

_____
MAYOR-COMMISSIONER
Nathaniel J. Birdsong, Jr.

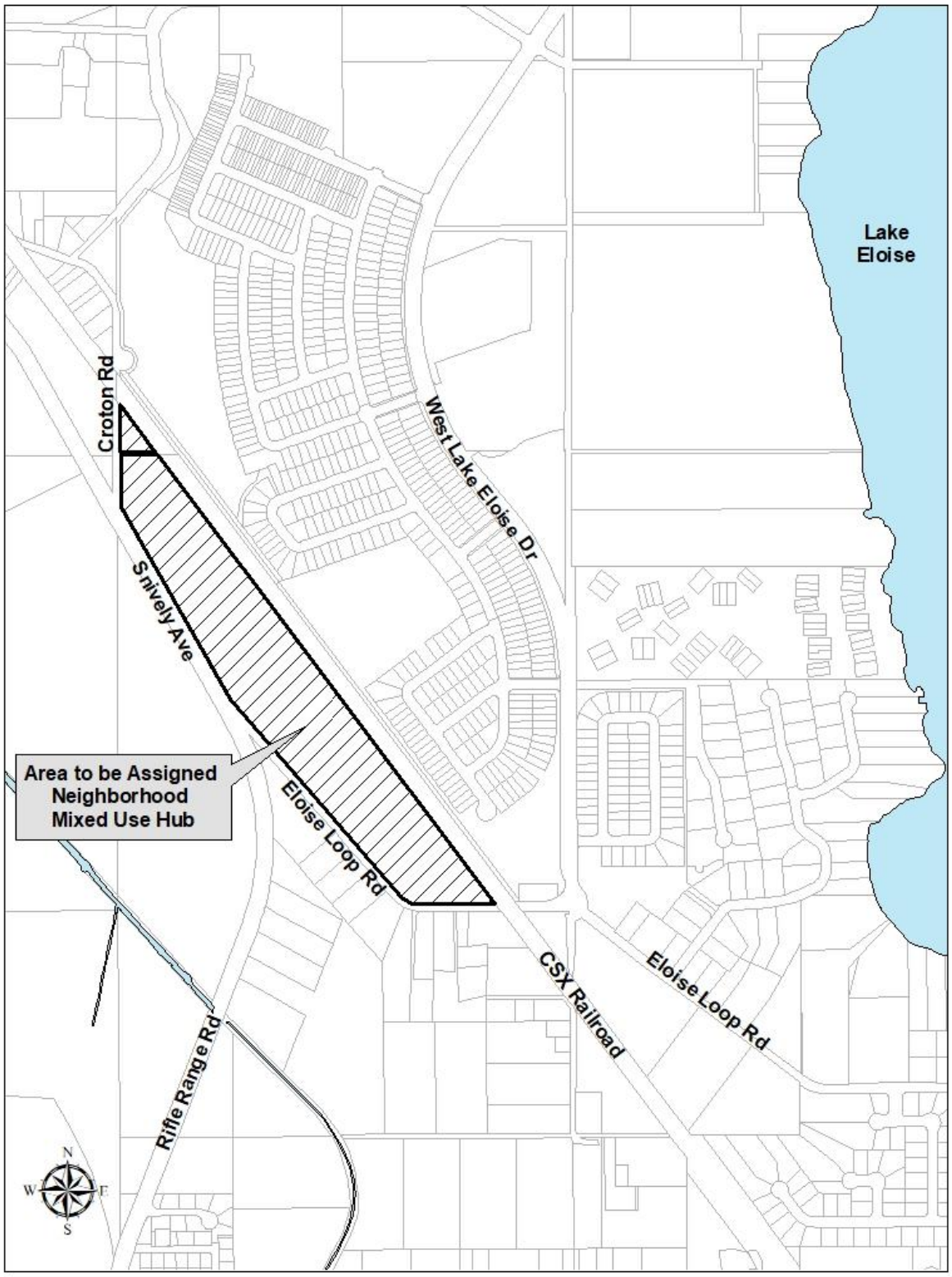
ATTEST:

_____
CITY CLERK
Vanessa Castillo, MMC

Approved as to form:

_____
CITY ATTORNEY
Frederick J. Murphy, Jr.

Exhibit “A”


Lake Eloise
Croton Rd
West Lake Eloise Dr
Snively Ave
Area to be Assigned Neighborhood Mixed Use Hub
Eloise Loop Rd
CSX Railroad
Eloise Loop Rd
Rifle Range Rd
N
W
E
S

DATE: June 4, 2025

TO: Honorable Mayor and City Commissioners

VIA: T. Michael Stavres, City Manager
Michael Carnevale, Deputy City Manager
Eric Labbe, Economic Opportunity & Community Investment Director

FROM: Sean Byers, Planning Manager

SUBJECT: **Ordinance O-25-21:** Request by Ark Industries, Inc. to amend the 2035 Future Land Use on a parcel from Neighborhood Suburban Future Land Use to Neighborhood Mixed Use Hub Future Land Use and to assign Neighborhood Mixed Use Hub Future Land Use to an annexed parcel. **General Location:** 807 Snively Avenue (The northeast corner of Snively Avenue and Eloise Loop Road). The area covered by this request is 33.0± acres; and

Ordinance O-25-22: Request by Ark Industries, Inc. to assign Commercial-Highway (C-3) zoning district to two annexed parcels. **General Location:** 807 Snively Avenue (The northeast corner of Snively Avenue and Eloise Loop Road). The area covered by these requests is 33.0 ± acres.

BACKGROUND

Ark Industries, Inc., petitioner, requests the City amend the 2035 Future Land Use on a 0.64-acre parcel from Neighborhood Suburban Future Land Use to Neighborhood Mixed Use Hub Future Land Use, to assign Neighborhood Mixed Use Hub Future Land Use to a 32.4-acre annexed parcel, and to assign Commercial- Highway (C-3) zoning district to two annexed parcels. The area subject to this request is located along the east side of Snively Avenue, between Croton Road and Eloise Loop Road, and contains 33.0± acres consisting of a former citrus grove and a 5,500-square foot maintenance building. While a small portion of the subject area has been in the City since 2007, the majority of the property was annexed into the City February 24, 2025.

The petitioner is looking to develop the northern 12 to 14 acres of the subject area with a new campus for Cypress Junction Montessori School, a public charter school. Construction on Phase One of the school is expected to begin later this summer with a scheduled opening date for the 2026/2027 school year. Construction on Phase Two is planned for 2028/2029. There are no immediate development plans for the remaining 19± acres of the property.

The Future Land Use request is considered a small-scale Future Land Use amendment and will not require review by FloridaCommerce and other state and local agencies.

SURROUNDING USES

Uses surrounding the subject area include warehousing across Croton Road to the north; the Harmony at Lake Eloise Subdivision to the east across the CSX railroad tracks; a mixture of single-family, manufactured homes, and agricultural buildings to the south across Eloise Loop Road; and undeveloped land to the west across Snively Avenue.

INFRASTRUCTURE

City potable water and wastewater infrastructure is located near the area subject to these requests and will be extended to the property by the petitioner, or their successors, at the time of development. At this time, the only known development proposed for the subject area is an approximate 1,400-student public charter school to be developed on the northern 14 acres of the subject area. There currently are no other identified development plans for the remainder of the property subject to these requests. The table below illustrates the potential impacts of the proposed public charter school on supporting infrastructure.

Potable Water and Wastewater Utilities (as of April 30, 2025)
Measured in gallons per day (gpd)

Type of Infrastructure	24-month Average Capacity	Projected Demands from This Request	Remaining Capacity (If Request Permitted Today)	Projected Future Demands for Prior Approved Projects*	Potential Remaining Capacity *if* All Approved Projects are Constructed
Potable Water	2,330,000	21,000	2,309,000	2,165,100	143,900
Wastewater Plant 3	2,968,000	18,480	2,949,520	1,093,200	1,856,320

Transportation (Background Data from Polk TPO)
Measured in PM Peak-Hour Trips

Roadway	3-year Average Capacity	Projected Demands from this Request	Remaining Capacity (If Request Permitted Today)	Projected Future Demands for Prior Approved Projects*	Potential Remaining Capacity *if* All Approved Projects are Constructed
Eloise Loop Rd EB	572	26	546	138	408
Eloise Loop Rd WB	569	25	544	133	411
Snively Avenue NB	187	26	161	0	161
Snively Avenue SB	178	25	153	0	153

**Projected Future Demands includes platted residential subdivisions, approved multi-family residential site plans, and approved commercial site plans. Approved multi-family or commercial site plans are approved for up to a maximum of 30 months. If a permit is not issued within this time period, the approved site plan becomes null and void and any reserved capacity assigned to that project is returned to the available capacity.*

The above evaluation of water, wastewater, and transportation concurrency for a specific property or project at the Future Land Use or zoning stage should simply be viewed as a "snapshot in time" with regards to available capacity. Between the time when a particular Future Land Use designation and/or zoning district is assigned to a property, and the point in time when an actual development project is submitted for approval, there are many factors which may affect the amount of available water, wastewater, or transportation capacity required for issuing final concurrency approval. These factors may include increased or decreased allocations in available capacities, approved projects not being constructed, unforeseen projects being constructed, and constructed projects using more or less than their projected demands.

COMPREHENSIVE PLAN

The subject area is designated as Residential Suburban by Polk County's Future Land Use Map. The requested Neighborhood Mixed Use Hub Future Land Use is consistent with the subject area's location at the intersection of two collector roadways and the mixed use character of the Snively Avenue/Rifle Range Road corridor. Additionally, the requested C-3 zoning district is consistent with the requested Neighborhood Mixed Use Hub Future Land Use.

NOTIFICATION

All notification requirements for these requests were met.

FINANCIAL IMPACT

There is no direct financial impact to the City with these requests.

These are requests initiated by an application by a private party. In accordance with Chapter 2024-145, Laws of Fla. (CS/CS/SB 1628 (2024)), ordinances initiated by an application by a private party are exempt from providing Business Impact Estimates.

STRATEGIC PLAN ALIGNMENT

This is a routine land use and zoning assignment associated with normal operations of the City not specifically defined as a goal or strategy within the Strategic Plan. However, it is aligned with the Responsible Government Strategic Pillar.

PLANNING COMMISSION RECOMMENDATION

The Planning Commission, at its June 3, 2025 regular meeting, voted to recommend approval of these requests. No members of the public spoke.

CONCLUSION

Staff's review of these requests yields the following conclusions:

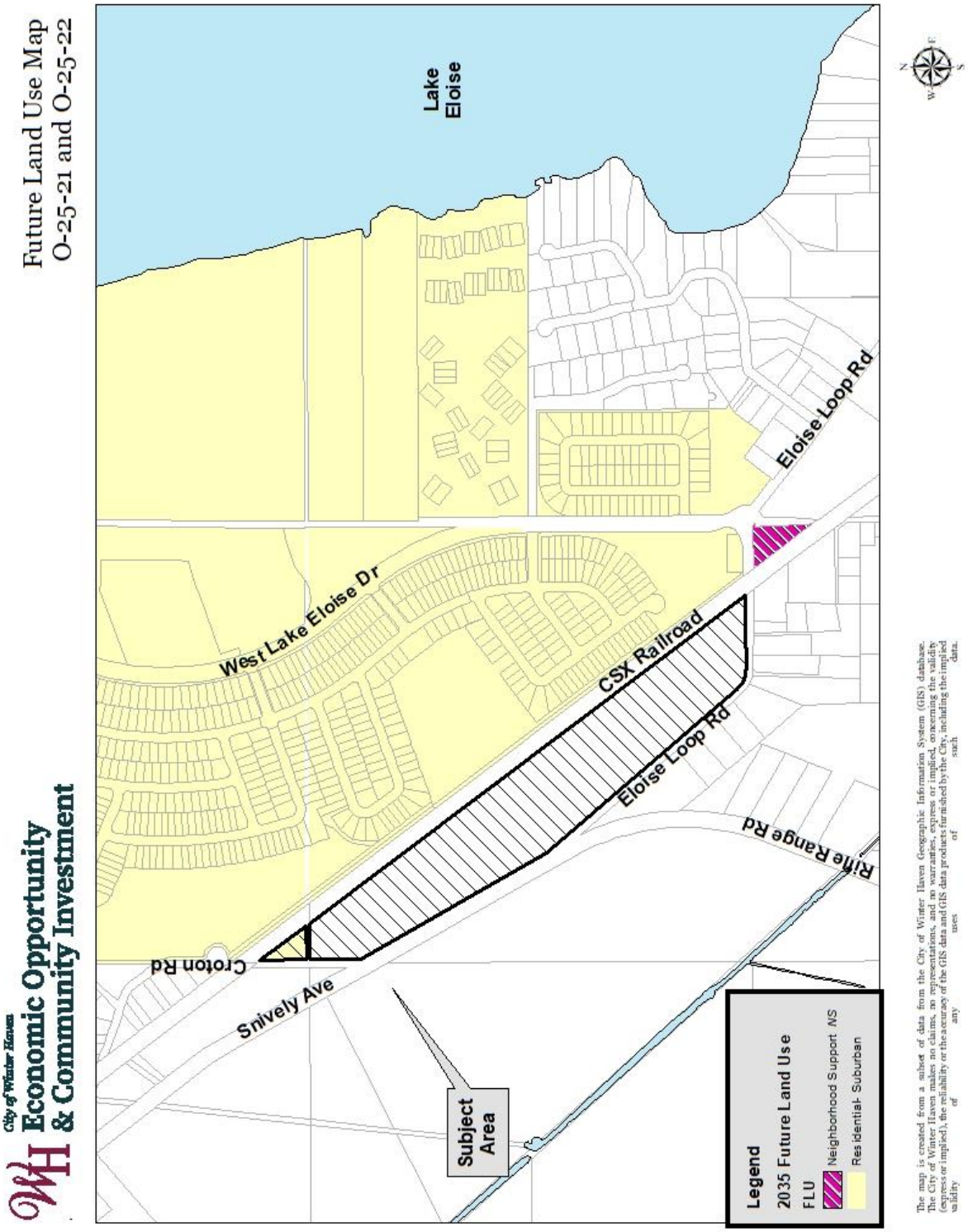
- The amendment to and assignment of Neighborhood Mixed Use Hub Future Land Use is consistent with Future Land Use Policy 1.3.5 (E) as the area is located adjacent two intersecting collector roadways;
- The assignment of C-3 zoning is consistent with the requested Neighborhood Mixed Use Hub Future Land Use;
- The long, shallow nature of the subject area, along with its significant frontage with the CSX railroad tracks, does not support the development of lower density residential uses as constructing an internal roadway network is impractical;
- The proposed use of a portion of the subject area as a public charter school is permitted within the requested Neighborhood Mixed Use Hub Future Land Use and the C-3 zoning district; and
- At this time, there is sufficient water, wastewater, and roadway capacity to support development of the proposed school; however, future development of the remaining portion of the subject area will be subject to sufficient available water, wastewater, roadway, and possibly public school capacity at the time development activities are proposed.

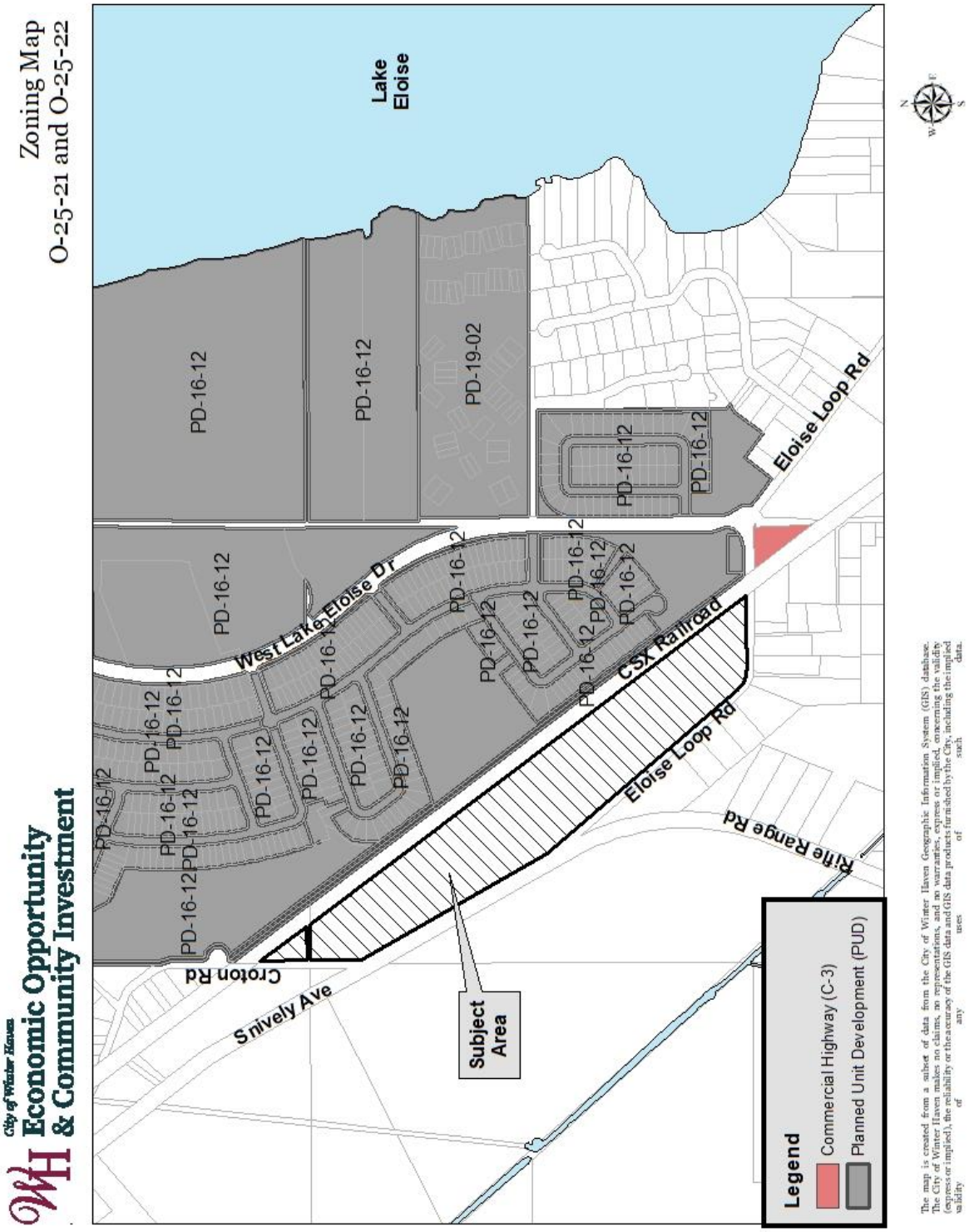
RECOMMENDATION

Staff recommends the City Commission approve Ordinances O-25-21 and O-25-22.

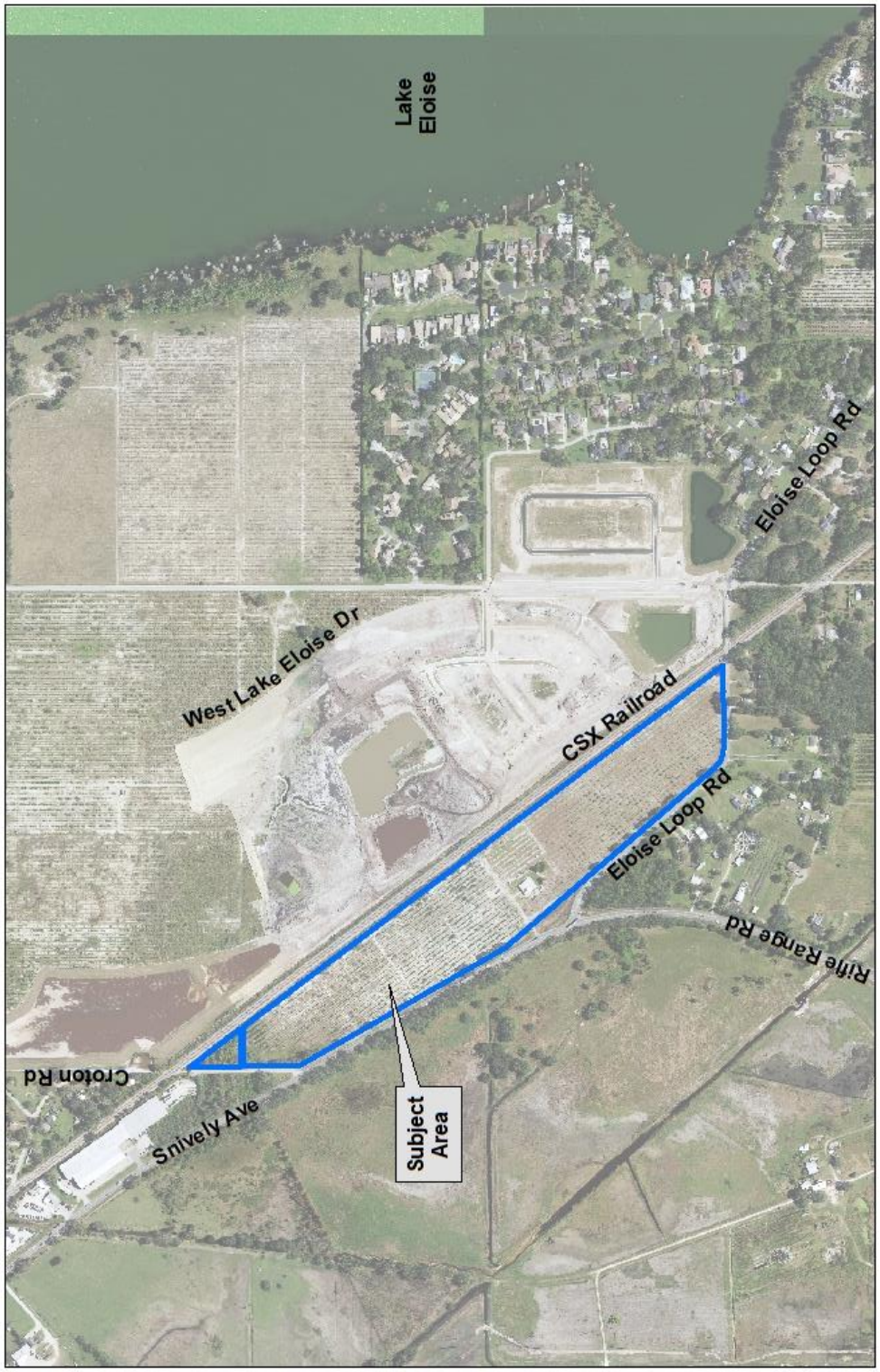
ATTACHMENTS

- Future Land Use Map
- Zoning Map
- Aerial Map
- Polk County Land Use Map
- Ordinance O-25-21 (Future Land Use)
- Ordinance O-25-22 (Zoning)


Future Land Use Map
O-25-21 and O-25-22
City of Winter Haven
Economic Opportunity
& Community Investment
Lake Eloise
Eloise Loop Rd
West Lake Eloise Dr
CSX Railroad
Eloise Loop Rd
Rifle Range Rd
Croton Rd
Snively Ave
Subject Area
Legend
2035 Future Land Use
FLU
Neighborhood Support NS
Residential- Suburban
The map is created from a subset of data from the City of Winter Haven Geographic Information System (GIS) database. The City of Winter Haven makes no claims, no representations, and no warranties, express or implied, concerning the validity (express or implied), the reliability or the accuracy of the GIS data and GIS data products furnished by the City, including the implied validity of any such data.


Zoning Map
O-25-21 and O-25-22
City of Winter Haven
Economic Opportunity
& Community Investment
Lake Eloise
PD-16-12
PD-19-02
Eloise Loop Rd
West Lake Eloise Dr
CSX Railroad
Rifle Range Rd
Croton Rd
Snively Ave
Subject Area
Legend
Commercial Highway (C-3)
Planned Unit Development (PUD)
The map is created from a subset of data from the City of Winter Haven Geographic Information System (GIS) database. The City of Winter Haven makes no claims, no representations, and no warranties, express or implied, concerning the validity (express or implied), the reliability or the accuracy of the GIS data and GIS data products furnished by the City, including the implied validity of any uses of such data.

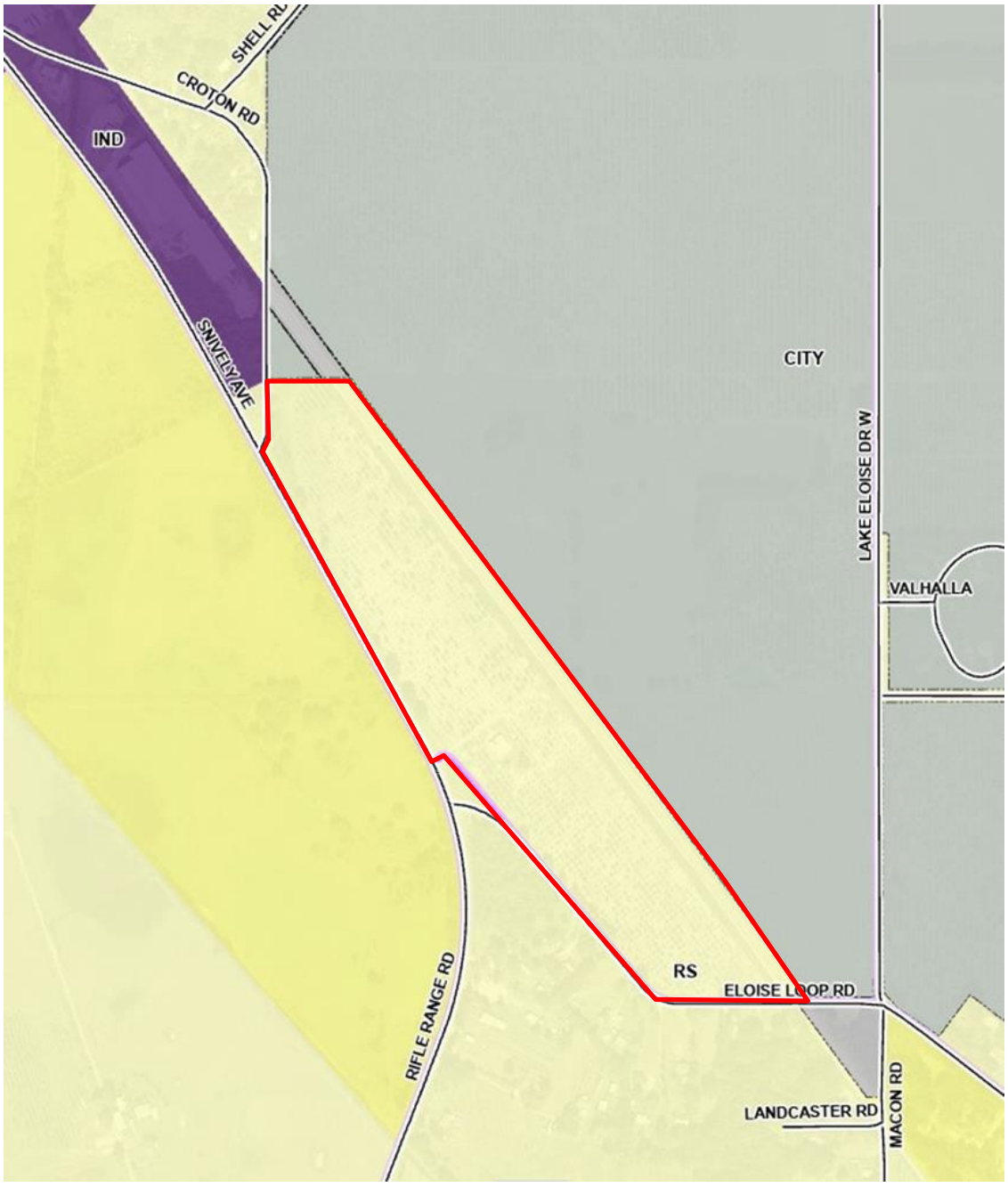
Aerial Map
O-25-21 and O-25-22



City of Winter Haven
Economic Opportunity & Community Investment

The map is created from a subset of data from the City of Winter Haven Geographic Information System (GIS) database. The City of Winter Haven makes no claims, no representations, and no warranties, express or implied, concerning the validity (express or implied), the reliability or the accuracy of the GIS data and GIS data products furnished by the City, including the implied validity of any such uses of data.

POLK COUNTY LAND USE MAP



ORDINANCE NO. O-25-22

AN ORDINANCE AMENDING CHAPTER 21 OF THE CODE OF ORDINANCES OF THE CITY OF WINTER HAVEN, FLORIDA, BY ASSIGNING COMMERCIAL-HIGHWAY (C-3) ZONING DISTRICT TO TWO (2) ANNEXED PARCELS; REPEALING ALL ORDINANCES IN CONFLICT HEREWITH; PROVIDING FOR THE ADMINISTRATIVE CORRECTION OF SCRIVENER'S ERRORS; AND PROVIDING AN EFFECTIVE DATE. (General Location: 807 Snively Avenue (The northeast corner of Snively Avenue and Eloise Loop Road). The area covered by this request is 33± acres.)

WHEREAS, there has been a request to assign zoning to the properties depicted below, and;

WHEREAS, the action will further the general health, safety, and welfare and be a benefit to the City as a whole, and;

WHEREAS, the requested zoning is consistent with the Future Land Use Element of the Winter Haven Comprehensive Plan.

WHEREAS, the request implements requirements contained in Part II, Chapter 163 of Florida Statutes by a property owner/private party, and therefore is exempt from requiring a Business Impact Estimate as set forth by Chapter 2024-145, Laws of Fla. (CS/CS/SB 1628 (2024)).

NOW THEREFORE, BE IT ENACTED BY THE PEOPLE OF THE CITY OF WINTER HAVEN, FLORIDA, AS FOLLOWS:

1. That Chapter 21 of the Code of Ordinances of the City of Winter Haven, Florida, is hereby amended to assign that land, depicted in Exhibit "A" attached hereto and made a part of this Ordinance, as Commercial-Highway (C-3) zoning district.

2. This Ordinance shall not be codified, but the City Clerk shall retain this Ordinance as a permanent record of action taken by the City Commission of the City of Winter Haven.

3. All ordinances in conflict herewith are hereby repealed.

4. The correction of typographical and/or scrivener's errors which do not affect the intent may be authorized by the City Manager or designee, without need of public hearing, by filing a corrected or recodified copy of same with the City Clerk.

5. This Ordinance shall be effective immediately upon the effective date of Future Land Use Ordinance O-25-21; however, that such change shall first be noted on the official zoning map of the City of Winter Haven.

INTRODUCED on first reading this 23rd day of June, 2025.

PASSED on second reading this 14th day of July, 2025.

CITY OF WINTER HAVEN, FLORIDA

_____
MAYOR-COMMISSIONER
Nathaniel J. Birdsong, Jr.

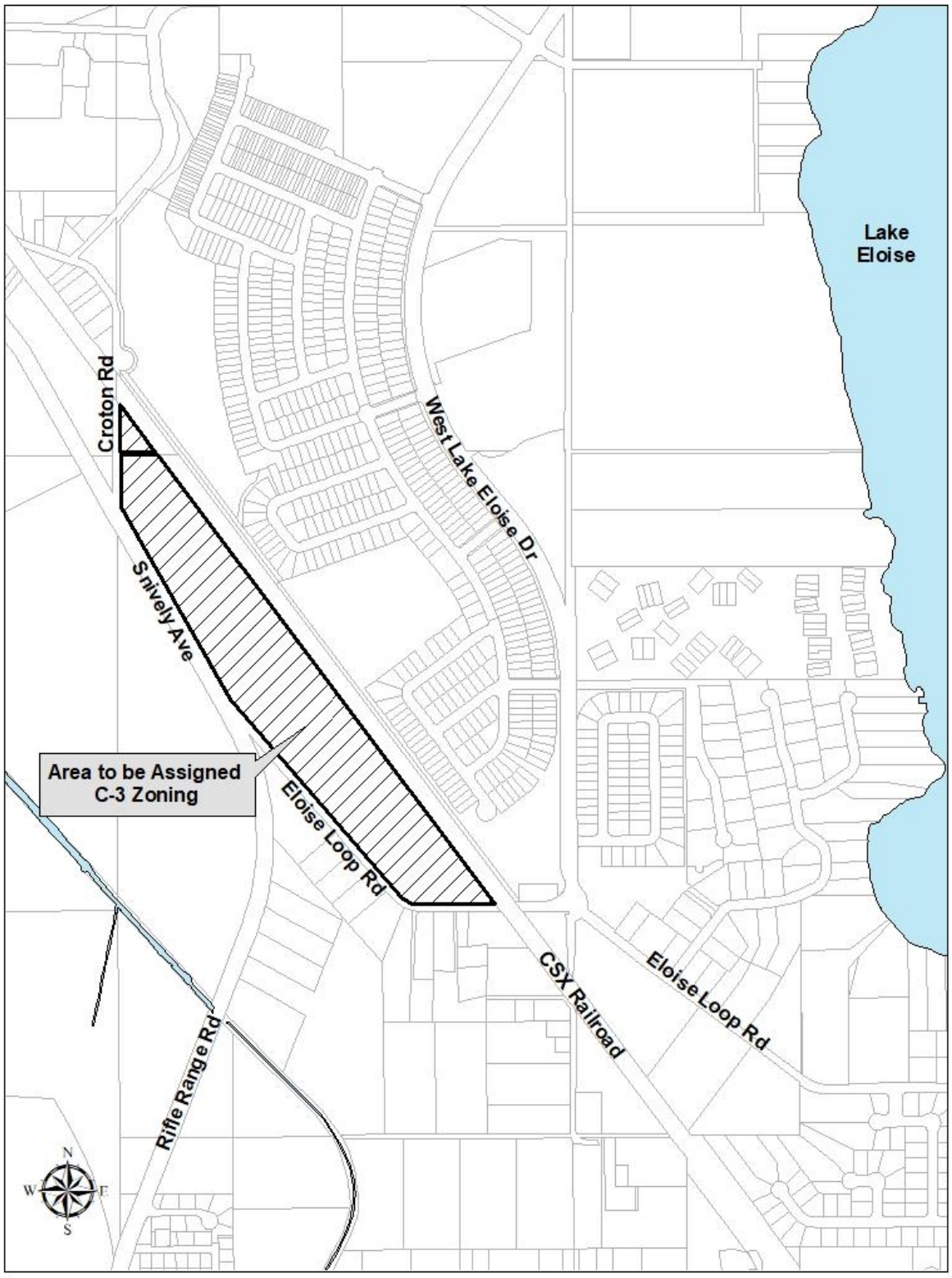
ATTEST:

_____
CITY CLERK
Vanessa Castillo, MMC

Approved as to form:

_____
CITY ATTORNEY
Frederick J. Murphy, Jr.

Exhibit “A”


Lake
Eloise
Croton Rd
West Lake Eloise Dr
Snively Ave
Area to be Assigned
C-3 Zoning
Eloise Loop Rd
CSX Railroad
Eloise Loop Rd
Rifle Range Rd
N
W
E
S

DATE: June 10, 2025

TO: Honorable Mayor and City Commissioners

VIA: T. Michael Stavres, City Manager
M.J. Carnevale, Deputy City Manager
Eric Labbe, Economic Opportunity and Community Investment Director

FROM: Angie Hibbard, CRA Manager

SUBJECT: Acceptance and Acknowledgement of Assignment of Development Agreement

---

BACKGROUND

On May 13, 2019, 750 Ave C SW, LLC, a Florida limited liability company ("Ave C SW"), entered into that certain Development Agreement (the "Development Agreement") with the City and CRA. On or about April 16, 2024, the property was sold to BNL Champs, LLC.

Section 7.9 of the Development Agreement provides that neither party may assign the Development Agreement without the express written consent of the other party and approved by the CRA Board and the governing body of the City. In this case, 750 Ave C SW, LLC, the original grantee and property owner, has requested the City and CRA Accept and Acknowledge the Assignment of the Development Agreement to BNL Champs, LLC, the new property owner. All terms and obligations pursuant to the Development Agreement remain in full effect.

FINANCIAL IMPACT

There is no direct financial impact to the City or CRA with this request.

CRA BOARD

The CRA Board, at their June 9, 2025, meeting unanimously voted to accept and acknowledge the Assignment of Development Agreement between 750 Ave C SW, LLC and BNL Champs, LLC.

STRATEGIC PLAN ALIGNMENT

This request is an acknowledgement of an assignment of a development agreement and is not specifically defined as a goal or strategy in the Strategic Plan. However, it aligns with the Economic Sustainability Pillar and Quality of Life Pillar.

RECOMMENDATION

Staff recommends the City Commission accept and acknowledge the Assignment of Development Agreement between 750 Ave C SW, LLC and BNL Champs, LLC and authorize the Mayor to execute same.

ATTACHMENT

- Assignment of Development Agreement

ASSIGNMENT OF DEVELOPMENT AGREEMENT

THIS ASSIGNMENT OF DEVELOPMENT AGREEMENT (this "**Assignment**") is executed as of 9 day of April, 2025 (the "**Effective Date**"), by and between **750 AVE C SW, LLC**, a Florida limited liability company ("**Assignor**"), in favor of **BNL CHAMPS LLC**, a Florida limited liability company ("**Assignee**"), and accepted and acknowledged by **THE CITY OF WINTER HAVEN**, a Florida municipal corporation ("**City**"), and **THE WINTER HAVEN COMMUNITY REDEVELOPMENT AGENCY**, a public body created pursuant to Chapter 163, Florida Statutes ("**CRA**").

Assignor, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, does hereby sell, assign, transfer, convey and deliver unto Assignee, its successors and permitted assigns (i.e., as and to the extent permitted in accordance with Section 7.9 of the Development Agreement, as hereinafter defined), without recourse or warranty of any kind, express or implied, all of its interests in and to all of Assignor's estate, right, title, interest, claim and demand in and to that certain Development Agreement (the "**Development Agreement**") dated as of May 13, 2019, by 750 AVE C SW, LLC, a Florida limited liability company, in favor of Assignee, and accepted and acknowledged by City and CRA, intending hereby to convey all of the right, title and interest, legal or equitable, contingent, deferred or otherwise, of Assignor in and to the Development Agreement, together with all rights, powers, privileges, options and other benefits of Assignor thereunder, including, without limitation, the right of Assignor to enforce or terminate the Development Agreement, to perform any of Assignor's obligations thereunder (it being expressly understood and agreed that no such obligations shall exist unless and until Assignee expressly assumes the Development Agreement, to make or agree to all waivers, amendments, approvals, and agreements, to give and receive all notices and other instruments, and to take all action thereunder or in connection therewith.

The assignment of the Development Agreement is "**AS-IS, WHERE-IS**" and without representations or warranties of any type being given by Assignor, except that Assignor represents and warrants that (i) Assignor is the legal and equitable holder owner of the interest of "Assignor" under the Development Agreement, (ii) the interest of "Assignor" under the Development Agreement has not been previously pledged or assigned by Assignor, and (iii) Assignor has all requisite power and authority to assign the Development Agreement to Assignee.

NOTICE OF FINAL AGREEMENT. THIS ASSIGNMENT (INCLUSIVE OF THE CONSENT ATTACHED HERETO AS EXHIBIT A), TOGETHER WITH THE DEVELOPMENT AGREEMENT (I) CONSTITUTE THE ENTIRE AGREEMENT BETWEEN THE PARTIES WITH RESPECT TO THE SUBJECT MATTER THEREOF; (II) SUPERSEDE ANY PRIOR AGREEMENTS WITH RESPECT TO THE SUBJECT MATTER THEREOF; (III) CAN BE CHANGED ONLY BY A WRITING SIGNED BY ALL THEN-PARTIES TO SUCH AGREEMENTS; AND (IV) SHALL BIND AND BENEFIT EACH PARTY AND ITS SUCCESSORS AND PERMITTED ASSIGNS (I.E., AS AND TO THE EXTENT PERMITTED IN ACCORDANCE WITH SECTION 7.9 OF THE DEVELOPMENT AGREEMENT).

This instrument, and the rights and obligations of the parties hereto, shall be governed by and construed and enforced in accordance with the substantive laws of the State of Florida.

Doc ID: 6d5e50bc1b61b49fe08ed99c2cc3f08f53892fea

IN WITNESS WHEREOF, Assignor has caused this Assignment to be duly executed and delivered to be effective as of the Effective Date.

ASSIGNOR:

750 AVE C SW, LLC
a Florida limited liability company

By: SILVER PROPERTIES OF WH, LLC, a Florida limited liability company, as Manager

By: _____

Printed Name: Alan L. Cosby

Title: Manager

Date: April 9, 2025

Doc ID: 6d5e50bc1b61b49fe08ed99c2cc3f08f53892fea

IN WITNESS WHEREOF, Assignee has caused this Assignment to be duly executed and delivered to be effective as of the Effective Date.

ASSIGNEE:

BNL CHAMPS LLC
a Florida limited liability company

By: _____

Name: Nigel Bogaert

Title: Manger

By: _____

Name: Brian Macomber

Title: Mgr

By: _____

Name: Luciano Assuncao

Title: Mgr

Date: 04 / 09 / 2025

Doc ID: 6d5e50bc1b61b49fe08ed99c2cc3f08f53892fea

The undersigned as of the Effective Date expressly consent to the foregoing assignment pursuant to the terms of the Consent attached hereto as Exhibit A:

CITY:

THE CITY OF WINTER HAVEN, FLORIDA,
a Florida municipal corporation

By: _____
Printed Name: Nathaniel J. Birdsong, Jr.
As its: Mayor
Date: _____

ATTEST WITH SEAL:

By_____
Vanessa Castillo, MMC, City Clerk

Approved as to correctness and form:

By_____
Frederick J. Murphy, Jr., City Attorney

Doc ID: 6d5e50bc1b61b49fe08ed99c2cc3f08f53892fea

The undersigned as of the Effective Date expressly consent to the foregoing assignment pursuant to the terms of the Consent attached hereto as Exhibit A:

CRA:

THE WINTER HAVEN COMMUNITY REDEVELOPMENT AGENCY,
a public body created pursuant to Chapter 163, Florida Statutes

THE WINTER HAVEN COMMUNITY REDEVELOPMENT AGENCY

By: _____
Print Name: Brian Yates
As its: Chairman
Date: _____

Signed, sealed and delivered
in the presence of:

_____

_____
Two Witnesses

Doc ID: 6d5e50bc1b61b49fe08ed99c2cc3f08f53892fea

Exhibit A

CONSENT

City and CRA hereby (i) consent to the foregoing assignment described in this Assignment and recognize BNL CHAMPS LLC, a Florida limited liability company ("**BNL CHAMPS**"), as a permitted assign of 750 AVE C SW, LLC, (ii) ratify and affirm all of the terms, covenants, conditions and obligations of such parties in the Development Agreement, and (iii) acknowledge and agree that all references to the term "Assignee" shall hereafter be deemed to refer to BNL CHAMPS and BNL CHAMPS shall be entitled to all of the benefits and privileges under the Development Agreement. Notwithstanding the foregoing, City and CRA acknowledge and agree that BNL CHAMPS shall be recognized as a permitted assign of 750 AVE C SW, LLC as approved in writing by City and CRA (as and to the extent permitted in accordance with Section 7.9 of the Development Agreement, as herein or hereafter defined), it being understood and agreed that the foregoing shall not otherwise modify the provisions of Section 7.9 of the Development Agreement (which for the avoidance of doubt remain in full force and effect). To the extent that BNL CHAMPS makes an assignment it shall within thirty (30) calendar days of such an assignment provide the City and CRA with the name and title, address (both physical and mailing), and contact information. Provided further for the additional avoidance of doubt, nothing herein shall be construed as creating any obligations and/or responsibilities by the City and/or CRA with respect to any Loan Documents.

City and CRA hereby represent and certify to BNL CHAMPS, as of the date hereof, that (a) this Consent has been duly authorized, executed and delivered by City and CRA, (b) the provisions of the Development Agreement dated May 13, 2019 among 750 AVE C SW, LLC, a Florida limited liability company ("**750 AVE C SW, LLC**"), City and CRA, has not been further amended, modified, supplemented or assigned, and the Development Agreement is in full force and effect, and (c) City, CRA and 750 AVE C SW, LLC are each in full compliance with the terms, covenants, conditions and requirements set forth in the Development Agreement and as of the date hereof there is no known violation of any provisions in the Development Agreement, and (d) neither City nor CRA have sent to Assignor any notice that Assignor is not in compliance with the terms, covenants, conditions and requirements set forth in the Development Agreement.

None of the foregoing assignment, this Consent nor any of the agreements set forth herein, shall constitute a novation of, or under, the Development Agreement. Except as otherwise expressly set forth herein, nothing contained herein shall constitute an amendment, modification or waiver of any of the terms or provisions of the Development Agreement (which Development Agreement shall otherwise remain in full force and effect and unchanged) or release or limit the liability of BNL CHAMPS or any other Person who may now be or may hereafter become liable, primarily or secondarily, under the Development Agreement.

For purposes of notices under the Assignment of Development Agreement, City and CRA acknowledge that the addresses for notices to BNL CHAMPS, as Assignee, are as follows:

If to BNL CHAMPS: BNL CHAMPS LLC, a Florida limited liability company
14808 Deaton Aly
Orlando, Florida 32827
Attention:

Doc ID: 6d5e50bc1b61b49fe08ed99c2cc3f08f53892fea

with a copy to:

Doc ID: 6d5e50bc1b61b49fe08ed99c2cc3f08f53892fea

Title	BNL - Assignment of Development Agreement
File name	20250409121450563.pdf
Document ID	6d5e50bc1b61b49fe08ed99c2cc3f08f53892fea
Audit trail date format	MM / DD / YYYY
Status	Signed

Document History

SENT	**04 / 09 / 2025** 13:13:17 UTC-4	Sent for signature to Nigel Bogaert (nigel@fivestaradj.com), Brian Macomber (brianm@fivestaradj.com) and Luciano Assuncao (luciano@fsclaims.com) from lor@fivestaradj.com IP: 108.188.240.232
VIEWED	**04 / 09 / 2025** 13:13:50 UTC-4	Viewed by Luciano Assuncao (luciano@fsclaims.com) IP: 76.235.212.76
VIEWED	**04 / 09 / 2025** 13:14:04 UTC-4	Viewed by Brian Macomber (brianm@fivestaradj.com) IP: 108.188.240.232
SIGNED	**04 / 09 / 2025** 13:14:25 UTC-4	Signed by Brian Macomber (lor@fivestaradj.com) IP: 108.188.240.232
SIGNED	**04 / 09 / 2025** 13:15:00 UTC-4	Signed by Luciano Assuncao (lor@fivestaradj.com) IP: 76.235.212.76

Title	BNL - Assignment of Development Agreement
File name	20250409121450563.pdf
Document ID	6d5e50bc1b61b49fe08ed99c2cc3f08f53892fea
Audit trail date format	MM / DD / YYYY
Status	Signed

Document History

SENT	**04 / 09 / 2025** 13:17:48 UTC-4	A new document has been created based off of an existing document with ID 6d5e50bc1b61b49fe08ed99c2cc3f08f53892fea IP: 108.188.240.232
EDITED	**04 / 09 / 2025** 13:17:48 UTC-4	Edited by LOR Department (lor@fivestaradj.com) IP: 108.188.240.232
REASSIGNED	**04 / 09 / 2025** 13:17:48 UTC-4	The document has been reassigned by LOR Department (lor@fivestaradj.com) from Nigel Bogaert (nigel@fivestaradj.com) to Nigel Bogaert (nigelb@fivestaradj.com) IP: 108.188.240.232
SIGNERS REMOVED	**04 / 09 / 2025** 13:17:48 UTC-4	LOR Department (lor@fivestaradj.com) removed nigel@fivestaradj.com IP: 108.188.240.232

Title	BNL - Assignment of Development Agreement
File name	20250409121450563.pdf
Document ID	6d5e50bc1b61b49fe08ed99c2cc3f08f53892fea
Audit trail date format	MM / DD / YYYY
Status	Signed

Document History

RESENT	**04 / 09 / 2025** 13:17:49 UTC-4	Signature request resent by LOR Department (lor@fivestaradj.com) IP: 108.188.240.232
VIEWED	**04 / 09 / 2025** 13:26:52 UTC-4	Viewed by Nigel Bogaert (nigelb@fivestaradj.com) IP: 108.188.240.232
SIGNED	**04 / 09 / 2025** 13:27:12 UTC-4	Signed by Nigel Bogaert (nigelb@fivestaradj.com) IP: 108.188.240.232
SIGNED	**04 / 09 / 2025** 13:30:42 UTC-4	Signed by Luciano Assuncao (luciano@fsclaims.com) IP: 76.235.212.76
SIGNED	**04 / 09 / 2025** 14:12:45 UTC-4	Signed by Brian Macomber (brianm@fivestaradj.com) IP: 108.188.240.232
COMPLETED	**04 / 09 / 2025** 14:12:45 UTC-4	The document has been completed.

DATE: June 20, 2025

TO: Honorable Mayor and City Commissioners

VIA: T. Michael Stavres, City Manager
M.J. Carnevale, Deputy City Manager

FROM: Amanda-Jo Nicholson, Assistant to the City Manager

SUBJECT: Authorization for Travel and Training

BACKGROUND

In April 2011, the City Commission amended the City's Policy Relating to the "Travel and Training Expenses for Officials, Employees, and City-Sponsored Boards and Committees". As part of the amended policy, any travel and training for the City Manager and City Commissioners must be presented to the City Commission for pre-authorization prior to attending a convention, conference or training program.

In accordance with the City Commission's Policy, authorization is requested for the following:

Event:	Florida Regional Councils Association (FRCA) Policy Board Meeting (on behalf of the Central Florida Regional Planning Council) (CFRPC)
Dates:	August 21-22, 2025
Location:	St Petersburg, FL
Attendee:	Mayor Nathaniel J. Birdsong, Jr.

FINANCIAL IMPACT

Hotel is paid for by the CFRPC, other travel related expenses associated with the travel and training outlined above will be accounted for within the City Commission cost center.

STRATEGIC PLAN ALIGNMENT

- **Pillar:** Responsible Government
- **Goal:** 6.2 – Engage and participate in legislative matters (State & Federal) and advocate for Home Rule and local priorities.
- **Strategy:** 6.2.1 – Strategically engage in local, State and national professional organizations and coalitions.

RECOMMENDATION

Staff recommends the City Commission approve the travel as outlined above.

DATE: June 18, 2025

TO: Honorable Mayor and City Commissioners

VIA: T. Michael Stavres, City Manager
M.J. Carnevale, Deputy City Manager

FROM: Amanda-Jo Nicholson, Assistant to the City Manager

SUBJECT: Authorization for Travel & Training

BACKGROUND

In April 2011, the City Commission amended the City's Policy Relating to the Travel and Training Expenses for Both Officials, Employees, and City-Sponsored Boards and Committees. As part of the amended policy, any travel and training for the City Manager and City Commissioners must be presented to the City Commission for pre-authorization prior to attending a convention, conference or training program.

In accordance with the City Commission's Policy, authorization is requested for the following:

Event: Florida League of Cities Annual Conference
Location: Orlando, FL
Dates: August 13-17, 2025
Attendees: Mayor Birdsong, Mayor Pro Tem Yates, Commissioners Dantzler, Dollison and Mercer, City Manager Stavres, and Public Affairs & Communication Director Hill

FINANCIAL IMPACT

Conference registration $650, plus hotel, mileage, & per diem costs. Expenses associated with the travel and training outlined above will be accounted for within the Commission, City Managers, and the Public Affairs and Communication cost centers.

STRATEGIC PLAN ALIGNMENT

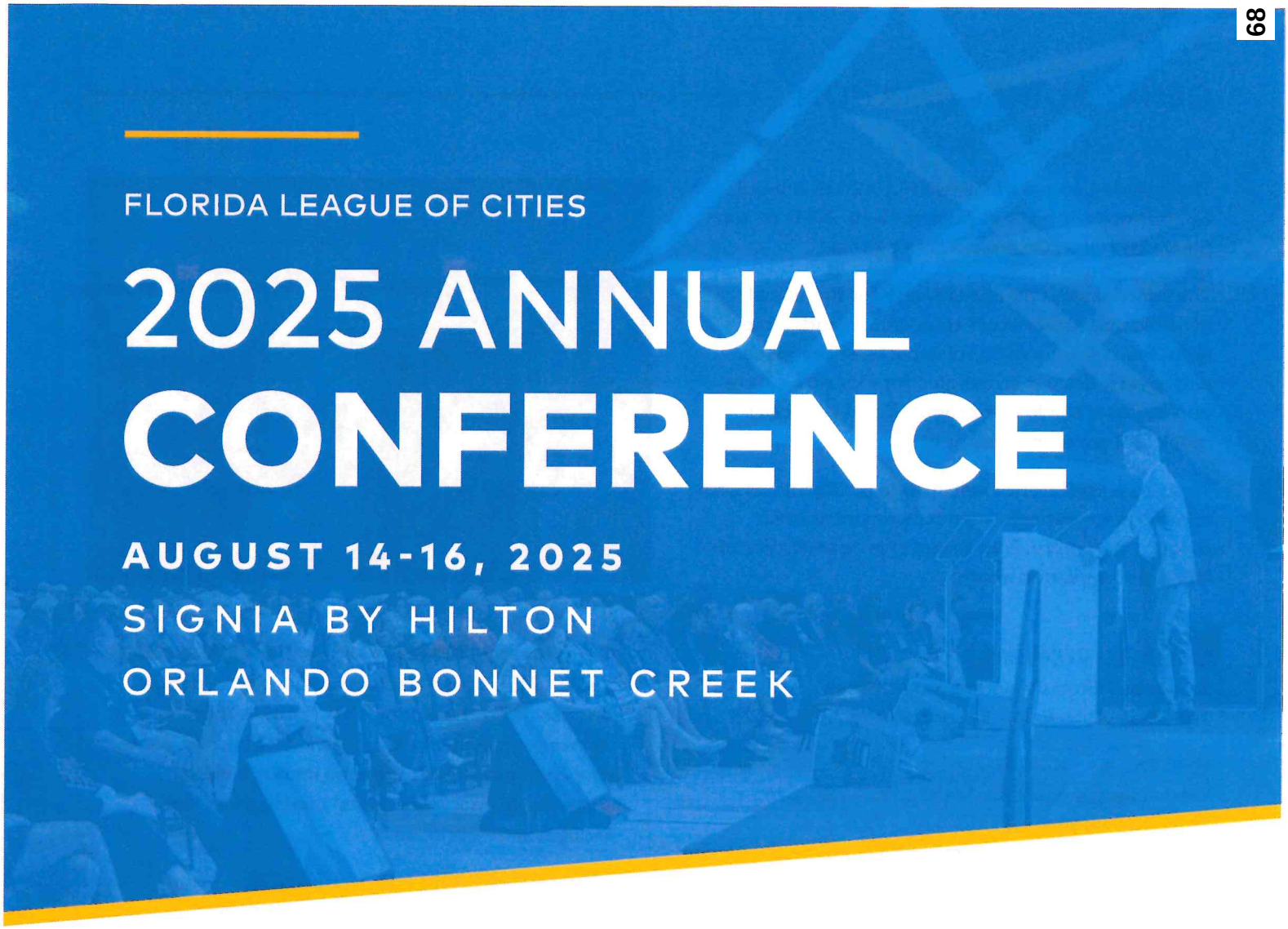
- **Pillar:** Responsible Government
- **Goal:** 6.2 – Engage and participate in legislative matters (State & Federal) and advocate for Home Rule and local priorities.
- **Strategy:** 6.2.1 – Strategically engage in local, State and national professional organizations and coalitions.

RECOMMENDATION

Staff recommends the City Commission authorize travel for the participants listed above.

ATTACHMENT

- FLC Conference Information



FLORIDA LEAGUE OF CITIES

2025 ANNUAL CONFERENCE

AUGUST 14-16, 2025

SIGNIA BY HILTON
ORLANDO BONNET CREEK

REGISTRATION INFORMATION

Paid registration is required to receive housing information. Sign up early! **See page 7 for details.**

Hotel Reservation Deadline: ***July 22, 2025***
Conference Registration Deadline: ***August 1, 2025***

FLC FLORIDA LEAGUE OF CITIES

#FLCITIES2025

GENERAL INFORMATION

The Florida League of Cities (FLC) 2025 Annual Conference will be held August 14-16, 2025, at the Signia by Hilton Orlando Bonnet Creek.

The conference is an opportunity for municipal officials and senior staff to enhance leadership skills, learn from municipal experts, share ideas with peers, discuss strategies for Florida's future, and discover the latest products and services for municipal governments.

This year's conference will include breakout sessions, committee meetings, keynote presentations, awards, and more. Don't miss this opportunity to learn, network, and share.



LOCATION/DATES

Signia by Hilton Orlando Bonnet Creek
Thursday, August 14 - Saturday, August 16, 2025

REGISTRATION HOURS

Wednesday, August 13: 12:00 p.m. - 4:30 p.m.
Thursday, August 14: 7:00 a.m. - 7:00 p.m.
Friday, August 15: 7:30 a.m. - 5:00 p.m.
Saturday, August 16: 7:30 a.m. - 2:30 p.m.

REGISTRATION FEES

City/County/Government ($650), **Corporate** ($750), and **Guest** ($175): These fees cover your name badge, admission to all conference sessions and the exhibit hall, refreshment breaks, Friday's membership networking event, Saturday's Past Presidents' Luncheon and Installation, and the Inaugural Celebration on Saturday night.

NOTE: Registrants are defined as any elected government official or any employee of governments, organizations, or corporations. **Guests** are defined as spouses, partners, or other nonprofessional relations of conference delegates. Guest registration **may not** be used for other elected government officials, staff, or company representatives.

Teen Guest 13-18 years ($20) and **Child Guest 3-12 years** ($15): These fees cover your name badge, admission to the exhibit hall, Friday's membership networking event, and refreshment breaks. **Teen and child guest registrations do not include Saturday's Past Presidents' Luncheon or the Inaugural Celebration.**

REGISTRATION PROCEDURES

Online Registration – Credit Cards Only
Visit *flcities.com/annualconference* to access online registration and pay with your Visa, Mastercard, or American Express. You will receive your conference confirmation immediately via email. Conference confirmations include your registration information, totals, and housing instructions. Please check your confirmation carefully to verify that all information is correct and inform the League immediately of any changes.

Mail Registration – Checks Only
To pay via check, fill out the registration form on page 8, attach your check for the appropriate fee, and mail it to the League office by **Friday, August 1, 2025**. Name badges and other information can be picked up at the conference registration desk.

DEADLINES

Registration – Conference registrations must be received no later than **Friday, August 1, 2025.** If you are unable to meet this deadline, please register on-site.

NOTE: Registration fees will increase to $680 for government and $780 for corporate registrants for all registrations done on-site. *We encourage you to register in advance.*

Hotel Reservations – The cutoff date for reservations at Signia is **July 22, 2025.** Reservations must be made via an FLC-provided registration link only; no one will receive housing information until **after** their **paid** registration is received. Please see page 7 for more details.

CANCELLATION POLICY

Conference registration cancellation requests must be sent in writing via email to *mhowe@flcities.com*. All cancellations received in the FLC office by 5:00 p.m. **Friday, August 1, 2025,** will receive refunds, minus a $50.00 cancellation fee. Refunds will be issued after the conference. **No refunds can be made after August 1 or for early departure from the conference.**

Hotel reservations must be canceled no later than **72 hours** prior to the scheduled arrival date to avoid a penalty of one night's room and tax.

SPECIAL NEEDS

If you are physically challenged and require special services or if you have special dietary needs (i.e., allergies or kosher or vegetarian meals), please attach a written description to your registration form. Contact the hotel directly if you need any special accommodations in your room.

CERTIFICATION CREDIT

This conference qualifies for 10 points in our **Certified Elected Municipal Official** program. Visit *flcities.com/certificate* for details or contact Christen Dangro at *cdangro@flcities.com* for more details.

LIVE FEEDS VIA SOCIAL MEDIA

The League will be posting real-time updates and photos via Facebook, Instagram, and X during the conference. Follow @FLCities on all major platforms. Connect with the conversation or pose questions by using the hashtag **#FLCities2025** in all your conference-related posts.

THURSDAY IS CITY SHIRT DAY!

We encourage all of you to show your city spirit by wearing your city shirt on **Thursday, August 14.**

CONTACT INFORMATION

For additional information, please contact Melanie Howe at *mhowe@flcities.com* or 850.222.9684.

TENTATIVE PROGRAM

WEDNESDAY, AUGUST 13, 2025

12:00 p.m. - 4:30 p.m.
Registration Desk Open

1:00 p.m. - 2:00 p.m.
Florida League of Mayors Nominating Committee Meeting

2:30 p.m. - 4:00 p.m.
Florida League of Mayors Workshop
Additional registration required through the Florida League of Mayors; contact Rachel Embleton at *rembleton@flcities.com* for more details.

4:15 p.m. - 5:15 p.m.
Florida League of Mayors Business Meeting
For more information, contact Rachel Embleton at *rembleton@flcities.com*

5:30 p.m. - 6:30 p.m.
Florida League of Mayors Reception
Additional registration required through the Florida League of Mayors; contact Rachel Embleton at *rembleton@flcities.com* for more details.

THURSDAY, AUGUST 14, 2025

7:00 a.m. - 7:00 p.m.
Registration Desk Open

8:00 a.m. - 10:00 a.m.
Florida League of Mayors Board of Directors Meeting

8:00 a.m. - 12:00 p.m.
Continuing Education in Ethics: Have You Completed Your Hours?
Florida's municipal elected officers are required to take four hours of specific continuing education in ethics per year. If you haven't completed your hours yet, this is your opportunity! The four-hour session includes two hours on the Florida Ethics Law (Chapter 112, Florida Statutes), one hour of public meetings (Chapter 286, Florida Statutes), and one hour of public records (Chapter 119, Florida Statutes). If your hours are completed, this class is a good refresher.

NOTE: *Registration is limited to the first 175 people and will be on a* **first-come, first-served basis.**

10:00 a.m. - 7:30 p.m.
Exhibit Hall Open

10:15 a.m. - 11:30 a.m.
Workshop

1:00 p.m. - 2:30 p.m.
Legislative Policy Committee Joint Meeting

1:00 p.m. - 3:00 p.m.
"Cities 101" Workshop
If you are newly elected or newly appointed, this "crash course" is designed for you. Details about Florida municipalities, the services they provide, and governing challenges will be discussed. This course is a prequel to the popular Institute for Elected Municipal Officials (IEMO), but it is not a substitute for the two-day IEMO class.

3:15 p.m. - 4:30 p.m.
Workshops

5:15 p.m. - 6:00 p.m.
Connect, Collaborate, and Caffeinate: Speed Networking for Elected Officials and Staff
Get ready for a dynamic networking experience! Fuel up with coffee and snacks as you engage in fun, fast-paced conversations and make meaningful connections with fellow leaders in local government. Don't forget your business cards.

6:00 p.m. - 7:30 p.m.
President's Welcome Reception in the Exhibit Hall

FRIDAY, AUGUST 15, 2025

7:00 a.m. - 8:30 a.m.
Florida Black Caucus of Local Elected Officials Breakfast
Additional registration required through the Florida Black Caucus of Local Elected Officials; contact Caressa Andrews-Moye at *candrewsmoye@flcities.com* for more details.

7:30 a.m. - 8:30 a.m.
FREE Sunrise Yoga
Join us on the Waterside Verandah for a sunrise yoga class. Flow with grace in a variety of postures

TENTATIVE PROGRAM

FRIDAY, AUGUST 15, 2025, *CONTINUED*

designed to open up your mind, body, and heart. This relaxing class will be led by a certified personal trainer and is great for individuals at all fitness levels. You don't need to bring a yoga mat, but be sure to wear comfortable clothing. There is no charge for the event, but **pre-registration is required**, and the class is limited to the **first 40 participants.**

7:30 a.m. - 9:00 a.m.
Continental Breakfast in the Exhibit Hall

7:30 a.m. - 1:15 p.m.
Exhibit Hall Open

7:30 a.m. - 5:00 p.m.
Registration Desk Open

8:15 a.m. - 9:15 a.m.
Federal Action Strike Team (FAST) Meeting

9:15 a.m. - 10:30 a.m.
Workshops

10:45 a.m. - 12:15 p.m.
Opening General Session

Presiding: *FLC President* **Michael C. Blake, Mayor**, *City of Cocoa.*

Featuring the presentation of the E. Harris Drew Award and a keynote presentation by **Jon Meacham.**



Michael C. Blake

12:15 p.m. - 1:15 p.m.
Sidewalk Café in Exhibit Hall (Cash Sales)

1:30 p.m. - 2:45 p.m.
Workshops

3:00 p.m. - 4:00 p.m.
Workshops

4:15 p.m. - 5:15 p.m.
Workshops

6:00 p.m. - 7:00 p.m.
Membership Networking Event

Evening Open



Jon Meacham

Presidential historian and Pulitzer Prize-winning author Jon Meacham is one of America's most prominent public intellectuals. A highly sought-after commentator, Meacham regularly appears on MSNBC, CNN, and other news outlets. A skilled orator with a depth of knowledge about politics, religion, and current affairs, Meacham has the unique ability to bring history to life and offer historical context to current events and issues impacting our daily lives – whether we realize it or not – to audiences of all backgrounds and levels of understanding.

He served as *Newsweek's* managing editor from 1998 to 2006 and as editor from 2006 to 2010.

Meacham is the author of multiple *New York Times* bestsellers. In 2022, he published And *There Was Light: Abraham Lincoln and the American Struggle*, which won numerous awards, including the Lincoln Prize, and spent 16 weeks on the Times bestseller list. A #1 *New York Times* bestseller, Meacham's *The Soul of America: The Battle for Our Better Angels* examines the present moment in American politics and life by looking back at critical times in U.S. history when hope overcame division and fear.

Meacham is a frequent guest on *Morning Joe, Real Time with Bill Maher, The 11th Hour,* and was featured in Ken Burns' documentary series *The Roosevelts: An Intimate History.* FOX News produced an hour-long special about Meacham's *Destiny and Power.*

Named a "Global Leader for Tomorrow" by the World Economic Forum, he is a member of the Council on Foreign Relations and a fellow of the Society of American Historians. Meacham is a distinguished visiting professor at Vanderbilt University, where he holds the Rogers Chair in the American Presidency. In 2024, he was awarded the National Humanities Medal by President Biden and was honored as a Library Lion of the New York Public Library.

TENTATIVE PROGRAM

SATURDAY, AUGUST 16, 2025

7:30 a.m. - 8:30 a.m.
Various Local/Regional League Breakfast Meetings
Contact your local league for more information.
Note that an RSVP is required by August 1 in order to guarantee a seat at a breakfast.

7:30 a.m. - 2:30 p.m.
Registration Desk Open

9:00 a.m. - 9:45 a.m.
Annual Business Meeting

10:00 a.m. - 11:45 a.m.
Second General Session
Featuring recognition of the Years of Service awards and a keynote address by **Jefferson Fisher.**



Jefferson Fisher is a board-certified Texas trial lawyer and founder of Fisher Firm. With his extensive experience as a trial lawyer, Jefferson understands the art of persuading and communicating effectively in high-conflict situations. He is one of the most sought-after names in functional thinking for modern-day communication. Known for his practical videos and authentic presence, Jefferson has amassed over 9 million social media followers, making him the most followed litigation attorney in the world in less than a year, all from inside his vehicle. Jefferson's followers include high-profile names such as Dwayne "The Rock" Johnson, Jesse Williams, Dr. Andrew Huberman, Sarah Silverman, Lewis Howes, and many more. Jefferson is on a mission to be a messenger of positivity in the world and help people learn to talk to each other again – one conversation at a time.

12:00 p.m. - 1:45 p.m.
Past Presidents' Luncheon and Installation of New President

2:00 p.m. - 3:00 p.m.
Workshop

6:15 p.m. - 11:00 p.m.
Inaugural Celebration
Don your best cocktail attire, enjoy dinner, and then be amazed by the mystical talents of **Colin Cloud**. After the show, enjoy drinks and dancing late into the night.



Colin Cloud
For over twenty years, Colin Cloud has been entertaining and astounding audiences on the biggest TV shows and stages around the world.

He'll know what you had for lunch, where you've been today, what you do for a living, your pet's names, and even your PIN code.

Described by the media as "the real-life Sherlock Holmes," he's enjoyed sold-out runs on London's West End, Broadway, and the Las Vegas Strip, where he is now a headliner with his own show "Colin Cloud: Mastermind" in Harrah's Hotel and Casino.

Graduating from university in Glasgow at just 20 years old with an honors degree in forensic investigation, Colin is now regarded as one of the world's leading corporate entertainers. By combining his background in criminal profiling and his skills in psychology, lie detection, stand-up comedy, and magic, he'll read you like a book, and he's already sure you're a compelling read.

Cloud's mind-blowing presentation challenges the way we all perceive the world around us and has been described by many as positively life-changing.

Schedule and speakers are subject to change.

DATE: June 26, 2025

TO: Honorable Mayor and City Commissioners

VIA: T. Michael Stavres, City Manager
M.J. Carnevale, Deputy City Manager

FROM: Amanda-Jo Nicholson, Assistant to the City Manager

SUBJECT: Authorization for Travel & Training

BACKGROUND

In April 2011, the City Commission amended the City's Policy Relating to the Travel and Training Expenses for Both Officials, Employees, and City-Sponsored Boards and Committees. As part of the amended policy, any travel and training for the City Manager and City Commissioners must be presented to the City Commission for pre-authorization prior to attending a convention, conference or training program.

In accordance with the City Commission's Policy, authorization is requested for the following:

Event: International City/County Management Association (ICMA) Annual Conference
Location: Tampa, FL
Dates: Oct 25-29, 2025
Attendees: City Manager Stavres and Deputy City Manager Carnevale

FINANCIAL IMPACT

Conference registration $890, plus hotel, mileage, & per diem costs. Expenses associated with the travel and training outlined above will be accounted for within the City Managers cost center.

STRATEGIC PLAN ALIGNMENT

- **Pillar:** Responsible Government
- **Goal:** 6.2 – Engage and participate in legislative matters (State & Federal) and advocate for Home Rule and local priorities.
- **Strategy:** 6.2.1 – Strategically engage in local, State and national professional organizations and coalitions.

RECOMMENDATION

Staff recommends the City Commission authorize travel for the participants listed above.

ATTACHMENT

- ICMA Conference Information

2025 ICMA ANNUAL CONFERENCE

OCTOBER 25–29 | TAMPA CONVENTION CENTER
TAMPA/HILLSBOROUGH COUNTY, FLORIDA

PRELIMINARY PROGRAM

Registration and Housing Open
Wednesday, June 25 at 12 noon EST

conference.icma.org

Title Sponsor MissionSquare



2025 ICMA ANNUAL CONFERENCE

The 2025 International City/County Management Association (ICMA) Annual Conference will be held at the Tampa Convention Center in Tampa, Florida. Tampa's got buzz, and it's not just from the Cuban coffee. This city blends waterfront views with business savvy, powered by powerhouse sectors like tech, healthcare, finance, tourism, alongside Florida's largest port. From the Riverwalk to the bay, Tampa pulses with multicultural energy, vibrant neighborhoods, and a skyline that keeps climbing. It's not just growing, it's thriving with style! Tampa's economy is founded on a diverse base that includes tourism, agriculture, construction, finance, healthcare, government, technology, and the Port of Tampa, which is the largest port in Florida. Tampa has evolved into a multicultural, diverse business center with sustainable communities for its residents.

Local government managers play a vital role in shaping the communities they serve by overseeing a wide range of services, from infrastructure to education to public safety, managing the budget and planning for the future. The 2025 ICMA Annual Conference is an opportunity for everyone in local government, anywhere in the world, to come together.

What's waiting for you in Tampa

- Professional development opportunities for every career stage.
- Dynamic keynote speakers with diverse backgrounds will spark new ideas, shift perspectives, and leave you feeling inspired.
- New tools and techniques presented by experts in the local government management profession.
- Networking opportunities with local government professionals and service providers from around the world.
- Products and services from solution providers in the Exhibit Hall.
- A place where local government leaders and professionals from all backgrounds can stand together as a profession.

REGISTRATION INCLUDES

General Sessions, 160 Education Sessions, Skill-Building Workshops, Discussions and Product Theaters

An Exhibit Hall featuring more than 150 companies showcasing the latest and greatest in local government innovations, attendee engagement opportunities, and much more!

Peer-to-Peer Networking

Exhibit Hall Grand Opening Reception

Attendee Lunches and Refreshment Breaks (Mon/Tue)

Team/Group Discounts of 15% for Four or More Attendees



EDUCATION TRACKS

The 2025 ICMA Annual Conference education sessions are organized into tracks aligning with the 14 Practices for Effective Local Government Management and Leadership. Each practice is represented in at least one track.

Tracks include:

Empowering Future Civic Leaders

Explore effective programs and initiatives designed to engage youth and cultivate the next generation of local government leaders in various cultural and political contexts.

Addresses Practices: 2) Community Engagement, 6) Strategic Leadership, 13) Human Resources Management and Workforce Management, and 14) Communication and Information Sharing

Enhancing Community Engagement and Public Trust

Uncover innovative methods to strengthen resident participation and build trust through new approaches to community engagement and transparent governance, considering varied democratic traditions and community structures internationally.

Addresses Practices: 2) Community Engagement, 3) Equity & Inclusion, 9) Community and Resident Services and 14) Communication and Information Sharing

Ethics and Governance in a Complex World

Strengthen governance and uphold ethical standards in an increasingly complex and globalized world.

Addresses Practices: 1) Personal and Professional Integrity, 6) Strategic Leadership, and 14) Communication and Information Sharing

Fiscal Innovation and Sustainable Economic Development

Explore the future of local finance and economic development with innovative strategies for growth and resilience, diverse economies, and governance systems globally.

Addresses Practices: 7) Strategic Planning, 8) Policy Facilitation and Implementation, 9) Community and Resident Service, 10) Service Delivery, and 12) Financial Management and Budgeting

Future of Work in the Public Sector

Prepare for the evolving workforce by exploring trends in hybrid work, talent recruitment and retention, and employee well-being.

Addresses Practices: 4) Staff Effectiveness, 6) Strategic Leadership, 8) Policy Facilitation and Implementation, and 13) Human Resources Management and Workforce Engagement

Mindfulness and Self-Transformation in Public Leadership

Discover practical approaches to enhancing leadership skills and maintaining well-being in public service roles, considering diverse cultural perspectives on leadership and work-life balance.

Addresses Practices: 5) Personal Resiliency and Development, and 6) Strategic Leadership

Modernizing Public Infrastructure Through Technology

Modernize public infrastructure by integrating cutting-edge technology and innovative approaches to asset management. Explore how technology integration can transform public infrastructure to meet future community needs across different resource settings and urban-rural contexts.

Addresses Practices: 7) Strategic Planning, 9) Community and Resident Service, 10) Service Delivery, 11) Technological Literacy, and 12) Financial Management and Budgeting

TOP 5 REASONS TO ATTEND

1
The ICMA Conference is the foremost professional development opportunity for local government managers.

2
Top rated educational sessions

3
World-renowned speakers

4
Meet and mingle with the people who "speak your language" and face the same day to day challenges that you face.

5
World-class Exhibit Hall with innovative products and service providers to make your job easier.



SCHEDULE OF EVENTS

For schedule updates, please visit **conference.icma.org**.
All times are listed in Eastern Standard Time and are subject to change.

SATURDAY, OCTOBER 25

7:00 am	–	5:00 pm	Registration Open
7:00 am	–	5:00 pm	The Bay Attendee Lounge Open
8:00 am	–	5:00 pm	ICMA Micro-Certification Sessions*
9:00 am	–	1:45 pm	Art of Assistant Leadership Sessions
9:00 am	–	3:00 pm	Headshot Lounge Open
9:00 am	–	3:30 pm	Mobile Workshops*
10:15 am	–	11:15 am	Education Sessions and Discussions
12:45 pm	–	4:15 pm	Education Sessions and Discussions
2:00 pm	–	5:00 pm	Sporting Events*
6:30 pm	–	9:00 pm	Opening Party at Splitsville/Sparkman's Wharf*
9:00 pm			Open for Exhibitor/Sponsor/Affiliate Events

SUNDAY, OCTOBER 26

6:45 am	–	5:30 pm	Registration Open
6:45 am	–	5:30 pm	The Bay Attendee Lounge Open
8:00 am	–	11:30 am	Sporting Events*
8:00 am	–	12:00 pm	ICMA Micro-Certification Sessions*
8:00 am	–	1:00 pm	Headshot Lounge Open
9:00 am	–	10:00 am	Regional Meetings
9:00 am	–	12:15 pm	Mobile Workshops
10:15 am	–	12:30 pm	Education Sessions and Discussions
1:30 pm	–	3:30 pm	Opening General Session
3:30 pm	–	6:00 pm	Headshot Lounge Open
3:30 pm	–	6:00 pm	Exhibit Hall Grand Opening Reception
4:00 pm	–	6:00 pm	Product Theater Sessions in Exhibit Hall
6:30 pm			Opening Evening for Exhibitor/Sponsor/Affiliate Events

MONDAY, OCTOBER 27

7:00 am	–	5:00 pm	Registration Open
7:00 am	–	5:00 pm	The Bay Attendee Lounge Open
7:45 am	–	9:45 am	Education Sessions, Discussions, Skill-Building Workshops
8:00 am	–	9:45 am	Exhibit Hall Open
10:00 am	–	11:30 am	General Session
11:30 am	–	3:00 pm	Exhibit Hall Open
11:30 am	–	1:30 pm	Exhibit Hall Lunch
11:45 am	–	1:15 pm	SheLeadsGov Luncheon*
12:00 pm	–	2:45 pm	Product Theater Sessions in Exhibit Hall
12:45 pm	–	5:00 pm	Education Sessions, Discussions, Skill-Building Workshops
12:45 pm	–	5:00 pm	Mobile Workshops*
2:45 pm			Passport to Prizes Live Drawing in Exhibit Hall
5:15 pm			Open for State/Alumni Receptions/Exhibitor/Sponsor/Affiliate Events

** Additional fee applies*

TUESDAY, OCTOBER 28

7:00 am	–	5:00 pm	Registration Open
7:00 am	–	5:00 pm	The Bay Attendee Lounge Open
8:00 am	–	12:15 pm	Education Sessions, Discussions, Skill-Building Workshops
9:00 am	–	12:30 pm	Mobile Workshops*
10:15 am	–	1:00 pm	Exhibit Hall Open
10:30 am	–	12:45 pm	Product Theater Sessions in Exhibit Hall
11:00 am	–	12:30 pm	Exhibit Hall Lunch
11:30 am	–	1:00 pm	Assistant Chief Administrative Officers (ACAO) Luncheon*
12:45pm			Passport to Prizes Live Drawing in the Exhibit Hall
1:30 pm	–	3:00 pm	General Session
3:30 pm	–	4:30 pm	Education Sessions and Discussions
6:30 pm	–	9:00 pm	Closing Party at the Florida Aquarium*
9:00 pm			Open for Exhibitor/Sponsor/Affiliate Events

WEDNESDAY, OCTOBER 29

7:30 am	–	11:45 am	Registration Open
7:30 am	–	11:45 am	The Bay Attendee Lounge Open
8:00 am	–	10:15 am	Education Sessions, Discussions, Skill-Building Workshops
10:30 am	–	11:45 am	Closing General Session

As of 5/15/2025

** Additional fee applies*



EXHIBIT HALL

ICMA exhibitors will be eagerly awaiting your arrival in Tampa, ready to share the latest products and services that will help you solve organizational challenges, develop leadership skills, advance your career, and find inspiration to create a lasting impact in your community. When planning your schedule, be sure to allow for time in the Exhibit Hall to experience the following:

- Meet with over 150 exhibiting companies!
- Sunday Evening Exhibit Hall Grand Opening Reception
- Light Breakfast Bites and Coffee on Monday morning
- Lunch on Monday and Tuesday
- Refreshment Breaks on Monday and Tuesday afternoon
- Product Theater Presentations
- Attendee Relaxation Lounge
- Pawsitivity Park
- And More!

To view a current list of exhibitors, please visit conference.icma.org.





REGISTRATION

PLEASE NOTE! All attendees must first register for the conference before being able to book and reserve an ICMA Annual Conference hotel room. After registering, attendees will have access to securing a hotel room with discounted rates in the ICMA room block. Reservations are accepted on a first-come, first-served basis beginning when housing and registration open on Wednesday, June 25 at 12 noon EST. **Please do NOT contact the hotels directly**.

Registration Rates: In-Person

	Best Value Rate (By September 17)	**Regular Rate** (Beginning September 18)
Member	$890	$980
Non-Member	$1,790	$1,960

Group Registration

Team registrations are available for groups of four or more attendees. Each participant will receive 15% off their applicable registration rate. For more information, please visit conference.icma.org/registration.



CONFERENCE HOTELS

You must first register for the 2025 ICMA Annual Conference **before** you secure a hotel reservation.

Reservations are accepted on a first-come, first-served basis beginning Wednesday, June 25 at 12:00 noon EST, when housing and registration open. ICMA will send more information as the date approaches. Please do NOT contact the hotels directly. For a detailed listing and descriptions of all ICMA conference hotels and a map of the hotels, please visit conference.icma.org/hotel-and-travel.

Hotel	Room Rate	Distance from Convention Center
Aloft Tampa Downtown	$199 Single/Double	3 blocks
*The Barrymore Hotel Tampa Riverwalk	$207 Single/Double	10 blocks
*Courtyard by Marriott Tampa Downtown	$267 Single/Double	8 blocks
Embassy Suites Tampa Downtown	$289 Single/Double	Connected
*Hampton Inn by Hilton Channel District	$199 Single/Double	10 blocks
*Hampton Inn Ybor City	$169 Single/Double	2 miles
*Hilton Garden Inn Ybor City	$219 Single/Double	2 miles
Hilton Tampa Downtown	$269 Single/Double	3 blocks
*Home2Suites by Hilton Channel District	$225 Single/Double	10 blocks
*Hotel Flor	$239 Single/Double	8 blocks
*Hotel Haya	$245 Single/Double	2 miles
Hotel Tampa Riverwalk	$210 Single/Double	3 blocks
Hyatt Place/Hyatt House Tampa Downtown	$279 Single/Double	6 blocks
JW Marriott Tampa Water Street	$340 Single/Double	Across the street
*Le Meridien Tampa Downtown	$252 Single/Double	6 blocks
*Residence Inn by Marriott Tampa Downtown	$279 Single/Double	6 blocks
*Springhill Suites by Marriott Tampa Downtown	$199 Single/Double	9 blocks
Tampa Marriott Water Street	$280 Single/Double	Across the street
Westin Tampa Waterside	$249 Single/Double	1 block

*ICMA will provide complimentary shuttle service between these hotels and the Tampa Convention Center (TCC).

See you in Tampa!

Partner with ICMA
Megan Sherman
Senior Manager, Conferences and Sponsorships
msherman@icma.org

General Conference Inquiries
conferenceteam@icma.org

Exhibit at ICMA
Contact:
ICMA@corcexpo.com
312-265-9648

DATE: June 23, 2025

TO: Honorable Mayor and City Commissioners

VIA: T. Michael Stavres, City Manager
M.J. Carnevale, Deputy City Manager

FROM: Gary Hubbard, Water Department Director

SUBJECT: Drinking Water Asset Management Plan – FDEP SRF Compliance Planning

---

BACKGROUND

The Water Department has requested that Jones Edmunds develop a comprehensive Drinking Water Asset Management Plan (AMP). This initiative, stemming from the Harmony Master Lift Station design and construction agreement, aligns with the Florida Department of Environmental Protection's (FDEP) State Revolving Fund (SRF) program requirements. This AMP will serve as both a regulatory compliance tool and a guide for the City's long-term planning, helping to direct capital investment decisions, promote sustainable operations, and enhance funding eligibility.

The AMP will integrate the City's existing Capital Improvement Plan (CIP) and utilize scenario-based modeling to evaluate the impacts of asset aging, deterioration, and cost escalation.

To support strategic reinvestment, a comprehensive Asset Preservation Plan will be developed. This plan will prioritize renewal and replacement efforts based on risk, asset criticality, and service impact. The Final Plan will be submitted to FDEP for approval.

FINANCIAL IMPACT

Funds are budgeted in account 402-08-323-6301 in fiscal year 2024/2025 under Harmony Master Lift Station in the amount of $115,655.00.

STRATEGIC PLAN ALIGNMENT

- **Pillar:** Infrastructure
- **Goal:** 3.4 – Ensure an actionable strategy is in place for the future of water resources.
- **Strategy:** 3.4.4 – Maintain relationships with local, regional, state and federal regulatory and cooperative agencies directly related to integrated water resource management.

RECOMMENDATION

Staff recommends the City Commission approve the Jones Edmunds Task Order 95300-209-25 to prepare the Drinking Water Asset Management Plan – FDEP SRF Compliance Planning document and authorize City Manager or his designee to take all necessary actions required of the City.

ATTACHMENT

- Drinking Water Asset Management Plan, Jones Edmunds Task Order 95300-209-25

June 20, 2025

Mark Bombard
Construction Project Manager
City of Winter Haven – Water Department Assistant Director
401 6th Street SW
Winter Haven, Florida 33880

RE: City of Winter Haven – Water Department
Drinking Water Asset Management Plan – FDEP SRF Compliance Planning
Jones Edmunds Opportunity No.: 95300-209-25

Dear Mr. Bombard:

The City of Winter Haven has requested that Jones Edmunds provide professional services to support the development of a comprehensive Drinking Water Asset Management Plan (AMP) in alignment with the Florida Department of Environmental Protection's (FDEP) State Revolving Fund (SRF) program requirements. This AMP will serve as a regulatory compliance tool while also supporting the City's long-term planning efforts by guiding capital investment decisions, promoting sustainable operations, and enhancing funding eligibility.

Jones Edmunds will begin by conducting a detailed evaluation of the City's drinking water system assets, including wells, treatment facilities, storage tanks, booster stations, distribution mains, valves, and hydrants. Each asset will be assessed for age, condition, and remaining useful life, with field verification and coordination with City staff to ensure data accuracy. Using this information, Jones Edmunds will develop a centralized asset management database and perform valuation modeling to estimate replacement costs and analyze long-term operation and maintenance (O&M) needs.

The AMP will incorporate the City's existing Capital Improvement Plan (CIP) and use scenario-based modeling to assess the impacts of asset aging, deterioration, and cost escalation. Jones Edmunds will also conduct a financial review that includes rate structure analysis and demand forecasting to ensure long-term revenue sufficiency. This approach is designed to align infrastructure renewal with available funding and evolving system demands.

To support strategic reinvestment, a comprehensive Asset Preservation Plan will be developed to prioritize renewal and replacement efforts based on risk, asset criticality, and service impact. A Draft AMP will be submitted to the City for review, followed by Final Plan incorporating feedback and submitted to FDEP for approval. Jones Edmunds will coordinate directly with FDEP throughout the review process to ensure acceptance and to support the City's future funding and planning efforts.

BACKGROUND

Jones Edmunds will provide services in support of the City's efforts to develop and enhance its Drinking Water Asset Management Plan (AMP) in alignment with the Florida Department of Environmental Protection's (FDEP) State Revolving Fund (SRF) program requirements. FDEP continues to place increased emphasis on comprehensive asset management as a foundation for the efficient operation, maintenance, and long-term sustainability of public water systems. In response, this project will focus on producing an AMP that not only meets FDEP's regulatory guidelines but also serves as a proactive planning tool to guide capital investment, extend asset life, and optimize service delivery. Jones Edmunds will leverage its extensive experience with SRF-funded infrastructure planning to ensure the AMP is both technically robust and strategically valuable to the City.

SCOPE OF WORK

This Task Assignment authorizes Jones Edmunds to provide professional services under RFQ 20-01 Master Continuing Professional Consulting Services Agreement to support the City's initial evaluation of its drinking water utility assets. Services will include the identification and documentation of all potable water system assets—such as wells, treatment facilities, storage tanks, distribution mains, and appurtenances—along with an assessment of each asset's age, condition, and estimated remaining useful life. Jones Edmunds will conduct asset valuation modeling to estimate replacement costs and analyze operation and maintenance (O&M) expenses, incorporating the City's Capital Improvement Plan (CIP) to evaluate long-term funding needs. This evaluation will include rate structure analysis—covering impact fees, and residential, commercial, and industrial user rates—based on projections of population growth and potable water demand. Finally, a comprehensive asset preservation strategy will be developed to guide the renewal, replacement, and repair of critical infrastructure, supported by a risk-benefit analysis to inform investment timing and capital planning priorities.

The Consultant will provide professional engineering and planning services to support the City's development of a comprehensive Asset Management Plan. The scope of services under this task includes the following components:

- Asset Inventory & Condition Assessment
    - Conduct a comprehensive inventory of all assets within the drinking water system, including wells, treatment facilities, storage tanks, booster stations, distribution mains, valves, and hydrants.
    - Document each asset's location, type, installation year (age), current condition, and estimated remaining useful life.
    - Coordinate with City staff to confirm existing records and supplement with field verification as needed to fill data gaps.
- Asset Valuation and Cost Modeling
    - Estimate the current replacement value for all drinking water system assets.
    - Analyze historical and projected operation and maintenance (O&M) costs to inform long-term lifecycle planning.

    - Integrate valuation results into a centralized asset management database for ongoing capital planning and decision-making.
- Capital Improvement Plan (CIP) Integration
    - Review the City's existing Capital Improvement Plan and incorporate it into the asset management framework.
    - Align asset renewal and replacement needs with CIP priorities, implementation timelines, and funding schedules.
    - Conduct scenario-based modeling to evaluate the impact of asset deterioration, remaining life, and cost escalations on capital needs.
- Financial Planning and Rate Analysis Support
    - Project future drinking water demand based on population growth and usage trends.
    - Evaluate funding needs and revenue sufficiency to support short- and long-term capital improvements.
    - Support the development or refinement of user rate structures, including:
        - Impact fees
        - Residential, commercial, and industrial water rates
- Asset Preservation Planning
    - Develop a comprehensive Asset Preservation Plan outlining proactive strategies for asset renewal, repair, and replacement.
    - Conduct a risk-benefit analysis to prioritize capital investments based on asset criticality, failure risk, and service impacts.
    - Recommend optimized timing for intervention to extend asset service life and minimize lifecycle costs.

DELIVERABLES

- Jones Edmunds will develop and submit a Draft Drinking Water Asset Management Plan (AMP) to the City for review and comment. The draft will include the asset inventory, condition assessment, valuation modeling, CIP integration, financial analysis, and asset preservation strategy. Following receipt of the City's comments, Jones Edmunds will revise the document and prepare the Final AMP. Upon City approval, the Final AMP will be submitted to the Florida Department of Environmental Protection (FDEP) for review, edits, and acceptance. Jones Edmunds will coordinate directly with FDEP throughout this process to address any agency feedback and facilitate approval for formal publication and inclusion in the City's funding and planning documentation.

ASSUMPTIONS

The following items are exclusions and conditions of this Scope of Services:

- This Scope of Work does not include permitting services.
- This project will not require design or permitting drinking water systems. Environmental site assessments and threatened or endangered species, archaeological, or historical investigations are not expected to be necessary and are excluded from this Scope of Work.

FEE

Based on the Scope of Work described in Attachment 1, the City will compensate the Consultant on a lump sum, percent complete basis, as follows:

Task	Labor	Expenses	Total
1.A - Coordination and Stakeholder Meetings	$30,060	$350	**$30,410**
1.B - Asset Inventory and Condition Evaluation	$43,140	$500	**$43,640**
1.C - Asset Valuation and Cost Modeling	$41,330	$275	**$41,605**
Total	**$114,530**	**$1,125**	**$115,655**

SCHEDULE

The draft Asset Management Plan is expected to be completed within 30 weeks after the issuance of the Notice to Proceed. The Final AMP will be completed within 3 weeks of City comments.

We appreciate the opportunity to work with you and your staff on this project. If you have any questions or comments, please contact me at (813) 557-1025 or cseufert@jonesedmunds.com.

Sincerely,

Brian Icerman, PE
Executive Director
13545 Progress Blvd Suite 100
Alachua, FL 32615

Christopher Seufert, PMP
Department Manager
324 S Hyde Park Ave # 250
Tampa, FL 33606

XC: David Nicholson, City of Winter Haven
Gary Hubbard, PE, City of Winter Haven
Anthony Holmes, PE, Jones Edmunds

DATE: June 23, 2025

TO: Honorable Mayor and City Commissioners

VIA: T. Michael Stavres, City Manager
M.J. Carnevale, Deputy City Manager

FROM: Gary Hubbard, Water Department Director

SUBJECT: Recommendation of Award ITB-25-23, Reclaimed Water Transmission Main Extension on CR653

BACKGROUND

On April 23, 2025, the City of Winter Haven issued an Invitation to Bid, ITB-25-23, for a Reclaimed Water Transmission Main Extension on County Road 653. On June 5, 2025, twelve (12) proposals were received that met the qualifications. Insituform Technologies, LLC was the lowest responsive/responsible bidder, meeting all of the requirements for the construction of the project. A Recommendation of Award was posted on June 11, 2025 with no protest received in response.

This project extends for approximately 1.26 miles of 24-inch alternate water supply (AWS) on County Road 653 and Eloise Loop Road and approximately 0.94 miles of 6-inch AWS southerly on County Road 653 from Cunningham Road. The project is partially funded through a Florida Department of Environmental Protection (FDEP) grant, LPA0443.

Construction is estimated to begin in August 2025, and has a 120-day construction duration to complete the project.

FINANCIAL IMPACT

Funds are budgeted in account 402-08-324-6301 in fiscal years 2024/2025 and 2025/2026 in the amount of $2,535,000.00. The FDEP grant will reimburse $819,000 for the construction of the Reclaimed Water Transmission Main Extension.

STRATEGIC PLAN ALIGNMENT

- **Pillar:** Infrastructure

- **Goal:** 3.3 – Ensure an actionable strategy is in place for the future of water resources.
- **Strategy:** 3.3.1 – Adopt, implement, and maintain the One Water Master Plan to ensure sufficient capacity for potable, reuse and wastewater needs.

RECOMMENDATION

Staff recommends the City Commission award of ITB-25-23 Reclaimed Water Transmission Main Extension of CR653 to Insituform Technologies, LLC and authorize City Manager or his designee to take all necessary actions required of the City.

ATTACHMENTS

- ITB-25-23 Bid Tab Sheet
- ITB-25-23 Recommendation of Award
- Location Map

ITB-25-23
June 5, 2025
City of Winter Haven
Tabulation of Bids

Description	Bidder No 1 Insituform Technologies LLC Chesterfield, MO	Bidder No 2 General Underground, LLC Chiefland, FL	Bidder No 3 Midsouth, Inc. Bushnell, FL	Bidder No 4 Tucker Paving, Inc. Winter Haven, FL	Bidder No 5 Cathcart Construction Co - FL Oviedo, FL
Reclaimed Water Transmission Main Extension on County Road 653					
Total Proposed Costs:	**$2,533,421.00**	**$2,599,999**	**$2,714,679.70**	**$2,790,276.11**	**$2,990,691.22**
Bid Alternative #1:	$1,105,560.00	$1,082,250	$1,147,185	$1,011,321	$1,138,194

Description	Bidder No 6 Harris-McBurney Co. Tampa, FL	Bidder No 7 Sarasota Underground LLC Bartow, FL	Bidder No 8 Accurate Drilling Services, Inc. LaBelle, FL	Bidder No 9 Kamminga & Roodvoets, Inc. Tampa, FL	Bidder No 10 DBE Management, Inc. Loxahatchee, FL
Reclaimed Water Transmission Main Extension on County Road 653					
Total Proposed Costs:	**$3,165,161.52**	**$3,188,600**	**$3,202,674.50**	**$3,381,985**	**$3,650,706**
Bid Alternative #1:	no bid	$1,248,750	$1,165,500	$1,075,590	$1,305,027

Description	Bidder No 11 AMICI Engineering Contractors, LLC Wesley Chapel, FL	Bidder No 12 Timberline Construction Group LLC Pelham, AL
Reclaimed Water Transmission Main Extension on County Road 653		
Total Proposed Costs:	**$4,415,102.00**	**$4,499,247.50**
Bid Alternative #1:	$1,688,310	$1,831,500

Prepared by: BethanyOwen Date: June 11, 2025

City of Winter Haven
Financial Services

JUNE 11, 2025

To: All interested parties

Subject: Recommendation of Award

City of Winter Haven staff has recommended the award of ITB-25-23 Reclaimed Water Transmission Main Extension on CR653 to Insituform Technologies, LLC as the lowest responsive/responsible bidder meeting all bid requirements.

If you have any questions, I can be reached via email at procurement@mywinterhaven.com.

Sincerely,
CITY OF WINTER HAVEN

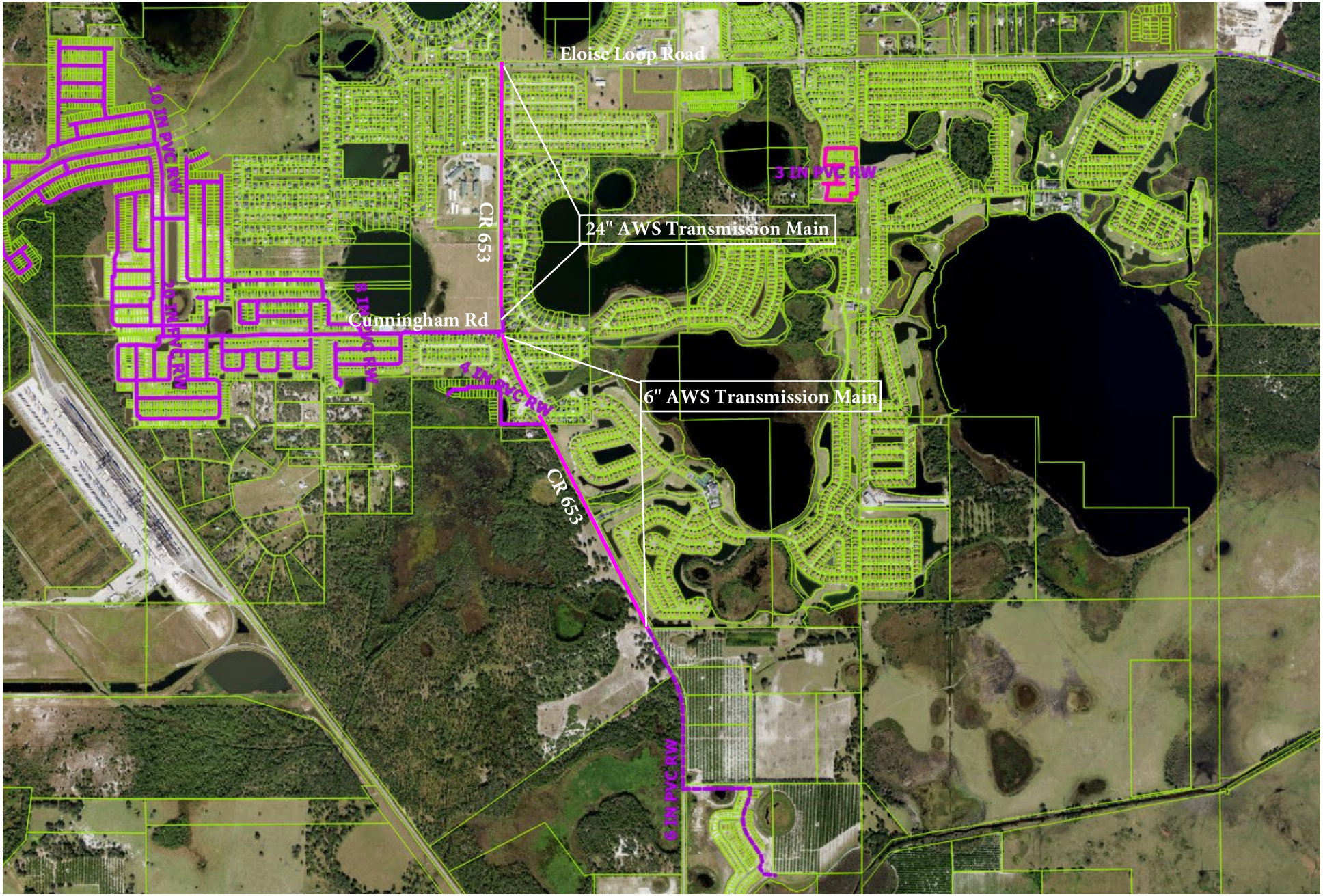
Bethany Owen

Bethany Owen
PROCUREMENT MANAGER

Procurement/Financial Services
500 Third Street
Winter Haven, FL 33881

MYWINTERHAVEN.COM

Location Map
AWS Transmission Main, Phase 2, CR653



DATE: June 23, 2025

TO: Honorable Mayor and City Commissioners

VIA: T. Michael Stavres, City Manager
M.J. Carnevale, Deputy City Manager

FROM: Gary Hubbard, Water Department Director

SUBJECT: Hadronex, Inc., (SmartCover System) annual maintenance agreement renewal, 2025/2026.

BACKGROUND

The Water Department initiated a gravity sewer level monitoring system, patented by SmartCover, in May 2021. The "Smart Level" system provides real-time remote monitoring of sewage levels in collection systems. The maintenance agreement will provide the software monitoring program, replacement of aging monitoring devices, and general support. Currently, 64 SmartCovers and 29 SmartRain sensors are deployed in the sewer collection system that provides:

- Sanitary Sewer Overflow Prevention
- Cleaning Optimization
- Inflow and Infiltration (I&I) Correlation
- Combined Sewer Overflow (CSO)
- Stormwater Management
- Hydrogen Sulfide (H2S) Monitoring
- Entry Detection

Hadronex, Inc., (SmartCover System) currently has a Sole Source Certificate to provide the hardware, software, and maintenance for the monitoring and emergency notifications of the wastewater gravity collection system.

FINANCIAL IMPACT

Funds are budgeted in account 402-08-323-5206 in fiscal year 2024/2025 in the amount of $85,572.70.

STRATEGIC PLAN ALIGNMENT

- **Pillar:** Environmental Stewardship
- **Goal:** 4.4 – Integrate the elements of the One Water philosophy to ensure a balance between water supply and nature.
- **Strategy:** 4.4.3 – Explore and implement the best management practices and innovative approaches to water resource infrastructure that further protects the natural environment.

RECOMMENDATION

Staff recommends the City Commission approve the Hadronex, Inc., (SmartCover System) annual maintenance agreement renewal and authorize City Manager or his designee to take all necessary actions required of the City.

ATTACHMENTS

- SmartCover Maintenance Agreement, Quote 3441
- SmartCover Renewal Services
- SmartCover – Price Change Letter 2025
- Hadronex – SmartCover Sole Source Certificate

Budget Quote
1 Year Renewal 2025-2026

Hadronex, Inc. DBA SmartCover Systems 2110 Enterprise Street Escondido, CA 92029 USA P: 760-291-1980 F: 760-291-1982	Due Date	Period Covered	Quote Number
	07/31/2025	08/01/2025-07/31/2026	00003441
	Remit PO to orders@smartcoversystems.com or return this quote signed with PO number. Scan of PO is preferred.		

Bill To:	Ship To:	Date	04/25/2025
City of Winter Haven Accounting Department P.O. Box 2277 Winter Haven, FL 33883, USA	City of Winter Haven 401 6th St SW Winter Haven, FL 33880, USA		

#	Product	Description	Qty	Mo	Rate	Total
1	ASM-RD-1R	Renewal: SmartRain™ - Rain data service. Provides continued rain data per site 1 year rate 08/01/2025 - 07/31/2026 8732 Ave C Rain 8733 Ave H 9011 6th St Rain 9012 Nottingham Rain 9013 Cypress Gardens Smart Rain 9014 Lake Elbert Rain 9866 Lake Smart Cir SmartRain 9867 Walmart SmartRain 10897 Lake Cannon SmartRain 10898 Cypresswood SmartRain 10899 Walmart Distribution SmartRain 10900 Lake Howard SmartRain 10901 Dundee Rd SmartRain	13	12	$117.00	$1,521.00
2	ASM-RD-1R	Renewal: SmartRain™ - Rain data service. Provides continued rain data per site 1 year rate 11/15/2025 - 07/31/2026 12740 Lake Howard West SmartRain 12741 Eloise Loop Rd SmartRain 12742 Havendale Rd SmartRain	3	8	$78.00	$234.00
3	ASM-SC1R	Renewal: SmartLevel – REQUIRED for system to function. 1 Year rate. 08/01/2025 - 07/31/2026 10902 Lift Station# 117 10903 High Point 10904 Lift Station# 123 10905 1562 Lake Howard Dr. 10906 Lift Station #133 10907 Lift Station #109 10908 Lift Station #135 10909 Lift Station #304 10910 Lift Station #182 10911 Lift Station #326 10912 Silverado Terr	40	12	$430.00	$17,200.00

		10913 1657 17th St NW 10914 List Station #120 10915 Lift Station #101 10916 Lift Station# 136 10917 Harmony Temp Lift Station 8723 Ave C SW 8724 N Lake Shipp 8725 Lake Shipp Dr 8726 Pope Ave 8727 MLS 1 8728 Lift Station #376 8729 Ave O NE 8730 Riverwood Dr 8731 Ave F NW 9002 1st St. South - Sonic 9003 Sears Ave 9004 Ave Q NE 9005 Ave S NE 9006 4th St SE Alley 9007 10th St SE 9008 N Lake Otis Dr SE 9009 Rose Lawn St SW 9010 Ware Ave NE 9860 AVE C Alley 9861 Camelot Ct SW 9862 MLS 2 9863 Ave U NE 9864 Ave G SW 9865 CWM 355				
4	EW-SC1R	Renewal: System Warranty- Covers all systems parts except PowerPack- PARTS ONLY. 1 year rate. 08/01/2025 - 07/31/2026 10902 Lift Station# 117 10903 High Point 10904 Lift Station# 123 10905 1562 Lake Howard Dr. 10906 Lift Station #133 10907 Lift Station #109 10908 Lift Station #135 10909 Lift Station #304 10910 Lift Station #182 10911 Lift Station #326 10912 Silverado Terr 10913 1657 17th St NW 10914 List Station #120 10915 Lift Station #101 10916 Lift Station# 136 10917 Harmony Temp Lift Station 8723 Ave C SW 8724 N Lake Shipp 8725 Lake Shipp Dr 8726 Pope Ave 8727 MLS 1 8728 Lift Station #376 8729 Ave O NE 8730 Riverwood Dr	40	12	$488.00	$19,520.00

		8731 Ave F NW 9002 1st St. South - Sonic 9003 Sears Ave 9004 Ave Q NE 9005 Ave S NE 9006 4th St SE Alley 9007 10th St SE 9008 N Lake Otis Dr SE 9009 Rose Lawn St SW 9010 Ware Ave NE 9860 AVE C Alley 9861 Camelot Ct SW 9862 MLS 2 9863 Ave U NE 9864 Ave G SW 9865 CWM 355				
5	PW-5C1R	Renewal: Power Warranty: PARTS ONLY. 1 year rate. 08/01/2025 - 07/31/2026 10902 Lift Station# 117 10903 High Point 10904 Lift Station# 123 10905 1562 Lake Howard Dr. 10906 Lift Station #133 10907 Lift Station #109 10908 Lift Station #135 10909 Lift Station #304 10910 Lift Station #182 10911 Lift Station #326 10912 Silverado Terr 10913 1657 17th St NW 10914 List Station #120 10915 Lift Station #101 10916 Lift Station# 136 10917 Harmony Temp Lift Station 8723 Ave C SW 8724 N Lake Shipp 8725 Lake Shipp Dr 8726 Pope Ave 8727 MLS 1 8728 Lift Station #376 8729 Ave O NE 8730 Riverwood Dr 8731 Ave F NW 9002 1st St. South - Sonic 9003 Sears Ave 9004 Ave Q NE 9005 Ave S NE 9006 4th St SE Alley 9007 10th St SE 9008 N Lake Otis Dr SE 9009 Rose Lawn St SW 9010 Ware Ave NE 9860 AVE C Alley 9861 Camelot Ct SW 9862 MLS 2 9863 Ave U NE	40	12	$243.00	$9,720.00

		9864 Ave G SW 9865 CWM 355				
6	ASM-SC1R	Renewal: SmartLevel – REQUIRED for system to function. 1 Year rate. 11/15/2025 - 07/31/2026 12743 Winter Haven Hospital 12744 Clubhouse Rd. and Wexford 12745 3107 Post Oak Ct. 12746 Idylwild Dr. and Trinity Circle 12747 Sunfish Dr. and Highfin Dr. 12748 21st St. SW and Ave D SW 12749 Cody Caleb Dr and Dakota Blvd 12750 Lift Station #147 12751 7th St SW and AVE O SW 12753 Bayou Ct 12754 220 AVE O SE 12755 Audubon Rd. 12756 Terranova Ln. and Terranova Ave. 12757 Fire Restaurant	14	8	$286.67	$4,013.38
7	EW-SC1R	Renewal: System Warranty- Covers all systems parts except PowerPack- PARTS ONLY. 1 year rate. 11/15/2025 - 07/31/2026 12743 Winter Haven Hospital 12744 Clubhouse Rd. and Wexford 12745 3107 Post Oak Ct. 12746 Idylwild Dr. and Trinity Circle 12747 Sunfish Dr. and Highfin Dr. 12748 21st St. SW and Ave D SW 12749 Cody Caleb Dr and Dakota Blvd 12750 Lift Station #147 12751 7th St SW and AVE O SW 12753 Bayou Ct 12754 220 AVE O SE 12755 Audubon Rd. 12756 Terranova Ln. and Terranova Ave. 12757 Fire Restaurant	14	8	$325.33	$4,554.62
8	PW-5C1R	Renewal: Power Warranty: PARTS ONLY. 1 year rate. 11/15/2025 - 07/31/2026 12743 Winter Haven Hospital 12744 Clubhouse Rd. and Wexford 12745 3107 Post Oak Ct. 12746 Idylwild Dr. and Trinity Circle 12747 Sunfish Dr. and Highfin Dr. 12748 21st St. SW and Ave D SW 12749 Cody Caleb Dr and Dakota Blvd 12750 Lift Station #147 12751 7th St SW and AVE O SW 12753 Bayou Ct 12754 220 AVE O SE 12755 Audubon Rd.	14	8	$162.00	$2,268.00

		12756 Terranova Ln. and Terranova Ave. 12757 Fire Restaurant				
9	Extended Warranty Labor	Labor services for onsite visits during coverage period. Level,FLOE, Vault. SmartCare. 02/01/2026 - 07/31/2026 10902 Lift Station# 117 10903 High Point 10904 Lift Station# 123 10905 1562 Lake Howard Dr. 10906 Lift Station #133 10907 Lift Station #109 10908 Lift Station #135 10909 Lift Station #304 10910 Lift Station #182 10911 Lift Station #326 10912 Silverado Terr 10913 1657 17th St NW 10914 List Station #120 10915 Lift Station #101 10916 Lift Station# 136 10917 Harmony Temp Lift Station 12743 Winter Haven Hospital 12744 Clubhouse Rd. and Wexford 12745 3107 Post Oak Ct. 12746 Idylwild Dr. and Trinity Circle 12747 Sunfish Dr. and Highfin Dr. 12748 21st St. SW and Ave D SW 12749 Cody Caleb Dr and Dakota Blvd 12750 Lift Station #147 12751 7th St SW and AVE O SW 12753 Bayou Ct 12754 220 AVE O SE 12755 Audubon Rd. 12756 Terranova Ln. and Terranova Ave. 12757 Fire Restaurant 8723 Ave C SW 8724 N Lake Shipp 8725 Lake Shipp Dr 8726 Pope Ave 8727 MLS 1 8728 Lift Station #376 8729 Ave O NE 8730 Riverwood Dr 8731 Ave F NW 9002 1st St. South - Sonic 9003 Sears Ave 9004 Ave Q NE 9005 Ave S NE 9006 4th St SE Alley 9007 10th St SE 9008 N Lake Otis Dr SE 9009 Rose Lawn St SW 9010 Ware Ave NE 9860 AVE C Alley	54	6	$437.50	$23,625.00

		9861 Camelot Ct SW 9862 MLS 2 9863 Ave U NE 9864 Ave G SW 9865 CWM 355				
10	Extended Warranty Labor	Labor services for onsite visits during coverage period. Level,FLOE, Vault. SmartCare. 04/03/2026 - 07/31/2026 15580 Lift Station #324 14 Meadow Lake Ct. 15581 SMH 0326036 Cypresswood Blvd. 15582 SMH 0179101 4150 Country Club Rd. S. 15583 SMH 0312001 3952 Cypress Landing W. 15584 Lift Station #94 Hill Nissan 15585 Lift Station #202 1409 Cooley Rd. 15586 SMH 0109031 203 8th St. NE 15587 SMH 0102065 1804 Ave Q SW 15588 SMH 0102070 201 Evergreen Pl. 15589 SMH 0104070 250 3rd St. NW	10	4	$291.67	$2,916.70
11	Notes	Details regarding order. ***THE UNITS BELOW ARE SMARTLEVEL AND THE ASM, PARTS AND POWER WARRANITES DOES NOT EXPIRE UNTIL 04/02/2027 AND WERE NOT INCLUDED IN THIS QUOTE ONLY THE LABOR WARRANTY*** 15580 Lift Station #324 14 Meadow Lake Ct. 15581 SMH 0326036 Cypresswood Blvd. 15582 SMH 0179101 4150 Country Club Rd. S. 15583 SMH 0312001 3952 Cypress Landing W. 15584 Lift Station #94 Hill Nissan 15585 Lift Station #202 1409 Cooley Rd. 15586 SMH 0109031 203 8th St. NE 15587 SMH 0102065 1804 Ave Q SW 15588 SMH 0102070 201 Evergreen Pl. 15589 SMH 0104070 250 3rd St. NW	1		$0.00	$0.00

Budget Quote
1 Year Renewal 2025-2026

Terms and Conditions for this transaction:
1. Payment: Net 30 days
2. All pricing subject to change.
3. All hardware, rentals, software subscriptions and renewals may be subject to tax.
4. Taxes were calculated at the time of quote creation and may change at the time of invoice.
5. Customer is responsible for paying the appropriate taxes due at time of invoice.
6. SmartCover is not responsible for the loss of wireless communication or internet communications or any communications used in the operation of this system.

SmartCover is an advisory service only. As such, SmartCover is not responsible for any damage of any kind or from any cause whatsoever that may result from, in relation to, in connection with, due to, or as a result of the installation or operation of the system, including without limitation, equipment failure, or any consequential damages caused by, or resulting from, the use or installation of the SmartCover system.

Signature for Approval _____

P.O. No.

We appreciate your business!

Subtotal	$85,572.70
Tax	$0.00
Total	$85,572.70

Real-Time Satellite Remote Infrastructure Monitoring Solutions

SmartCover® Renewals
What do you receive with your ongoing services?

Active Site Management (ASM) – Required

Active Site Management**,** a comprehensive service required for remote operation of the SmartCover system, includes the following:

- Two-way communication via Iridium satellite network (i.e. NOT cell based)
- Technical support via phone (855-291-1980), live chat from 7:00 AM to 5:00 PM PT email(customerservice@smartcoversystems.com)
- Secure password protected cloud-based software with unlimited data hosting.
- Maintenance of all cloud-based software with regular feature updates and upgrades.
- Automated notifications for Alarms, Advisories and Alerts via email and/or text message.
- Monitoring of system operations and performances including battery voltage, radio signal strength, and two-way communication.
- Access to analytical tools for evaluating data trends, inflow and infiltration, detecting blockages, potential overflows, and areas with odor issues, among others.
- Free iOS and Android mobile app for all users.

Warranty Services – Options

SmartCover offers comprehensive warranties covering system components and batteries, ensuring ongoing maintenance without additional orders or freight costs. Defective components are replaced free of charge as determined by the Customer Service Team, with SmartCover covering ground freight. Exclusions include damage from acts of nature, misuse, lack of maintenance, vandalism, or unauthorized repair. **All program units must be covered**, though labor costs are not included (*See Extended Labor Warranty*). SmartCover coordinates repair services upon notification to the Customer Service Team.

Extended System Parts Warranty

The standard Extended Warranty covers the following products:

- SmartCover® E-Box (System Controller)
- Sensor & Cable (e.g. SubSonic®, H2Scents®, etc.)
- Antenna (E-square, E-Dot or Helical)
- Bracket (Complete)

PowerPack Parts Warranty

The PowerPack extended warranty covers replacement of the PowerPack – 5 cell battery, including ground freight charges to the customer. Disposal of used batteries is the customer's responsibility.

Extended Labor Warranty

The extended labor warranty covers onsite labor for routine maintenance. This does not include new installations or relocations. Cost and availability vary by client location.

I Acknowledge that I have read and understood the terms stated above.

☐

October 24, 2024

SmartCover is implementing a price increase to cover higher costs we are experiencing. We are asking for your support as we address these current market conditions.

Effective January 1, 2025, or as contracts permit, SmartCover is increasing pricing by 2.8% for all systems and system components, Active Site Management (ASM), warranty programs and H2S Calibration Services. This moderate price adjustment will allow us to maintain a secure and reliable software platform, world-class support with a live person, as well as deliver future innovation.

SmartCover values your partnership and appreciates your understanding. We will continue to provide you with the highest quality products and services for all remote sewer monitoring needs.

If you have any questions regarding the increase or current pricing, don't hesitate to reach out to me or directly to your account manager.

Sincerely,

Paris Neofotistos

Paris Neofotistos
Executive Vice President, Sales and Marketing | SmartCover
pneofotistos@smartcoversystems.com
2110 Enterprise Street | Escondido, CA 92029

WINTER HAVEN
The Chain of Lakes City

Office of Procurement

SOLE SOURCE

CERTIFICATE OF CONDITIONS AND CIRCUMSTANCES

Instructions: The purpose of this form is to certify conditions and circumstances for the purchase of goods and services under the single source exception to the competitive bid process. This request is to be executed by the Department Director and submitted to the Procurement Officer for consideration.

Items or services required: SmartCover Systems: SmartCover;SmartFLOE; SmartVault; SmartWeir; SmartClean; SmartTank; SmartTrend; SmartRain; SmartTide; UnderCover; SubSonic; H2Scents and StreamWatch

Name of company considered a Sole Source: Hadronex, Inc DBA: SmartCover Systems

List the conditions and circumstances that require this to be a Sole Source purchase. Be specific:
SmartCover Systems solely provides SmartCover technology used to monitor the City's gravity sewer system in sensitive areas which will prevent back-ups/spills as well as monitor areas that may be experiencing inflow and infiltration to assist in identifying areas in need of rehab/replacement.

Proper documentation for verification of Sole Source must be attached.

Department Director's signature: [signature] **Date requested:** 7/11/2023

****

Procurement action/findings: Approved

Procurement Officer's signature: Bethany Owen **Date:** 7/11/2023

Per Florida Statute 838.22(2) It is unlawful for a public servant, with "corrupt intent" to obtain a benefit for any person or to cause unlawful harm to another to circumvent a competitive bidding process required by law or rule by using a sole-source contract for commodities or services.

SMARTCOVER
WE'VE GOT IT COVERED

Sole Source – Manufacturer

Customer Name City of Winter Haven
Address 401 Sixth St SW
City, State Zip Winter Haven FL 33880

Date 7/11/23

This letter is to provide notification that Hadronex, Inc. (doing business as SmartCover® Systems™) herein known as "Company" with corporate offices located at 2110 Enterprise Street, Escondido, CA 92029, is the sole creator, manufacturer and marketer of a group of systems and products, including: the award winning *SmartCover®; SmartFLOE™; SmartVault™; SmartWeir™; SmartClean®; SmartTank; SmartTrend®; SmartRain™; SmartTide™; UnderCover®; SubSonic®; H_2Scents®* and *StreamWatch®*.

The *SmartCover®* family of products are both ***patented and proprietary***, designed and manufactured by the Company to provide users with unique qualities and functions based on acquiring water level and/or flow data as well as other data in the sewer collection system or other structures with open channel flows, using ultrasonic, pressure or combined technology combined with embedded analytics and data fusion. The *SmartCover®* system, which acquires and transmits data through the Iridium® military grade satellite network, is immune to terrestrial communications interruptions caused by storms or hurricanes and provides 24/7 user access via a secure web browser and through a dedicated, secure user website.

SmartCover® uniquely provides real-time, continuous monitoring capability powered by an engineered and proprietary long-life lithium thionyl chloride battery pack. It *uniquely* communicates with an embedded digital radio through the Iridium® satellite system assuring global, redundant and continuous coverage.

Users acquire trend data via the patented and proprietary *SmartTrend®* analysis software tool which issues predictive "Advisories" on developing trends, "Alarms" for surcharges and intrusions and maintenance "Alerts" that monitor specific operational parameters system. All notifications provide information and resources enabling Sewer Intelligence® - effective, informed decision-making for corrective or preemptive action.

Patent pending *SmartRain™; StreamWatch® and SmartTide™* data services are available where users are presented a "multigraph view" for fast and easy comparison of the *SmartCover®* (level) or *SmartFLOE™* (flow) data with local environmental data. *SmartClean®* provides advanced maintenance forecasting to reduce cost and risk.

Mounted directly on the manhole cover, the patented *SmartCover®* configuration is designed to be installed with **no confined space entry** per OSHA CFR 1910.146(b). The manhole cover mounting also provides a real-time intrusion alarm when the manhole cover is opened, providing a unique capability to detect intrusions or entries into the manhole or hatch.

Company *solely provides* ongoing professional services for management and security of data, software maintenance and upgrades, the user website interface and exercise of the Iridium Satellite communications system. These essential services directly enable users to have seamless, robust and ongoing access to real-time data from remote locations.

Company is protected by the following US Patents: 7,589,630; 7,598,858; 7,944,352; 7,948,215; 8,607,654; 9,297,684; 9,482,568; 10,612,228 and 10,901,068. The systems are also protected by registered trademarks and international patents. Company also has a Madrid Treaty filing for its main trademark. We hope this information will satisfy your requirements and that it clearly demonstrates the special, patented, unique and proprietary features of our systems.

Sincerely,

Corey Williams, P.E.
President/CEO, SmartCover Systems
cwilliams@smartcoversystems.com

DATE: July 8, 2025

TO: Honorable Mayor and City Commissioners

VIA: T. Michael Stavres, City Manager
M.J. Carnevale, Deputy City Manager

FROM: Brittany Hart, Public Works Director
Todd Gooding, Assistant Public Works Director
Dustin Everitt, Natural Resources Manager

SUBJECT: Astute Financial Corporation Property Acquisition

BACKGROUND

The City has previously identified the property owned by Astute Financial Corporation and located southwest of the intersection of US Highway 17 North and U.S. Highway 92 West as being of high ecological importance. While this area has long been identified by staff as a priority for conservation, the opportunity for acquisition only recently materialized. The property includes four contiguous parcels totaling ±152.5 acres, of which roughly 140 acres are classified as freshwater wetlands and the remaining 12.5 acres as undeveloped uplands. The property is of high environmental value due to its geographic location, hydrological function, and potential for restoration. It sits at the northern gateway to the City and plays a critical role in filtering surface water flowing from Lake Pansy into the Winter Haven Chain of Lakes, which ultimately drains into the Peace River Basin.

Two independent appraisals were conducted for the property, which determined a mean value of $2,250 per acre for wetlands and $92,747 per acre for uplands. Based on these appraisals, the overall estimated mean value of the property is $1,470,822.35. Staff has negotiated a proposed purchase price of $1,400,000, which is slightly below the appraised mean. The Polk County Board of County Commissioners (BoCC) also recognized the property as a site of importance through its environmental lands program and has agreed to partner on the purchase, committing $600,000 in County funds, leaving the City responsible for the remaining $800,000.

In addition, the City was recently awarded an $800,000 grant for the ecological restoration of the wetland portion of the property. While the grant funding cannot be used for land acquisition, the purchase may serve as non-federal match for the restoration project, thereby fulfilling a key grant requirement and enabling implementation of long-term land management and wetland rehabilitation strategies.

The acquisition of this property preserves one of the last large, ecologically valuable parcels within the City limits at a time of increasing development pressure throughout Polk County. This site offers opportunities for future passive recreation, public access, and educational interpretation while ensuring continued ecological function and resilience.

FINANCIAL IMPACT

If approved, $800,000 budgeted in the Natural Resources Budget (404-08-300-6101) would be paired with $600,000 from the Polk County BoCC to complete the $1,400,000 property acquisition. As part of the negotiation, the City would be responsible for due diligence items such as the property boundary survey ($20,000) and the title insurance ($7,000) while the seller would be responsible for paying the documentary stamp taxes ($9,800).

STRATEGIC PLAN ALIGNMENT

- **Pillar:** Environmental Stewardship
- **Goal:** 4.4 – Integrate the elements of the One Water philosophy to ensure a balance between water supply and nature.
- **Strategy:** 4.4.1 – Continue to explore acquisition and/or activation opportunities of priority parcels that significantly benefit sustainable water resource initiatives.

RECOMMENDATION

Staff recommends the City Commission approve the Commercial Contract with Astute Financial Corporation, and authorize the City Manager or his designee to execute the Contract and take any and all necessary actions related to the City's acquisition of the subject property in accordance therewith.

ATTACHMENTS

- Appraisal from Tod Marr Appraisal Group, including map of parcel boundaries and locations
- Appraisal from String Appraisal Service
- Commercial Contract with Astute Financial
- Letter of support from Polk County

TOD MARR & ASSOCIATES, LLC

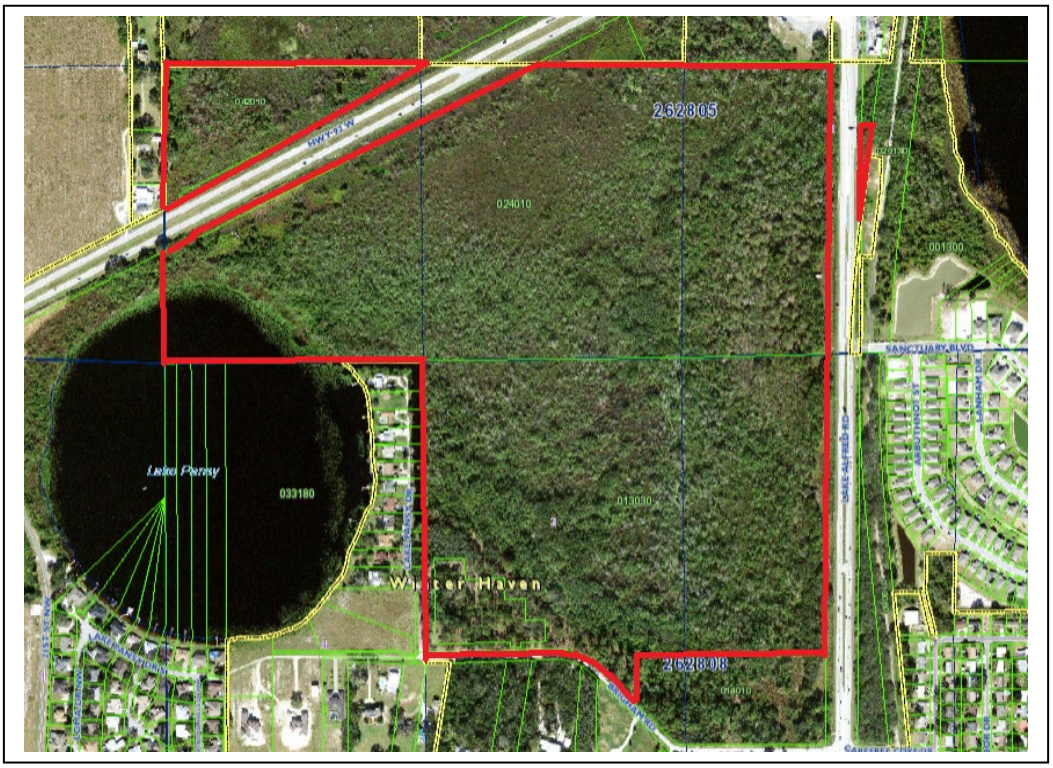
Real Estate Appraisers & Consultants
4735 94th Street North, Unit A
St. Petersburg, Florida 33708

Office: 727.399.9118
Email: tmarr@todmarr.com

APPRAISAL REPORT

162.03 Acres
Astute Property
US 92 and & US 17
Winter Haven, Polk County, Florida
Marr File #07244645

PO # 24104734



PREPARED FOR

Ms. Brooke Moherek
Environmental Specialist – Biologist II
Polk County Parks & Natural Resources
4177 Ben Durrance Road
Bartow, Florida 33830-8433

EFFECTIVE DATE
August 9, 2024

By

Tod Marr, MAI, CCIM
Cert Gen RZ1237

Tod Marr and Associates, LLC

4735 94th Street North, Unit A
St. Petersburg, Florida 33708
Telephone (727) 399-9118
Email tmarr@todmarr.com

Real Estate Appraisers
and Consultants
Tod Marr, MAI, CCIM
Cert. Gen. RZ 1237

September 13, 2024

Ms. Brooke Moherek
Environmental Specialist – Biologist II
Polk County Parks & Natural Resources
4177 Ben Durrance Road
Bartow, Florida 33830-8433

Re: Appraisal of 162.03 acres located at the southwest quadrant of US Highway 92 and US Highway 17 in the Winter Haven area of Polk County, Florida. Marr File # 07244645; Client PO 24104734

Dear Ms. Moherek:

At your request, I have prepared an appraisal of the above referenced property. The purpose of the appraisal is to provide an opinion of the market value of the fee simple interest of the subject as of the date of inspection, August 9, 2024.

This appraisal represents an "Appraisal Report" as identified by the Uniform Standards of Professional Appraisal Practice. The attached appraisal report describes the subject property and the methods used to provide an opinion of market value. The value reported in this appraisal report is subject to those Assumptions and Limiting Conditions, which have been included on pages 4-5 of the attached report. A title commitment was supplied and considered in the analysis. The following report contains the data, analysis, assumptions and limiting conditions on which I have based my value conclusions. Your attention is directed to the general assumptions and limiting conditions and certificate of appraisal, which are considered typical for this type assignment and have been included within the text of this report. This report has been prepared in compliance with the Uniform Standards of Professional Appraisal Practice (USPAP) and the Standards of Professional Practice of the Appraisal Institute and the Supplemental Appraisal Standards for Board of Trustees, March 2016. Refer to page 5 of this report for any extra ordinary assumptions, limiting conditions and hypothetical conditions.

The client for this assignment is Polk County Parks & Natural Resources. The intended users include the client, Polk County, a political subdivision of the State of Florida, the City of Winter Haven, and the Trustees of the Internal Improvement Trust Fund for the State of Florida. The intended use of the report is to assist the client and intended users with decisions relating to potential acquisition of the property. Based on the analysis, in my opinion, the market value of the fee simple interest of the subject, in as is condition, under the conditions as set forth herein, as of August 9, 2024, is estimated at

TWO MILLION TWO HUNDRED FIVE THOUSAND DOLLARS ($2,205,000).

Respectfully Submitted,

Digitally signed by Tod Marr
Date: 2024.09.13 13:26:02 -04'00'

Tod Marr, MAI, CCIM
St Cert Gen RZ1237

TABLE OF CONTENTS

Cover Page…….....…….……
Letter of Transmittal…… i
Table of Contents……..… ii
Certificate of Appraisal……... iii

Introduction:
Summary of Salient Facts and Conclusions……. 1
Assumptions and Limiting Conditions……. 4
Photographs of the Subject…….. 6
Scope of Appraisal……... 13
Property Rights or Interest Appraised…….. 13
Purpose of Appraisal.....…….……. 15
Date of Appraisal/Date of Inspection..... 15

Descriptive Analysis:
Polk County Area …… 16
Neighborhood…… 18
Property Description…….…….... 22
Size & Shape…..…..…… 22
Easements & Encumbrances.....…… 22
Description of Improvements……..... 22
Topography and Soil.....…… 23
Nuisances & Hazards.....…… 23
Legal Access……. 24
Utilities…….....…… 24
Sales History…… 24
Ownership/Tax Information……..……..... 25
Legal Description…….. 25
Zoning/Land Use……... 25
Concurrency…….. 28
Highest and Best Use.....…… 37

Valuations and Conclusions:
The Valuation Process.....……..... 41
Land Comparable Comparison Chart…….....…….……. 59
Explanation of Adjustments…….. 60
Correlation and Conclusion…….…….. 61
Wetland Sales…… 62
Reconciliation and Final Value Estimate ……..... 67

Addenda:
Qualifications of Appraiser
State Certification
Warranty Deeds for Wetland Sales
Zoning/Future Land Use Regulations
Title Commitment and Legal Description
DEP Checklist

CERTIFICATE OF APPRAISAL

The undersigned does hereby certify that, to the best of my knowledge and belief:

- The statements of fact contained in this report are true and correct.
- The reported analyses, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and are my personal, unbiased professional analyses, opinions, and conclusions.
- I have no present or prospective interest in the property that is the subject of this report and have no personal interest or bias with respect to the parties involved.
- My compensation is not contingent upon the reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value estimate, the attainment of a stipulated result, or the occurrence of a subsequent event.
- My analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the Uniform Standards of Professional Appraisal Practice (USPAP), the requirements of the Code of Professional Ethics and the Standards of Professional Practice of the Appraisal Institute and the Supplemental Appraisal Standards for Board of Trustees, March 2016.
- I have made a personal inspection of the property that is the subject of this report.
- No one provided significant professional assistance to the persons signing this report.
- The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.
- The value estimates in this report were not based on a requested minimum valuation, a specific valuation, or for the approval of a loan. This appraisal assignment was not based on a requested minimum valuation, a specific valuation, or approval of a loan.
- As of the date of this report, Tod Marr, MAI, has completed the requirements of the continuing education program for designated members of the Appraisal Institute and the continuing education for the State of Florida, license number, RZ1237
- I have not performed any services, as an appraiser or in any other capacity, regarding the property that is the subject of this report within the three-year period immediately preceding the acceptance of this engagement.

Based on the analysis, in my opinion, the market value of the fee simple interest of the subject, in as is condition, under the conditions as set forth herein, as of August 9, 2024, is estimated at

TWO MILLION TWO HUNDRED FIVE THOUSAND DOLLARS ($2,205,000).

Joseph S. String

Digitally signed by Joseph S. String
DN: cn=Joseph S. String, o=String Appraisal Services, ou, email=sservic2@tampabay.rr.com, c=US
Date: 2024.09.13 07:21:36 -04'00'

Tod Marr, MAI, CCIM
St Cert Gen RZ1237

EXECUTIVE SUMMARY OF IMPORTANT FACTS AND CONCLUSIONS

Project Identification:	Astute Property
Location:	The subject is located at the southwest quadrant of US Highway 92 and US Highway 17 in Winter Haven, Polk County, Florida. Brigham Road borders the site to the south. The city limits of Lake Alfred are just north of the subject. The downtown area of Winter Haven is roughly three miles to the south.
Parcel Numbers:	26-28-05-000000-024010; 26-28-05-000000-024030 26-28-05-000000-042010; 26-28-08-000000-013030 26-28-08-000000-032050
Owner of Record:	Astute Financial Corporation
Appraiser:	Tod Marr, MAI, CCIM Tod Marr & Associates, LLC
Date of Valuation:	August 9, 2024
Date of Report:	September 13, 2024
Interest Appraised:	Fee Simple
Land Area:	The subject consists of five different tax parcel numbers and is shaped irregular. Based on the property appraisers website the subject contains 162.03 acres. Based on the upland and wetland survey and information supplied, the property has 20.91 acres of uplands (13%) and 141.12 acres of wetlands (87%). The upland areas are divided into 12.46 acres on the east side of the property, with frontage on Highway 17, and 8.45 acres on the southwest side, with frontage on Brigham Road. The Various GIS maps indicate that there may be some uplands in the northwest corner, north of Highway 92 and on the sliver of land located east of Highway 17. However, these areas are not usable.
Improvements:	The subject is vacant land with no improvements
Parcel Access:	Access to the subject is via US Highway 92, US Highway 17 and Brigham Road. Based on the GIS maps, the portion of the subject that is on the north side of US Highway 92 has roughly 1,500’ of frontage. The main larger parcel has roughly 2,000’ on US Highway 92, roughly 2,775’ on US Highway 17 and roughly 1,100’ on Brigham Road. Both US Highways 92 and 17 are four lane divided highways. Brigham Road is a two lane local road that terminates just west of the subject.

Zoning/Future Land Use:	The subject has four different zoning designations and four different future land use classifications. Tax parcel 26-28-05-000000-042010 is mostly a wetland tract located on the north side of Highway 92 is zoned C-4 (Commercial Heavy, with a Conservation and Neighborhood Support future land use. Tax parcel 26-28-05-000000-024030 is the 0.24 acre sliver of land located on the east side of Highway 17 and it is zoned C-4 (Heavy Commercial) with an Neighborhood Support future land use. The main parcel located south of Highway 92 and west of Highway 17 is zoned C-4 (Commercial Heavy), R-1 (Single Family Residential – Large Lot), R-3 (Multi Family Residential – Low Density) and Conservation. The main parcel has two developable upland areas. One is on the east side of the property with frontage on Highway 17; this portion of the subject is zoned C-4 with a Neighborhood Support future land use. The other developable area is at the southwest corner, with frontage on Brigham Road. This portion of subject is zoned R-3 (Multi-family residential – Low Density) with an NSUB (Neighborhood Suburban) future land use classification.
FEMA Information:	Per FEMA flood insurance rate map number 12105C 0355G, map dated December 22, 2016, most of the site is within the AE flood designation. The southwest corner of the property appears to be within the X zone. The "AE" flood zone consists of areas where base flood elevations are determined. The X designation is areas determined to be outside the 500-year flood plain.
2023 Tax Information:	
Market Value:	$58,605 (General) and $59,689 (School)
Real Estate Taxes:	$1,134.26
Utilities:	Municipal water and sewer services are located along Highway 92, Highway 17 and Brigham Road. The city of Winter Haven Utilities Department was contacted and they indicated that there is capacity to support multiple family development of the subject. Electric, cable and telephone services are also in the area and available.
Oil, Gas and Mineral Reservations:	There were no adverse oil, gas or mineral reservations observed at the time of the physical inspection or review of the title commitment prepared by American Government Services Corporation, dated August 16, 2024, commitment # 33165-R. A summary of the more important exceptions on Schedule B-2 of the policy that could possibly affect the title are included after the scope of work section in this report.

Easements & Other Encumbrances:	There were no adverse easements, encroachments or reservations observed at the time of the physical inspection or review of the title commitment prepared by American Government Services Corporation, dated August 16, 2024, commitment # 33165R. A summary of the more important exceptions on Schedule B-2 of the policy that could possibly affect the title are included after the scope of work section in this report.
Highest and Best Use:	Multiple family development for the uplands, assuming a zoning change can be obtained, and recreation or possibly mitigation for the wetlands
Present Use:	Idle

OPINION OF VALUE

Sales Comparison Approach:	$2,205,000
Unit Value:	$92,000 per upland acre for the multiple family land $2,200 per acre of the subject's wetlands
Sales Data Dollar Range:	$57,432 to $146,352/upland acre for the multiple family sales $1,790 to $2,600/gross acre for the wetland sales
Market/Exposure Time:	1 to 3 months for the multiple family land and 6 to 12 months for the wetlands
Extra Ordinary Assumptions, Limiting Conditions and Hypothetical Conditions:	Refer to page 5

ASSUMPTIONS AND LIMITING CONDITIONS

The market value estimate of the property appraised is subject to the following assumptions and limiting conditions:

1. No responsibility is assumed for legal or title considerations. Title to the property is assumed to be good and marketable unless otherwise stated in this report. American Government Services Corporation, dated April 22, 2024, commitment # 33040 was supplied and considered in the analysis.

2. Responsible ownership and competent property management are assumed unless otherwise stated in this report.

3. The information furnished by others is believed to be reliable. However, no warranty is given for its accuracy.

4. Any plot plans and illustrative material in this report are included only to assist the reader in visualizing the property.

5. It is assumed that there are no hidden or unapparent conditions of the property or subsoil that render it more or less valuable. No responsibility is assumed for such conditions or for arranging for engineering studies that may be required to discover them.

6. Any sketch in this report may show approximate dimensions and is included to assist the reader in visualizing the property. Maps and exhibits found in this report are provided for the reader reference purposes only. No guaranty as to accuracy is expressed or implied unless otherwise stated in this report.

7. Possession of this report, or copy thereof, does not carry with it the right of publication or reproduction nor may it be used by anyone but the applicant without prior written consent of the applicant and the appraiser and in any event only in its entirety.

8. Neither all nor any part of the contents of this report shall be conveyed to the public through advertising, public relations, news, sales or other media without the written consent and approval of the author, particularly as to the valuation conclusions, the identity of the appraiser or firm with which he/she is connected, or any reference to the Appraisal Institute, the MAI designation.

9. Certain data used in compiling this report was given to the appraiser from sources he considers reliable; however, he does not guarantee the correctness of such data, although as far as is reasonably possible the data has been checked and is believed to be correct.

10. The soil in the area of the subject appears to be firm and solid, unless otherwise stated. Subsidence in the area is unknown or uncommon but the appraiser does not warrant against this condition or occurrence.

11. Any riparian rights and/or littoral rights indicated by survey, map or plat are assumed to go with the property unless the appraiser found easements or deeds of record to the contrary.

12. The appraiser, by reason of this report, is not required to give testimony in court with reference to the property herein appraised nor is he obligated to appear before any governmental body, board or agent unless arrangements have been previously made thereof.

EXTRAORDINARY ASSUMPTIONS AND LIMITING CONDITIONS

1. C-4 zoning does not allow multifamily development; however, according to Winter Haven Senior Planner Heather Reuter, CPM, the C-4 zoning could be down zoned to C-3, which does allow multifamily development. Townhomes are acceptable but only if they are not individually platted. For appraisal purposes, I am assuming that a zoning from C-4 to C-3 is a reasonable assumption based upon the planner's comment. The use of this Extraordinary Assumption might have affected the assignment results.

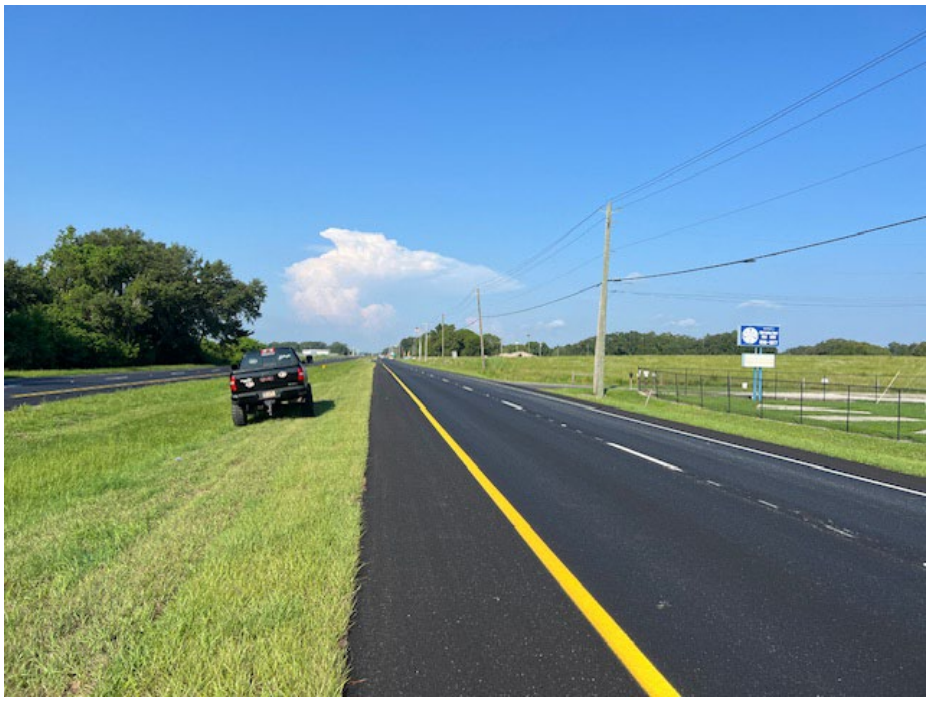
SUBJECT PHOTOGRAPHS



FACING NORTHEASTERLY TOWARDS THE 9.99 ACRES
LOCATED ON NORTH SIDE OF US HIGHWAY 98



FACING SOUTHEASTERLY FROM US HIGHWAY 98



FACING WESTERLY ON US HIGHWAY 98, FROM WEST END OF SUBJECT



FACING EASTERLY ON US HIGHWAY 98, SITE IS ON BOTH SIDES OF ROAD



FACING SOUTHWESTELRY FROM US HIGHWAY 98



FACING SOUTHWESTERLY FROM US HIGHWAY 17



FACING SOUTH ON US HIGHWAY 17, SUBJECT IS TO THE RIGHT OF ROAD



FACING NORTH ON US HIGHWAY 17, SUBJECT IS TO THE LEFT OF ROAD



FACING NORTHWESTERLY FROM US HIGHWAY 17



INTERIOR VIEW OF EAST SIDE OF PROPERTY
THAT HAS BEEN PARTIALLY CLEARED



FACING NORTHEASTERLY FROM BRINGHAM ROAD
AND LAKE PANSY DRIVE



FACING NORTHWESTERLY FROM BRINGHAM ROAD



TYPICAL VIEW OF CLEARED AREA IN SOUTHWEST SIDE OF PROPERTY



FACING WEST ON BRINGHAM ROAD, SITE IS TO THE RIGHT OF ROAD

APPRAISAL REPORT
162.03 Acres
Astute Property
Highway 92 and & Highway 17
Winter Haven, Polk County, Florida
Marr File #07244645

SCOPE OF WORK (APPRAISAL DEVELOPMENT AND REPORTING)

In preparing this appraisal, I

- Made an on-site inspection of the subject, surrounding properties and neighborhood on August 9, 2024.
- Gathered and reviewed specific data such as aerial maps, County GIS map, property appraiser tax sketches, quadrangle (topography) maps, flood maps, public record information, and historical data relative to the analysis of the subject. My client provided a copy of the title commitment, as well as various maps.
- Gathered relevant data pertaining to the neighborhood from a personal inspection of the surrounding environment, as well as local publications
- Discussed market conditions and trends with local brokers and owners
- Estimated the property's most probable and likely utilization under the basic real estate valuation principle of highest and best use
- The subject consists of two property types including 20.91 upland acres of multiple family land as well as 141.12 acres of adjacent wetlands that have a nominal amount of non-usable uplands. Thus, the search for sales was for the two different property types and this included gathering market information pertaining to multiple family acreage, as well as wetland acreage sales for the analysis of the fee simple interest of the property via the sales comparison approach to value. The primary area researched was Winter Haven and the secondary market area included other surrounding areas of central Polk County. For the wetland sales the area was expanded to other similar parts of central Florida. The time frame of the search for sales was from January 2022 to present. After researching the sales, I verified the information with an informed party.
- Estimated the market value of the fee simple interest of the subject via the sales comparison approach

The subject is vacant land and the sole method used in the valuation of the subject is the sales comparison approach and it provides a credible estimate of value. Because there are no improvements and because vacant land is rarely purchased for its ability to generate income, neither the cost nor income capitalization approach is applicable.

PROPERTY RIGHTS OR INTEREST APPRAISED

The fee simple interest of the property is being appraised There were no adverse easements, encroachments or reservations observed at the time of the physical inspection or review of the title commitment prepared by American Government Services Corporation, dated August 16, 2024, file # 33165-R, Project Astute Property EL-102-23. A summary of the more important exceptions on Schedule B-2 of the policy that could possibly affect the title are as follows.

2. **Based on a Thirty-Year ownership search and a Twenty-Year judgment search of the public records, we have found the above-described property to be subject to the following liens, encumbrances, and other matters of public record:**

Easement from Midlantic National Bank and Trust Co./Florida, as Successor Trustee, to the City of Winter Haven, a Florida municipal corporation, dated April 18, 1986 and recorded July 14, 1986 in Official Records Book 2438, Page 1465.

This is for a 30' wide easement along the right-of-way of US Highway 17 and Brigham Road and is in favor of the City of Winter Haven. It has no impact on value.

3. **Reservations as may have been issued by the Trustees of the Internal Improvement Trust Fund:**

Reservation of right of ingress and egress for the purpose of maintaining, repairing, and/or enlarging any and all canals, sluiceways, dikes and other works in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

Reservation of easement for road right-of-way in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

Reservation of oil, gas and mineral rights in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

The State of Florida reserves the right to maintain drainage of lands granted.
The instrument also reserves the State ¾ interest in all phosphate, minerals or metals that my be in , on or under the property. It also reserves ½ interest in all petroleum. Due to the Marketable Records Title Act there is not right of entry. In addition, this area of Winter Haven is nearly built-out, and the probability of the state exploring for any of these resources is highly unlikely. In my opinion, this has no impact on value.

DEFINITION OF FEE SIMPLE ESTATE

Absolute ownership unencumbered by any other interest or estate, subject only to the limitations by the governmental powers of taxation, eminent domain, police power, and escheat. Source: The Dictionary of Real Estate Appraisal, 6th edition, page 90

DEFINITION OF EASEMENT

The right to use another's land for a stated purpose.
Source: The Dictionary of Real Estate Appraisal, 6th edition, page 71

CLIENT

Ms. Brooke Moherek
Environmental Specialist – Biologist II
Polk County Parks & Natural Resources
4177 Ben Durrance Road
Bartow, Florida 33830-8433

APPRAISER

Tod Marr, MAI, CCIM
St Cert Gen RZ1237

PURPOSE OF APPRAISAL

The purpose of this appraisal is to provide an opinion of the market value of the fee simple interest in the property as of the effective date of the appraisal.

DEFINITION OF MARKET VALUE

The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller, each acting prudently, knowledgeably and assuming the price is not affected by undue stimulus. Implicit in this definition is the consummation of a sale, as of a specified date, and the passing of title from seller to buyer under conditions whereby:

a. Buyer and seller are typically motivated;
b. Both parties are well informed or well advised and each acting in what they consider their own best interest;
c. A reasonable time is allowed for exposure in the open market;
d. Payment is made in terms of cash in U.S. dollars or in terms of financial arrangements comparable thereto; and
e. The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale. Source: Supplemental Standards, DEP March 2016 and ACEP-ALE

Important elements affecting market value include the time element, neighborhood and economic changes, as well as anticipation thereof. Market prices do not necessarily follow all of these concepts and are often affected by salesmanship and the urgency and need of the buyer and/or the seller.

The market value of the property appraised in this report is estimated as of the effective date of appraisal. Constantly changing economic conditions have varying effects upon real property values. Even after the passage of a relatively short period, property values may change substantially and require a review of the appraisal and re-certification.

DATE OF APPRAISAL & PROPERTY INSPECTION

The effective date of the appraisal is the date of the on-site inspection, August 9, 2024. The typing date of the report is September 13, 2024. A list of the people at the inspection is below:

Brooke Moherek, Polk County
Brian Finder, Polk County
Joe String, MAI, Appraiser
Nick Mancuso, MAI, Review Appraiser
Steven Lockhart, Realtor

INTENDED USE OF THE APPRAISAL & INTENDED USERS

The client for this assignment is Polk County Parks & Natural Resources. The intended users include the client, Polk County, a political subdivision of the State of Florida, the City of Winter Haven, and the Trustees of the Internal Improvement Trust Fund for the State of Florida. The intended use of the report is to assist the client and intended users with decisions relating to potential acquisition of the property.

POLK COUNTY AREA DESCRIPTION

The subject is located in the Winter Haven area of central Polk County, Florida. The client, property owner, property owner's representative, the appraisers and review appraiser are well informed as to the location of the subject property and its general demographic features. Because of this only a brief county discussion will be provided.

Polk County has a total area of 2,011 square miles (5,210 km^2), of which 1,798 square miles (4,660 km^2) is land and 213 square miles (550 km^2) (10.6%) is water. Lakeland, Winter Haven and Bartow, respectively, are the three largest cities in the county.

Polk County is strategically located in Central Florida, on Interstate 4 between the Orlando Metropolitan Area to the Northeast and the Tampa/St. Petersburg Metropolitan Area to the West.

The climate is one of Polk County's most attractive innate features, best described as sub-tropical. The hottest months occur during the summer, primarily between June and September. The coldest months occur in December, January, and February. The summer months also represent the rainy season, when upwards of 60% of the total rainfall occurs. September and October are the two months that Florida is most susceptible to hurricanes, although they can occur anytime between June and October.

POPULATION

The 2022 population of Polk County is estimated at 788,382. The total estimated population of Polk and the five counties listed for 2022 was 3,265,788. Nearly 30,000 new people moved to Polk County in 2022, according to the data from the U.S. Census, and over 26,000 moved there in 2023.The chart below depicts the growth trends for Polk and surrounding counties for the past several years.

COUNTY	2010	2018	2019	2020	2021	2022
Polk	610,026	707,095	724,967	730,158	755,598	788,382
Highlands	98,637	104,453	105,890	101,349	103,279	105,649
Hillsborough	1,233,511	1,455,351	1,476,431	1,466,255	1,484,607	1,513,473
Hardee	27,731	27,106	27,385	25,339	25,322	25,651
Lake	297,724	357,086	366,941	386,216	396,352	410,090
Osceola	269,841	367,359	374,170	391,141	403,282	422,543

EMPLOYMENT & WAGES

In 2023, Polk County had approximately 334,524 employed persons. Highlands County had 35,909, Hardee County had 8,934, Hillsborough County employed 800,837, Lake County employed 172,445 and Osceola had 197,857.

UNEMPLOYMENT RATES

COUNTY	2010	2018	2019	2020	2021	2022	2023
Polk	11.6%	4.6%	4.2%	15.5%	6.2%	3.7%	3.8%
Highlands	12.2%	5.4%	5.0%	10.7%	6.7%	4.6%	4.3%
Hillsborough	10.5%	3.8%	3.4%	10.9%	4.8%	2.8%	3.0%
Hardee	10.6%	6.0%	5.9%	9.2%	5.7%	4.1%	4.0%
Lake	11.4%	4.0%	3.6%	15.9%	5.3%	3.1%	3.2%
Osceola	12.0%	4.0%	3.6%	25.4%	7.1%	3.9%	2.7%

Like most areas of Florida, as well as the United States in general, the unemployment rate for the entire area skyrocketed during 2020 and this was due to the pandemic. In the prior years, the unemployment rate hovered around 4%.

PER CAPITA INCOME

COUNTY	2010	2018	2019	2020	2021	2022
Polk	$30,873	$36,200	$37,771	$40,807	$43,915	$43,223
Highlands	$29,075	$34,077	$35,886	$38,713	$41,693	$41,845
Hillsborough	$39,791	$47,160	$49,580	$53,144	$57,905	$59,515
Hardee	$23,221	$28,141	$29,732	$32,291	$35,471	$34,968
Lake	$33,026	$41,727	$43,197	$45,699	$51,068	$52,291
Osceola	$27,111	$34,396	$36,376	$39,272	$44,013	$44,344

AGRICULTURE

Polk County ranks #8 in the state for market value of products sold. As of 2022 there were 2,197 farms in Polk County, encompassing 599,699 acres, with an average of 255 acres per farm. The market value of products sold was up 2% from 2017, at $304 million. Other farm related income was $24.5 million. Total farm production expense was $289 million, with a net cash income of about $47.5 million.

The mix of farms was roughly 79% as crops and 21% as livestock, poultry and product. The acreage in farm use was as follows: cropland, 141,588; pastureland, 269,459; woodland, 98,958; and other, 49,694. Most of the farms in the county were between 10 and 49 acres in size. Only 116 farms were over 1,000 acres.

NEIGHBORHOOD DESCRIPTION

By definition, a neighborhood is considered to be that portion of a larger community or an entire community in which there is a homogeneous grouping of inhabitants, buildings and business enterprises. Inhabitants of a neighborhood basically have a more than casual community of interest and similarity of economic level or cultural background. Neighborhood boundaries may consist of well-defined, natural, or man-made boundaries or they may be more or less defined by a distance change in land use or in the character of the inhabitants.

The subject is located at the southwest quadrant of Highway 92 and Highway 17 within the city limits of Winter Haven, Florida. Neighborhood boundaries are roughly defined as the downtown area of Winter Haven to the south, the City of Lake Alfred to the north, Auburndale to the west and Highway 27 to the east. The neighborhood is in the mature stage of the neighborhood life cycle and roughly 90% built-out. The arterial roads are typically developed with commercial properties including fast food restaurants, automotive repairs facilities, shopping centers, office buildings, etc. The local or side streets are typically developed with single family homes, as well as some multiple family and mobile home development.

Most of the homes in the subject's immediate area are single family. A review of the MLS for the last year indicated roughly 30 sales with prices between $180,000 and $715,000. The average price was in the $300,000 range. Most of the townhome development is in the southern portion of the neighborhood and the MLS showed sales prices between $120,000 and $275,000 over the last year.

As discussed, the highways and other arterial roads are typically developed with commercial properties. Jarrett Gordon Commercial Truck and RV Repair is located at the southwest corner of Highway 92 and 17, which is adjacently north of the subject. At the opposite end of the corner is a used car dealership. Older multiple tenant commercial buildings, as well as a small used car dealers are located south of the intersection and on the east side of Highway 17. This commercial development continues south of the subject to the downtown area of Winter Haven.

Located on the north side of the subject, Highway 92 is also developed with a variety of commercial properties. Located on the south side and adjacently west of the subject is the Winter Haven Regional Airport, which is a city owned public use airport. Note that no large airline companies fly from this airport.

Sanctuary by the Lake is a new residential development that is nearly built out and it is located on the east side of Highway 17, across the street from the subject's eastern perimeter. The community is being developed by Southern Homes. When complete there will be a total of 129 single family homes with sizes between 1,176 and 3,498 square feet. Located adjacently south is an older community that was developed in the 1970s known as Care Free Cove. The newer Island Lakes community is just to the east.

Recreational activities in the area includes Legoland, numerous golf courses, public parks, as well many lakes and rivers. The nearby cities and towns of Winter Haven to the south, Lake

Alfred to the north and Auburndale to the west provide all of the necessary governmental and other services needed.

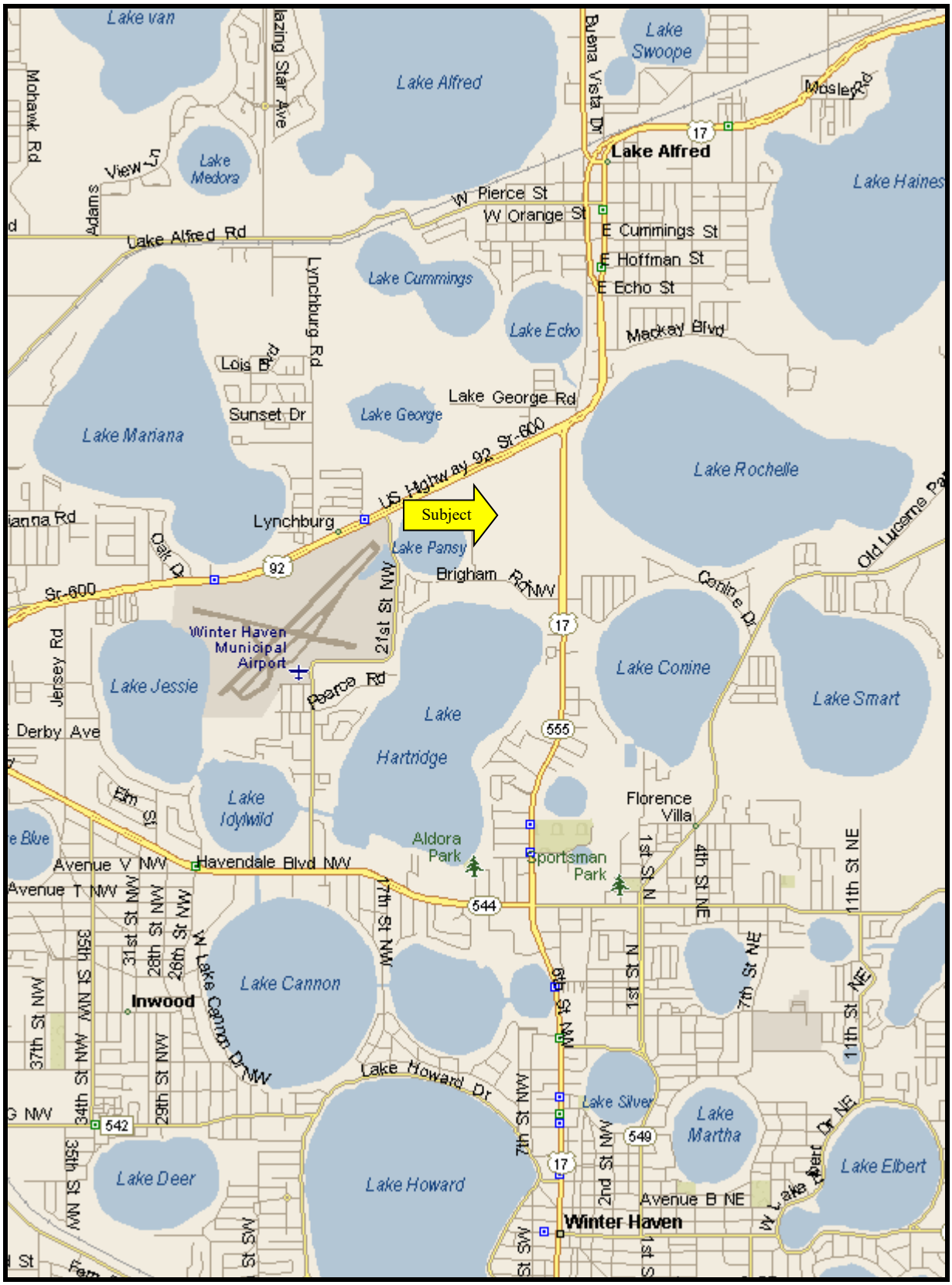
The Florida Association of Realtors reported an increase in statewide sales activity of existing single-family homes of 5.2% in the July 2024 year-to-year comparison. July sales of existing townhouse-condos statewide decreased by 21.2% for the same time period. The Polk County area has seen an increase in sales of single-family homes of 5.6%, and an increase in townhouse-condominium sales of 36.4%. The median statewide sale price for single family homes was up 0.5% and townhouse-condos median sale prices decreased by 1.3%. The Polk County Market has seen a median price decrease of 1.2% for single family homes and 12.0% increase for townhouse-condominiums in the July year over-year reports. The inventory of single-family homes for sale in Florida was up 59.4% year over year and the month's supply inventory was up 64.3%. The inventory of townhouses and condos for sale in Florida increased by 90.1% and the month's supply increased by 105.6%.

The Federal Reserve economic report for economic activity in the Sixth District released in July 2024 includes the subject area. Economic activity in the Sixth District was fairly flat, on balance, over the reporting period. Labor markets and wage pressures eased further, and worker availability and turnover improved. Cost growth moderated overall, but some construction and freight costs increased. Firms' pricing power weakened. Consumer spending was flat. Leisure travel softened, but group and business travel strengthened. Home sales slowed and existing home inventories grew. Commercial real estate conditions varied. Transportation activity was mixed. Loan growth was flat, and delinquencies rose. Energy activity varied by sector. Manufacturing declined somewhat. Agriculture conditions improved slightly.

The Bureau of Labor Statistics reported the June 2024 unemployment rate for Florida at 3.3%, which is slightly higher than its historic low of 2.8% in February 2020, and down significantly from 14.1% in May 2020. In an effort to quell the spread of Covid-19, the Florida Governor issued a statewide stay-at-home order, effective on April 3, 2020. The number of people applying for unemployment benefits subsequently increased significantly, but as the state began to open back up, the unemployment rate continued to decrease. Polk County had an unemployment rate of 3.2% in December 2019, which spiked to 15.2% in April 2020. As the county started to open back up, the unemployment rate dropped and was reported at 4.4% in June 2024.

The Consumer Price Index for All Urban Consumers (CPI-U) was up 0.5 percent in July 2024 on a seasonally adjusted basis and rose 6.4% over the past twelve months, according to the U.S. Bureau of Labor Statistics. The inflation turned higher to start 2023, as rising shelter, gas and fuel prices took their toll on consumers, according to the Labor Department. The annualized inflation is notably higher than in July 2020, which was at 1.0%. As a result of high inflation, the Federal Reserve has been increasing rates. The Fed has raised the federal funds rate eight times since March 2022, with the most recent being 25 basis points in February. While fears of a recession loom, the Fed hopes they can curb inflation without stalling economic growth. Additional interest hikes are expected.

In summary, the subject neighborhood is located in the Winter Haven area of Central Polk County Florida. The area is roughly 90% built and in the mature stage of the neighborhood life cycle. There are a few new residential developments that have been developed on the limited land available. The neighborhood is primarily residential in nature, with a good amount of supporting commercial development. The neighborhood is located close to employment centers, recreational activities, and schools. After several years of increasing property values, they appear to have leveled off over the past year. As inflation and interest rates have risen, additional pressure has been placed on the market.



NEIGHBORHOOD MAP

PROPERTY DESCRIPTION

Astute Property
US Highway 92 and & US Highway 17
Winter Haven, Polk County, Florida

General Description

The subject is located at the southwest quadrant of US Highway 92 and US Highway 17, in Winter Haven, Polk County, Florida. Brigham Road borders the site to the south. The city limits of Lake Alfred are just north of the subject. The downtown area of Winter Haven is roughly three miles to the south.

Size and Shape

The subject consists of five different tax parcel numbers and is shaped irregular. Based on the property appraiser's website, the subject contains 162.03 acres. Based on the upland and wetland survey and information supplied, the property has 20.91 acres of uplands (13%) and 141.12 acres of wetlands (87%). The upland areas are divided into 12.46 acres on the east side of the property with frontage on Highway 17, and 8.45 acres on the southwest side with frontage on Brigham Road.

Tax parcel 26-28-05-000000-013030 is located on the north side of US Highway 92, across the street from the other tracts. It contains 9.99 acres and is nearly all wetlands. Based on the maps, there is small upland area on the west side, with the only access through wetlands. Tax parcel 26-28-05-000000-024030 is located on the east side of US Highway 17. This tract contains 0.24 acres and is only a sliver of land with very limited utility.

Tax parcels 26-28-05-000000-024010, 26-28-08-000000-013030, 26-28-08-000000-032050 are located south of US 92, west of US 17 and north of Brigham Road. These parcels contain 151.80 acres. Refer to various maps following the site description for a visual depiction of the property.

Easements, Encroachments, Reservations (OGM)

There were no adverse easements, encroachments or reservations observed at the time of the physical inspection or review of the title commitment prepared by American Government Services Corporation, dated August 16, 2024, file # 33165-R, Project Astute Property EL-102-23. A summary of the more important exceptions on Schedule B-2 of the policy is included at the beginning of this report, within the property rights/interest appraised section.

Description of Improvements

The subject is vacant land and has no material improvements; however, there are two older billboard signs on Highway 17 and one on Highway 92. The two signs on Highway 17 rent for $11,090.88/year and expire March 2025. The sign Highway 92 is month to month and rents for $100/month. These billboards have minimal income and expire soon. They have no impact on value.

Topography and Soil Conditions

As mentioned, the subject contains 162.03 gross acres, with roughly 20.91 acres of uplands (13%) and 141.12 acres of wetlands (87%). Based on the survey and GIS maps there are roughly 12.46 acres of uplands on the east side of the property with frontage on Highway 17 and 8.45 acres on the southwest side with frontage on Brigham Road. Vegetation on the uplands consists of pines, palmettos, oaks, as well as other native hardwoods. It was reported that 90% of the wetland vegetation is exotic nuisance trees and grasses.

Based on the quadrangle (topography) maps, the elevation of the site is 130' above sea level in the eastern and southwest sections of the property, which is where the uplands are located. Based on the USDA soil survey the subject has twelve (12) different soil types and a summary is as follows:

Map Unit Legend			
#	**Name**	**Acres**	**%**
3	Candler sand	0.40	0.2%
13	Samsula muck	28.70	17.2%
16	Urban land	0.90	0.5%
17	Smyrna and Myaak fine sands	3.00	1.8%
22	Pomello fine sand	0.10	0.1%
25	Placid and Myakka fine sands, dpressional	1.60	1.0%
31	Adamsville fine sand	2.60	1.6%
35	Hontoon muck, frequently ponded	101.60	60.8%
36	Basinger mucky fine sand	16.10	9.6%
58	Udorthents, Exacvated	4.30	2.6%
59	Arents-Urban land complex	1.70	1.0%
99	Sanibel muck, frequently ponded	6.10	3.7%
Total		167.10	100.0%

Soils map has a slightly different size than the property appraiser's office

The main soil type is #35, Hontoon muck, frequently ponded, which is very poorly drained soil in swamps and marshes. This soil has seasonal high water table that is at or above the surface except during extended dry periods. Natural vegetation includes redbay, white bay, red maple, black gun, and cypress, with ground cover of sawgrass, lilies, reeds, ferns, greenbrier and other aquatic plants. As discussed, the subject is heavily infested with mostly non-native exotic vegetation including Brazilian pepper and melaleuca trees.

None of the surrounding properties display any of the characteristics that would indicate adverse soil conditions. I am not an expert in this field and thus, no warranty as to the condition of the soil is given.

Nuisances and Hazards

Per FEMA flood insurance rate map number 12105C 0355G, map dated December 22, 2016, most of the site is within the "AE" flood designation. The southwest portion of the site is within the "X" zone. The "AE" flood zone consists of areas where based flood elevations are

determined. The "X" designation is areas determined to be outside the 500-year flood plain. A copy of the flood map is included after the site description.

Legal Access

Access to the subject is via US Highway 92, US Highway 17 and Brigham Road. Based on the GIS maps, the portion of the subject that is on the north side of US Highway 92 has roughly 1,500' of frontage. The main larger parcel has roughly 2,000' on US Highway 92, roughly 2,775' on US Highway 17 and roughly 1,100' on Brigham Road. Both US Highway 92 and 17 are four lane divided highways. Brigham Road is a two lane local street that terminates just west of the subject.

The 2023 average daily traffic count on Highway 92 was 25,500 and the count on Highway 17 was 27,000. Access to the subject is considered good.

Utilities

Municipal water and sewer services are located along Highway 92, Highway 17 and Brigham Road. The city of Winter Haven Utilities Department was contacted and they indicated that there is capacity to support multiple family development of the subject. Electric, cable and telephone services are also in the area and available.

Sales History

Based on a review of the tax records, the subject has not sold in the last 5 years. The subject is currently listed for sale with Lockhart and Associates and it was reported that it has been on and off the market numerous times over the last 10 to 15 years. Based on a review of the MLS, the most current listing period has been roughly 2 years. The portion of the subject with frontage on Highway 17 consists of 17.91 gross acres with 12.46 upland acres and the asking price is $1,150,000. The parcel on Brigham Road contains 8.45 upland acres and the asking price is $850,000.

The realtor reported that he had an offer in June of 2024 for both parcels from the same potential buyer. The offer for the property on Highway 17 was $1,100,000 and the offer for the Brigham Road property was $825,000. The owner withdrew from negotiations and temporarily removed the property from market to provide time to consider an offer from Polk County. The property on Highway 17 also previously had a signed contract in February 2024 for $1,100,000 with a South Florida developer. The buyer eventually withdrew from this contract as during the due diligence period the buyer requested the seller to pay for certain items that the seller would not. The wetland areas on the site are being offer to the County for $5,000 per acre. Based on the sales used in this reports the offering prices for the two developable portions of the property are reasonable and similar to market value. Based on wetland sales, the offering price of $5,000 per acre for the wetlands is above market.

Owner of Record & Tax Data

Astute Financial Corporation
3 Strathearn Road
Toronto ON M6C 1R2
Canada

		#	Assessed Value		
#	Parcel Number	Acres	General	School	2023 Taxes
1	26-28-05-000000-024010	87.07	$ 24,378	$ 25,462	$ 475.30
2	26-28-05-000000-024030	0.24	$ 1,063	$ 1,063	$ 20.34
3	26-28-05-000000-042010	9.99	$ 799	$ 799	$ 15.38
4	26-28-08-000000-013030	61.26	$ 30,630	$ 30,630	$ 589.84
5	26-28-08-000000-032050	3.47	$ 1,735	$ 1,735	$ 33.40
	Total	162.03	$ 58,605	$ 59,689	$ 1,134.26

Based on the sales used in this report, the subject's assessment is much lower than my market value estimate and upon sale of the property the assessed value would most likely increase, which would result in an increase in real estate taxes. A review of the tax collectors website indicated that the 2023 taxes have been paid and there are no delinquencies.

Legal Description

The legal description is included in the title commitment . It is lengthy metes and bounds description and therefore, a copy is included in the addendum.

Zoning/Future Land Use

The subject has four different zoning designations and four different future land use classifications. Tax parcel 26-28-05-000000-042010 is mostly a wetland tract located on the north side of Highway 92 is zoned C-4 (Commercial Heavy), with Conservation and Neighborhood Support future land uses. Tax parcel 26-28-05-000000-024030 is the 0.24 acre sliver of land located on the east side of Highway 17 and it is zoned C-4 (Heavy Commercial) with an Neighborhood Support future land use.

The main parcel located south of Highway 92 and west of Highway 17 is zoned C-4 (Commercial Heavy), R-1 (Single Family Residential – Large Lot), R-3 (Multi Family Residential – Low Density) and Conservation. The main parcel has two developable upland areas. One is on the east side of the property with frontage on Highway 17; this portion of the subject is zoned C-4 with a Neighborhood Support future land use. The other developable area is at the southwest corner, with frontage on Brigham Road. This portion of the subject is zoned R-3 (Multi-family residential – Low Density) with an NSUB (Neighborhood Suburban) future land use classification. Copies of the zoning and future land use maps are included after the site description.

The purpose of the C-4 Commercial-Heavy zoning district is to provide locations for a combination of retail, wholesale, distribution and light manufacturing businesses that serve

the entire City and markets beyond the City limits. In addition to large retail and service activities with outdoor storage, the district permits the manufacture of small articles and non-objectionable products and limited production and processing operations. Generally, such districts are served by arterial and major collector streets.

The purpose of the R-1, Single family Residential-Large Lot zoning district is to provide areas for single-family, low density residential development with the necessary and incidental accessory uses that are normally located with the principal use. The maximum density permitted in the R-1 district shall not exceed three (3) dwelling units per gross acre. Note that the only portion of the subject that has this zoning is the most northwesterly portion of the main parcel and this area is 100% wetlands.

The R-3, Multi-family Residential-Low Density zoning district is to provide areas for moderate density single family detached residential development, and a wide range of attached types of dwelling units with the incidental accessory uses that are normally located with the principal use.

The maximum density in the R-3 zoning shall not exceed twelve (12) dwelling units per gross acre. For parcels located within 2,640 feet (1/2 mile) of an established or proposed fixed transit route or within the area mapped as the Central Urban Core by the Comprehensive Plan's Future Land Use Map, the maximum permitted density may be increased up to fifteen (15) dwelling units per gross acre.

The minimum density for parcels within the R-3 zoning district shall be in accordance with the adopted Future Land Use which is described in the table below.

Future Land Use Designation	Required Minimum Density
Neighborhood Suburban	2.01 units per acre
Traditional Neighborhood Area	4.0 units per acre
Neighborhood Mixed Use Hub	5.0 units per acre
Primary Mixed Use Hub	4.0 units per acre

The purpose of the CN, Conservation zoning district is to preserve the proper functioning of natural resources, such as wetlands, floodplains, and groundwater/aquifer recharge areas. Certain, limited agricultural uses are also permitted in this district. The maximum permitted residential density in the Conservation zoning district shall be 0.2 dwelling units per gross acre and this can be transferred to upland areas.

Future Land Use Classifications

Attached, detached, and manufactured residential uses ranging from 2.01 to 12.00 dwelling units per acre shall be mapped as Neighborhood Suburban on the Future Land Use Map. Secondary uses generally compatible with Neighborhood Suburban include houses of worship, schools, and recreational uses such as clubhouses, golf courses, and playgrounds.

The Neighborhood Support future land use is for isolated low intensity offices, retail, retail storage uses, service uses, and these uses shall be labeled on the future land use map. The NS future land use is intended primarily for outlying and existing office, retail or commercial land uses that do not meet the criteria of one of the mixed use hub designations. Residential densities shall range between 5 and 15 dwelling units per acre. Any parcel located on or

within ½ mile of an established or proposed transit route may be permitted up to 20 dwelling units per acre.

The goal of the Conservation future land use is to protect, manage, and enhance the natural resources and environmental quality of Winter Haven. Goal 1 is to achieve high levels of water quality that will support recreation, wildlife, and commerce in the City's Lakes through reduction of direct point and non-point sources of pollution. Goal 2 is to protect groundwater by eliminating further contamination and maintain current supplies in order to achieve the highest level possible for potable water supplies. Goal 3 is to protect and enhance the local watersheds so that the highest level of ground and surface water quality can be achieved and maintained. Goal 4 is to protect all area wetlands from negative impacts, which may occur from human activities, and could result in a lowering of the quality of life for residents of Winter Haven. Goal 5 is to maintain the current biological diversity of plant, fish and wildlife and the natural integrity of ecological systems. And Goal 6 is to prevent the further degradation of the ambient air quality, improve present ambient air quality and ensure a future clean environment.

Ms. Reuter indicated that the City does have a policy in the Comprehensive Plan which allows for an additional 1 dwelling unit per gross acre may be received to the upland portion of a parcel or development site from any portion of the parcel or development site which is designated as Conservation on the Future Land Use Map.

As discussed, the subject has two developable upland areas. One is on the east side of the property with frontage on Highway 17 and this area contains a gross area of 17.91 acres with 12.46 acres of developable uplands. These 12.46 uplands acres are zoned C-4 with a Neighborhood Support future land use. The other developable area is at the southwest corner with frontage on Brigham Road. This portion of subject is zoned R-3 (Multi-family residential – Low Density) with a Neighborhood Suburban future land use classification. This upland area of the subject contains 8.45 acres.

The C-4 zoning does not include all residential uses; however, Ms. Heather Reuter with the City of Winter Haven indicated that the property could be rezoned to C-3, which would be consistent with the Neighborhood Support future land use and zoning to the south. C-3 allows for multi-unit residential, but does not allow for townhouses. Note, a townhouse can be multi-unit residential if not platted as individual lots. As with all rezoning requests, the City Commission is the final action body on any request.

The Neighborhood Support future land use allows densities between 5 and 15 dwelling units per acre. Per Ms. Reuter, properties zoned C-3 with a Neighborhood Support future land use can be developed with a maximum of 15 units per acre. Multiplying the upland size of 12.46 acres by 15 units per acre would indicate a potential total density for the subject of 186 units.

The Neighborhood Suburban future land use allows attached, detached, and manufactured residential uses ranging from 2.01 to 12.00 dwelling units per acre. According to Ms. Reuter, if located within a ½ mile of a transit route up to 15 units per acre are permitted. Multiplying the usable area of 8.45 acres by 15 units per acre would indicate a total density of the southwest portion of the site of 126 units.

Concurrency

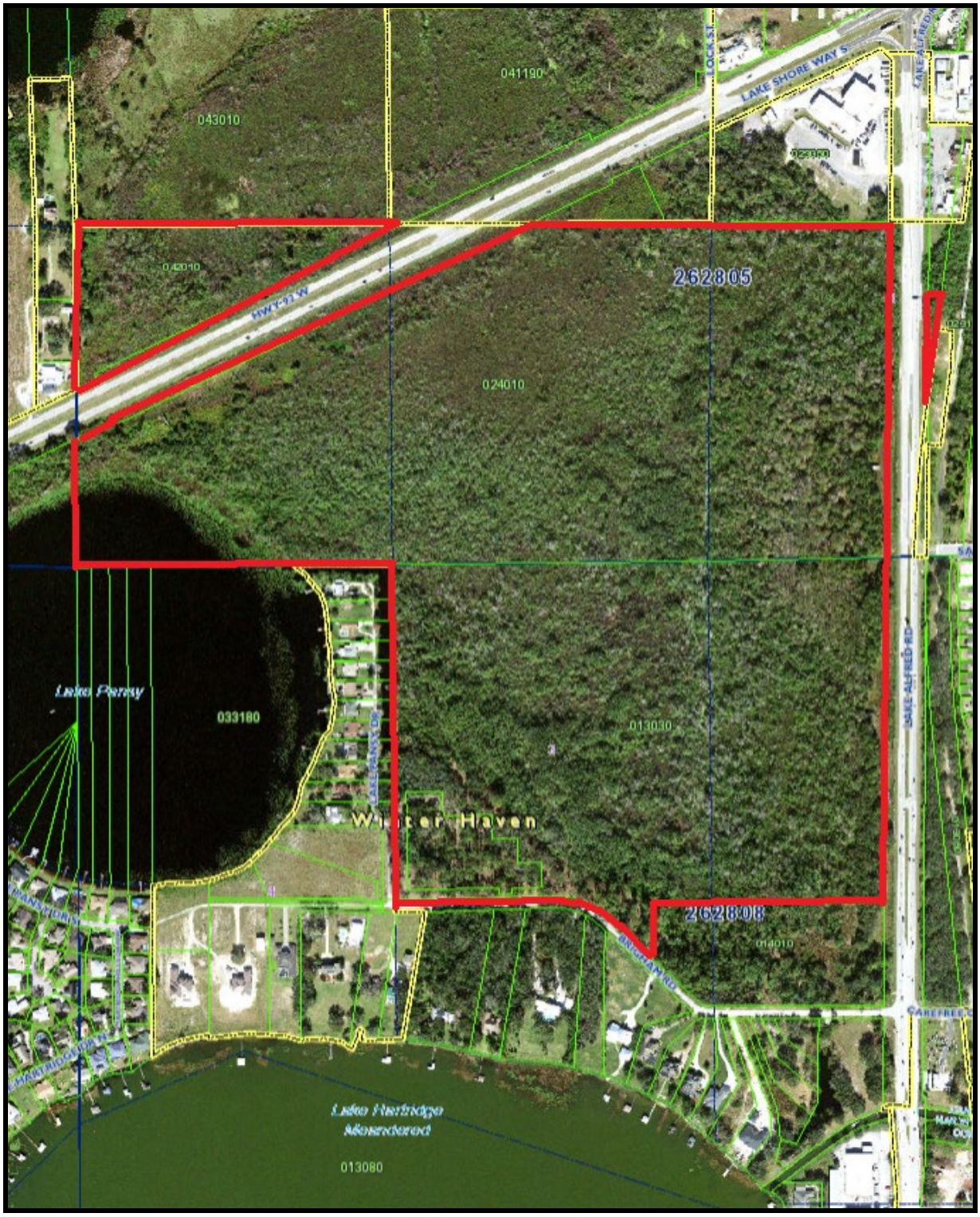
The January 1990 enactment of Concurrency Laws in the state of Florida directly impacts the use of a site. Concurrency is part of the 1985 Growth Management Act, which states in part that all of an area's infrastructure, which are or will be affected by the development of a property must be in place or concurrent with development and must be adequate.

In mid-2011 the Florida legislature made major changes to the growth management laws. The act was changed from the "Local Government Comprehensive Planning and Land Development Regulation Act" to the "Community Planning Act". This reflected a change from State oversight to local government control of the planning and growth management process. The Act's purpose moves from "control future development" to "manage future development consistent with the proper role of local government." The new statement focuses on recognizing and protecting "the traditional economic base of the state, agriculture, tourism and military presence" while also encouraging "economic Diversification, workforce development and community planning. Based on the information supplied by the Winter Haven planning department, as well as the utilities department, there are no concurrency issues in the area that would prohibit development of the subject.

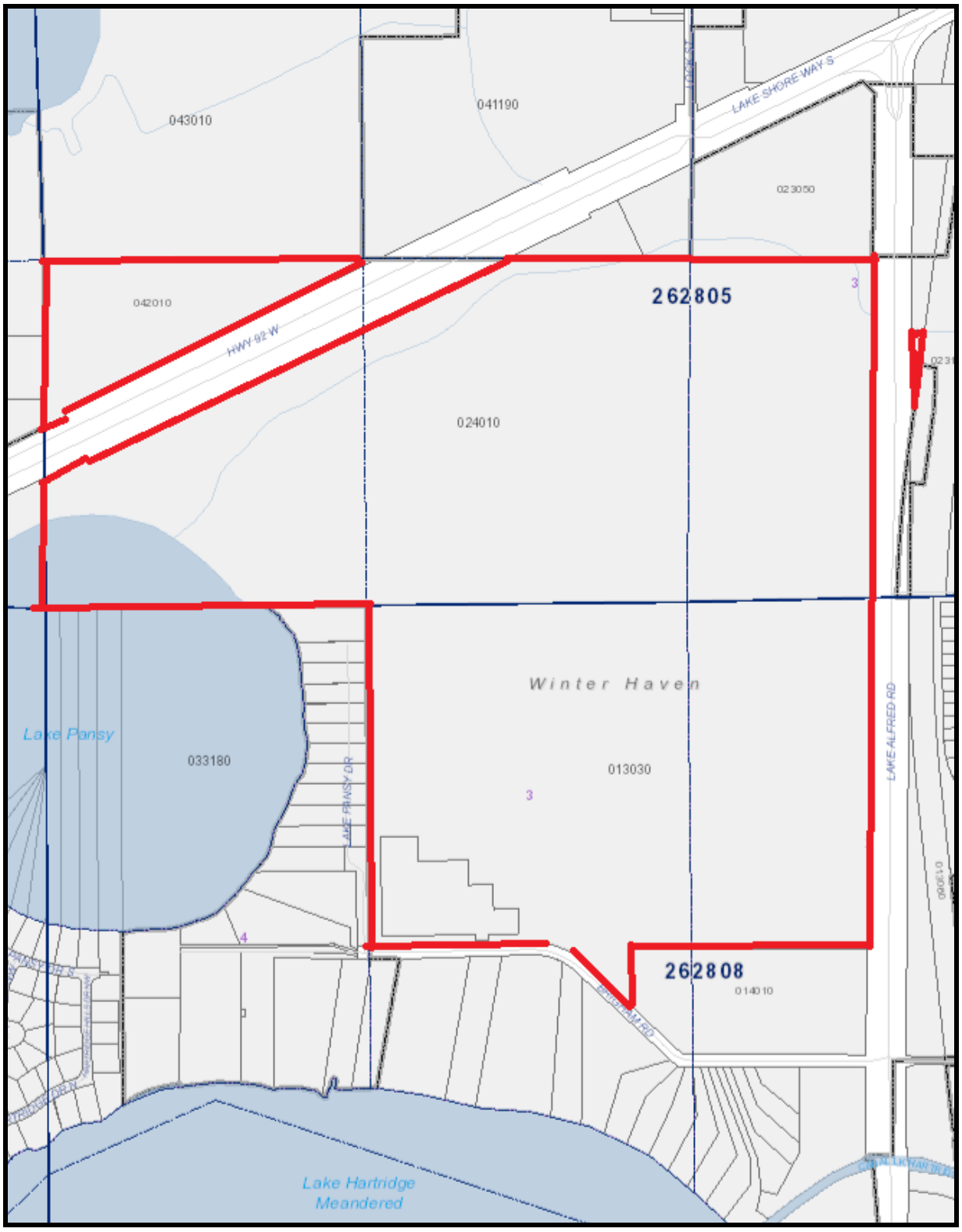
Summary

In summary, the subject is located at the southwest quadrant of US Highway 92 and US Highway 17 in Winter Haven, Polk County, Florida. The subject consist of 5 tax parcels and is shaped irregular, containing 162.03 acres. In addition to having access from the two major highways, the subject also has access from Brigham Road to the south. The property is mostly wetlands and is not developable. However, as mentioned, there are roughly 12.46 acres of uplands on the east side of the property that could potentially be developed with up to 186 units, and there are roughly 8.45 acres of uplands on the southwest side that could potentially be developed with up to 126 units.

Based on the location, access, topography and availability of utilities in my opinion, the upland areas of the property are well suited for multiple family residential. The wetland area could be used as recreational area for the residential or possibly mitigation.


041190
043010
LAKE SHORE WAY S
LOCK ST
LAKE ALFRED
042010
HWY-92 W
262805
024010
Lake Perry
033180
013030
LAKEFRONT DR
Winter Haven
262808
014010
ORANGE AVE
LAKEFRONT
MANSIONS
HARTRIDGE PL
Lake Hartridge
Monacketocet
013080

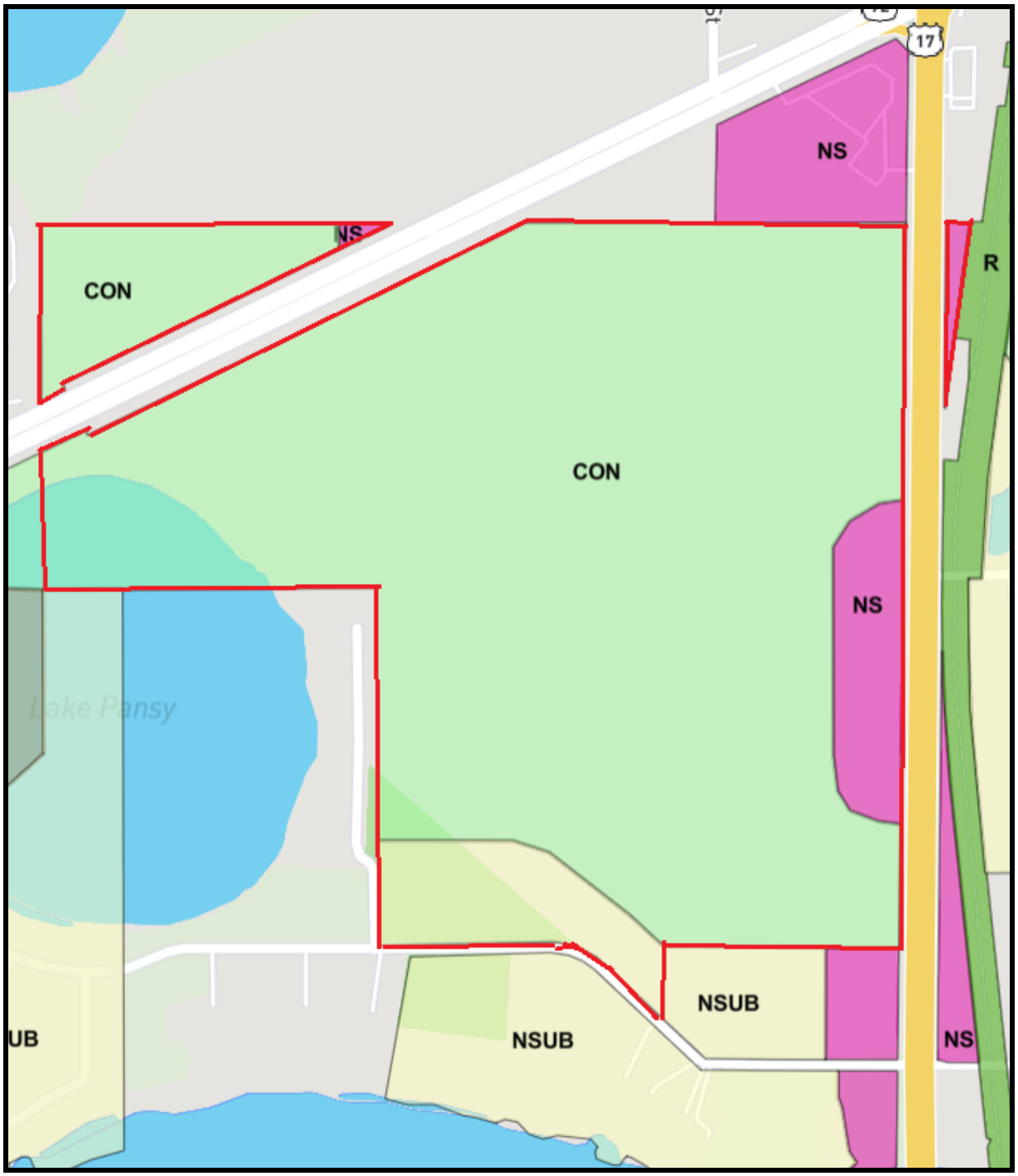
AERIAL MAP


043010
041190
LAKE SHORE WAY S
023050
042010
262805
HWY 92 W
024010
Winter Haven
Lake Pansy
033180
LAKE PANSY DR
013030
LAKE ALFRED RD
262808
014010
Lake Hartridge
Meandered

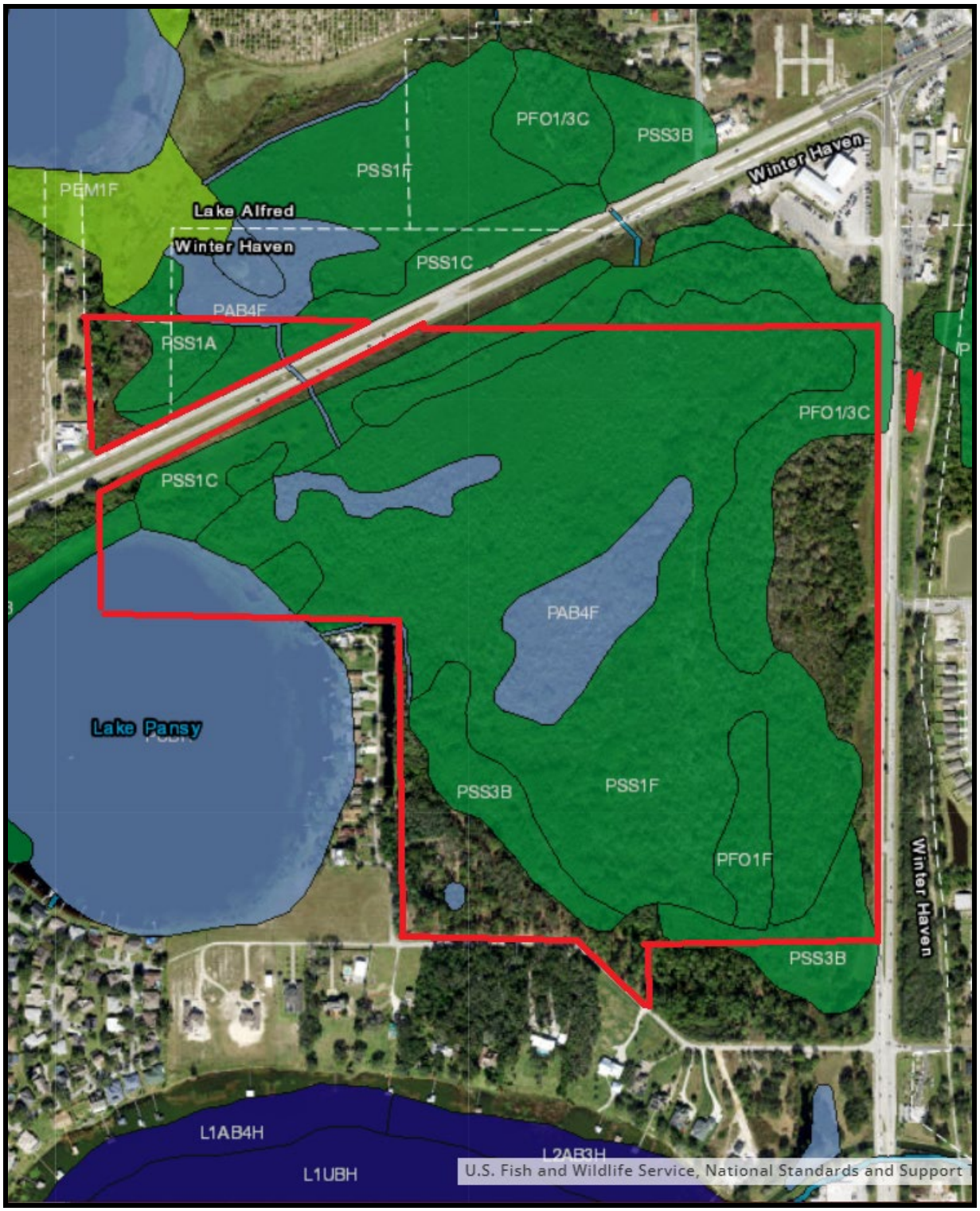
TAX MAP



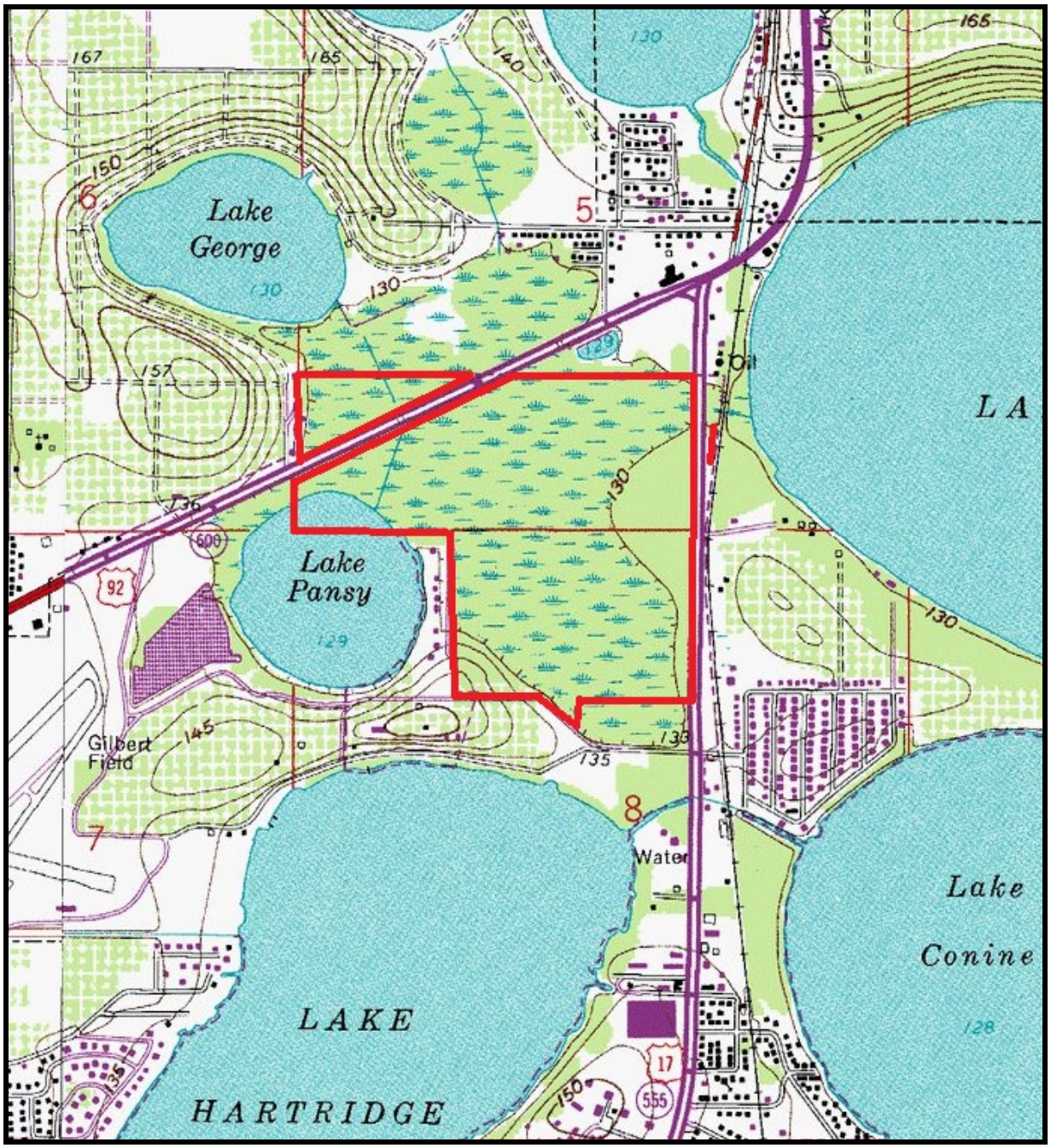
ZONING MAP



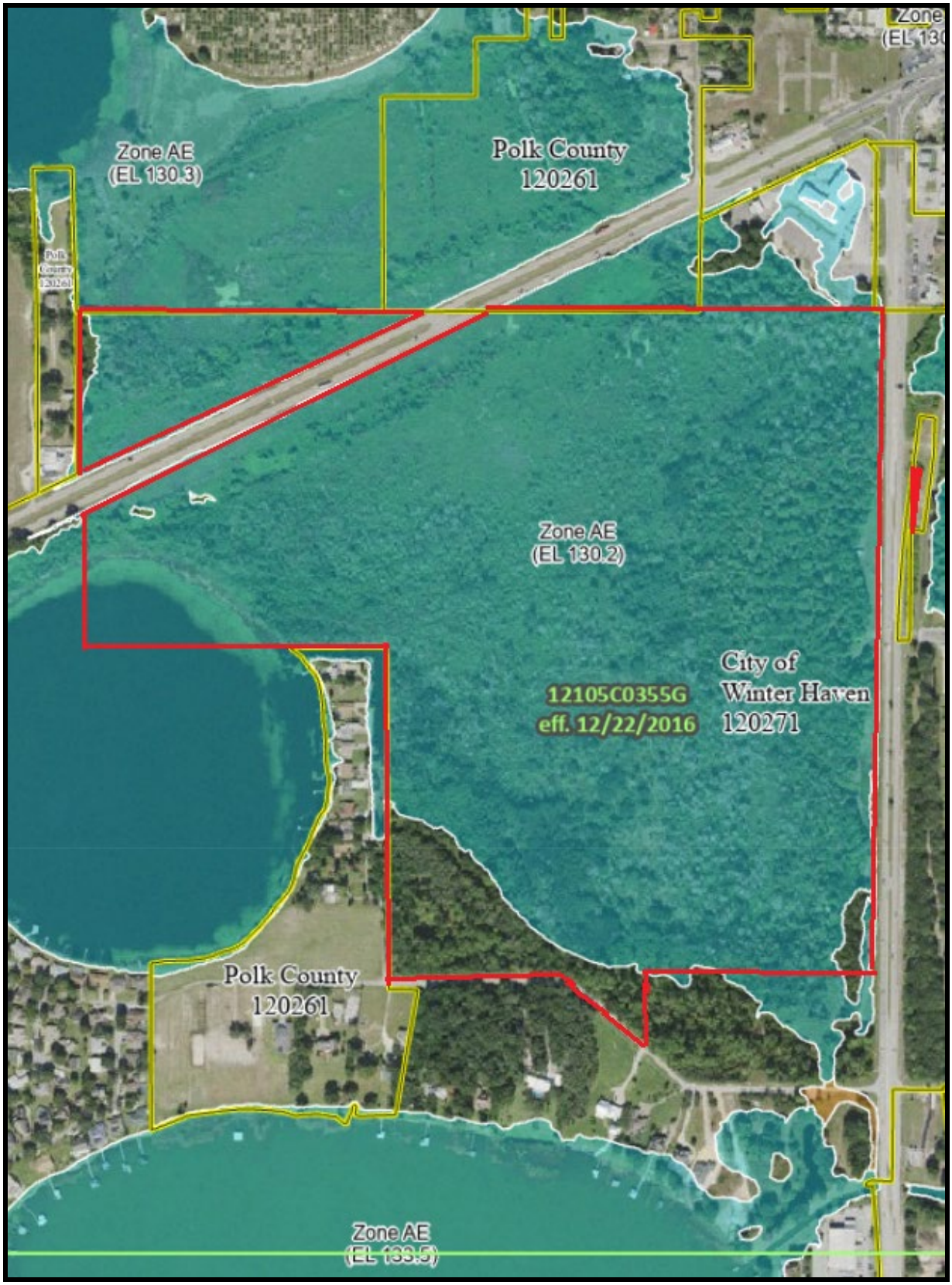
FUTURE LAND USE MAP



NATIONAL WETLANDS INVENTORY MAP



TOPOGRAPHY MAP

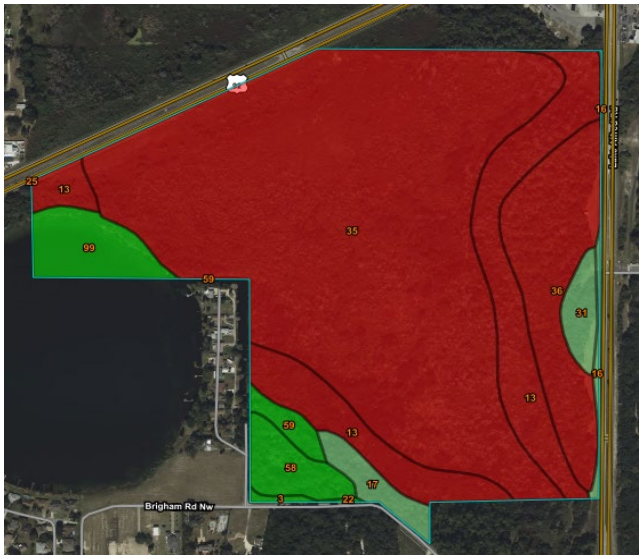

Zone AE
(EL 130.3)
Polk County
120261
Zone AE
(EL 130.2)
12105C0355G
eff. 12/22/2016
City of
Winter Haven
120271
Polk County
120261
Zone AE

FLOOD MAP

Soils map for 9.99 acres located on north side of Highway 92



Soils map for the main parcel south of Highway 92 and west of Highway 17



Soils map for 0.24 acre sliver on the east side of Highway 17



HIGHEST AND BEST USE OF SUBJECT

The highest and best use is defined as: The reasonably probable use of property that results in the highest value. The four criteria the highest and best use must meet are legal permissibility, physical possibility, financial feasibility and maximum productivity Alternatively, the probable use of land or improved property-specific with respect to the user and timing of the use-that is adequately supported and results in the highest present value.

The highest and best use of land or site as though vacant is defined as: Among all reasonable, alternative uses, the use that yields the highest present land value, after payments are made of labor, capital, and coordination. The use of a property based on the assumption that a parcel of land is vacant or can be made vacant by demolishing any improvements.

The highest and best use of property as improved is defined as: The use that should be made of a property as it exists. An existing property should be renovated or retained as is so long as it continues to contribute to the total market value of the property, or until the return from a new improvement would more than offset the cost of demolishing the existing building and constructing a new one. Source: The Dictionary of Real Estate Appraisal, 6th edition page 109.

Implied within these definitions is recognition of the contribution that specific use to community environment or to community development goals in addition to wealth maximization of individual property owners. Also implied is that the determination of highest and best use results from the appraiser's judgment and analytical skill, i.e., that the use determined represents an opinion, not a fact to be found.

In appraisal practice, the concept of highest and best use represents the premise upon which value is based. In the context of most probable selling price (market value) another appropriate term to reflect highest and best use would be most probable use. In the context of investment value an alternative term would be most profitable use." The four tests that a use must meet to qualify as the highest and best use are:

1. Physical Possibility
2. Legal Permissibility
3. Financial Feasibility
4. Maximum Profitability

Highest and Best Use as Though Vacant

Physical Possibility

Physical possibility or physically possible uses are those uses which could be physically put on the subject site. These uses change with the size, shape, soil, and terrain of the property. This test also considers whether public utilities are available to the site.

The main portion of the subject is located at the southwest quadrant of US Highway 92 and US Highway 92 in Winter Haven, Polk County, Florida. A 9.99 acre triangular parcel is to the north, across Highway 92 and a small 0.24 acre sliver is to the east, across Highway 17. Brigham Road borders the main parcel to the south. The city limits of Lake Alfred are just north of the subject. The downtown area of Winter Haven is roughly three miles to the south.

Highway 92 and 17 are heavily traveled four lane highways, while Brigham Road is a two lane local road that terminates (dead ends) at the southwest side of the subject. Access to the subject is considered good. Municipal water and sewer services are located on Brigham Road and both Highways 92 and 17. They are supplied by the City of Winter Haven and based on the information supplied by the Utilities Department, there is enough capacity to develop the subject's two upland parcels. Electric, cable and telephone services are also in the area.

Based on the location, size, shape, and topography of the site, it would appear as though the upland areas could physically be used for a variety of different types of developments. The wetland areas could be used as recreation and/or possibly mitigation.

Legal Permissibility

Legal permissibility or legally permissible uses are those uses, which are legally allowed on the subject site. These uses vary with the type of zoning, building codes, deed restrictions, and environmental restrictions imposed on the subject site.

The subject has four different zoning designations and four different future land use classifications. Tax parcel 26-28-05-000000-042010 is mostly a wetland tract located on the north side of Highway 92 is zoned C-4 (Commercial Heavy), with a Conservation and Neighborhood Support future land use. Tax parcel 26-28-05-000000-024030 is the 0.24 acre sliver of land located on the east side of Highway 17 and it is zoned C-4 (Heavy Commercial) with a Neighborhood Support future land use.

The main parcel located south of Highway 92 and west of Highway 17 is zoned C-4 (Commercial Heavy), R-1 (Single Family Residential – Large Lot), R-3 (Multi Family Residential – Low Density) and Conservation. As discussed, the main parcel has two developable upland areas. One is on the east side of the property with frontage on Highway 17; this portion of the subject is zoned C-4 with a Neighborhood Support future land use. The other developable area is at the southwest corner, with frontage on Brigham Road. This portion of subject is zoned R-3 (Multi-family residential – Low Density) with a Neighborhood Suburban future land use classification.

The C-4 zoning is a commercial designation and does not allow residential uses; however, Ms. Heather Reuter with the City of Winter Haven indicated that the property could be rezoned to C-3, which would be consistent with the Neighborhood Support future land use and zoning to the south. C-3 allows for multi-unit residential, but does not allow for townhouses. Note, a townhouse can be multi-unit residential if not platted as individual lots.

The Neighborhood Support future land use allows densities between 5 and 15 dwelling units per acre. Per Ms. Reuter, properties zoned C-3 with a Neighborhood Support future land use can be developed with a maximum of 15 units per acre. Multiplying the upland size of 12.46 acres by 15 units per acre would indicate a potential total density for the subject of 186 units.

The Neighborhood Suburban future land use allows attached, detached, and manufactured residential uses ranging from 2.01 to 12.00 dwelling units per acre. According to Ms. Reuter, the R-3 zoning and Neighborhood Support future land use allows up to 15 units per acre if

located within a ½ mile of a transit route. Thus, multiplying the usable area of 8.45 acres by 15 units/acre would indicate a total density of the southwest portion of the site of 126.

Based on the physical and legal attributes of the site, it appears as though using the eastern upland areas for commercial or residential if the zoning could be changed and using the southwest upland acres for residential would be both physically possible and legally permissible. The wetland areas are not developable. Ms. Reuter did indicate that properties with a Conservation zoning may transfer density of up to one unit per acre to the upland portion of a parcel or development site.

Financial Feasibility

The test of financial feasibility or financially feasible considers those uses, which are both physically possible and legally permissible. It determines among them; which uses, if any, would generate a positive return to the property.

As discussed, the subject is located at the southwest quadrant of Highway 92 and Highway 17 in Winter Haven, Polk County, Florida. The city limits of Lake Alfred are just north of the subject. The downtown area of Winter Haven is roughly three miles to the south. This is an area of residential development with supporting commercial. The listing realtor indicated that there has been no interest in purchase of the subject for commercial development and the only recent interest for the two upland properties are for residential townhome development.

As discussed, both the 12.46 and the 8.45 upland areas could potentially be developed with up to 15 units per acre. However, based on the sales used in this report, as well as conversations with planning staff and developers, most parcels cannot be developed at full density due to set back requirements, retention, and road rights-of-way requirements. In my opinion, the financially feasible use for the subject would be development of roughly 10 units per acre. A summary of the density of the comparables is below.

Comparable	Density
1	9.12
2	12.5 per zoning/future land use
3	8.11
4	9.64

Note that no development information was available for Comparable 2. The realtor who verified the sale was unaware of the buyer's plans and the City of Auburndale Planning Department indicated that nothing has yet been submitted to them. The zoning and future land use of this property allows between 11 and 14 units per upland acre and 12.5 is the middle of this range.

Maximum Profitability or Maximally Productive

Among the financially feasible uses, the use that provides the highest rate of return or value is the use that is maximally productive and therefore, the highest and best use of the property. There has been no interest in purchase of the subject for commercial purposes. Therefore, based on the analysis, in my opinion, the maximally productive and highest and best use of the upland areas is development of residential townhomes at a density of roughly 10 units per acre and use the wetlands for recreation and/or possibly mitigation.

THE VALUATION PROCESS

The estimate of market value for real property involves a systematic process in which the problem is defined, the work necessary to solve the problem is planned, and the data required; is acquired, classified, analyzed and interpreted into an estimate of value. In this process, three approaches are used by the appraiser to estimate value. They are:

THE COST APPROACH
THE SALES COMPARISON APPROACH
THE INCOME CAPITALIZATION APPROACH

The cost approach is a method in which the value of a property is derived from creating a substitute property with the same utility as the subject property. In the cost approach, the appraiser must estimate the market value of the subject site as if vacant, by using the direct sales comparison approach, then estimate the reproduction cost new of the improvements. Depreciation from all sources is estimated and subtracted from the reproduction cost new of the improvements. The depreciated reproduction cost of all improvements is then added to the estimated site value with the results being an indicated value by the cost approach.

The sales comparison approach, also referred to as the market approach, involves the comparison of similar properties that have recently sold or similar properties that are currently offered for sale, with the subject property. The basic principle of substitution underlies this approach. It implies that an informed purchaser would not pay more for a property than the cost to acquire a satisfactory substitute property with the same utility as the subject property in the current market. These properties are compared to the subject with regard to differences or similarities in time, age, location, physical characteristics, and the conditions influencing the sale. The notable differences in the comparable properties are adjusted to the subject property to indicate a value range for the property being appraised. The principle of increasing and decreasing returns is important in identification of comparables. The principle of contribution is the heart of the adjustment process in determining the effect that the presence or absence of some characteristic has on the sale price.

When sufficient sales data is available, these adjustments are best determined by the actions of typical buyers and sellers in the subject's market place. This value range, as indicated by the adjusted comparable properties, is reconciled into a final indicated value for the subject property by this approach.

The income capitalization approach is a process, which discounts anticipated income streams (whether in dollar income or amenity benefits) to a present worth figure through the capitalization process. The appraiser is again faced with obtaining certain data related to the subject and comparing it to similar physical, functional and economic properties.

The subject consists of two developable upland areas that have a residential highest and best use and a large wetland area that has a highest and best use of recreation and/or possibly mitigation. Thus, two different sets of comparables were used in the valuation. Vacant multiple family sales were in the valuation of the two upland areas and wetland sales were used in the valuation of the subject's wetlands. The sole method used in the valuation of the subject is the sales comparison approach and it provides a credible estimate of value. Neither the cost nor income capitalization approach was used.

THE SALES COMPARISON APPROACH

The sales comparison approach involves a detailed comparison of the subject property with similar properties that have recently sold in the same or competitive market. This approach is based primarily on the principle of substitution. This principle states, when several commodities or services with substantially the same utility are available, the lower price attracts the greatest demand and widest distribution. In other words, a prudent investor/purchaser would not pay more to acquire a given property in the market, considering that an alternative property may be purchased for less. The five basic steps in this analysis are listed below:

1. Research the market to identify similar properties for which pertinent sales listings offerings and/or rental data is available

2. Qualify the data as to terms, motivating forces, or bona fide nature

3. Analyze the salient characteristics of the comparable properties in relation to the property being appraised, particularly those items relating to date of sale, location, physical characteristics, and condition of sale

4. Consider all dissimilarities and the probable effect on the price of each sale and derive individual market value indications for the property being appraised

5. Formulate an opinion of market value from the pattern developed from the foregoing analysis

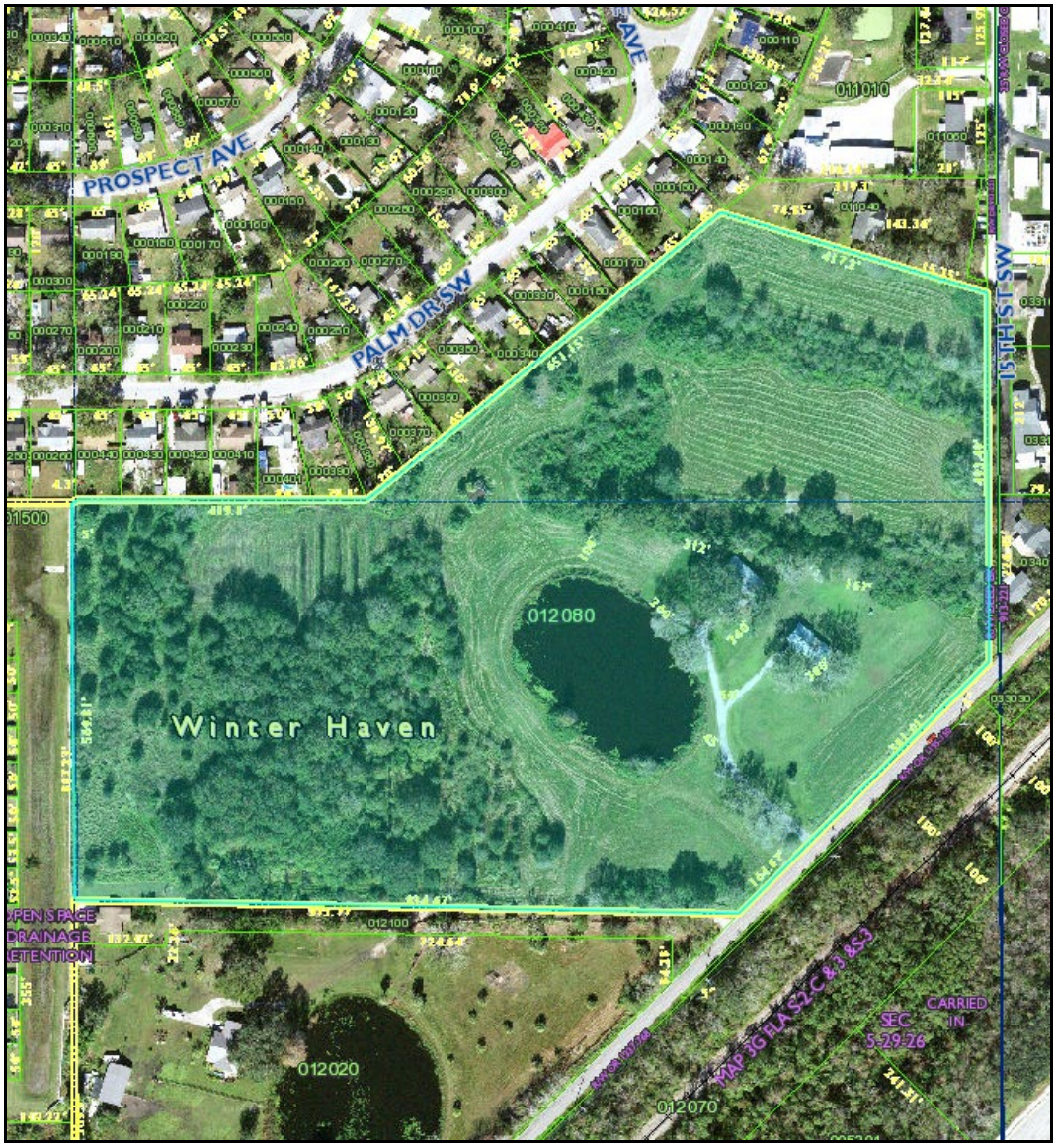
A market investigation was conducted in the area to find sales of properties comparable to the subject. The multiple family comparables were analyzed on a gross acre basis, upland acre basis, as well as a price per unit. Because the exact number of units permitted is not known until development plans are submitted and approved, the multiple family portion of the subject was valued on an upland acres basis, with probable density also considered. The wetlands are valued on a gross acre basis.

Four multiple family comparable sales have been presented on the following pages, along with an identifying aerial map and summary of important facts. After the valuation of the multiple family sales, a summary chart and short discussion of wetlands sales are presented and used to value the wetland area of the subject. The sales used in this analysis are considered to be the most comparable and reflective sales available for comparison to the subject.

LAND COMPARABLE NO. 1:

Parcel Number:	26-29-06-000000-012080
Brief Legal Description:	A portion of Section 6, Township 29 South, Range 26 East, Polk County, Florida
Date of Sale:	June 2024
Grantor:	Carlton Properties, LLC
Grantee:	Capital Investments, LLC
Instrument Number:	13192/726 (Polk County)
Property Data/Site:	
Location:	3257 Old Eagle Lake Road, Winter Haven, Florida 33880; west side of Old Eagle Lake Road, roughly 1,900' northeast of Old Nine Foot Road and south of Lake Shipp in the Winter Haven Area of Polk County, Florida
Access/Frontage:	Old Eagle Lake Road (515' of frontage)
Utilities:	Available
Size:	21.69 acres per property appraiser (20.05 upland acres, 92%)
Shape:	Irregular
Number of Units:	187
Density:	9.12 units per gross acre
Zoning/Future Land Use:	R-3/Residential Low Density by City of Winter Haven
Topography:	Basically level and near road grade. A small manmade pond is located in the middle of the site. The west side of the property is heavily wooded in native vegetation.
Sale Price:	$1,650,000
Price Per Gross Acre:	$76,072
Price Per Upland Acre:	$82,294
Price Per Unit:	$8,824
Verification:	By Tod Marr, August 2024 With realtor Todd Dantzler (863.287.3586)
Financing:	Cash to seller
Conditions of Sale:	Arm's-length
Present Use:	Single family residential
Highest & Best Use:	Multiple family residential

Comments:
The realtor reported that this property was listed for $1,500,000 and went under contract at the asking price within a few months with KB Homes, who annexed it into the City and rezoned the property to multiple family. The annexation and rezoning took 1 to 1 ½ years to complete. Prior to closing KB Homes backed out of the deal and the property was offered to other entities when a bidding war of two companies started, with the final sale price closing at $1,650,000. The property has roughly 1.64 acres of wetlands per the plans submitted to the City.


PROSPECT AVE
PALM DR SW
15TH ST SW
011010
012080
Winter Haven
012020
012070
012100
SEC 5-29-26
CARRIED IN
MAP 3G FLA S2,C & 3 &S3

INSTR # 2024163559
BK 13192 Pgs 0726-0731 PG(s)6
07/16/2024 01:13:14 PM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 52.50
DEED DOC 11,550.00

Prepared by and return to:
Angela J. Stanley, Esq.
Interval Title Services, LLC
604 Courtland Street, Suite 330
Orlando, FL 32804
File No. 23-0727

WARRANTY DEED

THIS INDENTURE made on this 28th day of June, 2024, by **CARLTON PROPERTIES, LLC, a Florida limited liability company,** whose address is 565 North Ridge Avenue, Lake Alfred, Florida 33850, hereinafter called the "grantor", to **RIDGE CAPITAL INVESTMENTS, LLC, a Florida limited liability company,** whose address is 209 Frenchmans Creek Way, Winter Haven, Florida 33884, hereinafter called the "grantee":

(Which terms "Grantor" and "Grantee" shall include singular or plural, limited liability company or individual, and either sex, and shall include heirs, legal representatives, successors and assigns of the same)

Witnesseth, that the grantor, for and in consideration of the sum of Ten Dollars, ($10.00) and other valuable considerations, receipt whereof is hereby acknowledged, hereby grants, bargains, sells, aliens, remises, releases, conveys and confirms unto the grantee, all that certain land situate in **Polk** County, **Florida**, to-wit:

SEE EXHIBIT A
FOR LEGAL DESCRIPTION

Property Address: 3257 Old Eagle Road, Bartow, Florida 33830
Property Tax ID No. 26-29-06-000000-012080

THIS PROPERTY IS NOT HOMESTEAD OF ANY MANAGER OR MEMBER OF GRANTOR OR OF ANY THEIR FAMILY AND/OR DEPENDENTS; NOR IS IT APPURTENANT TO ANY OF HOMESTEAD PROPERTY OF THE SAME.

Subject to all reservations, covenants, conditions, restrictions, limitations, easements, and agreements of record and to all applicable zoning ordinances and/or restrictions and prohibitions imposed by governmental authorities, if any, including, but not limited, to the items set forth in **Exhibit B** hereto, and to taxes for the year 2024 and thereafter.

Together with all the tenements, hereditaments and appurtenances thereto belonging or in any way appertaining.

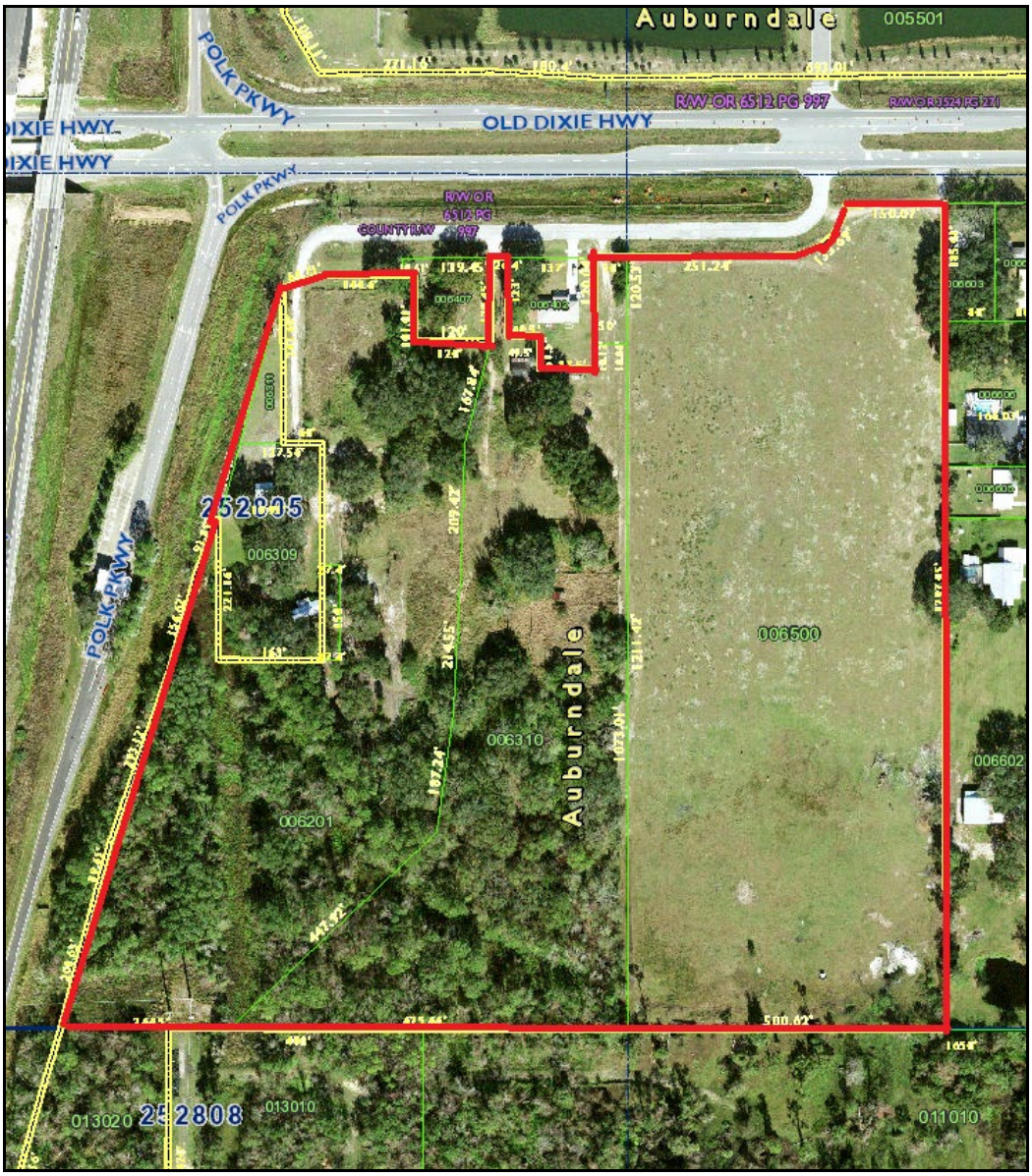
To Have and to Hold, the same in fee simple forever.

And the grantor hereby covenants with said grantee that the grantor is lawfully seized of said land in fee simple; that the grantor has good right and lawful authority to sell and convey said land; that the grantor hereby fully warrants the title to said land and will defend the same against

LAND COMPARABLE NO. 2:

Parcel Numbers:	25-28-05-319500-006500; 25-28-05-319500-006201 25-28-05-319500-006310; 25-28-05-319500-006408 25-28-05-319500-006309; 25-28-05-319500-006312
Brief Legal Description:	A portion of Section 5, Township 28 South, Range 25 East, Polk County, Florida
Date of Sale:	April 2023
Grantor:	Knapp Family Holdings, LLC; Old Dixie 1129, LLC and Diane Ritchey and Douglas Ritchey
Grantee:	Doherty Holdings Fortieth, LLC
Instrument Number:	12667/238; 12669/1545; 12668/1859 (Polk County)
Property Data/Site:	
Location:	1129 Old Dixie Highway, Auburndale, Floria 33823; southeast corner of Old Dixie Highway and the Polk Parkway in central Polk County, Florida. Highway 92 is roughly one mile south of the property.
Access/Frontage:	Old Dixie Highway
Utilities:	Available
Size:	32.69 acres per property appraiser; 22.89 uplands acres, 70%
Shape:	Irregular
Number of Units:	251 – 320 (average 286)
Density:	12.50 units per upland acre
Zoning/Future Land Use:	RG-2/Heavy Density City of Auburndale (11–14 units/acre)
Topography:	Basically level and near road grade. The east side of the property is mostly open and the west side is fairly heavily wooded. Based on the GIS map the wetlands are in the southwest corner of the property.
Sale Price:	$3,350,000 ($1,750,000, $1,350,000 and $250,000)
Price Per Gross Acre:	$102,478
Price Per Upland Acre:	$146,352
Price Per Unit:	$11,713 (based on 286 units)
Verification:	By Tod Marr, August 2024 With realtor Keith Rasmus (407.301.3182)
Financing:	Cash to seller
Conditions of Sale:	Arm's-length
Present Use:	Single family residential
Highest & Best Use:	Multiple family residential

Comments:
This comparable consists of 6 tax parcel numbers and three of them (25-08-05-319500-006201, 25-28-05-319500-006310, 25-28-05-319500-006408) containing 17.18 acres were actually listed for sale with an asking price of $1,500,0000. The realtor indicated that the buyer was a developer and wanted additional property, when the other two sales were simultaneously negotiated. The property is improved with some older residential dwellings that have no contributory value. The property was on the market for roughly 3 months.


Auburndale
005501
POLK PKWY
OLD DIXIE HWY
RW OR 6512 PG 997
RW OR 3524 PG 271
DIXIE HWY
DIXIE HWY
POLK PKWY
RW OR 6512 PG 997
COUNTY RW
006407
006550
252205
006309
POLK PKWY
006500
Auburndale
006310
006602
006201
013020
252808
013010
011010

INSTR # 2023096520
BK 12667 Pgs 238-240 PG(s)3
RECORDED 04/26/2023 11:42:52 AM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
DEED DOC $12,250.00
RECORDING FEES $27.00
RECORDED BY melijohn

This instrument prepared by:
John L. Mann
Attorney at Law
Post Office Box 2435
Lakeland, Florida 33806

WARRANTY DEED

THIS INDENTURE, made this 25TH day of APRIL 2023, between **Knapp Family Holding, LLC,** a Florida limited liability company authorized to do business in Florida, whose post office address is 361 Denton Avenue, Auburndale, Florida 33823 ("Grantor"); and **DOHERTY HOLDINGS FORTIETH, LLC,** a Florida limited liability company, whose post office address is 2925 Mall Hill Drive, Lakeland, Florida 33810, ("Grantee").

W I T N E S S E T H:

That said Grantor, for and in consideration of the sum of Ten Dollars and other good and valuable considerations to said Grantor in hand paid by said Grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said Grantee, and Grantee's heirs, successors, and assigns forever, the following described land, situate, lying and being in Polk County, Florida, and more particularly described on the attached Exhibit "A" (the "Property") reserving unto Grantor, its successors and assigns, any Polk County Impact Fee credits derived from or based upon Impact Fees paid prior to the date of this deed.

As part of the consideration: No portion of the Property may be used as a stand-alone public self-storage facility or as a storage facility for the members of the general public who are not tenants, employees or otherwise involved in the operations of the property without the express written consent of the Grantor or its assigns.

Property Identification No. 25-28-05-319500-006500

Subject to:

1. Conditions, restrictions, limitations and easements of record, if any, but this provision shall not operate to re-impose the same.
2. Zoning and other governmental regulations.
3. Taxes and assessments for 2023 and subsequent years.

Grantor does hereby fully warrant the title to said land, and will defend the same against the lawful claims of all persons whomsoever whose claim is based upon action or inaction of Grantor.

"Grantor" and "Grantee" are used for singular or plural, as context requires.

INSTR # 2023098378
BK 12669 Pgs 1545-1546 PG(s)2
04/28/2023 08:44:26 AM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 18.50
DEED DOC 9,450.00

Prepared by and return to:
William T. Link, Jr.
Reed Mawhinney & Link
53 Lake Morton Drive, Suite 100
Lakeland, FL 33801
(863) 687-1771
File Number: **04591**

[Space Above This Line For Recording Data]

Special Warranty Deed

This Special Warranty Deed made this **25th day of April 2023** between **Old Dixie 1129, LLC, a Florida limited liability company** whose post office address is **5885 Transit Road East, Amherst, New York 14051**, grantor, and **Doherty Holdings Fortieth, LLC, a Florida limited liability company** whose post office address is **2925 Mall Hill Drive, Lakeland, FL 33813**, grantee:

(Whenever used herein the terms grantor and grantee include all the parties to this instrument and the heirs, legal representatives, and assigns of individuals, and the successors and assigns of corporations, trusts and trustees)

Witnesseth, that said grantor, for and in consideration of the sum TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Polk County, Florida**, to-wit:

That part of Lots 62, 63 and 64, Auburndale Lakeside Park, as recorded in Plat Book 3, Page 20, of the Public Records of Polk County, Florida, being described as follows:

BEGIN at the Southeast corner of said Lot 64 thence North 89°53'54" West, along the South line of said Lots 62, 63 and 64, a distance of 890.10 feet to a point of intersection with the Easterly limited access Right-of-Way line of State Road 570 (Polk County Parkway) per Florida Department of Transportation Right-of-Way Map (Section 97160-2311), said point being on a non-tangent curve concave to the southeast and having a radius of 11,365.16 feet; thence along said curve to the right through a delta angle of 1°03'05", an arc distance of 208.56 feet (chord bearing = North 14°47'07" East, chord distance = 208.55 feet); thence continuing along said limited access Right-of-Way the following four (4) courses: (1) North 15°18'40" East, 89.38 feet; (2) North 19°00'27" East, 293.23 feet; (3) North 15°10'50" East, 154.57 feet; (4) North 22°07'13" East, 92.28 feet to a point of intersection with the west line of that parcel as described in Official Records Book 5900, Page 1110; thence South 00°21'24" East along said west line, a distance of 221.87 feet to the south line of said parcel; thence South 89°57'22" East, a distance of 190.52 feet; thence North 00°21'24" West, a distance of 150.00 feet; thence North 89°57'22" West, a distance of 27.40 feet to the east line of said parcel as described in Official Records Book 5900, Page 1110; thence North 00°21'24" West along said east line, a distance of 190.06 feet to the north line of said parcel; thence North 89°58'07" West, a distance of 60.01 feet; thence North 00°12'49" West, a distance of 245.87 feet to the southerly Right-of-Way of County Road 546 (Old Dixie Highway) per Official Records Book 6512, Page 997; thence along said southerly Right-of-Way the following two (2) courses: (1) North 74°33'48" East, 63.46 feet; (2) South 89°57'00" East, 144.63 feet to a point of intersection with the west line of that parcel as described in Official Records Book 8722, Page 1665; thence South 00°13'26" East along the west line of said parcel, a distance of 100.96 feet to the south line of said parcel; thence South 89°48'37" East along said south line, a distance of 119.97 feet to the east line of said parcel; thence North 00°11'51" West along said east line, a distance of 129.37 feet to the aforementioned southerly Right-of-Way of County Road 546 (Old Dixie Highway); thence North 89°34'39" East along said southerly Right-of-Way, a distance of 26.20 feet to the west line of that parcel as described in Official Records Book 8727, Page 1973; thence along the westerly, southerly and easterly lines of said parcel the following five (5) courses: (1) South 00°06'11" East, 123.00 feet; (2) North 89°34'39" East, 49.50 feet; (3) South 00°06'11" East. 51.50 feet; (4) North 89°34'39" East, 87.50 feet; (5) North 00°06'11" West, 174.50 feet returning to the aforementioned southerly Right-of-Way of said County Road 546 (Old Dixie Highway); thence North 89°34'39" East along said southerly Right-of-Way; a distance of 50.00 feet to the east line of aforementioned Lot 64, Auburndale

INSTR # 2023097760
BK 12668 Pgs 1859-1861 PG(s)3
04/27/2023 12:29:15 PM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 27.00
DEED DOC 1,750.00

Prepared by and return to:
DAVID D. HALLOCK, JR.
Attorney at Law
GrayRobinson, P.A.
One Lake Morton Drive
Lakeland, FL 33801
863-284-2200
File Number: **12904.14 - DH**
Will Call No.:

Parcel Identification Nos.: 25-28-05-319500-006312
and 25-28-05-319500-006309

Warranty Deed

This Warranty Deed made this 25th day of April, **2023** between **DIANE RITCHEY**, also known as **JANICE DIANNE RITCHEY**, formerly known as **DIANE GLENN**, joined by her husband, **DOUGLAS RITCHEY**, whose post office address is **1205 Old Dixie Highway, Auburndale, FL 33823**, grantor, and **DOHERTY HOLDINGS FORTIETH, LLC**, a Florida limited liability company whose post office address is **2925 Mall Hill Drive, Lakeland, FL 33810**, grantee:

(Whenever used herein the terms "grantor" and "grantee" include all the parties to this instrument and the heirs, legal representatives, and assigns of individuals, and the successors and assigns of corporations, trusts and trustees)

Witnesseth, that said grantor, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Polk County**, **Florida** to-wit:

A PORTION OF LOT 63 OF AUBURNDALE LAKESIDE PARK AS RECORDED IN PLAT BOOK 3, PAGE 20 OF THE PUBLIC RECORDS OF POLK COUNTY FLORIDA, BEING DESCRIBED AS FOLLOWS: AS A POINT OF REFERENCE COMMENCE AT THE NW CORNER OF LOT 61 OF SAID AUBURNDALE LAKESIDE PARK, ALSO BEING THE NW CORNER OF THE SW 1/4 OF THE SE 1/4 OF SECTION 5, TOWNSHIP 28 SOUTH, RANGE 25 EAST, POLK COUNTY FLORIDA; THENCE PROCEED S89°51'20"E ALONG THE NORTH BOUNDARY OF THE SW 1/4 OF THE SE 1/4 OF SAID SECTION 5, A DISTANCE OF 690.00 FEET; THENCE DEPARTING SAID NORTH BOUNDARY S00°19'56"E, A DISTANCE OF 423.00 FEET; THENCE S89°51'20"E, A DISTANCE OF 35.44 FEET TO A POINT ON THE EASTERLY RIGHT OF WAY LINE OF THE "POLK PARKWAY" STATE ROAD NUMBER 570; THENCE S15°11'49"W ALONG SAID RIGHT OF WAY LINE, A DISTANCE OF 103.90 FEET TO AN EXISTING 5/8" IRON ROD WITH DEFACED MARKINGS; THENCE S22°07'55"W, A DISTANCE OF 19.95 FEET TO AN EXISTING 5/8" IRON ROD WITH DEFACED MARKINGS; THENCE DEPARTING SAID EASTERLY RIGHT OF WAY LINE S00°19'56"E, A DISTANCE OF 221.16 FEET; THENCE S89°51'20"E, A DISTANCE OF 163.23 FEET TO AN EXISTING 1/2" IRON ROD MARKED LB 7623 AND TO THE POINT OF BEGINNING; THENCE CONTINUE S89°51'20"E, A DISTANCE OF 27.40 FEET; THENCE N00°11'50"W, A DISTANCE OF 150.00 FEET; THENCE N89°51'20"W, A DISTANCE OF 27.40 FEET; THENCE S00°21'50"E A DISTANCE OF 150.00 FEET TO THE POINT OF BEGINNING.

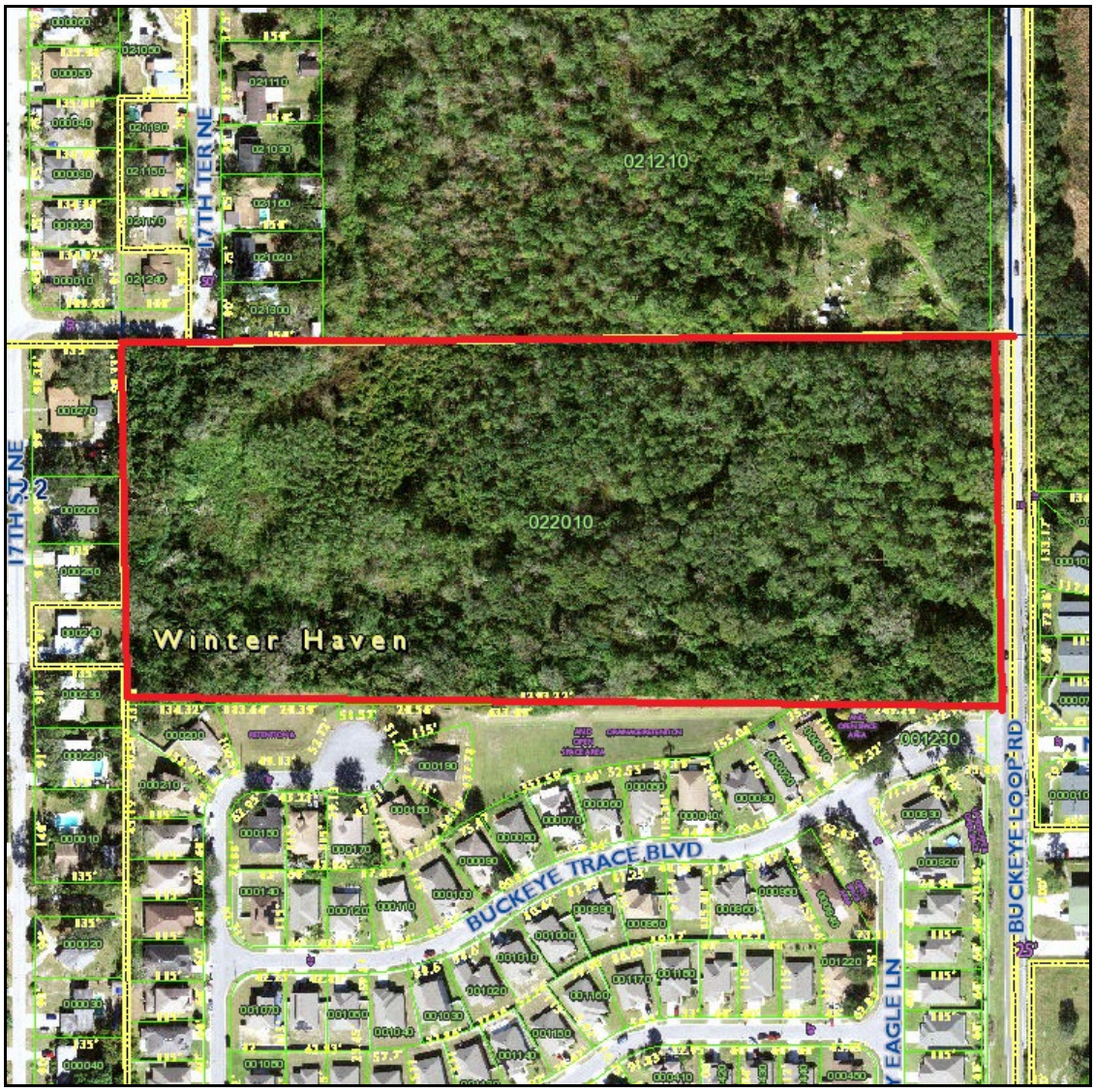
and

LAND COMPARABLE NO. 3:

Parcel Number:	26-28-22-000000-022010
Brief Legal Description:	A portion of Section 22, Township 28 South, Range 26 East, Polk County, Florida
Date of Sale:	February 2023
Grantor:	Central Asset Management Corporation & Robrt W. Bradshaw
Grantee:	Buckeye Partners, LLC
Instrument Number:	12606/505
Property Data/Site:	
Location:	West side of Buckeye Loop Road, roughly ½ mile north of Dundee Road in Winter Haven, Polk County, Florida. Lake Hamilton is roughly 2 miles northeast of the site.
Access/Frontage:	Buckeye Loop Road
Utilities:	All available
Size:	16.13 acres per property appraiser (7.40 uplands acres, 46%)
Shape:	Rectangular
Number of Units:	60
Density:	8.11 units per upland acre
Zoning/Future Land Use:	R-3, Conservation / Neighborhood Suburban, Winter Haven
Topography:	Basically level, heavily wooded and near road grade. The wetlands are located in the central and towards the west side of the site.
Sale Price:	$425,000
Price Per Gross Acre:	$26,348
Price Per Upland Acre:	$57,432
Price Per Unit:	$7,083
Verification:	By Tod Marr, August 2024 With realtor David Hitchcock (863.557.0082)
Financing:	Cash to seller
Conditions of Sale:	Arm's-length
Present Use:	Idle
Highest & Best Use:	Multiple family residential

Comments:

This comparable was listed for $799,00 and was on the market for roughly 6 months. The realtor indicated that due to the significant number of wetland acres, the price was negotiated down several times. Per the planning department, as well as the realtor, the property contains 8.77 acres of wetlands. The realtor indicated that due to the configuration of wetlands, as well as other developmental problems, the comparable sold at the lower end of the range when compared to competing properties.


021210
022010
Winter Haven
17TH TER NE
17TH ST NE
BUCKEYE TRACE BLVD
BUCKEYE LOOP RD
EAGLE LN

INSTR # 2023053051
BK 12606 Pgs 0505-0508 PG(s)4
03/07/2023 11:27:30 AM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 35.50
DEED DOC 2,975.00

THIS INSTRUMENT PREPARED BY AND SHOULD BE RETURNED TO:
Michael G. Candiotti, Esq.
GREENSPOON MARDER, LLP
201 E. Pine Street, Suite 500
Orlando, FL 32801

Parcel ID #: 26-28-22-000000-022010

SPECIAL WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS that as of this 24th day of February 2023 that **CENTRAL ASSET MANAGEMENT CORPORATION, a Georgia corporation (formerly known as BRADCO, INC., a Georgia corporation) & ROBERT W. BRADSHAW AS TRUSTEE OF SHARE A Q-TIP TRUST**, whose mailing address is 2900 Peachtree Road. N.W., Suite 201 Atlanta, GA 30305 (together, the "**Grantor**"), for and in consideration of the sum of Ten and 00/100 Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, has GRANTED, BARGAINED, SOLD and CONVEYED, and by these presents does GRANT, BARGAIN, SELL and CONVEY unto **BUCKEYE PARTNERS, LLC** a Florida limited liability company, whose mailing address is 711 N. Orlando Ave., Suite 302, Orlando, Florida 32751 (the "**Grantee**"), that certain real property lying and being situate in **Polk County, Florida**, being more particularly described in **EXHIBIT "A"** attached hereto and made a part hereof by this reference.

TOGETHER WITH all improvements, tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining (the "**Property**").

SUBJECT TO real property taxes and other assessments for the year 2023, which are not yet due and payable and all matters set forth on **EXHIBIT "B"** attached hereto without the intent to reimpose the same.

TO HAVE AND TO HOLD the Property unto Grantee, and its successors and assigns, and Grantor does hereby covenant with said Grantee that the Grantor is lawfully seized of the Property in fee simple; that Grantor has good right and lawful authority to sell and convey the Property; Grantor does hereby specially warrant the title to the Property subject to the matters referred to above and will defend the same against the lawful claims of all persons claiming by, through or under the Grantor, but not otherwise.

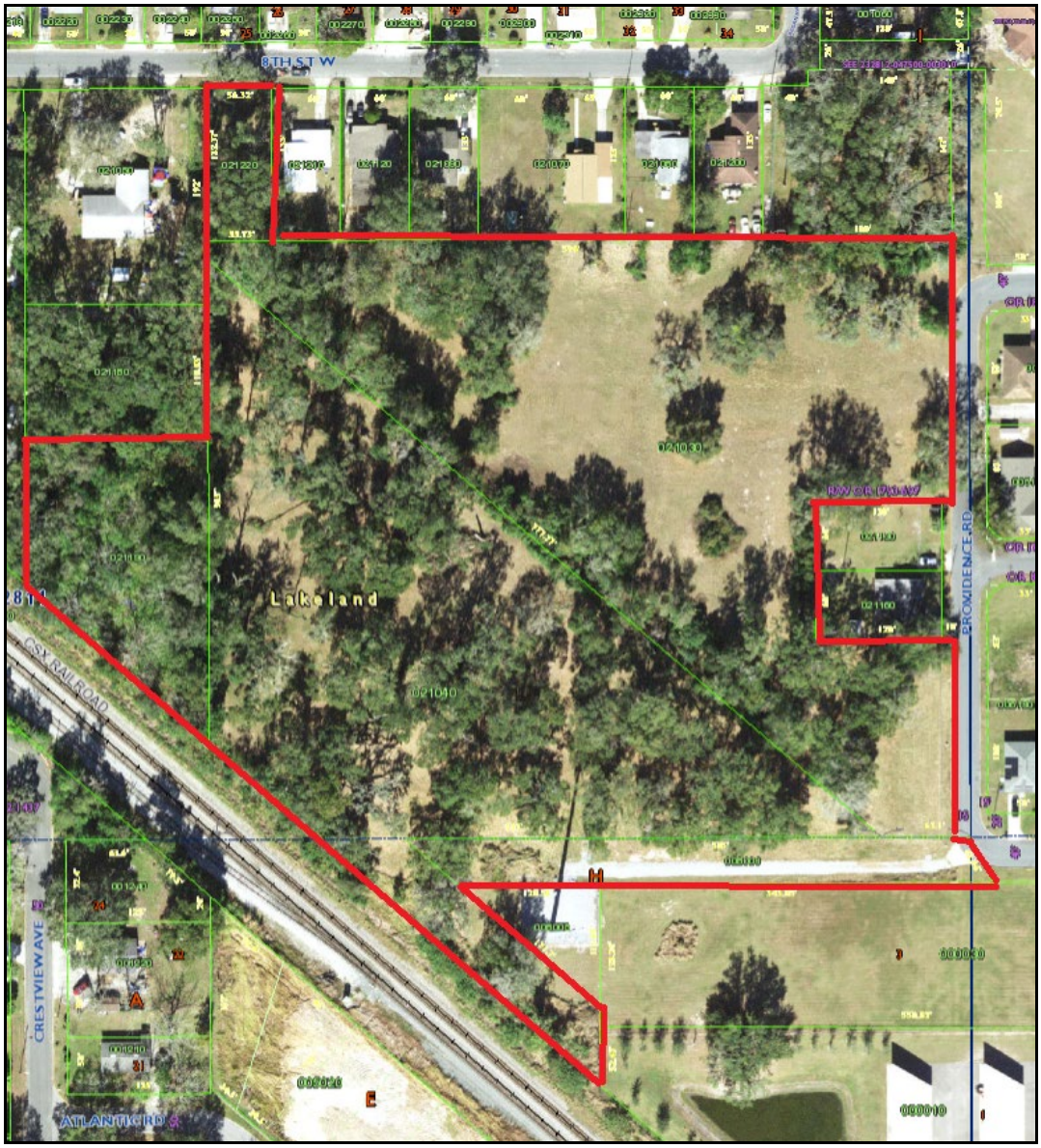
[SIGNATURE AND NOTARY ON FOLLOWING PAGE]

LAND COMPARABLE NO. 4:

Parcel Numbers:	23-28-11-000000-021040; 23-28-11-000000-021190 23-28-12-047000-008003; 23-28-11-000000-021220 23-28-11-000000-021030
Brief Legal Description:	A portion of Section 23, Township 28 South, Range 23 East, Polk County, Florida
Date of Sale:	August 2022
Grantor:	Millan Investments US, LLC; Ohm Prakash Rajasekaran
Grantee:	Providence Townhomes, LLC
Instrument Number:	12379/1555 and 12379/1542 (Polk County)
Property Data/Site:	
Location:	1250 Providence Road, Lakeland Florida 33805; West side of Providence Road and south of West 8th street, Poke County. Kathleen Road is just east of the property and Highway 92 is just south.
Access/Frontage:	Providence Road and 8th Street
Utilities:	All available
Size:	9.03 gross acres per property appraiser (all uplands)
Shape:	Rectangular
Number of Units:	87
Density:	9.64 units per upland acre
Zoning/Future Land Use:	PUD/Residential Medium by City of Lakeland
Topography:	Basically level with a mix of vegetation. The west side of the property is mostly heavily wooded and the eastern side is more open with scattered oaks.
Sale Price:	$780,000 ($400,000 & $380,000)
Price Per Gross Acre:	$86,379
Price Per Upland Acre:	$86,379
Price Per Unit:	$8,966
Verification:	By Tod Marr, August 2024 With realtor Charmagne Chappell (863.299.8011)
Financing:	Cash to seller
Conditions of Sale:	Arm's-length
Present Use:	Idle
Highest & Best Use:	Multiple family residential

Comments:

This comparable was listed as two properties by the same realtor; Roughly 4.24 acres were listed for $400,000 and sold for $380,000. The remaining acreage was listed for $400,000 and sold at the asking price. The property is proposed for 87 townhomes, which indicates a density of 9.64 units per acre. The plans are for two story structures with 1,280 sf of living space and one car garage. The property was rezoned from R-3 and RB-2, and was on the market between 1 and 3 month.


8TH ST W
Lakeland
CSX RAILROAD
CRESTVIEW AVE
ATLANTIC RD
PROVIDENCE RD

INSTR # 2022221512
BK 12379 Pgs 1555-1558 PG(s)4
08/15/2022 01:09:05 PM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 35.50
DEED DOC 2,800.00

Prepared by and return to:

Rosenthal Meyer, PLLC
3801 Avalon Park E Blvd, Suite 360
Orlando, FL 32828
(407) 504-9725
File Number: **2022-12-A**
Will Call No.:

[Space Above This Line For Recording Data]

Warranty Deed

This Warranty Deed made this **11th day of August, 2022** between **Millan Investments US LLC, a Florida Limited Liability Company** whose post office address is **1010 W Beacon Road, Lakeland, FL 33803**, grantor, and **Providence Townhomes, LLC, a Limited Liability Company** whose post office address is **15155 W Colonial Drive #783233, Winter Garden, FL 34787**, grantee:

(Whenever used herein the terms "grantor" and "grantee" include all the parties to this instrument and the heirs, legal representatives, and assigns of individuals, and the successors and assigns of corporations, trusts and trustees)

Witnesseth, that said grantor, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Polk County**, **Florida** to-wit:

See Exhibit A

Together with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

To Have and to Hold, the same in fee simple forever.

This property is not the homestead of the Grantor.

And the grantor hereby covenants with said grantee that the grantor is lawfully seized of said land in fee simple; that the grantor has good right and lawful authority to sell and convey said land; that the grantor hereby fully warrants the title to said land and will defend the same against the lawful claims of all persons whomsoever; and that said land is free of all encumbrances, except taxes accruing subsequent to **12/31/2021**.

In Witness Whereof, grantor has hereunto set grantor's hand and seal the day and year first above written.

Prepared by and return to:

Rosenthal Meyer, PLLC
3801 Avalon Park E Blvd, Suite 360
Orlando, FL 32828
(407) 504-9725
File Number: **2022-12**
Will Call No.:

INSTR # 2022221501
BK 12379 Pgs 1542-1543 PG(s)2
08/15/2022 01:08:11 PM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 18.50
DEED DOC 2,660.00

[Space Above This Line For Recording Data]

Warranty Deed

This Warranty Deed made this **22nd day of July, 2022** between **Ohm Prakash Rajasekaran** whose post office address is **4532 Ashburn Square Drive, Tampa, FL 33610**, grantor, and **Providence Townhomes LLC, a Limited Liability Company** whose post office address is , grantee:

(Whenever used herein the terms "grantor" and "grantee" include all the parties to this instrument and the heirs, legal representatives, and assigns of individuals, and the successors and assigns of corporations, trusts and trustees)

Witnesseth, that said grantor, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Polk County**, **Florida** to-wit:

Begin at the Northwest corner of the Southeast 1/4 of the Northeast 1/4 of the Southeast 1/4 of Section 11, Township 28 South, Range 23 East, thence run East 56.38 feet, thence run South 147 feet, thence run East 609 feet, thence run South 522.65 feet, thence run West 78.1 feet, thence run North 49 degrees West 777.77 feet, thence run North to Point of Beginning, LESS AND EXCEPT the South 120 feet of the North 497 feet of the West 130 feet of the East 145 feet and LESS AND EXCEPT the East 15 feet for Street right of way and LESS AND EXCEPT the North 14 feet for Lantzey Street right-of-way.

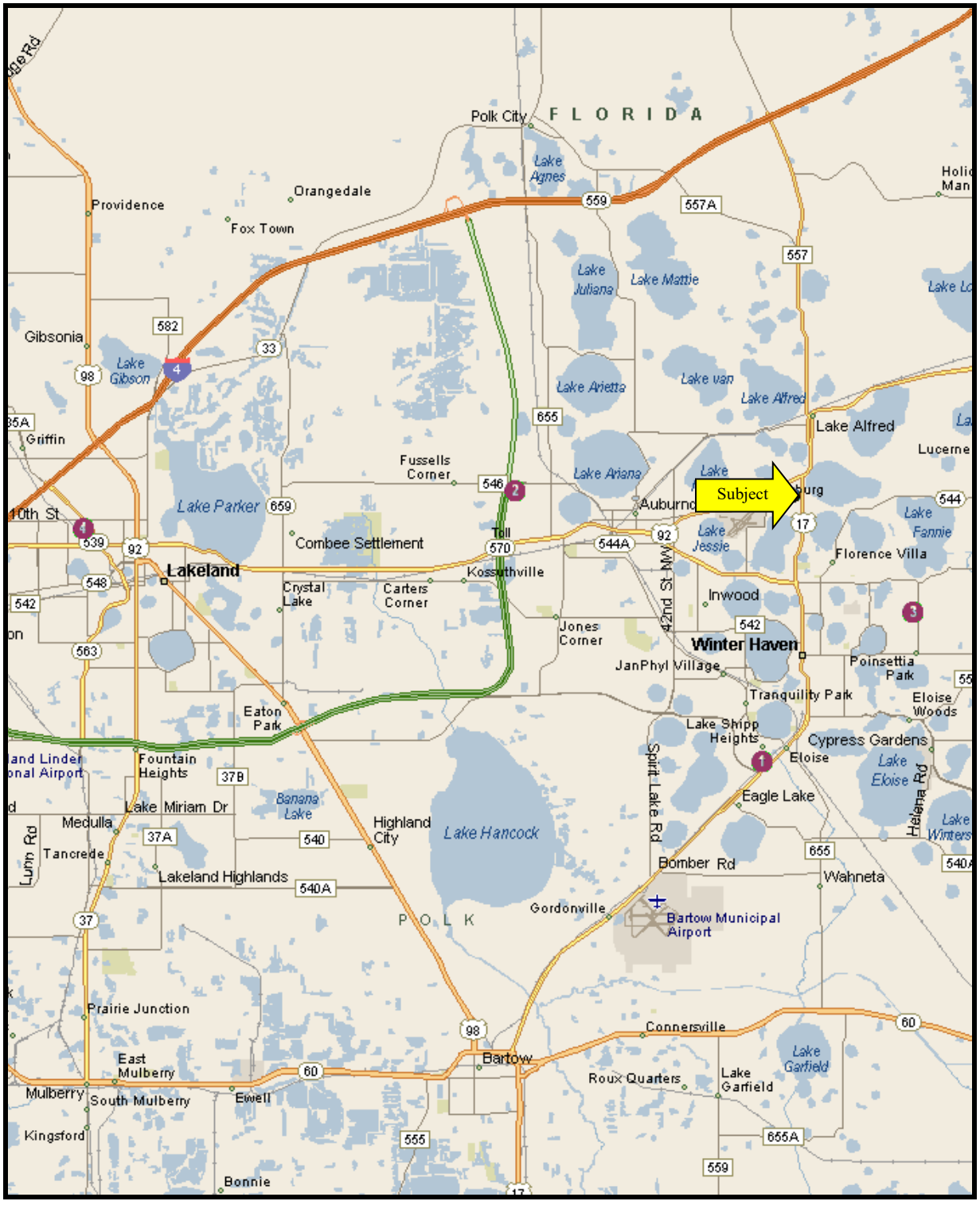
Parcel Identification Number: 23-28-11-000000-021030

Together with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

To Have and to Hold, the same in fee simple forever.

And the grantor hereby covenants with said grantee that the grantor is lawfully seized of said land in fee simple; that the grantor has good right and lawful authority to sell and convey said land; that the grantor hereby fully warrants the title to said land and will defend the same against the lawful claims of all persons whomsoever; and that said land is free of all encumbrances, except taxes accruing subsequent to **12/31/2021**.

In Witness Whereof, grantor has hereunto set grantor's hand and seal the day and year first above written.



MAP OF COMPARABLES

LAND COMPARABLE COMPARISON CHART

COMPARABLE	SUBJECT	COMP 1	COMP 2	COMP 3	COMP 4
SALE PRICE		$1,650,000	$3,350,000	$425,000	$780,000
# OF GROSS ACRES	12.46 8.45	21.69	32.69	16.13	9.03
# OF UPLAND ACRES	12.46 8.45	20.05	22.89	7.40	9.03
NUMBER OF UNITS	125, 85	187	286	60	87
DENSITY	10.00	9.33	12.50	8.11	9.63
PRICE/GROSS ACRE		$76,072	$102,478	$26,348	$86,379
PRICE/UPLAND ACRE		$82,294	$146,352	$57,432	$86,379
PRICE PER UNIT		$8,824	$11,713	$7,083	$8,966
LOCATION	Winter Haven	Winter Haven	Auburndale	Winter Haven	Lakeland
ACCESS/ROAD FRONTAGE	US 17, Brigham Road	Old Eagle Rd	Polk Pkwy, Dixie	Buckeye Loop	Providence Road
UTILITIES	Available	Available	Available	Available	Available
TOPOGRAPHY	Mostly level near Highway 17 Slightly below grade of Brigham	Level	Level	Wetlands	Level, at grade
SHAPE	Irregular	Irregular	Irregular	Rectangular	Irregular
UNITS OF COMPARISON					
FINANCING/COND OF SALE		Arm's-length	Arm's-length	Arm's-length	Arm's-length
MARKET CONDITIONS					
DATE OF APPRAISAL/SALE	Aug-24	Jun-24	Apr-23	Feb-23	Aug-22
# OF MONTHS SINCE SALE		2	16	18	24
ADJUSTMENT		Similar	Similar	Similar	Similar
PHYSICAL CHARACTERISTICS					
LOCATION	Average	Inferior	Much Superior	Similar	Inferior
ACCESS/ROAD FRONTAGE	US 17, Brigham Road	Similar	Similar	Similar	Similar
UTILITIES	Available	Similar	Similar	Similar	Similar
TOPOGRAPHY	Mostly level near Highway 17 Slightly below grade of Brigham	Similar	Similar	Much Inferior	Similar
SIZE/SHAPE	12.46 & 8.45 acres/ Irregular	Similar	Similar	Similar	Similar
DENSITY	10	Similar	Similar	Similar	Similar
OVERALL COMPARISON		Inferior	Much Superior	Much Inferior	Inferior
PRICE/UPLAND ACRE		$82,294	$146,352	$57,432	$86,379

EXPLANATION OF ADJUSTMENTS

The comparables presented on the previous pages are considered the best and most comparable properties available to compare with the subject. Qualitative adjustments are included in the comparison charts with regards to financing/conditions of sale, market conditions, location, access/road frontage, utilities, topography, size/shape, and density (zoning/future land use). A summary of these adjustments is below.

Financing/Conditions of Sale
All sales were verified with the grantee, grantor, an informed party and/or public records. No under-market financing or any special considerations which may have influenced the comparable's selling price was discovered. Therefore, no adjustments were made.

Market Conditions (Time)
Market conditions refer to the appreciation or depreciation of a property over a period of time. The date of the appraisal is August 9, 2024. Comparable 1 sold in 2024; Comparables 2 and 3 sold in 2023 while Comparable 4 sold in 2022. Although Comparable 4 sold roughly 24 months ago, I discussed the market with several realtors in the area and they were all in agreement that the market has been relatively stable for the past 2 to 3 years. Thus, no adjustment was warranted.

Location
The factor included in this adjustment category is the general location of the comparables when compared to the subject. Properties closer to town or in superior areas typically sell at a higher price per acre. The subject's upland areas are located on Highway 17 and Brigham Road in Winter Haven. Comparable 1 is located in an area of lower price homes and is considered inferior. Comparable 2 has frontage on the Polk Parkway, which is very desirable for multiple family properties. This location is much superior to the subject. Comparable 3 is located in a similar area of Winter Haven and no adjustment was necessary Comparable 4 is located in an area of Lakeland where property values typically sell at a lower price per acre. Thus, this sale is considered inferior in location.

Utilities
All utilities are available for the subject. The comparables are similar and no adjustments were warranted.

Access/Road Frontage
This adjustment is based on the comparables' access/road frontage in comparison to the subject. Properties on paved roads and/or properties with a lot of road frontage typically sell at a higher price per unit than properties without this feature. The subject's 12.46 upland area has frontage on Highway 17 and the 8.45 upland area has frontage on Brigham Road. The comparables have similar type road frontage and no adjustments were warranted.

Topography

This adjustment is based on the comparables' topography including cleared pasture area, improved citrus area, etc., in relation to the subject. The subject's 12.46 acre upland area is

basically level and near road grade of Highway 17. The 8.45 upland acres along Brigham Road have a slight pitch to the north and are below grade. Comparables 1, 2 and 4 are considered similar to the subject and no adjustments were necessary. The realtor for Comparable 3 indicated that the price was significantly reduced due to the location of the wetlands on the property, making development more difficult than a typical residential property. This comparable is considered much inferior to the subject.

Size/Shape
Size/shape adjustments were made on the basis of the comparables size/shape in relation to the subject. Typically, larger parcels or irregular shaped parcels tend to sell at a lower price per unit. Furthermore, smaller parcels are more affordable to a larger number of buyers indicating more demand and higher prices for smaller parcels. However, when larger parcels are scarce, making assemblage necessary, they typically sell at a higher price per unit. The subject's uplands along Highway 17 contain 12.46 acres and the uplands along Brigham Road contain 8.45 acres, for a total size of 20.91. The comparables are between 7.40 and 22.89 acres, bracketing the subject. Based on a review of the sales no adjustments were required. The subject is shaped irregular; however, it is more than adequate for residential development. Comparables 1, 2 and 4 are shaped irregular while Comparable 3 is rectangular. They have similar utility to the subject and no adjustments were warranted.

Density (Zoning/Future Land Use)
This adjustment is based on the comparables' density in comparison to the subject. Typically, properties, which can be developed at a higher density, sell for a higher price per acre. As discussed in the highest and best use, the subject's zoning/future land use would allow up to 15 units per acre; however, due to required setbacks, retention, and rights-way within the development, achieving maximum density allowed by zoning/future land use is rare. The comparables have densities between 8.11 and 12.50 units per acre and as discussed in the highest and best use, the most likely density for the subject is 10 units per acre. Based on a review of the sales no adjustments were warranted.

CORRELATION AND CONCLUSION

The four comparables presented on the previous pages are considered the best and most comparable properties available to compare with the subject. They have selling prices between $57,432 and $146,352 per upland acre. Based on the sales, the market value of the 20.91 upland acres of the subject's multiple family land is bracketed as follows:

Name	Overall Comparison	Price/Upland Acre
Comparable 2	Much Superior	$146,352
Subject	-	-
Comparable 4	Inferior	$86,379
Comparable 1	Inferior	$82,294
Comparable 3	Much Inferior	$57,432

The four comparables are located in central Polk County and considered overall good comparisons to the subject. Comparable 1 is inferior to the subject in location and similar in all other physical characteristics. It is considered overall inferior to the subject.

Comparable 2 is much superior to the subject in location and similar in all other physical characteristics. It is considered overall much superior to the subject. Comparable 3 is much inferior to the subject in topography and similar in all other physical characteristics. It is considered overall much inferior to the subject. Comparable 4 is inferior to the subject in location and similar in all other physical characteristics. It is considered overall inferior to the subject.

As mentioned in the sales history section of this report, the 12.46 acres on Highway 17 are listed for $1,150,000 and the 8.45 acres on Brigham Road are listed for $850,000. The realtor reported that he had an offer in June of 2024 for both parcels from the same potential buyer. The offer for the property on Highway 17 was $1,100,000 and the offer for the Brigham Road property was $825,000. The owner withdrew from negotiations and temporarily removed the property from market to provide time to consider an offer from Polk County. The total price of the offer was $1,925,000 or $92,061 per acre for the 20.91 upland acres.

Comparable 2 sold for $146,352 per upland acre and is considered much superior to the subject. Comparable 4 sold for $86,379 per upland acre and is inferior. In my opinion, the subject's value is well below the price paid for Comparable 2 and just above the price paid for Comparable 4. Therefore, based on the analysis, the "fee simple" market value of the subject is estimated as follows:

$92,000/upland acres X 20.91 upland acres	=	$1,923,720
Rounded To	=	$1,925,000

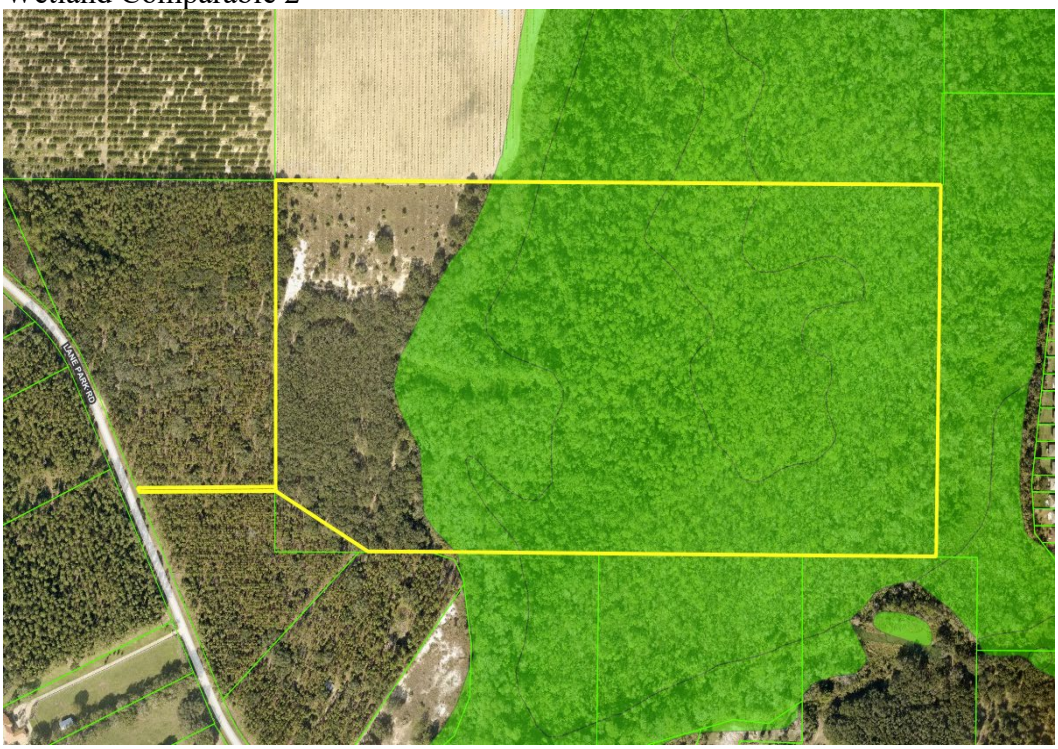
As discussed, the owner of the subject is also interested in selling the remaining 141.12 acres of wetlands at a price of $5,000 per acre. Thus, a variety of wetland sales were researched and verified. A summary is as below, followed by aerial maps of the sales and the valuation.

Comp #	Location	Parcel #	OR Bk, Pg	Date	Price	Size	$/Acre
1	Beauclaire Drive, Tavares	11-20-26-0001-000-00700	6327/1386	May-24	$250,000	96.14	$2,600
	Lake County	02-20-26-0004-000-02000					
2	Lane Park Road, Tavares	01-20-25-0001-000-00100	6295/1394	Mar-24	$185,000	81.05	$2,283
	Lake County	01-20-25-0002-000-01400					
3	N OF US 17/92, W OF US 27	26-27-23-000000-021010	12970/0560	Jan-24	$189,200	95.61	$1,979
	Haines City, Polk County						
4	Chesser Hammock, N of 40	2034840, 8016956 Alt Key	8436/2931	Jul-23	$425,000	237.4	$1,790
	Pierson, Volusia County						

Wetland Comparable 1



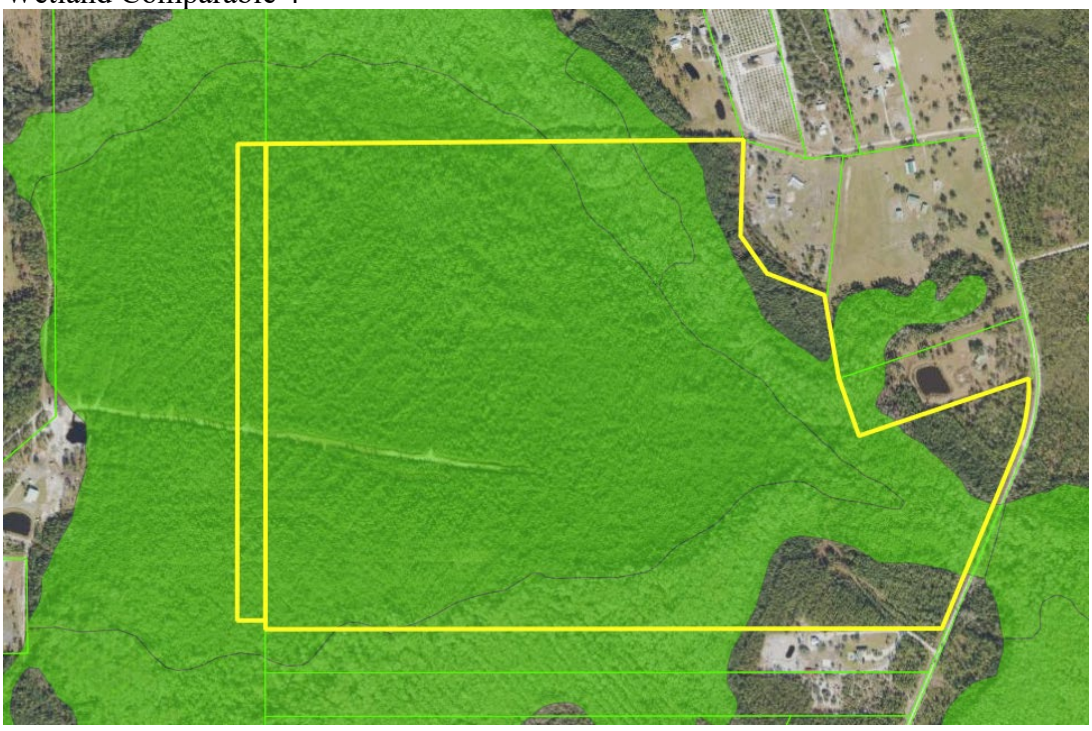
Wetland Comparable 2



Wetland Comparable 3



Wetland Comparable 4



Analysis of Wetland Sales

Comparable 1 is located on the west side of Beauclaire Drive and south of Old 441 on the southeastern side of Tavares, Lake County. The GIS maps indicate that the property is 100% wetlands. The comparable sold in May 2024 for $250,000 or $2,600 per acre for the 9.14 acres.

Comparable 2 is located east of Lane Park Road and south of Highway 441, on the southwestern side of Tavares, Lake County, The comparable consists of an 80.86 acre tract plus an access parcel of 0.19 acres to Lane Park Road for a total size of 81.05 acres. The property appraiser, as well as the GIS maps shows roughly 4 acres of uplands. The comparable sold in March 2024 for $185,000 or $2,283 per acre for the 81.05 acres.

Comparable 3 is located on the south side of Lake Lowery and a canal travels through the property at a diagonal. Based on the GIS maps there are roughly 4 acres of uplands located along the canal and these uplands include a graded road that travels along the east side of the canal and to the south. The property is north of Highway 92/17 and west of Highway 27, just northwest of downtown Haines City, Polk County. The comparable sold in January 2024 for $189,200 or $1,979 per acre for the 95.61 acres.

Comparable 4 is located on the west side of Chesser Hammock Road, north of State Road 40, in the Pierson area of northwest Volusia County. The Flager County line is roughly 2.5 miles to the north. The property consists of two tax parcels. The comparable sold in July 2023 for $425,000 or $1,790 per acre for the 237.4 acres.

Properties close to town or the municipal areas typically sell above those in more remote locations. Comparable 4 is located in a remote area of Volusia County and in my opinion, its price is the below the unit value of the subject. Comparables 1, 2 and 3 are located close to their respective towns and are given primary weight in the analysis. They have prices of $,2600, $2,283 and $1,979 per acre. Thus, based on the analysis, in my opinion, the market value of the subject's wetlands is estimated at $2,200 per acre. Note that some of the comparables have some upland areas, as the subject's wetland tract does also. As discussed, in the site description there are some uplands on the subject's wetland tract that are north of Highway 92; however, access is through wetlands. The sliver of land on the east side of Highway 17 appears to have some uplands, but due to the size and width of the parcel it is not buildable. Therefore, based on the analysis, the market value of the subject's wetland area, which includes the minimal non-buildable upland area is estimated as follows

$2,200/Acre X 141.12 Acres	=	$310,464
Less 10% selling costs	=	$ 31,046
Estimated Value	=	$279,418
Rounded to	=	$280,000

As discussed, in the prior valuation of the 20.91 acres of multiple family land, it has an estimated value of $1,925,000. In my opinion, the value of the entire property is estimated by adding the value of the multiple family land to the value of the wetlands. However, in the case of the subject, most investors would be purchasing the property for development of the multiple family land. The wetlands would not be needed and therefore, most likely sold off.

There will be costs of involved in selling off the wetlands including real estate commissions, attorney fees, title fees, etc. This selling cost is estimated at 10%, which indicates a value of $280,000 (rounded). Thus, the value of the entire 162.03 acres is estimated by adding my opinion of the value of the multiple family land of $1,925,000 to my opinion of value of the wetlands of $280,000. This calculation is as follows:

Multiple Family Land	=	$1,925,000
Wetlands	=	$ 280,000
Estimated Value	=	$2,205,000

RECONCILIATION AND FINAL VALUE ESTIMATE

Reconciliation is defined as the last phase in the development of a value opinion in which two or more value indications derived from market data are resolved into a final value opinion in relation to a benchmark or a single point estimate. (The Dictionary of Real Estate Appraisal, 6th edition, pg 91)

The following is a summary of the value conclusions obtained from the applicable approaches.

SALES COMPARISON APPROACH $2,205,000

The subject is located at the southwest quadrant of Highway 92 and Highway 17 in the Winter Haven area of Polk County, Florida. The property contains 162.03 acres and as discussed 9.99 acres are actually located on the north side of Highway 92, while a silver containing 0.24 acres is located on the east side of Highway 17. The property contains two developable areas with 12.46 acres on the east side of the property and 8.45 acres on the southwest side. The highest and best use of these upland acres is multiple family residential. The remaining areas of the property are mostly wetlands, with some very small areas of non-usable uplands on the north side of Highway 92, as well as on the east side of Highway 17.

As previously stated, because the property is vacant land the cost and income capitalization approaches were not relevant in the valuation. Therefore, the sole method used in the valuation was the sales comparison approach and it provides a credible estimate of value.

The sales comparison approach involves the comparison of similar properties that have recently sold with the subject property. The basic principle of substitution underlies this approach. It implies that an informed purchaser would not pay more for a property than the cost to acquire a satisfactory substitute property with the same utility as the subject property in the current market. Four multiple family sales were used in the valuation of the subject's 20.91 usable acres and they support my value opinion of $92,000 per upland acre.

Four wetland sales were used to estimate the value of the subject's wetland areas with some non-usable uplands. Some of these wetland sales also have a minimal amount of uplands. The sales support my opinion of value of $2,200 per acre. Thus, based on the analysis, in my opinion, the market value of the subject, as of the effective date of appraisal, August 9, 2024, under the conditions as stated herein, is estimated at

TWO MILLION TWO HUNDRED FIVE THOUSAND DOLLARS ($2,205,000).

ESTIMATED MARKETING AND EXPOSURE TIME

Marketing time is an opinion of the amount of time it might take to sell a real or personal property interest at the concluded market value level during the period immediately after the effective date of an appraisal. Marketing time differs from exposure time. Source: The Dictionary of Real Estate Appraisal, 6th edition, page 140

Exposure time is the time a property remains on the market. The estimated length of time the property interest being appraised would have been offered on the market prior to the hypothetical consummation of a sale at market value on the effective date of the appraisal. Exposure time is always presumed to precede the effective date of an appraisal. Source: The Dictionary of Real Estate Appraisal, 6th edition, page 83

I have reviewed the marketing and exposure time for properties like the subject in the Polk County area, as well as discussed it with land brokers. A summary of the comparables used in this report is as follows:

Name	**Marketing/Exposure Time**
Comparable 1	1 to 1 1/2 years under contract contract fell through and sold 30 days
Comparable 2	3 months
Comparable 3	6 months
Comparable 4	1 and 3 months
Wetland Sale 1	16 months
Wetland Sale 2	Not disclosed
Wetland Sale 3	one week
Wetland Sale 4	3 months

Based on the sales presented in this report, as well as other properties researched, in my opinion, if appropriately priced and properly marketed, a marketing time between 3 and 6 months for the multiple family land seems reasonable and a marketing time between 6 and 12 months for the wetlands seems reasonable . As mentioned, exposure time is always presumed to occur prior to the effective date of the appraisal. An exposure time between 3 and 6 months for the multiple family land and 6 and 12 months for the wetlands would have seemed reasonable.

ADDENDA

QUALIFICATIONS OF APPRAISER TOD MARR, MAI, CCIM

Education
Florida State University, 1985, Tallahassee Florida, Bachelor of Science Degree in Finance and Real Estate. Minor in Accounting.

Courses: Florida State University
Real Estate and Its Legal Environment; Real Estate Appraisal; Real Estate Feasibility Analysis Real Estate Finance; Real Estate Principles; Real Estate Market Analysis

Courses: American Institute of Real Estate Appraisers/Appraisal Institute

1A-1	Real Estate Principles	2-1	Case Studies in Real Estate
1A-2	Basic Valuation	2-2	Valuation Analysis/Report
1B-1	Capitalization Theory and Techniques	4	Litigation
1B-2	Capitalization Theory and Techniques	SPP	Standards Part A, B, & C
520	Highest and Best Use & Market Analysis	710	Condemnation Appraising

Courses: Commercial Investment Real Estate Institute

CI-101	Financial Analysis for Commercial Investment Real Estate
CI-201	Market Analysis for Commercial Investment Real Estate
CI-301	Decision Analysis for Commercial Investment Real Estate

Seminars:

Understanding Limited Appraisals	USPAP-Core Law
Appraisal Review-Income Properties	Accrued Depreciation
Persuasive Style Report Writing	Construction Cost Estimating
The Appraiser's Legal Liability	Sales Comparison Approach
Rates, Ratios & Reasonableness	Understanding Wetlands for
Valuation of a Less than Fee Acquisition	Appraisal Purposes & Mitigation
& Sales Comparison App. in Litigation	Banking as a Highest & Best Use
Appraising Rural Properties	SFWMD Appraisal Seminar
Appraisal Hotels	Residential Subdivision Analysis
Dairy Appraisal	Subdivision Valuation
Critical Issues	Property Tax Assessments
The Appraiser as Expert Witness	Real Estate Finance & Statistics
UAS for Federal Land Acquisitions	Site Valuation & Cost Approach

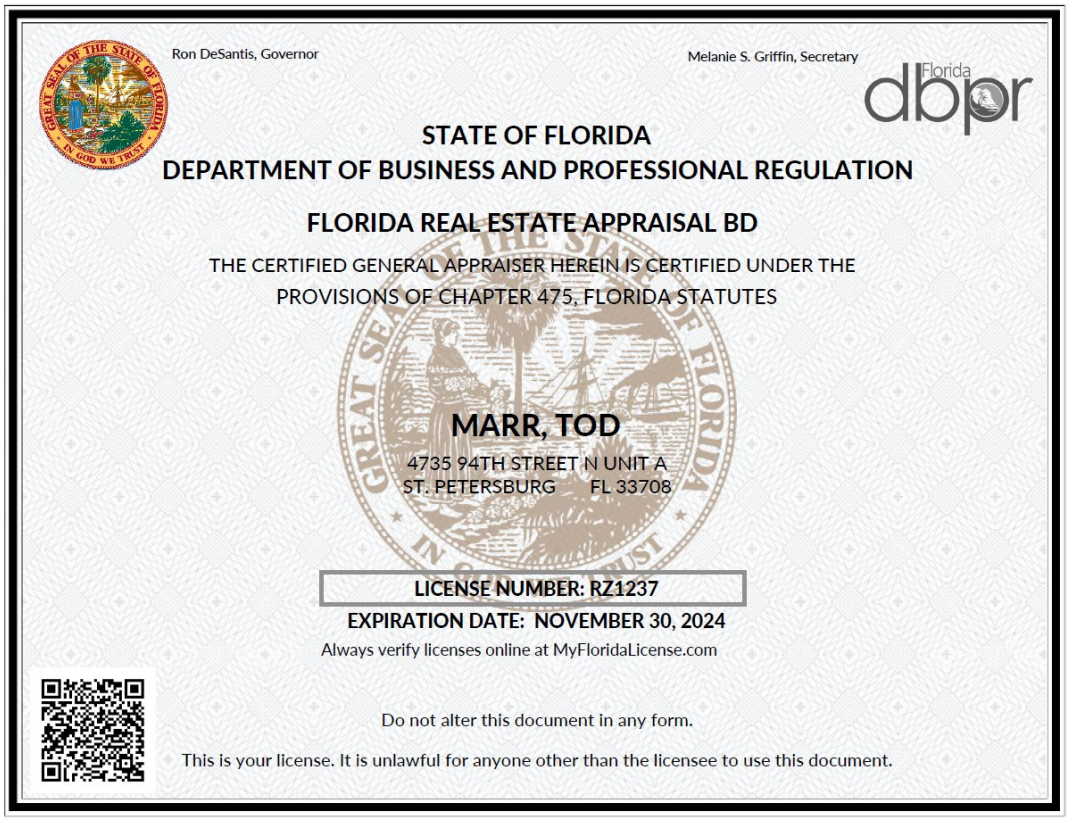
Valuation of Donated Real Estate, Including Conservation Easements

Professional Affiliations:
Member of the Appraisal Institute, MAI Designation #9440
Member of the Commercial Investment Real Estate Institute, CCIM Designation #7465
Member Pinellas County Realtor Organization & Florida Gulfcoast Commercial Association

Experience:
Owner, Tod Marr & Associates, Clearwater and Seminole, Florida, January 1993 to present
Staff Appraiser, Commercial Division, AppraisalFirst Inc. Clearwater, Fl (1986-1993)
Staff Appraiser, Southeastern Real Estate Appraisal Corp., St. Petersburg, Fl (1985-1986)

Licenses:
State-certified general appraiser RZ 1237
License Real Estate Broker, State of Florida
The Appraisal Institute conducts a program of continuing education for designated members. Designated members who meet the minimum standards of this program are awarded periodic educational certification. Tod Marr, MAI, is currently certified under this program.

COPY OF APPRAISER STATE LICENSE



Ron DeSantis, Governor

Melanie S. Griffin, Secretary

Florida dbpr

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

FLORIDA REAL ESTATE APPRAISAL BD

THE CERTIFIED GENERAL APPRAISER HEREIN IS CERTIFIED UNDER THE
PROVISIONS OF CHAPTER 475, FLORIDA STATUTES

MARR, TOD

4735 94TH STREET N UNIT A
ST. PETERSBURG FL 33708

LICENSE NUMBER: RZ1237

EXPIRATION DATE: NOVEMBER 30, 2024

Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.

WETLAND SALE #1 DEED

7/21/2023 1:09:51 PM Instrument #2023149868 #1 Book:8436 Page:2931
Doc Stamps $2,975.00 Transfer Amt $425,000.00

Prepared by and return to:
Jennifer Newsome Bradley
Westside Settlement Associates, LLC
339 West New York Avenue, DeLand, FL 32720
(386) 734-4341
File No WEST23-177

Parcel Identification No 590300000011

[Space Above This Line For Recording Data]

WARRANTY DEED

(STATUTORY FORM – SECTION 689.02, F.S.)

This indenture made the 30th day of July, 2023 between **A Shrugged Investment Corp Inc.**, a **Florida Corporation**, whose post office address is **1241 Produce Alley, DeLand, FL 32724**, of the County of Volusia, State of Florida, Grantor, to **Tony Depta, a married man**, whose post office address is **655 Dylan Trail, Ormond Beach, FL 32174**, of the County of Volusia, State of Florida, Grantee:

Witnesseth, that said Grantor, for and in consideration of the sum of TEN DOLLARS (U.S.$10.00) and other good and valuable considerations to said Grantor in hand paid by said Grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said Grantee, and Grantee's heirs and assigns forever, the following described land, situate, lying and being in Volusia, Florida, to-wit:

A parcel of land situated and being a part of Sections 2 and 3, Township 15 South, Range 29 East, Volusia County, Florida, being further described as follows:

Commencing at the Southwest corner of Section 33, Township 14 South, Range 29 East, Volusia County, Florida, as a POINT OF BEGINNING; thence South 89°59'56" East, a distance of 1645.34 feet; thence South 89°50'46" East, a distance of 4242.01 feet to the centerline of Truck Trail No. 11 (aka Chessar Hammock Road), an existing dirt road; thence along the centerline of said Truck Trail No. 11, the following courses and distances; South 12°39'03" East a distance of 2628.88 feet; thence South 06°41'41" West a distance of 449.99 feet; thence South 24°13'41" West a distance of 2452.97 feet; thence leaving said centerline of Truck Trail No. 11, North 89°52'35" West a distance of 3818.64 feet; thence continue North 89°52'35" West a distance of 1642.00 feet; thence North 00°38'40" East a distance of 5248.88 feet to the POINT OF BEGINNING.

LESS AND EXCEPT the lands described in the following Volusia County Public Records: Official Records Book 5487, Page 3720; Official Records Book 5577, Page 3423; Official Records Book 5290, Page 4155; Official Records Book 5672, Page 836; Official Records Book 5672, Page 876; Official Records Book 4438, Page 198; Official Records Book 4513, Page 4765; Official Records Book 4869, Page 3642; Official Records Book 4681, Page 2384; Official Records Book 4390, Page 405; Official Records Book 4555, Page 2305; Official Records Book 4436, Page 1353; Official Records Book 6840, Page 146; Official Records Book 6944, Page 4775 and Official Records Book 8197, Page 1663.

Together with the following non-exclusive easement situated in Sections 2 and 11, Township 15 South, Range 29 East, Volusia County, Florida:

A 60 foot easement for the purposes of ingress/egress, drainage and public utilities lying 30 feet on either side of a centerline along the following described courses:

Beginning at the intersection of the North right of way of State Road 40 and the centerline of an existing road known as Chessar Hammock Road; thence North 11°33'29" East along the centerline of Chessar Hammock Road, a distance of 4,152.96 feet; thence North 24°13'41" West, a distance of 3,212.40 feet; thence North 06°41'41" West, a distance of 449.99 feet; thence North 12°39'30" West, a distance of 1,451.45 feet to the Point of Intersection of an existing dirt road known as Hannah Road; thence departing said Chessar Hammock Road and following the centerline of said Hannah Road, South 82°01'13" West, a distance of 1,005.60 feet; thence North 71°57'13" West, a distance of 449.90 feet to a Point of Terminus of this easement; said point also being the center point of a cul-de-sac having a radius of 60.00 feet.

Grantor warrants that at the time of this conveyance, the subject property is not the Grantor's homestead within the meaning set forth in the constitution of the State of Florida, nor is it contiguous to or a part of a homestead property.

Together with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

Subject to taxes for 2023 and subsequent years, not yet due and payable; covenants, restrictions, easements, reservations and limitations of record, if any.

WETLAND SALE #2 DEED

INSTR # 2024008235
BK 12970 Pgs 0560-0562 PG(s)3
01/11/2024 09:22:25 AM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 27.00
DEED DOC 1,324.40

Prepared by and return to:
Mark Mangen
Attorney at Law
STRAUGHN & TURNER, P.A.
255 Magnolia Ave SW
Winter Haven, FL 33880-2902
863-293-1184
File Number: **17881-0001**
Will Call No.:

Parcel Identification No. **262723-000000-021010**

[Space Above This Line For Recording Data]

Warranty Deed

(STATUTORY FORM - SECTION 689.02, F.S.)

This Indenture made this **4th** day of **January, 2024** between **EKK Venture I, LLC, a Florida limited liability company** whose post office address is **346 E. Central Avenue, Winter Haven, FL 33880** of the County of **Polk**, State of **Florida**, grantor*, and **HBX, Inc., a Florida corporation** whose post office address is **P.O. Box 6052, Lakeland, FL 33807** of the County of **Polk**, State of **Florida**, grantee*,

Witnesseth that said grantor, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Polk County, Florida**, to-wit:

See Exhibit "A" attached hereto and made a part hereof as if fully set forth herein.

and said grantor does hereby fully warrant the title to said land, and will defend the same against lawful claims of all persons whomsoever.

* "Grantor" and "Grantee" are used for singular or plural, as context requires.

In Witness Whereof, grantor has hereunto set grantor's hand and seal the day and year first above written.

DoubleTime®

WETLAND SALE #3 DEED

INSTRUMENT#: 2024026440 OR BK 6295 PG 1394 PAGES: 2 3/7/2024 7:53:50 AM
GARY J. COONEY, CLERK OF THE CIRCUIT COURT & COMPTROLLER, LAKE COUNTY, FLORIDA
REC FEES: $18.50 DEED DOC:$1295.00

return to:
Jennifer Larsen, an employee of
Brokers Title of Leesburg, LLC
9800 U.S. Hwy 441, Suite 106,
Leesburg, FL 34788
Prepared incidental to the issuance of
a policy for title insurance
File No.: 24-143

Parcel Identification No.: 01-20-25-0002-000-01400, 01-20-25-0001-000-00100

Consideration: 185,000.00

[Space Above This Line For Recording Data]

WARRANTY DEED

(STATUTORY FORM – SECTION 689.02, F.S.)

This indenture made the **1st day of March, 2024** between **Davida C. Dyke a/k/a Davida C. Morris, a single woman**, whose post office address is **134 Holmes Drive, Fairborn, OH 45324**, hereinafter called the Grantor, to **Michelle Parrish and Shannon Parrish, wife and husband**, whose post office address is 11816 Woodlea Road, Tavares, FL 32778, hereinafter called the Grantees:

Witnesseth, that said Grantor, for and in consideration of the sum of TEN DOLLARS (U.S.$10.00) and other good and valuable considerations to said Grantor in hand paid by said Grantees, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said Grantees, and Grantees' heirs and assigns forever, the following described land, situate, lying and being in Lake, Florida, to-wit:

Parcel 1:

That part of Government Lot 4, Section 1, Township 20 South, Range 25 East, Lake County, Florida, described as follows:

Commencing at the Southeast corner of said Government Lot 4 (Southwest corner of Government Lot 3) run North 00°03'07" East along the East line of said Government Lot 4 a distance of 213.95 feet to the Point of Beginning; from said Point of Beginning continue North 00°03'07" East, 14.00 feet; thence South 89°58'13" West, 566.50 feet to a point on the center of Lane Park Road as shown on the plat of Lake Harris Highlands as recorded in Plat Book 29, Page 2, Public Records of Lake County, Florida; thence South 24°03'07" East, 15.33 feet; thence North 89°58'18" East, 560.24 feet to the Point of Beginning. Less the right-of-way of Lane Park Road.

Parcel 2:

South half (S 1/2) of Government Lots Two (2) and Three (3) of Section 1, Township 20 South, Range 25 East, Lake County, Florida.

Less and Except that portion conveyed by Warranty Deed recorded September 6, 1990 in Official Records Book 1074, Page 1451, Public Records of Lake County, Florida.

Said property did not constitute the Grantor(s) homestead, nor was it adjacent to or contiguous with their homestead, the homestead of the spouse of the Grantor(s) nor any member of the household of the Grantor(s) reside thereon, as defined by Article X, Section 4 of the Florida Constitution or laws.

Together with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

WETLAND SALE #4 DEED

INSTRUMENT#: 2024052418 OR BK 6327 PG 1386 PAGES: 6 5/3/2024 2:23:41 PM
GARY J. COONEY, CLERK OF THE CIRCUIT COURT & COMPTROLLER, LAKE COUNTY, FLORIDA
REC FEES: $52.50 DEED DOC:$1750.00

This Instrument Prepared By
and Should be Returned To:
Donald J. Curotto, Esquire
SHUTTS & BOWEN LLP
300 South Orange Avenue, Suite 1600
Orlando, Florida 32801

Parcel Identification Nos.
0220260004-000-02000 and 1120260001-000-00700

GENERAL WARRANTY DEED

THIS GENERAL WARRANTY DEED is made effective as of the 1st day of May, 2024, by and between **KELLY A. CHAMBERS,** whose address is 314 E Geneva Street, Ocoee, Orange County, Florida 34761; **KERRY L. HERZIG,** whose address is 8367 S 2960 W, West Jordan, UT 84088; **ROBERT M. WALLICK**, whose address is 308 E Geneva Street, Ocoee, Orange County, Florida 34761; and **ROBERT K. WALLICK**, whose address is 1257 Climbing Rose Drive, Orlando, Orange County, Florida 32818 (hereinafter referred to as "**Grantor**"), and **BEAUCLAIRE VENTURES, LLC,** a Florida limited liability company, whose address is 2405 W. Princeton Street, Unit 2, Orlando, Florida 32804 (hereinafter referred to as "**Grantee**").

(Whenever used herein, the terms "Grantor" and "Grantee" shall be deemed to include the parties to this General Warranty Deed and the heirs, personal representatives and assigns of individuals, and the successors and assigns of corporations, limited liability companies or partnerships. The singular shall be deemed to include the plural, and vice versa, where the context so permits.)

W I T N E S S E T H:

WITNESSETH that the Grantor, for and in consideration of the sum of Ten and No/100 Dollars ($10.00) and other good and valuable consideration, receipt of which is hereby acknowledged, hereby grants, bargains, sells, aliens, remises, releases, conveys and confirms, and by these presents does grant, bargain, sell, convey and confirm, unto Grantee, all that certain land situate in Lake County, Florida, more particularly described in **Exhibit "A"** attached hereto (the "**Property**").

TOGETHER with all the tenements, hereditaments and appurtenances with every privilege, right, title, interest and estate, reversion, remainder and easement hereto belonging or in anywise appertaining, and together with all improvements located thereon or therein.

TO HAVE AND TO HOLD the Property, and all the estate, right, title, interest, and equity whatsoever of Grantor either in law or in equity or both, to the proper use, benefit, and behalf of Grantee and Grantee's successors and assigns in fee simple forever.

AND Grantor hereby covenants with said Grantee that Grantor is lawfully seized of the Property in fee simple; that Grantor has good right and lawful authority to sell and convey the Property; that Grantor does hereby fully warrant the title to the Property and will defend the same against the lawful claims of all persons whomsoever; and that the Property is free of all

Scott C. Lowery, CPM
Polk County BOCC
515 E. Boulevard St.
Bartow, FL 33830
863-534-2580 (Office)
Email: ScottLowery@polk-county.net

August 16, 2024

AGSC File No.: 33165-R
Project: Astute Property – EL-102-23

PROPERTY INFORMATION REPORT

Pursuant to your request, we have made a search of the Official Records of Polk County, Florida, through August 9, 2024 at 8:00 a.m., for Polk County BOCC, pertaining to that real property which is more particularly described as follows:

See Exhibit "A", attached.

1. Owner(s) of record: Astute Financial Corporation, an Ontario corporation

By: Trustee's Deed
From: Midlantic National Bank and Trust Company/Florida, successor to Florida Coast Midlantic Trust Company, N.A., as Trustee
To: Astute Financial Corporation, an Ontario corporation, and Bladenboro Corp., N. V., a Netherlands Antilles corporation
Dated: December 31, 1992 Filed and Recorded: July 26, 1994
In Official Records: Book: 3418 Page: 1526
Note: Corrective Deed recorded in Official Records Book 3444, Page 216.
(contains additional property)

By: Warranty Deed
From: Bladenboro Corp., N.V., a Netherlands Antilles corporation To: Astute Financial Corporation, an Ontario corporation
Dated: December 21, 1994 Filed and Recorded: January 11, 1995
In Official Records: Book: 3483 Page: 1629
(contains additional property)

2. **Based on a Thirty-Year ownership search and a Twenty-Year judgment search of the public records, we have found the above-described property to be subject to the following liens, encumbrances, and other matters of public record:**

   Easement from Midlantic National Bank and Trust Co./Florida, as Successor Trustee, to the City of Winter Haven, a Florida municipal corporation, dated April 18, 1986 and recorded July 14, 1986 in Official Records Book 2438, Page 1465.

3. **Reservations as may have been issued by the Trustees of the Internal Improvement Trust Fund:**

   Reservation of right of ingress and egress for the purpose of maintaining, repairing, and/or enlarging any and all canals, sluiceways, dikes and other works in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

   Reservation of easement for road right-of-way in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

   Reservation of oil, gas and mineral rights in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

4. **Taxes:**

   Tax Parcel ID Number: 262805-000000-024010
   Taxes for 2023 are paid in the amount of $456.59
   Current assessment: $24,378.00
   Homestead exemption: No
   Delinquent Taxes: None

   Tax Parcel ID Number: 262805-000000-042010
   Taxes for 2023 are paid in the amount of $14.76
   Current assessment: $799.00
   Homestead exemption: No
   Delinquent Taxes: None

   Tax Parcel ID Number: 262808-000000-013030
   Taxes for 2023 are paid in the amount of $566.25
   Current assessment: $30,630.00
   Homestead exemption: No
   Delinquent Taxes: None

   Tax Parcel ID Number: 262808-000000-032050
   Taxes for 2023 are paid in the amount of $32.06
   Current assessment: $1,735.00
   Homestead exemption: No
   Delinquent Taxes: None

Name and Mailing Address as listed on Tax Roll:
Astute Financial Corporation
3 Strathearn Rd
Toronto ON M6C 1R2
Canada

Certification:

AS TO THE ORIGINAL SEARCH REPORT:

The undersigned hereby certifies that the foregoing PROPERTY INFORMATION REPORT reflects a comprehensive search of the Public Records of Polk County, Florida, showing the apparent ownership of the lands described above, together with outstanding encumbrances affecting the lands.

American Government Services Corporation assumes no responsibility for any defects or omissions in or from the instruments appearing in the chain of title to the property described herein, which defects or omissions would render such instruments void.

This report is not title insurance. Pursuant to s. 627.7843, Florida Statutes, the maximum liability of the issuer of this property information report for errors or missions in this property information report is limited to the amount paid for this property information report and is further limited to the person(s) expressly identified by name in the property information report as the recipients(s) of the property information report.

COUNTERSIGNED: W2mcA

AMERICAN GOVERNMENT SERVICES CORPORATION
3812 W. LINEBAUGH AVENUE
TAMPA, FL 33618
813-933-3322

AGSC File No.: 33165-R

Exhibit "A"

The South ½ of the Southwest ¼ Less right-of-way for State Road 600; All that part of the South ½ of U.S. Government Lot 3 which lies West of the right-of-way for State Road 555, all lying in Section 5, Township 28 South, Range 26 East, Polk County, Florida.

AND

All that part of U. S. Government Lot 2 and U. S. Government Lot 3 lying West of State Road 555 and lying North of Brigham Road (formerly known as Elfenbein Road), lying in Section 8, Township 28 South, Range 26 East, Polk County, Florida.

LESS and EXCEPT the following:

Commence at the Northwest corner of the South one-half of U.S. Government Lot 3 in Section 8, Township 28 South, Range 26 East, Polk County, Florida, run thence South along the West boundary of said Lot 3, 128.70 feet, thence East, 124.74 feet, thence South 09°57'00" West, 25.45 feet to a point on the Southerly right-of way of Brigham Road, thence North 88°06'21" East along said right-of-way, 529.35 feet, to the P.C. of a curve concave to the Southwest having a radius of 255.00 feet, thence continue along said right-of-way and said curve through a central angle of 43°31'39", an arc distance of 193.72 feet, a chord distance of 189.10 feet, a chord bearing of South 69°07'49" East to the P.T. of said curve, thence continue along said right-of-way, South 47°22'00" East, 561.68 feet, thence continue along said right-of way, South 89°34'00" East, 756.44 feet to its intersection with the Westerly right-of-way of U.S. 17, thence North 00°45'46" East, along said right-of-way, 50.00 feet to a point on the Northerly right-of-way of Brigham Road and the Point of Beginning. Run thence North 00°45'46" East, along the Westerly right-of-way of U.S. 17, 425.00 feet, thence North 89°34'00" West, parallel with Brigham Road leaving said right-of-way, 950.00 feet, thence South 00°45'46" West parallel with the Westerly right-of-way of U.S. 17, 233.25 feet to a point on the Northeasterly right-of-way of Brigham Road, thence South 47°22'00" East along said right-of way, 285.46 feet, thence continue along said right-of-way, South 89°34'00" East, 737.43 feet to the Point of Beginning.

BUREAU OF APPRAISAL - APPRAISAL CHECKLIST, PART ONE

GENERAL — VACANT LAND

		Yes	Page	No	N/A
1	Does the appraisal include a completed copy of the Bureau of Appraisal's "Appraisal Checklist?" (the appraiser is required to indicate compliance with specific requirements by noting which page number(s) of the appraisal contain required minimum information) [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions" Page 15]	[X]	[ ]	[ ]	Addenda
2	Is a completed "Executive Summary" included for each parcel and/or opinion of value?	[X]	[1]	[ ]	
3	Does the appraisal follow the recommended general format for narrative appraisal reports? (this format should be used by the fee appraiser as a general guide) [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions" Page 9]	[X]			

PREMISES OF THE APPRAISAL

4	Is there a description of the extent of the process (scope) of collecting, confirming and reporting data?	[x]	13	[ ]	
5	Is the Bureau of Appraisal's definition of market value or the current USPAP definition used? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 2]	[x]	15	[ ]	
6	Is the intended use (function) of the appraisal identified?	[x]	16	[ ]	
7	Are the property interests (rights) appraised identified?	[x]	13	[ ]	
8	Does the appraisal express the estate which existed as of the date of appraisal and any Extraordinary Assumptions approved by the Chief of the Bureau of Appraisal or assignee (e. g. – Fee Simple, Leased Fee, Easement, Fee subject to---)?	[x]		[ ]	
9	Does the appraisal report consider whether a fractional interest, physical segment or partial holding contribute pro rata to the value of the whole?	[ ]	[ ]	[x]	
10	Are the effective date of the appraisal and the date of the appraisal report stated?	[x]	i, 15	[ ]	

Bureau of Appraisal - Appraisal Checklist
Page 2

		Yes	Page No.	No	N/A
PRESENTATION OF DATA					
11	Is a legal description of the property appraised included in the report? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Pages 9 and 16]	[x]	Addendum	[ ]	
12	Is a five-year subject sales history included? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 3]	[x]	[24]	[ ]	
13	Does the appraiser explain why the previous sale of the subject was not used in the valuation of the subject property?	[ ]	[ ]	[ ]	[x]
14	Is any current agreement of sale, option or listing of the property under appraisal analyzed? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 4]	[ ]	[ ]	[ ]	[x]
15	Was a neighborhood analysis provided including a discussion of market trends, either positive or negative, which affect the subject property? [Bureau of Appraisal, "Supplemental Standards For Board of Trustees Land Acquisitions", Pages 9 and 15]	[x]	[18]	[ ]	
16	Is a land use analysis provided which discusses existing land use and zoning designations, impending use restrictions or other existing or proposed concurrency or land use planning restrictions?	[x]	[25	[ ]	
17	Does the appraisal report provide the current assessed value of the subject property? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 4]	[x]	[25]	[ ]	
DESCRIPTION OF SUBJECT SITE/LAND					
18	Is a site sketch included?	[x]	[29]	[ ]	
19	Does the appraisal report describe the size, shape and other physical characteristics of the site/land? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 4]	[x]	[24]	[ ]	

Bureau of Appraisal □ Appraisal Checklist
Page 3

		Yes	Page No.	No	N/A
20	Does the appraisal report describe the current state of access to the property? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 4]	[x]	[24]	[ ]	
21	If the access is poor, inadequate or substandard, does the appraisal address its affect, with supporting market evidence, on market value? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 4]	[ ]	[ ]	[ ]	[x]
22	Does the appraisal describe the topography of the property? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 4]	[x]	[23]	[ ]	
23	Does the appraisal report describe the location of the property? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 4]	[x]	[ii, 22]		
24	Does the appraisal report describe the property's road frontage? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 4]	[x]	[24]		
25	Does the appraisal report describe the property's water frontage? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 4]	[x]	[ ]		
26	Does the appraisal report describe utilities available and their proximity to the property? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 4]	[x]	[24]		
27	Does the appraisal report describe nuisances and hazards, if any, affecting the market value of the property?	[x]	[23]	[ ]	
28	Does the appraisal report describe any existing and/or potential environmental hazards affecting the market value of the property?	[x]	[ ]	[ ]	

Bureau of Appraisal - Appraisal Checklist
Page 4

		Yes	Page No.	No	N/A
29	Does the appraisal report describe the drainage and the existence of flood plain conditions affecting the market value of the property? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 3]	[x]	[23]		
30	Does the appraisal report discuss any easements, encroachments and rights-of-way affecting the market value of the property?	[x]	[22]	[ ]	[ ]
31	Does the appraisal report address their affect(s), if any, on the market value of the subject property?	[x]	[22]	[ ]	[ ]
32	Does the appraisal report discuss the effect on the market value of the property as a result of outstanding oil, gas and mineral interests? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 4]	[ ]	[ ]	[ ]	[x]

ANALYSIS OF DATA AND CONCLUSIONS

Highest and Best Use

33	Is the highest and best use of the property "as vacant" and "as improved", if applicable, analyzed? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 4]	[x]	[37]		
34	Is the highest and best use based on an "economic use" of the property? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 5]	[x]	[37]		

Land Valuation

34	Are the comparable sales verified, documented and presented? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Pages 5, 6 and 14]	[x]	[42]		
35	Are photographs of the comparable sales included? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 6]	[x]	[42]		

Bureau of Appraisal - Appraisal Checklist
Page 5

		Yes	Page No.	No	N/A
36	Does the appraisal report include sketches of the comparable sales? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 6]	[ ]	[ ]		
37	Did the appraiser include a general sales location map that also shows the subject's proximity?	[x]	[57]	[ ]	
38	Is the unit of comparison appropriate for the subject's market?	[x]	[ ]		
39	Is the unit of comparison reliable for the subject's market?	[x]	[ ]		
40	Is the unit of comparison valid for the subject's market?	[x]	[ ]		
41	Are the comparable sales similar to the subject in highest and best use?	[x]	[ ]		[ ]
42	If the comparable sales are not similar in highest and best use, is an adequate discussion included as to why the sales are used?	[ ]	[ ]		[x]
43	Are the comparable sales adjusted for cash equivalency or otherwise clearly explained?	[ ]	[ ]		
44	If you included comparable sales to governmental units and/or non-profit groups, were they analyzed separately with appropriate comments explaining Differences, if any, compared to private transactions? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 6]	[ ]	[ ]		[x]
45	If the appraisal report includes extraordinary assumptions, are their impacts on value Adequately supported and reported in the reconciliation and final value estimate?	[ ]	[ ]	[ ]	[x]
46	If you provide a discounted cash flow model in valuing the subject property, did you also provide a sales comparison, or other, approach to arrive at the present value of the subject property? [Bureau of Appraisal, "Supplemental Appraisal Standards for Board of Trustees Land Acquisitions", Page 7]	[ ]	[ ]	[ ]	[x]

		Yes	Page No.	No	N/A
47	Are demolition costs, if any, considered appropriately for the comparable sales and the subject property?	[ ]	[ ]	[ ]	[x]

PROJECT: **ASTUTE FINANCIAL CORPORATION**
LOCATION: **U.S. HWY 17 / U.S. HWY 92**
CITY/STATE: **WINTER HAVEN, FLORIDA 33801**
OUR FILE: **24-026**

AS OF
AUGUST 9, 2024

AT THE REQUEST OF
MS. BROOKE MOHEREK
ENVIRONMENTAL SPECIALIST – BIOLOGIST II
POLK COUNTY PARKS & NATURAL RESOURCES
4177 BEN DURRANCE ROAD
BARTOW, FLORIDA 33830-8433

PREPARED BY
JOSEPH S. STRING, MAI
CERT GEN RZ#96
STRING APPRAISAL SERVICES, INC.
6039 CYPRESS GARDENS BOULEVARD, SUITE #420
WINTER HAVEN, FLORIDA 33884

STRING APPRAISAL SERVICES, INC.

September 13, 2024

Ms. Brooke Moherek
Environmental Specialist – Biologist II
Polk County Parks & Natural Resources
4177 Ben Durrance Road
Bartow, Florida 33830-8433

Re: Project Number – 24-539
Project Name – Astute Financial Corporation
Location – U.S. Hwy 17 and U.S. Hwy 92
County/State – Polk County, Florida

Dear Ms. Moherek:

In compliance with Purchase Order 24104733 dated July 12, 2024, a copy of which has been attached in the addenda of this appraisal report, I wish to inform you that I have completed an appraisal of three non-contiguous tracts of vacant land totaling 162.03-acres located on both sides of U.S. Hwy 17 and both sides of U.S. 92, southwest of Lake Alfred, on the north side of Winter Haven, Florida. There is no physical address for the subject property. The property is currently vested to Astute Financial Corporation and identified by the Polk County Property Appraiser as PID Numbers 26-28-05-000000-024010, 26-28-05-000000-024030, 26-28-05-000000-042010, 26-28-08-000000-013030, and 26-28-08-000000-032050. The subject property will be fully identified and legally described within the body of the attached appraisal report.

The purpose of this assignment is to establish market value, including opinions for exposure period and marketing time, as of the date of the field inspection – August 9, 2024. The appraisal report was written between September 1, 2024 and September 9, 2024. The property has been appraised in "fee simple interest," subject to those exceptions identified American Government Services Corporation "Property Information Report" File Number 33165-R dated August 16, 2024. The client for this assignment is Polk County Parks & Natural Resources. The intended users include the client, Polk County, a political subdivision of the State of Florida, the City of Winter Haven, and the Trustees of the Internal Improvement Trust Fund for the State of Florida. The intended users will rely upon the analysis, opinions, and conclusions to make internal decisions regarding the potential acquisition of the fee simple interest in the subject property.

The attached report, plus exhibits, provides a description of the subject property and the approaches, techniques, and methods used to estimate market value. In my opinion, the market value of the subject property in "fee simple interest" subject to those exceptions identified in American Government Services Corporation "Property Information Report" File Number 33165-R as of August 9, 2024 was:

TWO MILLION TWO HUNDRED FORTY-FIVE THOUSAND DOLLARS ($2,245,000)

The appraiser-client relationship is with Polk County Parks & Natural Resources Division. This confidential report is prepared for the sole use and benefit of the client and Polk County, a political subdivision of the State of Florida. This report is provided for informational purposes only to third parties authorized to receive it. The appraiser assumes no responsibility if the report is used in any manner, other than as described.

The values reported in this appraisal report are subject to the "Assumptions and Limiting Conditions" found on Page 5 and the Extraordinary Assumption found on Page 6 of the attached appraisal report. This appraisal report represents an "Appraisal Report," that has been prepared in compliance with the guidelines of:

- *The 2024 Uniform Standards of Professional Appraisal Practice,*
- *The March 2, 2016 Supplemental Appraisal Standards for the Board of Trustees of the State of Florida, and*
- *The Code of Professional Ethics and Standards of Professional Practice of the Appraisal Institute.*

This letter of transmittal needs to accompany the attached "Appraisal Report." I appreciate being considered for this appraisal assignment. Please feel free to call on me should you or any users of this appraisal report need further clarification and/or assistance.

Respectfully submitted,

STRING APPRAISAL SERVICES, INC.

Joseph S. String

Digitally signed by Joseph S. String
DN: cn=Joseph S. String, o=String Appraisal Services, ou, email=sservic2@tampabay.rr.com, c=US
Date: 2024.09.13 07:21:36 -04'00'

Joseph S. String, MAI
Cert Gen RZ96

Attachments

PART ONE – INTRODUCTION

TABLE OF CONTENTS

PART ONE – INTRODUCTION 1

TABLE OF CONTENTS 2
QUALIFICATIONS OF THE APPRAISER 3
ASSUMPTIONS AND LIMITING CONDITIONS 5
HYPOTHETICAL CONDITIONS 6
EXTRAORDINARY ASSUMPTION 6
CERTIFICATE OF APPRAISER 8
EXECUTIVE SUMMARY 10
LOCATION MAP 13

PART TWO - PREMISES OF THE APPRAISAL 14

SCOPE OF APPRAISAL 15
INTENDED USER/INTENDED USE 16
PURPOSE OF APPRAISAL 16
PROPERTY RIGHTS APPRAISED 17
EFFECTIVE DATE OF APPRAISAL 18
EXPOSURE PERIOD 18
MARKETING TIME 18

PART THREE – PRESENTATION OF DATA 19

PROPERTY IDENTIFICATION 20
WINTER HAVEN DEMOGRAPHICS 21
NEIGHBORHOOD 23
AREA MAP 24
NEIGHBORHOOD MAP 25
TOPOGRAPHIC MAP 26
FEMA FLOOD MAP 27
SOIL MAP 28
WINTER HAVEN ZONING MAP 30
WINTER HAVEN FUTURE LAND USE MAP 31
AERIAL MAP 32
SUBJECT DESCRIPTION 40

PART FOUR – ANALYSIS 46

HIGHEST AND BEST USE 47
METHOD OF VALUATION 49
SALES COMPARISON APPROACH 50
FINAL RECONCILATION 74

PART FIVE- ADDENDA 75

PROPERTY INFORMATION REPORT 76
WETLAND DEEDS 83
DEP CHECKLIST 87

QUALIFICATIONS OF THE APPRAISER

JOSEPH S. STRING, MAI
String Appraisal Services, Inc.
6039 Cypress Gardens Blvd., Suite 420
Winter Haven, Florida, 33884
Phone 863-292-0657
e-mail: sservic2@tampabay.rr.com

Biographic: Born September 28, 1949 in St. Johnsbury, Vermont
Polk County resident since 1972
Real estate appraiser since 1969

Education: Graduate of Brevard Junior College, Cocoa, Florida
Graduated in 1969 with an Associate of Science degree

Graduate of University of Central Florida, Orlando, Florida
Graduated in 1972 with a Bachelor of Science degree, Finance

Attended/successfully completed courses offered by the Appraisal Institute, former American Institute of Real Estate Appraisers

Course 1A-1:	Real Estate Appraisal Principles	- 1988
Course 1A-2:	Basic Valuation Procedures	- 1988
Course SPP:	Standards of Professional Practice	- 2022
Course 2-2:	Valuation Analysis and Report Writing	- 1988
Course 2-1:	Case Studies in Real Estate Valuation	- 1985
Course 1:	Income Capitalization	- 2013
Course 1B-B:	Capitalization Theories and Techniques (B)	- 1984
Course 797:	Valuation of Conservation Easements	- 2008

In January 2008, I took and passed the week-long IRS "Valuation of Conservation Easement" course. I also attended the Uniform Appraisal Standards for Federal Land Acquisitions Seminar in March 2004, January 2007, March 2016, September 2017 and May 2024. In June 2020, I took the "Valuation of Donated Real Estate, Including Conservation Easements that dealt with non-cash charitable donations. In January 2024, I took the 3-hour Florida Law Seminar and the 2024 Uniform Standards of Professional Appraisal Practice Update Seminar.

Experience: Wheeler & Klusza, Inc., Lakeland, Florida
1973 to 1976 - appraiser of residential properties
Bill Wheeler, MAI and Dick Klusza, MAI

Chain-O-Lakes Realty, Inc., Winter Haven, Florida
1977 to 1981 - Appraiser of residential and commercial properties
George Cuddeback, MAI

Dale Hayes & Associates, Lakeland, Florida
1981 to 1986 - Appraiser of commercial properties
Dale Hayes, MAI

Reed Appraisal Company, Lakeland, Florida
1986 to 1993 - Appraiser of all property types
Stan Reed, MAI

Mancuso Appraisal Services, Winter Haven, Florida
1993 to 1998 - Appraiser of all property types
Nicholas Mancuso, MAI

String Appraisal Services, Winter Haven, Florida
1998 to present – Appraiser of all property types

Associations: MAI member of the Appraisal Institute - #7993
State-Certified General Real Estate Appraiser - #RZ96

Clients: US Department of Navy, US Air Force, US Office of Valuation Services, US Department of Fish & Wildlife, US Department of Agriculture -Natural Resource Conservation Service, Florida Department of Environmental Protection, Florida Department of Agriculture & Consumer Services - Florida Forest Service, South Florida Water Management District, Southwest Florida Water Management District, St. Johns River Water Management District, The Nature Conservancy, Conservation Florida, Sarasota Conservation Foundation, Conservation Foundation of the Gulf Coast, Farm Credit, AgAmerica, Brevard County, Charlotte County, Highlands County, Pasco County, Polk County, Sarasota County, City of Winter Haven, Truist Bank, Regions Bank, Wells Fargo, TD Bank, SouthState Bank, Citizens Bank & Trust, Citizens First Bank, Bank of Central Florida, and numerous attorneys and accountants.

Properties: Environmentally sensitive land, cattle ranches, farm land, sod farms, citrus groves, landscape nurseries, wetlands, 400± properties to be or encumbered by conservation easements, submerged land, residential subdivisions, mobile home parks, fish camps, shopping centers, retail strip plazas, medical offices, professional offices, retail stores, industrial properties, restaurants, apartment complexes, condominium developments, churches, funeral homes, veterinarian clinics, dental offices, and more than 12,000 single family residences.

ASSUMPTIONS AND LIMITING CONDITIONS

In accepting this appraisal report, the client agrees that the legal description set forth herein correctly describes the property being appraised.

The appraiser, by reason of this report, is not required to give court testimony unless prior arrangements have been made.

Certain information used in compiling this report was furnished to the appraiser by outside sources which is considered reliable. The appraiser, however, does not warrant the accuracy of such data, although so far as possible it has been checked and is believed to be correct.

The value reported herein is subject to those exceptions reported in American Government Services Corporation "Property Information Report File 33165-R dated August 16, 2024 – a copy of which can be found in the addenda of this report.

The appraiser did not receive a survey of the subject property and no responsibility is assumed for such. Sketches, drawings, maps, and exhibits provided in this appraisal report have been included only as an aid to assist the reader in visualizing the subject property.

It is assumed that the subject property is in full compliance with all federal, state, and local environmental laws and regulations, unless non-compliance is stated, defined, and considered in the report.

Unless otherwise stated in this report, hazardous materials or environmental contamination, which may or may not be present, has not been observed by this appraiser. The appraiser has no knowledge of hazardous materials or environmental contamination on this property and is not qualified to detect either hazardous materials or environmental contamination. The existence of hazardous materials or environmental contamination may affect the value of the property being appraised. The reported value estimate is predicated on the assumption that there are no such materials or conditions on, in, or near this property that would cause a loss in value. No responsibility is assumed for such conditions, or for the expertise required to detect or identify hazardous materials or environmental contamination.

It is assumed that all applicable zoning and land use regulations have been complied with, unless nonconformity has been stated, defined and considered in this report.

Acceptance of and/or use of this report constitutes acceptance of the foregoing General Assumptions and General Limiting Conditions.

HYPOTHETICAL CONDITIONS

A "Hypothetical Condition" is:

> "A condition that is presumed to be true when it is known to be false. It is also "a condition, directly related to a specific assignment, which is contrary to what is known by the appraiser to exist on the effective date of the assignment results, but is used for the purpose of analysis."
>
> Source: Appraisal Institute "The Dictionary of Real Estate Appraisal, 6th Edition.

Hypothetical conditions may be used in an assignment, only if:

- The use of the hypothetical condition is clearly required for legal purposes, for purposes of reasonable analysis, or for purposes of comparison;
- The use of the hypothetical condition results in a credible analysis, and;
- The appraiser complies with the disclosure requirements set forth in USPAP for hypothetical conditions.

1. There are no Hypothetical Conditions.

EXTRAORDINARY ASSUMPTION

An "Extraordinary Assumption" is:

> "An Assumption, directly related to a specific assignment, as of the effective date of the assignment results, which, if found to be false, could alter the appraiser's opinions or conclusions. Extraordinary Assumptions presume as fact otherwise uncertain information about physical, legal, or economic characteristics of the subject property; or about conditions external to the property such as market conditions or trends; or about the integrity of data used in an analysis."
>
> Source: Appraisal Institute "The Dictionary of Real Estate Appraisal, 6th Edition.

Extraordinary assumptions may be used in an assignment, only if:

- It is required to properly develop a credible opinion and conclusion;
- The appraiser has a reasonable basis for the extraordinary assumption;
- The use of the extraordinary assumption results in a credible analysis, and;
- The appraiser complies with the disclosure requirement set forth in USPAP for extraordinary assumption.

1. C-4 zoning does not allow multifamily development; however, according to Winter Haven Senior Planner Heather Reuter, CPM, the C-4 zoning could be down zoned to C-3,

which does allow multifamily development. Townhomes are acceptable but only if they are not individually platted. For appraisal purposes, I am assuming that a zoning from C-4 to C-3 is a reasonable assumption based upon the planner's comment. The use of this Extraordinary Assumption might have affected the assignment results.

Note: The distinction between the two lies in the potential reliability of the assumption. A *hypothetical condition* assumes a condition which is known to be contrary to fact whereas an *extraordinary assumption* assumes a condition or a fact which is merely unknown or uncertain. The results of an analysis involving any *hypothetical conditions* are known to not be reflective of what exists because the assumptions on which they are predicated are contrary to fact. The results of an analysis involving *extraordinary assumptions* are only potentially not reflective of what exists to the extent of the uncertainty underlying the assumptions on which the analysis or opinions are predicated.

CERTIFICATE OF APPRAISER

1. I have performed no services, as an appraiser or in any other capacity, regarding the property that is the subject of this report within the three-year period immediately preceding acceptance of this assignment.

2. To the best of my knowledge and belief, the statements of fact contained in this appraisal report upon which the analyses, opinions and conclusions expressed herein are based, are true and correct.

3. The reported analyses, opinions and conclusions are limited only by the reported assumptions and limiting conditions, and is my personal, impartial, and unbiased professional analyses, opinions and conclusions.

4. I have no present or prospective interest in the property that is the subject of this report, and no personal interest with respect to the parties involved.

5. I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.

6. My engagement in this assignment was not contingent upon developing or reporting predetermined results.

7. My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.

8. The analyses, opinions, and conclusions were developed, and this report has been prepared in conformity with the 2024 Uniform Standards of Professional Appraisal Practice, the March 2, 2016 Supplemental Appraisal Standards for the Board of Trustees of the State of Florida, and the (3) Code of Professional Ethics and Standards of Professional Practice of the Appraisal Institute which includes provisions for peer review.

9. I have made a personal inspection of the appraised property which is the subject of this report.

10. No one provided significant real property appraisal assistance to the person signing this certification.

11. The reported analyses, opinions and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute.

12. The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.

13. As of the date of this report, Joseph S. String has completed the continuing education program for Designated Members of the Appraisal Institute.

14. As of the date of this report, Joseph S. String has completed the continuing education requirements for the State Certified General Real Estate Appraiser's license through the State of Florida.

15. In my opinion, as of August 9, 2024, the market value of the subject property in "fee simple" interest, subject to those exceptions identified in American Government Services Corporation "Property Information Report" File 33165-R was $2,245,000.

Extraordinary Assumptions: C-4 zoning does not allow multifamily development; however, according to Winter Haven Senior Planner Heather Reuter, CPM, the C-4 zoning could be down zoned to C-3, which does allow multifamily development. Townhomes are acceptable but only if they are not individually platted. For appraisal purposes, I am assuming that a zoning from C-4 to C-3 is a reasonable assumption based upon the planner's comment. The use of this Extraordinary Assumption might have affected the assignment results.

STRING APPRAISAL SERVICES, INC.

Joseph S. String

Digitally signed by Joseph S. String
DN: cn=Joseph S. String, o=String Appraisal Services, ou, email=sservic2@tampabay.rr.com, c=US
Date: 2024.09.13 07:21:36 -04'00'

Joseph S. String, MAI
Cert Gen RZ96

September 13, 2024
Date Report Signed

EXECUTIVE SUMMARY

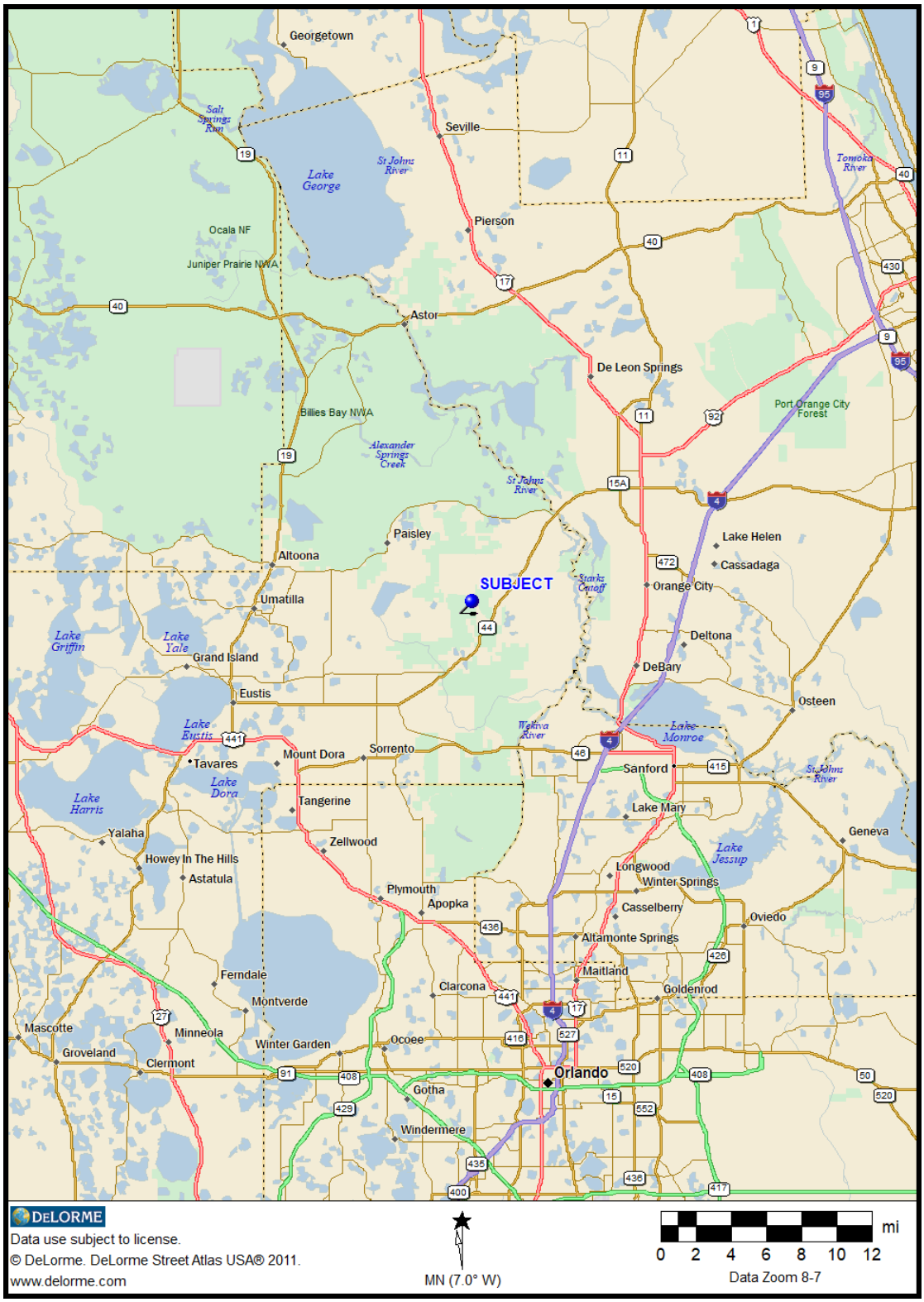
Project Name:	Astute Financial Corporation
File Name:	24-539
PID Number(s):	26-28-05-000000-024010, 26-28-05-000000-024030, 26-28-05-000000-042010, 26-28-08-000000-013030, and 26-28-08-000000-032050 – Polk County, Florida
Owner:	Astute Financial Corporation 3 Strathearn Road Toronto ON M6C 1R2 Canada
Appraiser:	Joseph S. String String Appraisal Services, Inc. 6039 Cypress Gardens Boulevard, #420 Winter Haven, Florida 33884
Dates:	Date of Inspection – August 9, 2024 Date of Value – August 9, 2024 Date of Report – September 13, 2024
Interest Appraised:	Fee Simple Interest – subject to those exceptions identified in American Government Services Corporation "Property Information Report File 33165-R dated August 16, 2024.
Parcel Size:	20.91 Upland Acres (12.9%) 141.12 Wetland Acres (87.1%) 162.03 Total Acres (100.0%)
History and Listing, Sales Contract:	There have been no transactions involving the subject property in the past ten years. Approximately 17 acres of usable uplands on the west side of U.S. Hwy 17 is listed for sale with Realtor Steve Lockhart of Lockhart & Associates, Inc. for $1,150,000 ($67,647/acre). It has been listed for about two-years. Approximately 8.5-acres of useable uplands on Brigham Road is listed with Realtor Steve Lockhart of Lockhart & Associates, Inc. for $850,000($100,000/acre). It has been listed for about two-years. I am not aware of any pending contracts.
Parcel Access:	The three non-contiguous subject property has access from U.S. Hwy 17, U.S. Hwy 92, and Brigham Road.

Improvements:	None
Zoning/Land Use:	Winter Haven Zoning – R-1, R-3, C-4, & CON Winter Haven Future Land Use – NS, NSUB, CON
Assessed Value:	2023 Just Value - $59,689 ($368/acre) 2023 Taxable Value - $58,605 ($362/acre) 2023 Taxes - $1,134.40 ($7.00/acre) Based upon 162.03-acres per property appraiser
Utilities:	Electric, telephone, cable, water, and sewer services are available
Flood Zone Information:	FEMA Panel 12105C0355G dated December 22, 2016 – This map clearly shows that 6% of the subject property lies within Flood Zone "X" and 94% lies within Flood Zone "AE."
OGM Rights:	I found no evidence to suggest that there is outstanding oil, gas, and/or mineral reservations. For appraisal purposes, I am assuming that all oil, gas, and mineral rights are retained by the underlying fee owner.
Easements:	The Title Policy revealed potential sources but nothing specific to the subject property – See Page 16. There are also three billboard leases, one month to month and two that terminate in March 2025.
Highest & Best Use:	The highest and best use is (1) multifamily development for 20.91-acres and (2) water storage, water purification, and/or mitigation for the 141.12-acres of wetlands and unusable land.
Present Use:	Vacant and undeveloped
Opinion of Value:	Multifamily Land: $1,955,000 Wetlands/Unusable Land: $ 290,000 * Market Value: $2,245,000 * This represents a 10% discounted net value to account for being sold off to another buyer, so the $2,245,000 Market Value already accounts for any issues involving the sum or the parts.
Hypothetical Conditions:	None
Extraordinary Assumption:	C-4 zoning does not allow multifamily development; however, according to Winter Haven Senior Planner Heather Reuter, CPM, the C-4 zoning could be down zoned to C-3, which does allow multifamily development. Townhomes are acceptable but only if they are not individually platted. For appraisal purposes, I am

assuming that a zoning from C-4 to C-3 is a reasonable assumption based upon the planner's comment. The use of this Extraordinary Assumption might have affected the assignment results.

Sales Index Prices: Multifamily 20.91-acres: $7,083 to $11,713 per unit
Wetlands/Unusable Land 141.12-acres: $1,790 to $2,600 per acre

LOCATION MAP



PART TWO - PREMISES OF THE APPRAISAL

SCOPE OF APPRAISAL

The purpose of this assignment is to establish market value, including opinions for exposure period and marketing time, as of the date of the field inspection – August 9, 2024. The client for this assignment is Polk County Parks & Natural Resources. The intended users include the client, Polk County, a political subdivision of the State of Florida, the City of Winter Haven, and the Trustees of the Internal Improvement Trust Fund of the State of Florida. The intended users will rely upon the analysis, opinions, and conclusions to make internal decisions regarding the potential acquisition of the fee simple interest in the subject property. As such, the appraiser had to inspect, investigate, research, and present information, data, and analysis necessary to produce a credible value and/or result.

This appraisal assignment began with a collection of legal descriptions, public information, and various maps available on the Internet. Factual data was then collected on the subject property from the Polk County Property Appraiser's office, the Polk County Tax Collector, the Polk County Clerk's office, the Polk County Planning Department, and appropriate utility departments. In addition, the appraiser reviewed plat maps, tax maps, topographic maps, flood maps, soil maps, and aerial photographs; including the title, data, maps, and exhibits provided to the appraiser by the client.

I next conducted a field inspection of the subject property. Brooke Moherek with the Polk County Parks and Natural Resources arranged the inspection for August 9, 2024 at 10:00 AM with the owner's representative Relator Steve Lockhart of Lockhart & Associates, Inc. Attendees included Brooke Moherek and Bryan Finders with Polk County Parks and Natural Resources, Realtor Steve Lockhart of Lockhart of Lockhart & Associates, Inc. (owner's representative), Tod Marr, MAI of Tod Marr & Associates (contract appraiser), Joseph S. String, MAI of String Appraisal Services (contract appraisers), and Nick Mancuso, MAI of Mancuso Appraisal Services, Inc. (contract review appraiser). The initial meeting allowed the owner's representative to provide information he deemed important in the appraisal of the property. It also allowed the appraisers to ask question relative to what was to be appraised, location, perimeter boundaries, and information about potential uses, listings, offers, and contracts. The field inspection allowed me to identify the quality and condition of access and note the perimeter boundaries of the subject property, the types of vegetation, and the improvements. It also allowed me to take representative photographs that would later be incorporated into the completed appraisal report. Following the inspection of the subject property, I proceeded to make a cursory inspection of the surrounding neighborhood paying special attention to listings, existing land uses, new development, public work projects, supply/demand factors, trends, and other economic and real estate indicators.

Following the collection of the relevant data and the field inspection, I then began to determine the highest and best use of the property – as vacant. The importance of highest and best use analysis cannot be overemphasized, as it lays the foundation for the valuation process and determines the approaches, techniques, and market data to be considered in estimating market value. If the appraiser determines an incorrect highest and best use, then there is a high probability that the resulting market value will also be incorrect.

The appraiser has three approaches that can be used to estimate market value, i.e., the Cost Approach, the Sales Comparison Approach, and the Income Approach. The Cost Approach and the Income Approach apply only to improved properties, whereas the Sales Comparison Approach applies to both improved and unimproved properties. The value conclusions indicated by each relevant approach are then correlated into one final value conclusion, based upon the appropriateness, the accuracy, the quantity of data, and the quality of data for each approach used in the valuation process. Since the subject property is vacant and undeveloped land, the only relevant approach is the Sales Comparison Approach.

INTENDED USER/INTENDED USE

The client for this assignment is Polk County Parks & Natural Resources. The intended users include the client, Polk County, a political subdivision of the State of Florida, the City of Winter Haven, and the Trustees of the Internal Improvement Trust Fund for the State of Florida. The intended users will rely upon the analysis, opinions, and conclusions to make internal decisions regarding the potential acquisition of the fee simple interest in the subject property.

PURPOSE OF APPRAISAL

The purpose of this assignment is to develop an opinion of market value for the subject property, including opinions of exposure and marketing times, as of the date of the field inspection – August 9, 2024. *Market Value*, as used in this appraisal report, is defined as:

> *"Market Value"* means the most probable price which a property should bring in a competitive and open market under all conditions, requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition are the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:
>
> 1. Buyer and seller are typically motivated;
> 2. Both parties are well informed or well advised, and acting in what they consider their own best interests;
> 3. A reasonable time is allowed for exposure in the open market;
> 4. Payment is made in terms of cash in U.S. dollars or in terms of financial arrangements comparable thereto; and
> 5. The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.

Source: The March 2, 2016 Supplemental Appraisal Standards for the Board of Trustees guidelines.

PROPERTY RIGHTS APPRAISED

The interest appraised is "fee simple interest." The definition of fee simple interest is provided below:

> "Absolute ownership unencumbered by any other interest or estate, subject only to the limitations imposed by the governmental powers of taxation, eminent domain, police power, and escheat."
>
> Source: Appraisal Institute – The Dictionary of Real Estate, 5th Edition
>
> Under this premise, the owner is assumed to retain all of the individual rights that form the bundle of rights, i.e., the right of ingress/egress, the right to prevent ingress/egress of others, the right of use, the right of occupancy, the right to lease, the right to sell, the right to give it away, the right to do nothing, etc. As long as none of the rights are severed from the bundle of rights, the owner is said to have "fee simple interest" in the property.

Title Insurance Policy – the appraiser was provided American Government Services Corporation "Property Information Report" AGSC File No.: 33165-R, a complete copy of which can be found in the addenda of this report. I have read the report in detail and offer the following comments:

Reservation of right of ingress and egress for the purpose of maintaining, repairing, and/or enlarging any and all canals, sluiceways, dikes and other works in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

Reservation of easement for road right-of-way in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

Reservation of oil, gas and mineral rights in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

This represents a deed from the Trustees of the Internal Improvement Trust Fund of the State of Florida to Henry A. Marks on July 9, 1925 for 131-acres; reserving unto itself the right of entry to construct canals, cuts, sluiceways, dikes or other works; a strip of land 130-feet on either side of a centerline of any canal, cut, sluiceway, or dike, an undivided three-fourths (¾) interest in and to an undivided three fourths interest in all phosphate, minerals, and metals, and an undivided one-half (½) interest in and title to an undivided one-half interest to all the petroleum. The State of Florida will not release the OGM rights; however, for a $300 fee they will release the right of entry which essentially prevents exploration and extraction. This has no negative impact on market value.

EFFECTIVE DATE OF APPRAISAL

The effective date of this appraisal is August 9, 2024, representing the date of the field inspection of the subject property. This appraisal was written between September 1, 2024 and September 9, 2024.

EXPOSURE PERIOD

This is defined as the "estimated length of time the property interest being appraised would have been offered on the market prior to the hypothetical consummation of a sale at market value on the effective date of appraisal; a retrospective opinion based on an analysis of past events assuming a competitive and open market." Based upon discussions with market participants, confirmation of the comparable sales and in a few instances the actual known days on the market of the comparable sales, the exposure period for the subject property is estimated at four months. The table below shows the exposure period for the four sales used in this appraisal assignment.

SALE NO.	SALE DATE	PRICE	TIME ON MARKET
Sale #1	04-25-2023	$3,350,000	Three Months
Sale #2	07-22-2022 08-11-2022	$780,000	Three to Four Months
Sale #3	06-29-2024	$1,650,000	Immediately after contract was withdrawn
Sale #4	02-24-2023	$425,000	Five Months

MARKETING TIME

This is defined as an opinion as to the amount of time it might take to sell the interest in real property at the concluded market value during the period immediately after the effective date of appraisal. Marketing time differs from exposure time, which always precedes the effective date of appraisal. Based upon discussions with market participants, confirmation of comparable sales, and knowledge of the real estate market, coupled with future expectations in the market, a marketing time of six months for the subject property is reasonable given beginning signs of a slowdown.

PART THREE – PRESENTATION OF DATA

PROPERTY IDENTIFICATION

The subject of this appraisal assignment represents three non-contiguous tracts of vacant land totaling 162.03-acres located on both sides of U.S. Hwy 17 and both sides of U.S. 92, southwest of Lake Alfred, on the north side of Winter Haven, Florida. There is no physical address for the subject property. The property is currently vested to Astute Financial Corporation and identified by the Polk County Property Appraiser as PID Numbers 26-28-05-000000-024010, 26-28-05-000000-024030, 26-28-05-000000-042010, 26-28-08-000000-013030, and 26-28-08-000000-032050. Below is the legal description of the subject property:

AGSC File No.: 33165-R

Exhibit "A"

The South ½ of the Southwest ¼ Less right-of-way for State Road 600; All that part of the South ½ of U.S. Government Lot 3 which lies West of the right-of-way for State Road 555, all lying in Section 5, Township 28 South, Range 26 East, Polk County, Florida.

AND

All that part of U. S. Government Lot 2 and U. S. Government Lot 3 lying West of State Road 555 and lying North of Brigham Road (formerly known as Elfenbein Road), lying in Section 8, Township 28 South, Range 26 East, Polk County, Florida.

LESS and EXCEPT the following:

Commence at the Northwest corner of the South one-half of U.S. Government Lot 3 in Section 8, Township 28 South, Range 26 East, Polk County, Florida, run thence South along the West boundary of said Lot 3, 128.70 feet, thence East, 124.74 feet, thence South 09°57'00" West, 25.45 feet to a point on the Southerly right-of way of Brigham Road, thence North 88°06'21" East along said right-of-way, 529.35 feet, to the P.C. of a curve concave to the Southwest having a radius of 255.00 feet, thence continue along said right-of-way and said curve through a central angle of 43°31'39", an arc distance of 193.72 feet, a chord distance of 189.10 feet, a chord bearing of South 69°07'49" East to the P.T. of said curve, thence continue along said right-of-way, South 47°22'00" East, 561.68 feet, thence continue along said right-of way, South 89°34'00" East, 756.44 feet to its intersection with the Westerly right-of-way of U.S. 17, thence North 00°45'46" East, along said right-of-way, 50.00 feet to a point on the Northerly right-of-way of Brigham Road and the Point of Beginning. Run thence North 00°45'46" East, along the Westerly right-of-way of U.S. 17, 425.00 feet, thence North 89°34'00" West, parallel with Brigham Road leaving said right-of-way, 950.00 feet, thence South 00°45'46" West parallel with the Westerly right-of-way of U.S. 17, 233.25 feet to a point on the Northeasterly right-of-way of Brigham Road, thence South 47°22'00" East along said right-of way, 285.46 feet, thence continue along said right-of-way, South 89°34'00" East, 737.43 feet to the Point of Beginning.

The preceding legal description is same one that appears in the "Property Information Report." For appraisal purposes, this legal description is assumed to be correct.

WINTER HAVEN DEMOGRAPHICS

The client, the seller's representative, and the appraiser are well informed as to the location of Winter Haven and its general area demographics, so only a brief summary discussion will be provided. Winter Haven is the second largest city in Polk County, the largest being Lakeland. The growth in Winter Haven has been phenomenal, evidenced by a 2010 Census estimate of 33,874 residents and a 2024 estimate of 59,270 residents. There are a significant number of additional residents in the abutting suburban areas. The Central Florida Development Council estimates that 1.5 million tourists visit Polk County each year. There are more than ten million people living within a 100-mile radius of Winter Haven.

Its economy has been heavily tied to citrus, cattle, and tourism. There have been two major developments that have helped with new job growth:

- CSX affiliate Evansville Western Railway began operations at CSX Intermodal Terminals Inc.'s new Central Florida Intermodal Logistics Center (ILC) in Winter Haven in 2014. Located just off State Road 60, the 318-acre, state-of-the-art facility serves as a centralized hub for transportation, logistics, and distribution for Orlando, Tampa, and South Florida. Surrounded by 930 acres reserved for development of up to 7.9 million square feet of warehouse distribution facilities and light industrial and office facilities.

  The terminal employees 43 CSX employees and can process up to 300,000 containers each year. CSX has forty Intermodal terminals across its network and, CSX representative Kristin Seay stated that the Winter Haven terminal is performing as well as any of the other forty terminals. Winter Haven Growth Management Director Merle Bishop indicated that impact is long term, perhaps as long as five to twenty years, but is eventually expected to create $10 billion in economic impact over ten years.

- Legoland Florida has expanded several times since it opened October 15, 2011 in what had originally been Cypress Gardens. Ever since the grand opening, Merlin Entertainment has continued to expand the number of attractions in the 150-acre theme park. Legoland has expanded several times since opening in October 2-11, its first hotel in 2015, the off-site Legoland Beach Retreat in 2017, and the new Pirate Island Hotel in 2020. Legoland added new improvements in 2021; however, marking their 10th year anniversary.

The City of Winter Haven has been busy with wetland restoration of Lake Conine, re-development of Lake Maude Park, Lake Elbert Trail, Joyce B. Davis Park renovation, Avenue K NE Street re-alignment, outdoor downtown dining, etc. The Department of Transportation has finished the re-alignment of the U.S. 17 / Cypress Gardens Boulevard Intersection and the Cypress Gardens Boulevard / First Street South Intersection. Private development has been busy with several large apartments, new restaurants, and a number of new residential subdivisions. New or proposed developments include 324-unit Annabell Estates, The shoppes at Lake McLeod retail project, 667-lot Willow Brook North and Willow Brook South development, Avenue G

Garden Apartments to be developed using Lego style construction methods, mixed use redevelopment of the Lake Hartridge Church property for 724 apartments and 55,757 square feet of commercial space, Supersize Publix Shopping center on Havendale Boulevard, etc. A large percentage of the downtown business district has been redeveloped into parks, streetscape, parking garage, restaurants, offices, and retail space.

Much of the growth and development is due to the buildout of the areas around Kissimmee to the northeast and the four corners area of Lake, Orange, Osceola, and Polk counties and the Disney Theme Parks. Over the past several years, development continues to move south from the I-4 / U.S. 27 Interchange, with many of the new homeowners electing to commute into the major employment centers around Orlando and the Disney Theme Parks. Haines City, just north of Winter Haven was ranked as one of the fastest growing cities in the nation, with Polk County ranked Number One.

The future for Winter Haven appears solid, supported by expansions of Legoland and the CXS Intermodal Center, redevelopment of the downtown business district, the private ongoing developments and the migration of new residents moving into the area each day. Some slow-down has occurred as the feds began to raise the key interest rates near the end of 2021, from 2.87% on August 12, 2021 to 6.47% on August 8, 2024. Particularly impacted were resales of homes, as the national home builders continued selling by offering incentives like price reductions, free upgrades, mortgage interest rate buydowns, etc. A recent report from a local developer who hired a helicopter to view the area, indicated that while there were a substantial number of new residential units being constructed, the number of concrete slabs were few.

NEIGHBORHOOD

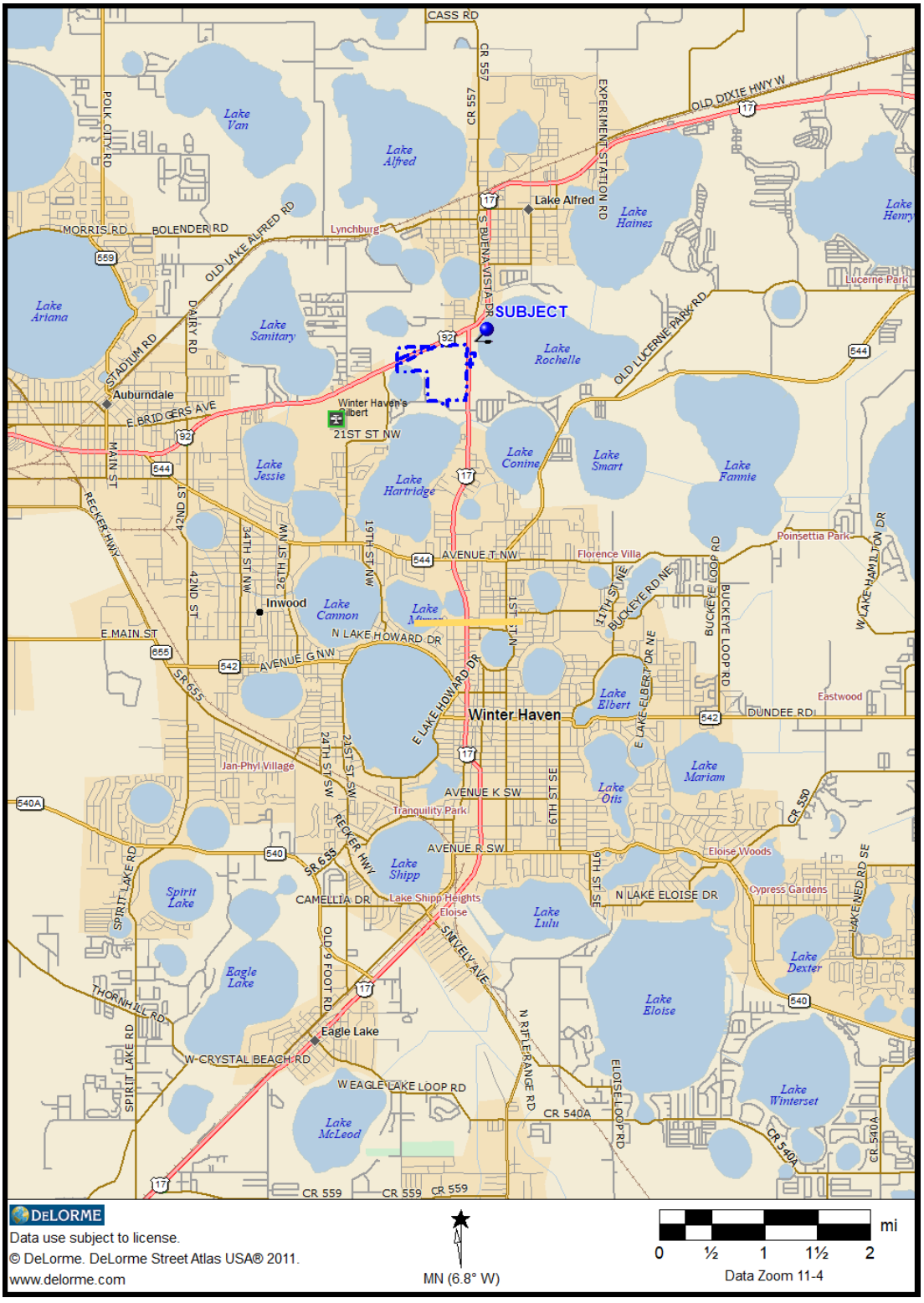
The "Appraisal Institute" defines a neighborhood as a group of complementary land uses that are influenced by similar political, social, economic, and environmental forces. It identifies the area under analysis, and establishes the boundaries from which the appraiser searches for data to be used in the appraisal process. The boundaries for a neighborhood can be based on changes in prevailing land uses, natural features such as lakes, river, and streams, man-made features such as roads, railroads, or canals, or more subtle features such as occupant characteristics. The selection for a neighborhood should be based on political, social, economic, and environmental similarities or differences. Unlike neighborhoods in urban areas, neighborhoods in rural areas tend to be quite large in size due to vast areas of similar property types and uses. Urban neighborhoods tend to be much smaller in size, due to abrupt changes in property types and uses.

The subject property is located on the north side of Winter Haven, southwest of Lake Alfred and east of Auburndale in an older area, where U.S. Hwy 17 and U.S. Hwy 92 converge to form U.S. Hwy 17/92. Both are major arterial roads connecting Winter Haven, Lake Alfred, and Auburndale. Most of the development in this area, whether residential or commercial is older. Numerous lakes and adjacent wetlands have prevented much new development within the area.

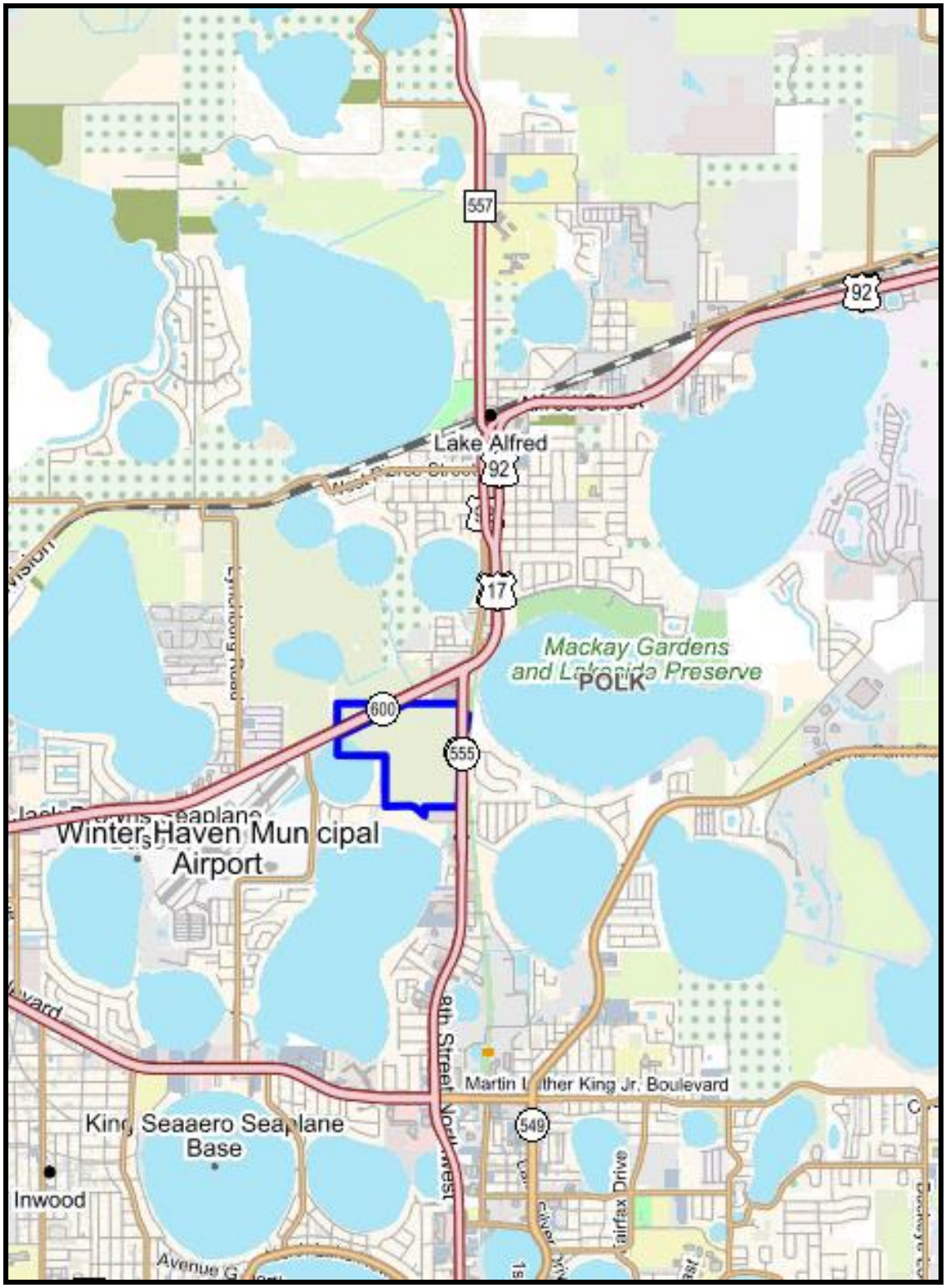
West of the subject property, on the south side of U.S. Hwy 92 is the Winter Haven Regional Airport, a city owned facility that leases industrial space. There is also an older mobile home rental park on the north side of the highway at the corner of Lynchburg Drive. At the southwest intersection of U.S. Hwy 17 and U.S. Hwy 92 is the old Miricle Toyota dealership, now Jarret Gordon Truck and RV repair facility. Nearby are used car lots, a restaurant, a pet grooming facility and an older motor court now rented to tenants on a monthly basis. The Lake Rochell Boat Ramp is just to the northeast in the town of Lake Alfred. There are few older homes north of the intersection but because of Lake Rochelle, Lake Conine, Lake Hartridge, Lake Pansy, Lake George, Lake Echo, Lake Cummings, and Lake Marina as well as the adjacent wetlands that surround some of these lakes, there is not an abundance of land left to develop.

Sanctuary by the Lake is a new residential development located on the east side of U.S. Hwy 17, with frontage on the southwest side of Lake Rochelle that is just about fully developed. An older residential development called Carefree Cove lies just south of Sanctuary by the Lake. Farther south along U.S. Hwy 17 there begins a mix of older commercial development on the northern fringe of Winter Haven. One area I need to mention is the development on Brigham Road. This is a small area of good land sandwiched between Lake Pansy and Lake Hartridge, with several waterfront homesites that have upscale custom built homes. With the exception of a large tract of land located north of U.S. Hwy 92 and east of Lynchburg Road, there is not a lot of good land remaining to be developed. Of the 162.03-acres of the subject property, there is about 20.91-acres of good land that appears developable.

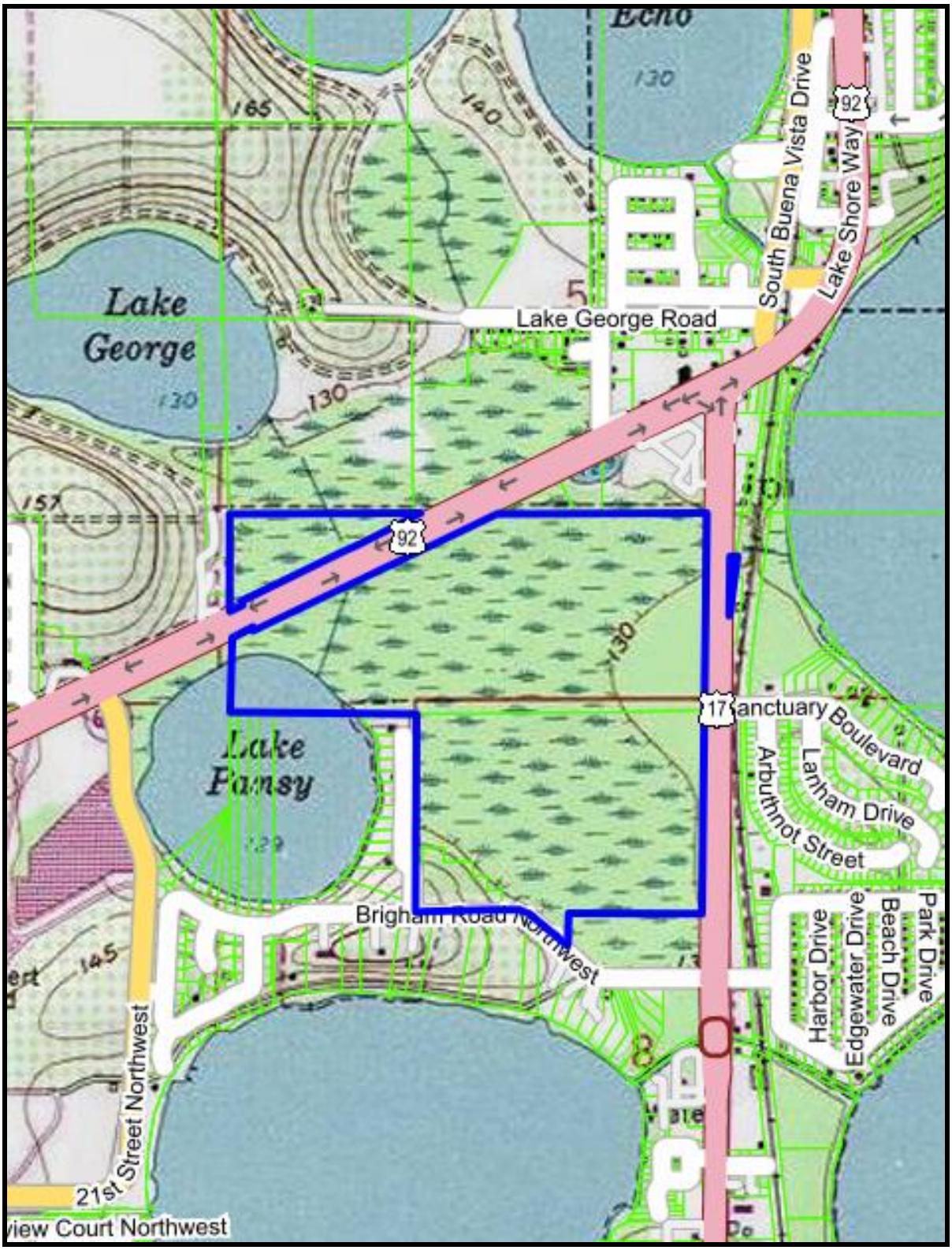
AREA MAP


SUBJECT
CASS RD
CR 557
OLD DIXIE HWY W
EXPERIMENT STATION RD
Lake Van
Lake Alfred
Lake Haines
Lake Henry
Lucerne Park
POLK CITY RD
MORRIS RD
BOLENDER RD
OLD LAKE ALFRED RD
Lynchburg
S BUENA VISTA DR
Lake Ariana
DAIRY RD
Lake Sanitary
Lake Rochelle
OLD LUCERNE PARK RD
STADIUM RD
Auburndale
E BRIDGERS AVE
Winter Haven's Albert
21ST ST NW
MAIN ST
Lake Jessie
Lake Hartridge
Lake Conine
Lake Smart
Lake Fannie
RECKER HWY
2ND ST
34TH ST NW
26TH ST NW
19TH ST NW
AVENUE T NW
Florence Villa
Poinsettia Park
Inwood
Lake Cannon
E MAIN ST
N LAKE HOWARD DR
AVENUE G NW
SR 655
1ST ST N
11TH ST NE
BUCKEYE RD NE
BUCKEYE LOOP RD
W LAKE HAMILTON DR
Winter Haven
E LAKE HOWARD DR
Lake Elbert
E LAKE ELBERT DR NE
DUNDEE RD
Eastwood
Jan-Phyl Village
24TH ST SW
21ST ST SW
AVENUE K SW
Tranquility Park
6TH ST SE
Lake Otis
Lake Mariam
CR 550
AVENUE R SW
RECKER HWY
Lake Shipp
9TH ST SE
Eloise Woods
N LAKE ELOISE DR
Cypress Gardens
SPIRIT LAKE RD
Spirit Lake
CAMELLIA DR
Lake Shipp Heights
Eloise
Lake Lulu
LAKE NED RD SE
OLD 9 FOOT RD
SWIVELY AVE
Eagle Lake
Lake Dexter
THORNHILL RD
Lake Eloise
N RIFLE RANGE RD
Eagle Lake
W CRYSTAL BEACH RD
W EAGLE LAKE LOOP RD
ELOISE LOOP RD
CR 540A
Lake Winterset
Lake McLeod
CR 559
DeLORME
Data use subject to license.
© DeLorme. DeLorme Street Atlas USA® 2011.
www.delorme.com
MN (6.8° W)
mi
0 ½ 1 1½ 2
Data Zoom 11-4

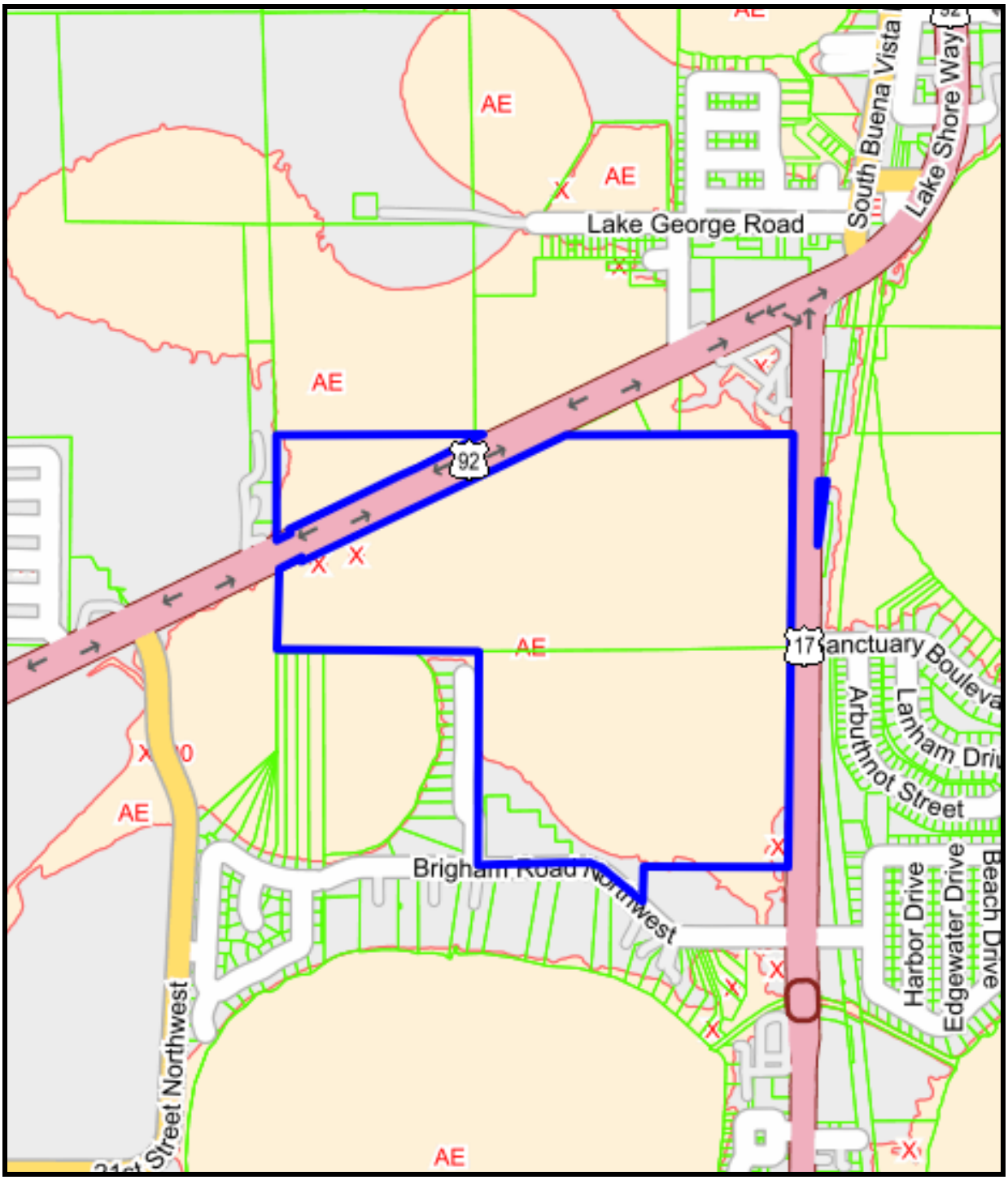
NEIGHBORHOOD MAP



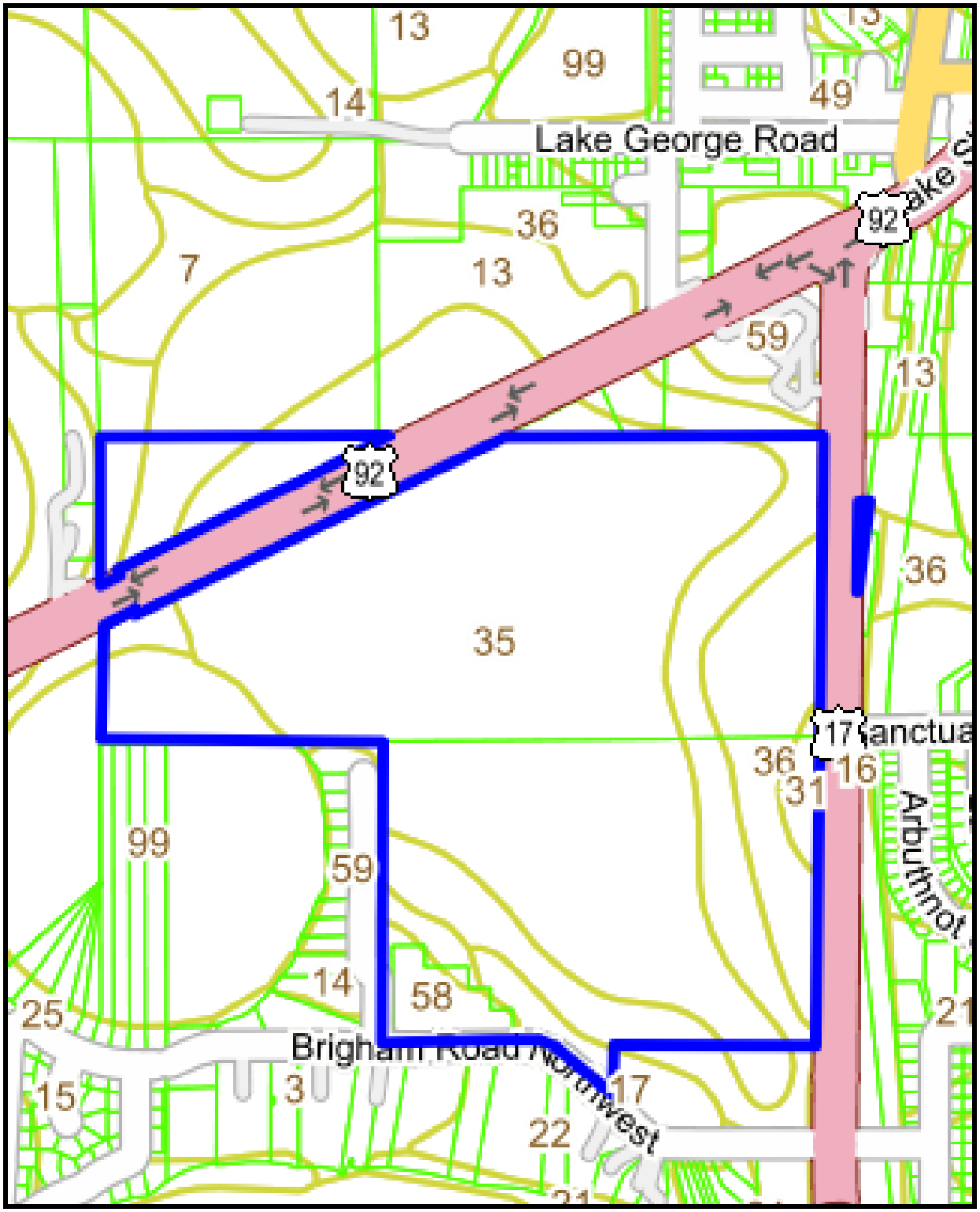
TOPOGRAPHIC MAP



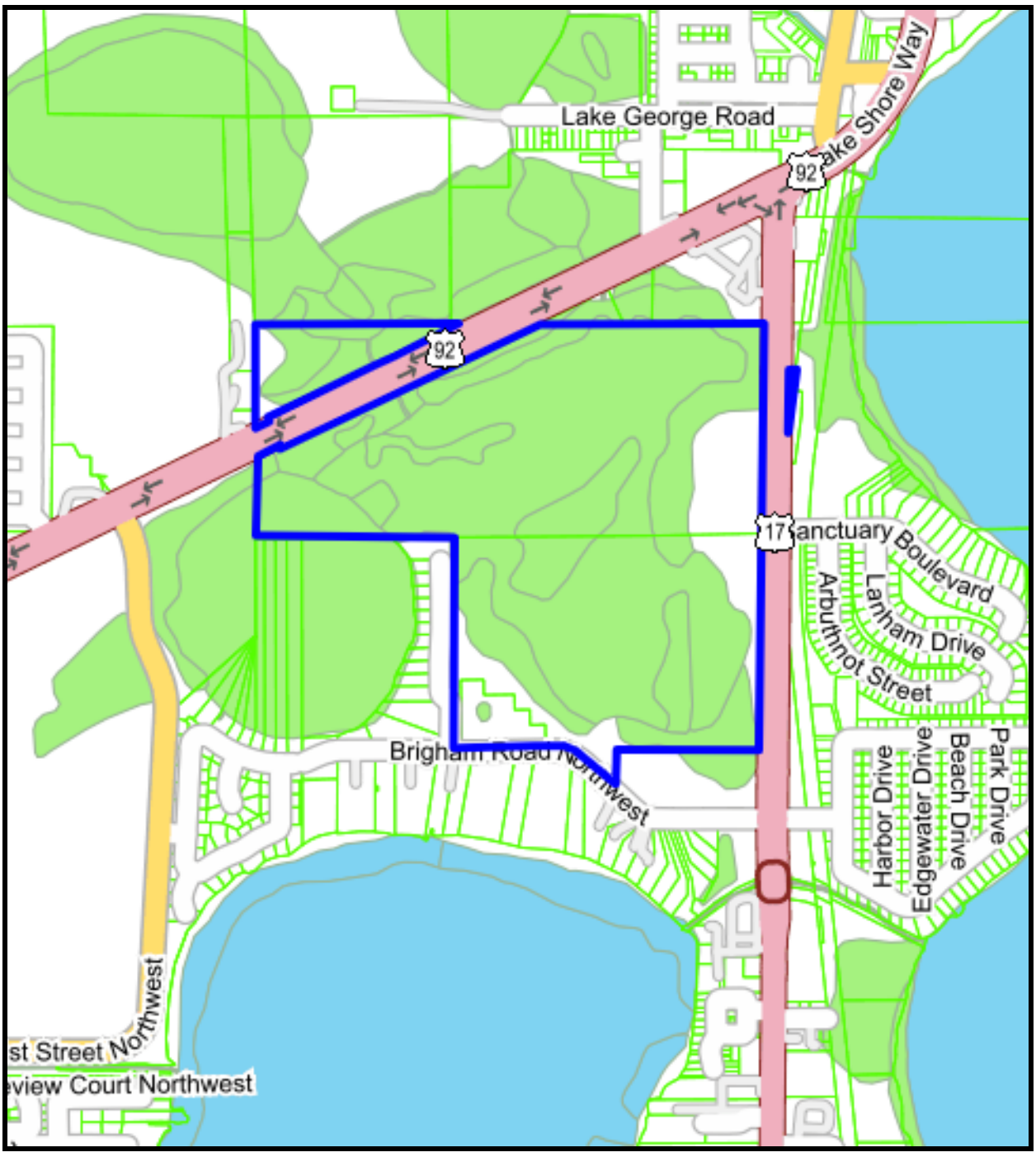
FEMA FLOOD MAP



SOIL MAP


13
99
14
49
Lake George Road
92
36
7
13
59
13
92
36
35
17
36
16
31
99
59
14
58
25
Brigham Road Northwest
15
3
17
22

UPLAND / WETLAND MAP



WINTER HAVEN ZONING MAP



WINTER HAVEN FUTURE LAND USE MAP



AERIAL MAP

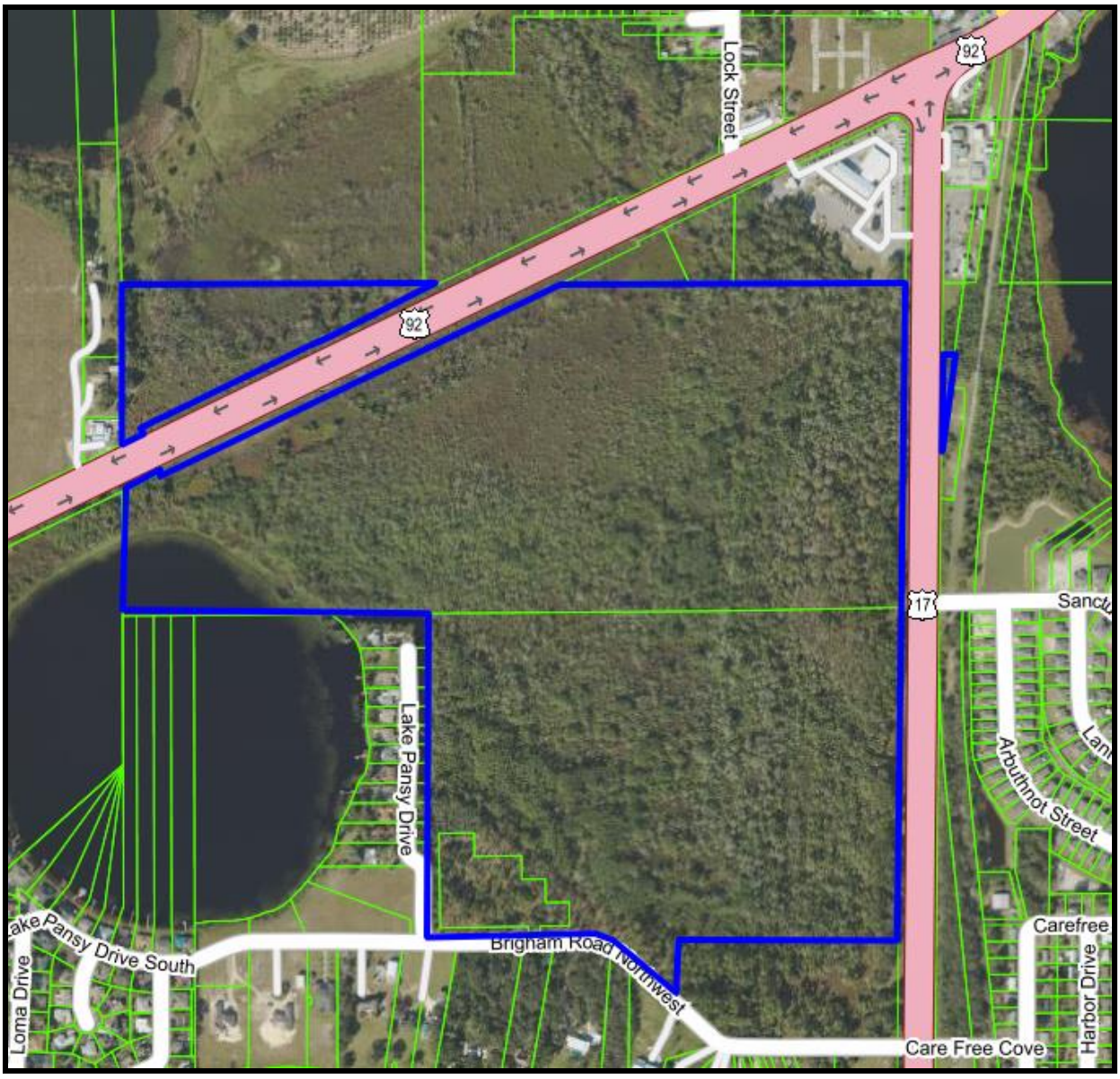

Lock Street
92
92
17
Lake Pansy Drive
Arbuthnot Street
Carefree
Harbor Drive
Brigham Road Northwest
Lake Pansy Drive South
Loma Drive
Care Free Cove



PHOTO #1 (08/11/2024) – U.S. HWY 17 LOOKING SOUTH – SUBJECT OPPOSITE SIDE



PHOTO #2 (08/11/2024) – U.S. HWY 17 LOOKING SOUTH – SUBJECT OPPOSITE SIDE



PHOTO #3 (08/11/2024) – LARGER SUB-PARCEL LOOKING WEST FROM US HWY 17



PHOTO #4 (08/11/2024) – SW CORNER OF LARGER SUB-PARCEL ON BRIGHAM ROAD



PHOTO #5 (08/11/2024) – BRIGHAM ROAD LOOKING EAST – SUBJECT ON LEFT



PHOTO #6 (08/11/2024) – BRIGHAM ROAD LOOKING WEST – SUBJECT ON RIGHT



PHOTO #7 (08/11/2024) – FOR SALE SIGN ON BRIGHAM ROAD



PHOTO #8 (08/11/2024) – SUBJECT LOOKING NORTH FROM BRIGHAM ROAD



PHOTO #9 (08/11/2024) – U.S. HWY 92 LOOKING WEST – SUBJECT ON BOTH SIDES



PHOTO #10 (08/11/2024) – U.S. HWY 92 LOOKING EAST – SUBJECT ON BOTH SIDES



PHOTO #12 (08/11/2024) – VIEW OF SUB-PARCEL NORTH OF U.S. HWY 92



PHOTO #13 (08/11/2024) – VIEW OF SUB-PARCEL NORTH OF U.S. HWY 92



PHOTO #14 (08/11/2024) – VIEW OF SUB-PARCEL SOUTH OF U.S. HWY 92



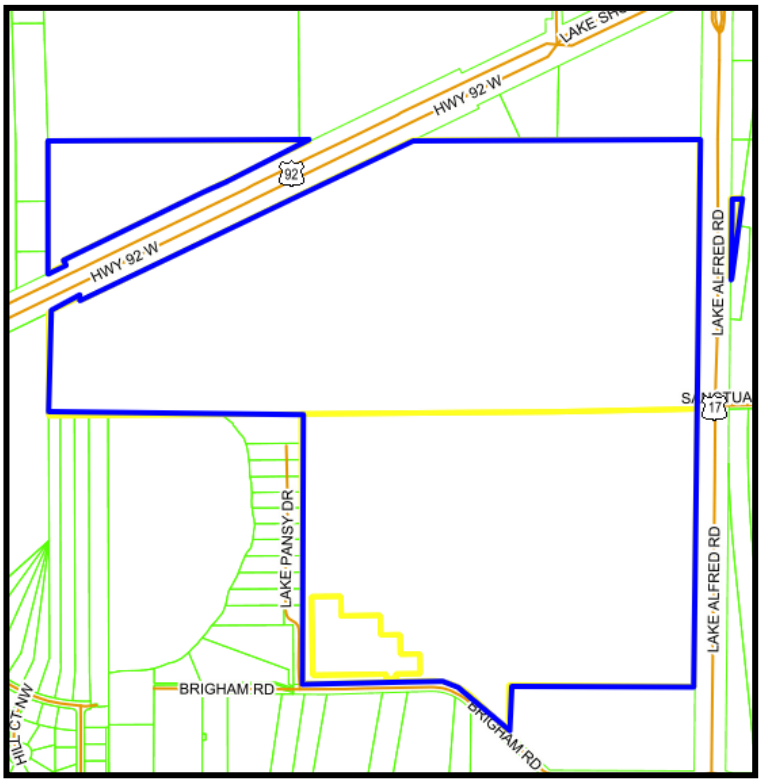
PHOTO #15 (08/11/2024) – VIEW OF SUB-PARCEL SOUTH OF U.S. HWY 92

SUBJECT DESCRIPTION

Location: The property being appraised represents three non-contiguous tracts of vacant land totaling 162.03-acres located on both sides of U.S. Hwy 17 and both sides of U.S. 92, southwest of Lake Alfred, on the north side of Winter Haven, Florida. There is no physical address for the subject property.

Census Tract: The majority of the subject is in Census Tract 0134.00. The small sliver on the east side of U.S. Hwy 17 is in Census Tract 0136.01

Access: The three subject sub-parcels have access via U.S. Hwy 92, U.S. Hwy 17, and/or Brigham Road.



- The largest sub-parcel has 2,000 lineal feet of frontage on the south side of U.S. Hwy 92, 2,775 lineal feet of frontage on the west side of U.S. Hwy 17, and 1,000 lineal feet of frontage on the north side of Brigham Road.
- The second largest sub-parcel and 1,500 lineal feet on the north side of U.S. Hwy 92.
- The smallest sub-parcel has 400 lineal feet of frontage on the east side of U.S. Hwy 17, which is also known as Lake Alfred Road

According to the Florida Department of Transportation, the 2023 traffic counts for U.S. Hwy 17 was 27,000 vehicles and the 2023 traffic county for U.S. Hwy 92 was 25,500 vehicles.

Shape: These are three highly irregular non-contiguous sub-parcels- (1) the largest one on the west side of U.S. Hwy 17, south side of U.S. Hwy 92, and north side of Brigham Road, (2) the second largest one on the north side of U.S. Hwy 92, and a narrow non-economic sliver on the east side of U.S. #17.

Size: A survey of the subject property was not available. The only available source is the 162.03-acres being reported by the records of the Polk County Property Appraiser. For appraisal purposes, I intend to use 162.03-acres, subject to survey.

Topography: Below is a short discussion of each of the three sub-parcels.

Sub-Parcel #1: this represents the largest contiguous sub-parcel that contains 151.80-acres, identified as Tax Parcels 26-28-05-000000-024010, 26-28-08-000000-013030, and 26-28-08-000000-032050. The highest elevation of 145-feet above sea level occurs in the southwest corner. The elevation drops rapidly downward to 130-feet above sea level and is essentially flat over the balance of the sub-parcel. The area between 130 and 145-feet in elevation is (4340) Upland Hardwood. The balance of the sub-parcel is a mix of (6150) Stream & Lake Swamp, (6410) Freshwater Marsh / Graminoid Prairie, and (6440) Emergent Aquatic Vegetation. There is an abundance of invading exotic vegetation such as Brazilian Pepper, Melaleuca, etc.

Sub-Parcel #2: this represents the second largest contiguous sub-parcel that contains 9.99-acres, identified as Tax Parcel 26-28-05-000000-042010. This is a flat sub-parcel with a consistent elevation of 130-feet above sea level. Wetland land uses include (6150) Steam & Lake Swamp and (6410) Freshwater Marsh / Graminoid Prairie, but like the other sub-parcels has invasive exotic vegetation.

Sub-Parcel #3: this represents a narrow uneconomic sliver of land that contains 0.24-acres, identified as Tax Parcel 26-28-05-000000-024010. This is a flat strip with an elevation of 130-feet above sea level with a land use of (1900) Residential Vacant Land.

Flood Zone: All three sub-parcels are found on FEMA Map 12105C0355G, with an effective date of December 22, 2016, a copy of which has been presented as one of the exhibits. This map clearly shows:

Sub-Parcel #1 – two areas, one in the southwest corner and the other fronting U.S. Hwy 17, have 8.50-acres and 0.76-acres zoned "X," respectively. The balance is zoned "AE."

Sub-Parcel #2 – one small area on the west boundary of 0.52-acres is zoned "X," with the balance zoned "AE."

Sub-Parcel #3 – this entire sub-parcel is zoned "X."

Zone "X" – Flood Zone X is a designation on a flood map that indicates an area with moderate-to-low risk for floods. FEMA actually has two distinct flood zones with this designation: one shaded and one unshaded. Flood Zone X (shaded) indicates an area where the annual flood risk is between 1% and 0.2%. This is considered a moderate risk. When Zone X is unshaded, the risk for flood is less than 0.2 % and may be protected from 100-year flood by a levee.

Zone "AE" - Flood Zone AE is an area designated as **a high-risk flood zone** by FEMA because of its proximity to floodplains, rivers, lakes, and other bodies of water. AE flood zone areas

have a 1% risk of flooding annually with a 26% risk of flooding over the course of a 30-year mortgage. Homes in Flood Zone AE may be close to floodplains, rivers, and lakes or in a low-lying region. Zone AE is one of the many Special Flood Hazard Areas defined by the FEMA.

Soils: According to the NRCS Soil Map, there are twelve different soils found on the three sub-parcels, as summarized below:

Map Unit #	Map Name	Acres	Percentage
3	Candler sand	0.40	0.2
13	Samsula muck	28.70	17.2
16	Urban land	0.90	0.5
17	Smyrna and Myakka fine sands	3.0	1.8
22	Pomello fine sand	0.10	0.0
25	Placid and Myakka fine sands, depressional	1.60	1.0
31	Adamsville fine sand	2.60	1.6
35	Hontoon muck	101.60	60.8
36	Basinger mucky fine sand	16.10	9.6
58	Udorthents, excavated	4.30	2.6
59	Arents-Urban land complex	1.70	1.0
99	Sanibel muck, requently ponded	6.10	3.7
Total		167.1	100.0

The upland non-hydric soils include (3) Candler sand, (17) Smyrna and Myakka fine sands, (22) Pomello fine sand, (31) Adamsville fine sand, (58) Udorthents, excavated, and (59) Arents-Urban land complex accounting for 7.3% of the total land area. These soils are suitable for some agriculture, silviculture, recreation, and urban development.

The wetland hydric soils include (13) Samsula muck, (25) Placid and Myakka fine sands, depressional, (35) Hontoon muck, and (36) Basinger mucky fine sand accounting for 88.6% of the total land area. Many of the hydric soils are organic soils as opposed to mineral soils. These soils are conducive to water storage, limited recreation, and as wildlife habitat.

A copy of the soils map has been presented as one of the exhibits.

Uplands/Wetlands: An upland/wetland breakdown was not available for this assignment. Based upon the National Wetland Inventory Maps, the following is the breakdown as to the number of probable uplands and potential jurisdictional wetlands.

Probable Uplands:	20.91-acres (12.9%)
Potential Jurisdictional Wetlands:	141.12-acres (87.1%)
Total Acres:	162.03 acres (100.0%)

Zoning/Future Lane Use: Zoning and Future Land Use maps of the property being appraised are presented as two of the exhibits. These maps showed:

- Sub-Parcel #1- a narrow strip along U.S. Hwy 92 with an "R-1" (Single Family Residential – Large Lot) and a "C-4" (Commercial Heavy) zoning classification; however, this is wetlands and undevelopable. It also shows the majority of the interior of the tract with a "Con" (Conservation) zoning classification, all of which are wetlands and undevelopable. The two developable areas are 8.5-acres in the southwest corner zoned "R-3" (Multi Family Residential – Low Density) with a "Neighborhood Suburban" future land use and 17-acres along U.S. Hwy 17 with a "C-4" (Commercial Heavy) zoning classification with a "Neighborhood Support" future land use that also allows multi-family development.

- Sub-Parcel #2 -this entire sub-parcel has a "C-4" "Commercial Heavy) zoning classification and while there is a small area of uplands, they are inaccessible because they are surrounded by wetlands. This tract has a "Conservation" and "Neighborhood Support" future land use.

- Sub-Parcel #3 – this is Zone "C-4" (Commercial Heavy) with a "Neighborhood Support" future land use; however, this sub-parcel represents an uneconomic sliver that is undevelopable.

Owner of Record: according to the Public Records, the subject property is vested to:

Astute Financial Corporation
3 Strathearn Road
Toronto ON M6C 1RC
Canada

Utilities: Public electric, telephone, and cable services are available. There are municipal water and sewer services along U.S. Hwy 17 and along Brigham Road, with capacity for multi-family development according to the City of Winter Haven. There are sections of U.S. Hwy 92 that also have municipal water and sewer services.

Assessment/Taxes: The subject property is assessed as five tax parcels. Information obtained from the Polk County Property Appraiser for 2023 is summarized below:

4PARCEL NUMBER	ACRES	JUST VALUE	TAXABLE VALUE	MILLAGE	2023 TAXES
26-28-05-000000-024010	87.07	$25,462	$24,378	19.2566	$475.30
26-28-05-000000-024030	0.24	$1,063	$1,063	19.2566	$20.48
26-28-05-000000-042010	9.99	$799	$799	19.2566	$15.38
26-28-08-000000-013030	61.26	$30,630	$30,630	19.2566	$589.84
26-28-08-000000-032050	3.47	$1,735	$1,735	19.2566	$33.40
Total	162.03	$59,689	$58,605		$1134.40

There is no correlation between Just Value & Taxable Value as determined by the Polk County Property Appraiser and Market Value as determined by the market. The Polk County Property Appraiser is responsible for assessing several hundred thousand tax parcels each year and simply does not have the time to spend valuing any single parcel. His performance is based upon

consistency among similar property types, measured by statistical calculations that include average, mean, median, standard deviation, and coefficient of dispersion. By law, assessed values exclude certain components of market value such as sales commissions, closing costs, recording fees, and legal fees. This is the reason that there is no direct correlation between Polk County Property Appraiser's Just Value and Taxable Value and market value as determined by the real estate markets.

The Polk County Tax Collector offers discounts for early payment, with full taxes due by March 31st 2024. The discounts are one percent per month, up to a maximum of four percent, beginning in November 1, 2023. The 2023 taxes were pre-paid in the full discounted amount of $1,089.02 on November 17, 2023. There are no delinquent taxes.

Sales History: There have been no transfers or conveyances of ownership of this property since December 1994.

- Approximately 17± acres of usable uplands on the west side of U.S. Hwy 17 is listed for sale with Realtor Steve Lockhart of Lockhart & Associates, Inc. for $1,150,000 ($67,647/acre). It has been listed for about two-years.
    - In February 2024, the seller entered into a signed contract for $1,100,000 with a developer from South Florida. The buyer requested that the seller pay for some of the due diligence items, the seller declined, and the buyer withdrew from the contract.
    - In June 2024, the Realtor received a cash offer of $1,100,00 from a local developer for multi-family development. The Realtor indicated that the seller withdrew from negotiations and temporarily removed the listing in order to give Polk County time submit an offer for their entire ownership.

- Approximately 8.5-acres of useable uplands on Brigham Road is listed with Realtor Steve Lockhart of Lockhart & Associates, Inc. for $850,000 ($100,000/acre). It has been listed for about two-years.
    - In June 2024, the Realtor received a cash offer of $825,000 from a local developer for multi-family development. The Realtor indicated that the seller withdrew from negotiations and temporary removed the listing in order to give Polk County time submit an offer for their entire ownership.

According to the Realtor, the property has been temporarily taken off the market and there are no pending contracts.

Oil, Gas, and Mineral Rights: The title policy was silent on oil, gas, and mineral rights. For appraisal purposes, I am assuming that the underlying fee owner retains all the oil, gas and mineral right.

Easements/Encumbrances: The "Property Information Report" essentially inferred that that the State of Florida could have access, drainage, and OGM rights – See Page Property Rights Appraised on Page 16 for a full discussion.

Leases: There are billboards on U.S. Hwy 17 and one on U.S. Hwy 92 that are leased by Lakeland Outdoor Advertising. Two billboard leases for $5,545.44 each per year, but the leases terminates in March 2025. The other billboard is lease on a month to month bases for $100 per month. The total collect annual billboard income is $11,190.88. Since one billboard is leased month to month and the leases of the other two billboards terminate in March 2025, these leases have no further impact on value. Additionally, I am not sure if one or both of the billboards on U.S. Hwy 17 are within the 12.5-acres of developable land.

Nuisances and Hazards: None observed

Improvements: None

PART FOUR – ANALYSIS

HIGHEST AND BEST USE

Fundamental to appraising real estate is the concept of "Highest and Best Use." The current definition of "Highest and Best Use" as defined in The Appraisal of Real Estate, 13^{h} Edition is:

> "The reasonably probable and legal use of vacant land or an improved property that is physically possible, appropriately supported, and financially feasible and that results in the highest value."

In order for any intended use to represent the highest and best use, the intended use must be (1) physically possible, (2) legally permissible, (3) financially feasible, and (4) maximally productive.

HIGHEST AND BEST USE – AS VACANT

Physically Possible – The subject property consists of three non-contiguous sub-parcels, each described physically below"

- Sub-Parcel #1: this represents the largest contiguous sub-parcel that contains 151.80-acres, identified as Tax Parcels 26-28-05-000000-024010, 26-28-08-000000-013030, and 26-28-08-000000-032050. The highest elevation of 145-feet above sea level occurs in the southwest corner. The elevation drops rapidly downward to 130-feet above sea level and is essentially flat over the balance of the sub-parcel. The area between 130 and 145-feet in elevation is (4340) Upland Hardwood. The balance of the sub-parcel is a mix of (6150) Stream & Lake Swamp, (6410) Freshwater Marsh / Graminoid Prairie, and (6440) Emergent Aquatic Vegetation. There is an abundance of invading exotic vegetation such as Brazilian Pepper, Melaleuca, etc.

- Sub-Parcel #2: this represents the second largest contiguous sub-parcel that contains 9.99-acres, identified as Tax Parcel 26-28-05-000000-042010. This is a flat sub-parcel with a consistent elevation of 130-feet above sea level. Wetland land uses include (6150) Steam & Lake Swamp and (6410) Freshwater Marsh / Graminoid Prairie, but like the other sub-parcels has invasive exotic vegetation.

- Sub-Parcel #3: this represents a narrow uneconomic sliver of land that contains 0.24-acres, identified as Tax Parcel 26-28-05-000000-024010. This is a flat strip with an elevation of 130-feet above sea level with a land use of (1900) Residential Vacant Land.

Legally Permissible – The only two developable areas for the entire 162.03-acre ownership are the 8.45-acres in the southwest corner of Sub-Parcel #1 zoned "R-3" (Multi Family Residential – Low Density) with a "Neighborhood Suburban" future land use and the 12.46-acres on the west side of U.S. Hwy 17 zoned "C-4" (Commercial Heavy) with a "Neighborhood Support" future land use. According to the listing Realtor Steve Lockhart, there has been no interest in commercial development of either sub-parcel; however, there has been interest in multi-family

development including the recent offer that was put on hold to give Polk County time to submit an offer for the purchase of the entire ownership.

However, multifamily development is not one of the allowed uses in the "C-4" zoning classification. Winter Haven Senior Planner Heather Reuter, CPM, indicated that the "C-4" zoned area could be down zoned to "C-3," which allows multifamily development. Townhomes are acceptable, but only if they are not individually platted. The density of 2.01 to 12.00-units per acre are allowed in the "Neighborhood Suburban" future land use and 5.00 to 15.00-units per acre are allowed in the "Neighborhood Support" future land use with a density bonus of five (5) additional densities if it is within proximity to a transit route which is. However, the likelihood of achieving the maximum density is not only unlikely but rare.

Even though the balance of 141.12-acres has several different zoning classifications such as C-4, R-1, and Con, because most of these areas have underlying muck soils and all are classified as wetlands, precludes any future development this area. Essentially, the zoning classifications and the future land use designations are unimportant. These areas can be used for water storage, water purification, and/or mitigation but probably not recreation for these wetland areas.

Financially Feasible – Polk County recently was recognized as being the fastest growing county in the country, and Haines City just northeast of Winter Haven as one of the fifteen fastest growing cities in the country. The buildout around Orlando, the four corners area that includes Orange, Lake, Osceola, and Polk counties, and the Disney Theme Parks is forcing development south along the U.S. Hwy 27 Corridor to cities like Davenport, Haines City, Dundee, Winter Haven, and Lake Wales. Traditionally, Hillsborough County issued the most residential building permits in West Central Florida, but in 2023 for the first time Polk County issued the most building permits. As described in the Winter Haven Demographic Section, there have been a number of new residential and commercial developments and a number of city and state infrastructure improvements, with more in the planning process. The hike in interest rates to 6.47% has slowed resales down and is now starting to affect new home construction. With more than 1,283-people moving into the State of Florida each day and indications that the feds are considering a reduction in interest rate at their next meeting, would most likely spur pent up demand. The rental market is even hotter because potential buyers are not able to purchase homes because of the high mortgage rates, so they rent until mortgage rates decrease and/or the save enough for the down payment.

Maximally Productive – Even though there is the potential for 12.00 to 15.00 units per acre for the two developable parcels, rarely have I seen the developments able to achieve the maximum number of units. For instance, the four comparable sales had densities of 12.50-units per acre, 9.63-units per acre, 9.12-units per acre, and 8.11-units per acre respectively. This equates to 9.83-units per acre; however, the two that are most similar in unit numbers is Sale #1 at 12.5-units per acre and Sale #3 at 9.12-units per acre, the average of which is 10.80-units per acre. The 20.91-acres of developable land has a highest and best use of multifamily development at a density of 11.00 units per acre, which is more reflective of similar multifamily projects. The 141.12-acres of wetlands has a highest and best use for water storage, water purification, and/or mitigation but probably not recreation for these wetland areas.

METHOD OF VALUATION

Appraisers have three approaches that can be used to estimate market value, i.e., the Cost Approach, the Sales Comparison Approach, and the Income Approach. The Cost Approach and the Income Approach generally only applies to improved properties, whereas the Sales Comparison Approach applies to both improved and unimproved properties.

- The Cost Approach is not relevant because the subject is vacant undeveloped land with no improvements .
- In certain situations, the application of the Income Approach is useful in appraising raw undeveloped land but not in this case. The Income Approach is not relevant simply because investors would not purchase this vacant land to lease out.

For this analysis, only the Sales Comparison Approach is relevant. A generic description is provided below.

The *Sales Comparison Approach* is based on the proposition that an informed purchaser would pay no more for a tract of land than it would cost him to acquire an equally desirable substitute tract of land offering the same or similar utility. The basic steps in the Sales Comparison Approach include:

1. Research the market to obtain information about transactions, listings, and offerings of properties similar to the subject property.

2. Verify the information by considering whether the data obtained is factually accurate and whether the sale was reflective of an arm's length market consideration.

3. Determine the appropriate unit of comparison, which in this case is the price per acre, and develop a comparative analysis.

4. Compare the comparable sales to the subject property based upon the elements of comparison and adjust each sale's index price appropriately by a qualitative or quantitative method or eliminate the sale as a comparable.

5. Reconcile the value conclusions resulting from the analysis and choose one single index price to value the subject property.

The Sales Comparison Approach is applicable to all property types for which there are a sufficient number of recent, reliable transactions to forecast value patterns in the market. For property types that are regularly bought and sold in the market place, the Sales Comparison Approach is considered a good reliable approach. When there are an insufficient number of recent transactions, necessary to forecast value patterns in the market place, then the application of the Sales Comparison Approach may be inappropriate. For special purpose properties, the Sales Comparison Approach may not be applicable due to the lack of good comparable sales.

SALES COMPARISON APPROACH

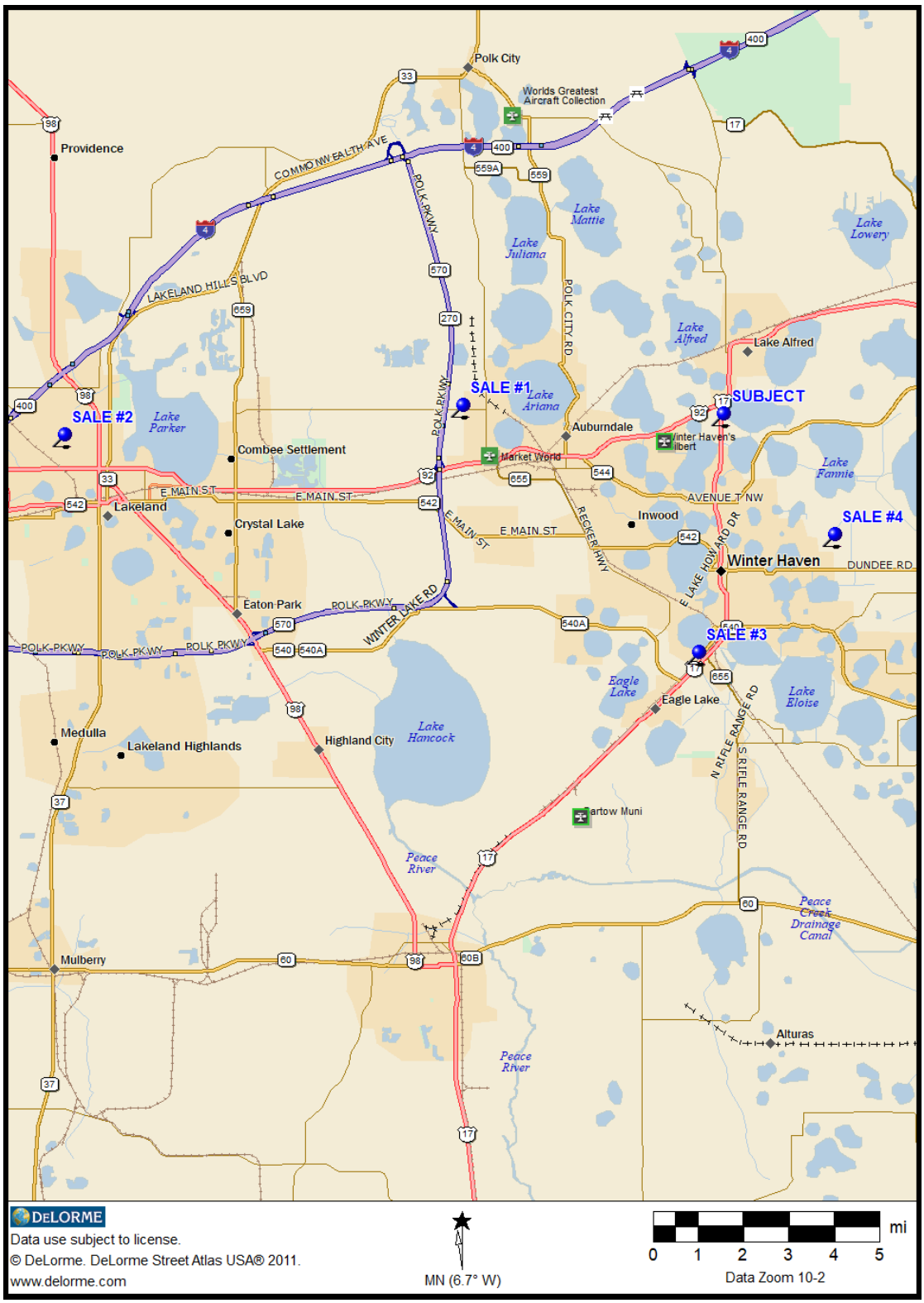
The subject property represents two developable areas of 8.45-acres and 12.46-acres that total 20.91-acres with a highest and best use for development to multifamily townhomes at a density of approximately 11-units per acre and the 141.12-acres of wetlands and uneconomic land that have limited use and/or possibly for mitigation. This requires the appraiser to provide separate valuation analysis for the 20.91-acres of developable area and the undevelopable 141.12-acres of wetlands and uneconomic land, then decide if a discount is appropriate for the sum of the parts.

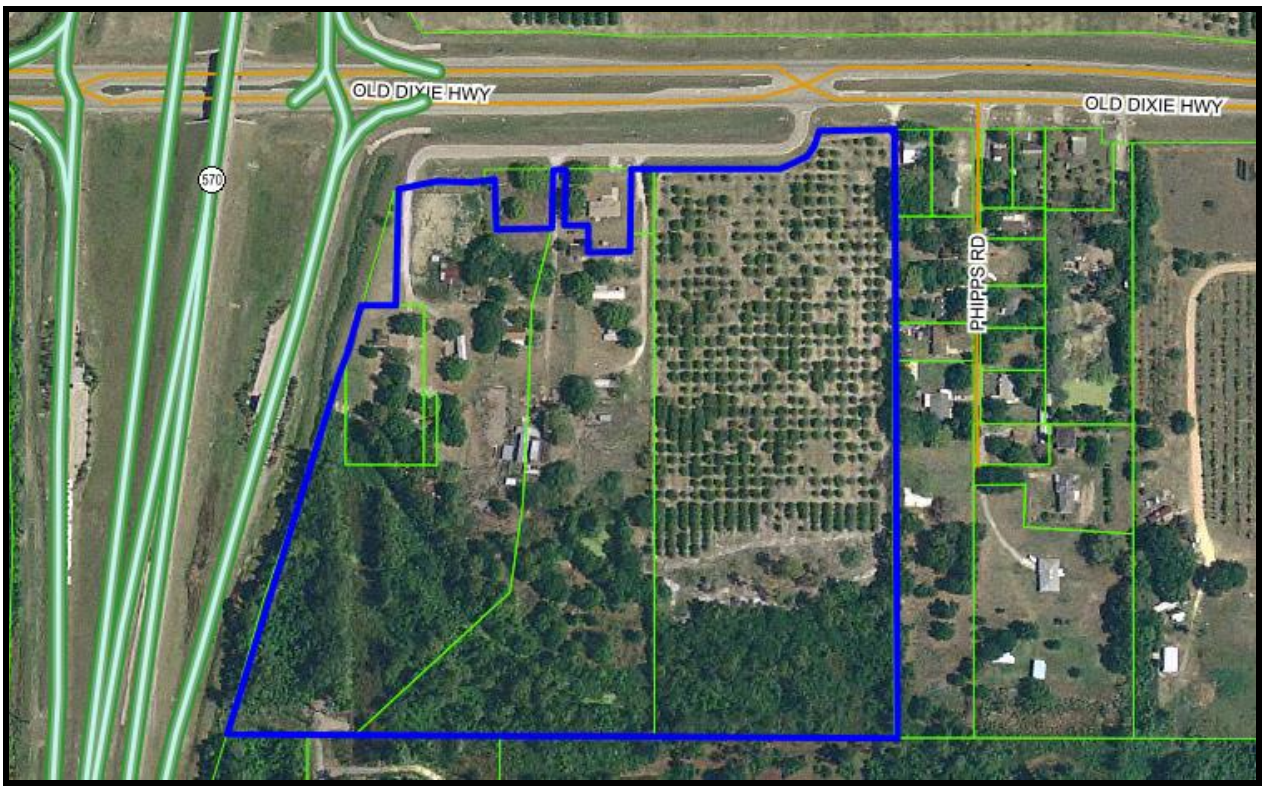
20.91-acres of Multifamily Land: Below is summary chart showing the subject 20.91-acres of multifamily land and four comparable multifamily sales that were considered in the valuation process. The following sales are what I believe to be the best and most recent available.

MULTFAMILY SALES SUMMARY CHART

SALE NO.	SUBJECT	SALE #1	SALE #2	SALE #3	SALE #4
Location	U.S. Hwy 17 and Brigham Road	Old Dixie Highway and Polk Parkway	Providence Road and West 8th Street	Old Eagle Lake Road	Buckeye Road
City	Winter Haven	Auburndale	Lakeland	Winter Haven	Winter Haven
Sale Date	N/A	04-25-2023	08-11-2022 07-22-2022	06-29-2024	02-24-2023
Sale Price	N/A	$3,350,000	$780,000	$1,650,000	$425,000
Financing	N/A	Cash to Seller	Cash to Seller	Cash to Seller	Cash to Seller
Access	Four and two lane paved roads	Frontage road off four lane road	Two lane roads	Two lane road	Two land road
Acres	20.91	32.69	9.03	21.69	16.13
Percent Uplands	100%	70%	100%	84%	46%
Water/Sewer	Nearby	Water	Nearby	Nearby	Nearby
Highest & Best Use	Multifamily	Multifamily	Multifamily	Multifamily	Multifamily
# of Units	230	286	87	187	60
Density per Acre	11 Per Acre	12.5 Per Acre	9.63 per Acre	9.12 Per Acre	8.10 Per Acre
Improvements	None	No Contributory Value	None	None	None
INDEX PRICE					
Price - Gross Acre	N/A	$102,478	$86,379	$76,072	$26,348
Price - Useable Acre	N/A	$146,397	$86,379	$84,488	$57,423
Price - Unit	N/A	$11,713	$8,966	$8,824	$7,083

SALES LOCATION MAP





SALE NUMBER: #1

PROPERTY TYPE: Development Land

LOCATION: This property is located at the southeast intersection of Old Dixie Highway and the Polk Parkway (570) in West Auburndale, Florida. One of the two address is 1129 Old Dixie Highway, Auburndale, Florida 33823

BRIEF LEGAL: Abridged – a portion of Section 5, Township 28 South, Range 25 East, Polk County, Florida.

PARCEL NUMBERS: 25-28-05-319500-006201, 25-28-05-319500-006309, 25-28-05-319500-006310, 25-28-05-319500-006312, 25-28-05-319500-006408, and 25-28-05-319500-006500 (Polk County)

RECORDING: OR Book 12667, Page 0238, OR Book 12668, Page 1859, and OR Book 12669, Page 1545 (Polk County)

GRANTOR: Knapp Family Holdings, LLC, Diane Richey and Douglas Richey, and Old Dixie 1129, LLC

GRANTEE: Doherty Holdings Fortieth, LLC

LAND SIZE: 32.69 acres per property appraiser

ZONING: RG-2 medium to high density residential between 11 and 14 units per acre. Community Activity Center, Medium Density Residential, and a small area of Conservation/Wetlands future land use.

PROPERTY DESCRIPTION: This property is located at the southeast intersection of Old Dixie Highway and the Polk Parkway, with access to the Polk Parkway. Access to the property is via a frontage road. The property contains 32.69-acres, 70% probable uplands and 30% potential jurisdictional wetlands. The wetlands primarily located in the southwest corner; however, there is a very small area in the southeast corner. The land slopes downward from the northeast corner toward the southwest corner with elevations ranging from 150-feet to 125-feet above sea level. The upland soils are Pomona and Tavares. The lone wetland soil is Hontoon muck. There is public water in the immediate area; however, sewer is about three-quarters mile away.

SALES PRICE: $1,750,000 plus $250,000 plus $1,350,000 = $3,350,000

DATE OF SALE: April 25, 2023

TERMS: Cash to seller

VERIFICATION: Verified with Realtor Keith Rasmus of Century 21 Myers Realty at mobile 407-301-3182 on September 4, 2024.

CONDITIONS OF SALE: An arms-length transaction indicative of market value.

PRESENT USE: Essentially vacant land with a house, mobile home and some outbuildings that no longer provide any contributory value.

HIGHEST AND BEST USE: Multiple Family Residential Development

COMMENTS: Only 17.13-acres of the property was listed for sale with a Realtor, at $1,500,000 for about three months. The buyer approached the two adjacent landowners and acquire those parcels as well.

INDEX: $102,478 per gross acre
$146,397 per net acre
$11,713 per unit based upon the average number of 286 units

INSTR # 2023096520
BK 12667 Pgs 238-240 PG(s)3
RECORDED 04/26/2023 11:42:52 AM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
DEED DOC $12,250.00
RECORDING FEES $27.00
RECORDED BY melijohn

This instrument prepared by:
John L. Mann
Attorney at Law
Post Office Box 2435
Lakeland, Florida 33806

WARRANTY DEED

THIS INDENTURE, made this 25TH day of APRIL 2023, between **Knapp Family Holding, LLC,** a Florida limited liability company authorized to do business in Florida, whose post office address is 361 Denton Avenue, Auburndale, Florida 33823 ("Grantor"); and **DOHERTY HOLDINGS FORTIETH, LLC,** a Florida limited liability company, whose post office address is 2925 Mall Hill Drive, Lakeland, Florida 33810, ("Grantee").

WITNESSETH:

That said Grantor, for and in consideration of the sum of Ten Dollars and other good and valuable considerations to said Grantor in hand paid by said Grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said Grantee, and Grantee's heirs, successors, and assigns forever, the following described land, situate, lying and being in Polk County, Florida, and more particularly described on the attached Exhibit "A" (the "Property") reserving unto Grantor, its successors and assigns, any Polk County Impact Fee credits derived from or based upon Impact Fees paid prior to the date of this deed.

As part of the consideration: No portion of the Property may be used as a stand-alone public self-storage facility or as a storage facility for the members of the general public who are not tenants, employees or otherwise involved in the operations of the property without the express written consent of the Grantor or its assigns.

Property Identification No. 25-28-05-319500-006500

Subject to:

1. Conditions, restrictions, limitations and easements of record, if any, but this provision shall not operate to re-impose the same.
2. Zoning and other governmental regulations.
3. Taxes and assessments for 2023 and subsequent years.

Grantor does hereby fully warrant the title to said land, and will defend the same against the lawful claims of all persons whomsoever whose claim is based upon action or inaction of Grantor.

"Grantor" and "Grantee" are used for singular or plural, as context requires.

INSTR # 2023097760
BK 12668 Pgs 1859-1861 PG(s)3
04/27/2023 12:29:15 PM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 27.00
DEED DOC 1,750.00

Prepared by and return to:
DAVID D. HALLOCK, JR.
Attorney at Law
GrayRobinson, P.A.
One Lake Morton Drive
Lakeland, FL 33801
863-284-2200
File Number: **12904.14 - DH**
Will Call No.:

Parcel Identification Nos.: 25-28-05-319500-006312
and 25-28-05-319500-006309

Warranty Deed

This Warranty Deed made this 25th day of April, **2023** between **DIANE RITCHEY,** also known as **JANICE DIANNE RITCHEY,** formerly known as **DIANE GLENN,** joined by her husband, **DOUGLAS RITCHEY,** whose post office address is **1205 Old Dixie Highway, Auburndale, FL 33823**, grantor, and **DOHERTY HOLDINGS FORTIETH, LLC,** a Florida limited liability company whose post office address is **2925 Mall Hill Drive, Lakeland, FL 33810**, grantee:

(Whenever used herein the terms "grantor" and "grantee" include all the parties to this instrument and the heirs, legal representatives, and assigns of individuals, and the successors and assigns of corporations, trusts and trustees)

Witnesseth, that said grantor, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Polk County, Florida** to-wit:

A PORTION OF LOT 63 OF AUBURNDALE LAKESIDE PARK AS RECORDED IN PLAT BOOK 3, PAGE 20 OF THE PUBLIC RECORDS OF POLK COUNTY FLORIDA, BEING DESCRIBED AS FOLLOWS: AS A POINT OF REFERENCE COMMENCE AT THE NW CORNER OF LOT 61 OF SAID AUBURNDALE LAKESIDE PARK, ALSO BEING THE NW CORNER OF THE SW 1/4 OF THE SE 1/4 OF SECTION 5, TOWNSHIP 28 SOUTH, RANGE 25 EAST, POLK COUNTY FLORIDA; THENCE PROCEED S89°51'20"E ALONG THE NORTH BOUNDARY OF THE SW 1/4 OF THE SE 1/4 OF SAID SECTION 5, A DISTANCE OF 690.00 FEET; THENCE DEPARTING SAID NORTH BOUNDARY S00°19'56"E, A DISTANCE OF 423.00 FEET; THENCE S89°51'20"E, A DISTANCE OF 35.44 FEET TO A POINT ON THE EASTERLY RIGHT OF WAY LINE OF THE "POLK PARKWAY" STATE ROAD NUMBER 570; THENCE S15°11'49"W ALONG SAID RIGHT OF WAY LINE, A DISTANCE OF 103.90 FEET TO AN EXISTING 5/8" IRON ROD WITH DEFACED MARKINGS; THENCE S22°07'55"W, A DISTANCE OF 19.95 FEET TO AN EXISTING 5/8" IRON ROD WITH DEFACED MARKINGS; THENCE DEPARTING SAID EASTERLY RIGHT OF WAY LINE S00°19'56"E, A DISTANCE OF 221.16 FEET; THENCE S89°51'20"E, A DISTANCE OF 163.23 FEET TO AN EXISTING 1/2" IRON ROD MARKED LB 7623 AND TO THE POINT OF BEGINNING; THENCE CONTINUE S89°51'20"E, A DISTANCE OF 27.40 FEET; THENCE N00°11'50"W, A DISTANCE OF 150.00 FEET; THENCE N89°51'20"W, A DISTANCE OF 27.40 FEET; THENCE S00°21'50"E A DISTANCE OF 150.00 FEET TO THE POINT OF BEGINNING.

and

DoubleTime®

Prepared by and return to:
William T. Link, Jr.
Reed Mawhinney & Link
53 Lake Morton Drive, Suite 100
Lakeland, FL 33801
(863) 687-1771
File Number: **04591**

INSTR # 2023098378
BK 12669 Pgs 1545-1546 PG(s)2
04/28/2023 08:44:26 AM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 18.50
DEED DOC 9,450.00

[Space Above This Line For Recording Data]

Special Warranty Deed

This Special Warranty Deed made this **25th day of April 2023** between **Old Dixie 1129, LLC, a Florida limited liability company** whose post office address is **5885 Transit Road East, Amherst, New York 14051**, grantor, and **Doherty Holdings Fortieth, LLC, a Florida limited liability company** whose post office address is **2925 Mall Hill Drive, Lakeland, FL 33813**, grantee:

(Whenever used herein the terms grantor and grantee include all the parties to this instrument and the heirs, legal representatives, and assigns of individuals, and the successors and assigns of corporations, trusts and trustees)

Witnesseth, that said grantor, for and in consideration of the sum TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Polk County, Florida**, to-wit:

That part of Lots 62, 63 and 64, Auburndale Lakeside Park, as recorded in Plat Book 3, Page 20, of the Public Records of Polk County, Florida, being described as follows:

BEGIN at the Southeast corner of said Lot 64 thence North 89°53'54" West, along the South line of said Lots 62, 63 and 64, a distance of 890.10 feet to a point of intersection with the Easterly limited access Right-of-Way line of State Road 570 (Polk County Parkway) per Florida Department of Transportation Right-of-Way Map (Section 97160-2311), said point being on a non-tangent curve concave to the southeast and having a radius of 11,365.16 feet; thence along said curve to the right through a delta angle of 1°03'05", an arc distance of 208.56 feet (chord bearing = North 14°47'07" East, chord distance = 208.55 feet); thence continuing along said limited access Right-of-Way the following four (4) courses: (1) North 15°18'40" East, 89.38 feet; (2) North 19°00'27" East, 293.23 feet; (3) North 15°10'50" East, 154.57 feet; (4) North 22°07'13" East, 92.28 feet to a point of intersection with the west line of that parcel as described in Official Records Book 5900, Page 1110; thence South 00°21'24" East along said west line, a distance of 221.87 feet to the south line of said parcel; thence South 89°57'22" East, a distance of 190.52 feet; thence North 00°21'24" West, a distance of 150.00 feet; thence North 89°57'22" West, a distance of 27.40 feet to the east line of said parcel as described in Official Records Book 5900, Page 1110; thence North 00°21'24" West along said east line, a distance of 190.06 feet to the north line of said parcel; thence North 89°58'07" West, a distance of 60.01 feet; thence North 00°12'49" West, a distance of 245.87 feet to the southerly Right-of-Way of County Road 546 (Old Dixie Highway) per Official Records Book 6512, Page 997; thence along said southerly Right-of-Way the following two (2) courses: (1) North 74°33'48" East, 63.46 feet; (2) South 89°57'00" East, 144.63 feet to a point of intersection with the west line of that parcel as described in Official Records Book 8722, Page 1665; thence South 00°13'26" East along the west line of said parcel, a distance of 100.96 feet to the south line of said parcel; thence South 89°48'37" East along said south line, a distance of 119.97 feet to the east line of said parcel; thence North 00°11'51" West along said east line, a distance of 129.37 feet to the aforementioned southerly Right-of-Way of County Road 546 (Old Dixie Highway); thence North 89°34'39" East along said southerly Right-of-Way, a distance of 26.20 feet to the west line of that parcel as described in Official Records Book 8727, Page 1973; thence along the westerly, southerly and easterly lines of said parcel the following five (5) courses: (1) South 00°06'11" East, 123.00 feet; (2) North 89°34'39" East, 49.50 feet; (3) South 00°06'11" East. 51.50 feet; (4) North 89°34'39" East, 87.50 feet; (5) North 00°06'11" West, 174.50 feet returning to the aforementioned southerly Right-of-Way of said County Road 546 (Old Dixie Highway); thence North 89°34'39" East along said southerly Right-of-Way; a distance of 50.00 feet to the east line of aforementioned Lot 64, Auburndale



SALE NUMBER: #2

PROPERTY TYPE: Development Land

LOCATION: This property is located on the west side of Providence Road and the south side of West 8th Street, just west of Kathleene Road in Lakeland. The property has two address : 1250 Providence Road, Lakeland, Florida 33805 and 1175 West 5th Street, Lakeland, Florida 33805.

BRIEF LEGAL: Abridged – portions of Section 11, Township 28 South, Range 23 East, Polk County, Florida.

PARCEL NUMBERS: 23-28-11-000000-021030, 23-28-11-000000-021040, 23-28-11-000000-021190, 23-28-11-000000-021220, and 23-28-12-047000-008003, (Polk County)

RECORDING: OR Book 12379, Page 01555 and OR Book 12379, Page 01542 (Polk County)

GRANTOR: Millan Investments US, LLC and Ohm Prakash Rajasekaran

GRANTEE: Providence Townhomes, LLC

LAND SIZE: 9.03 acres per property appraiser

ZONING: PUD 6035 Medium Density Residential zoning. RM Residential Medium future land use. This property was approved for a mini-warehouse and zoned industrial; however, the

zoning was changed and the future land use amended to allow 87 two-story townhomes of 1,280 square feet. The density is 9.64 units per acre.

PROPERTY DESCRIPTION: This property is located on the west side of Providence, end of W 5th Street, and south side of W 8th Street in Lakeland, Florida. The property contains 9.03-acres, 100% probable uplands and 0% potential jurisdictional wetlands. The land slopes slight downward from the northeast toward the southwest. Elevations range from 120 to 130-feet above sea level. The underlying soils are Sparr sand. There is public water and sewer services nearby. There are no improvements.

SALES PRICE: $400,000 plus $380,000 = $780,000

DATE OF SALE: August 11, 2022 and July 22, 2022

TERMS: Cash to seller

VERIFICATION: Verified with Realtor Charmagne Chappell with Friendly Realty, Inc. at 863-299-8011 on September 4, 2024.

CONDITIONS OF SALE: An arms-length transactions indicative of market value.

PRESENT USE: Vacant undeveloped land.

HIGHEST AND BEST USE: Multiple Family Residential Development

COMMENTS: There were two listings, side by side, by the same Relator, a 4.24-acre parcel that was listed for $400,000 and sold three months later for $380,000 and 4.79-acres that was listed for $400,000 and sold for $400,000 one month later.

INDEX: $86,379 per gross acre
$86,379 per net acre
$8,966 per unit based upon the average number of 87 units

Prepared by and return to:

Rosenthal Meyer, PLLC
3801 Avalon Park E Blvd, Suite 360
Orlando, FL 32828
(407) 504-9725
File Number: **2022-12-A**
Will Call No.:

INSTR # 2022221512
BK 12379 Pgs 1555-1558 PG(s)4
08/15/2022 01:09:05 PM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 35.50
DEED DOC 2,800.00

[Space Above This Line For Recording Data]

Warranty Deed

This Warranty Deed made this **11th day of August, 2022** between **Millan Investments US LLC, a Florida Limited Liability Company** whose post office address is **1010 W Beacon Road, Lakeland, FL 33803**, grantor, and **Providence Townhomes, LLC, a Limited Liability Company** whose post office address is **15155 W Colonial Drive #783233, Winter Garden, FL 34787**, grantee:

(Whenever used herein the terms "grantor" and "grantee" include all the parties to this instrument and the heirs, legal representatives, and assigns of individuals, and the successors and assigns of corporations, trusts and trustees)

Witnesseth, that said grantor, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Polk County, Florida** to-wit:

See Exhibit A

Together with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

To Have and to Hold, the same in fee simple forever.

This property is not the homestead of the Grantor.

And the grantor hereby covenants with said grantee that the grantor is lawfully seized of said land in fee simple; that the grantor has good right and lawful authority to sell and convey said land; that the grantor hereby fully warrants the title to said land and will defend the same against the lawful claims of all persons whomsoever; and that said land is free of all encumbrances, except taxes accruing subsequent to **12/31/2021**.

In Witness Whereof, grantor has hereunto set grantor's hand and seal the day and year first above written.

Prepared by and return to:

Rosenthal Meyer, PLLC
3801 Avalon Park E Blvd, Suite 360
Orlando, FL 32828
(407) 504-9725
File Number: **2022-12**
Will Call No.:

INSTR # 2022221501
BK 12379 Pgs 1542-1543 PG(s)2
08/15/2022 01:08:11 PM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 18.50
DEED DOC 2,660.00

[Space Above This Line For Recording Data]

Warranty Deed

This Warranty Deed made this **22nd day of July, 2022** between **Ohm Prakash Rajasekaran** whose post office address is **4532 Ashburn Square Drive, Tampa, FL 33610**, grantor, and **Providence Townhomes LLC, a Limited Liability Company** whose post office address is , grantee:

(Whenever used herein the terms "grantor" and "grantee" include all the parties to this instrument and the heirs, legal representatives, and assigns of individuals, and the successors and assigns of corporations, trusts and trustees)

Witnesseth, that said grantor, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Polk County**, **Florida** to-wit:

Begin at the Northwest corner of the Southeast 1/4 of the Northeast 1/4 of the Southeast 1/4 of Section 11, Township 28 South, Range 23 East, thence run East 56.38 feet, thence run South 147 feet, thence run East 609 feet, thence run South 522.65 feet, thence run West 78.1 feet, thence run North 49 degrees West 777.77 feet, thence run North to Point of Beginning, LESS AND EXCEPT the South 120 feet of the North 497 feet of the West 130 feet of the East 145 feet and LESS AND EXCEPT the East 15 feet for Street right of way and LESS AND EXCEPT the North 14 feet for Lantzey Street right-of-way.

Parcel Identification Number: 23-28-11-000000-021030

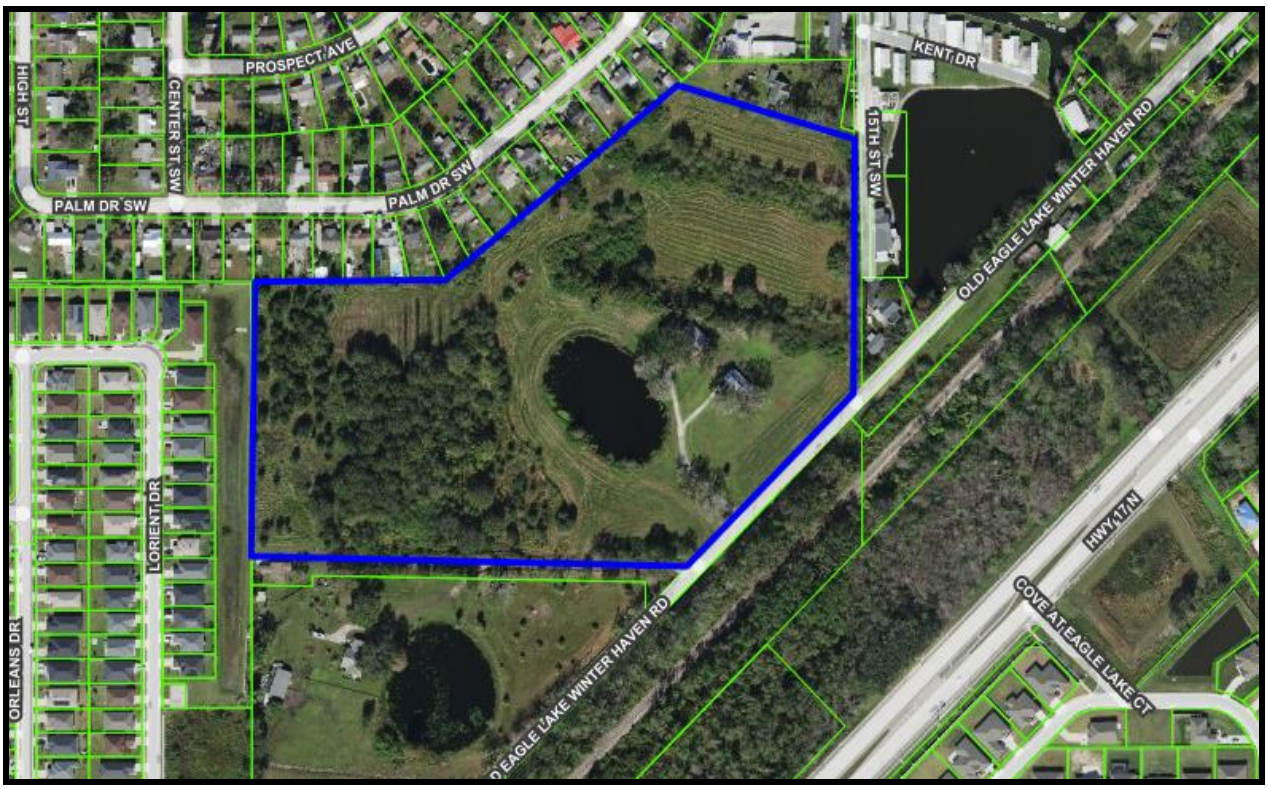
Together with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

To Have and to Hold, the same in fee simple forever.

And the grantor hereby covenants with said grantee that the grantor is lawfully seized of said land in fee simple; that the grantor has good right and lawful authority to sell and convey said land; that the grantor hereby fully warrants the title to said land and will defend the same against the lawful claims of all persons whomsoever; and that said land is free of all encumbrances, except taxes accruing subsequent to **12/31/2021**.

In Witness Whereof, grantor has hereunto set grantor's hand and seal the day and year first above written.

File Number: 2022-12



SALE NUMBER: #3

PROPERTY TYPE: Development Land

LOCATION: This property is located northwest side of Old Eagle Lake Road, on the southwest side of Winter Haven, Florida. The property has a physical address of 3257 Old Eagle Lake Road, Winter Haven, Florida 33880

BRIEF LEGAL: Abridged – a portion of Section 06, Township 29 South, Range 26 East, Polk County, Florida.

PARCEL NUMBERS: 26-29-06-000000-012080, (Polk County)

RECORDING: OR Book 13192, Page 00726 (Polk County)

GRANTOR: Carlton Properties, LLC

GRANTEE: Capital Investments, LLC

LAND SIZE: 21.69 acres per property appraiser

ZONING: R-3 Multi-family low density zoning classification up to 12 units per acre and NSUB (Neighborhood Suburban) future land use Winter Haven.

PROPERTY DESCRIPTION: This property has substantial frontage on two-lane Old Eagle Lake Road. The property contains 21.69-acres, 84% probable uplands and 16% potential jurisdictional wetlands. There is a small pond of about 1.50-acres in the center of this property . The land is relatively flat with little topographic relief at 140-feet above sea level. the northeast toward the southwest. Elevations range from 120 to 130-feet above sea level. The underlying soils are Sparr, Pompano, Smyrna, and Placid. There is public water and sewer services nearby. There are no improvements.

SALES PRICE: $1,650,000

DATE OF SALE: June 29,2024

TERMS: Cash to seller

VERIFICATION: Verified with Realtor Todd Dantzler of SVN / Saunders Ralston Dantzler at 863-287-3586 on September 4, 2024.

CONDITIONS OF SALE: An arms-length transactions indicative of market value.

PRESENT USE: Improved with a house, mobile home, and a couple of outbuildings, none of which offer any contributory value.

HIGHEST AND BEST USE: Multiple Family Residential Development

COMMENTS: This property was contracted by KB Homes, who spent one and one-half years annexing the property into the City of Winter Haven and having the property rezoned for multifamily development. Before closing, KB Homes withdrew from the contract price of $1,500,000 and a bidding war ensued where the final selling price was $1,650,000.

INDEX: $76,072 per gross acre
$84,488 per net acre
$8,824 per unit based upon the average number of 187 units

INSTR # 2024163559
BK 13192 Pgs 0726-0731 PG(s)6
07/16/2024 01:13:14 PM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 52.50
DEED DOC 11,550.00

Prepared by and return to:
Angela J. Stanley, Esq.
Interval Title Services, LLC
604 Courtland Street, Suite 330
Orlando, FL 32804
File No. 23-0727

WARRANTY DEED

THIS INDENTURE made on this 28th day of June, 2024, by **CARLTON PROPERTIES, LLC, a Florida limited liability company,** whose address is 565 North Ridge Avenue, Lake Alfred, Florida 33850, hereinafter called the "grantor", to **RIDGE CAPITAL INVESTMENTS, LLC, a Florida limited liability company,** whose address is 209 Frenchmans Creek Way, Winter Haven, Florida 33884, hereinafter called the "grantee":

(Which terms "Grantor" and "Grantee" shall include singular or plural, limited liability company or individual, and either sex, and shall include heirs, legal representatives, successors and assigns of the same)

Witnesseth, that the grantor, for and in consideration of the sum of Ten Dollars, ($10.00) and other valuable considerations, receipt whereof is hereby acknowledged, hereby grants, bargains, sells, aliens, remises, releases, conveys and confirms unto the grantee, all that certain land situate in **Polk** County, **Florida**, to-wit:

SEE EXHIBIT A
FOR LEGAL DESCRIPTION

Property Address: 3257 Old Eagle Road, Bartow, Florida 33830
Property Tax ID No. 26-29-06-000000-012080

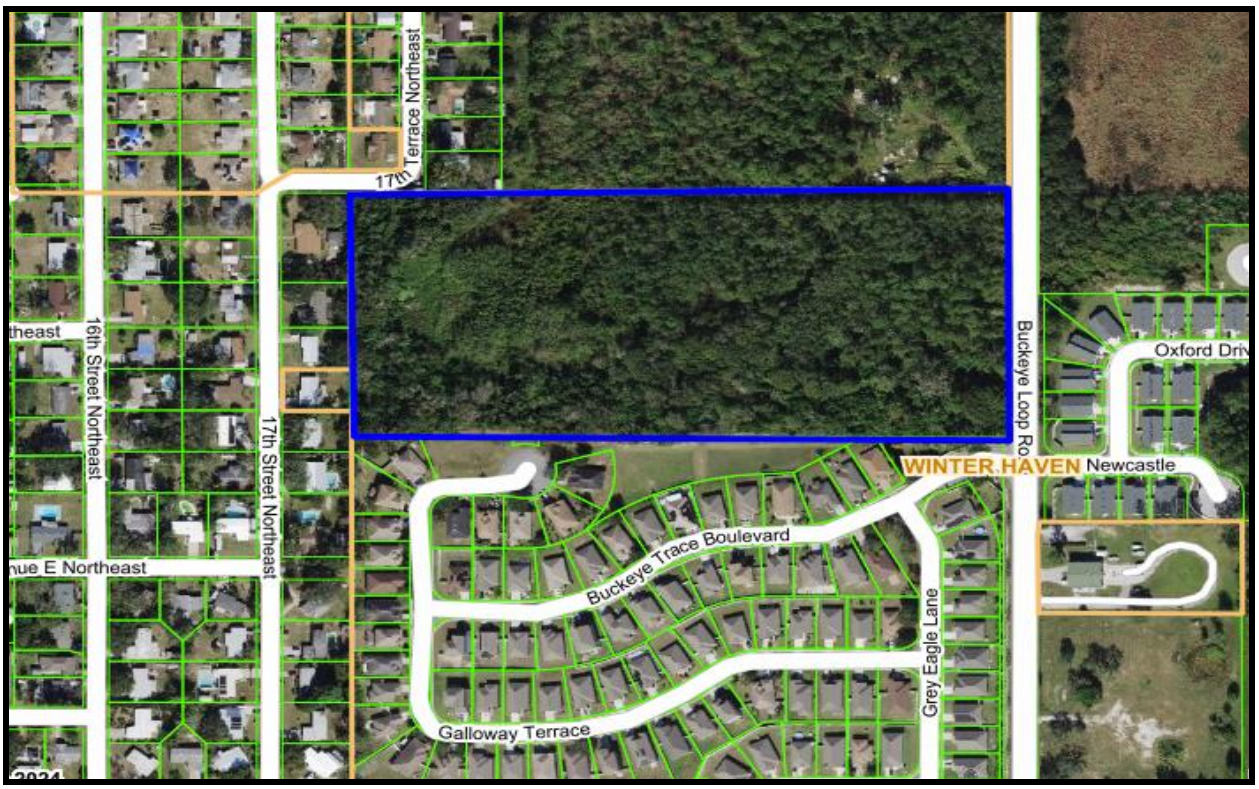
THIS PROPERTY IS NOT HOMESTEAD OF ANY MANAGER OR MEMBER OF GRANTOR OR OF ANY THEIR FAMILY AND/OR DEPENDENTS; NOR IS IT APPURTENANT TO ANY OF HOMESTEAD PROPERTY OF THE SAME.

Subject to all reservations, covenants, conditions, restrictions, limitations, easements, and agreements of record and to all applicable zoning ordinances and/or restrictions and prohibitions imposed by governmental authorities, if any, including, but not limited, to the items set forth in **Exhibit B** hereto, and to taxes for the year 2024 and thereafter.

Together with all the tenements, hereditaments and appurtenances thereto belonging or in any way appertaining.

To Have and to Hold, the same in fee simple forever.

And the grantor hereby covenants with said grantee that the grantor is lawfully seized of said land in fee simple; that the grantor has good right and lawful authority to sell and convey said land; that the grantor hereby fully warrants the title to said land and will defend the same against



SALE NUMBER: #4

PROPERTY TYPE: Development Land

LOCATION: This property is located on the west side of Buckeye Loop Road, north of Dundee Road and south of Buckeye Road Northeast in Winter Haven, Florida.

BRIEF LEGAL: Abridged – a portion of Section 22, Township 28 South, Range 26 East, Polk County, Florida.

PARCEL NUMBERS: 26-28-22-000000-022010 (Polk County)

RECORDING: OR Book 12606, Page 00505 (Polk County)

GRANTOR: Central Asset Management Corporation

GRANTEE: Bradco, Inc. & Rober W. Bradshaw Trustee

LAND SIZE: 16.13 acres per property appraiser

ZONING: R-3 Multi-family low density zoning classification up to 12 units per acre and Conservation for about 8.77-acres of muck soil wetlands. NSUB (Neighborhood Suburban) and CON (Conservation) future land use Winter Haven.

PROPERTY DESCRIPTION: This property has frontage on two-lane Buckeye Loop Road. The property contains 16.13-acres, 46% probable uplands and 54% potential jurisdictional wetlands. The land is relatively flat with little topographic relief at 135-feet above sea level. the northeast toward the southwest. The underlying soils are Adamsville sand, Samsula muck, and Hontoon muck. There is public water and sewer services nearby. There are no improvements.

SALES PRICE: $425,000

DATE OF SALE: February 24, 2023

TERMS: Cash to seller

VERIFICATION: Verified with Realtor David Hitchcock of SVN / Saunders Ralston Dantzler at 863-557-0082 on September 4, 2024.

CONDITIONS OF SALE: An arms-length transactions indicative of market value.

PRESENT USE: Vacant undeveloped land.

HIGHEST AND BEST USE: Multiple Family Residential Development

COMMENTS: This property was listed for $799,0000 for 147-days. Due diligence showed a large percentage of muck soil wetlands, some areas in difficult locations to plan around. The price was re-negotiated several times to adjust for the large number of jurisdictional wetlands.

INDEX: $26,348 per gross acre
$57,423 per net acre
$7,083 per unit based upon the average number of 60 units

INSTR # 2023053051
BK 12606 Pgs 0505-0508 PG(s)4
03/07/2023 11:27:30 AM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 35.50
DEED DOC 2,975.00

THIS INSTRUMENT PREPARED BY AND SHOULD BE RETURNED TO:
Michael G. Candiotti, Esq.
GREENSPOON MARDER, LLP
201 E. Pine Street, Suite 500
Orlando, FL 32801

Parcel ID #: 26-28-22-000000-022010

SPECIAL WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS that as of this 24th day of February 2023 that **CENTRAL ASSET MANAGEMENT CORPORATION, a Georgia corporation (formerly known as BRADCO, INC., a Georgia corporation) & ROBERT W. BRADSHAW AS TRUSTEE OF SHARE A Q-TIP TRUST**, whose mailing address is 2900 Peachtree Road. N.W., Suite 201 Atlanta, GA 30305 (together, the "**Grantor**"), for and in consideration of the sum of Ten and 00/100 Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, has GRANTED, BARGAINED, SOLD and CONVEYED, and by these presents does GRANT, BARGAIN, SELL and CONVEY unto **BUCKEYE PARTNERS, LLC** a Florida limited liability company, whose mailing address is 711 N. Orlando Ave., Suite 302, Orlando, Florida 32751 (the "**Grantee**"), that certain real property lying and being situate in **Polk County, Florida**, being more particularly described in **EXHIBIT "A"** attached hereto and made a part hereof by this reference.

TOGETHER WITH all improvements, tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining (the "**Property**").

SUBJECT TO real property taxes and other assessments for the year 2023, which are not yet due and payable and all matters set forth on **EXHIBIT "B"** attached hereto without the intent to reimpose the same.

TO HAVE AND TO HOLD the Property unto Grantee, and its successors and assigns, and Grantor does hereby covenant with said Grantee that the Grantor is lawfully seized of the Property in fee simple; that Grantor has good right and lawful authority to sell and convey the Property; Grantor does hereby specially warrant the title to the Property subject to the matters referred to above and will defend the same against the lawful claims of all persons claiming by, through or under the Grantor, but not otherwise.

[SIGNATURE AND NOTARY ON FOLLOWING PAGE]

CORRELATION

For this analysis, four sales were considered with index prices as summarized below:

Price Per Gross Acre:	$26,348 to $102,478 per acre
Price Per Usable Acre:	$57,424 to $146,397 per acre
Price Per Unit:	$7,083 to $11,713 per unit

Of the three indexes, the price per unit has the narrowest spread and typically the way multifamily land is acquired. For these reasons, the analysis will be solely based upon the price per unit index. Because of differences that existed between the sales and the subject, the index price for each sale/listing required some adjusting. The price per unit index ranged from a low of $7,083 to $11,713 per unit with an average unadjusted index price of $9,147 per unit. Appraisers have two methods by which they can adjust sales:

- Quantitative adjustments, adjustments in dollar or percent amounts based upon paired sales or statistical data.
- Qualitative adjustments when there is insufficient data available to use quantitative adjustments.

Due to the absence of a sufficient number of comparable sales to apply quantitative adjustments, qualitative adjustments will be used. Since the value is being determined by the number of units and the densities and zoning are all consistent with each other, consideration of only the date of sale, location, number of units, and utilities need to be given consideration. Below is a discussion of how each sale compared to the subject property.

Sale #1 had an index price of $11,713 per unit. This property is located approximately six miles west of the subject, at the southeast corner of the Polk Parkway and Old Dixie Highway in Auburndale. This sale is similar to the subject in all respect, except for:

- Date of Sale – this sale occurred approximately seventeen months ago, and demand for multifamily land remained strong up until recently necessitating a slight upward adjustment.

- Location – this sale was located at the intersection of Old Dixie Highway and the Polk Parkway, the Polk Parkway linking to I-4 with convenient access to either the large employment centers around Orlando to the east or Tampa to the west. Many new residents in Polk County are commuting to these larger employment centers and commuting times are important. The subject property does not have that benefit, necessitating a significant downward adjustment.

The slight upward adjustment for date of sale was more than offset by the significant downward adjustment. Overall, this sale's index price of $11,713 per unit is felt to be slightly higher than what the subject should anticipate.

Sale #2 had an index price of $8,966 per unit. This property is located approximately fifteen miles west of the subject, on the west side of Providence Road and the south side of West 8th Street in Lakeland. This sale is similar to the subject in every aspect, except for:

- Size - this property had a much lower number of units than the subject property, 87 units versus 230 units, and based upon the economies of scale that suggests small number of units would have a higher index price than a larger number of units necessitating slight downward adjustment.

The only difference required a slight downward adjustment. Overall, this sale's index price of $8,966 per acre is felt to be slightly higher than what the subject should expect.

Sale #3 had an index price of $8,824 per unit. This property is located approximately five miles south of the subject, on the northwest side of Old Eagle Lake Road in Winter Haven. This sale is similar to the subject in all respects. There were no major differences. Overall, this sale's index price of $8,824 per unit was felt to be similar to what the subject should expect.

Sale #4 had an index price of $7,083 per unit. This property is located approximately four miles southeast of the subject, on the west side of Buckeye Loop Road in Winter Haven. This sale is similar to the subject in all factors. There were no major differences. Overall, this sale's index price of

- Date of Sale – this sale occurred approximately nineteen months ago, and demand for multifamily land remained strong up until recently necessitating a slight upward adjustment.

- Size - this property had a much lower number of units than the subject property, 60 units versus 230 units, and based upon the economies of scale that suggests small number of units would have a higher index price than a larger number of units necessitating slight downward adjustment.

The two differences were offsetting. Overall, this sale's index price of $7,083 per unit was felt to be similar to what the subject should expect.

The preceding represents an analysis based upon a narrative type format. On the next page is the same exact analysis, but this time in chart form.

ADJUSTMENT CHART

SALE NUMBER	SALE #1	SALE #2	SALE #3	SALE #4
Price Per Unit	$11,713	$8,966	$8,824	$7,083
Financing	0	0	0	0
Date of Sale	Plus	0	0	Plus
Motivation	0	0	0	0
Location	Minus, Minus	0	0	0
Access	0	0	0	0
Shape	0	0	0	0
Size (units)	0	Minus	0	Minus
Zoning	0	0	0	0
Utilities	0	0	0	0
Overall Rating	Slightly Superior	Slightly Superior	Similar	Similar

Based upon the following, the subject should have an index price:

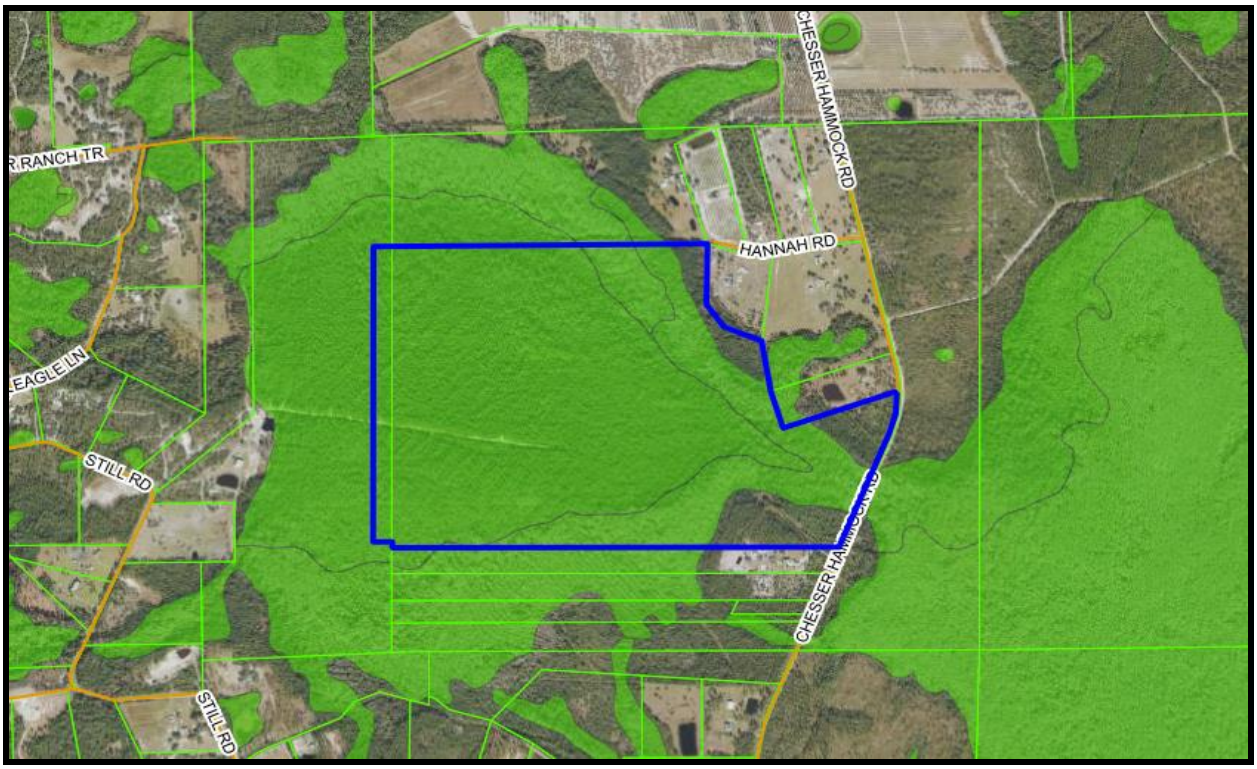
- Slightly lower than Sale #1's index price of $11,713 per unit.
- Slightly lower than Sale #2's index price of $8,966 per unit.
- Similar to Sale #3's index price of $8,824 per unit.
- Similar to Sale #4's index price of $7,083 per unit.

There is consistency in the direction of the adjustments, but some inconsistency in the magnitude of the adjustments. Sale #1 had the superior location and perhaps the downward location adjustment was insufficient. Sale #4 had issues with the location of wetlands interfering with development of the rear upland areas and perhaps an upward adjustment for this issue should have been considered. Decreasing Sale #1's index price lower and increasing Sale #4's index price higher would reduce the spread. The best sale is Sale #3 at $8,824 per acre. Based upon the preceding, an index price of $8,500 per unit is felt to be reasonable. Therefore:

Subject:	230-units	x	$8,500 per unit	=	$1,955,000
Value by the Sales Comparison Approach (Rounded to nearest $5,000)				=	$1,955,000

141.12-acres of Unusable Land: The 141.12-acres represents non-contiguous areas of wetlands and unusable land. Although the wetlands are not formerly listed for sale, Listing agent provided the appraisers with several pages of listing information, i.e. history, prices, etc. And although the 141.12-acres is not formerly listed for sale, the listing agent indicated that his client wanted $5,000 per acre for the 141.12-acres. Urban wetland sales are difficult to locate; however, I recently received several emails from a large appraisal shop in Orlando with forty wetland sales. The ones tabulated below represent the best and most recent sales available.

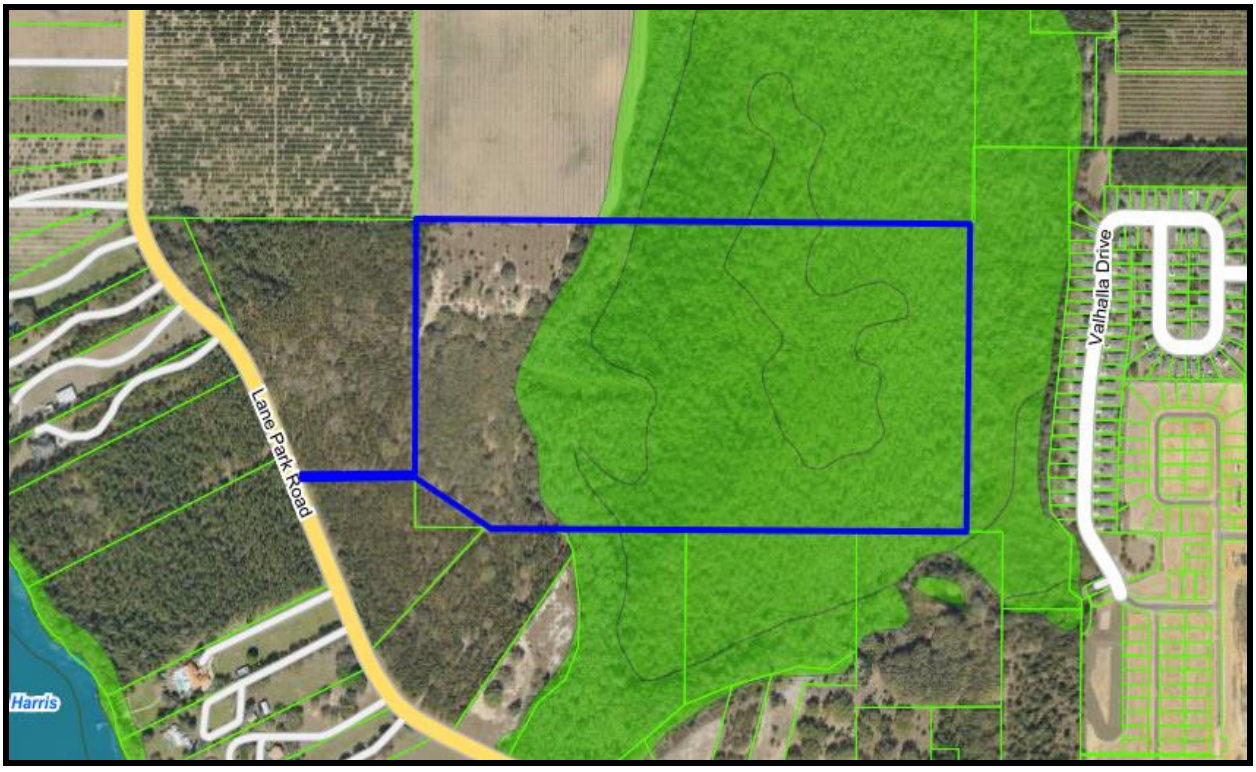
Sale #	Location	County	Book/Page	Sale Date	Sale Price	Acres	Price/Acre
Sale #1	125 Chesser Hammock Road, Pierson	Volusia	8436/2931	07-12-2023	$425,000	237.40	$1,790
Sale #2	Fletcher Camp Road, Haines City	Polk	12970/0560	01-22-2024	$189,200	95.61	$1,979
Sale #3	Lane Park Road, Tavares	Lake	6295/1394	02-29-2024	$185,000	81.05	$2,283
Sale #4	Beauclaire Drive, Tavares	Lake	6327/1386	05-21-2024	$250,000	96.14	$2,600
Average							$2,163



125 CHESSER HAMMOCK, PIERSON



FLETCHER CAMP ROAD, HAINES CITY



LANE PARK ROAD, TAVARES



BEAUCLAIRE DRIVE, TAVARES

CORRELATION

Sale #1: This predominately wetland tract is located on the west side of Chesser Hammock Road, north of State Road 40, east of the small community of Pierson in a rural area of Northwest Volusia County. This 237.40-acre tract sold for $425,000 on July 12, 2023 - $1,790 per acre.

Sale #2: This totally wetland tract is located at the end of Fisher Camp Road (easement) on the shores of Lake Lowery, north of Old Haines City Lake Alfred Road west Haines City in Polk County. This 95.61-acre tract sold for $189,200 on January 22, 2023 - $1,979 per acre.

Sale #3: This predominately wetland tract is located on the east side of Lane Park Road and east of Lake Harris, southwest of Travares in Lake County. This 81.05-acre tract sold for $185,000 on February 29, 2024 - $2,283 per acre.

Sale #4: This totally wetland tract is located on the west side of Beauclaire Drive, north of the Apopka – Beauclaire Canal, south of Tavares and Mount Dora in Lake County. This 96.14-acre tract sold for $250,000 on May 21, 2024 - $2,600 per acre.

The sales ranged from a low of $1,790 per acre to a high of $2,600 per acre with an average unadjusted price of $2,163 per acre. The two best sales are Sale #2 at $1,979 per acre and Sale #4 at $2,600 per acre because they both were total wetlands, the average of which is $2,289 per acre. Based upon this, an index price of $2,300 per acre is reasonable. Therefore:

Wetlands and Unusable Land	
141.12-acres x $2,300 per acre	= $324,576
Less 10% Selling Costs	= $ 32,548
Estimated Contributory Value	= $292,028
Rounded to nearest $5,000	= $290,000

Note: any potential purchaser of the 162.03-acre subject property would most likely be interested only in the 20.91-acres of developable multifamily land and spin off the 141.12-acres of wetlands and unusable land. Selling the 141.12-acres would entail a deduction for a sales commission, title insurance, and closing costs estimated at 10%.

FINAL RECONCILATION

Two values were provided, the second value less the expected cost to sell it off to another buyer, thus addressing any issues involving the sum or the parts.

Value of the 20.91-acres of Multifamily Land	- $1,955,000
Net Value of the 141.21-acres of Wetlands/Unusable Land	- $ 290,000
Market Value of the 162.03-acres	- $2,245,000

Note: Interest so far has solely been for the 20.91-acres of the multifamily land. Any potential buyer of the entire 162.03-acre ownership would sell off the 141.21-acres of wetlands and unusable land. Thus, the $32,576 market value has been discounted to a net value of $290,000, which excludes the anticipated cost to sell off the 141.21-acres.

In my opinion, the current market value of the subject property in "fee simple interest" subject to those exceptions identified in American Government Services Corporation "Property Information Report" AGSC File No.: 33165-R as of August 9, 2024 was:

TWO MILLION TWO HUNDRED FORTY-FIVE THOUSAND DOLLARS ($2,245,000)

The appraiser-client relationship is with Polk County Parks & Natural Resources Division. This confidential report is prepared for the sole use and benefit of the client and Polk County, a political subdivision of the State of Florida. This report is provided for informational purposes only to third parties authorized to receive it. The appraiser assumes no responsibility if the report is used in any manner, other than as described.

Extraordinary Assumptions: C-4 zoning does not allow multifamily development; however, according to Winter Haven Senior Planner Heather Reuter, CPM, the C-4 zoning could be down zoned to C-3, which does allow multifamily development. Townhomes are acceptable but only if they are not individually platted. For appraisal purposes, I am assuming that a zoning from C-4 to C-3 is a reasonable assumption based upon the planner's comment. The use of this Extraordinary Assumption might have affected the assignment results.

PART FIVE- ADDENDA

Scott C. Lowery, CPM
Polk County BOCC
515 E. Boulevard St.
Bartow, FL 33830
863-534-2580 (Office)
Email: ScottLowery@polk-county.net

August 16, 2024

AGSC File No.: 33165-R
Project: Astute Property – EL-102-23

PROPERTY INFORMATION REPORT

Pursuant to your request, we have made a search of the Official Records of Polk County, Florida, through August 9, 2024 at 8:00 a.m., for Polk County BOCC, pertaining to that real property which is more particularly described as follows:

See Exhibit "A", attached.

1. Owner(s) of record: Astute Financial Corporation, an Ontario corporation

By: Trustee's Deed
From: Midlantic National Bank and Trust Company/Florida, successor to Florida Coast Midlantic Trust Company, N.A., as Trustee
To: Astute Financial Corporation, an Ontario corporation, and Bladenboro Corp., N. V., a Netherlands Antilles corporation
Dated: December 31, 1992 Filed and Recorded: July 26, 1994
In Official Records: Book: 3418 Page: 1526
Note: Corrective Deed recorded in Official Records Book 3444, Page 216.
(contains additional property)

By: Warranty Deed
From: Bladenboro Corp., N.V., a Netherlands Antilles corporation To: Astute Financial Corporation, an Ontario corporation
Dated: December 21, 1994 Filed and Recorded: January 11, 1995
In Official Records: Book: 3483 Page: 1629
(contains additional property)

2. **Based on a Thirty-Year ownership search and a Twenty-Year judgment search of the public records, we have found the above-described property to be subject to the following liens, encumbrances, and other matters of public record:**

Easement from Midlantic National Bank and Trust Co./Florida, as Successor Trustee, to the City of Winter Haven, a Florida municipal corporation, dated April 18, 1986 and recorded July 14, 1986 in Official Records Book 2438, Page 1465.

3. **Reservations as may have been issued by the Trustees of the Internal Improvement Trust Fund:**

Reservation of right of ingress and egress for the purpose of maintaining, repairing, and/or enlarging any and all canals, sluiceways, dikes and other works in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

Reservation of easement for road right-of-way in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

Reservation of oil, gas and mineral rights in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

4. **Taxes:**

Tax Parcel ID Number: 262805-000000-024010
Taxes for 2023 are paid in the amount of $456.59
Current assessment: $24,378.00
Homestead exemption: No
Delinquent Taxes: None

Tax Parcel ID Number: 262805-000000-042010
Taxes for 2023 are paid in the amount of $14.76
Current assessment: $799.00
Homestead exemption: No
Delinquent Taxes: None

Tax Parcel ID Number: 262808-000000-013030
Taxes for 2023 are paid in the amount of $566.25
Current assessment: $30,630.00
Homestead exemption: No
Delinquent Taxes: None

Tax Parcel ID Number: 262808-000000-032050
Taxes for 2023 are paid in the amount of $32.06
Current assessment: $1,735.00
Homestead exemption: No
Delinquent Taxes: None

Name and Mailing Address as listed on Tax Roll:
Astute Financial Corporation
3 Strathearn Rd
Toronto ON M6C 1R2
Canada

Certification:

AS TO THE ORIGINAL SEARCH REPORT:

The undersigned hereby certifies that the foregoing PROPERTY INFORMATION REPORT reflects a comprehensive search of the Public Records of Polk County, Florida, showing the apparent ownership of the lands described above, together with outstanding encumbrances affecting the lands.

American Government Services Corporation assumes no responsibility for any defects or omissions in or from the instruments appearing in the chain of title to the property described herein, which defects or omissions would render such instruments void.

This report is not title insurance. Pursuant to s. 627.7843, Florida Statutes, the maximum liability of the issuer of this property information report for errors or missions in this property information report is limited to the amount paid for this property information report and is further limited to the person(s) expressly identified by name in the property information report as the recipients(s) of the property information report.

COUNTERSIGNED: _____

AMERICAN GOVERNMENT SERVICES CORPORATION
3812 W. LINEBAUGH AVENUE
TAMPA, FL 33618
813-933-3322

AGSC File No.: 33165-R

Exhibit "A"

The South ½ of the Southwest ¼ Less right-of-way for State Road 600; All that part of the South ½ of U.S. Government Lot 3 which lies West of the right-of-way for State Road 555, all lying in Section 5, Township 28 South, Range 26 East, Polk County, Florida.

AND

All that part of U. S. Government Lot 2 and U. S. Government Lot 3 lying West of State Road 555 and lying North of Brigham Road (formerly known as Elfenbein Road), lying in Section 8, Township 28 South, Range 26 East, Polk County, Florida.

LESS and EXCEPT the following:

Commence at the Northwest corner of the South one-half of U.S. Government Lot 3 in Section 8, Township 28 South, Range 26 East, Polk County, Florida, run thence South along the West boundary of said Lot 3, 128.70 feet, thence East, 124.74 feet, thence South 09°57'00" West, 25.45 feet to a point on the Southerly right-of way of Brigham Road, thence North 88°06'21" East along said right-of-way, 529.35 feet, to the P.C. of a curve concave to the Southwest having a radius of 255.00 feet, thence continue along said right-of-way and said curve through a central angle of 43°31'39", an arc distance of 193.72 feet, a chord distance of 189.10 feet, a chord bearing of South 69°07'49" East to the P.T. of said curve, thence continue along said right-of-way, South 47°22'00" East, 561.68 feet, thence continue along said right-of way, South 89°34'00" East, 756.44 feet to its intersection with the Westerly right-of-way of U.S. 17, thence North 00°45'46" East, along said right-of-way, 50.00 feet to a point on the Northerly right-of-way of Brigham Road and the Point of Beginning. Run thence North 00°45'46" East, along the Westerly right-of-way of U.S. 17, 425.00 feet, thence North 89°34'00" West, parallel with Brigham Road leaving said right-of-way, 950.00 feet, thence South 00°45'46" West parallel with the Westerly right-of-way of U.S. 17, 233.25 feet to a point on the Northeasterly right-of-way of Brigham Road, thence South 47°22'00" East along said right-of way, 285.46 feet, thence continue along said right-of-way, South 89°34'00" East, 737.43 feet to the Point of Beginning.

WETLAND DEEDS

7/21/2023 1:09:51 PM Instrument #2023149868 #1 Book:8436 Page:2931
Doc Stamps $2,975.00 Transfer Amt $425,000.00

Prepared by and return to:
Jennifer Newsome Bradley
Westside Settlement Associates, LLC
339 West New York Avenue, DeLand, FL 32720
(386) 734-4341
File No WEST23-177

Parcel Identification No 590300000011

[Space Above This Line For Recording Data]

WARRANTY DEED

(STATUTORY FORM – SECTION 689.02, F.S.)

This indenture made the 30th day of July, 2023 between **A Shrugged Investment Corp Inc., a Florida Corporation**, whose post office address is **1241 Produce Alley, DeLand, FL 32724**, of the County of Volusia, State of Florida, Grantor, to **Tony Depta, a married man**, whose post office address is **655 Dylan Trail, Ormond Beach, FL 32174**, of the County of Volusia, State of Florida, Grantee:

Witnesseth, that said Grantor, for and in consideration of the sum of TEN DOLLARS (U.S.$10.00) and other good and valuable considerations to said Grantor in hand paid by said Grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said Grantee, and Grantee's heirs and assigns forever, the following described land, situate, lying and being in Volusia, Florida, to-wit:

A parcel of land situated and being a part of Sections 2 and 3, Township 15 South, Range 29 East, Volusia County, Florida, being further described as follows:

Commencing at the Southwest corner of Section 33, Township 14 South, Range 29 East, Volusia County, Florida, as a POINT OF BEGINNING; thence South 89°59'56" East, a distance of 1645.34 feet; thence South 89°50'46" East, a distance of 4242.01 feet to the centerline of Truck Trail No. 11 (aka Chessar Hammock Road), an existing dirt road; thence along the centerline of said Truck Trail No. 11, the following courses and distances; South 12°39'03" East a distance of 2628.88 feet; thence South 06°41'41" West a distance of 449.99 feet; thence South 24°13'41" West a distance of 2452.97 feet; thence leaving said centerline of Truck Trail No. 11, North 89°52'35" West a distance of 3818.64 feet; thence continue North 89°52'35" West a distance of 1642.00 feet; thence North 00°38'40" East a distance of 5248.88 feet to the POINT OF BEGINNING.

LESS AND EXCEPT the lands described in the following Volusia County Public Records: Official Records Book 5487, Page 3720; Official Records Book 5577, Page 3423; Official Records Book 5290, Page 4155; Official Records Book 5672, Page 836; Official Records Book 5672, Page 876; Official Records Book 4438, Page 198; Official Records Book 4513, Page 4765; Official Records Book 4869, Page 3642; Official Records Book 4681, Page 2384; Official Records Book 4390, Page 405; Official Records Book 4555, Page 2305; Official Records Book 4436, Page 1353; Official Records Book 6840, Page 146; Official Records Book 6944, Page 4775 and Official Records Book 8197, Page 1663.

Together with the following non-exclusive ensement situated in Sections 2 and 11, Township 15 South, Range 29 East, Volusia County, Florida:

A 60 foot easement for the purposes of ingress/egress, drainage and public utilities lying 30 feet on either side of a centerline along the following described courses:

Beginning at the intersection of the North right of way of State Road 40 and the centerline of an existing road known as Chessar Hammock Road; thence North 11°33'29" East along the centerline of Chessar Hammock Road, a distance of 4,152.96 feet; thence North 24°13'41" West, a distance of 3,212.40 feet; thence North 06°41'41" West, a distance of 449.99 feet; thence North 12°39'30" West, a distance of 1,451.45 feet to the Point of Intersection of an existing dirt road known as Hannah Road; thence departing said Chessar Hammock Road and following the centerline of said Hannah Road, South 82°01'13" West, a distance of 1,005.60 feet; thence North 71°57'13" West, a distance of 449.90 feet to a Point of Terminus of this easement; said point also being the center point of a cul-de-sac having a radius of 60.00 feet.

Grantor warrants that at the time of this conveyance, the subject property is not the Grantor's homestead within the meaning set forth in the constitution of the State of Florida, nor is it contiguous to or a part of a homestead property.

Together with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

Subject to taxes for 2023 and subsequent years, not yet due and payable; covenants, restrictions, easements, reservations and limitations of record, if any.

INSTR # 2024008235
BK 12970 Pgs 0560-0562 PG(s)3
01/11/2024 09:22:25 AM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 27.00
DEED DOC 1,324.40

Prepared by and return to:
Mark Mangen
Attorney at Law
STRAUGHN & TURNER, P.A.
255 Magnolia Ave SW
Winter Haven, FL 33880-2902
863-293-1184
File Number: **17881-0001**
Will Call No.:

Parcel Identification No. **262723-000000-021010**

[Space Above This Line For Recording Data]

Warranty Deed

(STATUTORY FORM - SECTION 689.02, F.S.)

This Indenture made this **4th** day of **January**, **2024** between **EKK Venture I, LLC, a Florida limited liability company** whose post office address is **346 E. Central Avenue, Winter Haven, FL 33880** of the County of **Polk**, State of **Florida**, grantor*, and **HBX, Inc., a Florida corporation** whose post office address is **P.O. Box 6052, Lakeland, FL 33807** of the County of **Polk**, State of **Florida**, grantee*,

Witnesseth that said grantor, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Polk County**, **Florida**, to-wit:

See Exhibit "A" attached hereto and made a part hereof as if fully set forth herein.

and said grantor does hereby fully warrant the title to said land, and will defend the same against lawful claims of all persons whomsoever.

* "Grantor" and "Grantee" are used for singular or plural, as context requires.

In Witness Whereof, grantor has hereunto set grantor's hand and seal the day and year first above written.

DoubleTime®

INSTRUMENT#: 2024026440 OR BK 6295 PG 1394 PAGES: 2 3/7/2024 7:53:50 AM
GARY J. COONEY, CLERK OF THE CIRCUIT COURT & COMPTROLLER, LAKE COUNTY, FLORIDA
REC FEES: $18.50 DEED DOC:$1295.00

return to:
Jennifer Larsen, an employee of
Brokers Title of Leesburg, LLC
9800 U.S. Hwy 441, Suite 106,
Leesburg, FL 34788
Prepared incidental to the issuance of
a policy for title insurance
File No.: 24-143

Parcel Identification No.: 01-20-25-0002-000-01400, 01-20-25-0001-000-00100

Consideration: 185,000.00

[Space Above This Line For Recording Data]

WARRANTY DEED

(STATUTORY FORM – SECTION 689.02, F.S.)

This indenture made the **1st day of March, 2024** between **Davida C. Dyke a/k/a Davida C. Morris, a single woman**, whose post office address is **134 Holmes Drive, Fairborn, OH 45324**, hereinafter called the Grantor, to **Michelle Parrish and Shannon Parrish, wife and husband**, whose post office address is 11816 Woodlea Road, Tavares, FL 32778, hereinafter called the Grantees:

Witnesseth, that said Grantor, for and in consideration of the sum of TEN DOLLARS (U.S.$10.00) and other good and valuable considerations to said Grantor in hand paid by said Grantees, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said Grantees, and Grantees' heirs and assigns forever, the following described land, situate, lying and being in Lake, Florida, to-wit:

Parcel 1:

That part of Government Lot 4, Section 1, Township 20 South, Range 25 East, Lake County, Florida, described as follows:

Commencing at the Southeast corner of said Government Lot 4 (Southwest corner of Government Lot 3) run North 00°03'07" East along the East line of said Government Lot 4 a distance of 213.95 feet to the Point of Beginning; from said Point of Beginning continue North 00°03'07" East, 14.00 feet; thence South 89°58'13" West, 566.50 feet to a point on the center of Lane Park Road as shown on the plat of Lake Harris Highlands as recorded in Plat Book 29, Page 2, Public Records of Lake County, Florida; thence South 24°03'07" East, 15.33 feet; thence North 89°58'18" East, 560.24 feet to the Point of Beginning. Less the right-of-way of Lane Park Road.

Parcel 2:

South half (S 1/2) of Government Lots Two (2) and Three (3) of Section 1, Township 20 South, Range 25 East, Lake County, Florida.

Less and Except that portion conveyed by Warranty Deed recorded September 6, 1990 in Official Records Book 1074, Page 1451, Public Records of Lake County, Florida.

Said property did not constitute the Grantor(s) homestead, nor was it adjacent to or contiguous with their homestead, the homestead of the spouse of the Grantor(s) nor any member of the household of the Grantor(s) reside thereon, as defined by Article X, Section 4 of the Florida Constitution or laws.

Together with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

INSTRUMENT#: 2024052418 OR BK 6327 PG 1386 PAGES: 6 5/3/2024 2:23:41 PM
GARY J. COONEY, CLERK OF THE CIRCUIT COURT & COMPTROLLER, LAKE COUNTY, FLORIDA
REC FEES: $52.50 DEED DOC:$1750.00

This Instrument Prepared By
and Should be Returned To:
Donald J. Curotto, Esquire
SHUTTS & BOWEN LLP
300 South Orange Avenue, Suite 1600
Orlando, Florida 32801

Parcel Identification Nos.
0220260004-000-02000 and 1120260001-000-00700

GENERAL WARRANTY DEED

THIS GENERAL WARRANTY DEED is made effective as of the 1st day of May, 2024, by and between **KELLY A. CHAMBERS,** whose address is 314 E Geneva Street, Ocoee, Orange County, Florida 34761; **KERRY L. HERZIG,** whose address is 8367 S 2960 W, West Jordan, UT 84088; **ROBERT M. WALLICK**, whose address is 308 E Geneva Street, Ocoee, Orange County, Florida 34761; and **ROBERT K. WALLICK**, whose address is 1257 Climbing Rose Drive, Orlando, Orange County, Florida 32818 (hereinafter referred to as "**Grantor**"), and **BEAUCLAIRE VENTURES, LLC,** a Florida limited liability company, whose address is 2405 W. Princeton Street, Unit 2, Orlando, Florida 32804 (hereinafter referred to as "**Grantee**").

(Whenever used herein, the terms "Grantor" and "Grantee" shall be deemed to include the parties to this General Warranty Deed and the heirs, personal representatives and assigns of individuals, and the successors and assigns of corporations, limited liability companies or partnerships. The singular shall be deemed to include the plural, and vice versa, where the context so permits.)

W I T N E S S E T H:

WITNESSETH that the Grantor, for and in consideration of the sum of Ten and No/100 Dollars ($10.00) and other good and valuable consideration, receipt of which is hereby acknowledged, hereby grants, bargains, sells, aliens, remises, releases, conveys and confirms, and by these presents does grant, bargain, sell, convey and confirm, unto Grantee, all that certain land situate in Lake County, Florida, more particularly described in **Exhibit "A"** attached hereto (the "**Property**").

TOGETHER with all the tenements, hereditaments and appurtenances with every privilege, right, title, interest and estate, reversion, remainder and easement hereto belonging or in anywise appertaining, and together with all improvements located thereon or therein.

TO HAVE AND TO HOLD the Property, and all the estate, right, title, interest, and equity whatsoever of Grantor either in law or in equity or both, to the proper use, benefit, and behalf of Grantee and Grantee's successors and assigns in fee simple forever.

AND Grantor hereby covenants with said Grantee that Grantor is lawfully seized of the Property in fee simple; that Grantor has good right and lawful authority to sell and convey the Property; that Grantor does hereby fully warrant the title to the Property and will defend the same against the lawful claims of all persons whomsoever; and that the Property is free of all

0XHIBIT F - BUREAU OF APPRAISAL - APPRAISAL CHECKLIST

INSTRUCTIONS: THIS CHECKLIST IS TO BE USED BY APPRAISERS WHEN PREPARING APPRAISAL REPORTS FOR STATE LAND. ALL ITEMS ON THIS CHECKLIST MUST BE MARKED.

ITEMS THAT ARE MARKED "NO" MUST BE NARRATIVELY ADDRESSED WITHIN THE BODY OF THE COMPLETED APPRAISAL REPORT.

THE CHECKLIST IS TO BE INSERTED IN THE ADDENDA OF THE APPRAISAL REPORT.

BUREAU OF APPRAISAL - APPRAISAL CHECKLIST
PART ONE

GENERAL — VACANT LAND

		Yes	Page No.	No	N/A
1	Is a completed "Executive Summary" included for each parcel and/or final opinion of value?	☒	10	☐	☐
2	Does the appraisal follow the recommended general format for narrative appraisal reports (this format should be used by the fee appraiser as a general guide)?	☒		☐	☐

PREMISES OF THE APPRAISAL

3	Is there a description of the extent of the process (scope) of collecting, confirming and reporting data?	☒	15	☐	☐
4	Is the Bureau of Appraisal's definition of market value, or other defined value, used?	☒	17	☐	☐
5	Is the intended use (function) and user of the appraisal identified?	☒	16	☐	☐
6	Are the property interests (rights) appraised identified? (e.g. fee simple, leased fee, easement, fee simple subject to)	☒	17	☐	☐
7	Does the appraisal state any Extraordinary Assumptions and Hypothetical Conditions?	☒	6	☐	☐
8	Does the appraisal report consider whether a fractional interest, physical segment or partial holding contributes pro rata to the value of the whole?	☒	49	☐	☐
9	Are the effective date of value and the date of the appraisal report stated?	☒	18	☐	☐

PRESENTATION OF DATA

10	Is a legal description of the property appraised included in the report?	☒	20	☐	☐
11	Is a five-year subject sales history included?	☒	44	☐	☐
12	Does the appraiser explain why the previous sale of the subject, if within five years, was not used in the valuation?	☐		☐	☒

		Yes	Page No.	No	N/A
13	Is any current agreement of sale, option or listing of the property under appraisal analyzed?	☒	44	☐	☐
14	Was a neighborhood analysis provided including a discussion of market trends, either positive or negative, which affects the subject property?	☒	21 & 23	☐	☐
15	Is a land use analysis provided which discusses existing land use and zoning designations, impending use restrictions or proposed concurrency or land use planning restrictions?	☒	42	☐	☐
16	Does the appraisal report provide the current assessed value of the subject property?	☒	43	☐	☐
DESCRIPTION OF SUBJECT					
17	Are photographs and an aerial included?	☒	24 thru 29	☒	☐
18	Does the appraisal report describe the size, shape and other physical characteristics of the site/land?	☒	40	☐	☐
19	Does the appraisal report describe access to the property?	☒	40	☐	☐
20	If the access is poor, inadequate or substandard, does the appraisal address its affect, with supporting market evidence, on value?	☐		☐	☒
21	Does the appraisal describe the topography of the property?	☒	41	☐	☐
22	Does the appraisal report describe the location of the property?	☒	40	☐	☐
23	Does the appraisal report describe the property's road frontage?	☒	40	☐	☐
24	Does the appraisal report describe the property's water frontage?	☐		☐	☒
25	Does the appraisal report describe utilities available and their proximity to the property?	☒	43	☐	☐
26	Does the appraisal report describe nuisances and hazards, if any, affecting the value of the property?	☒	45	☐	☐

		Yes	Page No.	No	N/A
27	Does the appraisal report describe any existing and/or potential environmental hazards affecting the value of the property?	☒	62	☐	☐
28	Is the tax assessment included?	☒	45	☐	☐
29	Does the appraisal report describe the drainage and the existence of flood plain conditions affecting the value of the property?	☒	41 & 42	☐	☐
30	Does the appraisal report discuss any easements, encroachments and rights-of-way affecting the value of the property and the affect on value?	☒	11,17,44,45	☐	☐
31	Does the appraisal report discuss the affect on the value of the property as a result of outstanding oil, gas and mineral interests?	☒	11,19,44	☐	☐

ANALYSIS OF DATA AND CONCLUSIONS

Highest and Best Use

		Yes	Page No.	No	N/A
32	Is the highest and best use of the property "as vacant" and "as improved," if applicable, analyzed?	☒	47	☐	☐
33	Is the highest and best use based on an "economic use" of the property?	☒	47	☐	☐

Land Valuation

34	Is a minimum of 3 sales included and analyzed?	☒	50	☐	☐
35	Are photographs and an aerial of the sales included?	☐	50	☐	☐
36	Did the appraiser include a sale and listing location map that also shows the subject?	☒	51	☐	☐
37	Is the unit of comparison appropriate for the subject's market?	☒		☐	☐
38	Are the comparable sales similar to the subject in highest and best use?	☒		☐	☐
39	If the comparable sales are not similar in highest and best use, is an adequate discussion included as to why the sales are used?	☐		☐	☒
40	Are the comparable sales adjusted for cash equivalency or otherwise clearly explained?	☒		☐	☐
41	If you included comparable sales to governmental units and/or non-profit groups, were they analyzed separately with appropriate comments explaining differences, if any, compared to private transactions?	☐		☐	☒
42	If the appraisal report includes extraordinary assumptions and hypothetical conditions are their impacts on value adequately supported and reported in the reconciliation and final value estimate?	☒	6	☐	☐
43	If you provide a discounted cash flow model in valuing the subject property, did you also provide a sales comparison, or other, approach to arrive at the present value of the subject property?	☐		☐	☒

		Yes	Page No.	No	N/A
44	Are demolition costs, if any, appropriately considered for the comparable sales and the subject property?	☐		☐	☒

IF THE SUBJECT DOES NOT INCLUDE VALUATION OF IMPROVEMENTS,

PROCEED TO PART THREE – NUMBER 78

BUREAU OF APPRAISAL - APPRAISAL CHECKLIST
PART TWO

GENERAL - IMPROVED PROPERTIES

Cost Approach

		Yes	Page No.	No	N/A
45	Are there photographs of each major improvement?	☐		☐	☐
46	Is a sketch of the building or a copy of the building plans included?	☐		☐	☐
47	Does the appraisal report identify and describe any potential environmental hazards (e.g., asbestos)?	☐		☐	☐
48	Is the source of the reproduction or replacement cost new of the improvements identified and explained?	☐		☐	☐
49	Was entrepreneurial profit, whether included or excluded, identified and supported?	☐		☐	☐
50	Is curable physical deterioration (deferred maintenance) considered?	☐		☐	☐
51	Is incurable physical deterioration considered?	☐		☐	☐
52	Is functional obsolescence considered?	☐		☐	☐
53	Is external obsolescence considered?	☐		☐	☐
54	Is the contributory value of the site improvements supported?	☐		☐	☐

Income Approach

55	Are the comparable rentals adequately documented and considered?	☐		☐	☐
56	Is a general comparable rental location map also showing the location of the subject property included?	☐		☐	☐
57	Are adjustments to the comparable rentals supported?	☐		☐	☐
		Yes	**Page No.**	**No**	**N/A**

58	Is a current rent roll and recent income history for the property provided in the report or lack thereof explained?	☐		☐	☐
59	Were all existing leases considered?	☐		☐	☐
60	Does the report indicate whether the contract rental income is at or near market rental rates?	☐		☐	☐
61	Is the estimate of vacancy and collection loss adequately supported?	☐		☐	☐
62	Is a recent expense history for the subject property provided in the report?	☐		☐	☐
63	Are the projected expenses explained and supported?	☐		☐	☐
64	Are differences between the projected expenses and the property's historical expense trend supported and described?	☐		☐	☐
65	Is each component of the selected capitalization method and technique supported by appropriate market data?	☐		☐	☐
66	Are deductions for rent loss, leasing commissions, tenant improvements, deferred maintenance, etc., accounted for in the discounted cash flow analysis?	☐		☐	☐
67	Is the discount rate supported by appropriate market data?	☐		☐	☐
68	Is the terminal capitalization rate supported considering the future risk and increased age of the improvements?	☐		☐	☐
69	Are reasonable sales costs deducted from the estimated reversion to arrive at the net property reversion?	☐		☐	☐

Sales Comparison Approach

70	Is the unit of comparison appropriate for the subject's market?	☐		☐	☐
71	Are the sales adequately documented and presented?	☐		☐	☐
		Yes	**Page No.**	**No**	**N/A**

72	Are photographs and an aerial of the sales included?	☐	☐	☐
73	Does the report include a sales and listing location map showing the subject property?	☐	☐	☐
74	Are the comparable sales similar to the subject in highest and best use?	☐	☐	☐
75	If the comparable sales are not similar in highest and best use, is a discussion included as to why the sales are used?	☐	☐	☐
76	Are the comparable sales adjusted for cash equivalency or otherwise clearly explained?	☐	☐	☐
77	Are the adjustments that were applied to the sales adequately supported?	☐	☐	☐

BUREAU OF APPRAISAL - APPRAISAL CHECKLIST
PART THREE

Reconciliation

		Yes	Page No.	No	N/A
78	Is the quality and quantity of data considered and reconciled and the applicability or suitability of the approaches considered and reconciled?	☒	74	☐	☐
79	Is the final value estimate consistent with the highest and best use, the data, and analyses presented in the report?	☒	74	☐	☐
80	Does the appraisal report consider and analyze the effect on value, if any, of the assemblage of the various estates or component parts of a property, refraining from estimating the value of the whole property simply by adding together the individual values of the various estates or component parts without explanation?	☒	50 thru 73	☐	☐
81	In arriving at a final value estimate, does the appraisal consider the value impact (cost to cure/stigma) of environmental hazards and/or other contamination (underground storage tanks, toxic waste disposal, etc.) before concluding the "as is" value?	☐		☐	☒

Miscellaneous

82	Does the report provide an estimate of the property's anticipated exposure time, as required by USPAP?	☒	18	☐	☐
83	Does the appraisal explain and support the exclusion of any of the usual valuation approaches?	☐		☐	☒
84	Are Extraordinary Assumptions and Hypothetical Conditions repeated, or referenced with all statements of the final opinion of value?	☒	Several Places	☐	☐

SIGNED: Joseph S. String Digitally signed by Joseph S. String DN: cn=Joseph S. String, o=String Appraisal Services, ou, email=sservic2@tampabay.rr.com, c=US Date: 2024.09.13 07:21:07 -04'00' **DATE:** September 13, 2024

Authentisign ID: E0334CA1-EC50-F011-8F7C-000D3A8A9962

Vacant Land Contract

1. **Sale and Purchase ("Contract"):** *ASTUTE FINANCIAL CORPORATION* ("**Seller**") and *CITY OF WINTER HAVEN, FLORIDA* ("**Buyer**") (the "parties") agree to sell and buy on the terms and conditions specified below the property ("Property") described as:
Address: _____
Legal Description: _____
PARCELS 26-28-05-000000-024010 (0 US HIGHWAY 92 W), 26-28-05-000000-024030 (O US HIGHWAY 17), 26-28-05-000000-042010 (0 US HIGHWAY 92 W), 26-28-08-000000-013030 (0 LAKE ALFRED RD), LESS AND EXCEPT THAT PORTION OF 26-28-08-000000-013030 (NOT LESS THAN 6 ACRES) THAT CARRIES THE CITY OF WINTER HAVEN R-3 ZONING ---SEE ATTACHED EXHIBIT "A' FOR DIAGRAM /ILLUSTRATION ONLY---
SEC ___/TWP /___/RNG ___ of _____ County, Florida. Real Property ID No.:_____
including all improvements existing on the Property and the following additional property: _____
_____

2. **Purchase Price:** (U.S. currency) ..... $ *1,400,000.00*
All deposits will be made payable to "Escrow Agent" named below and held in escrow by:
Escrow Agent's Name: *Boswell & Dunlap LLP*
Escrow Agent's Contact Person: _____
Escrow Agent's Address: *245 South Central Avenue, Bartow, FL 33830*
Escrow Agent's Phone: *863-533-7117*
Escrow Agent's Email: *fjm@bosdun.com*

(a) Initial deposit ($0 if left blank) (**Check if applicable**)
☐ accompanies offer
☒ will be delivered to Escrow Agent within *10* days (3 days if left blank)
after Effective Date ..... $ *25,000.00*

(b) Additional deposit will be delivered to Escrow Agent (**Check if applicable**)
☐ within _____ days (10 days if left blank) after Effective Date
☐ within _____ days (3 days if left blank) after expiration of Due Diligence Period ..... $ *0.00*

(c) Total Financing (see Paragraph 6) (express as a dollar amount or percentage) ..... $ *0.00*

(d) Other: _____ ..... $ *0.00*

(e) Balance to close (not including **Buyer's** closing costs, prepaid items, and prorations) to be paid at closing by wire transfer or other Collected funds ..... $ *1,375,000.00*

(f) ☐ (Complete only if purchase price will be determined based on a per unit cost instead of a fixed price.) The unit used to determine the purchase price is ☐ lot ☐ acre ☐ square foot ☐ other (specify): _____ prorating areas of less than a full unit. The purchase price will be $_____ per unit based on a calculation of total area of the Property as certified to **Seller** and **Buyer** by a Florida licensed surveyor in accordance with Paragraph 8(c). The following rights of way and other areas will be excluded from the calculation: _____

3. **Time for Acceptance; Effective Date:** Unless this offer is signed by **Seller** and **Buyer** and an executed copy delivered to all parties on or before *June 25, 2025*, this offer will be withdrawn and **Buyer's** deposit, if any, will be returned. The time for acceptance of any counter-offer will be 3 days after the date the counter-offer is delivered. ~~The "Effective Date" of this Contract is the date on which the last one of the Seller and Buyer has signed or initialed and delivered this offer or the final counter-offer.~~

4. **Closing Date:** This transaction will close on *November 17, 2025 **** ("Closing Date"), unless specifically extended by other provisions of this Contract. The Closing Date will prevail over all other time periods including, but not limited to, Financing and Due Diligence periods. ~~However, if the Closing Date occurs on a Saturday, Sunday, or national legal holiday, it will extend to 5:00 p.m. (where the Property is located) of the next business day.~~ In the event insurance underwriting is suspended on Closing Date and **Buyer** is unable to obtain property insurance, **Buyer** may postpone closing for up to 5 days after the insurance underwriting suspension is lifted. If this transaction does not close for any reason, **Buyer** will immediately return all **Seller** provided documents and other items.

5. **Extension of Closing Date:** If Paragraph 6(b) is checked and Closing Funds from Buyer's lender(s) are not available on Closing Date due to Consumer Financial Protection Bureau Closing Disclosure delivery requirements

©2025 Florida Realtors®
Licensed to Alta Star Software and ID1825562.470604
Software and added formatting © 2025 Alta Star Software, all rights reserved. • www.altastar.com • (877) 279-8898

Authentisign ID: E0334CA1-EC50-F011-8F7C-000D3A8A9962

("CFPB Requirements), if applicable, then Closing Date shall be extended for such period necessary to satisfy CFPB Requirements, provided such period shall not exceed 10 days.

6. **Financing:** (**Check as applicable**)
(a) ☒ **Buyer** will pay cash for the Property with no financing contingency.
(b) ☐ This Contract is contingent on **Buyer** qualifying for and obtaining the commitment(s) or approval(s) specified below ("Financing") within _____ days after Effective Date (Closing Date or 30 days after Effective Date, whichever occurs first, if left blank) ("Financing Period"). **Buyer** will apply for Financing within _____ days after Effective Date (5 days if left blank) and will timely provide any and all credit, employment, financial, and other information required by the lender. If **Buyer**, after using diligence and good faith, cannot obtain the Financing within the Financing Period, either party may terminate this Contract and **Buyer's** deposit(s) will be returned.
(1) ☐ **New Financing: Buyer** will secure a commitment for new third party financing for $ _____ or _____% of the purchase price at (**Check one**) ☐ a fixed rate not exceeding _____% ☐ an adjustable interest rate not exceeding _____% at origination (a fixed rate at the prevailing interest rate based on **Buyer's** creditworthiness if neither choice is selected). **Buyer** will keep **Seller** and Broker fully informed of the loan application status and progress and authorizes the lender or mortgage broker to disclose all such information to **Seller** and Broker.
(2) ☐ **Seller Financing: Buyer** will execute a ☐ first ☐ second purchase money note and mortgage to **Seller** in the amount of $_____, bearing annual interest at _____% and payable as follows:
_____
The mortgage, note, and any security agreement will be in a form acceptable to **Seller** and will follow forms generally accepted in the county where the Property is located; will provide for a late payment fee and acceleration at the mortgagee's option if **Buyer** defaults; will give **Buyer** the right to prepay without penalty all or part of the principal at any time(s) with interest only to date of payment; will be due on conveyance or sale; will provide for release of contiguous parcels, if applicable; and will require **Buyer** to keep liability insurance on the Property, with **Seller** as additional named insured. **Buyer** authorizes **Seller** to obtain credit, employment, and other necessary information to determine creditworthiness for the financing. **Seller** will, within 10 days after Effective Date, give **Buyer** written notice of whether or not **Seller** will make the loan.
(3) ☐ **Mortgage Assumption: Buyer** will take title subject to and assume and pay existing first mortgage to
_____
LN#_____ in the approximate amount of $_____ currently payable at $_____ per month, including principal, interest, ☐ taxes and insurance, and having a ☐ fixed ☐ other (describe) _____
interest rate of _____% which ☐ will ☐ will not escalate upon assumption. Any variance in the mortgage will be adjusted in the balance due at closing with no adjustment to purchase price. **Buyer** will purchase **Seller's** escrow account dollar for dollar. If the interest rate upon transfer exceeds _____% or the assumption/transfer fee exceeds $_____, either party may elect to pay the excess, failing which this Contract will terminate; and **Buyer's** deposit(s) will be returned. If the lender disapproves **Buyer**, this Contract will terminate; and **Buyer's** deposit(s) will be returned.

7. **Assignability:** (**Check one**) **Buyer** ☒ may assign and thereby be released from any further liability under this Contract, ☐ may assign but not be released from liability under this Contract, or ☐ may not assign this Contract.

8. **Title: Seller** has the legal capacity to and will convey marketable title to the Property by ☒ statutory warranty deed ☐ special warranty deed ☐ other (specify) _____, free of liens, easements, and encumbrances of record or known to **Seller**, but subject to property taxes for the year of closing; covenants, restrictions, and public utility easements of record; existing zoning and governmental regulations; and (list any other matters to which title will be subject) _____, provided there exists at closing no violation of the foregoing.
(a) Title Evidence: The party who pays for the owner's title insurance policy will select the closing agent and pay for the title search, including tax and lien search (including municipal lien search) if performed, and all other fees charged by closing agent. **Seller** will deliver to **Buyer**, at
(**Check one**) ☐ **Seller's** ☒ **Buyer's** expense and
(**Check one**) ☒ within *30* days after Effective Date ☐ at least _____ days before Closing Date,
(**Check one**)
(1) ☒ a title insurance commitment by a Florida licensed title insurer setting forth those matters to be discharged by **Seller** at or before closing and, upon **Buyer** recording the deed, an owner's policy in the

©2025 Florida Realtors®
Licensed to Alta Star Software and ID1825562.470604
Software and added formatting © 2025 Alta Star Software, all rights reserved. • www.altastar.com • (877) 279-8898

Authentisign ID: E0334CA1-EC50-F011-8F7C-000D3A8A9962

amount of the purchase price for fee simple title subject only to the exceptions stated above. If **Buyer** is paying for the owner's title insurance policy and **Seller** has an owner's policy, **Seller** will deliver a copy to **Buyer** within 15 days after Effective Date.

(2) ☐ an abstract of title, prepared or brought current by an existing abstract firm or certified as correct by an existing firm. However, if such an abstract is not available to **Seller**, then a prior owner's title policy acceptable to the proposed insurer as a base for reissuance of coverage may be used. The prior policy will include copies of all policy exceptions and an update in a format acceptable to **Buyer** from the policy effective date and certified to **Buyer** or **Buyer's** closing agent together with copies of all documents recited in the prior policy and in the update. If such an abstract or prior policy is not available to **Seller**, then (1) above will be the title evidence.

(b) Title Examination: After receipt of the title evidence, **Buyer** will, within *10* days (10 days if left blank) but no later than Closing Date, deliver written notice to **Seller** of title defects. Title will be deemed acceptable to **Buyer** if (i) **Buyer** fails to deliver proper notice of defects or (ii) **Buyer** delivers proper written notice and **Seller** cures the defects within *30* days (30 days if left blank) ("Cure Period") after receipt of the notice. If the defects are cured within the Cure Period, closing will occur within 10 days after receipt by **Buyer** of notice of such cure. **Seller** may elect not to cure defects if **Seller** reasonably believes any defect cannot be cured within the Cure Period. If the defects are not cured within the Cure Period, **Buyer** will have 10 days after receipt of notice of **Seller's** inability to cure the defects to elect whether to terminate this Contract or accept title subject to existing defects and close the transaction without reduction in purchase price.

(c) Survey: Buyer may, at **Buyer's** expense, have the Property surveyed and must deliver written notice to **Seller**, within 5 days after receiving survey but not later than 5 days before Closing Date, of any encroachments on the Property, encroachments by the Property's improvements on other lands, or deed restriction or zoning violations. Any such encroachment or violation will be treated in the same manner as a title defect and **Seller's** and **Buyer's** obligations will be determined in accordance with Paragraph 8(b).

(d) Ingress and Egress: Seller warrants that the Property presently has ingress and egress.

9. Property Condition: Seller will deliver the Property to **Buyer** at closing in its present "as is" condition, with conditions resulting from **Buyer's** Inspections and casualty damage, if any, excepted. **Seller** will not engage in or permit any activity that would materially alter the Property's condition without the **Buyer's** prior written consent.

(a) Inspections: (**Check (1) or (2)**)

(1) ☒ **Due Diligence Period: Buyer** will, at **Buyer's** expense and within *90 ***** days (30 days if left blank) ("Due Diligence Period") after Effective Date and in **Buyer's** sole and absolute discretion, determine whether the Property is suitable for **Buyer's** intended use. During the Due Diligence Period, **Buyer** may conduct a Phase 1 environmental assessment and any other tests, analyses, surveys, and investigations ("Inspections") that **Buyer** deems necessary to determine to **Buyer's** satisfaction the Property's engineering, architectural, and environmental properties; zoning and zoning restrictions; subdivision statutes; soil and grade; availability of access to public roads, water, and other utilities; consistency with local, state, and regional growth management plans; availability of permits, government approvals, and licenses; and other inspections that **Buyer** deems appropriate. If the Property must be rezoned, **Buyer** will obtain the rezoning from the appropriate government agencies. **Seller** will sign all documents **Buyer** is required to file in connection with development or rezoning approvals. **Seller** gives **Buyer**, its agents, contractors, and assigns, the right to enter the Property at any time during the Due Diligence Period for the purpose of conducting Inspections, provided, however, that **Buyer**, its agents, contractors, and assigns enter the Property and conduct Inspections at their own risk. **Buyer** will indemnify and hold **Seller** harmless from losses, damages, costs, claims, and expenses of any nature, including attorneys' fees, expenses, and liability incurred in application for rezoning or related proceedings, and from liability to any person, arising from the conduct of any and all Inspections or any work authorized by **Buyer**. **Buyer** will not engage in any activity that could result in a construction lien being filed against the Property without **Seller's** prior written consent. If this transaction does not close, **Buyer** will, at **Buyer's** expense, (i) repair all damages to the Property resulting from the Inspections and return the Property to the condition it was in before conducting the Inspections and (ii) release to **Seller** all reports and other work generated as a result of the Inspections.

Before expiration of the Due Diligence Period, **Buyer** must deliver written notice to **Seller** of **Buyer's** determination of whether or not the Property is acceptable. **Buyer's** failure to comply with this notice requirement will constitute acceptance of the Property as suitable for **Buyer's** intended use in its "as is" condition. If the Property is unacceptable to **Buyer** and written notice of this fact is timely delivered to **Seller**, this Contract will be deemed terminated, and **Buyer's** deposit(s) will be returned.

©2025 Florida Realtors®
Licensed to Alta Star Software and ID1825562.470604
Software and added formatting © 2025 Alta Star Software, all rights reserved. • www.altastar.com • (877) 279-8898

Authentisign ID: E0334CA1-EC50-F011-8F7C-000D3A8A9962

(2) ☐ **No Due Diligence Period: Buyer** is satisfied that the Property is suitable for **Buyer's** purposes, including being satisfied that either public sewerage and water are available to the Property or the Property will be approved for the installation of a well and/or private sewerage disposal system and that existing zoning and other pertinent regulations and restrictions, such as subdivision or deed restrictions, concurrency, growth management, and environmental conditions, are acceptable to **Buyer**. This Contract is not contingent on **Buyer** conducting any further investigations.

(b) Government Regulations: Changes in government regulations and levels of service which affect **Buyer's** intended use of the Property will not be grounds for terminating this Contract if the Due Diligence Period has expired or if Paragraph 9(a)(2) is selected.

(c) Flood Zone: Buyer is advised to verify by survey, with the lender, and with appropriate government agencies which flood zone the Property is in, whether flood insurance is required, and what restrictions apply to improving the Property and rebuilding in the event of casualty.

(d) Coastal Construction Control Line ("CCCL"): If any part of the Property lies seaward of the CCCL as defined in Section 161.053, Florida Statutes, **Seller** will provide **Buyer** with an affidavit or survey as required by law delineating the line's location on the Property, unless **Buyer** waives this requirement in writing. The Property being purchased may be subject to coastal erosion and to federal, state, or local regulations that govern coastal property, including delineation of the CCCL, rigid coastal protection structures, beach nourishment, and the protection of marine turtles. Additional information can be obtained from the Florida Department of Environmental Protection, including whether there are significant erosion conditions associated with the shore line of the Property being purchased.

☐ **Buyer** waives the right to receive a CCCL affidavit or survey.

10. Closing Procedure; Costs: Closing will take place in the county where the Property is located and may be conducted by mail or electronic means. If title insurance insures **Buyer** for title defects arising between the title binder effective date and recording of **Buyer's** deed, closing agent will disburse at closing the net sale proceeds to **Seller** (in local cashier's check if **Seller** requests in writing at least 5 days before closing) and brokerage fees to Broker as per Paragraph 21. In addition to other expenses provided in this Contract, **Seller** and **Buyer** will pay the costs indicated below.

(a) Seller Costs:
Taxes on deed
Recording fees for documents needed to cure title
Title evidence (if applicable under Paragraph 8)
Estoppel Fee(s)
Other: ***Seller's attorney's fees and any real estate sales and/or Broker's commissions and/or fees.***

(b) Buyer Costs:
Taxes and recording fees on notes and mortgages
Recording fees on the deed and financing statements
Loan expenses
Title evidence (if applicable under Paragraph 8)
Lender's title policy at the simultaneous issue rate
Inspections
Survey
Insurance
Other: ***See Addendum***

(c) Prorations: The following items will be made current and prorated as of the day before Closing Date: real estate taxes (including special benefit tax liens imposed by a CDD), interest, bonds, assessments, leases, and other Property expenses and revenues. If taxes and assessments for the current year cannot be determined, the previous year's rates will be used with adjustment for any exemptions.

(d) Special Assessment by Public Body: Regarding special assessments imposed by a public body, **Seller** will pay (i) the full amount of liens that are certified, confirmed, and ratified before closing and (ii) the amount of the last estimate of the assessment if an improvement is substantially completed as of Effective Date but has not resulted in a lien before closing; and **Buyer** will pay all other amounts. If special assessments may be paid in installments, ☒ **Seller** ☐ **Buyer** (**Buyer** if left blank) will pay installments due after closing. If **Seller** is checked, **Seller** will pay the assessment in full before or at the time of closing. Public body does not include a Homeowners' or Condominium Association.

(e) PROPERTY TAX DISCLOSURE SUMMARY: BUYER SHOULD NOT RELY ON THE **SELLER'S** CURRENT PROPERTY TAXES AS THE AMOUNT OF PROPERTY TAXES THAT **BUYER** MAY BE OBLIGATED TO PAY IN THE YEAR SUBSEQUENT TO PURCHASE. A CHANGE OF OWNERSHIP OR PROPERTY

©2025 Florida Realtors®
Licensed to Alta Star Software and ID1825562.470604
Software and added formatting © 2025 Alta Star Software, all rights reserved. • www.altastar.com • (877) 279-8898

Authentisign ID: E0334CA1-EC50-F011-8F7C-000D3A8A9962

IMPROVEMENTS TRIGGERS REASSESSMENTS OF THE PROPERTY THAT COULD RESULT IN HIGHER PROPERTY TAXES. IF YOU HAVE ANY QUESTIONS CONCERNING VALUATION, CONTACT THE COUNTY PROPERTY APPRAISER'S OFFICE FOR FURTHER INFORMATION.

(f) Foreign Investment in Real Property Tax Act ("FIRPTA"): If **Seller** is a "foreign person" as defined by FIRPTA, **Seller** and **Buyer** will comply with FIRPTA, which may require **Seller** to provide additional cash at closing.

(g) 1031 Exchange: If either **Seller** or **Buyer** wish to enter into a like-kind exchange (either simultaneously with closing or after) under Section 1031 of the Internal Revenue Code ("Exchange"), the other party will cooperate in all reasonable respects to effectuate the Exchange including executing documents, provided, however, that the cooperating party will incur no liability or cost related to the Exchange and that the closing will not be contingent upon, extended, or delayed by the Exchange.

11. **Computation of Time:** Calendar days will be used when computing time periods, except time periods of 5 days or less. Time periods of 5 days or less will be computed without including Saturday, Sunday, or national legal holidays specified in 5 U.S.C. 6103(a). Other than time for acceptance and Effective Date as set forth in Paragraph 3, any time periods provided for or dates specified in this Contract, whether preprinted, handwritten, typewritten or inserted herein, which shall end or occur on a Saturday, Sunday, or national legal holiday (see 5 U.S.C. 6103) shall extend until 5:00 p.m. (where the Property is located) of the next business day. **Time is of the essence in this Contract.**

12. **Risk of Loss; Eminent Domain:** If any portion of the Property is materially damaged by casualty before closing or **Seller** negotiates with a governmental authority to transfer all or part of the Property in lieu of eminent domain proceedings or an eminent domain proceeding is initiated, **Seller** will promptly inform **Buyer**. Either party may terminate this Contract by written notice to the other within 10 days after **Buyer's** receipt of **Seller's** notification, and **Buyer's** deposit(s) will be returned, failing which **Buyer** will close in accordance with this Contract and receive all payments made by the governmental authority or insurance company, if any.

13. **Force Majeure:** **Seller** or **Buyer** will not be required to perform any obligation under this Contract or be liable to each other for damages so long as the performance or non-performance of the obligation is delayed, caused, or prevented by an act of God or force majeure. An "act of God or "force majeure" is defined as hurricanes, earthquakes, floods, fire, unusual transportation delays, wars, insurrections, and any other cause not reasonably within the control of **Seller** or **Buyer** and which by the exercise of due diligence the non-performing party is unable in whole or in part to prevent or overcome. All time periods, including Closing Date, will be extended for the period that the act of God or force majeure is in place. However, in the event that such act of God or force majeure event continues beyond 30 days, either party may terminate this Contract by delivering written notice to the other; and **Buyer's** deposit(s) will be returned.

14. **Notices:** All notices will be in writing and delivered to the parties and Broker by mail, personal delivery, or electronic means. **Buyer's failure to timely deliver written notice to Seller, when such notice is required by this Contract, regarding any contingency will render that contingency null and void, and this Contract will be construed as if the contingency did not exist. Any notice, document, or item delivered to or received by an attorney or licensee (including a transactions broker) representing a party will be as effective as if delivered to or received by that party.**

15. **Complete Agreement; Persons Bound:** This Contract is the entire agreement between **Seller** and **Buyer**. **Except for brokerage agreements, no prior or present agreements will bind Seller, Buyer, or Broker unless incorporated into this Contract.** Modifications of this Contract will not be binding unless in writing, signed or initialed, and delivered by the party to be bound. Electronic signatures will be acceptable and binding. This Contract, signatures, initials, documents referenced in this Contract, counterparts, and written modifications communicated electronically or on paper will be acceptable for all purposes, including delivery, and will be binding. Handwritten or typewritten terms inserted in or attached to this Contract prevail over preprinted terms. If any provision of this Contract is or becomes invalid or unenforceable, all remaining provisions will continue to be fully effective. **Seller** and **Buyer** will use diligence and good faith in performing all obligations under this Contract. This Contract will not be recorded in any public record. The terms "**Seller**," "**Buyer**," and "Broker" may be singular or plural. This Contract is binding on the heirs, administrators, executors, personal representatives, and assigns, if permitted, of **Seller**, **Buyer**, and Broker.

©2025 Florida Realtors®
Licensed to Alta Star Software and ID1825562.470604
Software and added formatting © 2025 Alta Star Software, all rights reserved. • www.altastar.com • (877) 279-8898

Authentisign ID: E0334CA1-EC50-F011-8F7C-000D3A8A9962

16. **Default and Dispute Resolution:** This Contract will be construed under Florida law. This Paragraph will survive closing or termination of this Contract.
    (a) **Seller Default:** If **Seller** fails, neglects, or refuses to perform **Seller's** obligations under this Contract, **Buyer** may elect to receive a return of **Buyer's** deposit(s) without thereby waiving any action for damages resulting from **Seller's** breach and may seek to recover such damages or seek specific performance. **Seller** will also be liable for the full amount of the brokerage fee.
    (b) ~~**Buyer Default:** If **Buyer** fails, neglects, or refuses to perform **Buyer's** obligations under this Contract, including payment of deposit(s), within the time(s) specified, **Seller** may elect to recover and retain the deposit(s) paid and agreed to be paid, for the account of **Seller** as agreed upon liquidated damages, consideration for execution of this Contract, and in full settlement of any claims, whereupon **Seller** and **Buyer** will be relieved from all further obligations under this Contract; or **Seller**, at **Seller's** option, may proceed in equity to enforce **Seller's** rights under this Contract.~~

17. **Attorney's Fees; Costs:** In any litigation permitted by this Contract, the prevailing party shall be entitled to recover from the non-prevailing party costs and fees, including reasonable attorney's fees, incurred in conducting the litigation. This Paragraph 17 shall survive Closing or termination of this Contract.

18. **Escrow Agent; Closing Agent:** **Seller** and **Buyer** authorize Escrow Agent and closing agent (collectively "Agent") to receive, deposit, and hold funds and other items in escrow and, subject to Collection, disburse them upon proper authorization and in accordance with Florida law and the terms of this Contract, including disbursing brokerage fees. "Collection" or "Collected" means any checks tendered or received have become actually and finally collected and deposited in the account of Agent. The parties agree that Agent will not be liable to any person for misdelivery of escrowed items to **Seller** or **Buyer**, unless the misdelivery is due to Agent's willful breach of this Contract or gross negligence. If Agent interpleads the subject matter of the escrow, Agent will pay the filing fees and costs from the deposit and will recover reasonable attorneys' fees and costs to be paid from the escrowed funds or equivalent and charged and awarded as court costs in favor of the prevailing party.

19. **Professional Advice; Broker Liability:** Broker advises **Seller** and **Buyer** to verify all facts and representations that are important to them and to consult an appropriate professional for legal advice (for example, interpreting this Contract, determining the effect of laws on the Property and this transaction, status of title, foreign investor reporting requirements, the effect of property lying partially or totally seaward of the CCCL, etc.) and for tax, property condition, environmental, and other specialized advice. **Buyer** acknowledges that all representations (oral, written, or otherwise) by Broker are based on **Seller** representations or public records. **Buyer agrees to rely solely on Seller, professional inspectors, and government agencies for verification of the Property condition and facts that materially affect Property value. Seller** and **Buyer** respectively will pay all costs and expenses, including reasonable attorneys' fees at all levels, incurred by Broker and Broker's officers, directors, agents, and employees in connection with or arising from **Seller's** or **Buyer's** misstatement or failure to perform contractual obligations. **Seller** and **Buyer** hold harmless and release Broker and Broker's officers, directors, agents, and employees from all liability for loss or damage based on (i) **Seller's** or **Buyer's** misstatement or failure to perform contractual obligations; (ii) the use or display of listing data by third parties, including, but not limited to, photographs, images, graphics, video recordings, virtual tours, drawings, written descriptions, and remarks related to the Property; (iii) Broker's performance, at **Seller's** or **Buyer's** request, of any task beyond the scope of services regulated by Chapter 475, Florida Statutes, as amended, including Broker's referral, recommendation, or retention of any vendor; (iv) products or services provided by any vendor; and (v) expenses incurred by any vendor. **Seller** and **Buyer** each assume full responsibility for selecting and compensating their respective vendors. This Paragraph will not relieve Broker of statutory obligations. For purposes of this Paragraph, Broker will be treated as a party to this Contract. This Paragraph will survive closing.

20. **Commercial Real Estate Sales Commission Lien Act:** If the Property is commercial real estate as defined by Section 475.701, Florida Statutes, the following disclosure will apply: The Florida Commercial Real Estate Sales Commission Lien Act provides that when a broker has earned a commission by performing licensed services under a brokerage agreement with you, the broker may claim a lien against your net sales proceeds for the broker's commission. The broker's lien rights under the act cannot be waived before the commission is earned.

21. **Brokers:** The licensee(s) and brokerage(s) named below are collectively referred to as "Broker." **Instruction to closing agent:** **Seller** and **Buyer** direct Closing Agent to disburse at Closing the full amount of the brokerage fees as specified in separate brokerage agreements with the parties and cooperative agreements between the Brokers, except to the extent Broker has retained such fees from the escrowed funds. This Paragraph will not be used to modify any offer of compensation made by **Seller** or listing broker to cooperating brokers.

©2025 Florida Realtors®
Licensed to Alta Star Software and ID1825562.470604
Software and added formatting © 2025 Alta Star Software, all rights reserved. • www.altastar.com • (877) 279-8898

Authentisign ID: E0334CA1-EC50-F011-8F7C-000D3A8A9962

Steven L. Lockhart	*Steven L. Lockhart*
Seller's Sales Associate/License No.	**Buyer's** Sales Associate/License No.
steve@lockhartonline.com	*steve@lockhartonline.com*
Seller's Sales Associate Email Address	**Buyer's** Sales Associate Email Address
863-293-1234	*863-293-1234*
Seller's Sales Associate Phone Number	**Buyer's** Sales Associate Phone Number
LOCKHART & ASSOCIATES INC.	*LOCKHART & ASSOCIATES INC.*
Listing Brokerage	**Buyer's Brokerage**
826 1ST ST S, Winter Haven, FL 33880	*826 1ST ST S, Winter Haven, FL 33880*
Listing Brokerage Address	**Buyer's Brokerage Address**

22. **Addenda:** The following additional terms are included in the attached addenda and incorporated into this Contract (**Check if applicable**):
- ☐ A. Back-up Contract
- ☐ B. Kick Out Clause
- ☐ C. HOA Addendum
- ☐ D. Other _____

23. **Additional Terms:**

** See paragraph G of Addendum to Vacant Land Contract regarding the Closing Date.*

*** See paragraph D of Addendum to Vacant Land Contract for additional terms regarding Due Diligence Period.*

This Contract is fully conditioned upon its approval by the City Commission of the City of Winter Haven within 90 days of when both Buyer and Seller have executed; failing which, either party may terminate this Contract and any Deposit(s) paid shall be promptly returned to the Buyer.

In addition, the Addendum to Vacant Land Contract is attached hereto and incorporated herein by reference.

COUNTER-OFFER/REJECTION

☐ Seller counters Buyer's offer (to accept the counter-offer, Buyer must sign or initial the counter-offered terms and deliver a copy of the acceptance to Seller).
☐ Seller rejects Buyer's offer

[The remainder of this page is intentionally left blank.

This Contract continues with Line 369 on Page 8 of 8.]

Buyer (_____) (_____) and Seller (_____) (_____) acknowledge receipt of a copy of this page, which is 7 of 8 pages.

©2025 Florida Realtors®
Licensed to Alta Star Software and ID1825562.470604
Software and added formatting © 2025 Alta Star Software, all rights reserved. • www.altastar.com • (877) 279-8898

Authentisign ID: E0334CA1-EC50-F011-8F7C-000D3A8A9962

This is intended to be a legally binding Contract. If not fully understood, seek the advice of an attorney before signing.

ATTENTION: SELLER AND BUYER

CONVEYANCES TO FOREIGN BUYERS: Part III of Chapter 692, Sections 692.201 - 692.205, Florida Statutes, 2023 (the "Act"), in part, limits and regulates the sale, purchase and ownership of certain Florida properties by certain buyers who are associated with a "foreign country of concern", namely: the People's Republic of China, the Russian Federation, the Islamic Republic of Iran, the Democratic People's Republic of Korea, the Republic of Cuba, the Venezuelan regime of Nicolás Maduro, or the Syrian Arab Republic. **It is a crime to buy or knowingly sell property in violation of the Act.**

At time of purchase, Buyer must provide a signed Affidavit which complies with the requirements of the Act. Seller and Buyer are advised to seek legal counsel regarding their respective obligations and liabilities under the Act.

CITY OF WINTER HAVEN, FLORIDA

Buyer: T. Michael Stavres Date: 6·23·2025

Print name: ***T. Michael Stavres, City Manager***

Buyer: _____ Date: _____

Print name: _____

Buyer's address for purpose of notice:

Address: ***451 Third Street, N.W., Winter Haven, FL 33881***

Phone: _____ Fax: _____ Email: _____

ASTUTE FINANCIAL CORPORATION

Seller: Authentisign by Donald W. Kerr Date: 06/24/25

Print name: ***Donald W. Kerr***

Seller: _____ Date: _____

Print name: _____

Seller's address for purpose of notice:

Address: ***3 STRATHEARN RD, TORONTO, ON M6C 1R2***

Phone: _____ Fax: _____ Email: _____

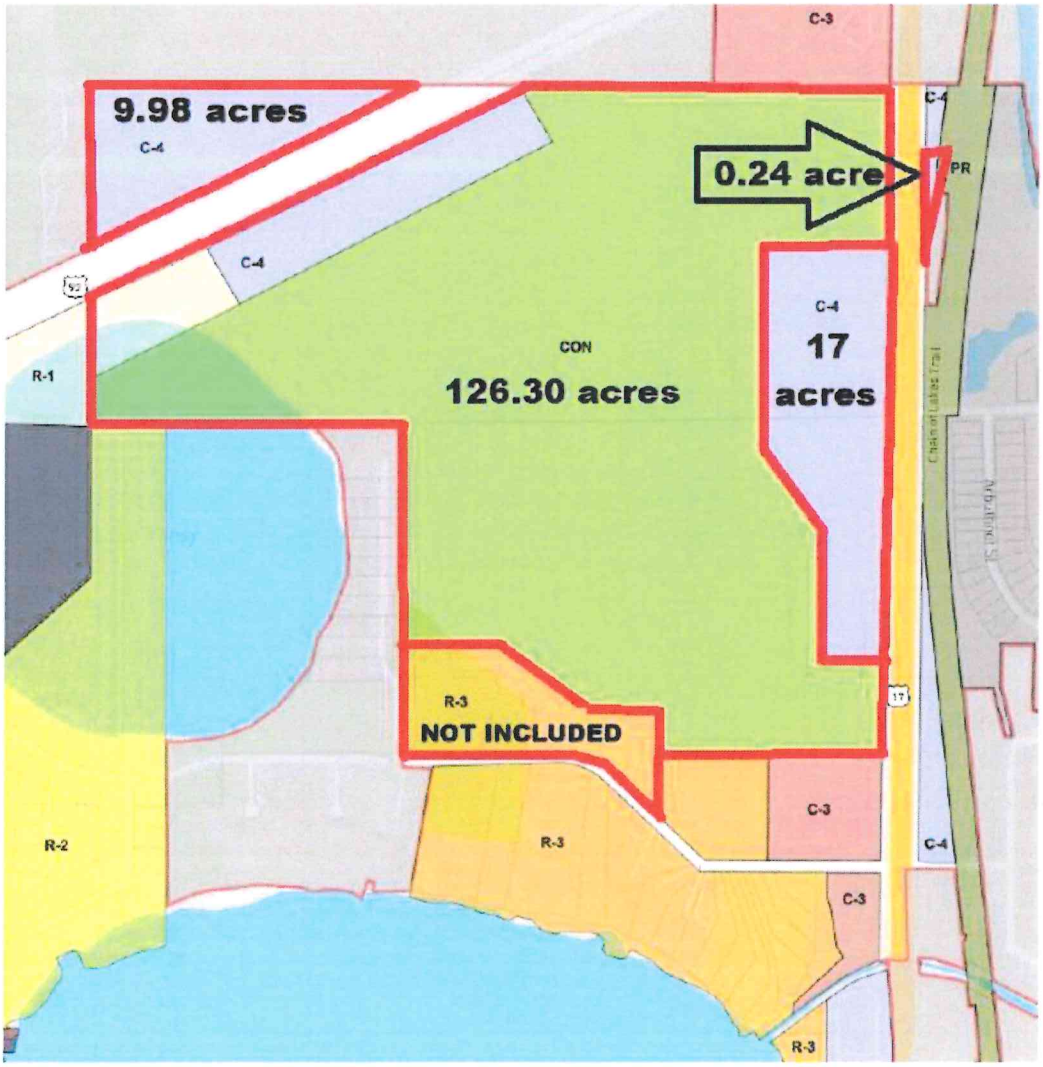
Florida REALTORS® makes no representation as to the legal validity or adequacy of any provision of this form in any specific transaction. This standardized form should not be used in complex transactions or with extensive riders or additions. This form is available for use by the entire real estate industry and is not intended to identify the user as REALTOR®. REALTOR® is a registered collective membership mark which may be used only by real estate licensees who are members of the NATIONAL ASSOCIATION OF REALTORS® and who subscribe to its Code of Ethics. The copyright laws of United States (17 U.S. Code) forbid the unauthorized reproduction of this form by any means including facsimile or computerized forms.

©2025 Florida Realtors®
Licensed to Alta Star Software and ID1825562.470604
Software and added formatting © 2025 Alta Star Software, all rights reserved. • www.altastar.com • (877) 279-8898

Authentisign ID: E0334CA1-EC50-F011-8F7C-000D3A8A9962

Exhibit "A"

ATTACHMENT TO
VACANT LAND CONTRACT
FOR ILLUSTRATION ONLY
ALL MEASUREMENT ARE APPROXIMATE



Authentisign ID: E0334CA1-EC50-F011-8F7C-000D3A8A9962

ADDENDUM TO VACANT LAND CONTRACT

A. The Buyer's obligation to close this transaction is contingent on all of the following matters being completed: 1) Approval by the City Commission of the City of Winter Haven authorizing the purchase of the subject property in accordance with the terms of this Contract.

B. Effective Date is the date that this Contract is approved by the City Commission of the City of Winter Haven.

C. Each party shall pay its own attorney's fees incurred in this matter.

D. Subject to appraisal, testing, inspections, soil borings, survey, and other due diligence determined necessary by the City which shall be completed within 90 days ("Due Diligence Period") from the Effective Date of this Contract with the option for an automatic 30 day extension if requested in writing by Buyer. Such tests and other matters must be satisfactory to the Buyer as a condition precedent to its obligation to close this transaction. In the event any appraisal, test, inspection, soil boring, survey, and other due diligence matters set forth above are not acceptable to the Buyer then it shall notify Seller of same in writing within the Due Diligence Period contained in this Contract. Thereafter the Buyer and Seller shall be relieved of any further obligations and/or responsibilities related to this Contract and all deposits paid hereunder, if any, shall be refunded in full to Buyer. Buyer shall pay all costs associated with due diligence matters determined necessary by Buyer.

E. Buyer and Seller may attempt to resolve any disputes through non-binding mediation. Mediation shall be conducted in Polk County, Florida, by a Mediator who is certified to conduct mediations pursuant to rules promulgated by the Florida Supreme Court and pursuant to Section 44.102 of the Florida Statutes. Any mediation shall be conducted within 45 days of the date of any dispute. Each party shall bear their own costs in mediation and the Mediator shall be paid one-half by each party.

F. All real estate taxes prior to 2025 and all certified, confirmed, and ratified assessments which are a lien against the Property shall be satisfied of record by Seller at Closing. All current real estate taxes shall be pro-rated as of Closing. If a certified, confirmed, and ratified assessment is payable in installments, Seller will pay all installments due and payable on or before the Closing, with any installment for any period extending beyond the Closing Date prorated as of Closing. In the event Buyer acquires fee title to the Property between January 1 and November 1, Seller shall, in accordance with Section 196.295, Florida Statutes, place in escrow with the county tax collector an amount equal to the current taxes prorated to the date of Closing, based upon the current assessment and millage rates on the Property. In the event Buyer acquires fee title to the Property on or after November 1, Sellers shall pay, to the county tax collector an amount equal to all of the taxes that are determined to be legally due and payable to the county tax collector for the entire calendar year. If an improvement is substantially completed as of the Closing Date that has not resulted in a lien before Closing, Seller will pay the amount of the last estimate of the assessment. This subsection applies to special assessment liens imposed by a public body and does not apply to condominium association special assessments.

Buyer (_____)(_____) and Seller (DWK)

Authentisign ID: E0334CA1-EC50-F011-8F7C-000D3A8A9962

G. *Closing Date.* If the Closing Date occurs on a Saturday, Sunday, or national legal holiday, or a holiday where the City's City Hall is closed for the transaction of ordinary business (a "City Holiday"), it will extend to 5:00 p.m. (where the Property is located) of the next business day. Provided, further, that Buyer and Seller may agree to an earlier Closing Date than 11/17/2025 as set forth in Paragraph 4 of the Vacant Land Contract if the Buyer requests same in writing.

H. **Buyer Default**. If Buyer fails, neglects, or refuses to perform Buyer's obligations under this Contract, including payment of deposit(s), within the time(s) specified, Seller shall retain the deposit(s), paid and agreed to be paid, for the account of Seller as agreed upon liquidated damages, consideration for execution of this Contract, and in full settlement of any claims, whereupon Seller and Buyer will be relieved from all further obligations under this Contract.

Florida's Crossroads of Opportunity

Board of County Commissioners

Natural Resources Programs
Bartow Air Base
4177 Ben Durrance Road
Bartow, Florida 33830

POLK COUNTY

PHONE: 863-534-7377
FAX: 863-534-7374
www.polk-county.net

PARKS & NATURAL RESOURCES DIVISION

July 3, 2025

M.J. Carnevale
Attn: Deputy City Manager, City of Winter Haven
451 Third Street NW
Winter Haven, FL 33881
863-229-6341
mcarnevale@mywinterhaven.com

Mr. Carnevale,

Polk County Environmental Lands Program (COUNTY) would like to formally submit this letter in support of the Astute Conservation Land Trust acquisition and restoration project. The COUNTY values its partnership with the City on implementing successful water quality.

November 2022, Polk County citizens approved a ballot initiative renewing a designated funding source for acquisition and management of conservation lands. The COUNTY program goals are to expand conservation/ agriculture corridors and improve connections to existing conservation areas. COUNTY staff review each site nominated. The properties are evaluated by the technical advisory board (TAG), reviewed by a citizen advisory board (CLASAC) and ultimately go before the Board of County Commissioners who direct staff to pursue acquisition or not to pursue acquisition.

The COUNTY has evaluated and approved a project, located on Highway 27/92 and Highway 17 and shores of Lake Pansy. The County's TAG, a group of expert biologist, botanist, geologists, and others from several different agencies, conducted a site tour and the results are shown below.

TAG Score Summary from September 22, 2023

A. Water Resources	**32**
B. Natural Communities & Landscape	**29**
C. Plants and Animals	**11**
D. Human Values	**6**
E. Management	**3**
Total Average Score:	**80**

Subsequently, our citizen advisory board (CLASAC) and our Board of County Commissioners recommended staff to pursue acquisition. Therefore, the COUNTY would like to assist and support the City of Winter Haven in the acquisition of this project.

The County has budgeted in FY 24/25 $600,000 for the acquisition of the Astute Financial Land Trust. The Stormwater Technical Advisory Committee (STAC) has reviewed and approved the project and supports the partnership between City of Winter Haven and Polk County Parks and Natural Resources in the acquisition of this project.

Polk County appreciates the City's dedication to protecting water, wildlife, and wilderness resources and appreciates the opportunity to partner and preserve these important water quality projects and look forward to working together in the future.

Sincerely,



Tabitha Biehl
Land and Water Natural Areas Manager
Polk County Parks and Natural Resources Division

DATE: June 27, 2025

TO: Honorable Mayor and City Commissioners

VIA: T. Michael Stavres, City Manager
M.J. Carnevale, Deputy City Manager

FROM: Chris Young, Senior Planner

SUBJECT: **Resolution R-25-35:** Request by TBHG, Inc. confirming acceptance of a portion of the improvements, infrastructure, and dedications in favor of the Public/City of Winter Haven for the Lake Deer Townhomes Subdivision, and retaining the performance bond to guarantee completion of infrastructure that remains incomplete. **General Location:** Subdivision is generally located east of 35th Street NW, north of Recker Highway, and south of Lake Deer.

BACKGROUND

May 27, 2025, the City Commission approved Resolution R-25-26 platting the Lake Deer Townhome Subdivision. The subdivision consists of 51.7± acres generally located east of 35th Street NW, north of Recker Highway, and south of Lake Deer. The subdivision contains 304 building lots and ten (10) common lots. However, certain improvements were not completed at that time. In accordance with §21-395(c) of the City of Winter Haven Unified Land Development Code, the developer, TBHG, Inc. submitted a Performance Bond issued by Wagner Bonding & Insurance Inc. in the amount of $1,976,237.50 to guarantee completion of all required infrastructure and improvements for the subdivision. Incomplete improvements included, earthwork, sanitary sewer, potable water, stormwater management, paving, and engineering certification.

While TBHG, Inc. platted Lake Deer Townhomes as a single phase subdivision plat, they chose to break the installation of required infrastructure into Two "phases." At this time, they have completed the required infrastructure for "Phase 1" and are now seeking the City's acceptance of those improvements to be dedicated to the City. City staff has performed inspections of these improvements and has found them ready for acceptance. The City will retain the Performance Bond submitted as part of the subdivision plat approval process.

As work is incomplete for "Phase 2," the Performance Bond issued by Wagner Bonding & Insurance Inc. in the amount of $1,976,237.50 will continue to be held to insure completion of the infrastructure in this area. The developer expects to begin construction on the remainder of the subdivision following the acceptance of the improvements contained in "Phase 1."

FINANCIAL IMPACT

There is no direct financial impact as a result of this request.

STRATEGIC PLAN ALIGNMENT

This is an approval of acceptance of infrastructure for an approved subdivision plat and is not specifically defined as a goal or strategy in the Strategic Plan. However, it is generally aligned with the Economic Sustainability and Responsible Government Pillars.

RECOMMENDATION

Staff recommends the City Commission approve Resolution R-25-35 and authorize the City Manager or his designee to take necessary and appropriate actions related thereto.

ATTACHMENT

- Resolution R-25-35

Space for Recording

RESOLUTION R-25-35

A RESOLUTION CONFIRMING THE ACCEPTANCE OF A PORTION OF THE IMPROVEMENTS, INFRASTRUCTURE, AND DEDICATIONS IN FAVOR OF THE PUBLIC/CITY OF WINTER HAVEN AS NOTATED ON THAT CERTAIN PLAT ENTITLED "LAKE DEER TOWNHOMES" RECORDED IN THE OFFICE OF THE CLERK OF THE CIRCUIT COURT IN AND FOR POLK COUNTY, FLORIDA, IN PLAT BOOK 216, PAGES 4 THROUGH 13, PUBLIC RECORDS OF POLK COUNTY, FLORIDA; AND CONFIRMING THE CONTINUED POSSESSION OF A PERFORMANCE BOND POSTED TO GUARANTEE COMPLETION OF REQUIRED IMPROVEMENTS AND INFRASTRUCTURE THAT REMAIN UNCOMPLETED FOR THIS SUBDIVISION; AND PROVIDING FOR AN EFFECTIVE DATE. (General Location: Subdivision is generally located east of 35th Street NW, north of Recker Highway, and south of Lake Deer.)

Whereas, that certain plat entitled "Lake Deer Townhomes" as depicted and reflected on Composite Exhibit "A" attached hereto and made a part hereof, was presented to the City Commission and approved for filing on the 27th day of May, 2025, by the passage of Resolution R-25-26; and

Whereas, §21-396 of the City of Winter Haven Unified Land Development Code provides that acceptance of public improvements and dedications shall be by Resolution; and

Whereas, all required infrastructure and improvements as depicted in that portion of the Subdivision known as "Lake Deer Townhomes" and as depicted and outlined on Exhibit "B" attached hereto and incorporated by reference have been completed in accordance with all applicable standards and specifications as determined by City staff and therefore City staff is requesting that the City of Winter Haven confirm its acceptance of only those portions of the improvements and dedications in favor of the Public/City of Winter Haven as notated on the said plat as more specifically depicted and outlined on Exhibit "B" attached hereto and incorporated by reference herein. The City is not affirmatively accepting any other infrastructure and improvements as depicted and outlined within the portion of the "Lake Deer Townhomes" plat as more specifically set forth on Exhibit "C" attached hereto and incorporated by reference herein and as provided in this Resolution.

Whereas, TBHG INC., owner of the lands depicted and reflected on Composite Exhibit "A" attached hereto has already submitted a Performance Bond issued by Wagner Bonding & Insurance Inc. to the City of Winter Haven in the amount of $1,976,237.50 to insure completion of all required infrastructure and improvements within the subdivision shown on the approved plat known as "Lake Deer Townhomes" as more specifically depicted and reflected on Composite Exhibit "A" attached hereto and incorporated by reference herein which shall remain in full force and effect and in possession of the City.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF WINTER HAVEN, FLORIDA:

1. The City Commission having been otherwise fully advised in the premises, and having already approved said plat for filing hereby confirms its acceptance as of July 14, 2025, of only the infrastructure and improvements as set forth on that portion of the said plat as depicted on Exhibit "B" attached hereto and incorporated herein by reference. Said infrastructure and improvements are intended to be only those portions of the water; wastewater; and internal roadways that have been completed for Phase 1 of the Lake Deer Townhomes Subdivision as depicted on Exhibit "B" attached hereto and incorporated by reference herein as such systems have passed all required tests, and all required certifications have been obtained, and those systems are fully operational pursuant to City standards in accordance with Chapter 177, Florida Statutes. Provided further that the City is not accepting the stormwater drainage systems and related infrastructure for Phase 1 of the Lake Deer Townhomes Subdivision which is within the portion of the said Subdivision depicted on Exhibit "B" attached hereto and incorporated herein by reference as those will remain the responsibility of the entity and/or individuals to whom they were dedicated in the Plat. Furthermore, the City is not affirmatively accepting any infrastructure and improvements within Phase 2 of the said Subdivision as more specifically outlined on Exhibit "C" attached hereto and incorporated by reference herein.

2. The Performance Bond in favor of the City and issued by Wagner Bonding & Insurance Inc. in the amount of $1,976,237.50 and delivered as security for the completion of all required infrastructure and improvements in the said Subdivision which remain uncomplete shall remain in full force and effect and in possession of the City.

3. That certificates of occupancy for structures constructed within Phase 1 of the Lake Deer Townhomes Subdivision, as depicted and outlined on Exhibit "B", attached hereto and incorporated herein by reference, may be issued by the City in accordance with the requirements of all applicable Winter Haven Code of Ordinances, Land Development Regulations and applicable Florida law, and rules and regulations of all entities with jurisdiction. No certificates of occupancy for structures constructed within Phase 2 of the Lake Deer Townhomes Subdivision, as depicted and outlined on Exhibit "C", attached hereto and incorporated herein by reference, shall be issued by the City

until such time as all such infrastructure and improvements that are incomplete are completed and have passed all required testing and obtained all required certifications and are ready and accepted for operation and use as determined by the City staff and provided by further Resolution.

4. This Resolution shall take effect immediately upon passage.

INTRODUCED AND PASSED by the City Commission of the City of Winter Haven, Florida, in regular session this 14th day of July, 2025.

_____
MAYOR-COMMISSIONER
Nathaniel J. Birdsong, Jr.

ATTEST:

_____
CITY CLERK
Vanessa Castillo, MMC

Approved as to form:

_____
CITY ATTORNEY
Frederick J. Murphy, Jr.

Composite Exhibit "A"

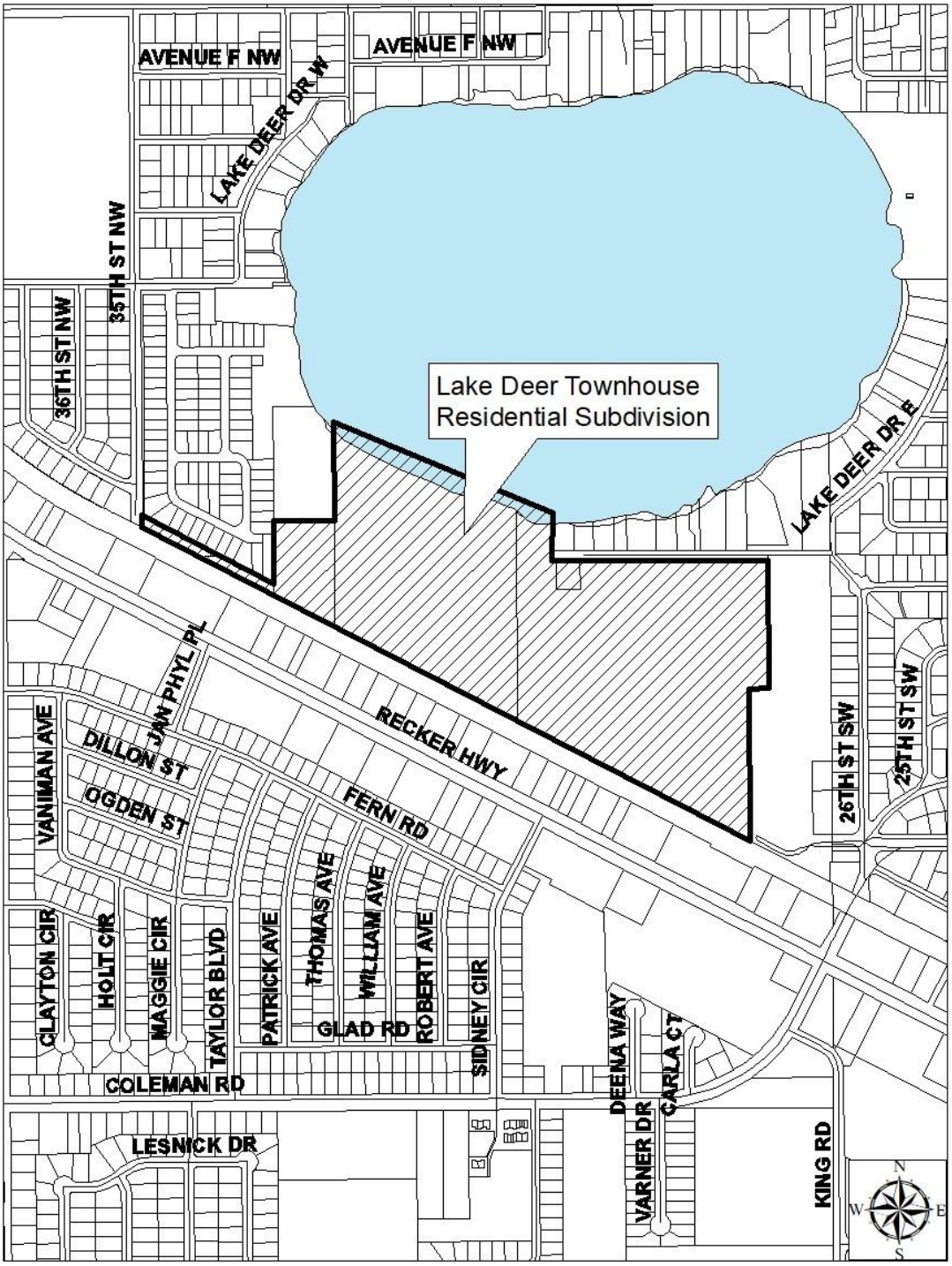


Exhibit "A"
(page 2)

LAKE DEER TOWNHOMES

SHEET 1 OF 10

A REPLAT OF A PORTION OF R.H. BRYSONS SUBDIVISION, RECORDED IN PLAT BOOK 4, PAGE 16 OF THE PUBLIC RECORDS OF POLK COUNTY, FLORIDA, AND
A PORTION OF LAND SITUATED WITHIN SECTION 25, TOWNSHIP 28 SOUTH, RANGE 25 EAST, CITY OF WINTER HAVEN, POLK COUNTY, FLORIDA

PLAT BOOK ____ PAGE ____

LEGAL DESCRIPTION

A REPLAT OF A PORTION OF R.H. BRYSONS SUBDIVISION, RECORDED IN PLAT BOOK 4, PAGE 16 OF THE PUBLIC RECORDS OF POLK COUNTY, FLORIDA, AND A PORTION OF LAND SITUATED WITHIN SECTION 25, TOWNSHIP 28 SOUTH, RANGE 25 EAST, CITY OF WINTER HAVEN, POLK COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 25, TOWNSHIP 28 SOUTH, RANGE 25 EAST, ALSO BEING A POINT ON THE EAST LINE OF THE PLAT OF LAKE DEER, AS RECORDED IN PLAT BOOK 174, PAGES 13 AND 14, OFFICIAL RECORDS OF POLK COUNTY, FLORIDA; THENCE RUN NORTH 00°26'20" WEST, ALONG THE WEST LINE OF SAID NORTHWEST QUARTER OF THE NORTHEAST QUARTER AND SAID EAST LINE OF THE PLAT OF LAKE DEER, A DISTANCE OF 1,43.17 FEET; THENCE DEPARTING SAID WEST LINE AND SAID EAST LINE, RUN NORTH 89°28'23" EAST, A DISTANCE OF 281.60 FEET; THENCE RUN NORTH 00°25'22" WEST, A DISTANCE OF 442.39 FEET, PLUS OR MINUS, TO A POINT ON THE APPROXIMATE SOUTHERLY LINE OF LAKE DEER; THENCE RUN SOUTHEASTERLY AND EASTERLY ALONG SAID SOUTHERLY LINE OF LAKE DEER, WITH A SURVEY LINE OF CLOSURE RUNNING APPROXIMATELY SOUTH 65°33'27" EAST, A DISTANCE OF 1,148.08 FEET MORE OR LESS, TO A POINT ON THE EAST LINE OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF AFORESAID SECTION 25; THENCE RUN SOUTH 00°26'46" EAST, ALONG THE SAID EAST LINE, A DISTANCE OF 153.84 FEET MORE OR LESS TO THE SOUTHWEST CORNER OF LAKE DEER, DRIVE SOUTH PER OFFICIAL RECORDS BOOK 1307/9, PAGE 2131 OF THE PUBLIC RECORDS OF POLK COUNTY, FLORIDA; THENCE RUN NORTH 89°58'40" EAST, ALONG THE SOUTH RIGHT-OF-WAY LINE OF SAID LAKE DEER DRIVE SOUTH, A DISTANCE OF 1,015.27 FEET; THENCE DEPARTING SAID SOUTH LINE ALONG THE WEST LINE OF A 22' WIDE DRAINAGE DITCH EASEMENT AS RECORDED IN OFFICIAL RECORDS BOOK 2061, PAGE 443, PUBLIC RECORDS OF POLK COUNTY, FLORIDA RUN THE FOLLOWING THREE (3) COURSES AND DISTANCES: (1) RUN SOUTH 00°27'30" EAST, A DISTANCE OF 593.08 FEET; (2) THENCE RUN SOUTH 89°32'30" WEST, A DISTANCE OF 94.00 FEET; (3) THENCE RUN SOUTH 00°27'30" EAST, A DISTANCE OF 741.74 FEET TO A POINT ON THE NORTHERLY RIGHT-OF-WAY LINE OF CSX TRANSPORTATION RAILROAD (FORMERLY SEABOARD COAST LINE RAILROAD); THENCE RUN NORTH 62°44'40" WEST, ALONG SAID NORTHERLY RIGHT-OF-WAY LINE, A DISTANCE OF 2,546.12 FEET TO THE INTERSECTION OF SAID NORTHERLY RIGHT-OF-WAY LINE WITH THE WEST LINE OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF AFORESAID SECTION 25; THENCE RUN NORTH 62°46'51" WEST, CONTINUING ALONG SAID NORTHERLY RIGHT-OF-WAY LINE, A DISTANCE OF 723.35 FEET TO A POINT ON THE EAST RIGHT-OF-WAY LINE OF THIRTY-FIFTH STREET NORTHWEST (VARIABLE WIDTH); THENCE RUN NORTH 00°17'28" WEST, ALONG SAID EAST RIGHT-OF-WAY LINE, A DISTANCE OF 56.77 FEET TO A POINT ON THE NORTHWESTERLY PROJECTION OF THE SOUTHERLY LINE OF AFORESAID PLAT OF LAKE DEER; THENCE RUN SOUTH 62°46'51" EAST, ALONG SAID SOUTHERLY LINE AND IT'S NORTHWESTERLY PROJECTION A DISTANCE OF 723.19 FEET TO THE SOUTHEAST CORNER OF SAID PLAT OF LAKE DEER, SAID POINT ALSO LYING ON THE WEST LINE OF SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF AFORESAID SECTION 25; THENCE RUN NORTH 00°26'20" WEST, ALONG SAID WEST LINE AND THE EAST LINE OF SAID PLAT OF LAKE DEER, A DISTANCE OF 156.68 FEET RETURNING TO THE POINT OF BEGINNING.

CONTAINING 2,251,778 SQUARE FEET OR 51.694 ACRES, MORE OR LESS.

SURVEYOR'S NOTES

1. THE BEARINGS SHOWN HEREON ARE ASSUMED NORTH BASED ON THE WEST LINE OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 25, TOWNSHIP 28 SOUTH, RANGE 25 EAST, WHICH BEARS NORTH 00°26'20" WEST, AS RECORDED IN THE PLAT OF LAKE DEER, PLAT BOOK 174, PAGES 13 AND 14 OF THE PUBLIC RECORDS OF POLK COUNTY, FLORIDA.
2. ALL LOT CORNERS AND CHANGES IN DIRECTION OF LOTS AND TRACTS SHALL BE MONUMENTED BY A 1/2" IRON ROD AND CAP STAMDING "ASM LB 6393" SET IN ACCORDANCE WITH CHAPTER 177.091(9), FLORIDA STATUTES, UNLESS OTHERWISE SHOWN.
3. ALL LOT LINES INTERSECTION CURVES ARE RADIAL UNLESS OTHERWISE SHOWN AS NON-RADIAL (NR).
4. ALL PLATTED PUBLIC UTILITY EASEMENTS SHOWN HEREON SHALL ALSO BE EASEMENTS FOR THE CONSTRUCTION, INSTALLATION, MAINTENANCE, AND OPERATION OF CABLE TELEVISION SERVICES; PROVIDED, HOWEVER, NO SUCH CONSTRUCTION, INSTALLATION, MAINTENANCE, AND OPERATION OF SAID CABLE TELEVISION SERVICES SHALL INTERFERE WITH THE FACILITIES AND SERVICES OF AN ELECTRIC, TELEPHONE, GAS, OR OTHER PUBLIC UTILITY. IN THE EVENT A CABLE TELEVISION COMPANY DAMAGES THE FACILITIES OF A PUBLIC UTILITY, IT SHALL BE SOLELY RESPONSIBLE FOR THE DAMAGES.
5. LANDS IN THE VICINITY OF DRAINAGE AREAS, RETENTION AREAS, AND/OR SWALES MAY BE SUBJECT TO TEMPORARY STANDING WATER WHEN CONDITIONS DECREASE THE RATE OF PERCOLATIONS AND DRAINAGE RUNOFF.
6. THE PLATTED LANDS ARE LOCATED WITHIN ZONE "X", ZONE "X" SHADED & ZONE "AE", AS SHOWN ON THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 12027I 0345 G (MAP NO. 12105C0345C), WHICH BEARS AN EFFECTIVE DATE OF 12/22/2018, AND IS IN A SPECIAL FLOOD HAZARD AREA. NO FIELD SURVEYING WAS PERFORMED TO DETERMINE THIS ZONE. ZONE "X" DENOTES AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN. ZONE "X" SHADED DENOTES AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE FLOOD. ZONE "AE" DENOTES AREAS DETERMINED TO BE SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT, WITH A BASE FLOOD ELEVATION OF 142.1 FEET (NAVD88) DETERMINED.
7. THE ELEVATIONS SHOWN HEREON, ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). VERTICAL INFORMATION BASED ON: (1) BENCHMARK N 746 (PID DO1964) HAVING A PUBLISHED ELEVATION OF 152.89 FEET (NAVD 88) DESCRIBED AS: SURVEY DISK SET IN TOP OF CONCRETE MONUMENT, DISK STAMPED "N 746 2010" AND (2) BENCHMARK M 746 (PID DO1965) HAVING A PUBLISHED ELEVATION OF 139.48 FEET (NAVD 88) DESCRIBED AS: SURVEY DISK SET IN TOP OF CONCRETE MONUMENT, DISK STAMPED "M 746 2010".
8. THE PROPERTY SHOWN HEREON IS SUBJECT TO CERTAIN MATTERS OF TITLE AS REPORTED IN THAT CERTIFICATE OF TITLE INFORMATION PREPARED BY TULA MICHELE HAFF, ESQUIRE, HAVING AN EFFECTIVE DATE OF APRIL 7TH, 2025. SAID MATTERS OF TITLE ARE LISTED BELOW AND SHOWN HEREON, WHERE APPLICABLE:
   - 8.1. MORTGAGE EXECUTED BY TBHG, LLC, A FLORIDA LIMITED LIABILITY COMPANY TO CITIZENS BANK & TRUST, DATED 5/30/2024, RECORDED 6/04/2024, IN OFFICIAL RECORDS BOOK 13140, PAGE 1630, PUBLIC RECORDS OF POLK COUNTY, FLORIDA. (AFFECTS, NOTHING TO PLOT, SEPARATE MORTGAGEE'S JOINDER AND CONSENT TO PLAT RECORDED IN THE PUBLIC RECORDS OF POLK COUNTY, FLORIDA.)
   - 8.2. INDEMNITY MORTGAGE BY TBHG, LLC, A FLORIDA LIMITED LIABILITY COMPANY TO NVR, INC., A VIRGINIA CORPORATION, DATED 6/24/2024, RECORDED 6/24/2024, IN OFFICIAL RECORDS BOOK 13164, PAGE 328, PUBLIC RECORDS OF POLK COUNTY, FLORIDA. (AFFECTS, NOTHING TO PLOT, SEPARATE MORTGAGEE'S JOINDER AND CONSENT TO PLAT RECORDED IN THE PUBLIC RECORDS OF POLK COUNTY, FLORIDA.)
   - 8.3. ALL MATTERS CONTAINED ON THE PLAT OF R.H. BRYSON'S SUBDIVISION, AS RECORDED IN PLAT BOOK 4, PAGE 16, PUBLIC RECORDS OF POLK COUNTY, FLORIDA. (AFFECTS, AS SHOWN)
   - 8.4. EASEMENT CONTAINED IN THAT CERTAIN DEED RECORDED IN OFFICIAL RECORDS BOOK 1619, PAGE 529, PUBLIC RECORDS OF POLK COUNTY, FLORIDA. (AFFECTS, AS TO LAKE DEER DRIVE SOUTH, AS SHOWN)
   - 8.5. AMENDED EASEMENT DEED BY COURT ORDER IN SETTLEMENT OF LANDOWNER ACTION AS RECORDED IN OFFICIAL RECORDS BOOK 3089, PAGE 2142, TOGETHER WITH NOTICE OF SUBSTITUTION RECORDED IN OFFICIAL RECORDS BOOK 9116, PAGE 600, PUBLIC RECORDS OF POLK COUNTY, FLORIDA, WHICH CONTAIN PROVISIONS CREATING COVENANTS, CONDITIONS, AND RESTRICTIONS. (AFFECTS, AS SHOWN)
   - 8.6. TRI-PARTY AGREEMENT REGARDING ACCESS AND UTILITY EASEMENTS AND OTHER MATTERS BY AND BETWEEN G. RICHARD DOERBAUM, INDIVIDUALLY AND AS TRUSTEE OF THE G. RICHARD DOERBAUM AND KATHERINE A. DOERBAUM REVOCABLE TRUST DATED MAY 7, 2015, AND OF UNITED, LLC., A FLORIDA LIMITED LIABILITY COMPANY AND TBHG, LLC, A FLORIDA LIMITED LIABILITY COMPANY RECORDED IN OFFICIAL RECORDS BOOK 12536, PAGE 252, AND AMENDMENT RECORDED IN OFFICIAL RECORDS BOOK 12732, PAGE 1978, PUBLIC RECORDS OF POLK COUNTY, FLORIDA, WHICH CONTAIN PROVISIONS CREATING COVENANTS, CONDITIONS, RESTRICTIONS, AND EASEMENT(S). (AFFECTS, NOTHING TO PLOT)

LEGEND

◦	=	SET 4"x4" CONCRETE MONUMENT "PRM LB #6393" IN ACCORDANCE WITH F.S. 177.091 (7) (UNLESS OTHERWISE NOTED)
◦	=	SET NAIL AND DISK PCP "LB 6393" IN ACCORDANCE WITH F.S. 177.091 (8) (UNLESS OTHERWISE NOTED)
C#	=	CURVE TAG (SEE CORRESPONDING CURVE TABLE)
℄	=	CENTERLINE OF RIGHT-OF-WAY
BFE	=	BASE FLOOD ELEVATION
DE	=	DRAINAGE EASEMENT
F.S.	=	FLORIDA STATUTES
LB	=	LICENSED BUSINESS
LS	=	LICENSED SURVEYOR
(NR)	=	NON RADIAL
(OA)	=	OVERALL
ORB	=	OFFICIAL RECORDS BOOK
PC	=	POINT OF CURVATURE
PG	=	PAGE(S)
PI	=	POINT OF INTERSECTION
PT	=	POINT OF TANGENCY
PSM	=	PROFESSIONAL SURVEYOR AND MAPPER
RP	=	RADIUS POINT
UE	=	UTILITY EASEMENT

SHEET KEY

SEE SHEET 1 OF 10 FOR: LEGAL DESCRIPTION, PLAT NOTES, DEDICATION, VICINITY MAP, SIGNATORY BLOCKS, AND LEGEND
SEE SHEET 2 OF 10 FOR: NOTES & OVERALL VIEW OF PLAT
SEE SHEETS 3-10 OF 10 FOR: DETAILED VIEW OF LOTS AND TRACTS

AMERICAN SURVEYING & MAPPING, INC.
NDDS NATIONAL DUE DILIGENCE SERVICES
A DIVISION OF AMERICAN SURVEYING & MAPPING, INC
221 Circle Drive, Maitland, FL 32751 Phone: 407-628-7979
LB#6393 nationalduediligenceservices.com

FLOOD HAZARD WARNING

THIS PROPERTY MAY BE SUBJECT TO FLOODING. YOU SHOULD CONTACT CITY OF WINTER HAVEN AND OBTAIN THE LATEST INFORMATION ON FLOOD ELEVATIONS AND RESTRICTIONS BEFORE MAKING PLANS FOR THE USE OF THIS PROPERTY. EVEN MEETING POLK COUNTY STANDARDS DOES NOT ENSURE THAT ANY IMPROVEMENTS SUCH AS STRUCTURES, DRIVEWAYS, YARDS, SANITARY SEWER SYSTEMS AND WATER WELL SYSTEMS WILL NOT BE FLOODED IN CERTAIN RAIN EVENTS.

NOTICE

THIS PLAT, AS RECORDED IN ITS GRAPHIC FORM, IS THE OFFICIAL DEPICTION OF THE SUBDIVIDED LANDS DESCRIBED HEREIN AND WILL IN NO CIRCUMSTANCES BE SUPPLANTED IN AUTHORITY BY ANY OTHER GRAPHIC OR DIGITAL FORM OF THE PLAT. THERE MAY BE ADDITIONAL RESTRICTIONS THAT ARE NOT RECORDED ON THIS PLAT THAT MAY BE FOUND IN THE PUBLIC RECORDS OF THIS COUNTY.

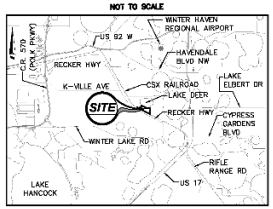
CERTIFICATE OF SURVEYOR

KNOW ALL MEN BY THESE PRESENTS, THAT THE UNDERSIGNED IS A FLORIDA REGISTERED SURVEYOR AND MAPPER, THAT THE FORGOING PLAT WAS PREPARED UNDER HIS DIRECTION AND SUPERVISION; THAT PERMANENT REFERENCE MONUMENTS HAVE BEEN PLACED AND THAT PERMANENT CONTROL POINTS HAVE BEEN OR WILL BE PLACED AS REQUIRED BY ALL STATE AND LOCAL REGULATIONS AND THAT THIS PLAT COMPLIES WITH ALL SURVEY REQUIREMENTS OF CHAPTER 177, FLORIDA STATUTES, THE LAND DESCRIBED HEREON LIES IN SECTION 25, TOWNSHIP 28 SOUTH, RANGE 25 EAST, CITY OF WINTER HAVEN, POLK COUNTY, FLORIDA.

E. GLENN TURNER, PSM DATE
FLORIDA REGISTRATION NO. 5643

PREPARED BY:
AMERICAN SURVEYING AND MAPPING, INC.
221 CIRCLE DRIVE
MAITLAND, FL 32751
(407) 628-7979
REGISTRATION NUMBER OF LEGAL ENTITY: LB 6393

VICINITY MAP
NOT TO SCALE



APPROVAL: ENGINEERING SERVICES DIVISION

THIS PLAT IS HEREBY APPROVED BY THE CITY OF WINTER HAVEN ENGINEERING SERVICES DIVISION ON THIS _____ DAY OF _____ 20___.

APPROVED

BY: _____
CITY ENGINEER, WINTER HAVEN, FLORIDA

APPROVAL OF ECONOMIC OPPORTUNITY & COMMUNITY INVESTMENT DIRECTOR

THIS PLAT IS HEREBY APPROVED BY THE CITY OF WINTER HAVEN ECONOMIC OPPORTUNITY & COMMUNITY INVESTMENT DIRECTOR THIS _____ DAY OF _____ 20___.

APPROVED

DIRECTOR - WINTER HAVEN, FLORIDA

CITY SURVEYOR - CONSULTANT APPROVAL

THIS PLAT HAS BEEN REVIEWED AND FOUND TO BE SUBSTANTIALLY IN COMPLIANCE WITH THE PROVISIONS OF CHAPTER 177, FLORIDA STATUTES, RELATING TO THE MAKING OF MAPS AND PLATS.

BY: JEFFREY P. AMMERMANN, PSM DATE
FLORIDA REGISTRATION LS 7386
GHASTAIN SKILLMAN, LLC
FLORIDA REGISTRATION LB 262

LAKE DEER TOWNHOMES

DEDICATION:

KNOW ALL MEN BY THESE PRESENTS, THAT TBHG, LLC., A FLORIDA LIMITED LIABILITY COMPANY, BEING THE OWNER IN FEE SIMPLE OF THE LANDS DESCRIBED IN THE ATTACHED PLAT, ENTITLED "LAKE DEER TOWNHOMES", LOCATED IN THE CITY OF WINTER HAVEN, POLK COUNTY, FLORIDA, HEREBY DEDICATES SAID LANDS AND PLAT FOR THE USES AND PURPOSES HEREIN EXPRESSED AND DEDICATES:

1. TRACT A (RIGHT-OF-WAY), AS SHOWN HEREON, TO THE CITY OF WINTER HAVEN, FLORIDA AND ITS SUCCESSORS AND ASSIGNS FOR OWNERSHIP, MAINTENANCE, AND OPERATION.
2. AND TRACT E (LIFT STATION), AS SHOWN HEREON, TO THE CITY OF WINTER HAVEN, FLORIDA AND ITS SUCCESSORS AND ASSIGNS FOR OWNERSHIP, MAINTENANCE, AND OPERATION.
3. THE PUBLIC UTILITY EASEMENTS (UE) AS SHOWN HEREON, TO THE CITY OF WINTER HAVEN, FLORIDA AND ITS SUCCESSORS AND ASSIGNS AS PERPETUAL PUBLIC UTILITY EASEMENTS.
4. THE DRAINAGE EASEMENTS (DE) AS SHOWN HEREON, TO THE LAKE DEER TOWNHOMES HOMEOWNERS ASSOCIATION, INC., A FLORIDA NOT FOR PROFIT CORPORATION (HEREAFTER REFERRED TO AS THE "ASSOCIATION") AND THEIR SUCCESSORS AND ASSIGNS.
5. TRACT B (WETLAND), AS SHOWN HEREON, TO THE ASSOCIATION AND THEIR SUCCESSORS AND ASSIGNS FOR OWNERSHIP AND MAINTENANCE.
6. TRACT C (WETLAND BUFFER), AS SHOWN HEREON, TO THE ASSOCIATION AND THEIR SUCCESSORS AND ASSIGNS FOR OWNERSHIP AND MAINTENANCE.
7. TRACTS D, F, G, I, AND J (OPEN SPACE), AS SHOWN HEREON, TO THE ASSOCIATION AND THEIR SUCCESSORS AND ASSIGNS FOR OWNERSHIP AND MAINTENANCE.
8. TRACT H (POND), AS SHOWN HEREON, TO THE ASSOCIATION AND THEIR SUCCESSORS AND ASSIGNS FOR OWNERSHIP AND MAINTENANCE.
9. TRACT K (OPEN SPACE, SIGN, AND UTILITY), AS SHOWN HEREON, TO THE ASSOCIATION AND THEIR SUCCESSORS AND ASSIGNS FOR OWNERSHIP AND MAINTENANCE. THERE IS A PUBLIC UTILITY EASEMENT OVER SAID TRACT K HEREBY DEDICATED TO THE CITY OF WINTER HAVEN, FLORIDA AND ITS SUCCESSORS AND ASSIGNS.

NO PART OF SAID LANDS, EXCEPT AS NOTED IN THIS DEDICATION OR OTHERWISE ON THE FACE OF THIS PLAT, IS DEDICATED TO THE CITY OF WINTER HAVEN, FLORIDA, OR THE PUBLIC. IN WITNESS WHEREOF, OWNER, HAS CAUSED THESE PRESENTS TO BE SIGNED AND ATTESTED TO BY THE OFFICER NAMED BELOW AFFIXED HERETO ON THE _____DAY OF _____, 20___.

BY: TBHG, LLC., A FLORIDA LIMITED LIABILITY COMPANY

BY: _____
ANDREW KELLEY SWAIN, AS MANAGER

_____ _____
WITNESS PRINTED NAME

_____ _____
WITNESS PRINTED NAME

ACKNOWLEDGMENT:
STATE OF FLORIDA
COUNTY OF ORANGE

THE FOREGOING INSTRUMENT WAS ACKNOWLEDGED BEFORE ME BY MEANS OF [ ] PHYSICAL PRESENCE OR [ ] ONLINE NOTARIZATION, THIS _____ DAY OF _____, 20___ BY ANDREW KELLEY SWAIN, AS MANAGER OF TBHG, LLC, A FLORIDA LIMITED LIABILITY COMPANY, ON BEHALF OF THE COMPANY, WHO IS PERSONALLY KNOWN TO ME OR HAS PRODUCED _____ AS IDENTIFICATION.

_____
NOTARY PUBLIC, STATE OF FLORIDA

_____
PRINTED NAME
STATE OF FLORIDA
MY COMMISSION EXPIRES: _____

COMMISSION #: _____

CITY COMMISSION APPROVAL

THIS PLAT HAS RECEIVED FINAL APPROVAL BY THE CITY COMMISSION OF WINTER HAVEN, FLORIDA IN AN OPEN MEETING THIS _____ DAY OF _____, 20___.

APPROVED

_____
WINTER HAVEN CITY COMMISSION

CERTIFICATE OF CITY OF WINTER HAVEN CITY CLERK

THIS PLAT HAS RECEIVED FINAL APPROVAL THIS _____ DAY OF _____, 20___.

BY_____ BY _____
CITY CLERK DEPUTY CITY CLERK

CERTIFICATE OF COUNTY CLERK

I, STACY M. BUTTERFIELD, CLERK OF COURT OF POLK COUNTY, FLORIDA, DO HEREBY CERTIFY THAT THIS PLAT HAS BEEN APPROVED FOR RECORDING ON THIS _____ DAY OF _____, 20___.

FILE NUMBER_____

_____
STACY M. BUTTERFIELD
CLERK OF THE CIRCUIT COURT
IN AND FOR OSCEOLA COUNTY, FLORIDA

BY: _____ D.C.

Exhibit "A"
(page 3)

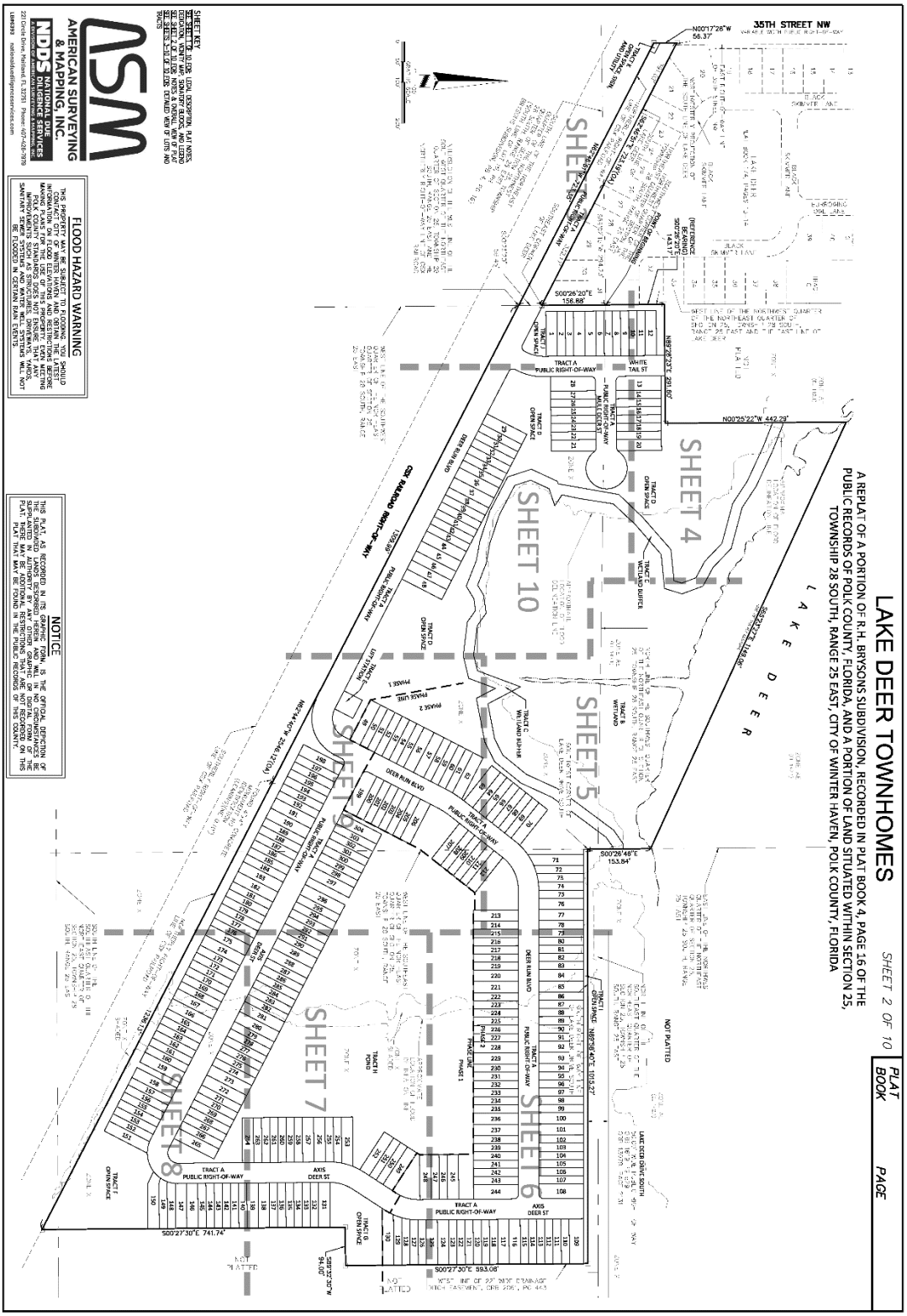


Exhibit "A"
(page 4)

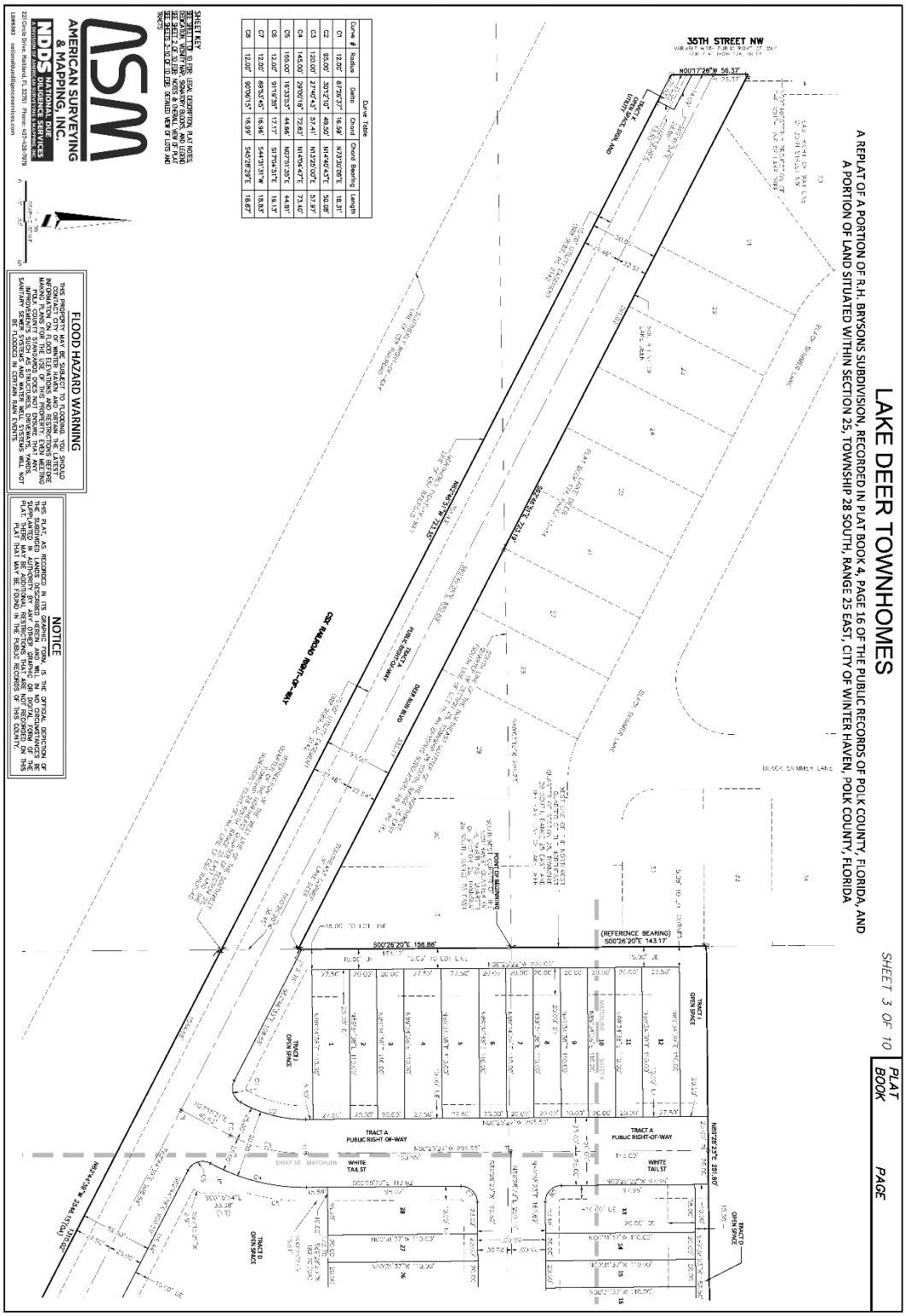


Exhibit "A"
(page 5)

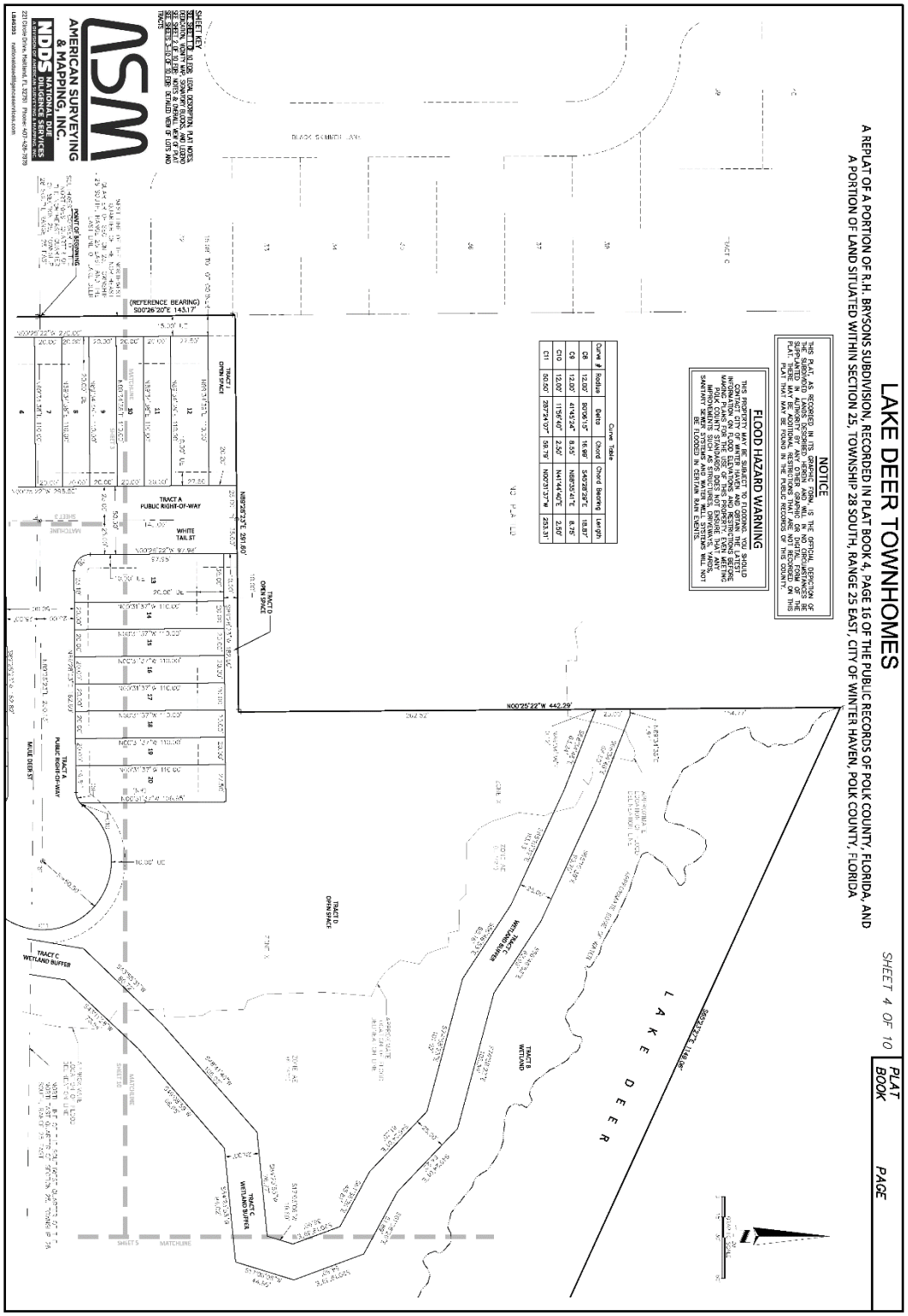


Exhibit "A"
(page 6)

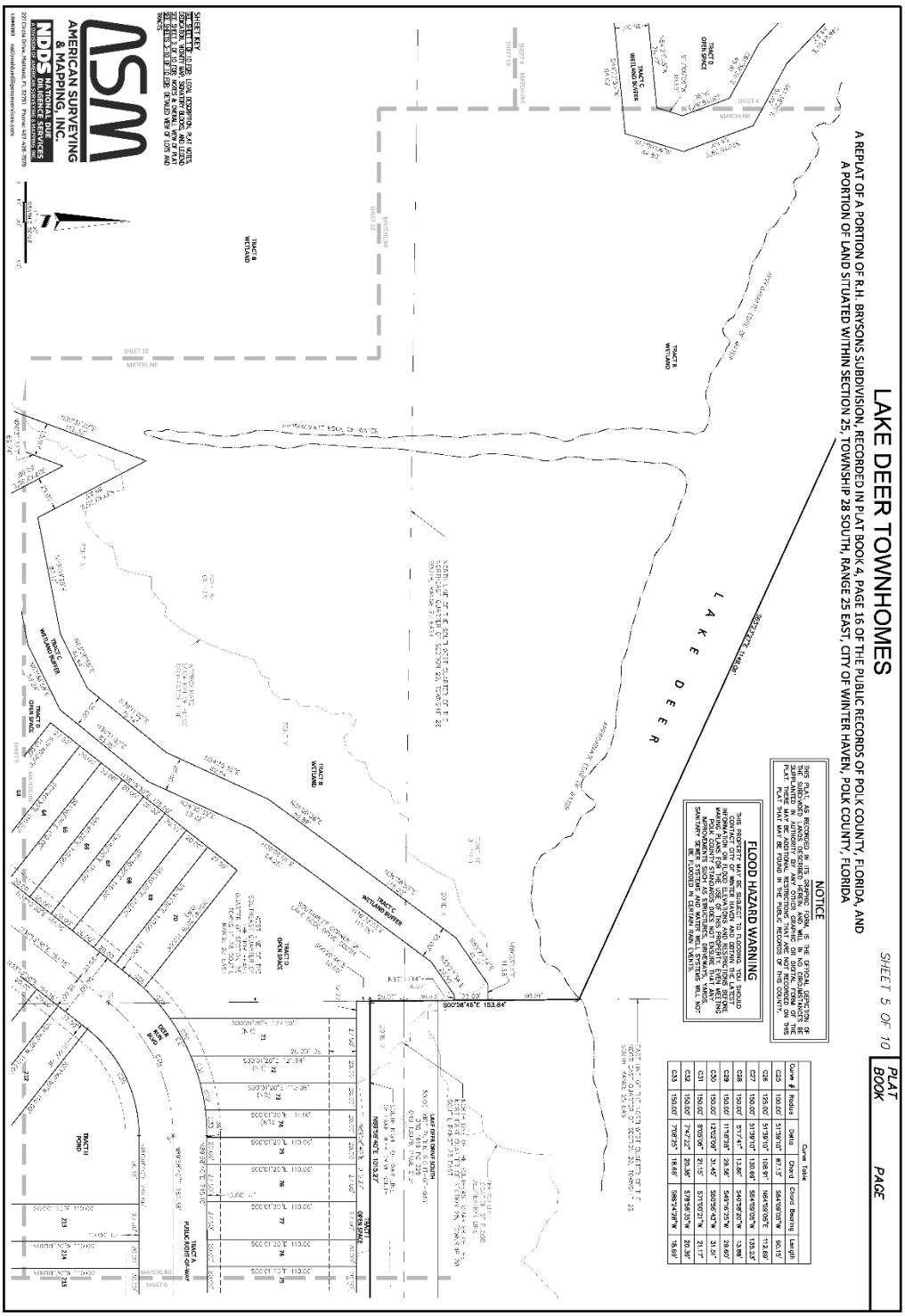


Exhibit "A"
(page 7)

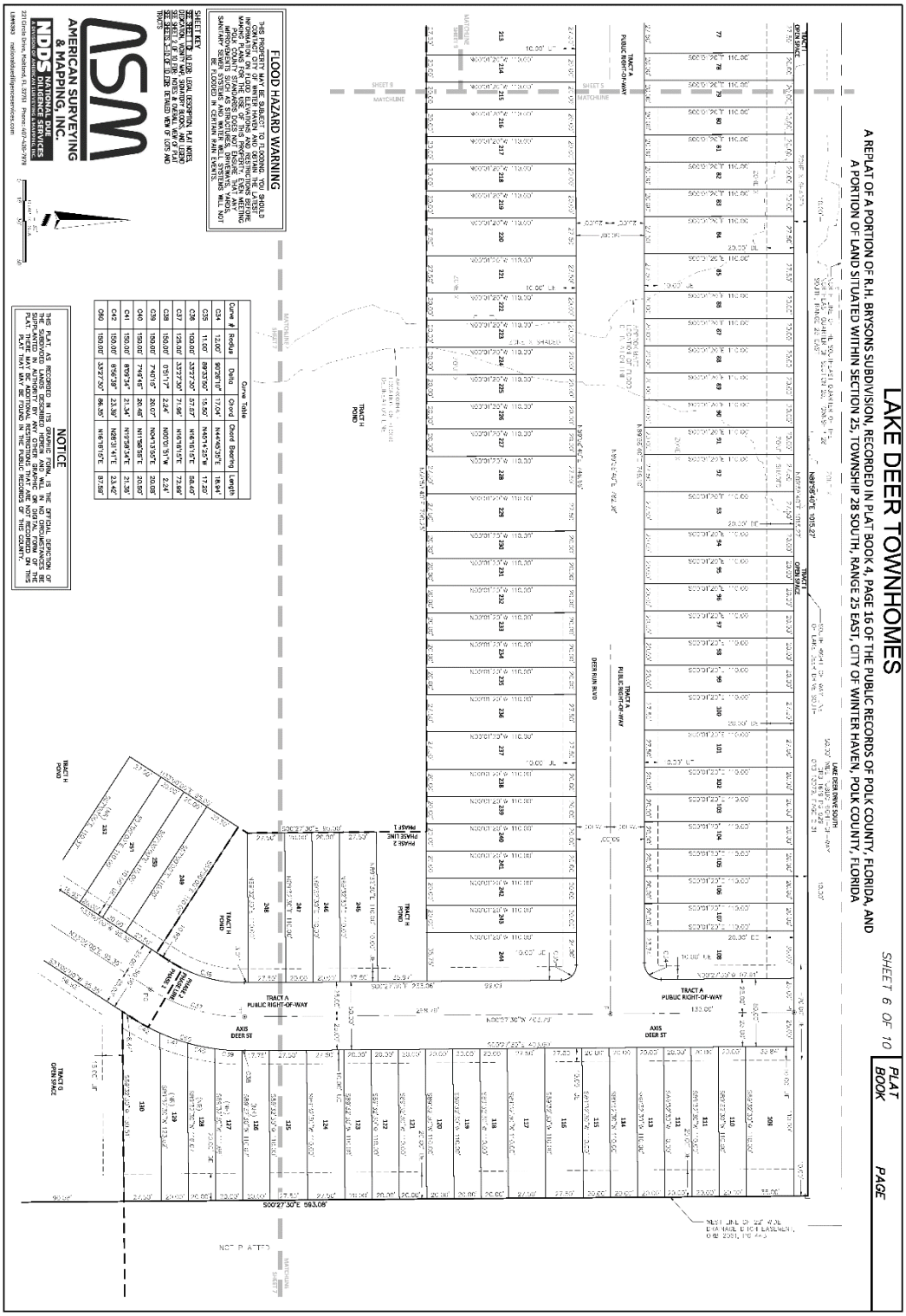


Exhibit "A"
(page 8)

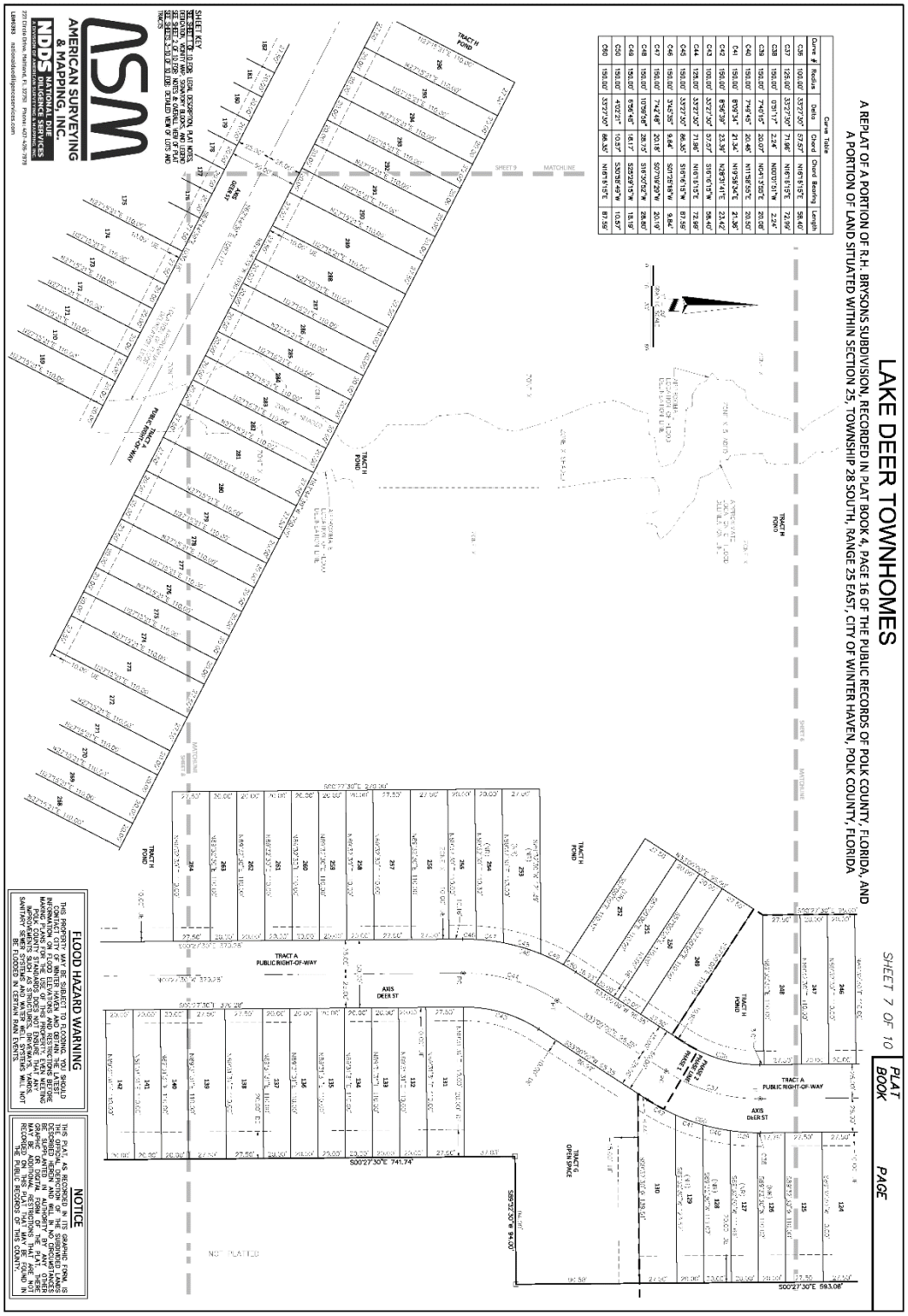


Exhibit "A"
(page 9)

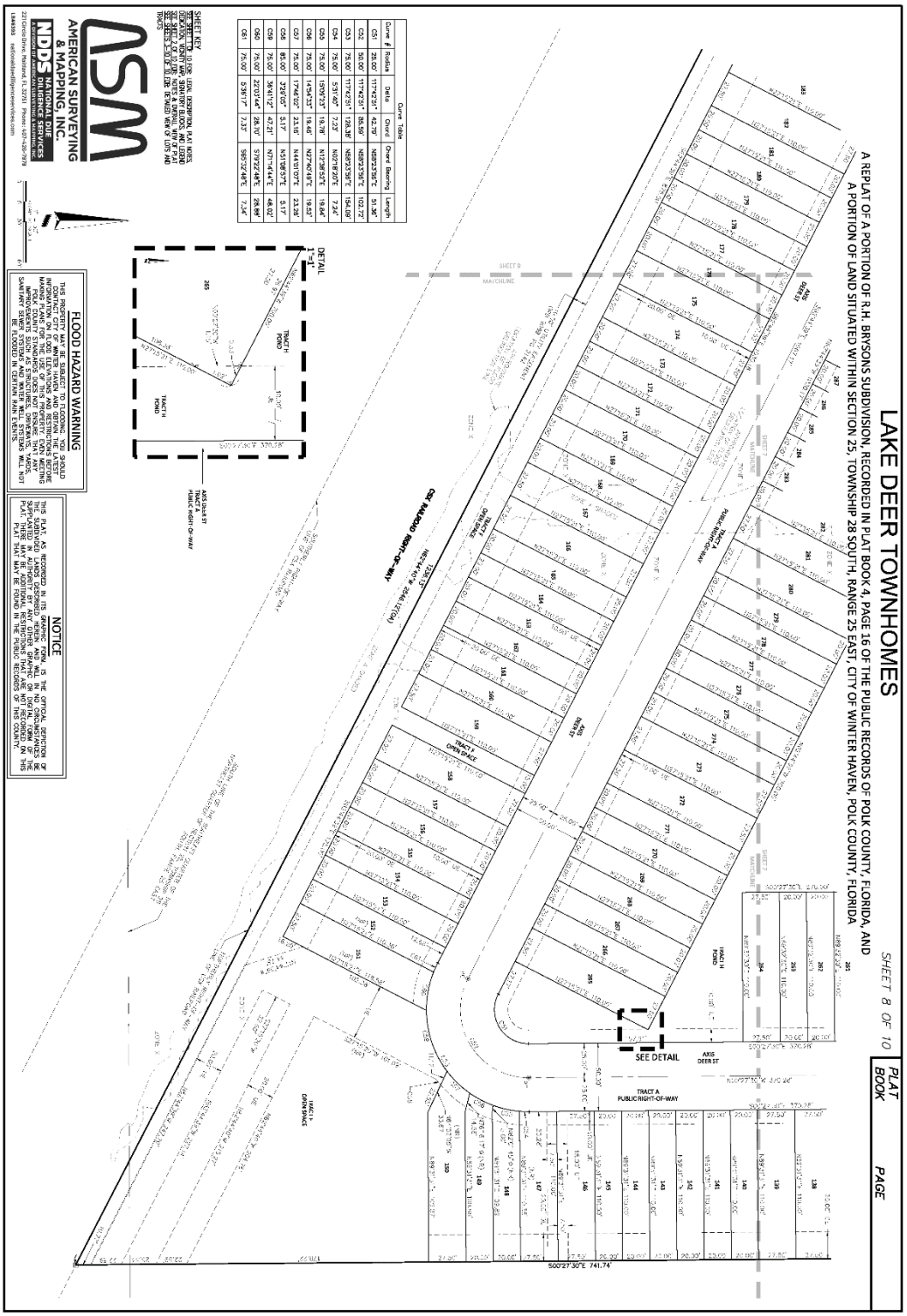


Exhibit "A"
(page 10)

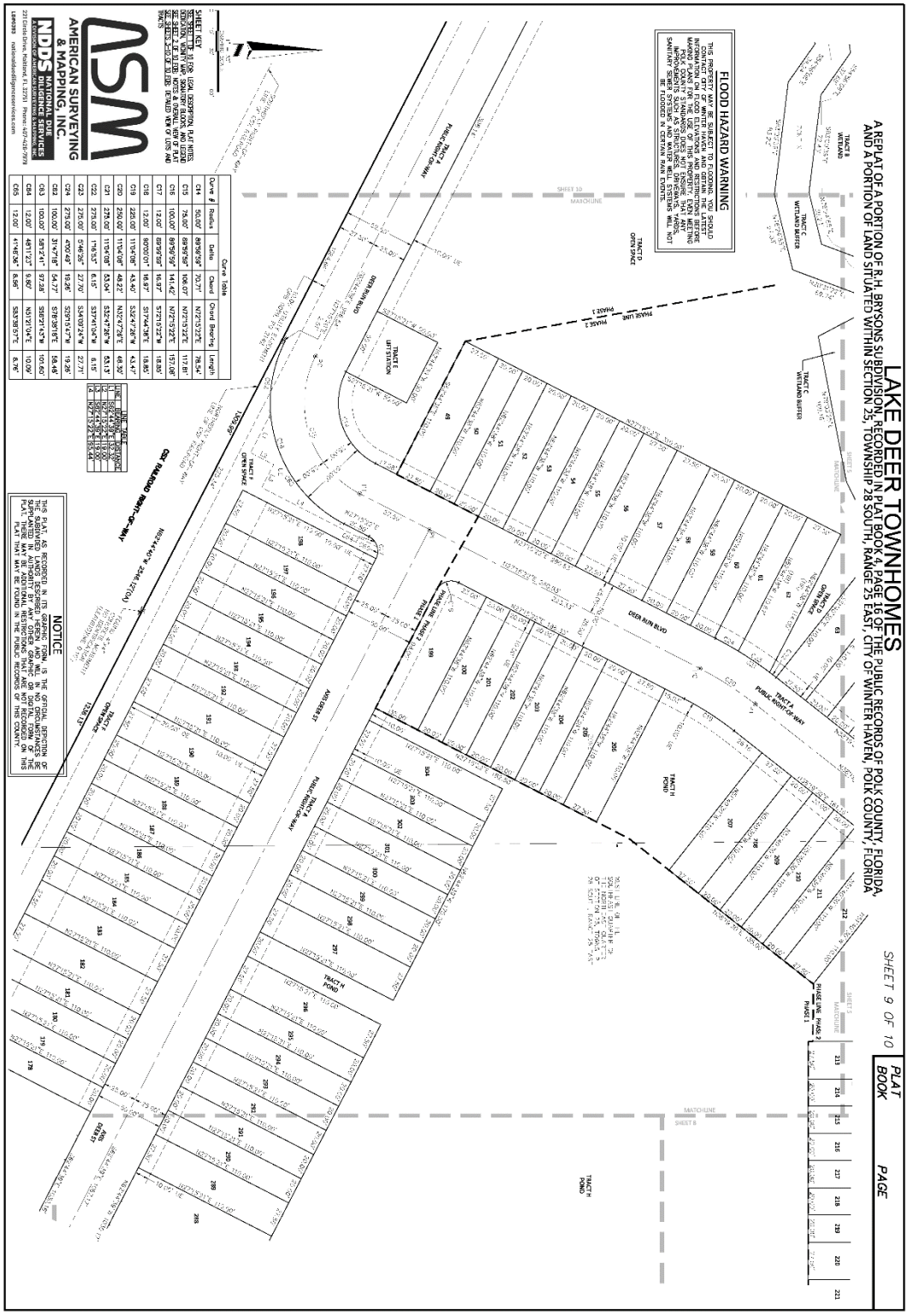


Exhibit "A"
(page 11)

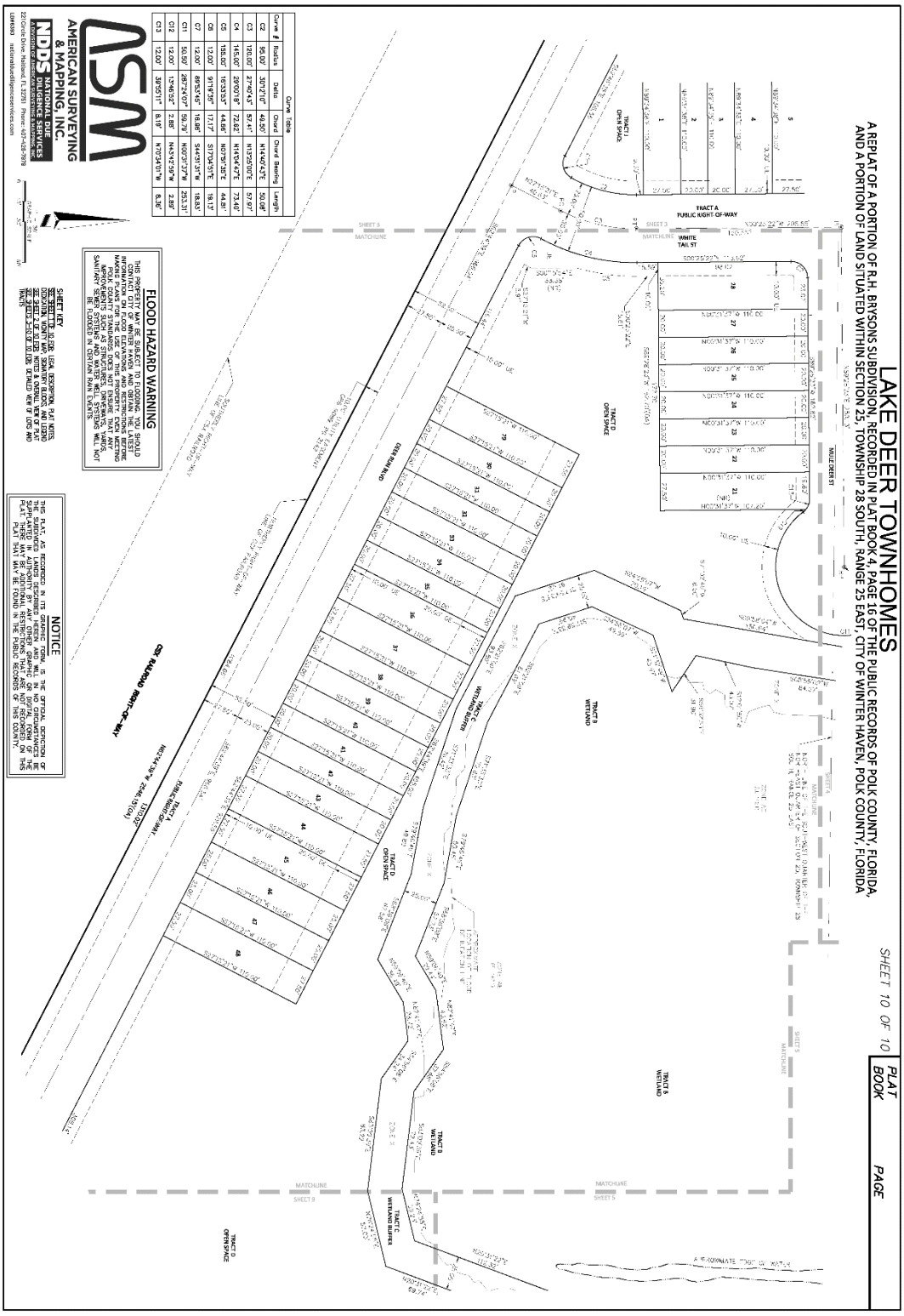


Exhibit "B"

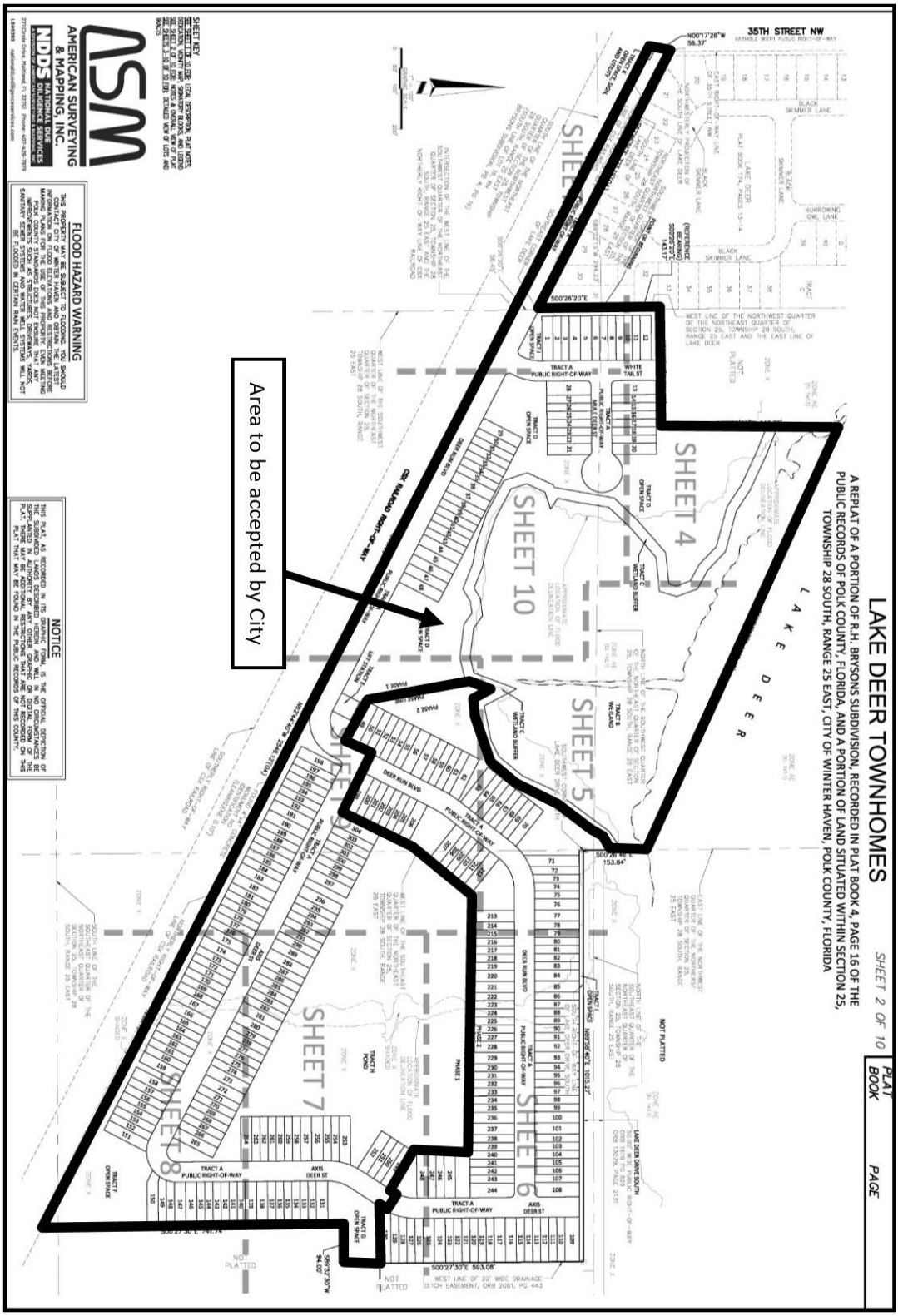
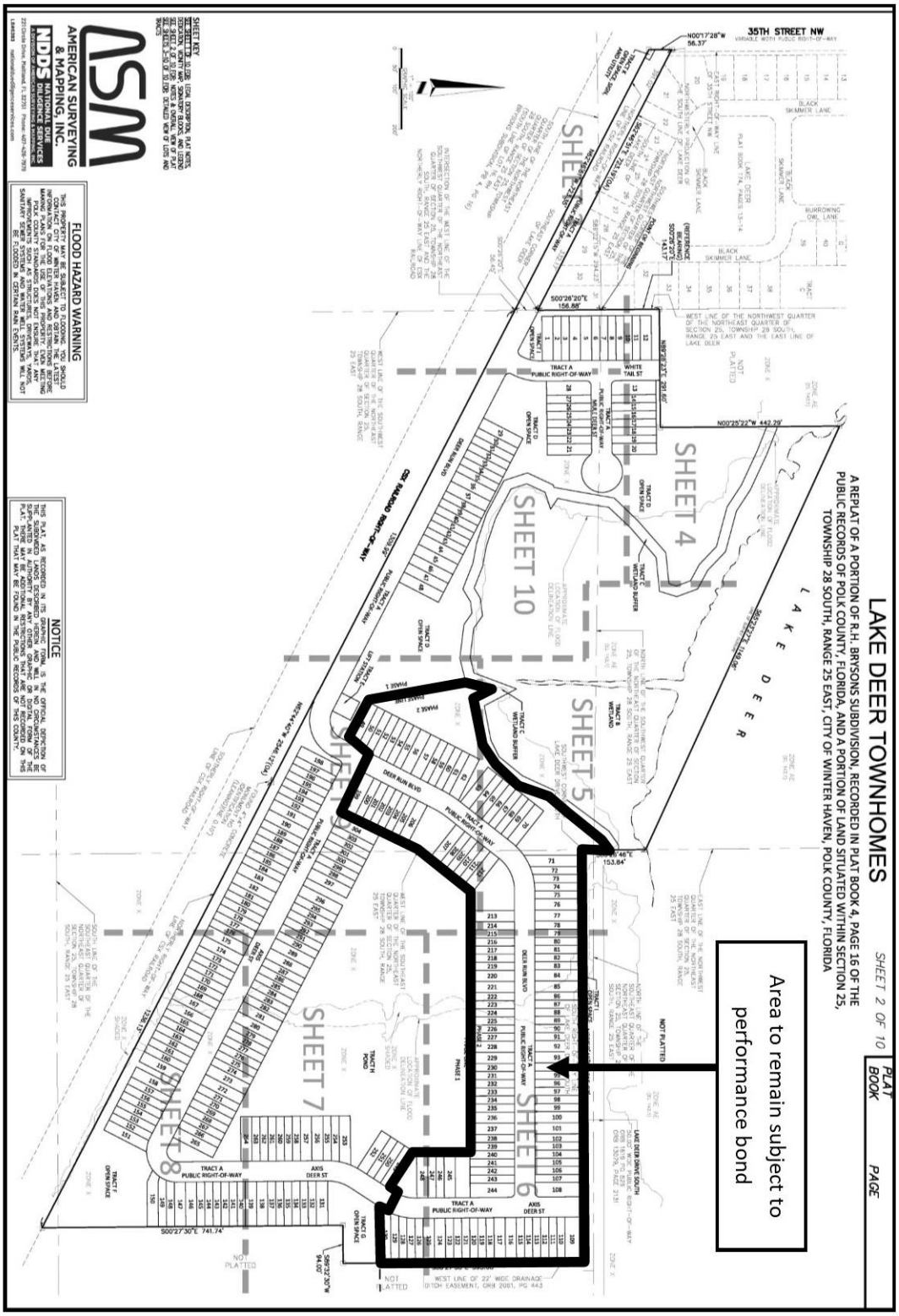

LAKE DEER TOWNHOMES
A REPLAT OF A PORTION OF R.H. BRYSONS SUBDIVISION, RECORDED IN PLAT BOOK 4, PAGE 16 OF THE PUBLIC RECORDS OF POLK COUNTY, FLORIDA, AND A PORTION OF LAND SITUATED WITHIN SECTION 25, TOWNSHIP 28 SOUTH, RANGE 25 EAST, CITY OF WINTER HAVEN, POLK COUNTY, FLORIDA
SHEET 2 OF 10
PLAT BOOK
PAGE
35TH STREET NW
SHEET 4
SHEET 5
SHEET 6
SHEET 7
SHEET 8
SHEET 10
LAKE DEER
Area to be accepted by City
AMERICAN SURVEYING & MAPPING, INC.
NOTICE
FLOOD HAZARD WARNING

Exhibit "C"


LAKE DEER TOWNHOMES
A REPLAT OF A PORTION OF R.H. BRYSONS SUBDIVISION, RECORDED IN PLAT BOOK 4, PAGE 16 OF THE PUBLIC RECORDS OF POLK COUNTY, FLORIDA, AND A PORTION OF LAND SITUATED WITHIN SECTION 25, TOWNSHIP 28 SOUTH, RANGE 25 EAST, CITY OF WINTER HAVEN, POLK COUNTY, FLORIDA
SHEET 2 OF 10
PLAT BOOK
PAGE
Area to remain subject to performance bond
35TH STREET NW
SHEET 4
SHEET 5
SHEET 6
SHEET 7
SHEET 8
SHEET 10
LAKE DEER
DEER RUN BLVD
AXIS DEER ST
TRACT A PUBLIC RIGHT-OF-WAY
WHITE TAIL ST
NOT PLATTED
AMERICAN SURVEYING & MAPPING, INC.
NDDS NATIONAL DUE DILIGENCE SERVICES
FLOOD HAZARD WARNING
NOTICE

DATE: July 2, 2025

TO: Honorable Mayor and City Commissioners

VIA: T. Michael Stavres, City Manager
M.J. Carnevale, Deputy City Manager

FROM: Brittany Hart, Public Works Director
Todd Gooding, Assistant Public Works Director
Dustin Everitt, Natural Resources Manager
Devon Moore, Senior Environmental Scientist

SUBJECT: R-25-36 – Adopting the 2024 Annual Lakes Report

BACKGROUND

Established in 1986, the Lakes Advisory Committee (LAC) serves in an advisory role to the City Commission and the City's Natural Resources Division. This citizen-led committee offers guidance and recommendations on the management of Winter Haven's lakes, with the shared goal of enhancing the overall health of local waterbodies.

Each year, the LAC presents the Annual Lakes Report, which summarizes the current condition of area lakes and outlines the City's ongoing and planned management strategies. The 2024 report includes assessments for 37 lakes in the greater Winter Haven area, selected based on criteria such as public accessibility, data availability, and connectivity to the Winter Haven Chain of Lakes and the Peace Creek Basin.

Lake health is evaluated using a combination of water quality data, hydrology, and biological assessments. In 2024, 54% (20 out of 37) of the monitored lakes met the State of Florida's regulatory thresholds for key nutrients—chlorophyll-a, total nitrogen, and total phosphorus. While this percentage remains unchanged from 2023, it reflects a continuing upward trend from earlier years.

Since the City began active lake monitoring in 2016, several previously impaired lakes have shown measurable improvements in water quality and have begun meeting regulatory thresholds for at least one pollutant. Even among lakes not yet meeting all State standards, many are showing positive trends and are likely to improve further with continued management.

The purpose of the Annual Lakes Report is twofold: 1) To provide a scientifically rigorous, data-driven analysis of local lake conditions. 2) To document the City's lake management efforts and show how they align with the mission, vision, and goals of the Natural Resources Division and the LAC.

A key feature of the report is the inclusion of individual Water Quality Management Plans for each lake. These plans identify site-specific impacts and outline current and future strategies for improvement. They are intended to serve as living documents—tools that the City can use to track, adapt, and refine its approach to lake management over time.

Since 2020, the Annual Lakes Report has also included an interactive online version, providing residents, researchers, and other stakeholders with a visual, user-friendly companion to the full report. New for 2025, the Natural Resources Division has developed a Reader's Digest Version of the Annual Lakes Report - a concise, 12-page summary designed to make the report's key findings more accessible to a broader audience. This streamlined version highlights major takeaways from the full report and incorporates engaging visuals such as photos, charts, and maps to help convey important information at a glance.

Recognizing that not all residents have the time or interest to read a technical document, this high-level summary was created to expand outreach and awareness of local lake health and City management efforts. To encourage further exploration, the brief report includes QR codes that link directly to both the full and interactive versions of the report, as well as relevant City web pages. It also provides staff contact information so readers can easily reach out with questions or for additional details.

FINANCIAL IMPACT

There is no fiscal impact associated with this item.

STRATEGIC PLAN ALIGNMENT

Pillar: Environmental Stewardship
Goal: 4.3 – Continue to monitor lakes and implement proactive strategies for lake management.
Strategy: 4.3.1 – Publish and implement strategies within the Annual Lakes Report and develop community education campaigns based on the information within the report.

RECOMMENDATION

Staff recommend the City Commission approve resolution R-25-36, adopting the City of Winter Haven 2024 Annual Lakes Report

ATTACHMENTS

- R-25-36
- Exhibit ‘A’ – 2024 Annual Lakes Report
- Lakes Report in Brief

RESOLUTION NO. R-25-36

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF WINTER HAVEN, FLORIDA, MAKING FINDINGS; APPROVING AND ADOPTING THE 2024 ANNUAL LAKES REPORT; PROVIDING FOR SEVERABILITY; THE ADMINISTRATIVE CORRECTION OF SCRIVENER'S ERRORS; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, lakes are a unique and integral part of Winter Haven's character contributing to its economic future and its resident's quality of life; and

WHEREAS, the City's Lakes Advisory Committee's Mission for the Natural Resources Division of the City's Public Works Department is "To Maintain and improve natural resources through management based on a sound understanding of social, economic, and ecological systems."; and,

WHEREAS, achieving that Mission begins with a thorough understanding of the conditions as they exist, is progressed towards by identifying management strategies, and is ultimately achieved by implementation of those management strategies; and

WHEREAS, successful implementation of those strategies hinges on community support of the initiatives, good government transparency, and tracking of changes in the local natural systems; and

WHEREAS, the City's Lakes Advisory Committee's Vision for the Natural Resources Division of the City's Public Works Department is "To be the premier knowledge base for local natural resources, with an engaged public, supporting natural systems through a community ethic."; and,

WHEREAS, the nature of water resource management is dependent on partnerships with other agencies; and

WHEREAS, the City endeavors to be a leader in partnerships related to managing local water resources; and

WHEREAS, the City's 2024 Annual Lakes Report, prepared by City staff with input from the Lakes Advisory Committee and which is attached hereto as Exhibit "A" and incorporated herein by reference, exemplifies this effort by providing technically sound information that can be utilized by other agencies, while remaining approachable and accessible by the general public; and

WHEREAS, the City's 2024 Annual Lakes Report attached hereto as Exhibit "A" serves to memorialize the conditions and efforts of the previous year for posterity; and

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF WINTER HAVEN, FLORIDA AS FOLLOWS:

1. The 2024 Annual Lakes Report a copy of which is attached hereto as Exhibit "A" and incorporated herein by reference is hereby adopted and may serve as a local resource for the following:
    a. A data-driven understanding of the current state of local lakes;
    b. Management strategies identified to improve the state of local water quality; and
    c. Water Quality Management Plans for individual local lakes.

2. The said 2024 Annual Lakes Report approved herein and attached hereto as Exhibit "A" may be used as a reference guide to provide direction for the City, the community, and partner agencies where appropriate relating to lakes and related natural resources.
3. The administrative correction of typographical and/or scrivener's errors in this Resolution which do not affect the intent may be authorized by the City Manager

or designee, without need of public hearing, by filing a corrected or recodified copy of same with the City Clerk.

4. If any section, subsection, sentence, clause, phrase of this Resolution, or the application thereof shall be held invalid by any court, administrative agency, or other body with appropriate jurisdiction, the remaining section, subsection, sentences, clauses, or phrases under application shall not be affected thereby. The City of Winter Haven hereby declares that it would have passed this Resolution, and each section, subsection, clause, or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses, and phrases be declared unconstitutional.

5. This Resolution shall take effect immediately upon passage.

INTRODUCED AND PASSED by the City Commission of the City of Winter Haven, Florida, in Regular Session, on this 14th day of July, 2025.

CITY OF Winter Haven, FLORIDA

BY: _____
Mayor–Commissioner

ATTEST:

_____
CITY CLERK

Approved as to form:

_____
CITY ATTORNEY

Winter Haven Lakes Report

Presented by the Lakes Advisory Committee

2024



CITY OF WINTER HAVEN

Public Works Department
Natural Resources Division

City of Winter Haven Natural Resources

Mission:

Maintain and improve local natural resources through management based on a sound understanding of social, economic, and ecological systems.

Vision:

To be the premier knowledge base for local natural resources, with an engaged public, supporting natural systems through a community ethic.

Purpose:

Balance the needs of diverse user groups to sustain natural resources the community can be proud of.

Values:

Courteous, Cognizant, Cooperative, Resourceful, Responsive, Accurate, Adaptive

Executive Summary

The City of Winter Haven possesses one of the highest densities of natural lakes in the state of Florida. Thirty-seven of these lakes have been identified as providing cultural, ecologic, and economic benefits for the Chain of Lakes City. Proper management of these resources is absolutely necessary to ensure that Winter Haven remains a place of enriched lifestyle for residents and visitors alike.

Effective lake management requires an understanding of the factors that impact lake health. The Winter Haven Natural Resources Division (NRD) is committed to evaluating the water quality, hydrologic, and biological factors on an annual basis. In 2018, City staff developed a scientific methodology to objectively prioritize management efforts for the 37 public lakes under our jurisdiction; it was then that the Annual Lakes Report was initially drafted. The purpose of this report is fourfold: to educate the public about the factors that affect lake health, describe the evaluation methodology developed by the City, present the most recent data and analysis, and highlight the management strategies employed by the City to maintain and improve lake health. Moreover, the report ensures accountability of the NRD's management efforts by tying them to the City's adopted strategic goals. The information contained within this report is shared not only with our residents, but with myriad federal, state, and local agencies with whom the City partners.

Each year, the City NRD gathers and analyzes a tremendous amount of data on the lakes, presenting it to the public via this document and an interactive online format found using the following link: www.tinyurl.com/wh-fl-lakesreport-app. The content contained within this document is divided into three primary sections. For those interested in learning about the aforementioned factors that influence lake health, the Introduction (starting on page 10), provides detailed, but easy-to-understand definitions and descriptions of the hydrology, water chemistry, and ecology of Winter Haven's lakes. The Management Strategies section (starting on page 35), details the projects and initiatives the City currently employs to maintain and improve the health of these lakes; including critical milestones and references to how these efforts tie back to City-wide strategic goals. Finally, the Data Presentation & Analysis section (starting on page 62) delves into the data and presents the insights and conclusions that allow the City to make its management decisions.

The following State of the Lakes statement is designed for individuals wanting a brief overview of the most current data regarding the study area lakes:

Water Quality: In 2024, 54% of the 37 study area lakes met State regulatory water quality targets. This marks a substantial improvement from 2018 when only 37% of area lakes were meeting these targets. Of the 17 lakes that are currently still impaired, over 50% are exhibiting statistically significant improving trends in at least one of the regulatory metrics (i.e. chlorophyll-a, total nitrogen, and/or total phosphorus). Furthermore, only three of these impaired waterbodies are currently exhibiting actively deteriorating water quality

trends. These three lakes remain the City's top priority regarding the planning of management actions.

Hydrology: Winter Haven received 46.5 inches of rainfall in 2024. This annual total is actually below the regional average of roughly 52 inches. During the dry season (January – June), lake surface levels declined considerably. However, an extremely active tropical storm season resulted in surface levels increasing beyond where they were at during the start of 2024—some even reaching record highs. For nearly 60% of these lakes, an increase in level correlates directly with an improvement in at least one primary water quality parameter. It should also be noted that lake levels have remained relatively high since our last major drought from 2008 to 2013. Due to the relationships between surface level and water quality, these consistently high lake levels are one of the likely contributors to the water quality improvements observed since monitoring began.

Aquatic Biology: Aquatic vegetation monitoring remains a critical management strategy in order to maintain robust, healthy, and native ecological communities. Comparing biological criteria scores from 2018 to 2024 indicates that ecological health of these lakes has improved considerably. The annual average aquatic vegetation coverage percent for the study area is at a record high. Additionally, the average percentage of invasive exotic plant species within these vegetation communities is at an all-time low. This indicates that management efforts have been successful at reducing invasive plant abundance while promoting the growth of native, beneficial species.

The City employs various management practices aimed at improving lake health. The important milestones for these activities are detailed extensively in the Management Strategies section of the report. However, there are some notable projects and initiatives to highlight:

Hydrologic monitoring is critical for understanding how changes in precipitation can impact surface level, water quality, and ecologic functions in our lakes (page 38). City staff continue to deploy automated surface level sensors in area lakes to improve the quality and quantity of lake level data. Additionally, the NRD is working closely with the Winter Haven Water Department to purchase and install several weather stations and aquifer level sensors throughout the City. These should significantly improve the City's ability to track and model hydrologic changes throughout the study area instead of just downtown.

Implementation of green stormwater infrastructure helps to capture and treat urban runoff and increase groundwater recharge (page 40). Construction of several raingardens in the downtown area was completed in 2024. An expansion to the South Lake Howard Nature Park is currently in the construction phase and is scheduled to be completed before the end of the 2025-2026 fiscal year. This expansion is expected to significantly increase the treatment capacity and wildlife habitat of the park.

Natural Resources staff made efforts to expand outreach and education programming in 2024 (page 50). The NRD hosted or participated in 37 individual outreach events,

engaging with a record-setting 1800 residents and visitors. The City hosted its inaugural Kid's Fishing Derby at South Lake Howard Nature Park—with over 100 attendees. Additionally, the NRD devoted a combined 108 hours of staff time working with youth during the summer camps in 2024 and has increased the number of guided kayak tour offerings on our lakes. Lastly, the Division began organizing independent lakeshore clean-up events, inviting residents to join staff in beautifying the City's shorelines. Most of these activities are slated to be recurring events hosted by the City.

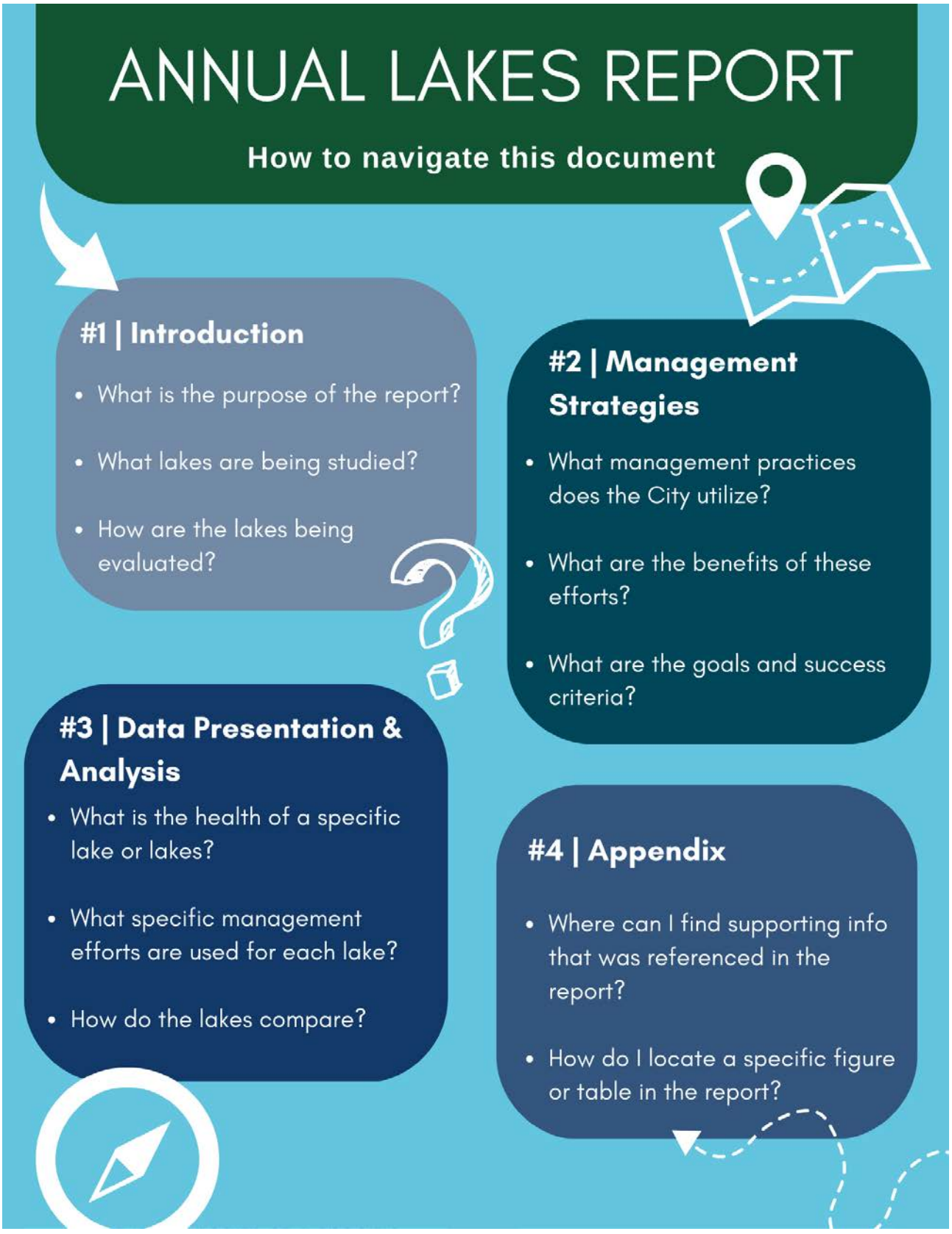
This report is a considerable endeavor—one that would not be possible without the guidance, advice, and support of local citizens with the passion to protect our natural resources. The City recognizes the efforts of the Lakes Advisory Committee whose leadership resulted in the initial directive to create this report and whose members devote valuable time to review. Additionally, we'd like to thank you, the reader. We hope the information contained herein allows for a deeper, more meaningful understanding of the factors that affect the health of our lakes. Please don't hesitate to contact the City Natural Resources Division if you have questions, suggestions, or wish to support lake management efforts in the Winter Haven area.

Sincerely,

City of Winter Haven
Natural Resources Division

863-291-5881 | naturalresources@mywinterhaven.com




ANNUAL LAKES REPORT
How to navigate this document
#1 | Introduction
• What is the purpose of the report?
• What lakes are being studied?
• How are the lakes being evaluated?
#2 | Management Strategies
• What management practices does the City utilize?
• What are the benefits of these efforts?
• What are the goals and success criteria?
#3 | Data Presentation & Analysis
• What is the health of a specific lake or lakes?
• What specific management efforts are used for each lake?
• How do the lakes compare?
#4 | Appendix
• Where can I find supporting info that was referenced in the report?
• How do I locate a specific figure or table in the report?

Contents

1- Introduction 10
1.1 Purpose 11
1.2 Background on the Waterbodies 12
1.3 Background on the Metrics 17
Water Quality 17
Hydrology 23
Ecology 28
2- Management Strategies 34
Environmental Monitoring 37
Green Stormwater Infrastructure 39
Low-Impact Development & Gray to Green 42
National Pollutant Discharge Elimination System Reporting 44
Nutrient Pollutant Inactivation/Treatment 45
One Water 47
Public Outreach & Education 49
Sediment Management 52
Stormwater Assessment and Improvement Program 54
Street Sweeping 57
Vegetation & Habitat Management 59
3- Data Presentation & Analysis 61
Winter Haven Regional Hydrology 65
Lake-Specific Data Analysis 68
Lake Blue 69
Lake Buckeye 75
Lake Cannon 81
Lake Conine 87
Lake Daisy 93
Lake Deer 99
Lake Elbert 105
Lake Eloise 111
Lake Fannie 117

Lake Haines 123
Lake Hamilton 129
Lake Hartridge 135
Lake Howard 141
Lake Idyl 148
Lake Idylwild 154
Lake Jessie 160
Lake Link 166
Lake Lulu 172
Lake Mariam 178
Lake Mariana 184
Lake Martha 190
Lake Maude 196
Lake May 202
Lake Mirror 208
Lake Ned 214
Lake Otis 220
Lake Pansy 226
Lake Rochelle 232
Lake Roy 238
Lake Shipp 244
Lake Silver 250
Lake Smart 256
Lake Spring 262
Lake Summit 268
Lake Winterset 274
Little Lake Hamilton 280
Middle Lake Hamilton 286
Lake Management Summary 292
4- Appendix 296
4.1 References 297
4.2 Data Sources: 299

4.3 Supplemental Data 301
4.3 List of Figures 312
4.4 List of Tables 321

#1 | Introduction



1.1 Purpose

The lakes of the greater Winter Haven area are considered some of its most important natural assets. The use of these waterbodies by visitors and residents alike has cemented their role as economic and cultural resources. Our lakes also impart environmental benefits such as fish and wildlife habitat, water storage, aquifer recharge, and flood protection. By virtue of this, one of the primary objectives of the City's Natural Resources Division is to monitor their overall wellness and to implement best management practices that will ensure the continued enjoyment of their benefits by our diverse user groups.

Much of the information in this report has been gathered by the Natural Resources Division's ongoing monitoring efforts. It presents a comprehensive outlook on the characteristics that comprise lake health and provides a detailed list of management strategies aimed at improving water quality. In using this holistic assessment approach, the City can prioritize waterbodies based on measurable conditions and implement specific management practices geared toward each lake's characteristics and issues. Using methods and techniques that are technically sound but presented in a manner that is accessible ensures that the information contained within this report can be understood and applied by the scientific community as well as the general public.

The work the City does to monitor and maintain the health of its lakes is also incredibly beneficial outside City limits. Winter Haven's lakes form part of the headwaters for the Peace River. The Peace River flows toward the Gulf of Mexico, eventually emptying into Charlotte Harbor—an economically and ecologically vital estuary along Florida's southwest coast. Since our lakes flow into such a major waterway, the health of both are intrinsically tied with far-reaching consequences for many people, businesses, and ecosystems.

Lastly, this annual report serves to document the City's evolving approach to environmental stewardship. As we continue to gain a better understanding of our natural systems, we hope to use that knowledge to refine our analytical methods and management practices. The principles we learn today will certainly drive how we preserve our lakes for the future.

1.2 Background on the Waterbodies

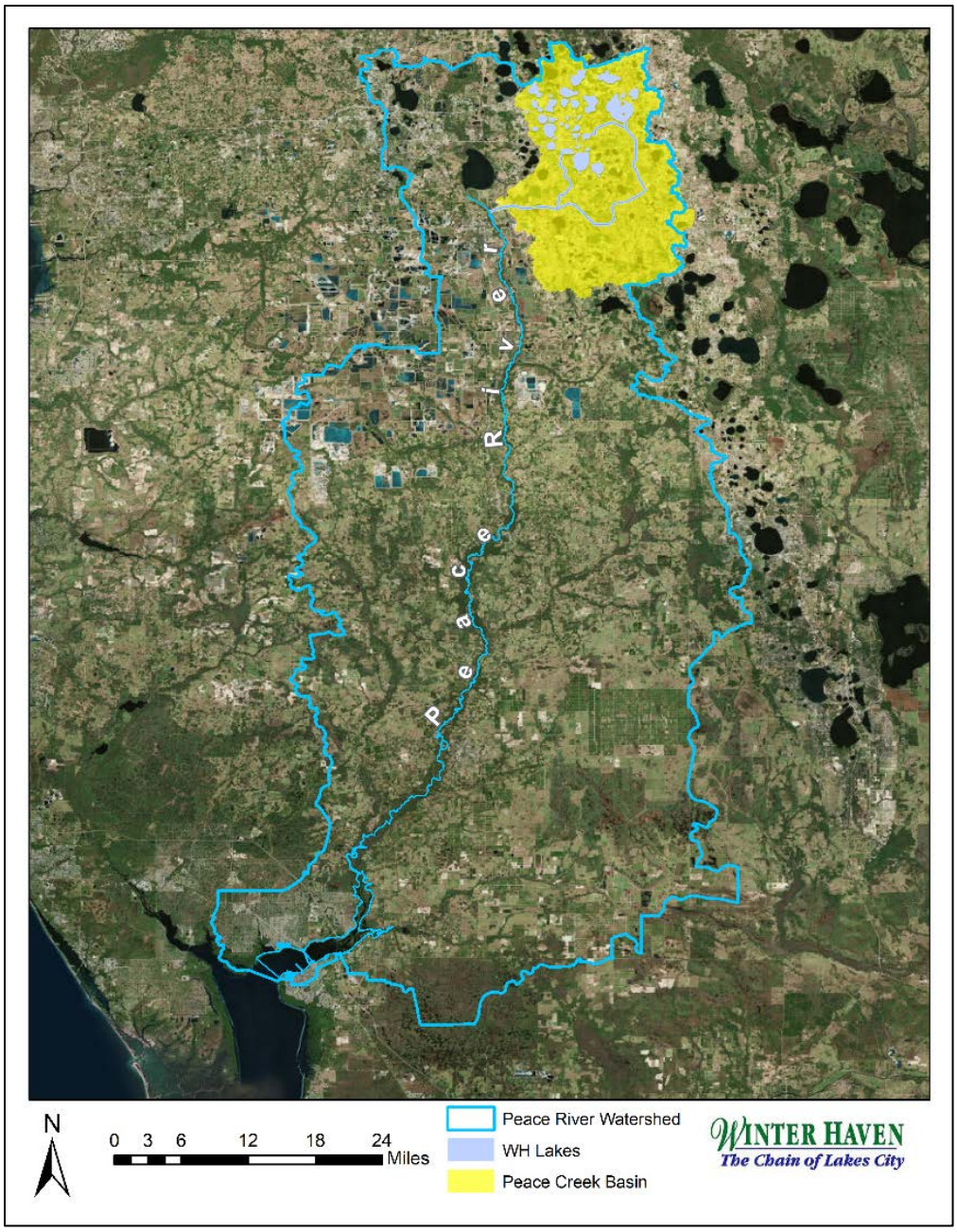


Figure 1-1. Map of Peace River & Peace Creek Watersheds

The lakes of the Winter Haven area are located at the top of the Peace River watershed, in what is known as the Peace Creek sub-basin. As excess water discharges to the Peace Creek, they become a major contributor of surface and groundwater flow to the Peace River which flows to the Gulf of Mexico at Charlotte Harbor (Figure 1-1). The lakes chosen for this evaluation discharge directly or indirectly to the Peace Creek Canal—a major tributary that flows south of the Winter Haven area from Lake Hamilton and then west to join with Saddle Creek to become the Peace River (Figure 1-2).

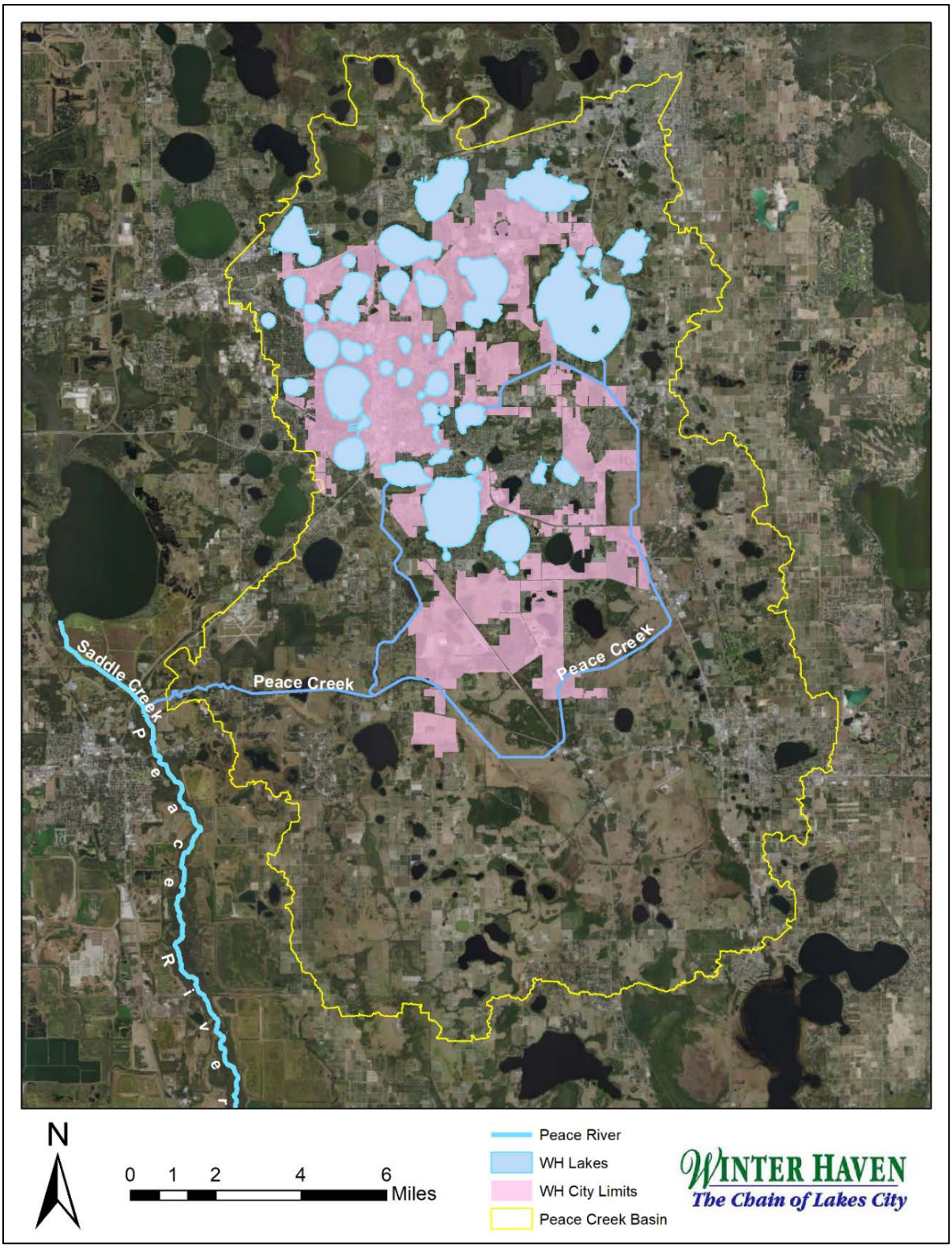


Figure 1-2. Map of the Peace Creek sub-basin, City of Winter Haven limits, contributing lakes and flow-ways.

Winter Haven Lakes

This report focuses on the 37 primary lakes that the Winter Haven Natural Resources Division monitors for lake health. These lakes were selected for monitoring based on several criteria:

- The lake must have some form of public access (e.g. public park, boat ramp, or navigable canal from another publicly accessible lake).
- The lake must be located within or adjacent to Winter Haven city limits, or it must discharge directly to a public lake within city limits.
- The lake must discharge, either directly or indirectly, to the Peace Creek.
- The lake must have a sufficient period of record water quality and hydrologic data set (approximately 20 years) in order to evaluate.

The lakes included in this report were previously categorized into five groups: *North Chain of Lakes, North Central Lakes, South Chain of Lakes, South Central Lakes, and Outlying Lakes*, based on their geographic location and where they discharge water to. This was done in order to summarize the water quality, hydrologic, and ecological data by group. Recent iterations of this report evaluate each lake individually, meaning the lake groupings are no longer necessary. The following are the 37 lakes listed in alphabetical order:

Blue	Idyl	Pansy
Buckeye	**Idylwild**	**Rochelle**
Cannon	**Jessie**	**Roy**
Conine	Link	**Shipp**
Daisy	**Lulu**	Silver
Deer	Mariam	**Smart**
Elbert	Mariana	**Spring**
Eloise	Martha	**Summit**
Fannie	Maude	**Winterset**
Haines	**May**	Little Hamilton
Hamilton	**Mirror**	Middle Hamilton
Hartridge	Ned	
Howard	Otis	

The series of waterways connected by navigable canals is colloquially referred to as the Winter Haven Chain of Lakes (highlighted in **bold** in the list above). Many of these canals were constructed in the early 1900's, in part as a means to transport citrus through the region [Cavitt, 2015; Gernert, 2016]. With the advent of the automobile, the canals never got to serve this purpose—instead their primary role became recreational transportation. Winter Haven's Chain of Lakes are a major component of the City's culture and economy. The Lakes are used year-round for recreation and lake-centric tourism benefits many local businesses. Similarly, residents and visitors enjoy the lakes for everything from water skiing to seaplane training. Whether it's fishing, boating, water skiing, kayaking, or flying

a seaplane, Winter Haven has built its day-to-day life around our lakes, which means caring for them is a critical responsibility.

The Winter Haven Chain of Lakes can be differentiated into a 'North Chain' and 'South Chain'; managed at different levels and separated by a lock system between lakes Conine and Hartridge. The lock system is controlled by the Lakes Region Lakes Management District (LRLMD), a special taxing district originally established to maintain the canals and local boat ramps. The LRLMD also controls surface levels for the 14 Southern Chain of Lakes via a passive control structure at Lake Lulu. The Southwest Florida Water Management District (SWFWMD) manages the surface level of the nine Northern Chain of Lakes via a series of active water control structures. For the purposes of water conservation and flood control, the SWFWMD sets the maximum desired levels at each of these structures—discharging water to the Peace Creek Canal when surface levels exceed the upper limits [SWFWMD, 2019]. In this system, water flows from west to east toward the terminal discharge point at Lake Hamilton.

The remaining (interior) lakes have non-navigable flow ways (i.e. pipes and ditches) that allow them to flow either directly to the Peace Creek or indirectly via one of the lake chains. The movement of water through many of these connections is determined by water control structures put in place primarily to maintain the lakes at desirable levels. The control structures can be grouped into active or passive categories. Active structures rely on the deliberate opening/closing of a gating mechanism to allow water to pass through the flow-way at an adjustable level. Whereas passive structures include weirs or pipes set at the lake's maximum desired water level. Passive structures only allow for the overflow of water above that set level. The SWFWMD and LRLMD maintain the majority of structures in the Winter Haven area, however, a couple of passive structures are managed by Polk County (Table 1-1). The canals and connections for these lakes are shown in Figure 1-3.

Control Structure ID	Contributing Waterbody	Managing Organization	Control Type	Maximum Desired Elevation (NGVD29)
P-5	Lake Henry	SWFWMD	Active	126.00
P-6	Lake Smart	SWFWMD	Active	128.50
P-7	Lake Fannie	SWFWMD	Active	125.50
P-8	Lake Hamilton	SWFWMD	Active	121.25
Lulu-CS	Lake Lulu	LRLMD	Passive	132.00
Silver-CS	Lake Silver	LRLMD	Passive	146.50
Martha-CS	Lake Martha	LRLMD	Passive	142.00
Maude-CS	Lake Maude	LRLMD	Passive	140.50
Idyl-CS	Lake Idyl	LRLMD	Passive	132.00
Link-CS	Lake Link	LRLMD	Passive	128.00
Mariam-CS	Lake Mariam	LRLMD	Passive	124.75
Mariana-CS	Lake Mariana	LRLMD	Passive	137.50
Blue-CS	Lake Blue	Polk County	Passive	148.86
Deer-CS	Lake Deer	Polk County	Passive	138.61

Table 1-1. Control structure elevations (in feet above sea level), contributing waterbodies, and managing agencies of study area lakes.

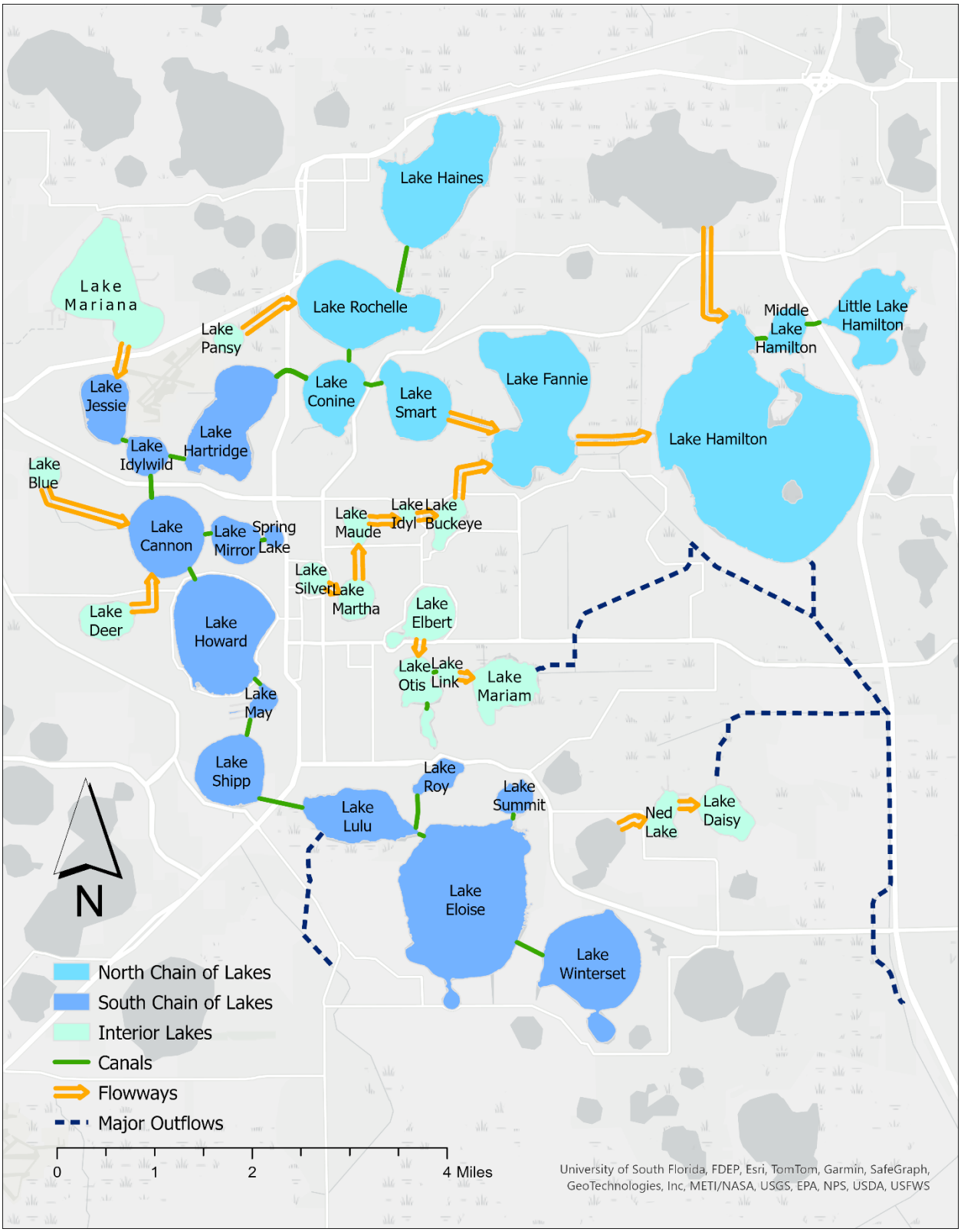


Figure 1-3. Map of Winter Haven Lakes, navigable canals, non-navigable flow-ways, and major outflows.

1.3 Background on the Metrics

Just as a person's physical health relies on multiple factors, so are the facets of lake health built upon complex interactions amongst various components. The focus of this report will be placed on understanding the interactions between and among water quality, hydrology, and ecology.

Water Quality

The term "water quality" refers to a selection of physical and chemical characteristics, parameters, or attributes pertaining to water. Some parameters more obvious to the casual observer include water clarity or color. However, there are myriad less-obvious parameters with examples ranging from the amount of dissolved oxygen to the concentration of metals or other elements in the water column.

An extensive synopsis of every water quality metric studied would be extraneous. For the sake of simplicity, this report focuses on the water quality metrics that are most relevant from a regulatory standpoint—or parameters that are indicative of a lake's ability to meet environmental, human health, or water supply standards. Throughout the remainder of this report, the following core water quality metrics will be used in the City's analysis in the context of overall lake health.

Primary Water Quality Metrics

Chlorophyll-a (Chl-a): *Measured as the concentration of the photosynthetic pigment found in plant and algal cells, Chl-a is used to estimate algal abundance in the water column. While algae is important ecologically, it can become problematic at higher concentrations. Therefore, the goal is to maintain Chl-a concentrations at or below a target threshold and/or lower them over time.*

Nutrients: *Measured as the concentration of total nitrogen (TN) and total phosphorus (TP) in the water column, TN and TP are the primary nutrients that contribute to plant and algal growth. Therefore, a higher concentration of nutrients leads to higher Chl-a levels. As a result, the goal is to maintain TN and TP concentrations at or below specified target thresholds and/or lower them over time.*

Water Clarity: *Measured as Secchi depth, or the maximum depth in the water column that light can penetrate. Clarity can be used to represent the amount of both suspended and dissolved matter in the water column. Clarity is often inversely proportional to Chl-a concentrations. Therefore, the goal is to maintain clarity at or above levels consistent with natural lakes in Florida and/or increase clarity levels over time.*

Trophic State & Water Quality

Mentioned above, trophic state is a concept describing a waterbody's level of primary productivity; a term that relates to the amount of plants, algae, and wildlife a waterbody can support. Trophic status is broken down into several classes (Figure 1-4) [USGS, 1998]:

Trophic States

- **Oligotrophic:** *Low productivity*
- **Mesotrophic:** *Moderate productivity*
- **Eutrophic:** *High productivity*
- **Hypereutrophic:** *Very high productivity*

Generally, oligotrophic lakes are clearer, less build-up of organic sediments, and possess less abundance of plants and fish. These types of lakes are rare in Florida, but ubiquitous in the northern US. Eutrophic lakes, on the other hand, are less clear due to increased amounts of organic matter and sediments. These lakes are typically shallower and have higher natural nutrient concentrations—as such they can support more plants, algae, and wildlife. Mesotrophic waterbodies fit the middle ground between these two while hypereutrophic waterbodies are on the extreme high end—often associated with toxic algal blooms, fish kills, and overabundance of nuisance plants.

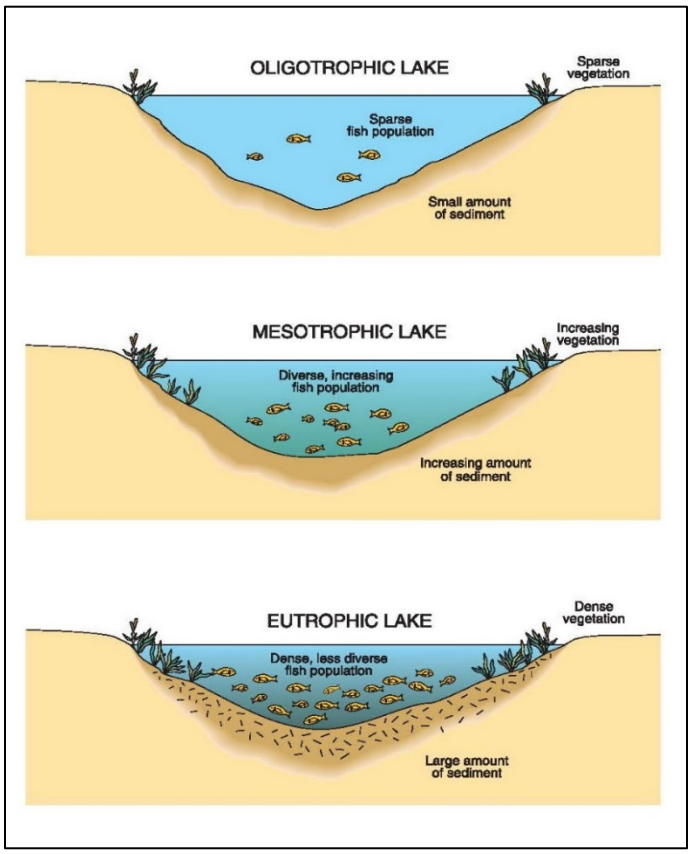


Figure 1-4. Diagram of Lake Trophic States [USGS, 1998].

Eutrophication is the process by which waterbodies increase in trophic state, usually due to human-originated (anthropogenic) factors, like pollution from runoff. That said, trophic state also naturally increases slowly over the geologic timescale. Chlorophyll-a (Chl-a), a measure of algal abundance, is generally used as an indicator for a waterbody's trophic state. Nitrogen and phosphorus, two of the main elements required for plant growth, are the primary drivers of Chl-a increases in the water. Figure 1-5 shows that an increase in total nitrogen (TN) and/or total phosphorus (TP) will generally lead to an increase in Chl-a. Trophic state index (TSI) is a standard metric incorporating chlorophyll and nutrient values into one measure. While it was used as a regulatory water quality metric for a time, TSI was determined to be too simplistic and didn't capture the complex interactions between nutrients and algal concentrations [FDEP, 2013]. For example, due to Florida's naturally high-phosphorus soils, meeting a standard TSI threshold was impossible for many Florida lakes. Instead, Chl-a, TN, and TP are evaluated separately as regulatory water quality metrics. This way localized differences in the lakes can be better accounted for.

Nutrient Cycles

Nitrogen (N) and Phosphorus (P) have been established as the primary drivers of eutrophication, but each is involved in a complex natural cycle within lake ecosystems. Both nitrogen and phosphorus enter aquatic systems through similar external pathways: surface runoff, groundwater infiltration, and atmospheric deposition. Nitrogen is typically present in three forms: organic N, inorganic N, and atmospheric N. Typically, only the inorganic, mineral form of N is biologically available for plants and algae to uptake. Most inorganic N is derived from a microbial process called mineralization that converts it from organic forms. Inorganic N can also be introduced via anthropogenic sources such as fertilizers and wastewater. One of the more important aspects of the nitrogen cycle is denitrification—a process by which soil bacteria in anoxic conditions can convert inorganic N to atmospheric N; effectively removing it from the aquatic environment.

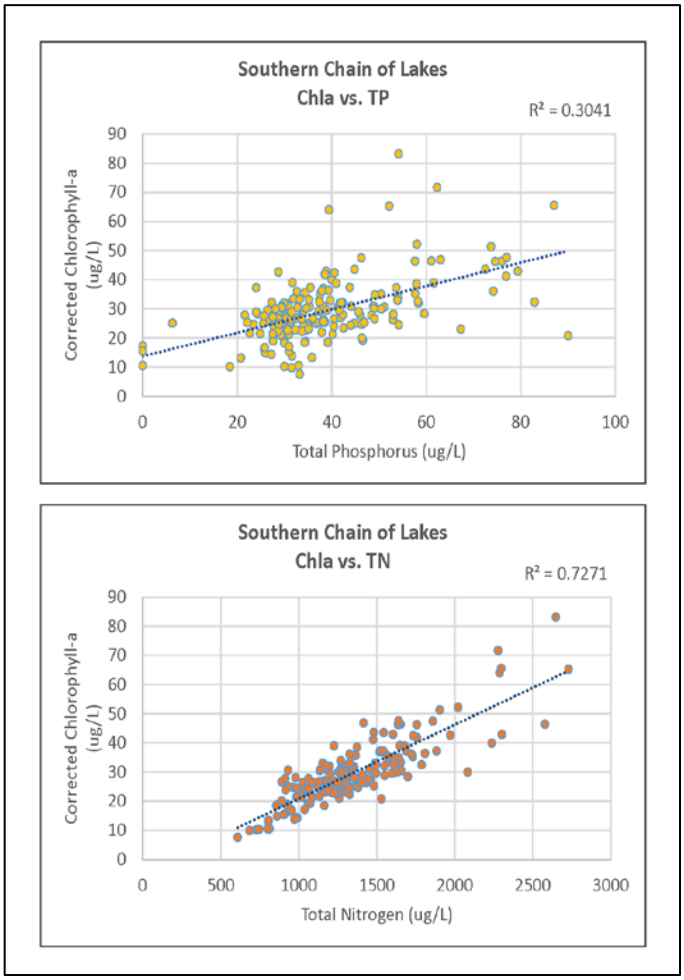


Figure 1-5. Linear Regression of Chlorophyll-a vs. Total Phosphorus & Total Nitrogen

Similar to nitrogen, phosphorus also cycles in and out of inorganic (mineral) and organic forms. Plants and algae uptake mineral P from the water column and sediments and convert it into organic P as it's incorporated into their cellular structure. When plant and algal cells die or are eaten, the remains are left to decompose on lake beds. Bacteria in the sediments convert the organic P to inorganic P which can return to the water column depending on the current phosphorus gradient in the water. This process, called phosphorus flux, can allow large amounts of P to be stored and released over long periods of time—facilitating a continual source of P. Unlike the nitrogen cycle, phosphorus does not undergo a transformation to an atmospheric form; meaning the only effective means to reduce P in aquatic environments is through the physical removal of plants, animals, or sediments (muck removal). Due to the large costs associated with removal, it's often more economically feasible to develop methods to lock phosphorus in an unavailable form or prevent it from entering aquatic environments altogether.

Underscoring the concepts of phosphorus flux and nitrogen mineralization is the concern regarding internal nutrient loading. The presence of legacy nutrients originating from historic wastewater or industrial discharges or the presence of naturally phosphate-rich sediments can exacerbate eutrophication. These legacy nutrients require special consideration as even a significant reduction of stormwater input may not have much effect on water quality if the majority of nutrient loading originates from the underlying sediments.

Paleolimnology, or the study of historic lake conditions, can provide insights into the trophic state of lakes before human activity. By testing the layers of sediment that have accumulated on the lake floor, inferences regarding historic nutrient and chlorophyll concentrations can be made. Several studies performed on Winter Haven area lakes have shown that several of these waterbodies were naturally eutrophic before human development in the region [Whitmore et al., 1996; Whitmore & Brenner, 2002]. That said, anthropogenic pollution has led to an increase in trophic status and poorer water quality over time.

Regulatory Impairment Evaluation

A major effort by State and Federal environmental agencies in recent decades was the development of an objective set of standards to measure anthropogenic impacts to waterbodies. In 2011, under section 303(d) of the Clean Water Act, the US Environmental Protection Agency (EPA) and the Florida Department of Environmental Protection (FDEP) established sets of Numeric Nutrient Criteria (NNC) for all of Florida's surface waters. These criteria are based on a waterbody's intended use classification and historical water chemistry characteristics. All of the Winter Haven lakes fall under Class III and are therefore subject to NNC impairment thresholds that support recreation and healthy ecosystems. As a result, whether or not a lake is impaired is one of the primary metrics that we use to evaluate lake health.

FDEP Intended Use Classifications

- **Class I**: *Potable Water Supply*
- **Class II**: *Shellfish Propagation & Harvesting*
- **Class III**: *Recreation; Propagation, & Maintenance of a Healthy, Well-Balanced Population of Fish & Wildlife*
- **Class IV**: *Agricultural Water Supply*
- **Class V**: *Navigation, Utility, & Industrial Use*

Impairment: *Threshold concentrations of Chl-a, TN, and TP, set forth by the Numeric Nutrient Criteria, are used to determine whether a lake is meeting its intended use classification. Figure 1-6 is a flow chart that explains the impairment determination process.*

As stated, impairment determination also looks at historic water chemistry values. Lakes are initially categorized based on the long-term geometric mean (average) true color and total alkalinity. Color, or the measure of dissolved organic material in the water column, is measured in platinum cobalt units (PCU). High color concentrations can block sunlight, limiting Chl-a concentrations. The presence or absence of wetland vegetation can alter a

lake's natural color concentration. Alkalinity, measured as the amount of calcium carbonate (mg/L $CaCO_3$) in the water, buffers against changes in pH that can affect flux of nutrients in the water column. Generally, lakes with more alkalinity can support more productivity which is why this metric is used to classify lakes. Due to the increased presence of underlying carbonate rock (limestone) in this region of Florida, the majority of Winter Haven's lakes possess relatively high natural alkalinity.

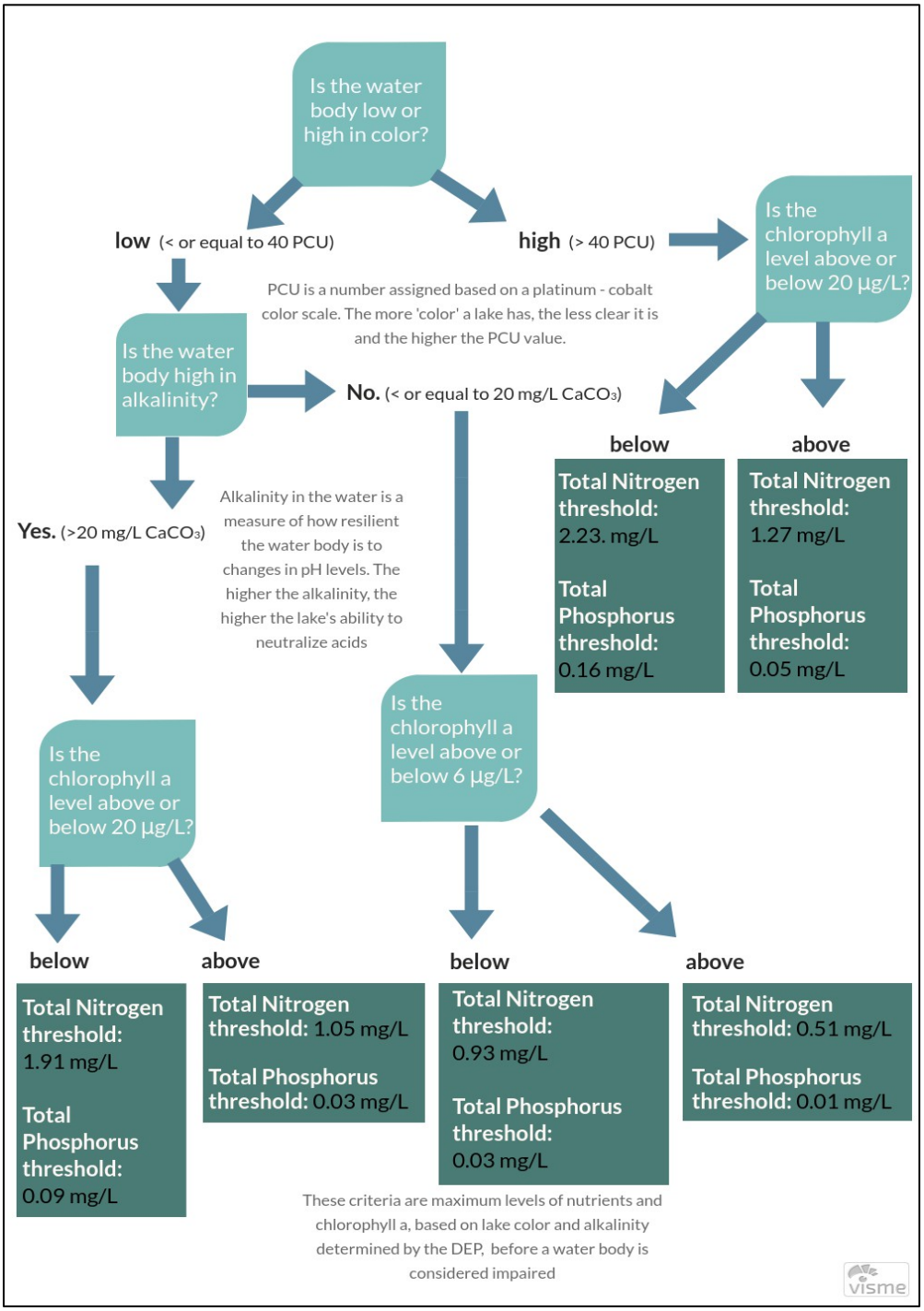


Figure 1-6. NNC Impairment Determination Flowchart

Impairment Response

After a waterbody is determined to have a nutrient impairment, the FDEP develops pollutant reduction goals for stakeholders that contribute surface water or groundwater to that waterbody. Referred to as a Total Maximum Daily Load (TMDL), the reduction goals represent the total allowable amount of pollutants that can be discharged to a waterbody per day and still meet the intended use. TMDLs are established for the pollutant of concern which is typically the nutrient of impairment, but can also be the limiting nutrient(s). A nutrient is considered limiting if present in lower relative concentrations than other nutrients or if it would be the first to be used up through natural processes. When a limiting nutrient is depleted, plant and algal growth cannot continue regardless of the presence of other nutrients. Depending on the ratio of nitrogen to phosphorus, a lake may be considered phosphorus-limited, nitrogen-limited, or co-limited. Research shows that the majority of Florida lakes are phosphorus limited or co-limited (by both nitrogen and phosphorus) [Lakewatch 102, 2000]. Knowledge of the limiting nutrient can assist lake managers in determining what management practices to focus on to improve water quality.

In order to establish appropriate nutrient reduction goals that will lead to water quality improvement, the FDEP must estimate the current pollutant loading rate from potential sources (e.g. lbs/year of TP). Point sources refer to discharge from wastewater treatment plants and **M**unicipal **S**eparate **S**torm **S**ewer **S**ystems (MS4s). Nonpoint sources refer to the introduction of pollutants through surface runoff, atmospheric deposition, groundwater, sediments, and any other sources that don't possess a discrete entry point. Modeling pollutant loading rates is explained more in the next section.

Once a waterbody has a TMDL established, the FDEP works with local stakeholders to develop a management plan. Plans include the targeted water quality goals, a timeline for achievement, and a confirmation process for best management practices. This ensures that the managing entities (like the City) are able to meet the intended goals using methods that are scientifically sound, technically and financially feasible, and in a timely manner.

Tracking water quality trends is critical to lake management. For impaired waterbodies, it helps lake managers know whether their strategies are being effective. Whereas, for waterbodies that are meeting the water quality targets, it can warn of potential future issues that managers can work proactively to correct. It is for these reasons that the City considers water quality trends a critical lake health metric.

Water Quality Trends: *The long-term changes in Chl-a, TN, TP, and Clarity. Trend analysis uses statistical analysis to determine direction (up or down), magnitude (how much are levels changing), and significance (validity of the trend).*

Hydrology

Hydrology is the study of the pathways that water takes through our environment. Water's journey is long as it travels the Earth through different pathways. The way water enters, leaves, and interacts with our lakes plays a large part in their overall health. The following metrics are the primary hydrologic response variables and characteristics that are assessed by the City and other environmental agencies. While the metrics listed below are not direct indicators of lake health, they are useful for determining underlying causes of poor water quality and/or biological health. In addition, management practices can be tailored to specific waterbodies based on their unique hydrologic characteristics. In the health and wellness analogy, hydrology is akin to a patient's medical history and genealogy—things that cannot be changed, but can point to underlying issues that can be managed.

Primary Hydrologic Metrics

Surface Level: *The elevation of a waterbody's surface measured in feet above sea level. Also known as lake stage, surface level changes over time in response to environmental stimuli such as precipitation (rainfall) and groundwater flows.*

Groundwater Level: *The elevation of groundwater surface measured in feet above sea level. There are two major types of groundwater in peninsular Florida. The surficial aquifer or water table and the confined aquifer.*

Drainage Characteristics: *How water enters and leaves a given waterbody from its surrounding drainage basin. Includes precipitation, land use, soil types and surface runoff potential (imperviousness), this information can even be used to model the rate of pollutant loading.*

Precipitation

It is important to start off with the primary driver of Winter Haven's hydrology—precipitation (i.e. rainfall). Due to Winter Haven's elevation on Florida's central ridge system, its lakes sit at the top of a watershed. This means that all water naturally flows downstream away from the lakes. With no rivers imparting flow to the area, rainfall remains the only water input for the region. As a result, the amount of rainfall received is responsible for fluctuations in lake levels and for maintaining the capacity of groundwater reservoirs.

Precipitation enters lakes either directly or via surface runoff from the surrounding land (i.e. stormwater). The total area that contributes stormwater runoff to a waterbody is referred to as its drainage basin. In a natural system the effective drainage basin of a lake is relatively small. The lack of impervious surfaces (e.g. roads and buildings) and stormwater infrastructure (i.e. pipes and ditches) cause much of that surface flow to seep into the ground before it reaches the lake. Land development increases both impervious surface area and the drainage basin size, causing issues such as more extreme surface level fluctuations as well as increased pollutant loading in lakes. However, these impacts can be mitigated by creating open spaces for water seep into the ground. Stormwater that infiltrates into the ground is then referred to as groundwater.

Groundwater

There are two primary tiers of groundwater in Florida: the upper layer known as the surficial aquifer, and the deeper Floridan aquifer that is confined under a layer of impermeable clay. Measurement of the elevation above sea level of the upper surface of each aquifer is the accepted method for determining their current water quantity. The surficial aquifer level, referred to as the water table, generally fluctuates readily based on rainfall, soil saturation, temperature, and humidity. The Upper Floridan Aquifer is confined under pressure. As a result, its level is measured as the potentiometric surface, or the level at which water will rise in a well pipe due to the pressure exerted on it. Where there are breaks or perforations in this confining layer, water can be exchanged with the surface. Fluctuations of both the surficial and Upper Floridan levels can significantly impact lake surface levels (Figure 1-7). In locations or during periods of time where the aquifer levels are high, water may flow to the surface via the bottom of lakes. Naturally, the opposite occurs when the water table and potentiometric surface are low.

One less frequently discussed component of hydrology is lake morphology or the size and shape of a waterbody. The depth and slope of a lake bed can provide insights into how it reacts to changes in groundwater. For example, a deeper lake may have a more direct connection with the aquifer and would more quickly gain or lose water due to potentiometric changes.

The Upper Floridan Aquifer is the sole municipal water source for the City of Winter Haven. Winter Haven has been previously listed as one of the fastest growing areas in the US [US Census Bureau, 2018]. Due to this population increase, the potential hydrologic impacts of water use must be considered for both the ecological outlook of our lakes and the future of our drinking water supply. The primary hydrologic strategies for this area include promoting rapid recharge of the Floridan aquifer and the long-term storage, treatment, and slow infiltration of stormwater in areas where fast recharge isn't feasible.

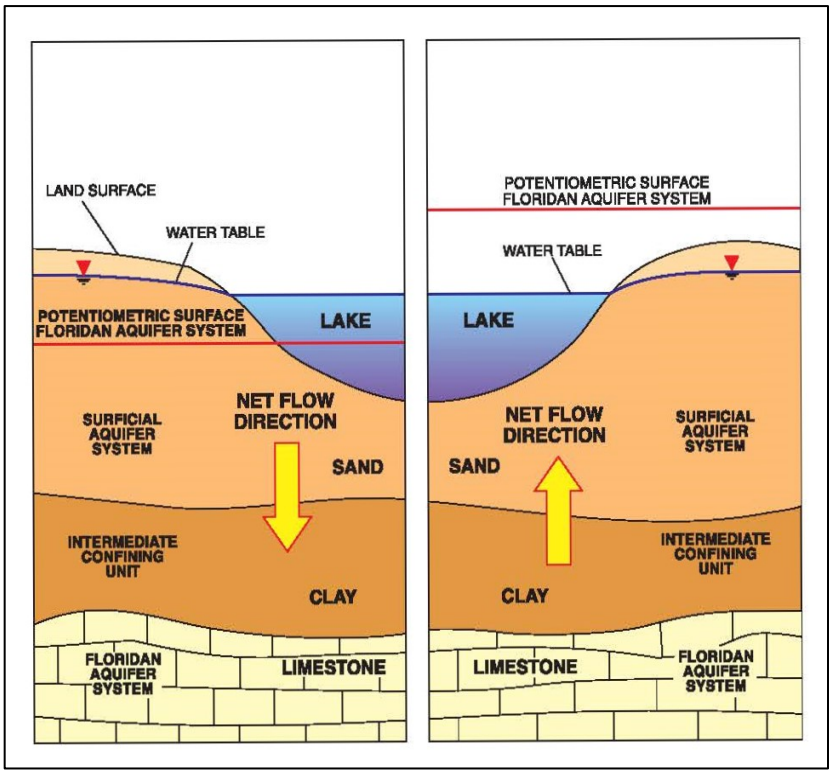


Figure 1-7. Diagram of Groundwater Interactions.

Soil Characteristics

The types of soils found in lake drainage basins can significantly impact the infiltration rate of stormwater. The United States Department of Agriculture (USDA) has classified soils into several hydrologic groups based on sediment types (e.g. sand, clay, loam) and their respective water infiltration rates. This information has informed site development planning and engineering across the country since the early 1900s. Environmental scientists can also utilize soil data to determine how quickly water can percolate into the groundwater system.

USDA Hydrologic Soil Groups

Group A: *Soils consisting mostly of excessively drained sands or gravel with a high infiltration rate when thoroughly wet.*

Group B: *Soils consisting of moderately well-drained course or fine texture sediments with a moderate infiltration rate when thoroughly wet.*

Group C: *Soils consisting of fine textures having a layer that impedes the downward movement of water with a slow infiltration rate when thoroughly wet.*

Group D: *Soils consisting chiefly of clays or clay layers near the surface or over nearly impervious material with a very slow infiltration rate.*

Dual Groups: *(A/D, B/D, C/D) Mixed soils with no dominant type where the designation applies to their status when 'drained'/'saturated'.*

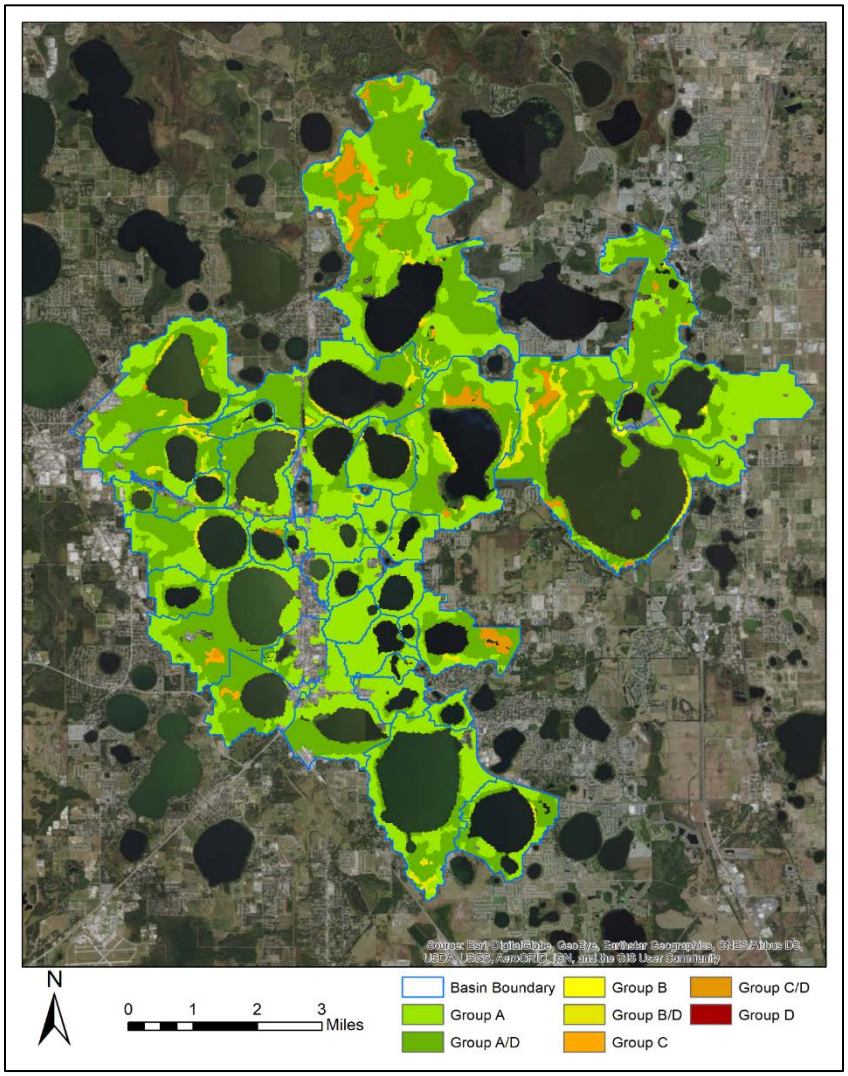


Figure 1-8. Hydrologic Soil Groups of the Winter Haven Lakes.

The proportion of each soil group making up a given lake drainage basin can indicate the infiltration potential within that basin. This information can also be used to determine adequate locations for management practices that promote groundwater recharge or treatment of stormwater. The majority of the Winter Haven area consists of Class A or A/D soils. However, notice that the proportion of poorly-drained soil types increases

further from the downtown area (Figure 1-8). It can be inferred that stormwater infiltration BMPs will be more effective in the City center with surface water storage/treatment practices being relegated to the less well-drained lower elevations at the periphery of the downtown area.

Drainage/Pollutant Modeling

Pulling together the previously mentioned drainage characteristics can yield insights into the amount of stormwater and pollutants entering a lake. This process is referred to as stormwater modeling. Modeling stormwater flows is the basis for the TMDL targets mentioned in the water quality section, but the process can also be useful in pinpointing pollution sources in a drainage basin and helping lake managers prioritize drainage projects.

There are various methods and tools that lake managers use to model stormwater and pollutant loads. The 'Simple Method', developed by Thomas Schueler in 1987, is an EPA approved model that utilizes rainfall volume, soil type, impervious area, and land use to estimate the annual load of various pollutants such as TN, TP, suspended solids, and heavy metals [Schueler, 1987]. Tied to each land use are average impervious percentages to determine runoff rates as well as event mean concentrations (EMCs) which denote average loading rates for each pollutant for a given storm event size. The result of this modeling work is the ability to estimate annual pollutant loads from a delineated drainage basin. In Figure 1-9, differences in land use types and impervious percentages result in drastically different TP loading rates.

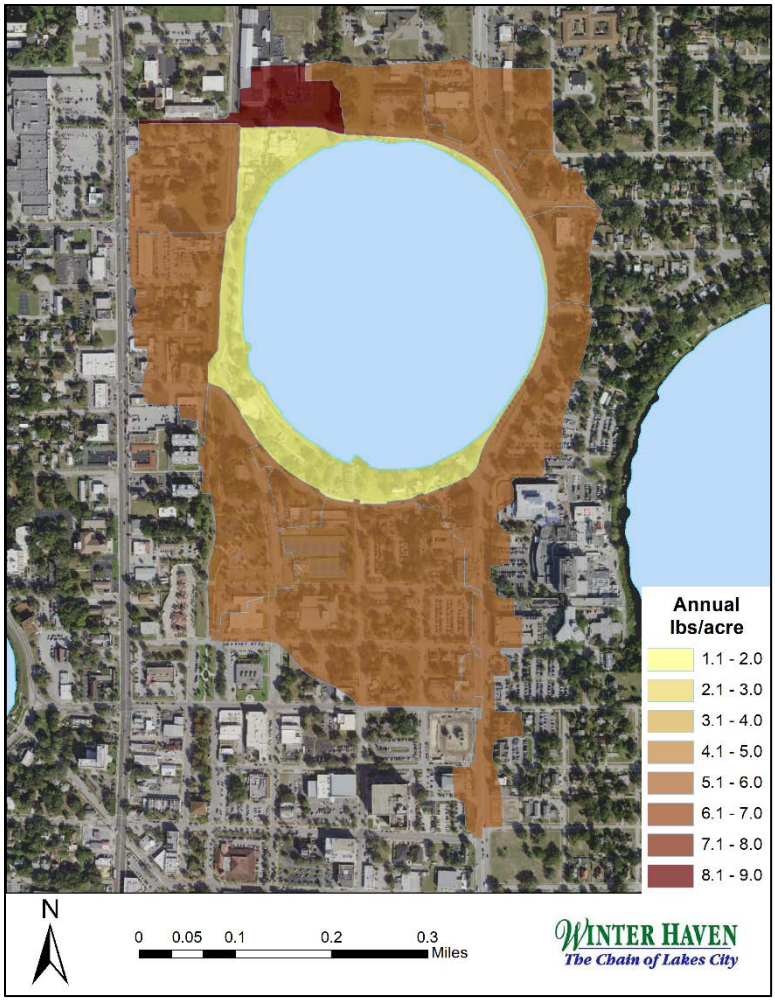


Figure 1-9. Annual Total Nitrogen Loads to Lake Silver in lbs/acre.

The calculated loading rates displayed here are raw values that exclude nutrient load reductions from stormwater best management practices (BMPs). There are numerous privately owned BMPs within each drainage basin, however the estimated load reduction they confer is not always documented. The City's Unified Land Development Code

requires a match of pre and post-development runoff rates and volumes [City Code § 21-161]. By design, these BMPs capture the majority of runoff. However, many parcels that were developed before the initiation of these ordinances have no stormwater management BMPs implemented. By identifying where raw pollutant loads are highest and where there are no documented BMPs, staff can pinpoint specific areas where new stormwater practices will have the greatest effect. This strategy is most effective in Winter Haven's urban center where aging stormwater infrastructure and high density of impervious surfaces funnel untreated stormwater directly to lakes. The City actively installs stormwater management practices that capture, filter, or infiltrate runoff in downtown areas lacking existing infrastructure. Additionally, City officials review development projects and recommend these types of practices on private properties.

As previously mentioned, groundwater can also be a contributor of pollutants if there are potential sources within a lake's drainage basin. Leaky Onsite Sewage Treatment & Disposal (OSTD), aka septic systems, near a lake could be contributing to water quality issues. While the density of OSTDs within a basin doesn't provide concrete evidence of this, considering septic as a potential nutrient source can lead to exploratory studies as confirmation. This is just one component to consider when developing a water quality improvement plan.

Ecology

Ecology is a subsection of biology that focuses on the study of living organisms and their interactions with one another and their environment. An understanding of these biological communities is necessary to meet the intended use requirements for Class III waterbodies; that is, maintenance of a healthy, well-balanced population of fish and wildlife.

One of the main components of any ecosystem is the presence of primary producers (i.e. plants and algae). These photosynthetic organisms provide multiple benefits for the aquatic environment. Management of non-algal plants, or macrophytes, ensures that their populations remain healthy and well-balanced. The quantity and quality of vegetation in a waterbody can respond to and impact the response of both hydrologic and water quality metrics. In addition, a healthy plant community will also provide habitat and food sources for fish and wildlife. It is for this reason that the City decided to focus on aquatic vegetation as a vital component of lake health.

Primary Ecological Metrics

Biological Abundance: *The quantity of vegetation growing in a waterbody can be estimated through the use of remote monitoring methods. Percent area coverage (PAC) and biological volume (BV) represent the respective 2-dimensional and 3-dimensional quantification of plant matter relative to a waterbody's size.*

Species Composition: *Ecological surveys are performed to estimate the overall population of aquatic plants in each lake. A count of each species present during a survey allows for the evaluation of diversity, dominant taxa, and the presence of harmful invasive species.*

Species Diversity: *Species diversity is a measure of the overall richness (number of unique species) and evenness (relative species proportion) of a lake's biological community. Multiple indices are used to evaluate overall diversity.*

Aquatic Plant Types

Of the different types of primary producers in aquatic environments, both microscopic algae and macrophytes (large aquatic plants) fill a similar ecological role as producers of oxygen and a food source for organisms higher on the food chain. A healthy balance of each is necessary for a functioning, diverse aquatic community. However, macrophytes provide additional ecological benefits such as their role as habitat for aquatic fauna. Based on their various fundamental growth strategies, aquatic macrophytes are separated into several categories: submerged aquatic vegetation (SAV), emergent aquatic vegetation (EAV), floating leaf vegetation (FLV), and free-floating vegetation (FV) (Figure 1-10). A full list of commonly occurring plant species in the area, with links to images, is provided in Table 4-8 (in the appendix).

Submerged plants grow completely under the water's surface and are usually rooted in the benthic sediments. Since the main body of the plant is supported by water, SAV isn't hampered by the energy requirements needed to develop rigid support structures to keep them upright. Due to this, SAV species typically grow relatively quickly. However, this

evolutionary strategy ties the growth of submerged plants to the availability of sunlight—meaning that water clarity, lake morphology, and surface level can significantly impact available real estate where SAV can grow. Common examples of SAV in our lakes include eelgrass (*Vallisneria americana*) and the invasive species hydrilla (*Hydrilla verticillata*).

Emergent plants are similar to SAV in that they are rooted in the benthic substrate, however, the main photosynthetic body of the plant grows above the water's surface. This adaptation negates some of the issues associated with light availability, but these plants must put more energy into structural components that allow them to rise above the surface. In addition, the growing depth of EAV is limited by the capacity to transport oxygen and nutrients to their root systems—meaning that most species are relegated to the shallow margins of lakes. Duck potato (*Sagittaria lancifolia*) and cattail (*Typhus spp.*) are a couple examples.

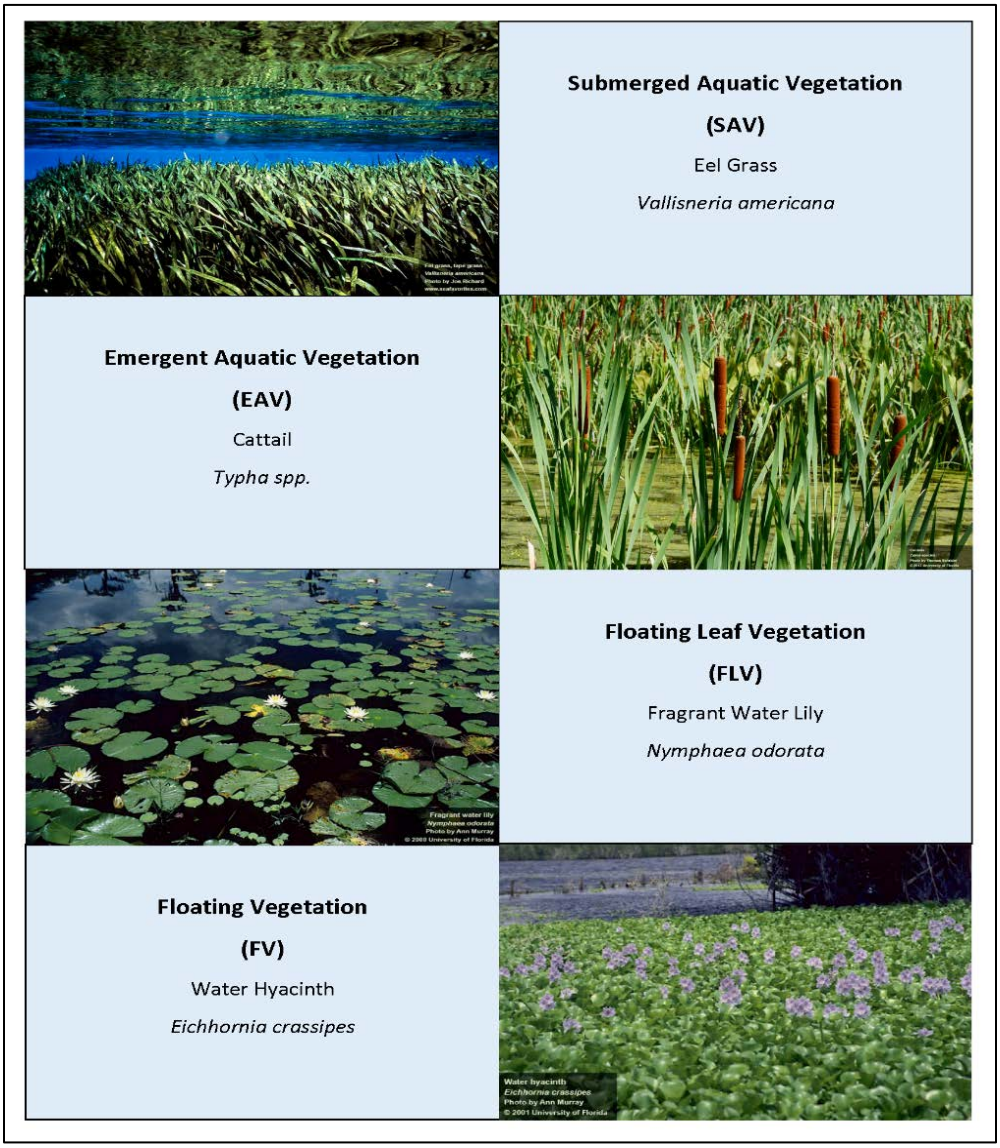


Figure 1-10. Examples of Aquatic Vegetation Categories.

Floating leaf plants (FLV) are a subcategory of emergent vegetation that behave very similarly to EAV, but present a unique habitat type for fish and wildlife. The base of these plants is rooted into the substrate, but their floating leaves extend to the water's surface without the need for strong stems to support them. Often, floating leaf plants will form dense stands that can shade out submerged species below them and become an impediment to navigation in shallow waterbodies. Common species of FLV include fragrant water lily (*Nymphaea odorata*) and spatterdock (*Nuphar advena*).

Floating plants are unique in that they have evolved beyond the need to root into the underlying substrate. To prevent them from sinking, most are small in size while some species possess adaptations that create buoyancy. The ability to float negates many of the challenges that SAV and EAV must contend with. Because of this, some of the most prolific invasive or nuisance plant species in Florida are floating plants. Examples of FV species are water hyacinths (*Eichhornia crassipes*) and duckweeds (*Lemnoideae spp*.).

Vegetation Abundance

The areas of saturated or inundated ground along the peripheries of some lakes can support emergent vegetation. These areas, known as wetlands, are a unique habitat area on which many species of wildlife rely. Wetlands can act as a pollutant sink and a source of beneficial chemical components [USEPA, 2015]. Surface water that comes into contact with wetland areas deposits sediments, nutrients, and other contaminants. Also, most forested wetlands provide a source of dissolved organic compounds that impart color to the water column. Figure 1-11 illustrates the correlation between surface level and true color in a system with a surrounding wooded wetland area and one without significant wetlands. Lake Haines, with its dense surrounding wetlands, elicits a much stronger relationship between surface

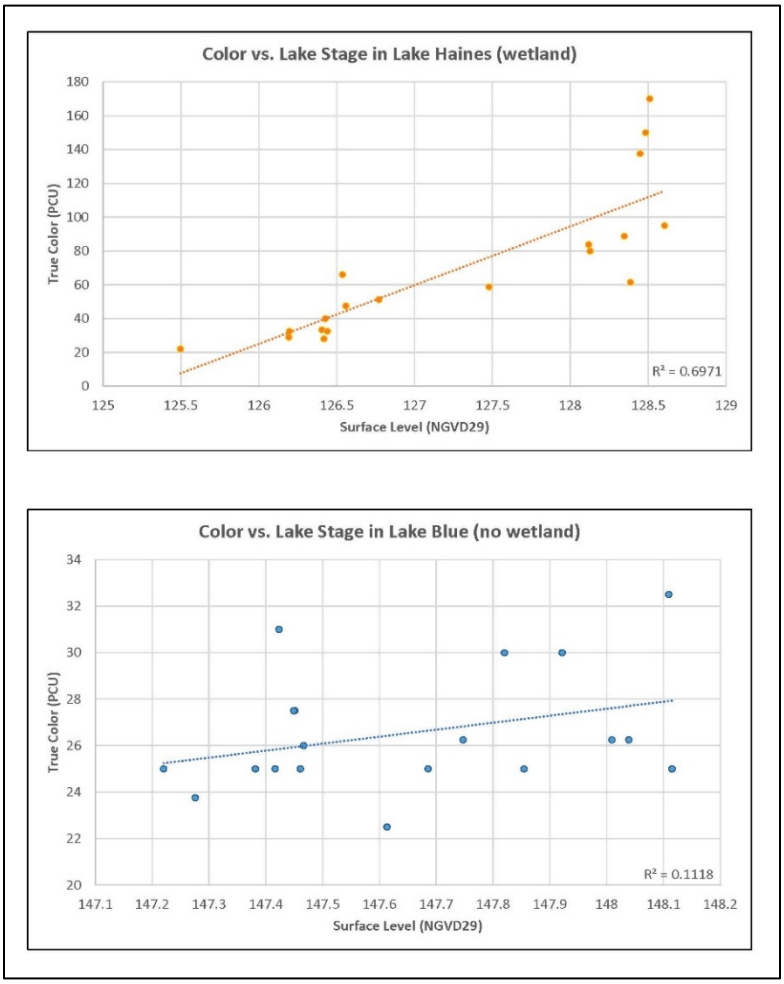


Figure 1-11. Correlation between Wetlands and True Color in Lake Haines & Lake Blue.

level and color than Lake Blue which lacks any substantial forested wetland area. Reductions in wetland connectivity through land development or surface level alteration can diminish these benefits. Identification and restoration of historic wetland connections is one management strategy that can be employed to improve water quality.

The area within a lake that can support the growth of rooted aquatic vegetation is referred to as the littoral zone. Taking into consideration the growth habits of SAV, EAV, and FLV, the size of the littoral zone is determined by lake morphology, water clarity, and the unique requirements of the species of plants that inhabit it. A strong network of rooted plants contributes to the stabilization of the benthic sediments in lakes [Barko & James, 1998]. Therefore, it can be inferred that a greater area of rooted vegetation generally equates to lower potential suspended sediment concentrations.

One additional benefit of SAV in lakes is their increased capacity to uptake nutrients directly from the water column compared to other growth patterns [Denny, 1980]. Monitoring the total quantity of SAV can help determine a lake's ability to buffer against changes in nutrient concentrations. The use of SONAR mapping technology allows for the 3-dimensional quantification of SAV. In addition to measuring the areal coverage of aquatic plants, SONAR mapping can determine the volume of the water column taken up by plant matter. Both measures are used to evaluate the vegetation abundance in Winter Haven's lakes.

Percent Area Coverage (PAC): The percentage of a lake area taken up by rooted aquatic vegetation. Lake managers suggest maintaining PAC of at least 15% for most Florida lakes.

Biological Volume (BV): The volume of aquatic plant mass measured as a percentage of the total lake volume. Generally, a higher BV equates to better water quality.

Vegetation Diversity

Species diversity is a complex metric that takes into account the number of species present (richness) as well as the relative proportion of each species (evenness). Since each individual plant can't feasibly be counted, scientists can use a variety of survey methods to identify what a representative sample of the overall population looks like. Using a point-intercept method to sample regularly spaced points across a lake's area, the City can record not only the estimated number (frequency) of each species but also their relative spatial distribution.

Using frequency data, we can identify a waterbody's dominant species, proportion of each plant category, and gauge the relative distribution or evenness of the species present (Figure 1-12). The resulting scores, referred to as diversity index values can be used to evaluate the health of vegetation communities. Ecologically, a diverse and evenly distributed population is a healthy one. As an example, a lake that is dominated by one or two species is at a substantially greater risk of collapse than one with numerous, equally abundant species. Common sources of collapse include climatic changes, pests, diseases, as well as competition from invasive species. Since species diversity is such a complex metric, no single index can adequately represent diversity in all cases. Moreover,

some indices make assumptions regarding the population being studied and are applicable only in specific scenarios. For the intents and purposes of this study, the following indices were chosen to compare the changes in vegetation communities over time and not for comparing the diversity of one lake to another: **[Ludwig & Reynolds, 1988]**

R2: known as *Menhinick's richness index, represents the number of unique species sampled in a given site or area. This index is reliant upon sampling effort, therefore it is useful only for comparing richness of the same site over time (assuming sample size remains constant).*

E3: *One of many popular indices that represent how evenly the species in a population are distributed. E3 ranks a sample from 0 – 1 where the index approaches 1 when all species are present in equal proportions.*

H: *Referred to as Shannon's Diversity Index, this metric incorporates concepts of richness and evenness. H represents the level of uncertainty of sampling the same species multiple times in a row; as such, this value increases as a population becomes more diverse.*

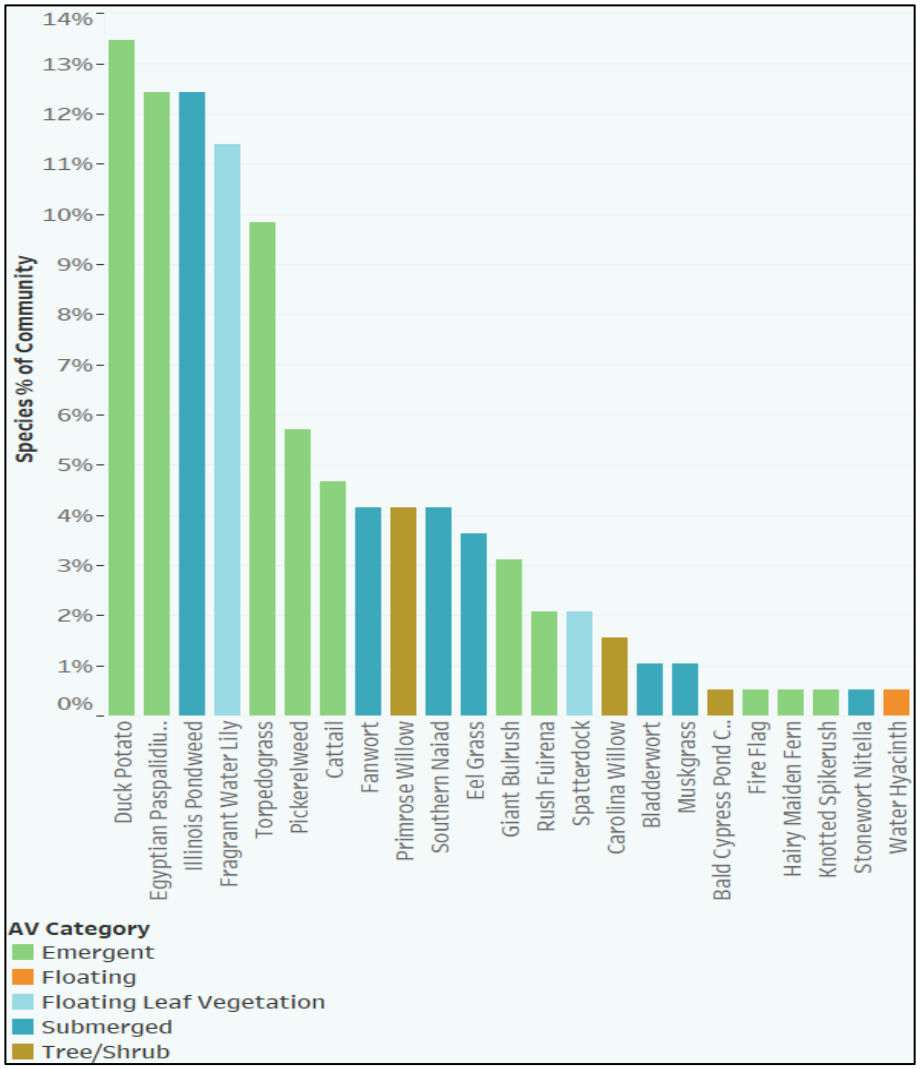


Figure 1-12. Species Frequency Chart of Aquatic Vegetation in Lake Howard (2023).

In the realm of vegetation management, knowing where a given species is located is equally as important as understanding the community dynamics of the local population. Where a particular plant species is commonly found can provide information about its optimal growing conditions (e.g. light, depth, or substrate). It can also be used as a handy method for tracking invasive species such as hydrilla and water hyacinth. These plants have few natural checks that would limit their growth in this region and can outcompete most natives; often to the detriment of navigation and ecological diversity.

Invasive Species Presence: Measured as the percentage of the total aquatic vegetation community comprised by ecologically or economically significant invasive species. Ideally, invasive presence is maintained at or as close to zero as possible.

The City of Winter Haven manages invasive aquatic plants along City-owned shorelines and provides support to the organizations that manage the lakes. The Florida Fish and Wildlife Commission (FWC) is the governing body with jurisdiction over the treatment of waters of the State. Through funding from FWC, Polk County assists in the treatment of invasive plants in this area using various methods including herbicide, mechanical removal, and biological controls. Excluding physical removal methods, the treatment of invasive species can facilitate the reintroduction of nutrients as the treated plants decompose. Fortunately, the release of nutrients can be mitigated by limiting treatment area and intensity. The City's monitoring efforts allow for the early detection of invasives so that they may be managed before their populations expand and require large scale treatment. This concept of early detection and rapid response is critical to the maintenance of species diversity and overall ecological health. Since complete eradication of invasives is often not a feasible goal, reduction of invasive presence to a maintenance state is the general target. These targets are typically based on percent of lake surface area covered and are species specific. Since the point-intercept survey methods aren't the most applicable means of measuring species area, the City considers reduction in invasive frequency an adequate indicator of improvement.


#2 | Management Strategies

Summary

One of the primary challenges of managing dozens of lakes spanning both urban and rural areas involves balancing the diverse needs of the various lake user groups while addressing the unique challenges associated with each lake or watershed. A single management practice or approach will not be effective in all scenarios. One of the first steps in developing a management strategy is to gain an understanding of which practices are available and applicable in addressing a given issue.

To that end, management practices are often categorized based on what aspects of lake health they seek to maintain or improve. Practices that improve water quality should seek to reduce algae or pollutant concentrations. Hydrologic strategies should incorporate groundwater recharge or surface water storage components to maintain or restore natural hydrologic processes. Strategies aimed at ecological improvement should help to improve fish and wildlife habitat either through the creation of new habitat or by the restoration of disturbed areas. Further, the primary purpose of some practices is to increase awareness of environmental issues and to promote public engagement and stewardship of our natural resources. This last category is important since widespread adoption of pro-environment practices by citizens can be more effective than individual projects implemented by a government agency. In many cases, a single practice is able to address multiple lake health aspects.



The City's Natural Resources team is constantly reviewing the effectiveness of practices the organization currently utilizes while also researching new and innovative solutions applicable to our lakes. The following section details many of the City's management strategies with a brief description of the practice itself and an explanation for which aspect(s) of lake health it addresses. Furthermore, this section of the report details strategic goals for each management strategy that helps demonstrate how staff plan to implement these practices in the future.

Additionally, it is critical for the management strategies to be consistent with the mission, goals, and values of the organization implementing them. In 2024, the City of Winter

Haven Commission adopted its FY 25-29 Strategic Plan which established a comprehensive framework to guide all City policies, operations, and decision-making over the next five years (https://issuu.com/cofwh/docs/city_of_winter_haven_fy25-fy29_strategic_plan_-_v1). The plan describes six pillars that comprise the City's vision for a sustainable, vibrant, and inclusive future: economic sustainability, quality of life, infrastructure, environmental stewardship, community safety, and responsible government. Within each pillar are several broad goals with detailed strategies for successfully implementing those goals. Each of the lake management efforts listed in this section should align with one or more of these goals and/or strategies. This ensures that all of Winter Haven's lake management actions work within the framework approved by the government and its citizens.



Environmental Monitoring

Summary:

Environmental monitoring encompasses the Natural Resources Division's data collection programs as they relate to the lakes and their health. These include water quality sampling, surface level and groundwater level tracking, and aquatic vegetation surveying. The information gathered through these monitoring efforts helps guide the City's management decisions. Since so much of this data appears in the annual Lakes Report, these monitoring efforts not only address the water quality, hydrology, and ecology aspects of lake health, but public engagement as well. Therefore, this particular management strategy lies at the heart of the Division's purpose, mission, and vision. The individual monitoring efforts are described more below:

Aquatic Vegetation Monitoring

Aquatic vegetation monitoring (AVM) is a methodology employed by the Winter Haven Natural Resources Division to regularly assess plant abundance and diversity in City lakes. This protocol is based on a survey process developed by the Florida Fish and Wildlife Commission (FWC). Utilizing sound navigation and ranging (SONAR) technology, the Division is capable of measuring the amount of vegetation in the water column. Percent area cover and biological volume make up the vegetation abundance metrics obtained through SONAR mapping (Figure 2-1). In addition, the Division performs point-intercept sampling; identifying the species present at regularly spaced points across a lake to provide a representative sample of plant diversity. This

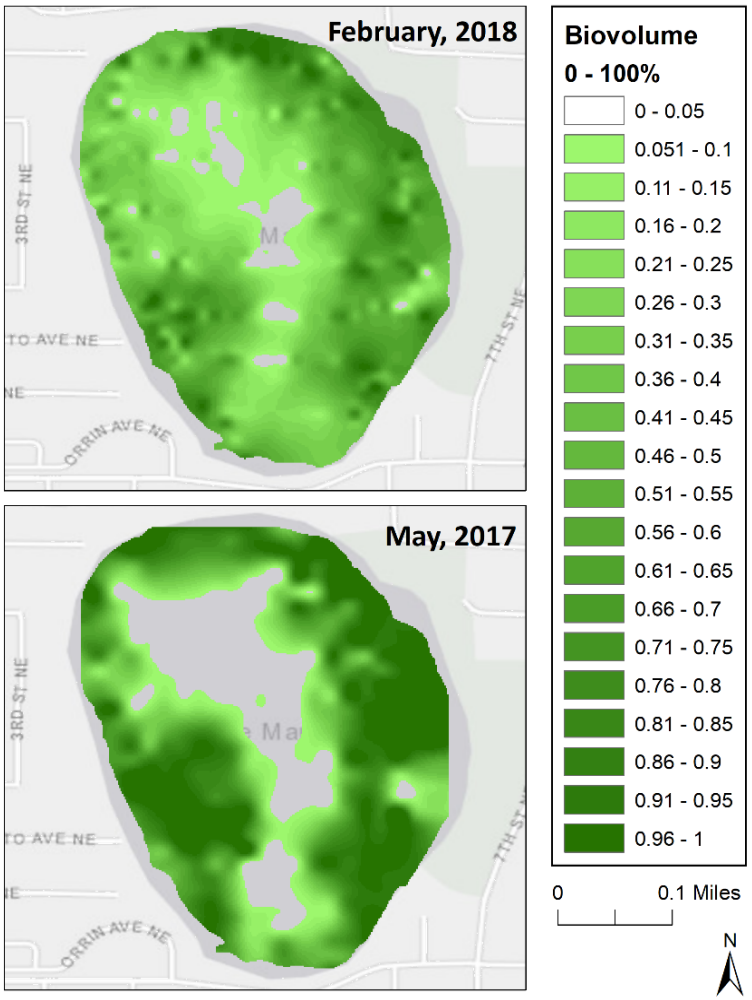


Figure 2-1. Biovolume heat map of Lake Maude. Color scale represents percent of water column occupied by plants.

information is also shared with partner agencies, such as Polk County and the Florida Fish and Wildlife Commission (FWC) to assist with invasive plant management efforts.

Hydrologic Monitoring

Hydrologic monitoring is a practice that provides information on the quantities and movement of water in an area. Collection and analysis of rainfall, surface water, and groundwater data allows the City to build a better understanding of the relationships amongst these parameters as well as their impacts on lake health and municipal water supply. The Natural Resources Division and Utilities Department work together to obtain this data through a network of weather stations, monitoring wells, and surface level gauges located throughout the City. Surface level, rainfall, groundwater, and streamflow data collected by Polk County, the Southwest Florida Water Management District (SWFWMD) and the Lake Region Lakes Management District (LRLMD), is also incorporated into the City's analysis. This data is also used in hydrologic models that can help identify areas of potential flooding and/or higher pollutant loading due to differences in soils and land use.

Water Quality Monitoring

Water quality monitoring involves collecting and analyzing the chemical properties of surface and groundwater. This includes physical properties like dissolved oxygen, pH, and temperature; as well as concentrations of pollutants of concern like chlorophyll-a, nutrients, and other heavy metals. The City relies heavily on outside parties like the Florida Department of Environmental Protection, Polk County, and the volunteer-based Lakewatch program to gather water quality samples—mostly due to funding and staffing constraints. Utilizing these publicly-available data, the City is able to devote more time and effort to statistical analysis; allowing for impairment determination and water quality trend tracking. That said, the City does conduct some water quality sampling such as when evaluating the effectiveness of municipal stormwater or water quality projects or tracking the presence of forever chemicals (e.g. PFAS) in our lakes.

Support of City Pillars:

Environmental Stewardship

Goal 4.3: Continue to monitor lakes and implement proactive strategies for lake management. *Data collected through monitoring efforts drive management strategies to improve lake health. Both the data and these strategies are published in the annual Lakes Report.*

Strategic Goals:

- Continue aquatic vegetation, hydrologic, and water quality monitoring efforts for analysis in the annual lakes report and to guide management efforts.
- Stay up to date on new and innovative research, methods, and technologies; such as aerial and satellite imaging, AI-based analysis tools, plant tissue nutrient content analysis, and automated hydrologic monitoring equipment.
- Maintain close working partnerships with state and local environmental agencies.

Green Stormwater Infrastructure



Summary:

Green stormwater infrastructure (GSI) is a term referring to stormwater management practices that incorporate natural processes to capture and filter runoff. Traditional, or "gray", stormwater infrastructure relies on impervious materials, gutters, and pipes to transfer runoff from one area to another. The primary purpose of gray infrastructure is to prevent flooding by diverting runoff, as well as any pollutants, directly to lakes or stormwater ponds. In contrast, green infrastructure works to slow runoff rates, promote natural hydrologic processes like evaporation and groundwater infiltration, and filter pollutants using the nutrient sequestration capacity of plants.



Figure 2-2. Photo of a raingarden capturing runoff and road debris in downtown Winter Haven.

Infiltration GSI

The purpose of these types of GSI practices is to capture sediments, heavy metals, and other solid debris during the first flush of a rainfall event, preventing it from entering waterbodies at the "end of the pipe". Taking advantage of well-drained soils to promote infiltration, flooding along roadways can be reduced during 1-year to 10-year storm events. Planting of appropriate vegetation can also allow for nutrient uptake while also beautifying the urban landscape. Under the right soil conditions, these types of GSI can be utilized in lieu of conventional stormwater practices; often occupying smaller footprints than traditional stormwater ponds while providing improved pollutant capture. The common types of infiltration GSI practices include raingardens (Figure 2-2), vegetated swales, and exfiltration pipes (i.e. French drains). Practices such as raingardens can also be a relatively low-cost option for residents to reduce minor flooding and improve aesthetics on private property as well. Currently, the City has constructed over 60 raingardens, bioswales, and exfiltration systems in and around Winter Haven's urban center. Waterbodies receiving stormwater benefits from these systems include: Lakes Elbert, Howard, Martha, Maude, May, Otis, Roy, and Silver.

Storage GSI

In areas lacking highly porous soils, infiltration GSI practices become much less effective. Instead, there are types of GSI practices that are designed to store stormwater and slow down runoff rates. One type of storage practice includes constructed wetlands which function similarly to traditional stormwater retention ponds. However, these practices have added benefits such as increased evaporation and plant water uptake (transpiration), nutrient sequestration by the wetland plants, and habitat for fish and wildlife. Additionally, these areas can be used as recreational green spaces by the public. The City has constructed four of these constructed wetland parks ranging from the 6 acre Lake Maude Nature Park to the 40 acre Lake Conine Nature Park. These parks capture and filter runoff from drainage basins totaling over 760 acres while also providing enhanced features like walking trails, picnic pavilions, and playgrounds (Figure 2-3). The natural resources division maintains these parks through regular invasive plant management efforts and occasional sediment removal. Other forms of storage GSI practices include rainwater catchment systems and green roofs. Rain barrels are an excellent example of a storage practice that is low cost and easily implemented by residents and homeowners.



Figure 2-3. Map depicting the Winter Haven nature parks and their drainage basins.

Support of City Pillars:

Quality of Life

Goal 2.3: Champion arts, beautification, and address blight to be an attractive and enriching community. *Many of the green infrastructure practices implemented on public properties and rights-of-way include landscaping design choices that enhance the aesthetics of the City's green spaces.*

Goal 2.4: Ensure that as the City grows, opportunities for access to recreation grow along with the population, especially geographically. *Constructed wetland parks include passive recreational amenities such as walking trails, exercise equipment, picnic areas, and playgrounds that further the recreational opportunities available in various locations throughout Winter Haven.*

Infrastructure

Goal 3.4: Pursue emerging opportunities to embrace new technology, infrastructure, and enterprise opportunities. *Green stormwater infrastructure is considered an innovative stormwater design strategy for managing urban runoff. City staff are consistently identifying areas where GSI can be implemented to address nonexistent or underperforming gray infrastructure.*

Environmental Stewardship

Goal 4.3: Continue to monitor lakes and implement proactive strategies for lake management. *One of the primary benefits of GSI is the reduction in stormwater runoff and pollutant loading to the lakes.*

Goal 4.4 Integrate the elements of the One Water philosophy to ensure a balance between water supply and nature. *Many GSI practices promote groundwater infiltration where applicable; leading to an increase in aquifer recharge and more sustainability of the City's water supply.*

Strategic Goals:

- Continue to maintain the functionality of the more than 75 green stormwater best management practices; including regular sediment removal and landscape maintenance of raingardens & exfiltration systems, sediment removal and vegetation management of the nature park ponds.
- Complete expansion of South Lake Howard Nature Park, to include additional stormwater treatment and recreational amenities (by FY2027).
- Complete Lake Elbert trail project, to include vegetated swales and raingardens to capture runoff from a previously untreated drainage basin (by FY2026).
- Explore opportunities to implement additional GSI practices where needed; specifically in areas lacking existing infrastructure and those experiencing roadway flooding and relatively high pollutant loading rates.

Low-Impact Development & Gray to Green







Summary:

Conventional development philosophy has been to move stormwater runoff off of roads and properties as quickly as possible; sending pollutants downstream to the lakes with little to no treatment. This type of stormwater management is often referred to as gray infrastructure in reference to the use of pipes, drains, and concrete flumes. In recent decades, there has been an increase in awareness and adoption of low-impact development (LID); stormwater practices that seek to slow, spread, and soak runoff into the landscape close to where it originates. These features usually try to mimic natural hydrologic processes like groundwater infiltration and evapotranspiration, often incorporating vegetation into their designs (e.g. raingardens, grassed swales, etc.). This led to these best management practices being defined as green stormwater infrastructure (GSI). Taken together, LID+GSI provides water quality and hydrologic benefits for local lakes.

Since the 1990s, Winter Haven has become a forerunner in the implementation of GSI in the state of Florida by implementing numerous raingardens and infiltration basins throughout the City. However, to be effective, it was determined that the adoption of GSI practices on City properties and rights of way alone would not be sufficient. Therefore, in 2016, the City initiated a public education program targeting local engineers and developers, providing tools and incentives to shift mindsets away from gray infrastructure and toward GSI. This program was referred to as Gray to Green.

The Gray to Green initiative began by exploring the perceived benefits and barriers to widespread LID+GSI adoption within the development community. Based on feedback from roundtable discussions with local development professionals, the City worked with subject matter experts to produce a Gray to Green Development Guide. This document was designed to be an educational introduction to the philosophy of LID+GSI; illustrating the benefits and demonstrating which practices would be effective in the Winter Haven area. Expanding on the development guide, the City followed up with the creation of the Gray to Green Permit Design Methodology—a step-by-step guide for engineers on how to properly design GSI practices and how to get infiltration credit through the permitting process. Both phases of the Gray to Green program were made possible through 319 Stormwater Education grants via the Florida Department of Environmental Protection.

City staff continue to prioritize developer adoption of LID+GSI through the development review process. Natural Resources staff not only promote the Gray to Green philosophy to developers, but we actively review and recommend specific practices based on individual site conditions. Advocating for these GSI practices early in the development review process is critical in order to reduce redesign costs by developers. At its heart, the Gray to Green program is an education strategy designed to increase engagement with practices and technologies that benefit the environment.

Support of City Pillars:

Economic Sustainability

Goal 1.4: Ensure the strategic approach to growth management that includes robust public engagement. *The Gray to Green program seeks to engage the development community in sustainable development practices that are considered a smart form of growth.*

Quality of Life

Goal 2.3: Champion arts, beautification, and address blight to be an attractive and enriching community. *The principles of low-impact development include preserving open space and utilizing green infrastructure to capture and store stormwater runoff on site. These concepts implemented in new development promote aesthetic benefits and beautification over traditional pipe and pond systems.*

Infrastructure

Goal 3.4: Pursue emerging opportunities to embrace new technology, infrastructure, and enterprise opportunities. *The Gray to Green program champions the innovative principles of low-impact development and promotes LID+GSI practices on private properties through new and redevelopment.*

Environmental Stewardship

Goal 4.2: Leverage partnerships and implement best practices to ensure a clean environment for all citizens. *The Gray to Green Development Guide and Permit Design Manual are tools to assist in collaborations with private developers to implement innovative best management practices.*

Goal 4.3 Continue to monitor lakes and implement proactive strategies for lake management. *One of the primary benefits of GSI is the reduction in stormwater runoff and pollutant loading to the lakes.*

Goal 4.4 Integrate the elements of the One Water philosophy to ensure a balance between water supply and nature. *Many GSI practices promote groundwater infiltration where applicable, which leads to an increase in aquifer recharge and more sustainability of the City's water supply.*

Strategic Goals:

- Continue promotion of the Gray to Green Development Guide and Permit Design Manual to construction, engineering, and landscape architecture firms seeking to engage in commercial and residential development within the City of Winter Haven.
- Conduct and support research into developer perceptions on municipal stormwater policies that can promote LID+GSI practices by private commercial and residential developers (by FY2027).
- Pursuant to Strategic Plan goals 4.3.5 and 4.4.1: work with the Winter Haven Planning Department to update the City's land development code and comprehensive plan such that LID+GSI is promoted and incentivized.

National Pollutant Discharge Elimination System Reporting

Summary:

As a directive of the United States Environmental Protection Agency (EPA), the National Pollutant Discharge Elimination System (NPDES) was created in 1972 under the Federal Clean Water Act. The NPDES is a permit system designed to regulate point source discharge into U.S. waters in an effort to improve water quality. The EPA works closely with the Florida Department of Environmental Protection (FDEP) to administer this program within the State of Florida.

Polk County is a primary permit holder in the region with the City of Winter Haven as a co-permittee under it. The permit requires each co-permittee to list all Municipal Separate Storm Sewer Systems (MS4s) maintained in their jurisdiction, document the functional maintenance of all infrastructure, track any public education initiatives that support pollutant load reduction, and monitor lake health to determine any measurable impacts. Natural Resources staff compile relevant information from each City department and submit an annual NPDES report to the FDEP each spring. The benefit of this program to the City is the quantifiable standard it provides for actions like stormwater infrastructure inspections and repairs, best management practices implemented, and outreach programs conducted that can be referenced to track annual performance.

Support of City Pillars:

Infrastructure

Sub-goal 3.3.4: Maintain relationships with local, regional, state, and federal regulatory agencies directly related to integrated water resource management. *The NPDES reporting process requires that the City report its stormwater management efforts to the Federal, State, and County agencies. This enhances accountability by ensuring that Winter Haven maintains the strict standards outlined in the NPDES reporting guidelines. It also provides an opportunity to coordinate with other co-permittees under the Polk County permit.*

Environmental Stewardship

Goal 4.3: Continue to monitor lakes and implement proactive strategies for lake management. *The NPDES report requires annual evaluation of lake water quality and other factors important to lake health; ensuring that the City is cognizant of potential infrastructure and management needs.*

Strategic Goals:

- Submit report for Cycle 4 Year 8 report by March 2025.
- Begin compiling data for Cycle 4 Year 9 report due in 2026.
- Attend coordination meetings with NPDES report co-permittees and FDEP/EPA agency officials.

Nutrient Pollutant Inactivation/Treatment

Summary:

Nutrient inactivation is an umbrella term for a suite of non-structural best management practices that utilize chemical compounds that limit the bioavailability of pollutants like nitrogen and phosphorus in a lake's water column or sediments. These options are useful in situations where other stormwater control strategies would not be as effective; for example, areas lacking space for structural practices like raingardens. There are numerous products available that differ in their active ingredients, modes of action, and methods of application. Some target phosphorus in the water column, whereas others help to keep nutrients from escaping from the sediments on the lake bed. Understanding where each is effective and applicable is important for lake managers.

Aluminum sulfate (Al_2SO_4), also known as alum, has been a popular treatment option to reduce phosphorus and total suspended solids concentrations in surface waters for several decades. Alum works as a coagulant, causing nutrients and sediments to adsorb to the product's particles and bind together into a gelatinous flocculent (Figure 2-4). This alum floc is stable in a pH range of 5.5 – 7.5 [Harper, 2007] making it effective in Winter Haven's lakes which are typically a neutral pH of 7. Alum can be broadcast over the entirety of a lake's surface to strip phosphorus from the water column, or injected at stormwater outfalls to treat pollutants from a discrete entry point. The City currently maintains three alum injection sites at points on Lakes Howard, Lulu, and May. Additionally, a broadcast alum treatment was conducted by Polk County in the mid-1990's to cap internal phosphorus loading from historic point-source discharges in Lake Conine [ERD, 2018].

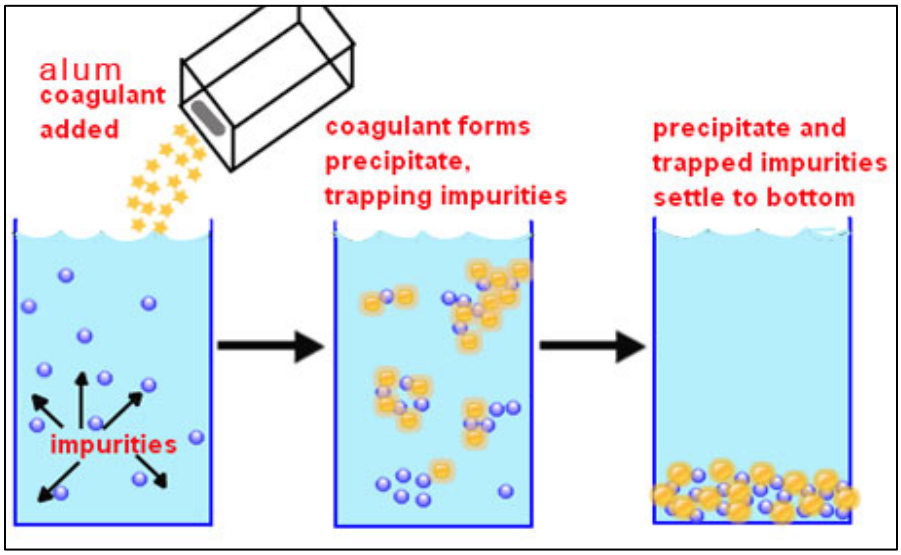


Figure 2-4 Diagram of alum floc adsorption properties. [Bionics, 2013]

Other phosphorus-binding materials include lanthanum-based products like Phoslock® and EutroSORB®. These function very similarly to alum, but instead of using aluminum sulfate, bioavailable phosphorous in sediment binds to a lanthanum-embedded bentonite clay material. These have shown relatively high capacity to reduce total phosphorus concentrations in lakes and reduce phosphorus flux from lake bed sediments [Copetti et al., 2016]. These products are relatively new, so lake managers are exploring different applications such as stormwater

effluent filtration or broadcast applications over large areas. The City of Winter Haven has conducted a pilot study using EutroSORB® on a small private lake, with great success. This has resulted in plans to employ this product to reduce phosphorus levels in Lake Idyl as well. While these products have been shown to be effective in different applications, they are relatively expensive compared to alum or other options.

An even more recent product that aims to inactivate phosphate from the water column is made from silica (i.e. sand particles). Products like Algae Armor are demonstrated to remove up to 80% of the phosphate dissolved in the water column [Xanthopoulou et al., 2021]. Despite being the least expensive category of phosphorus-reducing products on the market, it only targets dissolved phosphate in the water column, with minimal application to deactivate sediment-bound phosphorus. The City is currently exploring a pilot study to examine the effectiveness of this product and where it can most feasibly be utilized.

Support of City Pillars:

Environmental Stewardship

Goal 4.3: Continue to monitor lakes and implement proactive strategies for lake management. *Phosphorus is considered a pollutant of concerns for the majority of lakes in the Winter Haven area. Addressing phosphorus loading from stormwater runoff and flux from lake sediments helps to curtail eutrophication, thereby reducing the presence of harmful algal blooms and growth of nuisance vegetation in the lakes.*

Sub-goal 4.4.3: Explore and implement best management practices and innovative approaches to water resource infrastructure that further protect the natural environment. *Identifying and testing innovative products and approaches to phosphorus inactivation keeps staff knowledgeable about the latest scientific advancements and provides opportunities for the City to be a leader in lake management research application.*

Strategic Goals:

- Continue to maintain the City's 3 alum injection systems at Lakes Howard, Lulu, and May.
- Acquire grant funding to implement a EutroSORB® treatment for Lake Idyl.
- Conduct pilot study exploring the effectiveness of Algae Armor® in the Lake Conine Nature Park ponds and determine if silica-based products are a viable solution for lake phosphate removal (in FY2025).

One Water

Summary:

One Water is an organizational planning effort which was borne out of the 2010 Sustainable Water Resource Plan and seeks to preserve the quality of life afforded by Winter Haven's water resources. The impetus for this effort is the identified threat of hydrologic decline that is driven by several factors: population growth, limited fresh water supply, climate change, aging infrastructure, funding needs, and increased regulatory pressure [Black & Veatch, 2021]. The goals of the plan are to ensure the future of the region's potable water supply and natural water resources. This is accomplished by improving utility planning, water conservation, wastewater treatment processes, reuse water infrastructure, watershed optimization, land use planning, and many other practices.

One of the signature recommendations evaluated and accepted as part of the One Water Master Plan is the Sapphire Necklace—a conceptual design of Winter Haven ringed by approximately 5000 acres of restored wetlands and nature parks (Figure 2-5). These sites would provide water storage, groundwater infiltration, wildlife habitat, and the backdrop for recreational amenities such as an expanded trail network—all of which benefit Winter Haven's lakes and the residents that utilize them while addressing water quality, hydrologic, ecologic, and public engagement needs of the community.

For more information visit:

OneWaterWH.com

Support of City Pillars:

Infrastructure

Sub-goal 3.3.1: Adopt, implement, and maintain the One Water Master Plan to ensure sufficient capacity for potable, reuse, and wastewater needs. *Completing and implementing the One Water Master Plan is, in itself, one of the City's primary strategic goals. Natural Resources' role in this effort is to provide technical guidance on hydrologic analysis and monitoring.*

Environmental Stewardship

Sub-goal 4.4.2: Continue to explore acquisition and/or activation opportunities of priority parcels that significantly benefit sustainable water resource initiatives. *The Natural Resources Division has assisted with identifying and acquiring potential wetland restoration sites that further the water storage and treatment capacity of the Winter Haven area.*

Strategic Goals:

- Budget for and complete the water storage features at the newly acquired parcel on Dundee Rd.
- Work with Polk County Environmental Lands to complete purchase of wetland parcel on US17.

- Currently working with Polk County to acquire a wetland parcel at the corner of US17 & Hwy 92

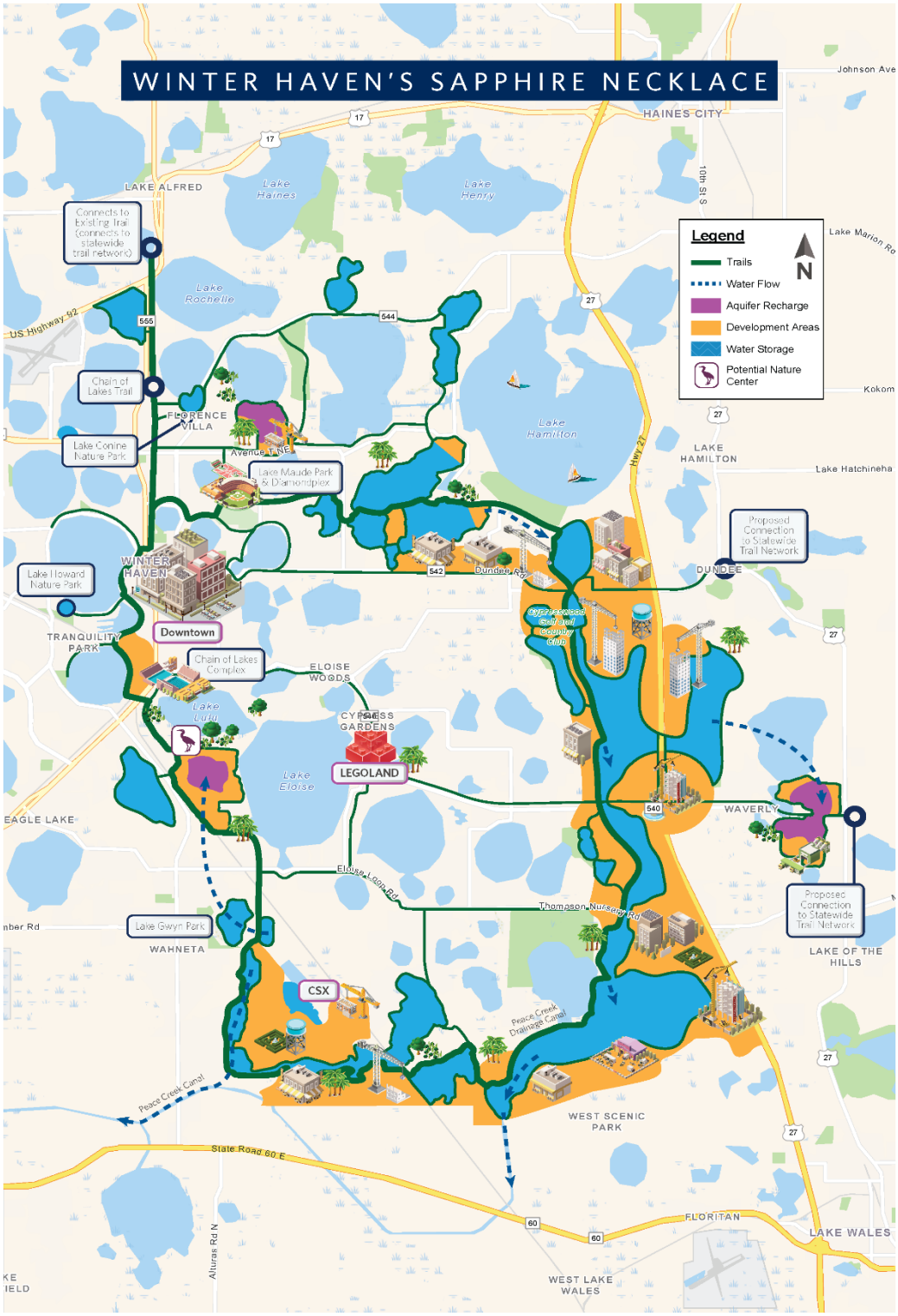


Figure 2-5. Rendering of the Sapphire Necklace concept that includes water storage, aquifer recharge, and nature park areas.

Public Outreach & Education

Summary:

Outreach encompasses most of the Division's efforts that spread information to the public, with the aim of increasing knowledge and engagement to solve common issues like litter, residential runoff, and overuse of potable water. Some believe that the role of government agencies is to solve issues through command and control policies like regulations. However, studies have shown that many environmental issues cannot be solved through regulatory compliance alone—mostly due to limits on staff and funding to implement, oversee, and enforce these regulations [Paddock, 2004]. Instead, increasing residents' understanding of local environmental issues is shown to result in voluntary public participation and stewardship actions. Therefore, informal education efforts are a vital public service that help to protect natural resources by motivating community participation. The Natural Resources Division has implemented numerous outreach programs that fall into distinct categories:

Public Events

Staff participation in public events like the 7 Rivers Water Festival, Arbor Day, and Community Fest are opportunities to hear from individual residents and respond with personalized information and guidance in a relaxed setting (Figure 2-6). The events often provide the widest reach, allowing for interactions with several dozen to several hundred participants per event. Whether the events are sponsored by the City or another agency (e.g. Water Wings & Wild Things at Circle B Bar Reserve), the Natural Resources team is excited to participate and interact with attendees.



Figure 2-6. Photo of 2025 Community Fest booth with activity teaching about the impacts from litter.

Recreation

Residents who can physically interact with natural resources may be more likely to take action to protect them. Kayaking is an excellent outreach opportunity to introduce residents to our water



Figure 2-7. Image of 2022 guided kayak tour on Lakes Conine and Hartridge.

resources and the plants and animals that reside in them (Figure 2-7). Time spent on the water provides unique experiences and settings that help to convey concepts like water quality, hydrology, ecology, and what actions residents can make to improve them. These tours are typically hosted on local lakes several times per year and attendees are provided with a pre and post tour survey to gauge knowledge retention and satisfaction.

Workshops/Seminars

These include adult educational programs that target neighborhood, community groups and homeowners' associations (HOAs). The goal is to provide knowledge so that these groups can solve issues specific to their area. Workshop topics include sustainable landscaping, residential stormwater management, and living with wildlife. While the total number of participants is smaller than the public events, these seminars provide a unique forum for community members to share their specific issues and gain insights into how they can be solved through cooperation. The City has conducted in-person lake watershed seminars, virtual raingarden workshops, and community tree planting discussions; with plans to expand the capacity to implement more each year.

Volunteer Missions

Volunteer events provide unique opportunities for especially dedicated residents to make a difference in their community. The City has traditionally partnered with other organizations, like Keep Winter Haven Clean and Beautiful to host litter pick-up events such as Project Eagle. Recently, the Natural Resources Division has begun sponsoring other types of activities like lakeshore clean-ups and adopt-a-raingarden programs. These forms of outreach are still relatively new, but the City's strategic plan includes goals associated with developing and expanding a City-wide volunteer network.

Youth Education

The primary objective of youth outreach is the creation of positive experiences that instill an appreciation for water, wildlife, and outdoor recreational activities. Children that are able to build stronger connections with nature are increasingly likely to engage in stewardship or other activities that protect natural resources later in life [Andrejewski, 2011]. Outreach also supports STEM education by reinforcing concepts learned in school while

providing guidance to students interested in pursuing careers in environmental sciences. Natural Resources staff have worked with numerous local schools and youth organizations, developing lesson plans and teaching both in the classroom and on field trips. Additionally, the City hosts a youth summer camp annually where attendees get to learn about nature, the water cycle, and local wildlife at South Lake Howard Nature Park.

Support of City Pillars:

Quality of Life

Sub-goal 2.3.2: Establish a community adoption program for rights of way, parks, and public spaces. *While the volunteer missions so far have only included individual events, there are plans to incorporate public lakeshores, raingardens, and parks into the planned public space adoption program.*

Sub-goal 2.4.5: Provide creative opportunities for adult sports and recreation. *The City's kayaking tours on public lakes constitute a unique recreational opportunity in addition to the educational benefits they provide.*

Environmental Stewardship

Sub-goal 4.3.2: Develop and facilitate an education/outreach program tied to awareness and protection of local lakes. *The majority of the outreach programs mentioned in this section aim to improve lake health by developing public stewardship of these resources.*

Strategic Goals:

- The City conducted 37 outreach events in 2024 with a total of almost 1,800 individual engagements. A comparison of records over the last five years marks this as a record for the most public education and engagement during a calendar year.
- Continue to participate in public outreach events and develop new and unique offerings and educational opportunities at Natural Resources' booths.
- Conduct at least 3 adult educational workshops/seminars in 2025; focusing on Florida Friendly Landscaping, sustainable stormwater management, and lakeshore/pond vegetation management.
- Increase the frequency of guided kayak tours on local lakes (at least 9) in 2025.
- Coordinate with UF/IFAS to enhance the educational lesson plans incorporated during kayak tours.
- Budget for kayak, trailer, and equipment upkeep and replacement at regular intervals to ensure quality experiences for participants.
- Continue to develop relationships with local schools and youth organizations to expand youth education opportunities.
- Organize and conduct at least two litter clean-up events in 2025.

Sediment Management

Summary:

As a result of natural deposition, biological cycles, and pollution, sediment (aka muck) accumulates in Florida's waterbodies over time. Sediment deposited from historic point-sources, often referred to as legacy sediments, can be a significant contributor of nitrogen and phosphorus. Internal pollutant loading, also known as nutrient flux, can be exacerbated by low lake surface levels as well as wind and wave action. This internal loading can even exceed pollutant reductions from external sources such as stormwater—leading to declines in water quality despite the implementation of numerous best management practices [PBS&J, 2010]. As a result, the City of Winter Haven conducted sediment analysis in several muck-heavy waterbodies. Sediment cores were collected from Lakes Lulu, May, and Shipp from 2005 to 2009, coupled with bathymetric evaluation to determine water and muck volumes as well as seepage monitoring and chemical analysis of surface water and sediments to estimate internal nutrient loading.

The volume of muck in Lakes Lulu, May, and Shipp was estimated to be 1.3M yd^3, 1.0M yd^3, and 487K yd^3, respectively. To put these volumes in perspective, if equally distributed over the lake's surface area, the depth of muck in Lakes Lulu, May, and Shipp would be 2.25 ft, 2.75 ft, and 6 ft, respectively. The estimated annual nitrogen and phosphorus loading from these sediments is provided in Table 2-1 [PBS&J, 2010]. Based on these estimates, internal influx accounts for between 27%-44% of total nitrogen loading and between 5%-14% of total phosphorus loading in these lakes.

While nutrient inactivation treatments can help to reduce internal loads of phosphorus, nitrogen flux and sediment suspension through wind and wave action limit their effectiveness. Therefore, sediment removal via dredging remains one of the most effective means of mitigating legacy nutrient loading. However, this practice is often prohibitively expensive—exceeding multi-million dollar figures for even small areas of muck removal. Nonetheless, the City has explored outside funding opportunities and other means to reduce these costs. Recently, staff are seeking legislative funding to develop a pilot project that would remove a considerable volume of sediment from Lake May. A significant cost-cutting aspect of this project is the utilization of a City-owned parcel on the southwest shore of Lake May to temporarily store and dewater the removed muck. The expected outcome includes improvements to water quality, navigability, and fish habitat in the lake.

Lake	TN Influx (kg)	TP Influx (kg)	TN Areal Loading (kg/ac)	TP Areal Loading (kg/ac)
May	641	14.3	12.7	0.28
Shipp	2814	80.5	10.2	0.29
Lulu	1668	91.7	5.43	0.3

Table 2-1. Annual TN & TP mass loading & areal loading values for Lakes May, Shipp, and Lulu determined through the sediment analysis performed by ERD.

Support of Mission, Vision, and Purpose:

Environmental Stewardship

Sub-goal 4.3.4: Inventory and develop strategies to address legacy stormwater systems and discharges that negatively impact local waterbodies. *Much of the sedimentation that occurs in local lakes is considered to be comprised of legacy pollutants from historic point-source discharges (i.e. wastewater, stormwater, etc.). Sediment removal is a viable strategy that has been identified and efforts are underway to acquire funding to implement it as a management practice.*

Strategic Goals:

- Continue to seek grant and/or legislative funding for sediment removal projects in Winter Haven lakes.

Stormwater Assessment and Improvement Program

Summary:

Winter Haven's stormwater system is a network of drainage pipes, ditches, and other conveyances that capture surface water runoff and move it to storage ponds or, more often, directly into lakes. The Stormwater Assessment and Improvement Project (SAIP) was drafted by the City, in conjunction with various agencies and organizations, employing a holistic approach to planning maintenance and improvements to the stormwater infrastructure. This project was 100% funded by a legislative appropriation administered by the Florida Department of Environmental Protection (FDEP) and involved contracted work through the consulting firm Chastain-Skillman. The SAIP is a four-pronged approach that includes:

1. Cataloging and refining a database of stormwater infrastructure using geographic information systems (GIS).
2. Ground-truthing existing and previously unidentified stormwater infrastructure with information such as pipe and drain size, material type (e.g. concrete, steel, etc.), and flow capacity.
3. Hydrologic modeling, which incorporates accurate topographic, surface water, and groundwater information as well as land use and impervious surface data to identify areas where storm flooding and pollutant loading are highest.
4. Identification and prioritization of targets for improvement by incorporating all of the previously mentioned methods. This suite of information allows the Public Works Department make objective, data-driven decisions about where to address stormwater issues.

The City has incorporated asset management software into this plan, which has greatly enhanced the speed and efficiency of repairs, maintenance, and improvements to Winter Haven's stormwater systems. Figure 2-8 displays the locations of high-priority target areas within the City as identified by initial evaluation by the SAIP. Once improvements are implemented in the top priority areas, future analysis of this stormwater model will allow the City to explore additional areas in need of stormwater infrastructure practices.

Traditionally, stormwater improvement needs are identified by City staff that observe conditions directly in the field or when residents submit complaints. As a result, this process has been reactive. The primary benefit of utilizing up-to-date data and modelling, is that the City can now take a more proactive approach to addressing drainage issues. However, this effort requires consistent inspections and cataloging of information to function properly—underscoring the need for proper data management.

Support of City Pillars:

Infrastructure

Sub-goal 3.4.1: Incorporate advanced transportation and infrastructure systems that leverage technology for enhanced effectiveness and efficiency in the delivery of municipal services. *The SAIP utilizes innovative technologies, like ArcGIS and Cartegraph asset management software to increase the efficiency and effectiveness of stormwater infrastructure improvement.*

Environmental Stewardship

Sub-goal 4.3.4: Inventory and develop strategies to address legacy stormwater systems and discharges that negatively impact local waterbodies. *One of the most critical components of the SAIP is the inventorying of existing stormwater infrastructure to determine where repairs and improvements are needed. Implementing these improvements often comes with significant water quality and hydrologic improvements for lakes and their drainage basins.*

Strategic Goals:

- Utilize concept plans for Priority Area 1 from SAIP to implement stormwater improvements for Lake Idyl. These improvements were incorporated into a Pollutant Reduction Plan submitted to FDEP in 2024.
- Acquire funding for implementation of Priority Area 1 stormwater improvements; FDEP 319 Stormwater Grant application submitted in 2024.
- Explore implementation of stormwater improvements in the other priority areas identified in the SAIP.

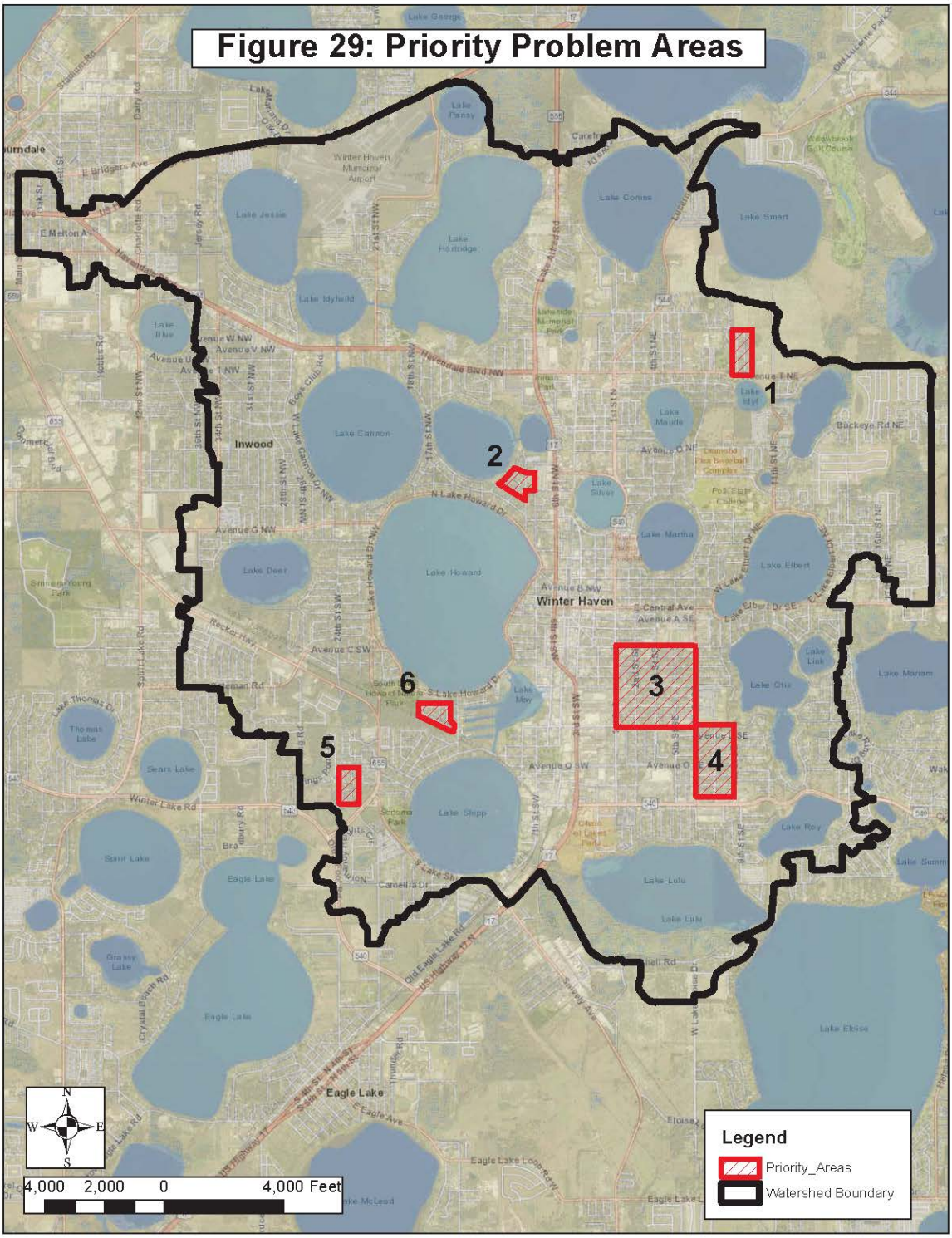


Figure 2-8. Priority sites indicated by increased flooding and pollutant load potential as determined by the Winter Haven SAIP.

Street Sweeping

Summary:

One significant source of pollutant loading comes from sediment and debris accumulation in streets which drain to waterbodies via stormwater. Street sweeping is what is referred to as a non-structural best management practice (BMP) that helps to reduce pollutant loading by removing debris before it can enter the stormwater infrastructure and the lakes. In 2013, the City contracted third-party support to sweep curbed streets in specified areas to mitigate this pollutant loading source. However, in 2016, the City began exploring a transition to in-house sweeping services in order to improve the quality and efficiency of road debris removal. In 2020, a new position was created within the Drainage division and a street sweeper was purchased; leading to an increase in sweeping quality, efficiency, route control, and total area swept.

The areas where sweeping is conducted include commercial and residential roadways in the core downtown corridor. Department of Transportation (DOT) roads have also been prioritized for regular sweeping. The sweeper routes and frequency are presented in Figure 2-9. In 2023, the City swept over 2000 centerline miles, equating to over 2000 lbs of nitrogen and over 4000 lbs of phosphorus prevented from entering into local lakes.

Support of City Pillars:

Environmental Stewardship

Sub-goal 4.2.2: Develop and implement a litter and dumping mitigation plan. *Street sweeping efforts help to remove a considerable amount of litter from entering the City's stormwater system.*

Sub-goal 4.4.3: Explore and implement best management practices and innovative approaches to water resource infrastructure that further protect the natural environment. *The debris and sediment captured through street sweeping is a preventative measure that helps to improve lake water quality.*

Strategic Goals:

- Continue to conduct in-house sweeping services as a best management practice to reduce pollutant loading to the lakes.
- Fill the street sweeper employee position vacated since early 2024; due to this position being vacant, minimal street sweeping was conducted during this calendar year.
- Explore the addition of new sweeper routes and/or increasing the frequency of sweeping in high-volume areas.

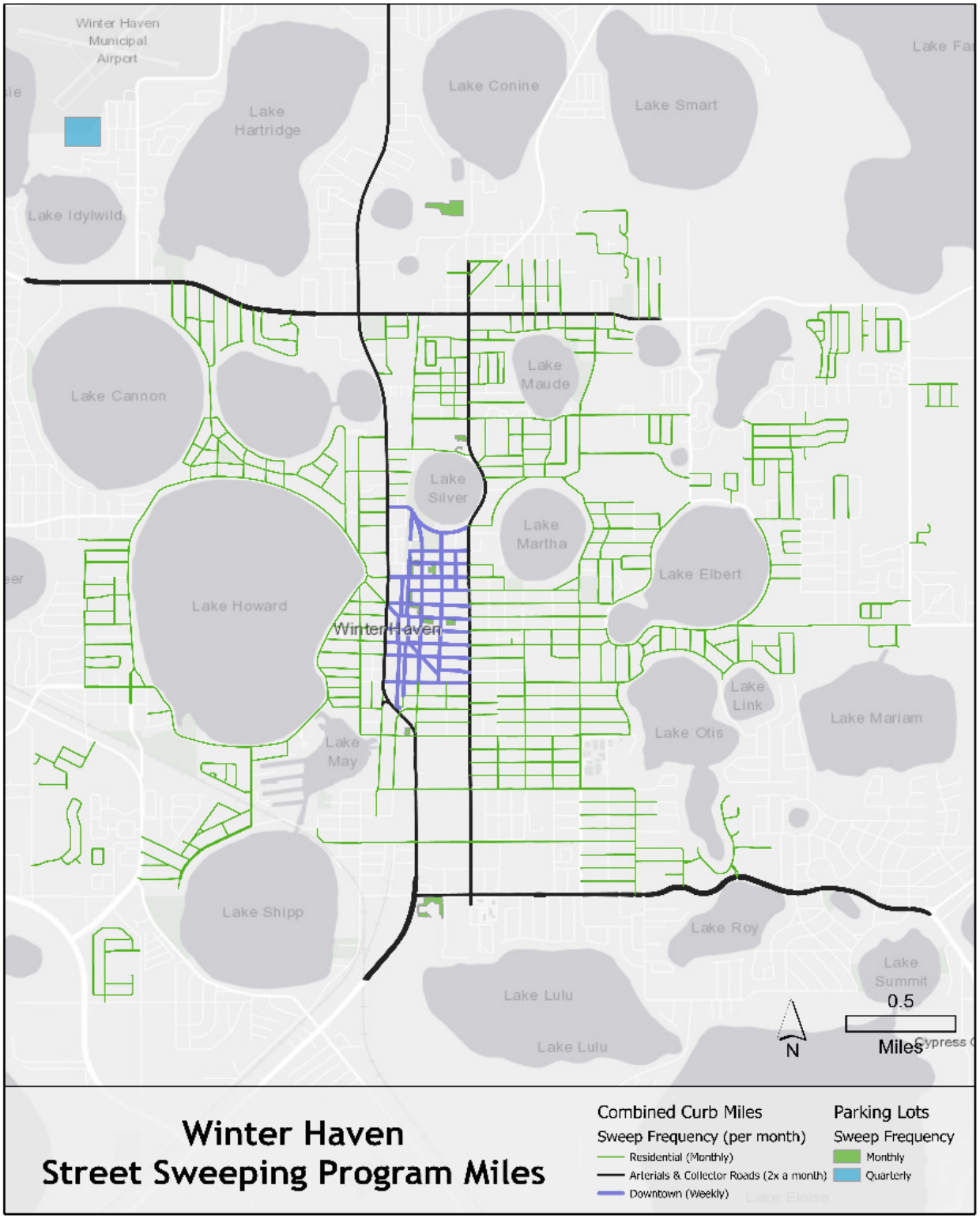


Figure 2-9. Map depicting roadways undergoing street sweeping. Legend indicates sweeping frequency of each street category.

Vegetation & Habitat Management

Summary:

Fostering adequate fish and wildlife habitat is one of the core objectives for managing healthy lakes. In the absence of more structural features like coral and rock outcroppings not typically found in Florida's fresh waterbodies, the majority of habitat is comprised of aquatic vegetation. Proper management of this habitat involves actions that promote the proper abundance and diversity of plants. Some circumstances may require removal of nuisance plants and floating mats of vegetation (i.e. tussocks), which can cause both ecological and economic issues. Areas underneath tussocks are deprived of oxygen creating dead zones. Also, as tussocks drift around lakes, they can become navigational hazards by blocking canals and stormwater outflows.



Figure 2-10. Photos of Lake Martha diesel spill remediation planting (top) and Lake Idyl tussock removal (bottom).

Another practice involves the reduction and removal of invasive plant species (Figure 2-10). Native plants have trouble competing with the extraordinary growth rates and lack of natural predators of exotic species, thus reducing diversity and wildlife habitat. Many invasive plants, like hydrilla and water hyacinth can clog up waterways, making navigation and recreational activities more difficult. Controlling terrestrial invasives, like Brazilian Peppertree, is also important for maintaining healthy ecosystems on City-owned properties. Controlling the introduction and spread of invasive plants is critical to preserving the health of our lakes and other natural resources. That said, early detection and rapid response planning is especially important to minimize the negative impacts of invasive removal efforts and herbicides.

Some circumstances require the re-introduction of native plants in areas that have become denuded. Planting efforts can help to restore

fish and wildlife habitat in areas that have been heavily impacted by invasive species or other environmental factors (Figure 2-10). Finally, the City also looks for opportunities to expand critically important fish and wildlife habitat through the purchase and management of public properties. Many of the City's nature parks were purchased wetland parcels that have been improved to provide multiple recreational amenities and ecosystem services.

Support of City Pillars:

Environmental Stewardship

Sub-goal 4.4.2: Continue to explore acquisition and/or activation opportunities of priority parcels that significantly benefit sustainable water resource initiatives. *The City has acquired several parcels in the last few decades that have been designated for use as recreational and wildlife habitat areas—including each of the 4 nature parks and sites identified as part of the One Water 'Sapphire Necklace' concept. These properties serve multiple purposes, one of which involves protection of critical fish and wildlife habitat.*

Sub-goal 4.4.3: Explore and implement best management practices and innovative approaches to water resource infrastructure and further protect the natural environment. *Invasive and nuisance plant removal, if conducted properly and under the right conditions, constitute best management practices that help to maintain the ecological integrity of the lakes and terrestrial ecosystems. Planting of native vegetation is another form of ecological best management practice.*

Sub-goal 4.5.1: Develop and maintain a complete inventory of all City-owned parcels and assess opportunities for enhanced access to lakes and natural upland areas. *The City has inventoried and conducts regular inspections and improvements to its multiple nature parks and natural parcels. Vegetation management is a large component of maintaining this collection of natural public properties.*

Strategic Goals:

- Coordinated with FWC to conduct planting of native submerged aquatic plants in Lake Martha in 2024; explore other opportunities to introduce native vegetation in local lakes that may be in need.
- Continue to monitor lakes for drainage, navigation, and habitat issues; coordinate with the Lakes Region Lakes Management District to remove tussocks from lakes that pose a critical navigational and or flooding risk to local residents.
- Explore partnership with Polk County Environmental Lands Division to purchase wetland property within Winter Haven city limits; budget funds to restore habitat and/or improve with recreational amenities.
- Continue to budget for internal aquatic plant management efforts (i.e. equipment, herbicides, licensing); ensure City staff maintain applicator licenses and permits.


#3 | Data Presentation & Analysis

Overview

The purpose of this section is the compilation of lake data and the assessment of lake health with a focus on the metrics and criteria described in the introduction. The objective nature of this evaluation methodology allows for the identification of issues affecting each lake individually as well as the comparison of lakes with each other. This prescriptive approach allows staff to not only recommend management actions to correct lake-specific issues, but also prioritize these actions so that funding and effort go to the lakes with the greatest need.

This section has been organized so that hydrologic information common to all study area lakes (i.e. rainfall, aquifer level, etc.) is presented at the beginning in order to reduce redundancy. Next, lake-specific information is presented separately for each waterbody. The lakes are ordered alphabetically by name to make locating them easier. Finally, this section concludes with a comparison of all lakes in the study area where prioritization rankings and management considerations for the Winter Haven area as a whole are presented.

Lake Health Evaluation Methodology

The primary feature in this section is the Lake Health Index—an evaluation methodology that provides an objective annual score for each lake based on five water quality and three biological criteria. ***The eight individual criteria are scored based on a scale of 0 to 3. The higher the score, the better the lake is doing in that particular criterion.***

Lake Health Index								
Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
3	3	3	2	3	2	2	3	**2.6**

The mean (average) of individual criterion values is calculated to derive the Lake Health Index value for each lake during the current report year. **This overall Lake Health Index value also ranges from 0 to 3** and can be used to track changes in lake health over time as well as rank the area lakes to prioritize management action. The following are descriptions of the individual lake health criteria:



Water Quality Criteria

- *Water Quality Impairments*
- *Chlorophyll-a Trends*
- *Total Nitrogen Trends*
- *Total Phosphorus Trends*
- *Clarity Trends*

Biological Criteria

- *Vegetation Abundance*
- *Invasive Species Percentage*
- *Species Diversity*

Water Quality Impairments: This criterion indicates a lake's level of impairment in the three primary water quality parameters—chlorophyll-a (Chl-a), total nitrogen (TN), and total phosphorus (TP)—based on exceedance of the Numeric Nutrient Criteria thresholds. A point is awarded for each parameter not exhibiting impairment. For example, a lake with no impairments receives a score of **3**, but a lake impaired for Chl-a and TN would receive a score of **1**.

Water Quality Trends: The water quality trend criteria explores long-term changes in the four primary water quality parameters (i.e. Chl-a, TN, TP, and Clarity) which is critical for identifying potential water quality issues before impairment sets in while also highlighting successes in the management of currently impaired lakes. Improving trends for Chl-a, TN, and TP correspond with decreasing concentrations, whereas an improving water clarity trend would correspond with an overall increase in Secchi depths; and vice versa for deteriorating trends.

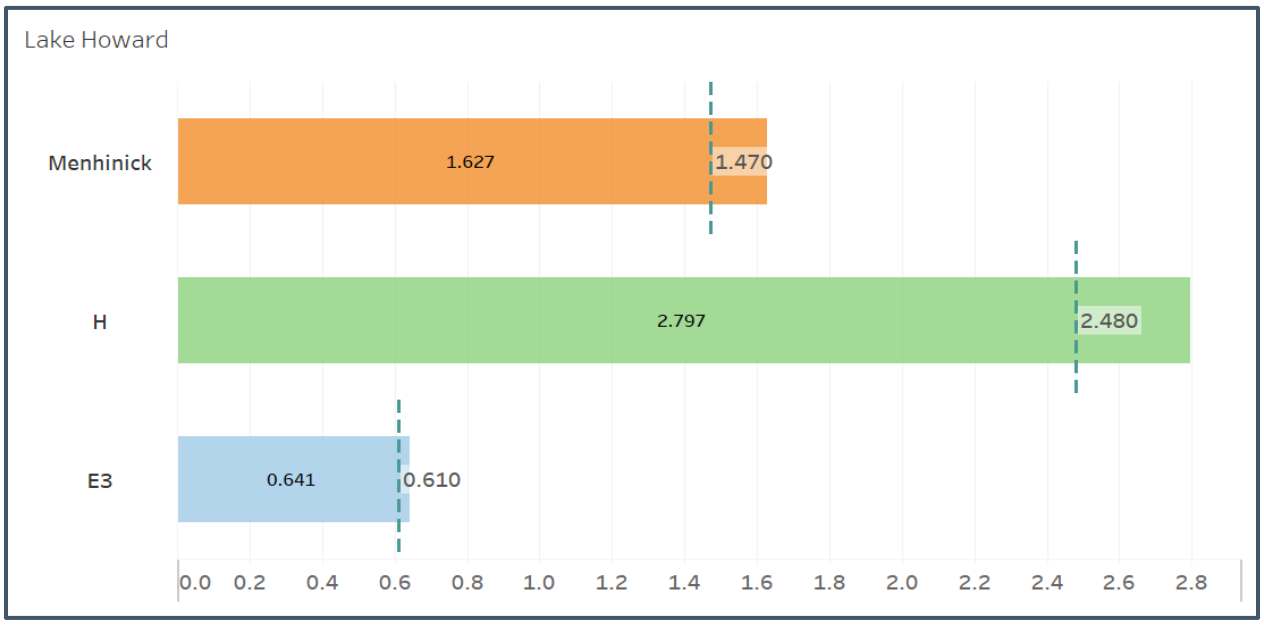
A linear regression statistical analysis is used to evaluate 20-year trend direction and significance for each parameter. The Pearson Correlation Coefficient (R Coefficient) ranges from -1 to +1, indicating whether the trend is decreasing or increasing, respectively. The closer this coefficient is to either -1 or +1, the stronger the trend. Subsequently, statistical significance is evaluated to determine if the trend results are valid or due to random chance. Significance is measured using a 95% confidence level, or a probability value (p-value) of less than 0.05. Significant improving trends are assigned a score of **3**; non-significant improving trends are given a score of **2**; non-significant deteriorating trends are scored as a **1**; and significant deteriorating trends are scored as a **0**.

Parameter	R Coefficient	p-value	Trend	Index Score
Chla	-0.313	0.168	No Trend	2
TN	-0.030	0.898	No Trend	2
TP	-0.584	0.005	Decreasing	3
Secchi	-0.417	0.060	No Trend	1

Vegetation Abundance: The abundance of aquatic vegetation is a critical ecological factor that impacts fish and wildlife habitat as well as a lake's ability to buffer against changes in water quality. The evaluation of abundance is based on the percent area coverage (PAC) or the total area of the lake bed occupied by vegetation as determined by SONAR mapping. A score of **3** is given to lakes with PAC exceeding 30%; a score of **2** is given for PAC between 30% and 15%; a score of **1** is assigned to PAC between 15% and 2.5%; and a score of **0** is given to lakes with less than 2.5% PAC.

Invasive Species Percentage: The presence of invasive aquatic plants can have negative impacts on lake ecology and navigation. Evaluation of this criterion is based on the proportion of each lake's managed invasive plant species in relation to all species present during the annual survey. A score of **3** is assigned if a lake has no managed invasive species present; a **2** is given if the invasive percentage is less than 2.5% of the total population; invasive presence between 2.5% and 10% is given a score of **1**; while **0** scores are given if invasive species make up greater than 10% of a lake's total population.

Species Diversity: The diversity of aquatic vegetation often parallels the ecological health of a waterbody. Species diversity is based on the species frequency data for a given report year using three distinct diversity index calculations. These include the Menhinick species richness index which is based on the number of unique species recorded; Hill's evenness index (E3) which measures how evenly species are distributed; and Shannon's overall diversity index (H) which evaluates the probability of sampling the same species multiple times in a row. Using three different indices provides a more robust assessment of diversity that a single index cannot sufficiently approximate. The annual diversity index values are compared to the long-term median values for that lake to determine the lake health score. A point is awarded for each diversity index that meets or exceeds its respective long-term median value; for a total possible score of **3**. In the example below, the diversity criterion score for Lake Howard would be 3 because all of the diversity index values exceeded their long-term medians (shown as dotted vertical lines).



Winter Haven Regional Hydrology

Winter Haven's regional hydrology is completely driven by precipitation. An abundance or lack of rainfall can significantly impact water resources such as lake levels, stream flows to the Peace Creek, and groundwater supply. Changes in lake surface elevation influence not only recreation, such as usability of boat ramps and navigation through canals, but can also have drastic effects on water quality and wetland ecology. Rainfall on the Winter Haven Ridge recharges the Floridan Aquifer—the underground source of the State's drinking water supply. Just as important as rainfall, the amount of water in the Upper Floridan Aquifer (UFA) also affects the levels and overall health of the lakes.

On average, the City of Winter Haven receives 51.62 inches of rainfall annually. This is typically distributed throughout the year in distinct wet and dry seasons. The wet season is concentrated from June through September evidenced by the higher average monthly rainfall around 7-8 inches, shown as the orange dotted lines (Figure 3-1). Whereas the dry season, which ranges from October to May, usually receives much less monthly rainfall—between 2-4 inches. The light blue shaded areas on the graph represent the normal range, or one standard deviation above and below the median rainfall during a given month.

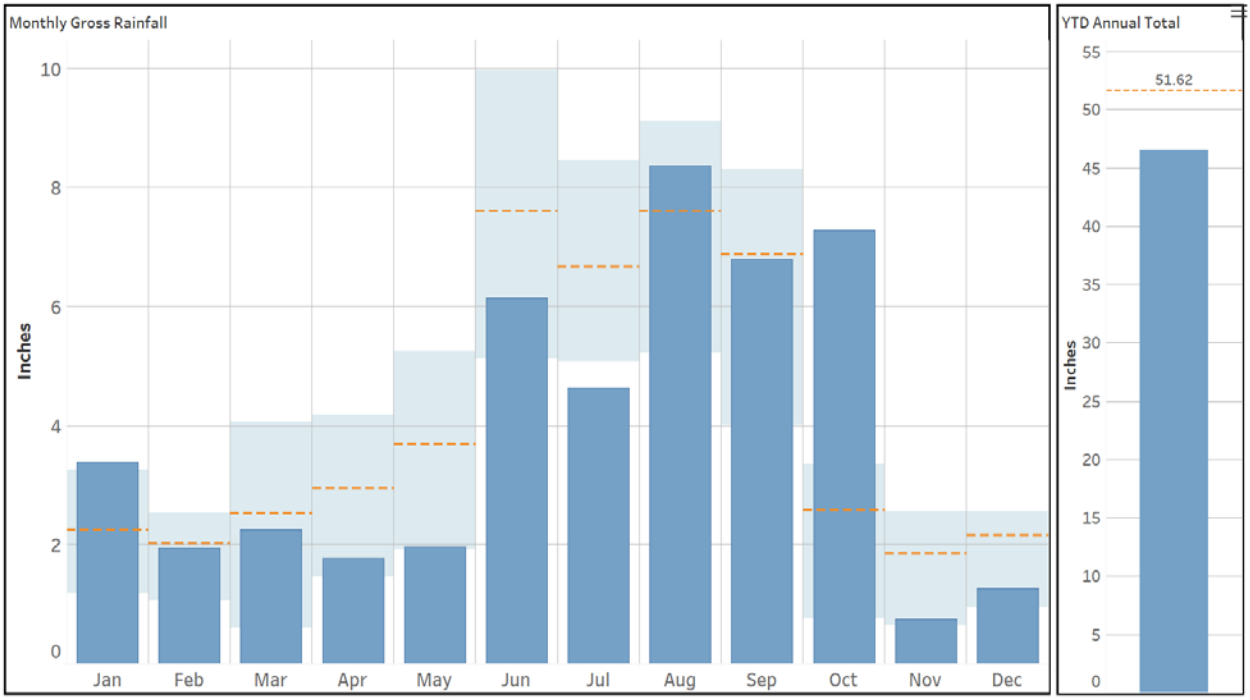


Figure 3-1. 2024 monthly and annual rainfall totals in relation to the long-term average.

In 2024, the City of Winter Haven received 46.55 inches of rainfall which was almost 5 inches below the annual average. Monthly rainfall totals were only above-average in January, August, and October; with the latter receiving near-record rainfall due to hurricane activity. February, March, and September received rainfall near to the average for those months. However, April, May, June, July, November, and December received rainfall totals near or below their normal range. Over 48% of the rainfall received in 2024

fell during the three month window from August to October. Despite the lower-than-average annual total rainfall received, the lakes and aquifer were able to bounce back to well above-average levels by the end of the wet season—due to the tremendous volume of water injected into the region.

This marks the second consecutive year with below-average rainfall. However, this is not abnormal as similar totals were received between 2017-2018 and 2020-2021. The last prolonged drought the area experienced occurred between 2006 and 2014 with eight consecutive years of below-average rainfall (Figure 3-2). It is too early to determine if the region is headed toward another extended period of low annual rainfall and subsequent drought. That said, water conservation efforts are still necessary and relevant as even a short period of below-average rainfall can manifest through declines in lake and aquifer levels. These impacts are discussed further in this section and in the individual lake reports.

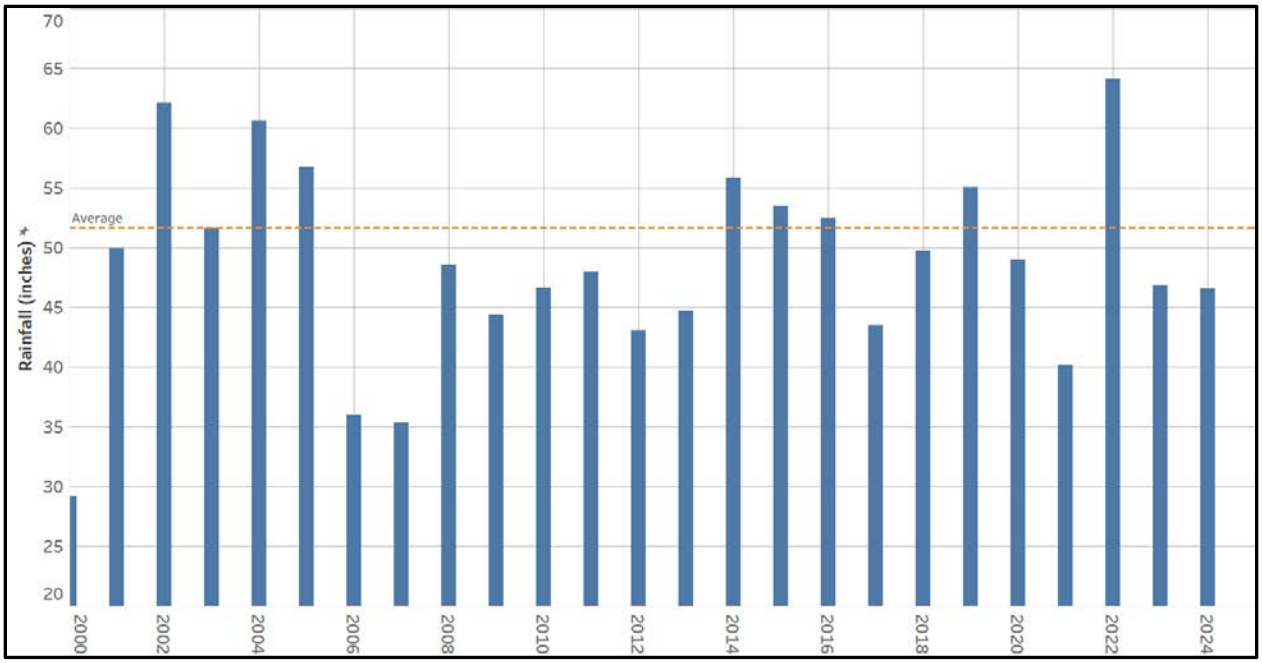


Figure 3-2. Annual rainfall totals for the Winter Haven area from 2000 to 2024.

Figure 3-3 depicts the upper surface elevation of the UFA and monthly rainfall totals from 2000 until 2024. The dotted line represents the long-term average UFA level, while the shaded area represents the normal range of one standard deviation above and below the median level. For reference, the ground elevation of the monitoring station is approximately 170 feet above sea level; making the long-term average more than 50 feet below the ground surface in downtown Winter Haven.

The Upper Floridan Aquifer undergoes both seasonal and long-term fluctuations corresponding with annual rainfall patterns and climatic cycles. This is evidenced by the drastically lower UFA levels in the early 2000s, followed by a short period of above-average levels from 2003 to 2006. The prolonged drought from 2006 to 2014 resulted in consistently lower UFA levels that barely peaked above the long-term average. The UFA

has remained relatively stable since then—consistently exceeding the long-term average and even the upper normal range most years while occasionally dipping below the normal range during the dry season.

The lack of rainfall at the beginning of 2024 resulted in a sharp UFA decline to 113 feet above sea level in June. Despite below-average monthly rain totals in June and July, beginning of the wet season led to a slight increase in the UFA level. By August, the UFA was back to the long-term average; eventually rising well above the normal range in October, due precipitation received through tropical storms. The UFA level ended 2024 slightly above the long-term average—a good place to begin the 2025 dry season. Winter Haven's local lakes also exhibited similar fluctuations.

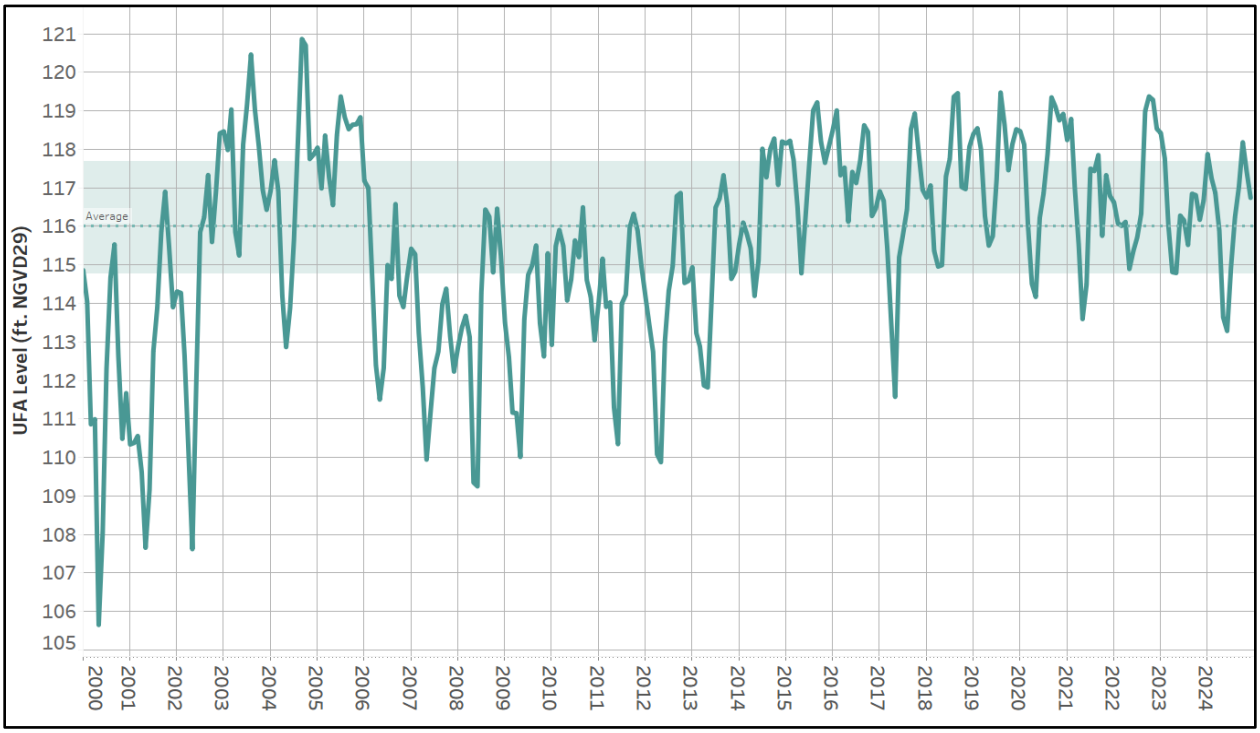


Figure 3-3. Monthly Upper Floridan Aquifer levels from 2000 to 2024. UFA levels graphed in relation to long-term mean and normal range.

Lake-Specific Data Analysis

The following pages comprise water quality, hydrologic, and biological data collected, analyzed, and presented for each individual lake in the study area. As previously stated, the lakes are presented in alphabetical order. Additionally, a Lake Management Summary is included at the end of this section that summarizes the lake health scores for all area lakes and presents specific management considerations for Winter Haven's lakes as a whole. To help you navigate to specific lake sections, please reference the following table which includes page numbers and direct links (in the digital version); click the lake name to go directly to that lake's starting page.

Lake Name	Starting Page #	Lake Name	Starting Page #
Blue	69	Mariana	184
Buckeye	75	Martha	190
Cannon	81	Maude	196
Conine	87	May	202
Daisy	93	Mirror	208
Deer	99	Ned	214
Elbert	105	Otis	220
Eloise	111	Pansy	226
Fannie	117	Rochelle	232
Haines	123	Roy	238
Hamilton	129	Shipp	244
Hartridge	135	Silver	250
Howard	141	Smart	256
Idyl	148	Spring	262
Idylwild	154	Summit	268
Jessie	160	Winterset	274
Link	166	Little Hamilton	280
Lulu	172	Middle Hamilton	286
Mariam	178	Lake Management Summary	292

Lake Blue

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Blue	0	2	2	3	1	3	3	2	**2.0**

Features & Statistics:

Surface area	54.3 acres
Mean depth	4.57 feet
Maximum depth	9.8 feet
Volume	268.6 acre-feet
Drainage basin area	128 acres
Annual TN Load	871.5 lbs
Annual TP Load	154.2 lbs
Limiting nutrient	Phosphorus

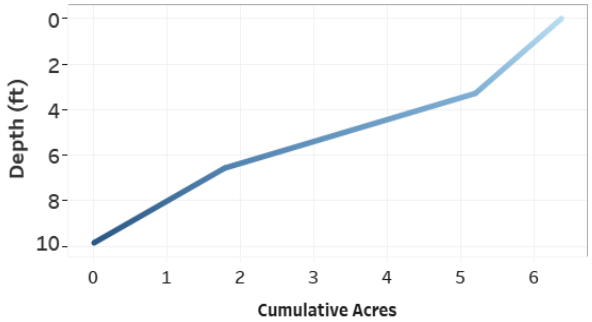


Figure 3-4. Hypsograph of Lake Blue depicting the depth profile and morphology of the lake bed.

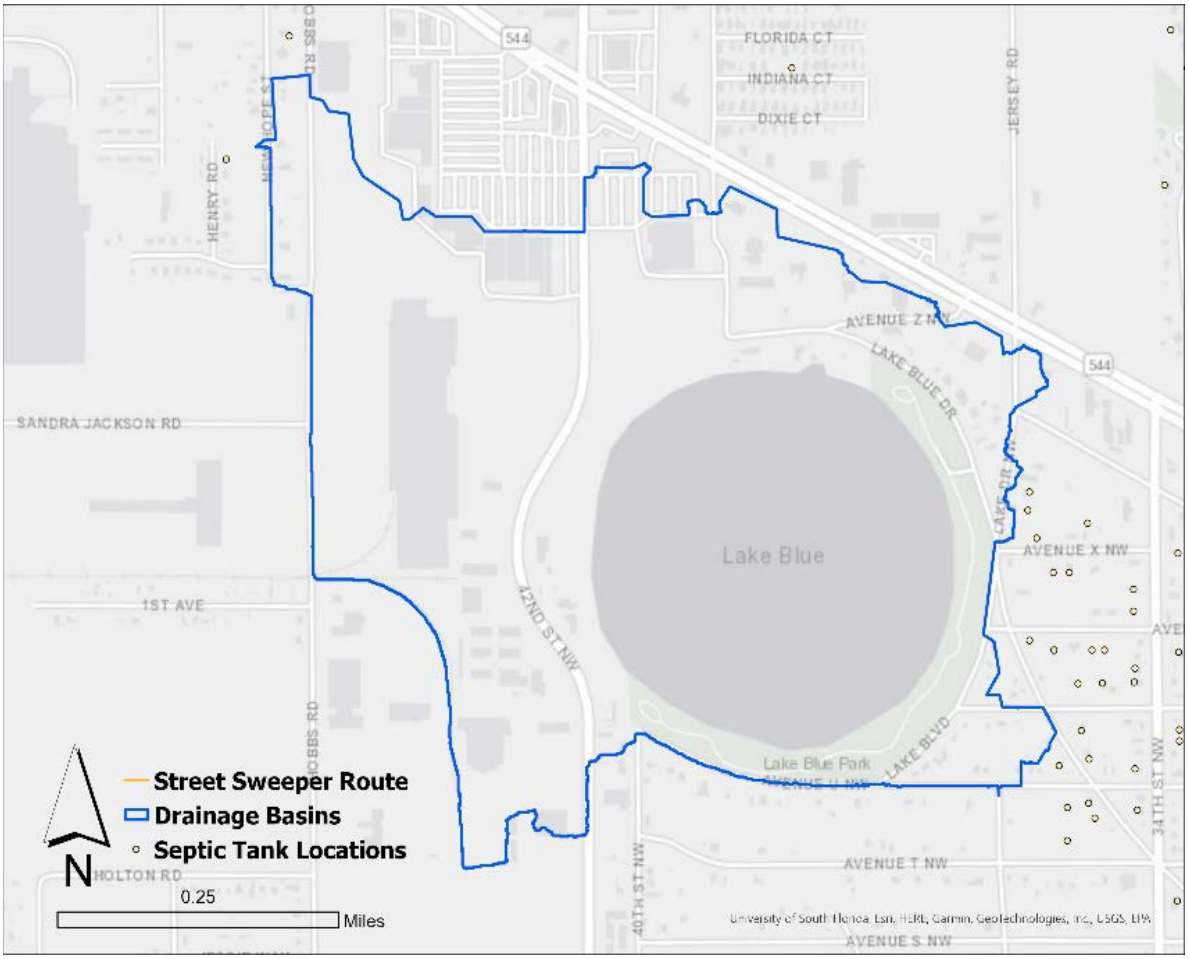


Figure 3-5. Map of Lake Blue's drainage basin, City street sweeper routes, and nearby septic systems.

Hydrology:

The morphology of Lake Blue indicates that it is a relatively small and shallow waterbody (Figure 3-4). Due to its shallowness, Lake Blue may undergo somewhat increased sediment suspension due to wind and recreational boating activities. With little stormwater infrastructure surrounding it, Lake Blue's drainage basin is also relatively small; at just over twice the area of the lake itself (Figure 3-5). Despite the relatively low volume of stormwater entering the lake, a high proportion of industrial land uses in the drainage basin have resulted in some of the highest per-acre rates of nitrogen and phosphorus loading in the area. This has likely contributed to Lake Blue exhibiting some of the poorest water quality in the region. Fortunately, there are few septic systems within close proximity of this waterbody, so surface runoff remains one of the primary pollutant sources to manage. It should be noted that Lake Blue and its drainage basin fall completely outside the municipal limits of Winter Haven.

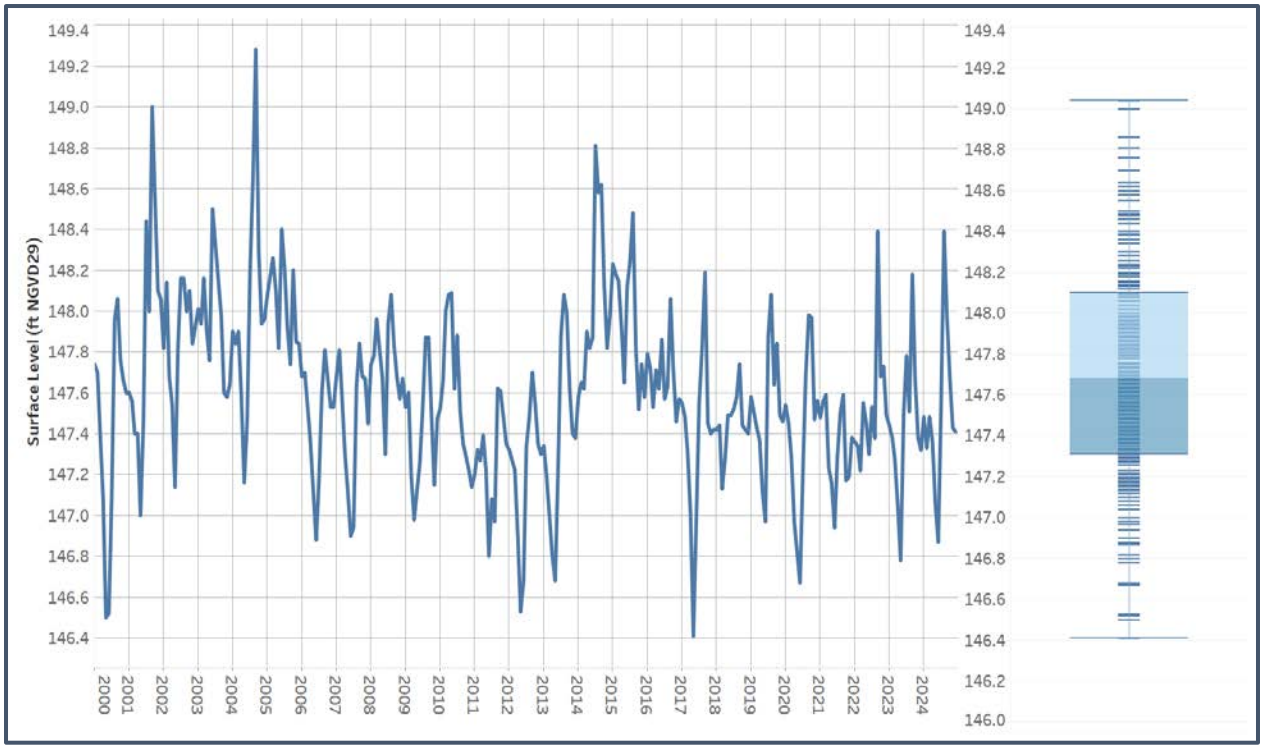


Figure 3-6. Hydrograph of Lake Blue depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details the total range, median, and normal range of surface level during the period of record.

Lake Blue sits at the very top of the Winter Haven watershed; overflowing via a pipe/ditch system to Lake Cannon only during high-water periods. Throughout the period of record, the surface level of Lake Blue has fluctuated between 146.4 and 149.8 feet above sea level. The normal range of seasonal fluctuations is between 147.3 to 148.1 feet; with more extreme peaks and troughs occurring during particularly wet and dry years, respectively (Figure 3-6). During 2024, Lake Blue reached a wet season peak of 148.4 ft and a dry season low of 146.83 ft, but ended the year at 147.4 ft which is right at the lower end of the normal range. Changes in Lake Blue's surface level are not correlated with Chl-a, TN, TP, or clarity (see appendix).

Water Quality Impairment:

For purposes of determining water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Blue is categorized as a clear, alkaline waterbody. The lake is considered impaired for Chl-a, TN, and TP due to exceedances of the impairment thresholds during the assessment

period (Figure 3-7). This equates to an impairment criterion score of 0. In 2018, the FDEP established a total maximum daily load (TMDL) for Lake Blue. The TMDL stipulates a 66% reduction in TN and a 67% reduction in TP to meet NNC guidelines.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	-0.313	0.168	No Trend	0	2
TN	Y	-0.030	0.898	No Trend		2
TP	Y	-0.584	0.005	Decreasing		3
Secchi	NA	-0.417	0.060	No Trend		1

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of annual Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Total phosphorus exhibited a statistically significant improving trend; Chl-a and TN exhibited non-significant improving trends; and Secchi depth exhibited a non-significant declining trend. Despite its impairments and high nutrient pollutant loads, Lake Blue is exhibiting marginal improvement in water quality. That said, it has a long way to go in order to start meeting the impairment thresholds. For example, the chlorophyll-a concentrations, which were roughly 50 ug/l, would need to be at or below 20 ug/l to meet the target.

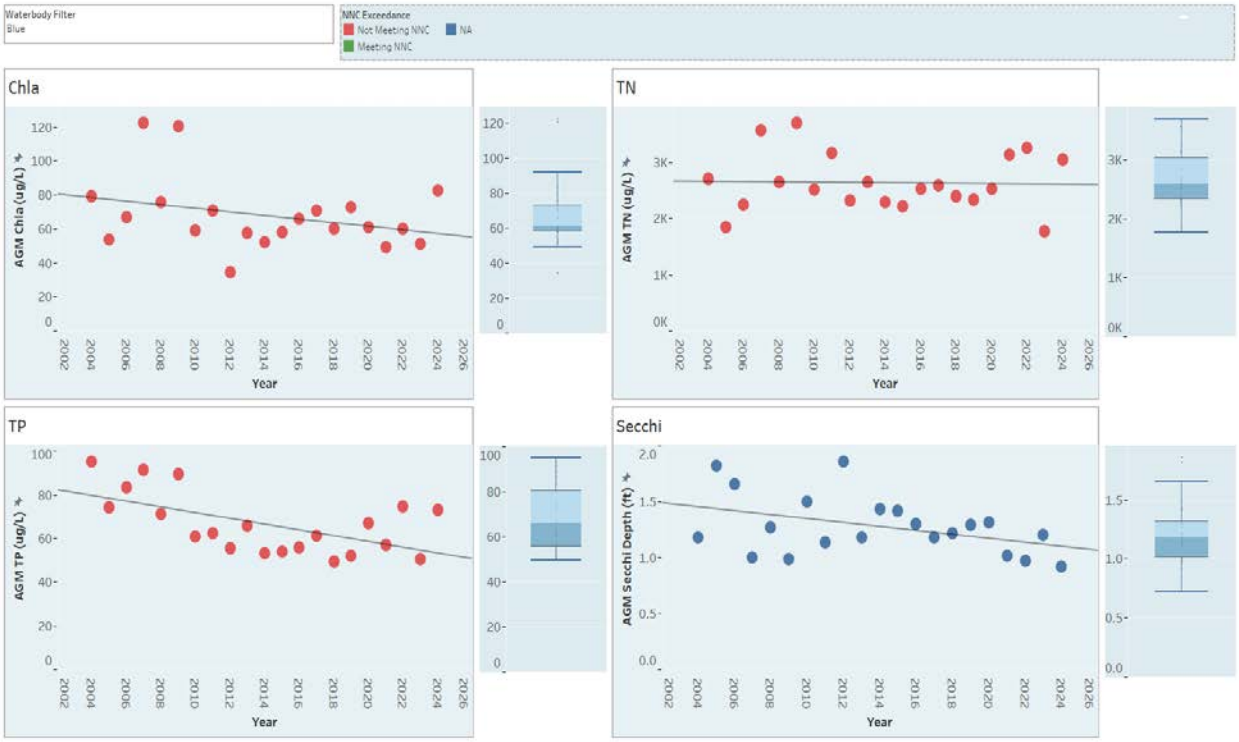


Figure 3-7. Lake Blue AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Blue on 2/9/2024. The percent coverage during this survey was 78% and the total BV was 11.9% (Figure 3-8). Similar to last year's survey, the high coverage value may have been an error in the SONAR's ability to distinguish between decaying organic matter and living vegetation as shown by the light green areas in the center of the lake. That said, there has been a marked increase in vegetation abundance in recent years. The result is the Lake Blue receives a score of 3 for this criterion.

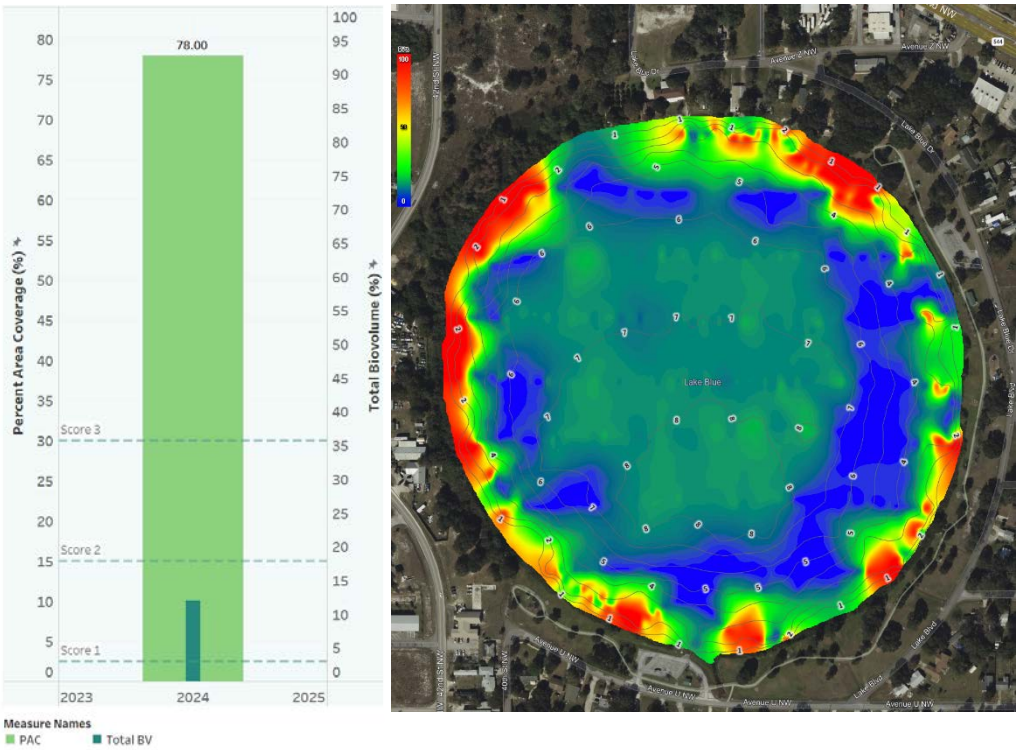


Figure 3-8. Graph depicting 2024 PAC/BV and biovolume heatmap; biovolume values range from green (lowest) to red (highest).

Invasive Species Management:

Based on data from the 2024 vegetation survey, Lake Blue's vegetation community was primarily made up of emergent vegetation (Figure 3-9). The most abundant species was pickerelweed—a native emergent. However, this lake experienced a surge in submerged aquatic vegetation abundance, with eelgrass making up over 15% of surveyed species. Normally, the water clarity in this lake is too poor for SAV to grow. Therefore, the increase in eelgrass demonstrates how even gradual water quality improvement can result in biological responses. While exotic plants, like primrose willow, were present these often do not require management action to control. Therefore, Lake Blue possessed no appreciable presence of managed invasive species—earning a score of 3 for this criterion.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). During 2024, Lake Blue's richness and diversity indices exceeded there long-term medians. Evenness was slightly below the median resulting in a criterion score of 2 (Figure 3-10). These results are consistent with previous years. The vegetation community in

Lake Blue has not shifted considerably since monitoring began. The lack of invasive species management has not shifted the species dynamics like in other lakes.

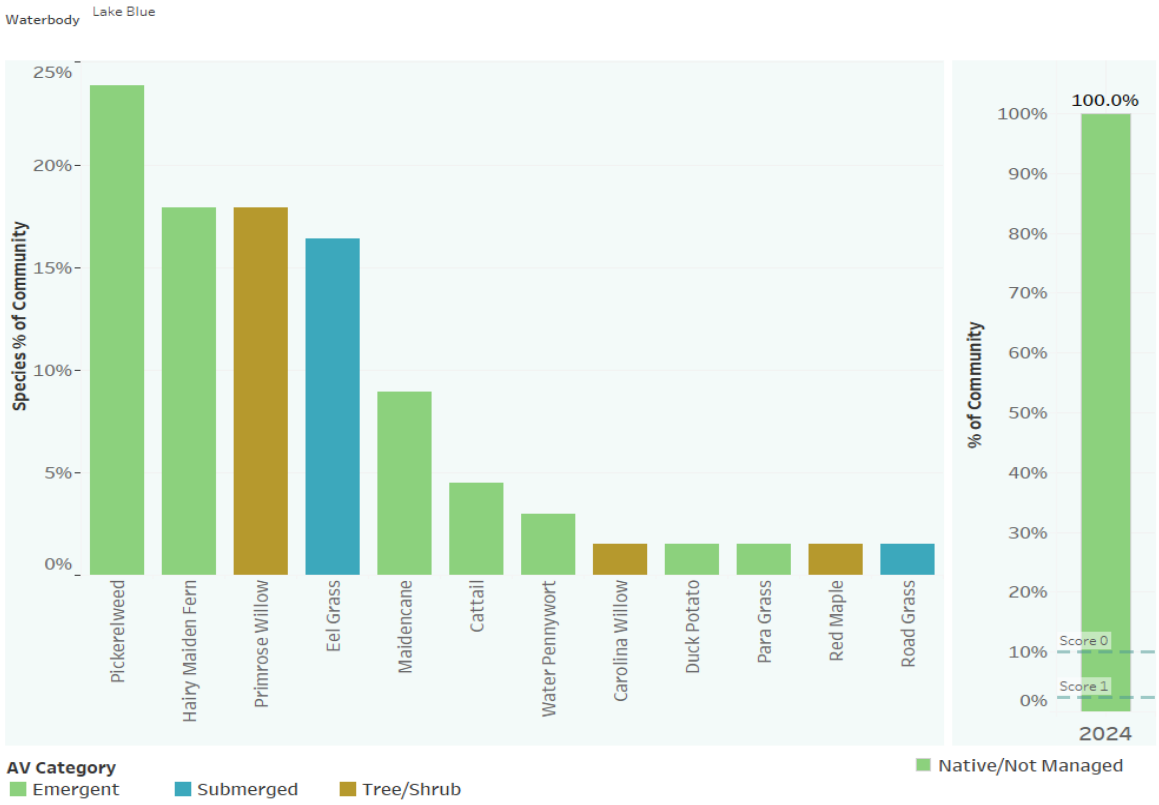


Figure 3-9. Chart depicting species frequency and invasive species percentage of Lake Blue during 2024.

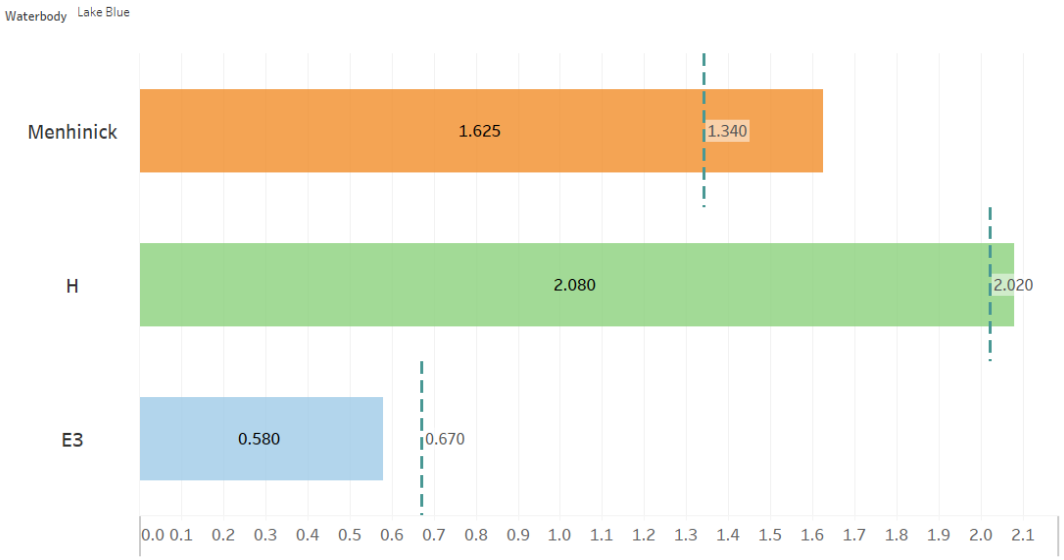


Figure 3-10. Chart depicting 2024 diversity index values for Lake Blue.

Lake Health Tracking:

A comparison of Lake Blue's health index scores from 2018 to 2024 shows relative stability in lake health (Figure 3-11). During this period, there has been a slight shift in the water clarity trend score and an overall improvement in vegetation abundance, with diversity contributing to the majority of the score variation. Though the trends show some general movement toward better water quality, Lake Blue is still far from meeting the impairment thresholds.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	2	2	3	2	2	3	3	**2.1**
2019	0	2	2	3	2	1	3	3	**2.0**
2020	0	2	2	3	2	NA	3	0	**1.7**
2021	0	2	2	3	2	2	3	1	**1.9**
2022	0	2	2	3	2	3	3	3	**2.3**
2023	0	2	2	3	1	3	3	0	**1.8**
2024	0	2	2	3	1	3	3	2	**2.0**

Figure 3-11. Chart depicting a comparison of Lake Blue's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Lake Blue currently exhibits poor water quality with impairments in each of the NNC metrics. With high intensity industrial and commercial land uses dominating the drainage basin, the stormwater pollutant load is likely the primary driver of these water quality issues.
- Despite the 2023 PAC values, Lake Blue distinctly lacks vegetation beyond the shoreline. The low clarity likely prevents the growth of vegetation in water deeper than a few feet, resulting a very narrow littoral zone. Fish and wildlife habitat is limited by the lack of submerged vegetation.
- The morphology of Lake Blue likely exacerbates its water quality issues. At an average depth of 4.6 feet, wind and wave action have greater potential to suspend sediments from the lake bed—leading to poor water clarity.

Lake Management Strategy:

- The City currently conducts annual aquatic vegetation monitoring and shares this information with partnering agencies for use in management efforts. Staff will continue to support Polk County and FWC in these efforts.
- City staff may work with Polk County and other agencies to explore the potential for aquatic vegetation planting. However, the poor water clarity may hinder the planting of submerged vegetation.
- Polk County has implemented an algal neutralization device in the lake to help filter the water column and increase clarity. So far, this has not yielded majort changes in chlorophyll-a concentrations or improvements to water clarity. It is likely that any improvements from this effort will observed over a longer time period. Further water quality monitoring will provide additional insights.

Lake Buckeye

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Buckeye	3	2	2	2	2	3	1	3	**2.3**

Features & Statistics:

Surface area	72.4 acres
Mean depth	9 feet
Maximum depth	26.8 feet
Volume	683.2 acre-feet
Drainage basin area	233.6 acres
Annual TN Load	867.1 lbs
Annual TP Load	154.8 lbs
Limiting nutrient	Phosphorus

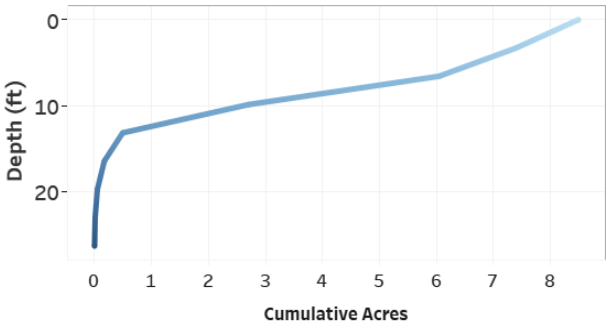


Figure 3-12. Hypsograph of Lake Buckeye depicting the depth profile and morphology of the lake bed.

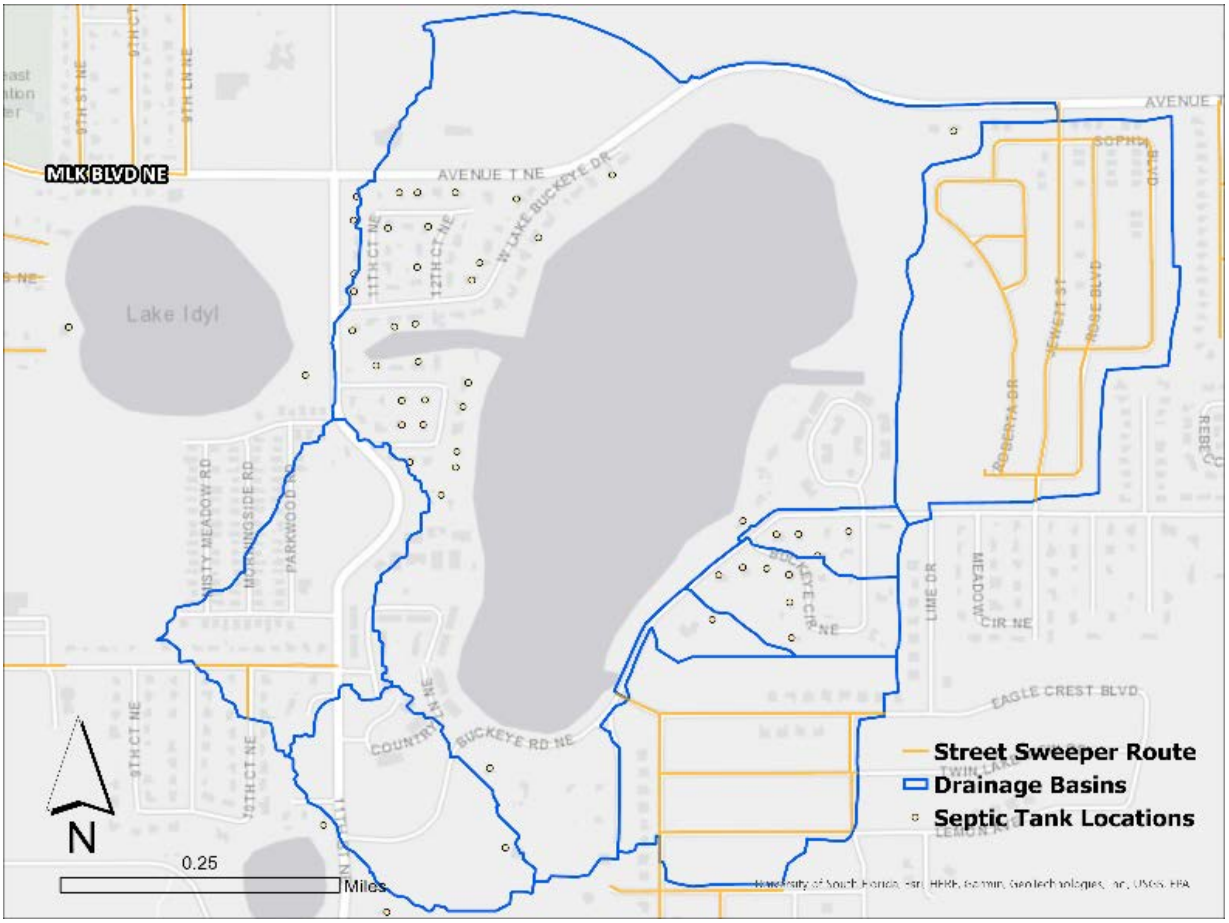


Figure 3-13. Map of Lake Buckeye's drainage basin, City street sweeper routes, and nearby septic systems.

Hydrology:

Lake Buckeye is a relatively small waterbody at just over 70 acres. It's mean depth of 9 feet is just slightly more than the overall average for all lakes in the study area; but it has some significantly deeper areas of over 26 feet (Figure 3-12). Compared to the total lake area, Buckeye's drainage basin is over three times as large which is slightly above average (Figure 3-13). Land use within the Buckeye drainage basin is primarily residential, contributing relatively low amounts of nitrogen and phosphorus per acre compared with other lakes in the area. There are approximately 40 septic systems within close proximity of the lake—potentially contributing nitrogen via groundwater seepage. However, as a phosphorus-limited waterbody, this is unlikely to have significant water quality impacts.

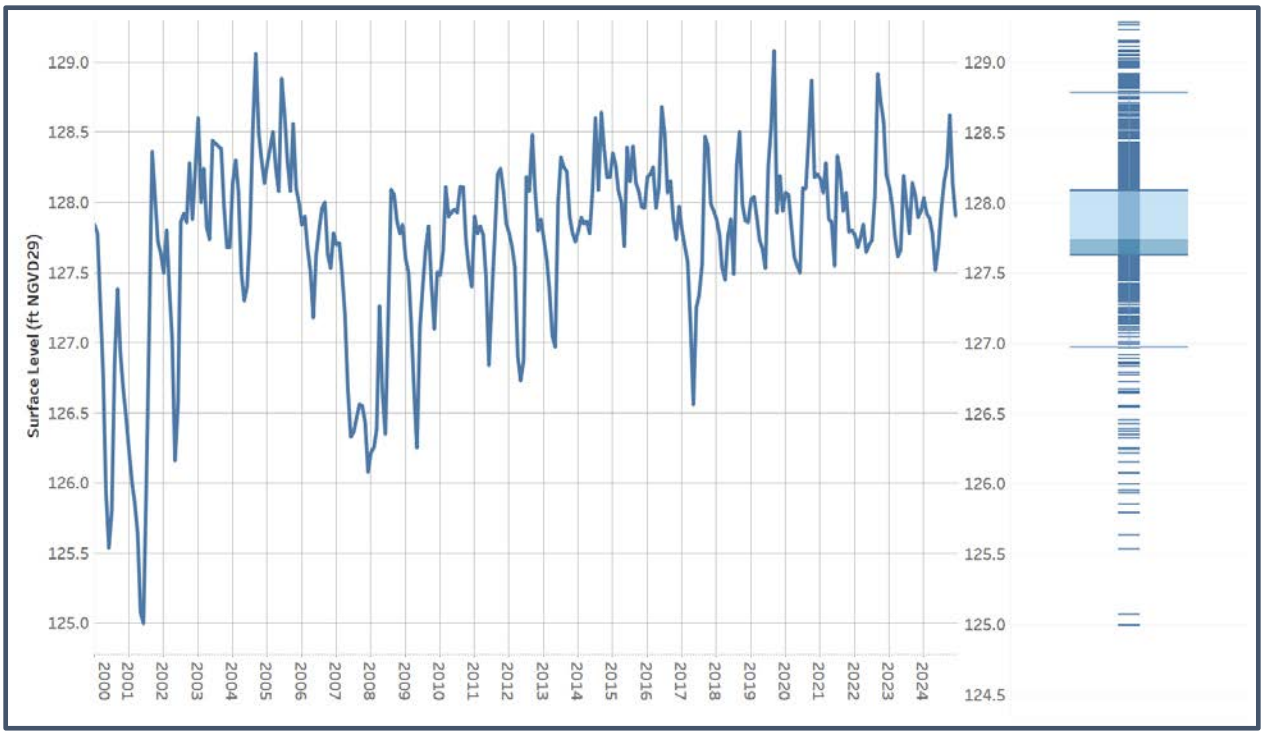


Figure 3-14. Hydrograph of Lake Buckeye depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Compared with other lakes in the area, Lake Buckeye sits at a lower elevation within the watershed; receiving a constant overflow from Lake Idyl and discharging downstream to Lake Fannie. Over its period of record, Lake Buckeye's surface level has fluctuated between 125 and 129.8 feet above sea level. The normal level range fluctuates less than half a foot, between 127.6 and 128 feet (Figure 3-14). During 2024, Lake Buckeye reached a dry season low of 127.5 ft at the start of the wet season in June and a wet season peak of 128.6 ft after the hurricanes in October. The surface level ended the year slightly above average at 127.9 ft. Changes in Lake Buckeye's surface level is not correlated with Chl-a, TN, TP, or clarity (see appendix).

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Buckeye is categorized as a clear, alkaline waterbody. Since 2000, there has only been one year in which Buckeye exceeded NNC thresholds in Chl-a and TP—2005 (Figure 3-15). However, Buckeye's Chl-a concentration did exceed the NNC impairment threshold in 2024 and TN also

exhibited higher-than-normal concentrations in 2023 and 2024. Impairment for Chl-a could be a future possibility if the NNC threshold is exceeded again in 2025. The City will be closely monitoring the water quality in this lake moving forward.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	-0.199	0.388	No Trend	3	2
TN	N	-0.221	0.336	No Trend		2
TP	N	-0.209	0.364	No Trend		2
Secchi	NA	0.346	0.125	No Trend		2

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. All four water quality parameters exhibited non-significant improving trends in 2024. In previous years, Lake Buckeye has shown significant improving trends. However, higher concentrations of Chl-a, TN, and TP coupled with lower Secchi depths indicate a recent shift toward poorer water quality. Again, this is a lake that will require close monitoring to ensure that water quality does not continue to decline.

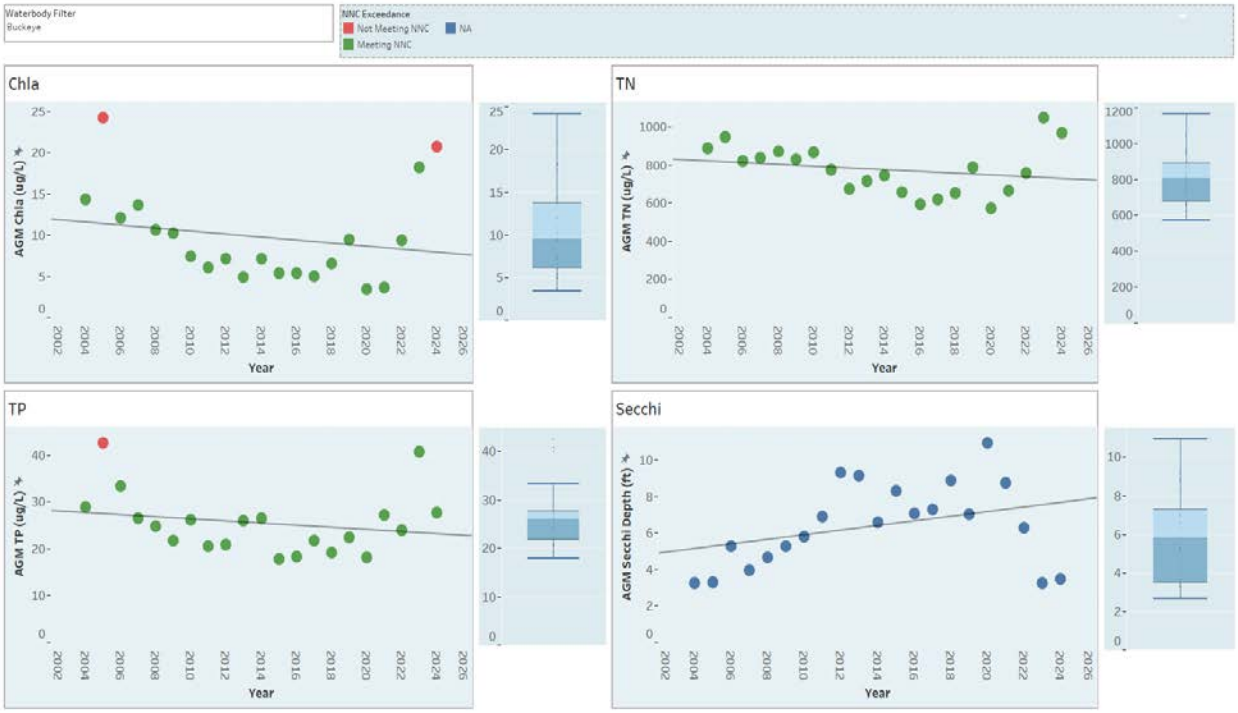


Figure 3-15. Lake Buckeye AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Buckeye on 4/18/2024. The PAC during this survey was 55.2% and the total BV was 5.2%--equating to an abundance criterion score of 3 (Figure 3-16). Compared with the previous year, this constituted a significant increase in vegetation abundance. It is likely that invasive plant expansion and subsequent management

efforts by state and county agencies resulted in the previous decline vegetation abundance. However, this recent resurgence demonstrates how these impacts are often short-lived.

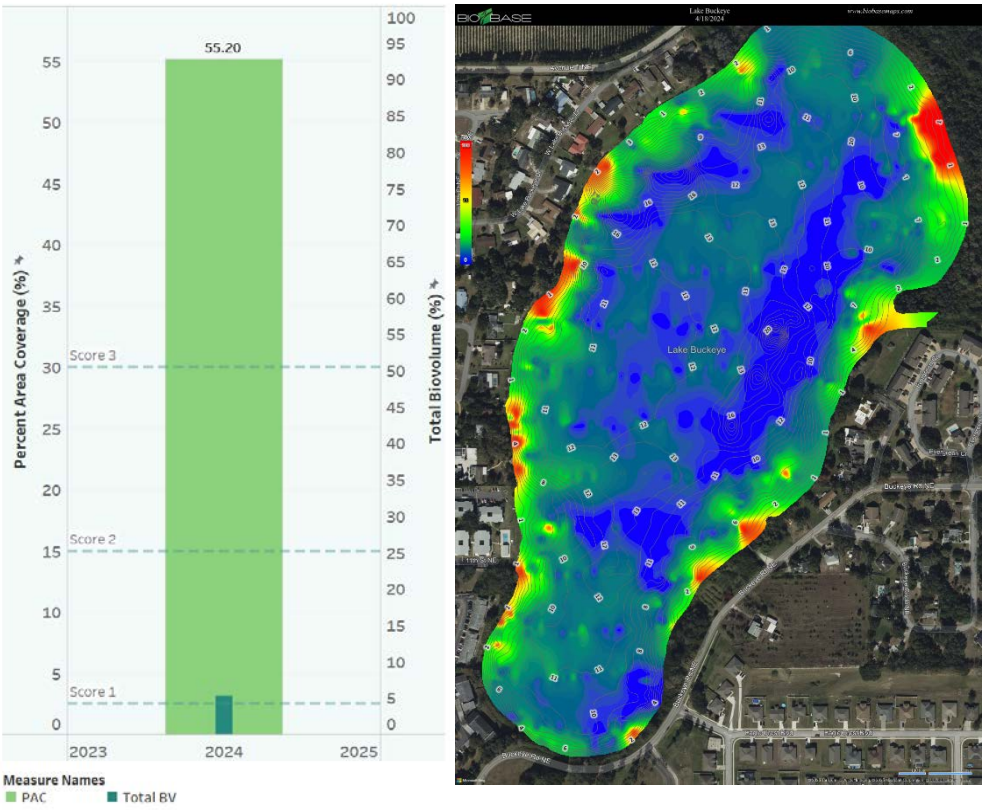


Figure 3-16. Graph depicting 2023 PAC/BV and biovolume heatmap; biovolume values range from green (lowest) to red (highest).

Invasive Species Management:

In previous years, coontail was the most dominant species present in Lake Buckeye by a very large margin. However, a surge in hydrilla and subsequent invasive herbicde treatment in 2021 caused a sharp decline in water clarity—decreasing the abundance of submerged species with it. By 2023, coontail was no longer the dominant plant species in the lake, being replaced by the emergent spatterdock lily. Based on the 2024 survey, coontail has exhibited a resurgence in abundance, followed by a relatively even mix of emergent and floating leaf plants. Invasive plants like hydrilla, burhead sedge, and parrot feather were present in low numbers, but collectively at over 6% of the population—resulting in an invasive abundance score of 1 (Figure 3-17).

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). During 2024, Lake Buckeye's richness, evenness, and diversity indices exceeded their long-term medians, resulting in a criterion score of 3 (Figure 3-18). Species richness was at the long-term median—indicating no net increase or decrease in the number of unique species present; while evenness and overall diversity were well above the average. This is primarily due to the resurgence in submerged species leading to a more even distribution of aquatic vegetation throughout the lake.

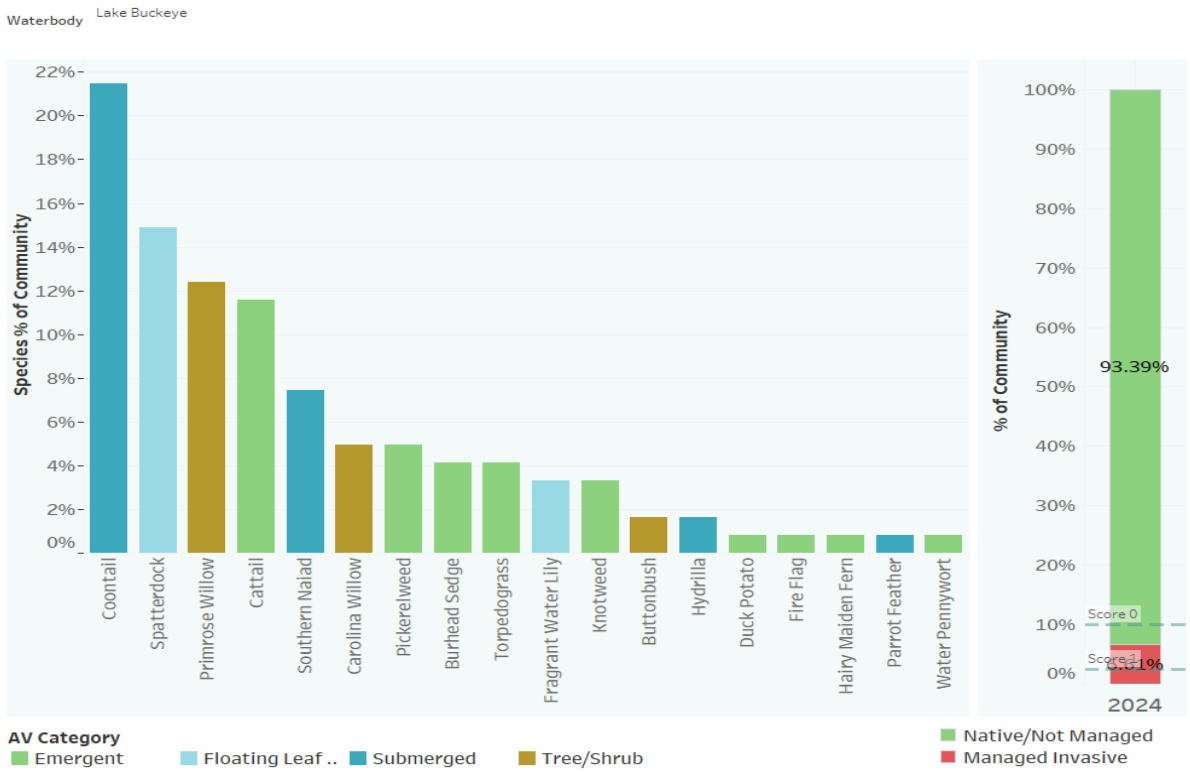


Figure 3-17. Chart depicting species frequency and invasive species percentage of Lake Buckeye during 2024.

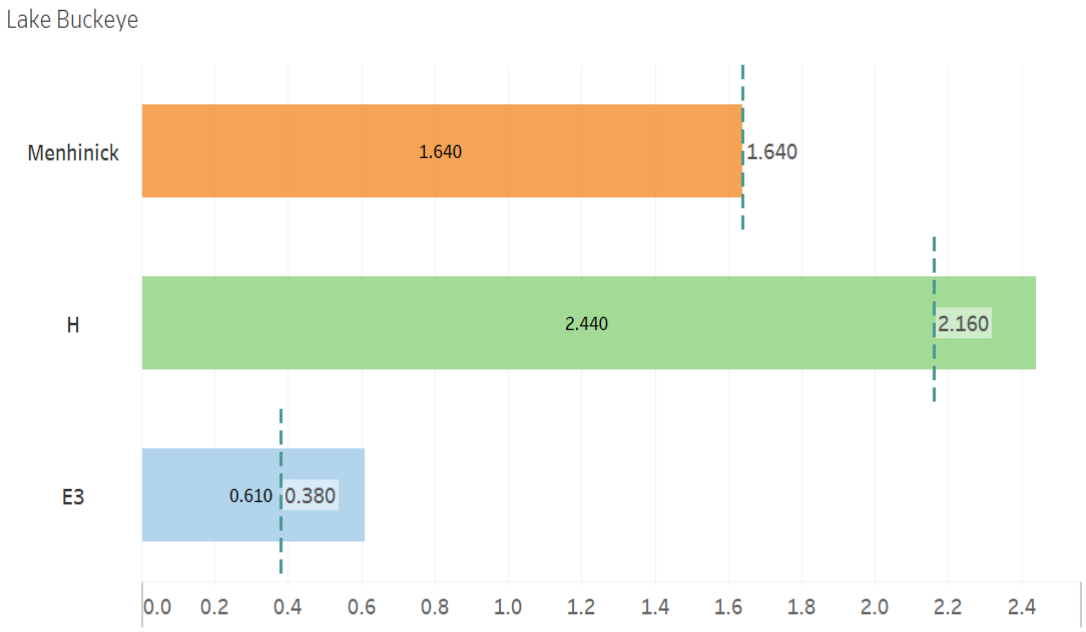


Figure 3-18. Chart depicting 2024 diversity indices for Lake Buckeye. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Buckeye's health index scores from 2018 to 2024 shows relative consistency. However, shifts in the water quality trend scores in 2024 lowered its overall lake health index value to its lowest point since monitoring began (Figure 3-19). These shifts in water quality metrics were likely due in part to invasive species treatments and the subsequent impacts from the increase in decaying plant matter in the lake. The restoration of vegetation abundance should help to buffer against future shifts in water quality. However, continual monitoring to facilitate the early detection and rapid response of invasive management efforts should help to prevent impacts on a large scale in the future.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	3	3	3	3	3	3	0	1	**2.4**
2019	3	3	3	3	3	3	0	3	**2.6**
2020	3	3	3	3	3	3	0	2	**2.5**
2021	3	3	3	3	3	3	1	1	**2.5**
2022	3	3	3	3	3	3	1	0	**2.4**
2023	3	3	3	2	3	2	2	3	**2.6**
2024	3	2	2	2	2	3	1	3	**2.3**

Figure 3-19. Chart depicting a comparison of Lake Buckeye's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Lake Buckeye currently exhibits good water quality. However, stormwater pollutant loading is a potential concern if water quality trends ever change for the worse.
- The presence of OSTDs (septic) systems in the drainage basin may not currently be an issue assuming they are functioning properly. However, as these systems age, they may begin to leach nutrients into the water table—leading to water quality declines.
- The management of invasive species like hydrilla and burhead sedge are a constant concern. It can only take a single season for even a small population to take over large areas of a waterbody. Large-scale invasive treatments can sometimes result in the sharp declines in vegetation abundance as seen in 2023.

Lake Management Strategies:

- Stormwater management within this basin includes street sweeping up to 5.6 miles monthly. Resident education is also important to address non-point pollutants from stormwater runoff such as fertilizer and pesticides.
- City staff may explore source analysis to determine if OSTD leachate is a potential contributor to nutrient pollutant loading. Further management may involve septic-to-sewer conversions.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large scale herbicide treatments and potential water quality issues that follow.

Lake Cannon

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Cannon	2	2	2	2	2	3	1	2	**2.0**

Features & Statistics:

Surface area	338.2 acres
Mean depth	10.9 feet
Maximum depth	20 feet
Volume	3479.2 acre-feet
Drainage basin area	695.4 acres
Annual TN Load	3863.1 lbs
Annual TP Load	637.8 lbs
Limiting nutrient	Co-limited (N & P)

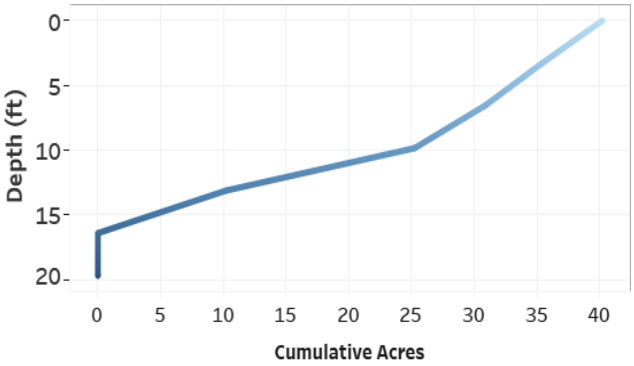


Figure 3-20. Hypsograph of Lake Cannon depicting the depth profile and morphology of the lake bed.

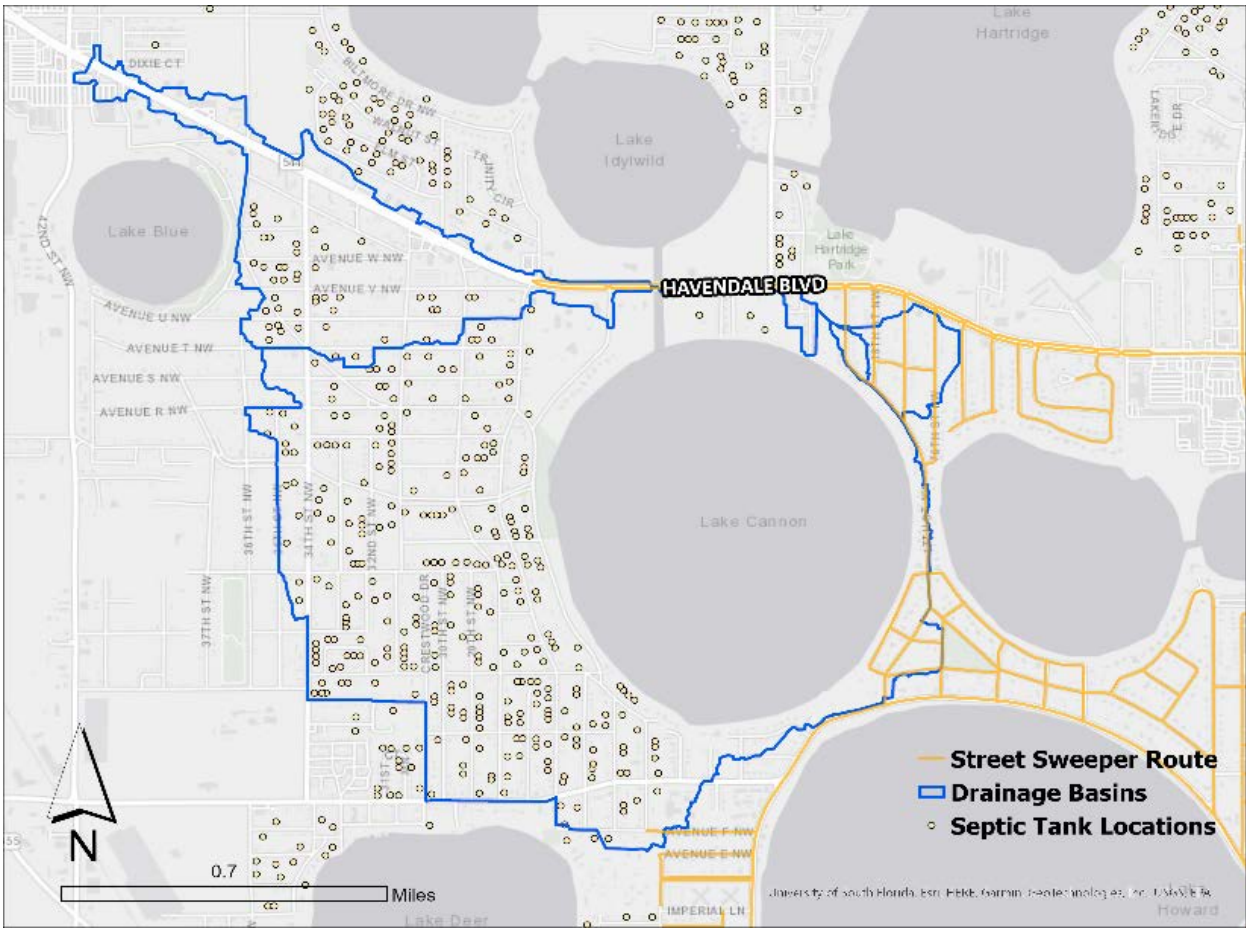


Figure 3-21. Map of Lake Cannon's drainage basin, City street sweeper routes, and nearby septic systems.

Hydrology:

Lake Cannon is a moderately sized waterbody at over 300 acres. It exhibits somewhat above average depth compared with other lakes in the area with a mean depth of 11 feet and a maximum depth of 20 feet; a cone-shaped depression typical of most sinkhole lakes on the Central Florida ridge (Figure 3-20). Lake Cannon's drainage basin is roughly twice the size of its lake area and is comprised primarily of medium density residential land uses (Figure 3-21). The per-acre nitrogen and phosphorus loads contributed by this basin rank 17th compared to the 37 other lakes in the study area. There are 338 known septic systems within the drainage basin on the west side of the lake. These have the potential to contribute elevated nitrogen loads via groundwater seepage.

As part of the South Chain of Lakes, Cannon is connected to Lakes Howard, Idylwild, and Mirror via navigable canals. Excess water from the South Chain of Lakes discharges to the Wahneta Farms drainage canal via a passive overflow structure at the south shore of Lake Lulu; eventually connecting with the Peace Creek near Bartow. Due to its canal connections, surface levels fluctuate consistently across the South Chain of Lakes. Throughout the period of record, the South Chain's surface level has fluctuated between 127.5 and 133.7 feet above sea level. The normal range is much narrower—between 129.7 and 131.4 feet (Figure 3-22). That said, wetter and drier periods often result in more extreme peaks and troughs, respectively. During 2024, the South Chain reached a dry season low of 130.8 ft in June and a wet season peak of 131.8 ft in September. The level of the South Chain by the end of the year was slightly above the top of the normal range at 131.5 ft. The South Chain's level remained at or above the high end of the normal range throughout most of the year—consistent with annual level fluctuations over the last 10 years. According to linear regression analysis, changes in Lake Cannon's surface level directly correlate with water clarity and indirectly correlate with Chl-a and TN (see appendix). This carries management implications as a higher surface level should result in water quality improvements.

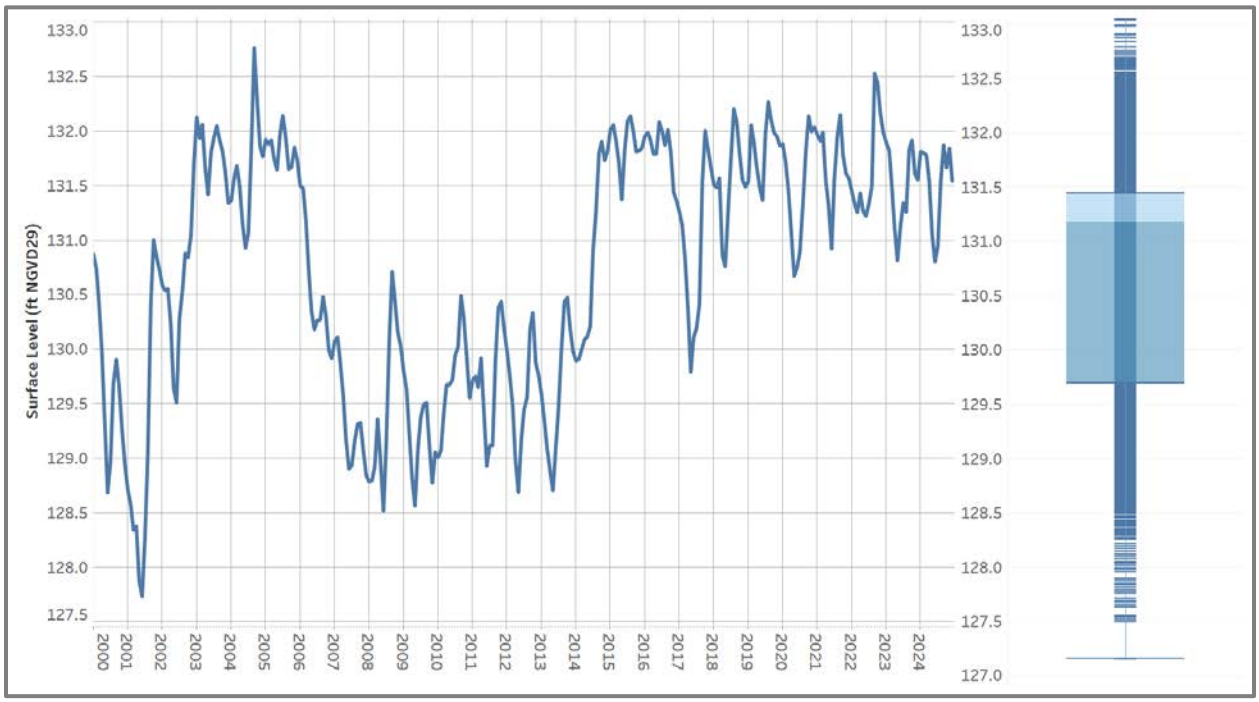


Figure 3-22. Hydrograph of the South Chain of Lakes depicting monthly surface level readings from 2000 to 2024. A box & whisker plot details the total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Cannon is categorized as a clear, alkaline waterbody. Based on exceedances in 2018, 2019, and 2020, it is considered impaired for Chl-a (Figure 3-23). In 2019, the FDEP established a total maximum daily load (TMDL) for Lake Cannon which stipulates a 20% reduction in TN concentration to meet the Chl-a guidelines. The annual average Chl-a and TP concentrations exceeded the NNC thresholds in 2024. Both chlorophyll-a and TP concentrations have fluctuated above and below the impairment threshold over the last four years which is relatively common for lakes with pollutant concentrations right at the impairment theshold.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	-0.231	0.313	No Trend	2	2
TN	N	-0.160	0.489	No Trend		2
TP	N	-0.208	0.366	No Trend		2
Secchi	NA	0.063	0.786	No Trend		2

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Each of the four parameters exhibited non-significant improving trends—downward for Chl-a, TN, and TP; and upward for Secchi depth. The spikes in average TP concentration in 2022 and 2024 have shifted the TP trend from statistically significant, exhibited in previous years, to non-significant. Continued monitoring is required to determine if these trend shifts are signs of long-term degradation.

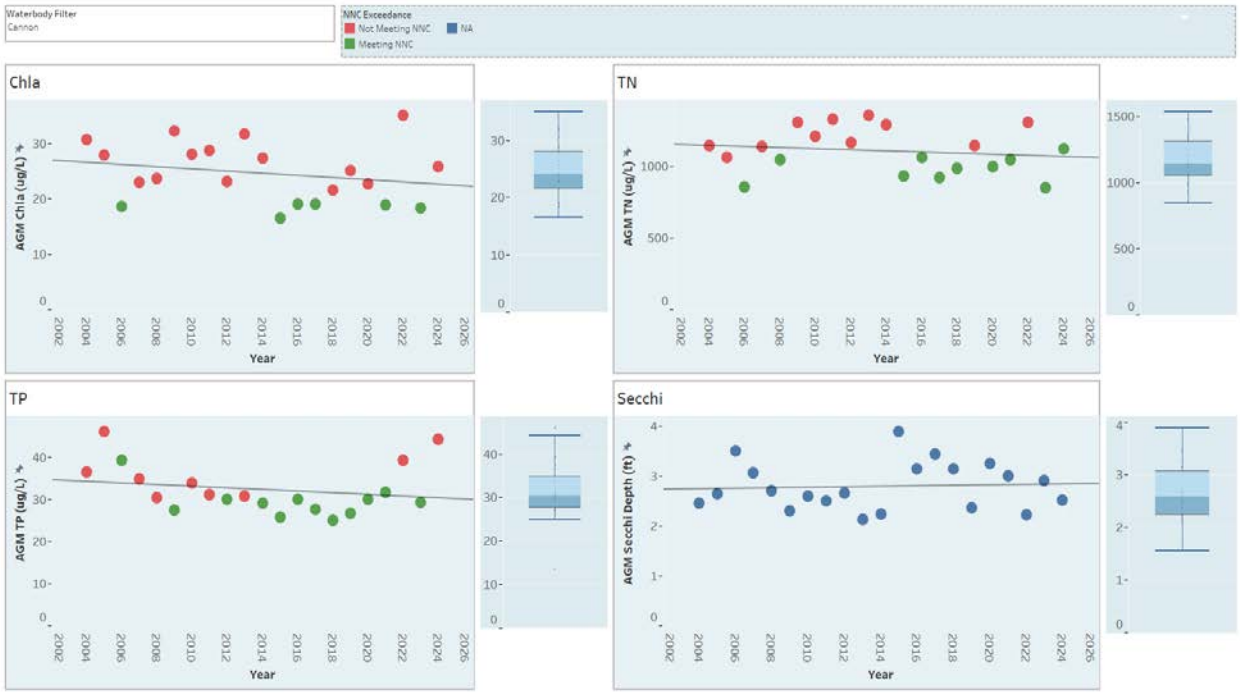


Figure 3-23. Lake Cannon AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

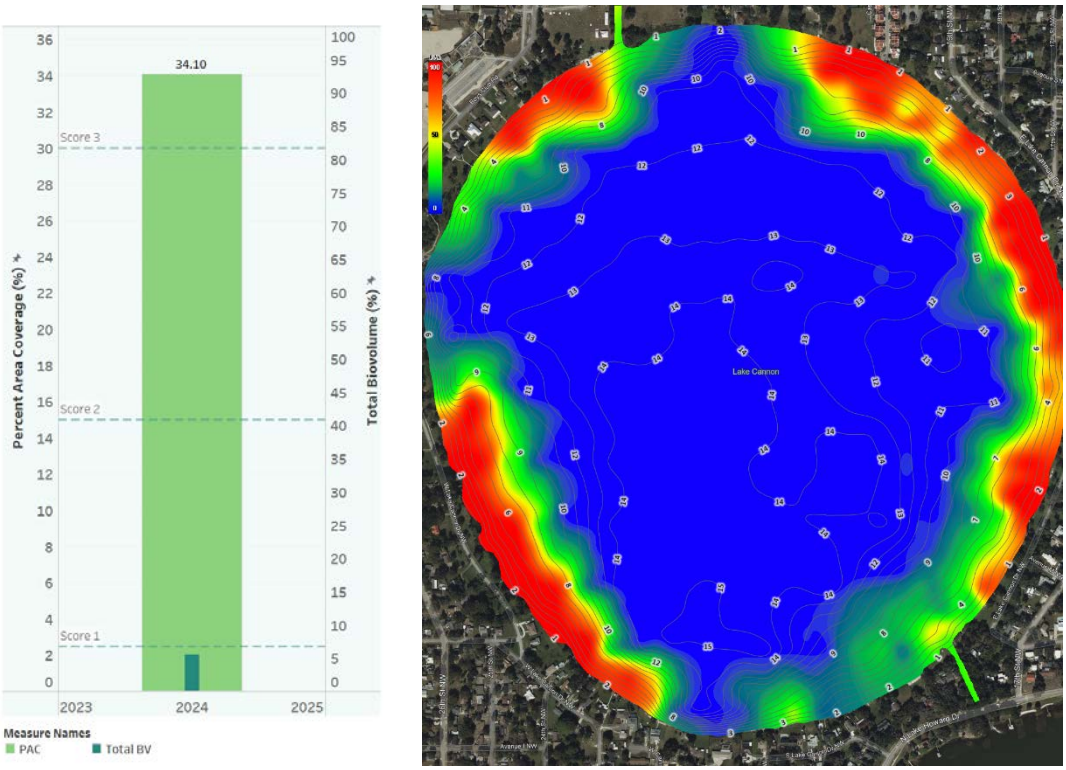


Figure 3-24. Graph depicting 2024 PAC/BV and biovolume heatmap; biovolume values range from green (lowest) to red (highest).

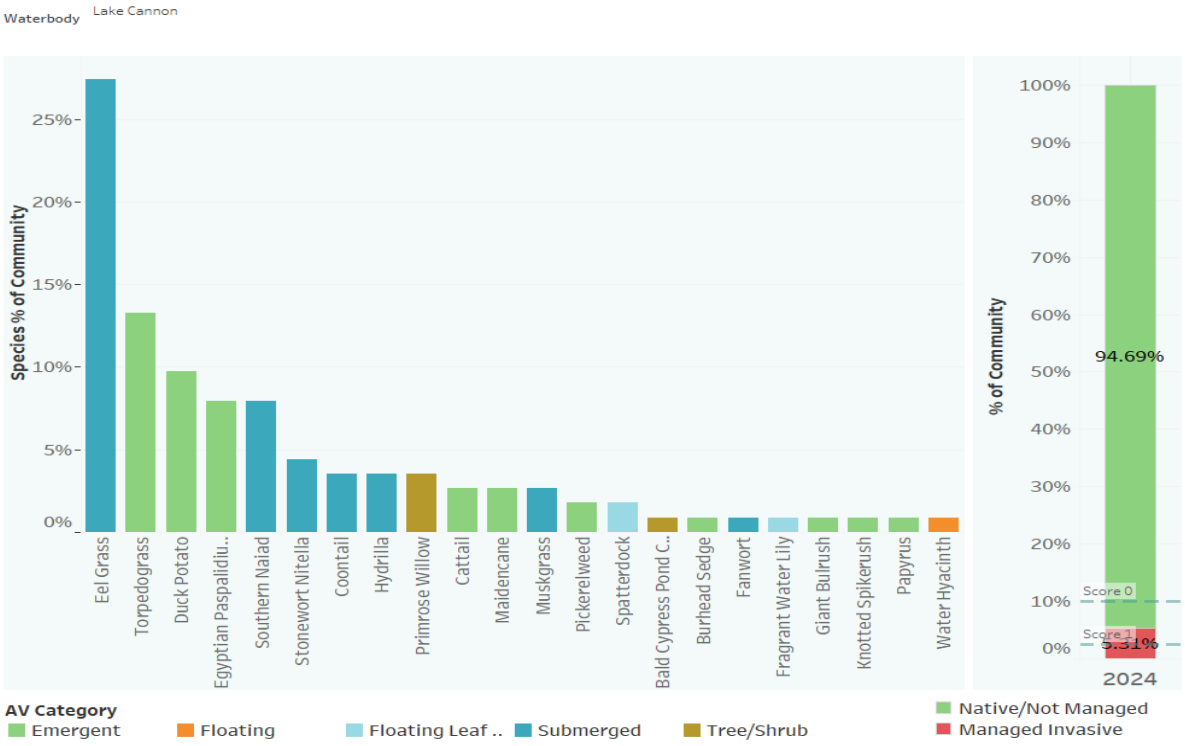


Figure 3-25. Chart depicting species frequency and invasive species percentage of Lake Cannon during 2024.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted on Lake Cannon on 5/31/2024. The PAC during this survey was 34.1% and the total BV was 5.5% (Figure 3-24). Due to the slope of Lake Cannon's bed, the littoral zone is limited to around 10-12 feet in depth. Both the PAC and BV values exhibited a slight increase from 2023 to 2024. Over the years, Lake Cannon has not exhibited much variability in the amount of vegetation—maintaining an abundance score of 3 since monitoring began.

Invasive Species Management:

Based on data from the 2024 survey, Lake Cannon's vegetation community was comprised of a good mix of submerged and emergent species. The most abundant species by far was the submerged native, eel grass (Figure 3-25). The invasive hydrilla, burhead sedge, and water hyacinth made up 5.3% of the community in 2024. This was a slight decrease from nearly 7% in 2023. As a result, Lake Cannon scored a 1 in the invasive species presence criterion. Hydrilla, which is the dominant invasive present, required additional management effort to keep under control.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). In 2024, all three of Lake Cannon's species richness and overall diversity indices exceeded their respective medians while the evenness index fell below its long-term median (Figure 3-26). This equates to a diversity score of 2. This decline in species evenness may be due to the management of invasive plants—allowing for a greater dominance of eel grass in 2024. Indeed, while the plant community was somewhat more evenly distributed in 2023, there was a signficant decrease in hydrilla abundance in the most recent survey.

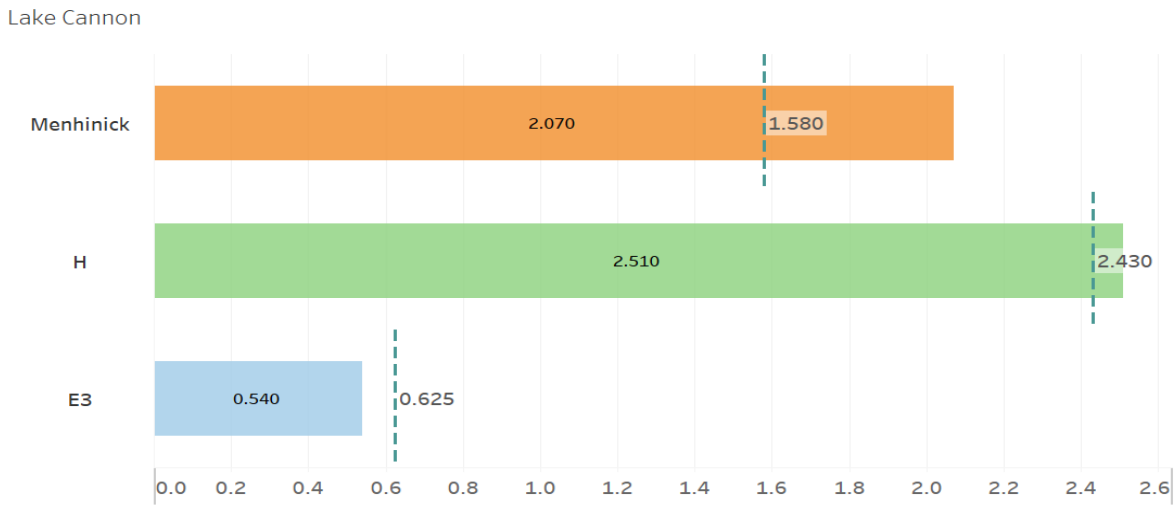


Figure 3-26. Chart depicting 2024 diversity index values for Lake Cannon. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Cannon's health index scores over time shows a gradual increase from 2018 to 2023, then an abupt decrease to its lowest point in 2024 (Figure 3-27). In the years since lake health monitoring began, the impairment criterion has shown steady improvement. The trend criteria appears to have decreased from significant improving scores to non-significant trends we

see in 2024. These shifts in the trends demonstrate how additional management efforts are needed to maintain the improving direction of water quality. Vegetation abundance has remained high, with some fluctuation in the invasive and diversity criteria.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	2	3	2	3	3	2	NA	**2.1**
2019	1	2	3	2	3	3	2	1	**2.1**
2020	1	2	3	2	3	3	1	2	**2.1**
2021	2	3	3	2	3	3	1	1	**2.3**
2022	2	2	2	2	3	3	2	3	**2.4**
2023	2	2	2	3	2	3	1	3	**2.3**
2024	2	2	2	2	2	3	1	2	**2.0**

Figure 3-27. Chart depicting a comparison of Lake Cannon's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Lake Cannon's chlorophyll-a concentrations still exceed the impairment threshold. Stormwater is a primary concern as a leading contributor of nutrient pollutant loading as is the effluent from Lake Blue.
- The presence of OSTDs (septic) systems in the drainage basin may not currently be an issue assuming they are functioning properly. However, as these systems age, they may begin to leach nutrients into the water table—leading to water quality declines.
- The management of invasive species like hydrilla is a constant concern. It can only take a single season for even a small population to take over large areas of a waterbody. The subsequent treatment can result in impacts to native vegetation and water quality.
- Several water quality metrics are significantly correlated with Lake Cannon's surface level; likely due to increased flushing during wetter periods. The means that drought conditions could result in water quality declines.

Lake Management Strategy:

- Street sweeping is currently conducted on City roads in the eastern part of the drainage basin (Figure 3-21). In total, nearly 10 miles of roadways are swept monthly.
- City staff may explore source analysis to determine if OSTD leachate is a potential contributor to nutrient pollutant loading. Further management may involve septic-to-sewer conversions.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large-scale herbicide treatments and potential water quality issues that follow.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.

Lake Conine

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Conine	3	3	3	2	3	2	1	3	**2.5**

Features & Statistics:

Surface area	235.4 acres
Mean depth	9 feet
Maximum depth	18 feet
Volume	2105.1 acre-feet
Drainage basin area	559.1 acres
Annual TN Load	2836.2 lbs
Annual TP Load	474.4 lbs
Limiting nutrient	Co-limited (N & P)

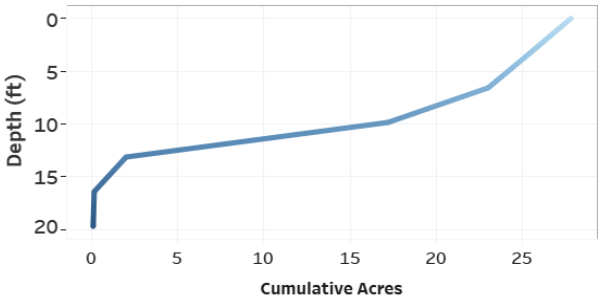


Figure 3-28. Hypsograph of Lake Conine depicting the depth profile and bed morphology.

Hydrology:

With a surface area of 235 acres, Lake Conine ranks 15th of area lakes in size. Its morphology is fairly conical, with an average depth of 9 feet and maximum depth of roughly 18 feet (Figure 3-28). Lake Conine receives surface runoff from an area approximately twice the size of the lake; contributing a moderate amount of nitrogen and phosphorus (Figure 3-29). Based on per-acre loading rates, Lake Conine's pollutant load ranks 19th out of area lakes. There are 39 known septic systems within this basin—potentially contributing a minor amount of nitrogen via groundwater leaching.

As part of the Northern Chain, Lake Conine is connected via navigable canals to Lakes Rochelle and Smart, as well as a lock system to Lake Hartridge,

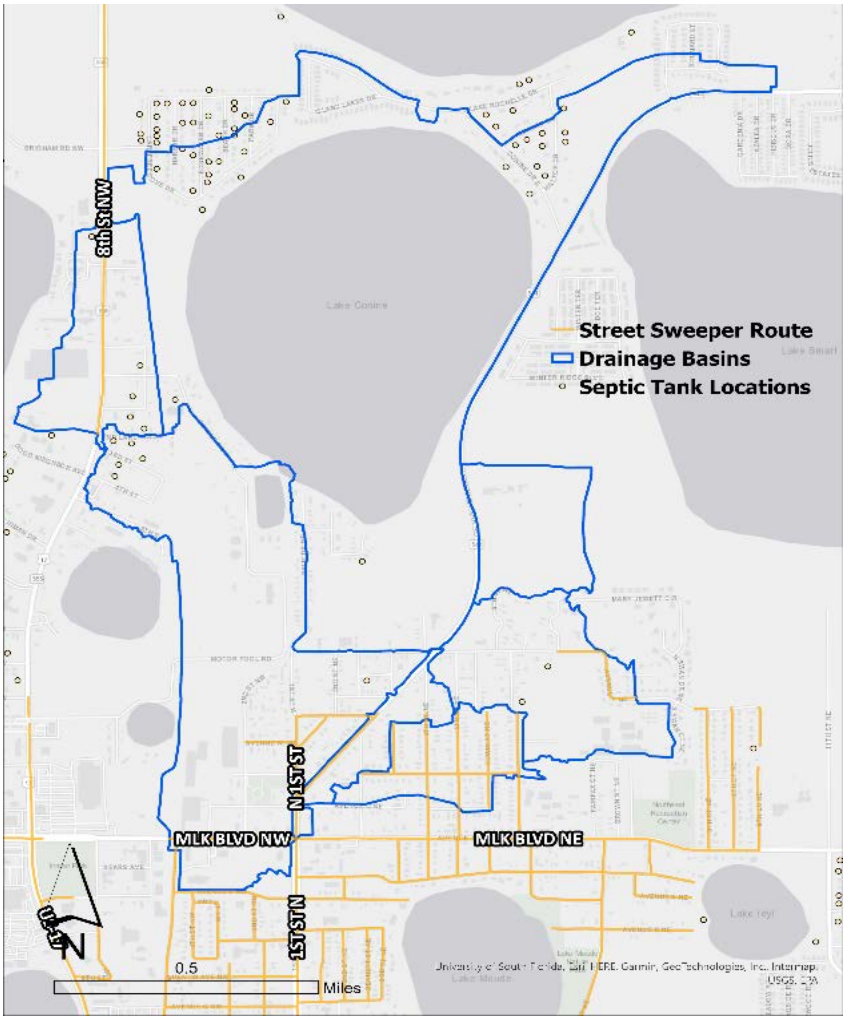


Figure 3-29. Map of Lake Conine's drainage basin, City street sweeper routes, and nearby septic systems.

Excess water from the North Chain eventually drains via the SWFWMD-managed P-8 control structure to the south of Lake Hamilton and enters the Peace Creek.

Over the period of record, surface levels in this section of the North Chain (Lakes Conine, Haines, Rochelle, and Smart) have fluctuated between 122 and 129.5 feet above sea level. The normal range fluctuates much less between 126.1 and 128.2 feet (Figure 3-30). During 2024, Lake Conine reached a dry season low of 127.8 feet in June and a wet season peak of 130.3 feet in October. The October peak was a record high for this chain of lakes; exceeding the previous record experienced during the triple hurricane season of 2004. The surface level ended the year above the high end of the normal range, at 128.5 feet. Changes in Lake Conine's surface level are directly correlated with water clarity and indirectly correlated with Chla and TN (see appendix). This carries management implications as maintaining a higher surface level should result in improved water quality.

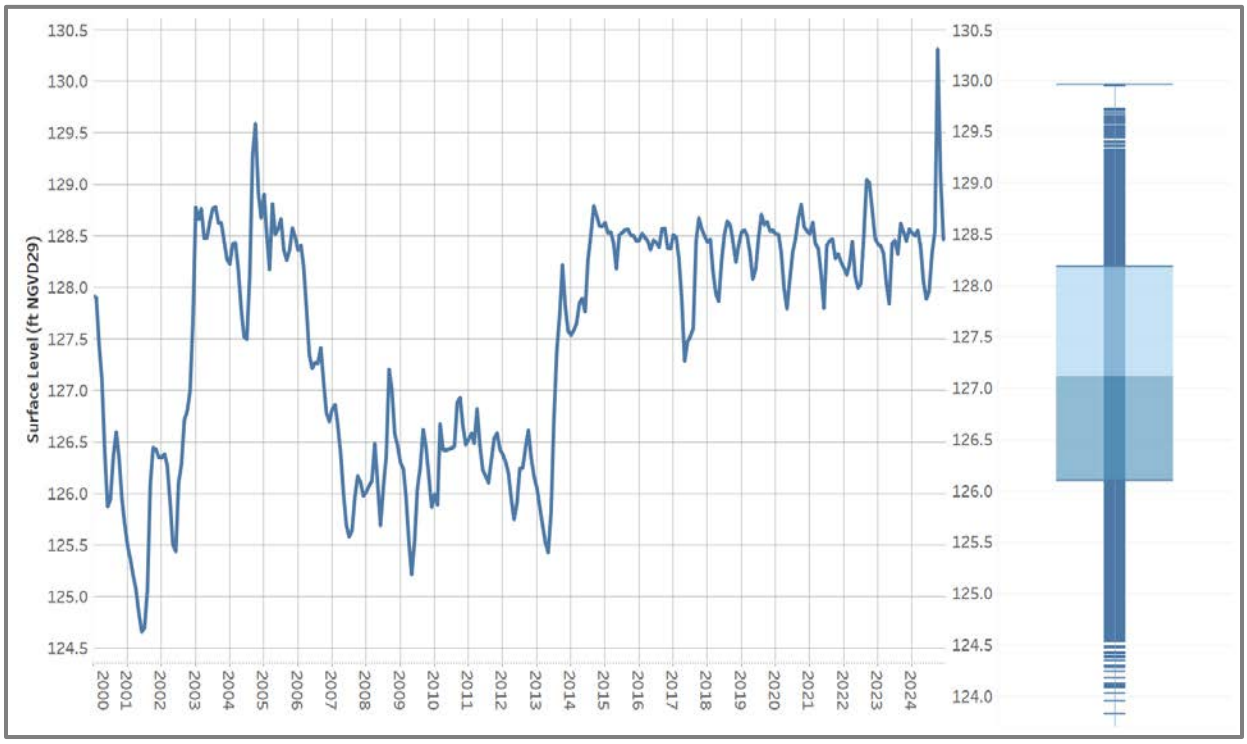


Figure 3-30. Hydrograph of Lake Conine depicting monthly surface level readings from 2000 to 2024. A box & whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Conine is categorized as a clear, alkaline waterbody. Based on a lack of multiple consecutive exceedances in the last 7.5 years, Lake Cannon is no longer exhibiting impaired status (Figure 3-31). This marks the second consecutive year that the lake has maintained Chl-a, TN, and TP at levels deemed not-impaired by the NNC. Continued improvement in water quality demonstrates how management actions have helped to restore the lake to previous conditions. Due to its previous impairments, the FDEP established a total maximum daily load for Lake Conine in 2018; stipulating a 36% reduction in TN and a 57% reduction in TP in order to meet NNC guidelines.

The City will continue to work towards meeting these guidelines through its management activities.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	-0.818	0.000	Decreasing	3	3
TN	N	-0.669	0.001	Decreasing		3
TP	N	-0.293	0.198	No Trend		2
Secchi	NA	0.751	0.000	Increasing		3

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Lake Conine exhibits significant improving trends in Chl-a and Secchi depth and non-significant improving trends in TN and TP. This equates to water quality trend criteria scores listed in the table below. Individual AGM values and trend statistics can be found in the appendix.

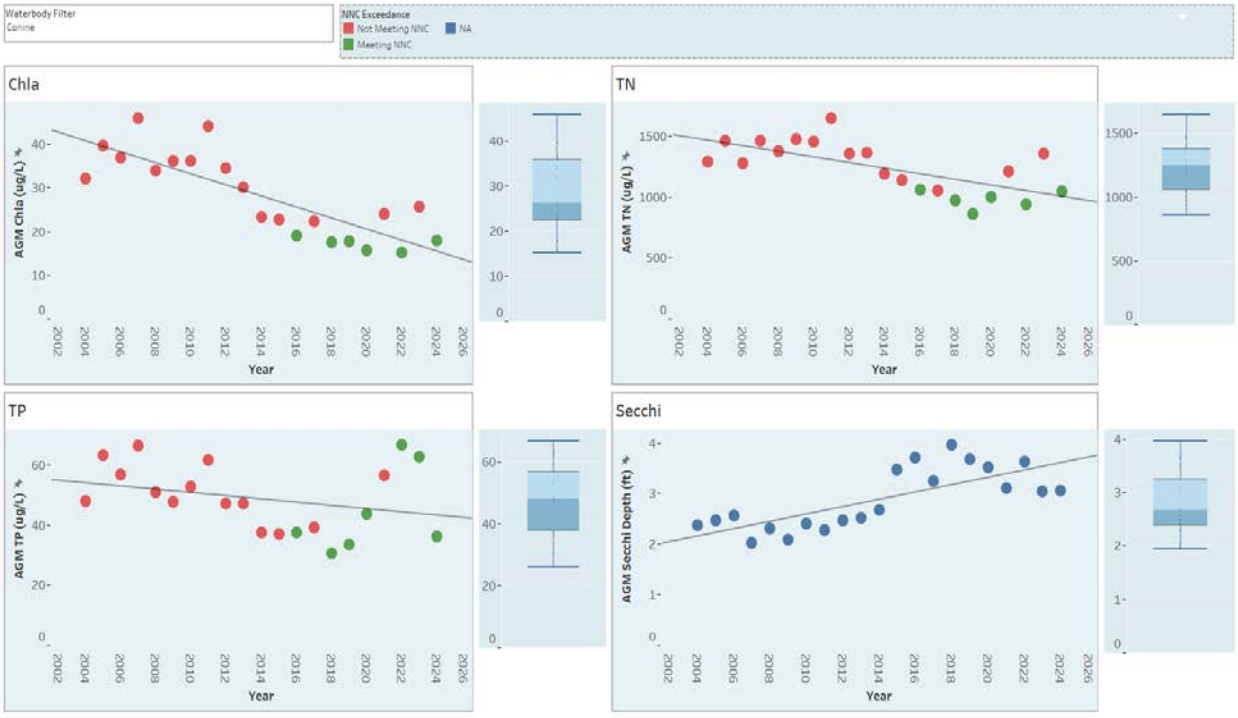


Figure 3-31. Lake Conine AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Conine on 8/1/2024. The PAC during this survey was 28.1% and the total BV was 4.64% (Figure 3-32). Lake Conine saw a dramatic drop in abundance in 2021 has continued to exhibit similar vegetation abundance since. This was likely due to treatment of invasive species like hydrilla. The PAC did experience an increase from 2023 to 2024, albeit with a slight decrease in biological volume. However, both values are marginally higher than what was reported in 2021 and 2022. The PAC value in 2024 earns Lake Conine a vegetation abundance score of 2.

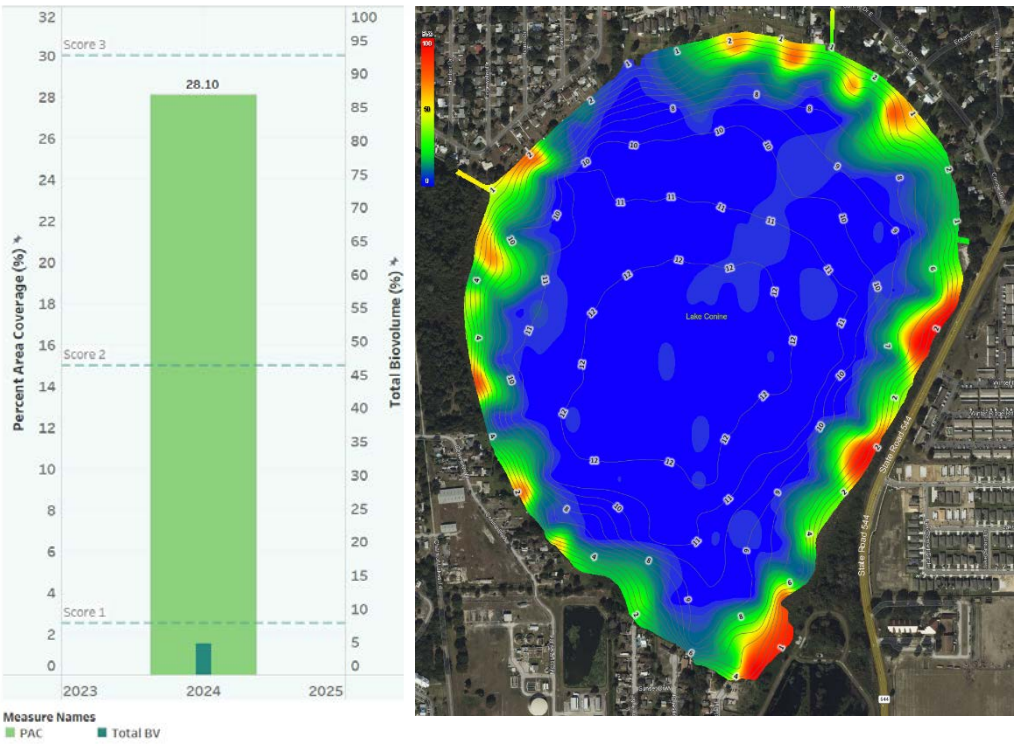


Figure 3-32. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Conine; biovolume values range from green (lowest) to red (highest).

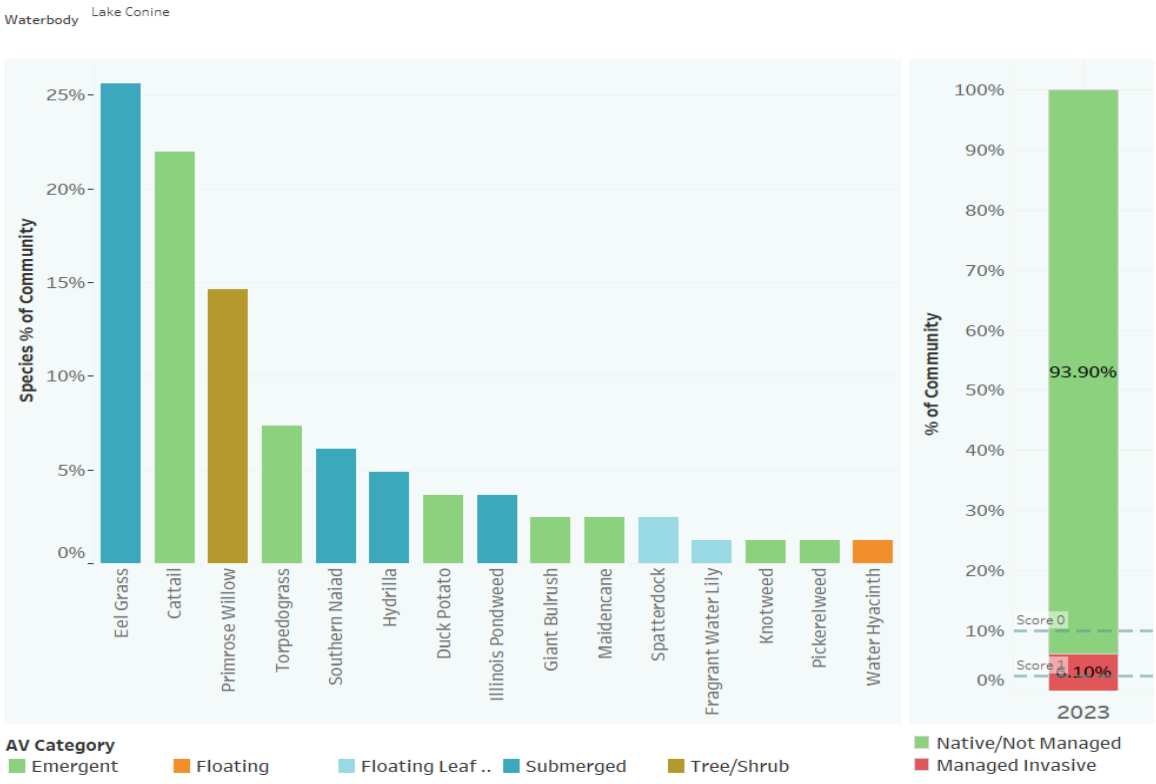


Figure 3-33. Chart depicting species frequency and invasive species percentage of Lake Conine during 2024.

Invasive Species Management:

During the 2024 survey, there was a relatively even mix of submerged and emergent plant types present. The most abundant species was the native eelgrass at 26% (Figure 3-33). The population percentage for hydrilla and water hyacinth totaled 3.95% which relates to an invasive presence criterion score of 1. Hydrilla has historically been the primary invasive species present in Lake Conine. Fortunately, the 2024 invasive percentage was nearly half of what it was in 2023 with no loss in vegetation abundance—indicating that native species are filling in the gaps left by invasive treatment efforts.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, all three of Lake Conine's diversity indices exceeded their long-term median values (Figure 3-34). Conine exhibited surprisingly little change in diversity index values from 2023 to 2024. Species richness and overall diversity were slightly lower, while evenness was slightly higher in 2024. This indicates that the vegetation community in the lake is relatively stable.

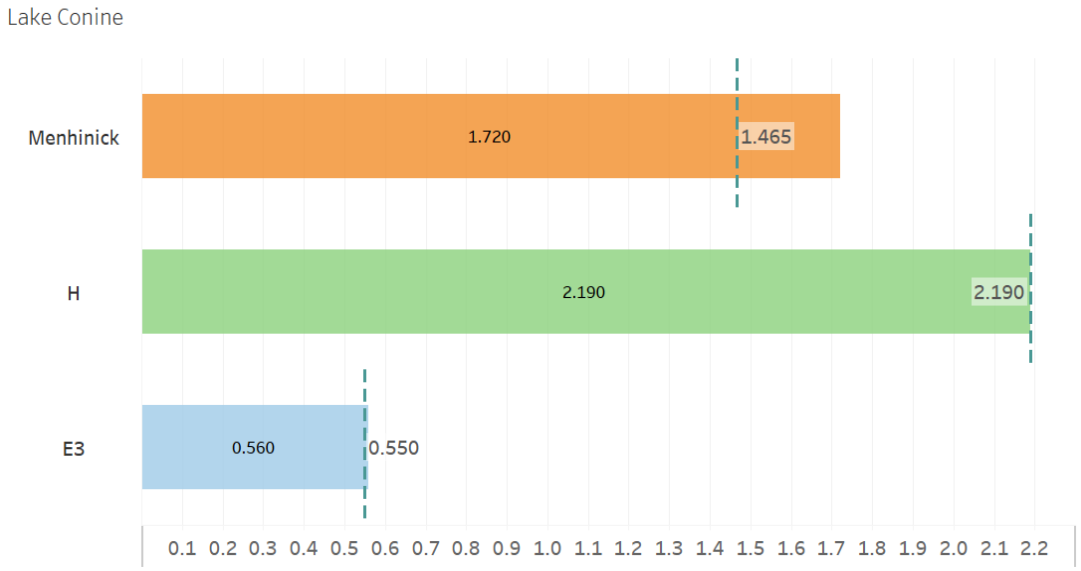


Figure 3-34. Chart depicting 2024 diversity indices for Lake Conine. Dashed line represent median values.

Lake Health Tracking:

A comparison of Lake Conine's health index scores from 2018 to 2024 shows general improvement. The recent shift in the impairment scores in 2023 and 2024 were the primary drivers of these lake health changes (Figure 3-35). Additionally, the trend criteria scores improved somewhat since 2018, indicating that the water quality impairment score should continue to improve in the future. One of the primary areas for improvement will be addressing invasive species presence which has shown some positive movement since 2022. Overall, Lake Conine is doing much better than it was when monitoring began. The stability in lake health scores over the last two years is a good sign that management efforts have made consistent improvements during this time.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	2	2	2	3	2	0	2	**1.6**
2019	0	3	2	3	3	3	0	2	**2.0**
2020	0	3	2	3	3	3	0	0	**1.8**
2021	0	3	2	2	3	2	0	3	**1.9**
2022	0	3	2	2	3	2	1	1	**1.8**
2023	3	3	3	2	3	2	1	3	**2.5**
2024	3	3	3	2	3	2	1	3	**2.5**

Figure 3-35. Chart depicting a comparison of Lake Buckeye's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- In addition to stormwater influx to Lake Conine, the wastewater treatment plant near this lake was a historic contributor of point-source pollutants. These legacy nutrients in the lake bed are a potential source of nitrogen and phosphorus.
- The management of invasive species like hydrilla and burhead sedge are a constant concern. It can only take a single season for even a small population to take over large areas of a waterbody.
- Several water quality metrics are significantly correlated with Lake Conine's surface level; likely due to increased flushing during wetter periods. This means that drought conditions could result in water quality declines.

Lake Management Strategy:

- The City is addressing stormwater pollutant loading through the recent construction of the Lake Conine Nature Park—a form of green stormwater infrastructure utilizing constructed wetlands designed to treat runoff from the largest southern sub-basins contributing to Lake Conine.
- Street sweeping is conducted on City roadways in the southern portion of the drainage basin—roughly 0.75 miles monthly.
- City staff continue to monitor aquatic vegetation and share the information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large-scale herbicide treatments and potential water quality issues that follow.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.
- Previous efforts by Polk County have used alum to "cap" historic legacy sediments in Lake Conine. Future efforts may evaluate the longevity of this project and the potential for future nutrient flux from the lake bed. However, water quality trends indicate that efforts to date have been successful.

Lake Daisy

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Daisy	3	3	3	3	3	3	2	2	2.8

Features & Statistics:

Surface area	137.3 acres
Mean depth	8.5 feet
Maximum depth	13 feet
Volume	1179.7 acre-feet
Drainage basin area	356 acres
Annual TN Load	1717.7 lbs
Annual TP Load	382.25 lbs
Limiting nutrient	Co-limited (N & P)

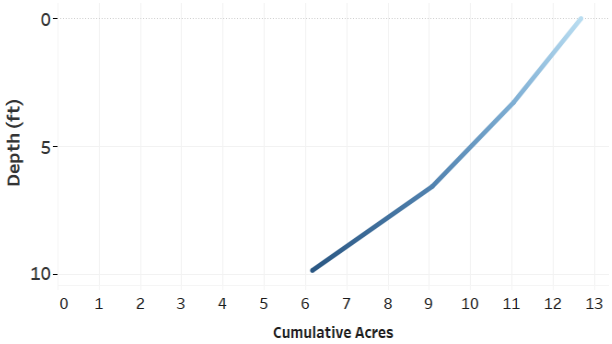


Figure 3-36. Hypsograph of Lake Daisy depicting the depth profile and morphology of the lake bed.

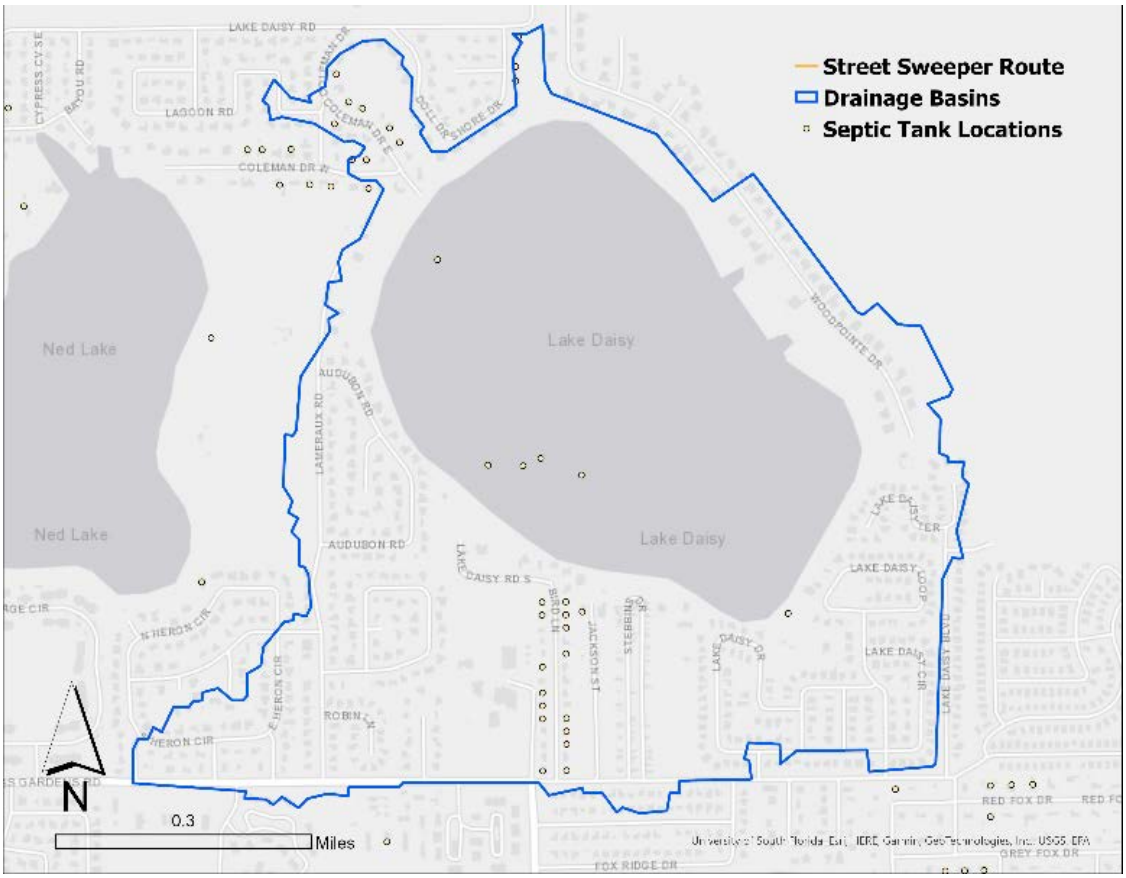


Figure 3-37. Map of Lake Daisy's drainage basin, City street sweeper routes, and nearby septic systems.

Hydrology:

Lake Daisy is a small and shallow waterbody at just 137 acres, an average depth of 8.5 feet, and a maximum depth of 13 feet (Figure 3-36). Due to its small size and relative shallowness, it has a higher than normal propensity for sediment suspension due to wind and wave action. Lake Daisy's drainage basin is also relatively small and made up mostly of residential land uses (Figure 3-37). Despite receiving relatively low nitrogen and phosphorus loads by volume, its per-acre nitrogen and phosphorus loads are some of the highest in the study area; mostly due to the abundance of high-density residential land use within the basin. There are approximately 30 septic systems within the drainage basin, but this density is low and not likely to be a major contributor to pollutant loads. Since the vast majority of the drainage basin falls outside of Winter Haven limits, the City does not conduct street sweeping services within the basin.

Over its period of record, Lake Daisy's surface level has fluctuated between 125.75 and 129.9 feet above sea level. The normal range is much narrower; between 127.9 and 128.9 feet (Figure 3-38). During 2024, Lake Daisy reached a a dry season low of 127.7 feet in June and a wet season peak of 129.7 feet in October. The surface level ended the year slightly below the median at 128.4 feet. It should be noted that Lake Daisy's surface level reached a high not observed in the last 20 years due to increased rainfall during the active hurricane season. This excess water quickly dissapated afterwards. Changes in Lake Daisy's surface level are not correlated with Chl-a, TN, TP, or clarity (see appendix).

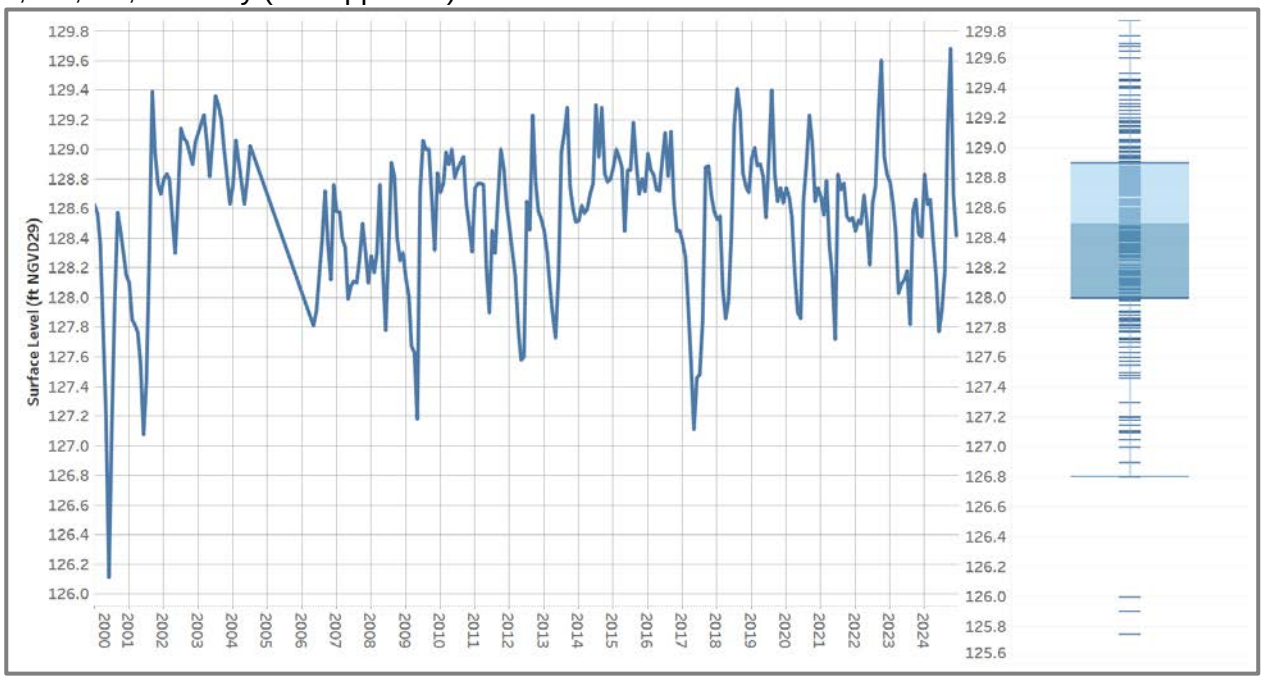


Figure 3-38. Hydrograph of Lake Daisy depicting monthly surface level readings from 2000 to 2024. A box and whisker plot detail total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Daisy is categorized as a clear, low-alkalinity waterbody. Lake Daisy has not exhibited exceedances of any of its NNC parameters within the 7.5 year assessment period (Figure 3-39). The most recent exceedance occurred for TP in 2009. The lack of impairments earns Lake Daisy a score of 3.

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Based on the trend analysis, all four of the primary water quality parameters exhibit significant improving trends. This equates to trend criteria scores of 3 for each of these parameters. Individual AGM values and trend statistics can be found in the appendix.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	-0.662	0.001	Decreasing	3	3
TN	N	-0.749	0.000	Decreasing		3
TP	N	-0.759	0.000	Decreasing		3
Secchi	NA	0.517	0.016	Increasing		3

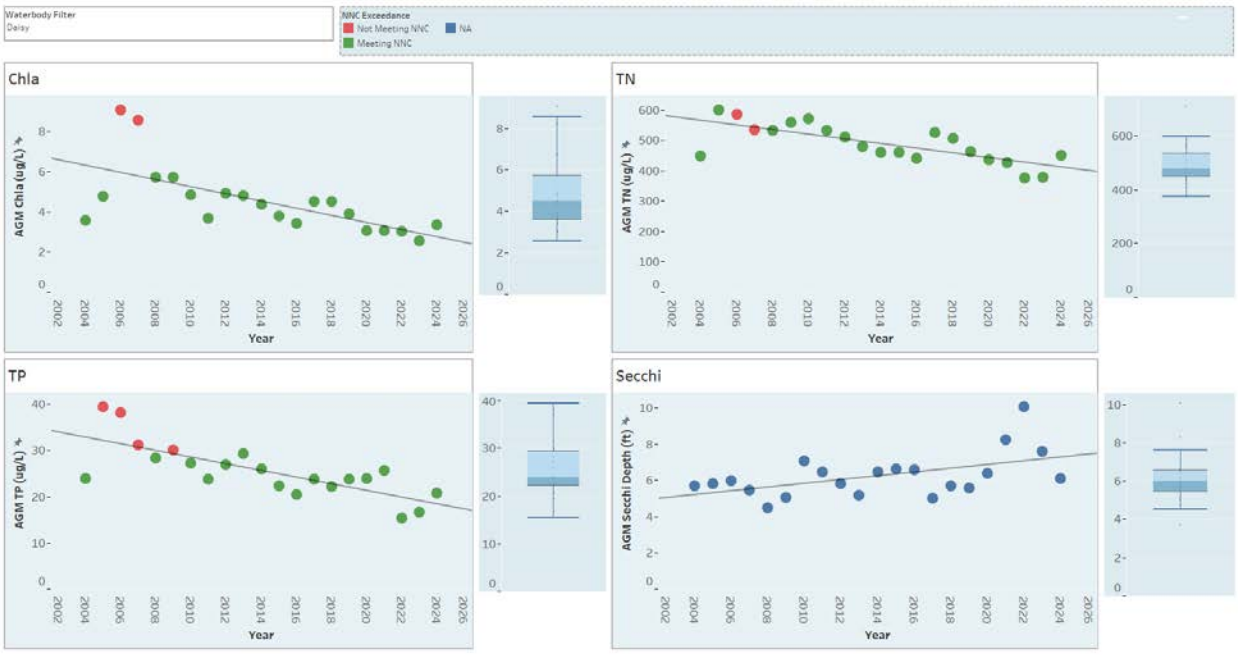


Figure 3-39. Lake Daisy AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Daisy on 9/17/2024. The PAC during this survey was 32.3% and the total BV was 4.2% (Figure 3-40). Lake Daisy has traditionally lacked submerged vegetation. In 2022 there was a significant increase in the presence of native SAV. However, the introduction of hydrilla in late 2022 required immediate treatment which ultimately reduced the overall abundance. Fortunately, 2024 saw another substantial increase in abundance; the highest on record. The result is an abundance criterion score of 3.

Invasive Species Management:

Based on data from the 2024 survey, Lake Daisy exhibited a more even mix of emergent and submerged species (Figure 3-41). Previously wholly dominanted by emergent species, Daisy saw

a considerable increase in coontail, which made up over 12% of the community. A small amount of hydrilla was detected in 2024, totaling less than 1% of the population and resulting in an invasives criterion score of 2. This substantial increase in vegetation abundance coupled with a decline in invasives demonstrates a significant improvement in biological health.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, Lake Daisy's species richness and overall diversity indices exceeded their long-term median values (Figure 3-42). Species evenness fell slightly below the median value—resulting in a diversity criterion score of 2. The evenness decrease from the previous year was very slight; well within normal fluctuations based on annual or seasonal variation. Species richness was recorded as the highest on record and overall diversity is also at one of the highest points in monitoring history for this lake. Overall, the biological community of Lake Daisy appears to be stabilizing in a state much better than when monitoring began.

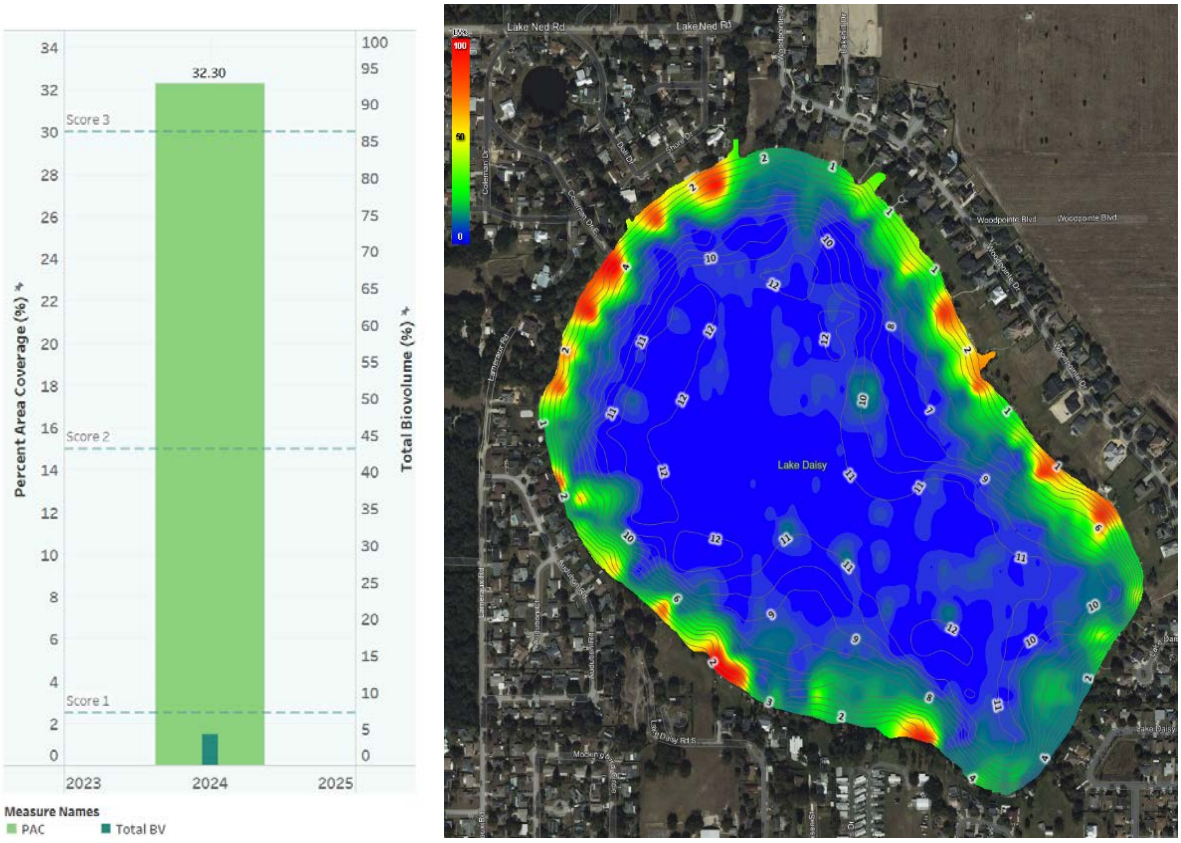


Figure 3-40. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Daisy; biovolume values range from green (lowest) to red (highest).

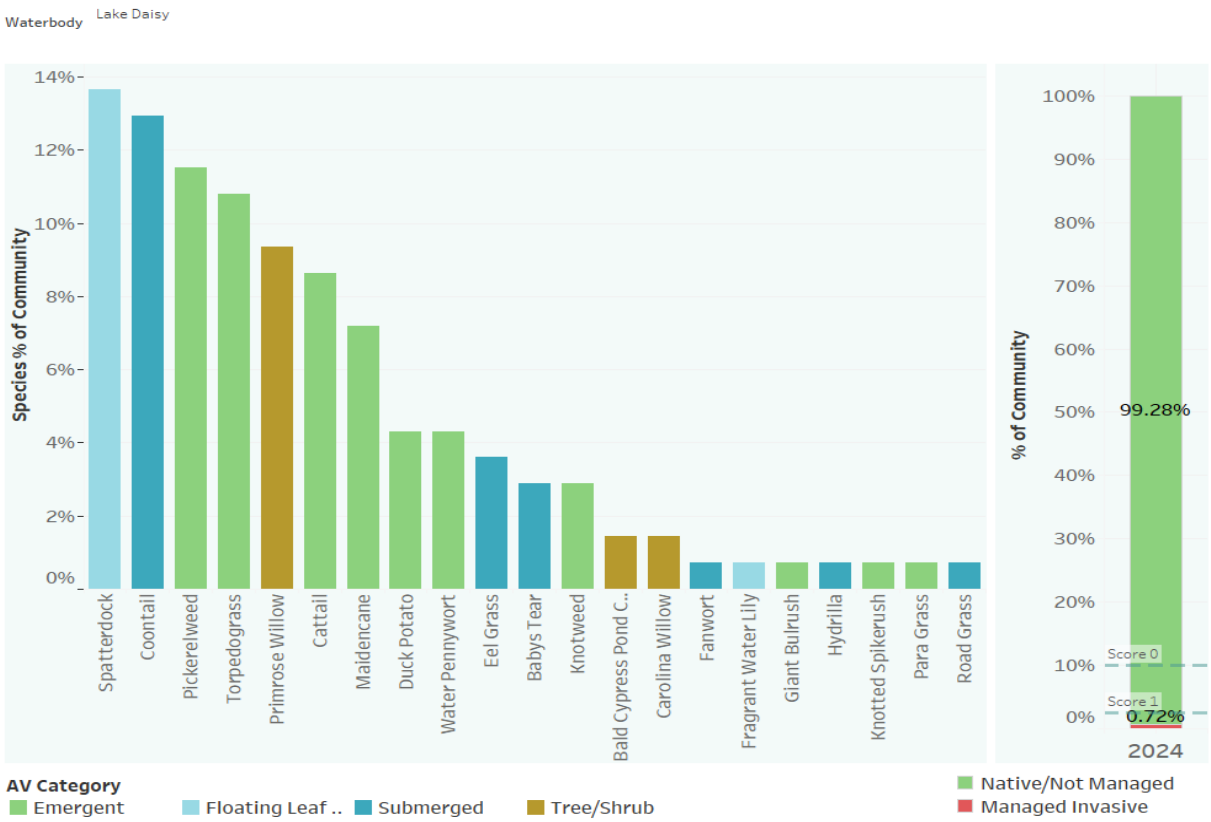


Figure 3-41. Chart depicting species frequency and invasive species percentage of Lake Daisy during 2024.

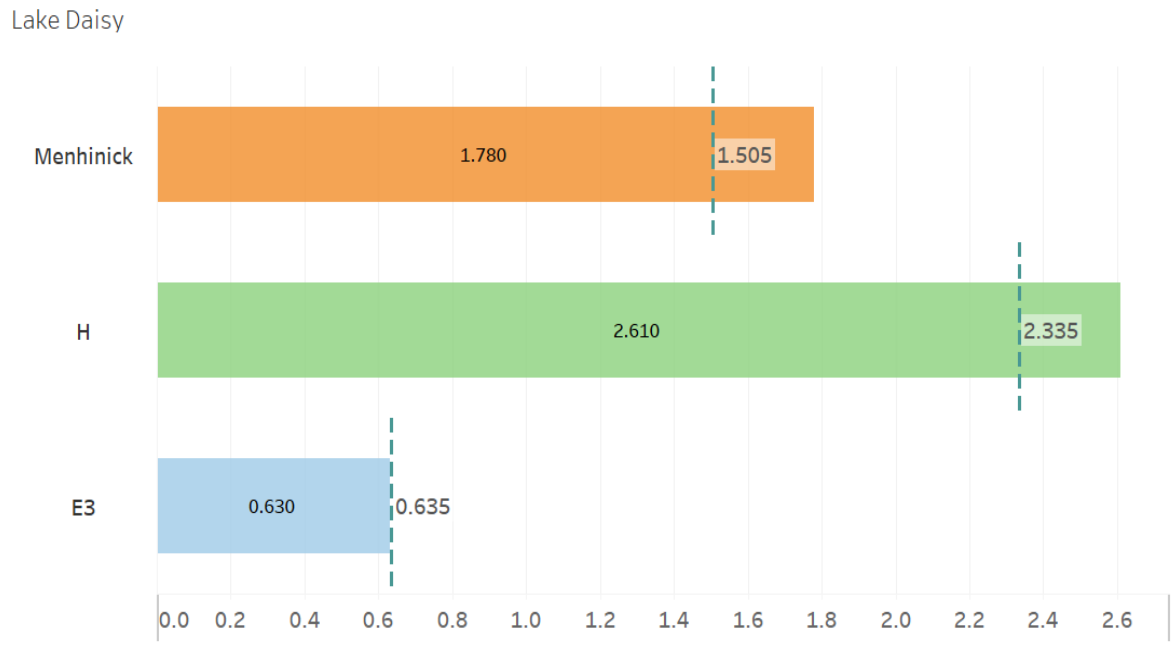


Figure 3-42. Chart depicting 2024 diversity indices for Lake Daisy. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Daisy's health index scores from 2018 to 2024 shows a substantial increase during the last three years (Figure 3-43). The majority of this increase has come from statistically significant changes in three of the four trend criteria as well as an increase in the vegetation criterion scores. The LHI in 2024 ties with 2022 as the highest on record for this lake. Invasive species management and preserving biological diversity are the only areas for improvement at this time and should be the primary focus of any future management effort.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	3	3	2	2	2	1	3	1	**2.1**
2019	3	3	2	2	2	1	3	1	**2.1**
2020	3	3	2	2	2	1	2	2	**2.1**
2021	3	3	2	2	2	2	2	2	**2.3**
2022	3	3	3	3	3	3	2	2	**2.8**
2023	3	3	3	3	3	2	1	3	**2.6**
2024	3	3	3	3	3	3	2	2	**2.8**

Figure 3-43. Chart depicting a comparison of Lake Daisy's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Lake Daisy currently exhibits acceptable water quality. Lacking stormwater infrastructure, the primary sources of pollutant loading would be from nonpoint sources like direct sheetflow from residential lots.
- While the presence of invasive species is currently low, there is potential for these plants to take over large areas of a waterbody in a single season. This requires regular monitoring to detect new infestations early before they require large-scale management.
- While the OSTD systems within the drainage basin are in low densities, these could be a potential avenue for pollutant loading via groundwater if they begin to fail. Continually monitoring water quality for nitrogen influx is recommended.

Lake Management Strategy:

- With the majority of the drainage basin comprised of residential housing, future management of stormwater will likely consist of public education and outreach. Education aims to increase residents' knowledge of best stormwater practices and ways they can collectively reduce their pollutant load.
- If water quality becomes a future issue, City staff may explore source analysis to determine if OSTD leachate is a potential contributor to nutrient pollutant loading. Further management may involve septic-to-sewer conversions.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species remains the best management strategy to prevent large-scale herbicide treatments and potential water quality issues that follow.

Lake Deer

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Deer	3	3	3	3	3	3	1	1	2.5

Features & Statistics:

Surface area	119 acres
Mean depth	7.3 feet
Maximum depth	17.5 feet
Volume	877.8 acre-feet
Drainage basin area	377 acres
Annual TN Load	1451.1 lbs
Annual TP Load	261.2 lbs
Limiting nutrient	Co-limited (N & P)

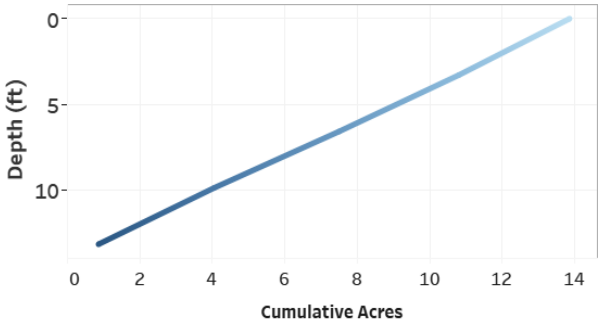


Figure 3-44. Hypsograph of Lake Deer depicting the depth profile and morphology of the lake bed.

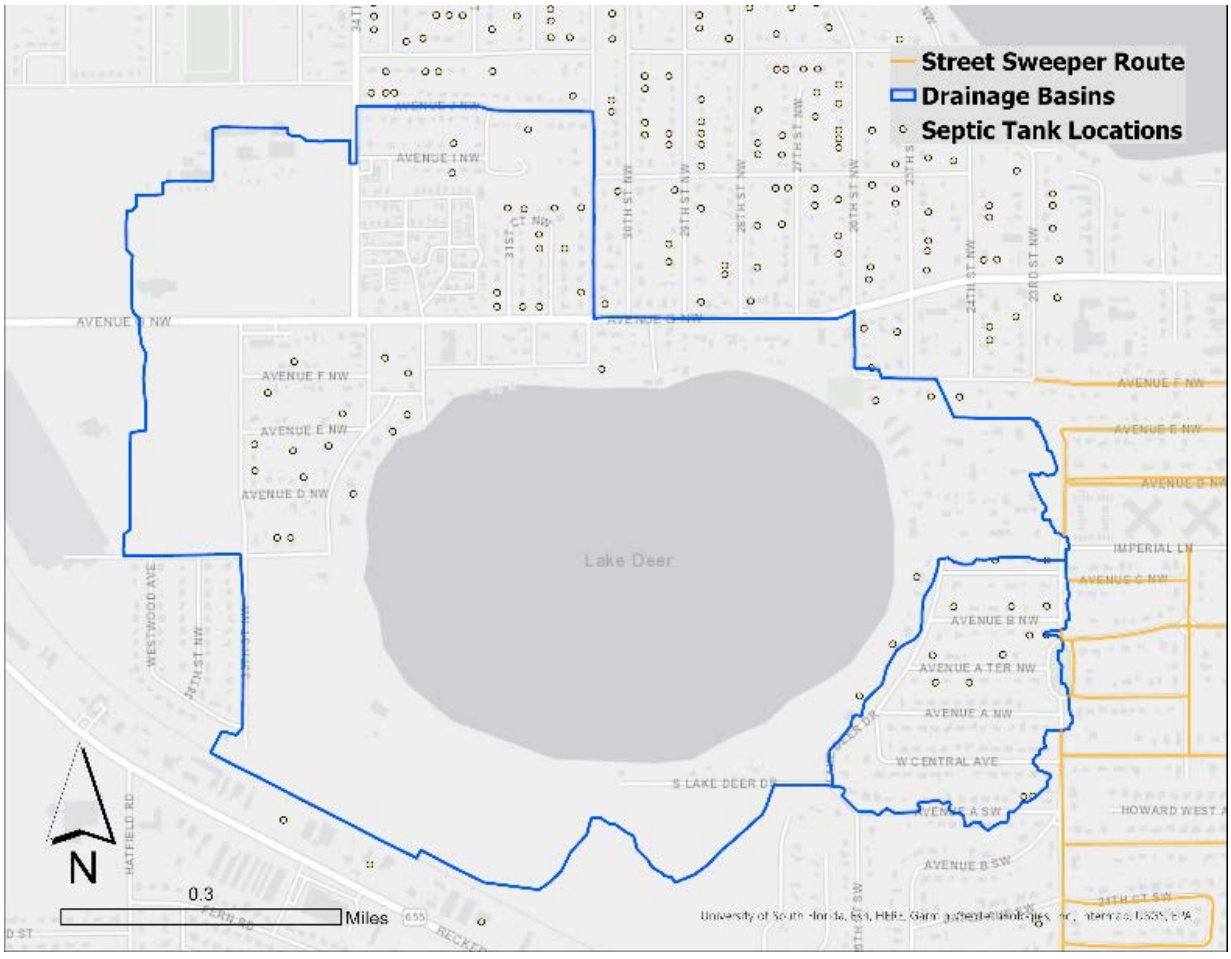


Figure 3-45. Map of Lake Deer's drainage basin, City street sweeper routes, and nearby septic systems.

Hydrology:

Lake Deer is a smaller waterbody at 119 acres, with an average depth of 7.3 feet, and a maximum depth of 17.5 feet (Figure 3-44). Despite it having a shallower average depth than the regional mean, Lake Deer possesses some very deep areas. As a result of its morphology, it has a fairly wide littoral zone which supports a very robust area of submerged aquatic vegetation. Lake Deer receives stormwater runoff from a drainage basin nearly three times the size of the waterbody (Figure 3-45). The primary land use within this basin is residential which contributes almost 1,500 lbs of nitrogen and 260 lbs of phosphorus to the lake annually. By area, these pollutant loads rank 9th highest out of the 37 lakes in the study area. There are 41 septic systems located within this basin—a relatively low density. However, factoring in other septic systems in close proximity to the basin reveals a higher density of OSTDs that could impact water quality. The areas of the drainage basin within City limits possess few public roadways. As a result, the City provides no street sweeping services within the basin.

Lake Deer's surface level sits fourth highest within the Winter Haven watershed. Over its period of record, Lake Deer's surface level has fluctuated between 136.9 and 141.9 feet above sea level. That said, Deer's surface level has not exceeded 140.1 feet since before the year 2000 (Figure 3-46). The normal range fluctuates between 136.9 and 139.6 feet. However, since around 2008, Deer's level has remained at the low end of this range. This is likely the result of an alteration to the lake's water control structure driving a shift in the overall hydrological regime. In 2024, Deer reached a dry season low of 137.3 ft in June and a wet season peak of 138.8 ft in September. Changes in Lake Deer's surface level are not correlated with any of the primary water quality metrics (see appendix).

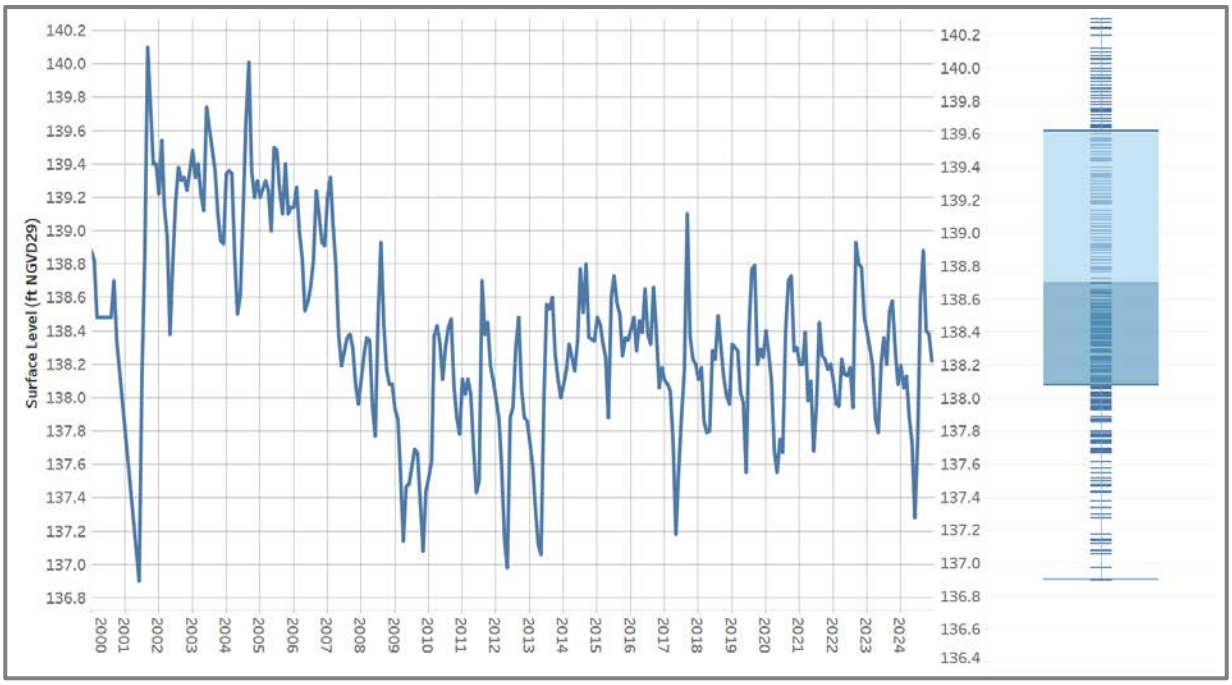


Figure 3-46. Hydrograph of Lake Deer depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface levels during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Deer is categorized as a clear, alkaline waterbody. Lake Deer has not exhibited exceedances of NNC

thresholds since 2013 (Figure 3-47). Since there have been no exceedances in the 7.5 year assessment period, Lake Deer is currently considered not impaired—earning an impairment criterion score of 3. Due to its previous impairments, the FDEP established a TMDL for Lake Deer in 2015 stipulating a 12% reduction in TN in order to meet the NNC guidelines. Lake Deer is currently meeting these guidelines.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	-0.608	0.003	Decreasing	3	3
TN	N	-0.480	0.028	Decreasing		3
TP	N	-0.588	0.005	Decreasing		3
Secchi	NA	0.546	0.010	Increasing		3

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. All four of the primary water quality metrics exhibited significant improving trends during this period. Despite the overall improvement in water quality, Lake Deer is still on FDEP's study list and will be for quite some time to ensure that water quality continues to be maintained below impairment thresholds.

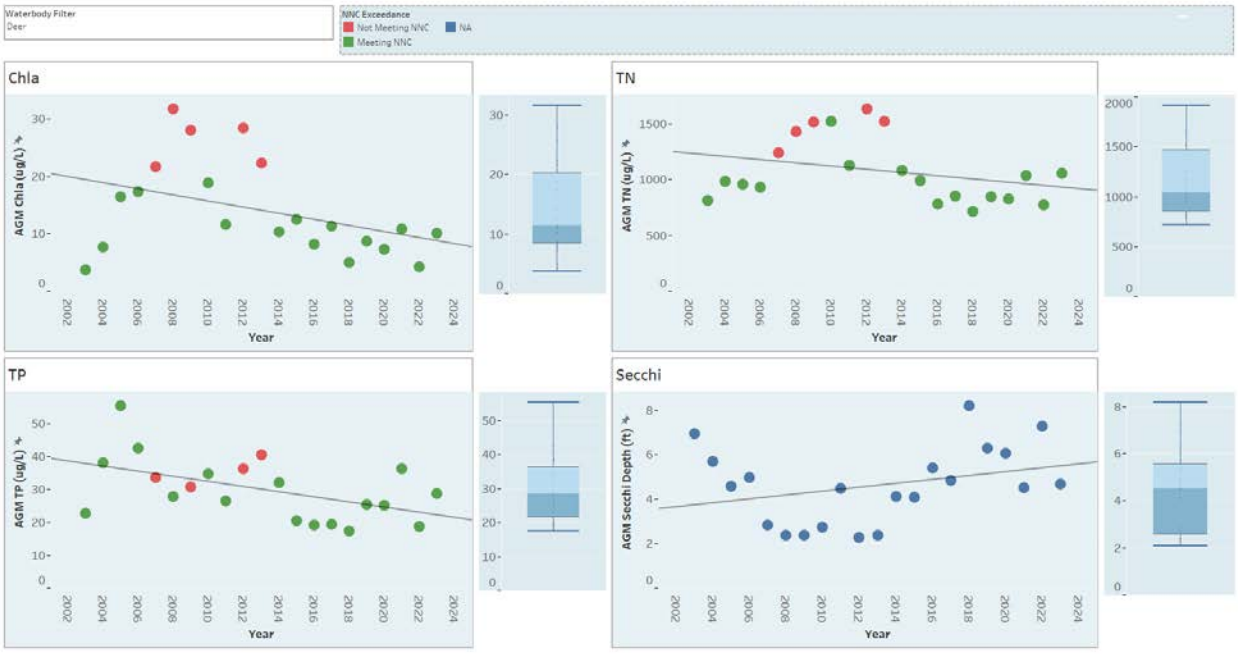


Figure 3-47. Lake Deer AGM Chl-a, TN, TP, and Secchi depth values from 2003 to 2023. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Deer on 2/2/2024. The PAC during this survey was 90.6% and the total BV was 26% (Figure 3-48). Lake Deer has historically maintained very high abundances of aquatic vegetation due to its shallow morphology and wide littoral zone. The water quality improvements observed are likely due, in part, to the nutrient sequestration capacity of this vegetation. The amount of vegetation coverage observed in 2024 was the second highest on record and equates to a vegetation abundance score of 3.

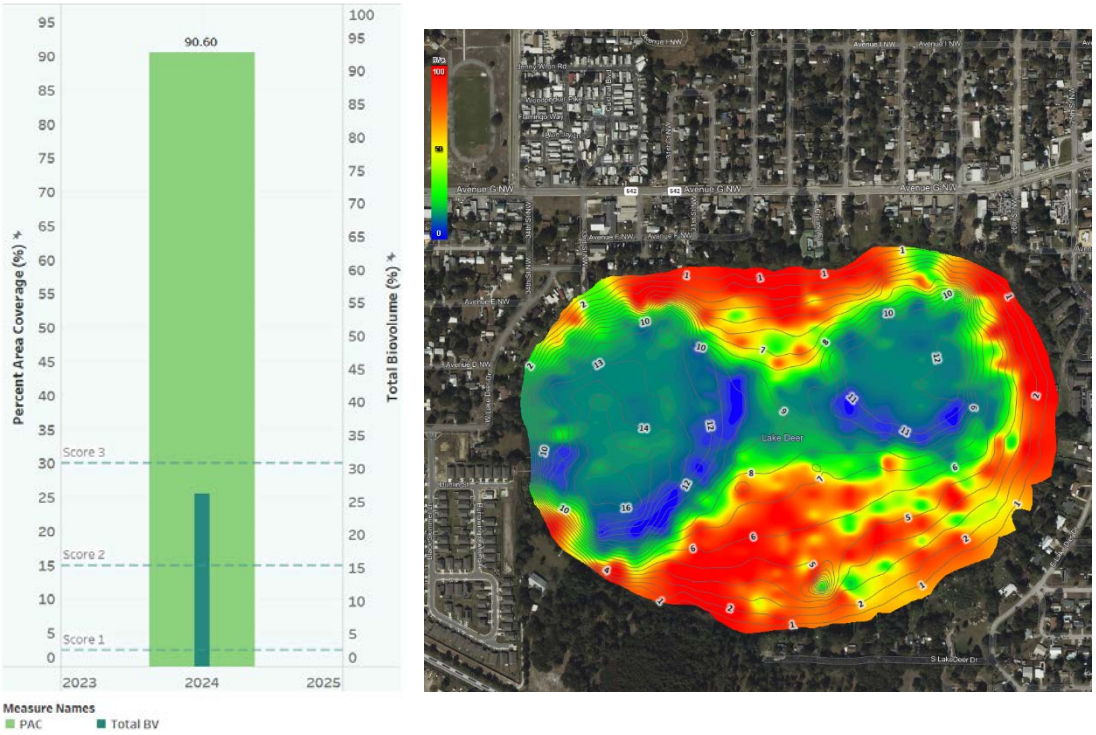


Figure 3-48. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Deer; biovolume values range from green (lowest) to red (highest).

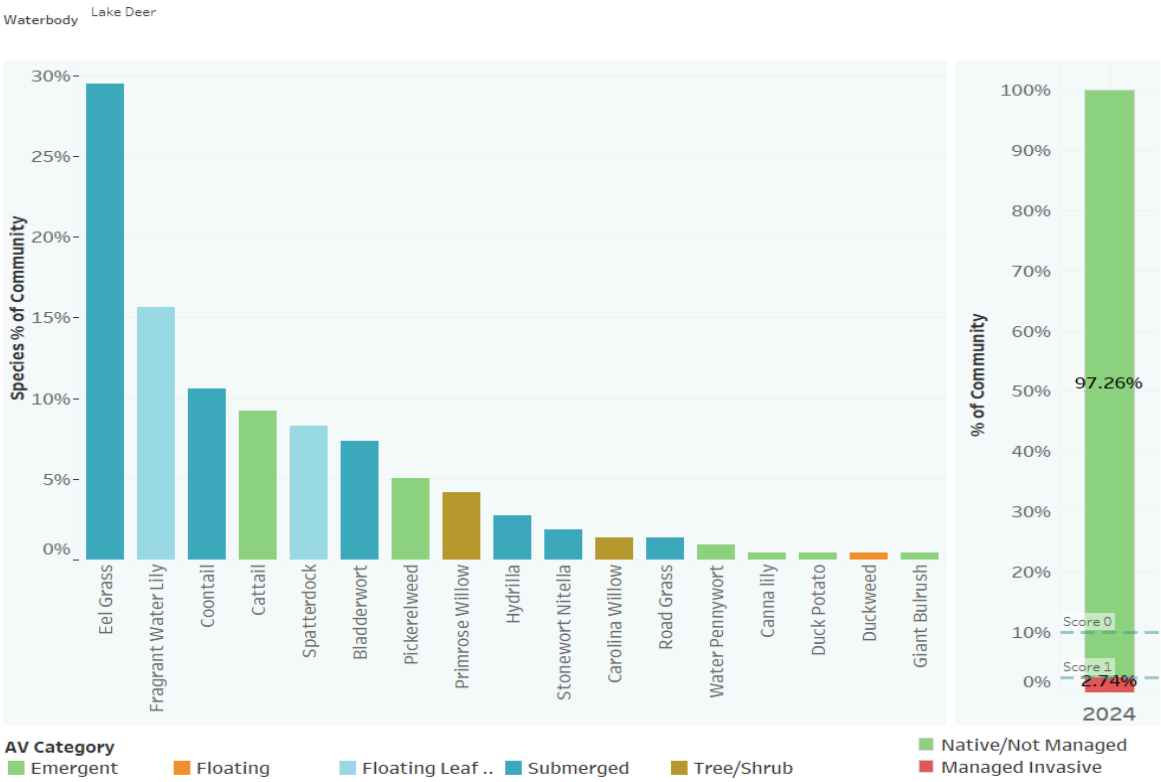


Figure 3-49. Chart depicting species frequency and invasive species percentage of Lake Deer during 2024.

Invasive Species Management:

Based on data from the 2024 survey, submerged plants make up a large percentage of the total vegetation community at over 50% (Figure 3-49). The native eel grass was the dominant species during this survey at nearly 30% of the community. Unlike previous years, Lake Blue exhibited a much lower proportion of invasive species. Hydrilla was the only invasive present and in only small numbers—at just 2.75%. This earns Lake Deer an invasive abundance score of 1 and demonstrates how invasive management practices have been effective in recent years.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, only the species richness index met or exceeded its long-term media value (Figure 3-50). Unfortunately, the decrease in invasive presence lowered both the species evenness and overall diversity metrics. This earns Lake Deer a score of 1 in the diversity criterion. A decrease in the species diversity values is a worthy tradeoff for control of invasive species, however. Continued management employing early detection and rapid treatment should allow natives to fill the niches vacated by the invasive plants.

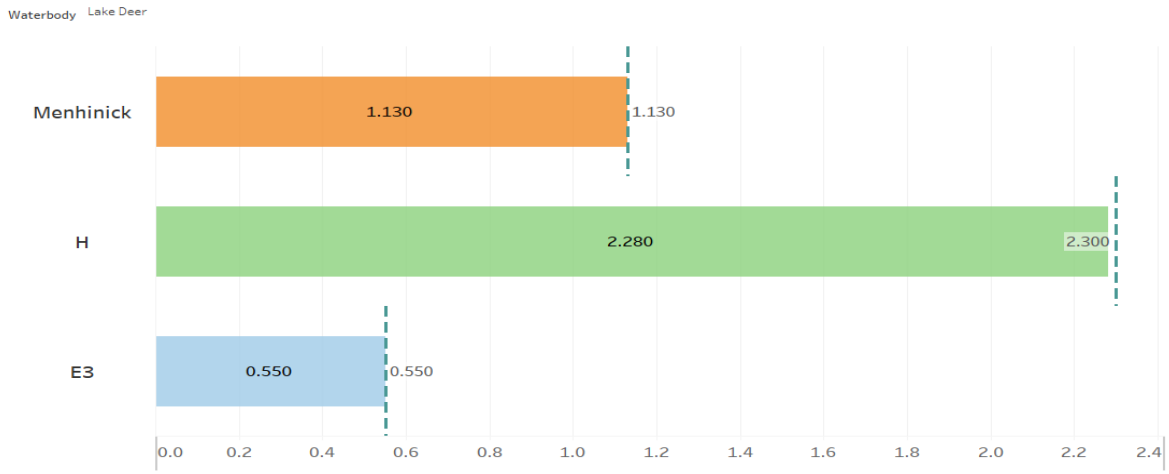


Figure 3-50. Chart depicting 2024 diversity indices for Lake Deer. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Deer's health index scores from 2018 to 2024 shows a substantial increase since 2021. Most of this improvement has been due to meeting impairment thresholds along with generally stable long-term water quality trends (Figure 3-51). Vegetation abundance remains high, but the main issue plaguing Lake Deer now is management of invasive species.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	2	2	2	2	3	1	2	**1.8**
2019	0	2	2	2	2	3	0	2	**1.6**
2020	0	2	2	2	2	3	0	2	**1.6**
2021	0	2	3	2	2	3	0	0	**1.5**
2022	3	2	3	2	3	3	0	1	**2.1**
2023	3	2	2	3	2	3	0	2	**2.1**
2024	3	3	3	3	3	3	1	1	**2.5**

Figure 3-51. Chart depicting a comparison of Lake Deer's Lake Health Index scores from 2018 to 2023.

Lake Health Impacts/Challenges:

- While Lake Deer's water quality is improving, managing the stormwater pollutant loads from its drainage basin is still a priority.
- The presence of OSTDs (septic) systems in the drainage basin may be a potential source of pollutants. As these systems age, they may begin to leach nutrients into the water table—leading to water quality issues.
- The management of invasive species is especially important for Lake Deer. Hydrilla has been a constant issue since monitoring began since it can quickly undo management efforts in a single season.

Lake Management Strategy:

- While the City has little stormwater infrastructure contributing to Lake Deer, efforts can still be made to improve these pollutant loads through implementation of green infrastructure where possible.
- City staff may explore source analysis of septic systems in the vicinity of Lake Deer to determine if they are contributing pollutant loads via groundwater. Further management may involve septic-to-sewer conversions.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large-scale herbicide treatments and potential water quality issues that follow.

Lake Elbert

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Elbert	3	0	0	1	0	2	3	1	**1.3**

Features & Statistics:

Surface area	177 acres
Mean depth	14 feet
Maximum depth	26 feet
Volume	2325.9 acre-feet
Drainage basin area	605 acres
Annual TN Load	2365.8 lbs
Annual TP Load	385.1 lbs
Limiting nutrient	Co-limited (N & P)

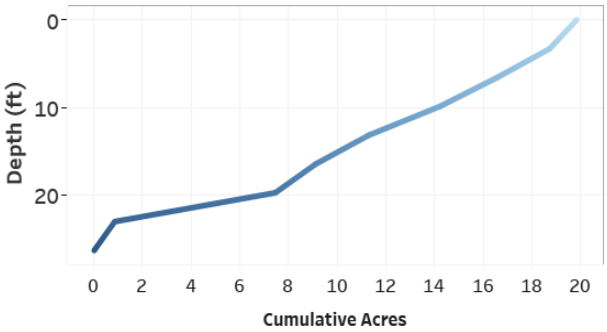


Figure 3-52. Hypsograph of Lake Elbert depicting the depth profile and morphology of the lake bed.

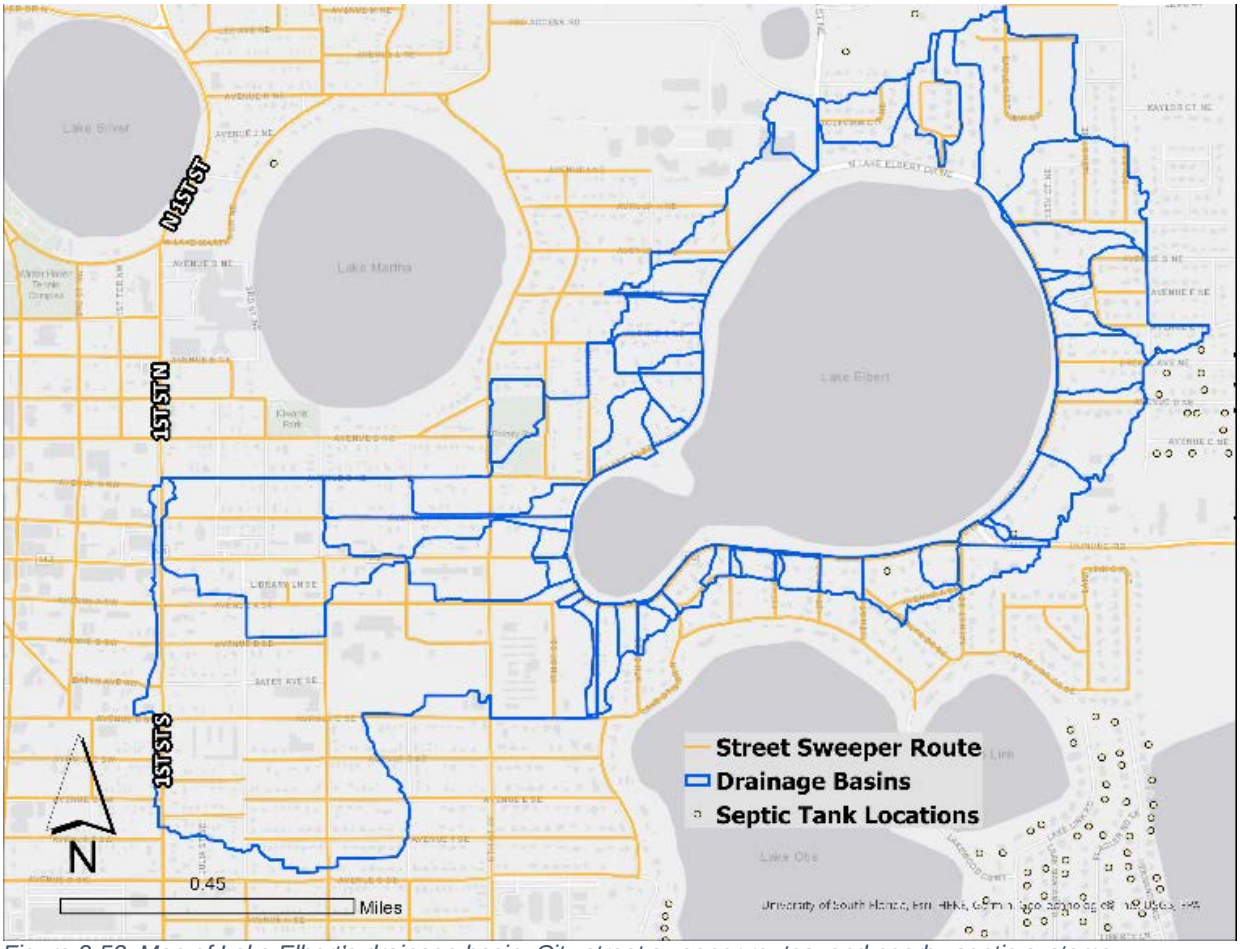


Figure 3-53. Map of Lake Elbert's drainage basin, City street sweeper routes, and nearby septic systems.

Hydrology:

Lake Elbert is a moderate sized waterbody with a surface area of nearly 200 acres. Elbert is deeper than most lakes in the area with an average depth of 14 feet; the regional mean depth is only 8.5 feet (Figure 3-52). Despite its more bowl-shaped morphology, Lake Elbert possesses a wide littoral zone that is capable of supporting a dense submerged aquatic plant community. Stormwater is conveyed to this waterbody from a 439 acre urbanized drainage basin made up of 50 individual sub-basins (Figure 3-53). By far the largest proportion of land use in this basin is comprised of medium-density residential which contributes up to 2,365 lbs of TN and 385 lbs of TP to the lake annually. Compared with the other lakes in the region, the TN and TP loads per acre rank 12th and 15th, respectively. There are very few known Onsite Sewage Treatment and Disposal (OSTD/septic) systems within the vicinity of Lake Elbert. Completely within City limits, Winter Haven conducts monthly street sweeping services of up to 33.5 miles within this basin.

Over its period of record, Lake Elbert's surface level has fluctuated between 128.8 and 137.6 feet above sea level (Figure 3-54). A water level pump station is only activated during extremely high levels—such as after Hurricane Ian in 2022. As a result, Lake Elbert's level is able to fluctuate more or less naturally. The normal level range is much narrower—between 131.9 and 134.7 feet. During 2024, Elbert's level declined to a June low of 133.1 feet, but reached a wet-season high of 134.7 feet in November. These level fluctuations were within the lake's normal range. Based on 2019 regression analyses, changes in Lake Elbert's level are significantly correlated with Chl-a, TN, TP, and clarity such that an increase in surface level should result in water quality improvements.

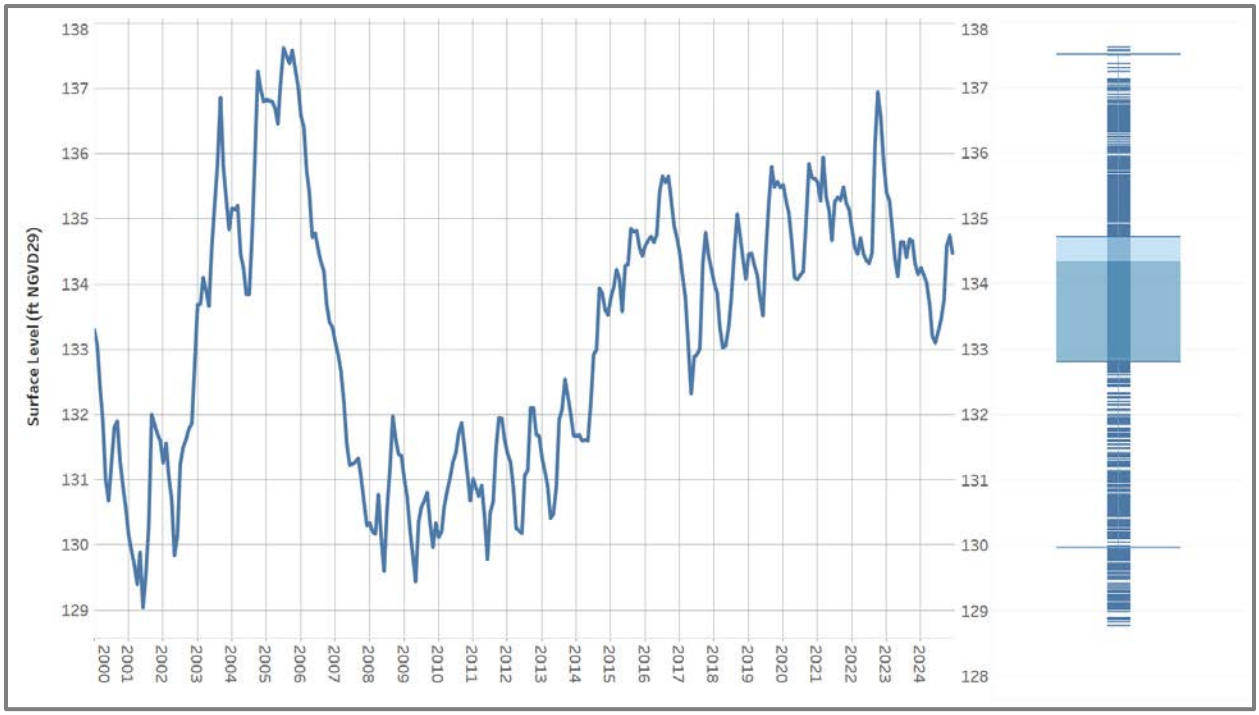


Figure 3-54. Hydrograph of Lake Elbert depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Elbert is categorized as a clear, alkaline waterbody. Since 2000, Lake Elbert has not exhibited any

exceedances of NNC thresholds (Figure 3-54). By virtue of this, Lake Elbert is not considered impaired by any of the primary water quality metrics—earning an impairment criterion score of 3.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	0.767	0.000	Increasing	3	0
TN	N	0.703	0.000	Increasing		0
TP	N	0.024	0.919	No Trend		1
Secchi	NA	-0.722	0.000	Decreasing		0

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Chl-a, TN, and Secchi depth exhibit significant declining trends—earning scores of 0 for their respective trend criteria. That said, TP exhibits a non-significant increasing trend that has been recently shifting toward a decreasing direction in recent years. These statistics earn TP a trend score of 1.

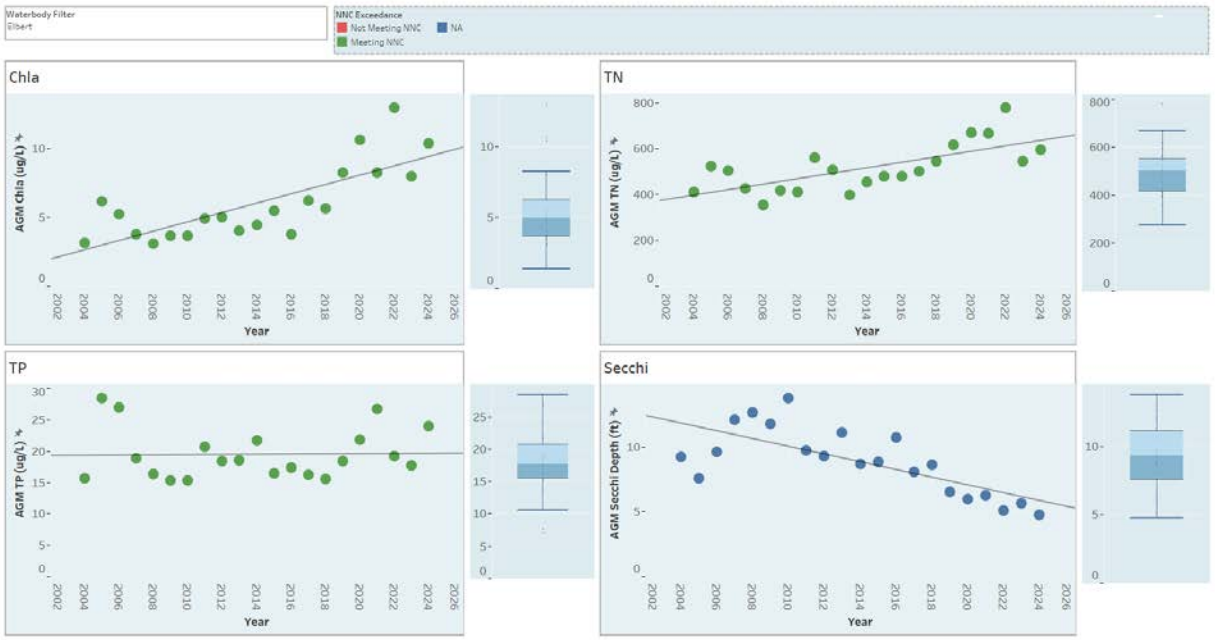


Figure 3-55. Lake Elbert AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Elbert on 7/19/2024. The PAC during this survey was 18.2% and the total BV was 1.3%; slightly lower than the previous year (Figure 3-56). A comparison of abundance from previous years shows a continuous decline in the amount of submerged vegetation present in the lake. This is likely due to the continued management of hydrilla, but it may also be an indication of the water clarity decline having an impact on the vegetation community. As a result of the below thirty percent PAC value, Elbert receives an abundance criterion score of 2.

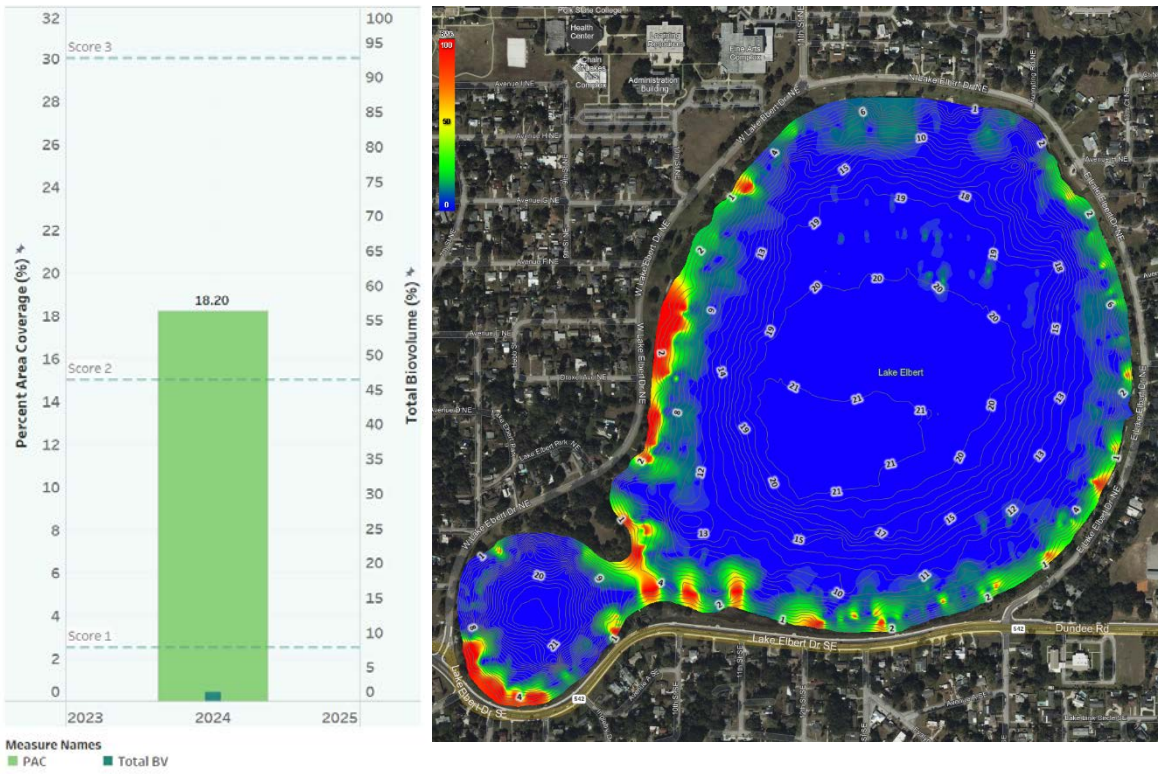


Figure 3-57. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Elbert; biovolume values range from green (lowest) to red (highest).

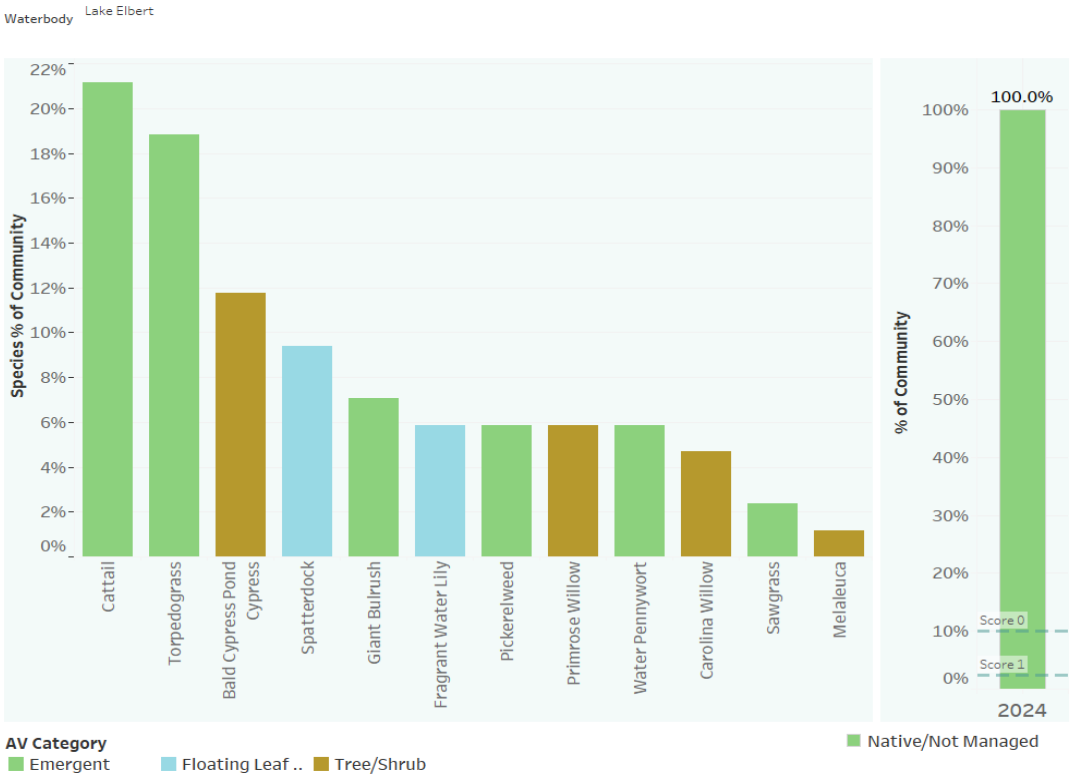


Figure 3-56.Chart depicting species frequency and invasive species percentage of Lake Elbert during 2024.

Invasive Species Management:

Based on 2024 data, emergent species were the only plants present during the survey (Figure 3-57). This is surprising since Lake Elbert has historically been a submerged plant-dominated lake. Lake Elbert has historically had issues managing invasives and the dominance often shifts between hydrilla and eelgrass on an annual basis. There is a positive aspect to the absence of SAV in 2024—there were no invasive species detected, leading to an invasive presence score of 3. Again, the loss of submerged plants may be the result of continued invasive plant management efforts coupled with a sharp decline in water clarity in recent years.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, only the evenness index exceeded its long-term median value—resulting in a diversity score of 1 (Figure 3-58). It comes as little surprise that the species richness and overall diversity index values fell below the average due to the loss of submerged plants (native and invasive alike). Future management efforts should seek to restore native submerged plants in order to better balance the ecological community.

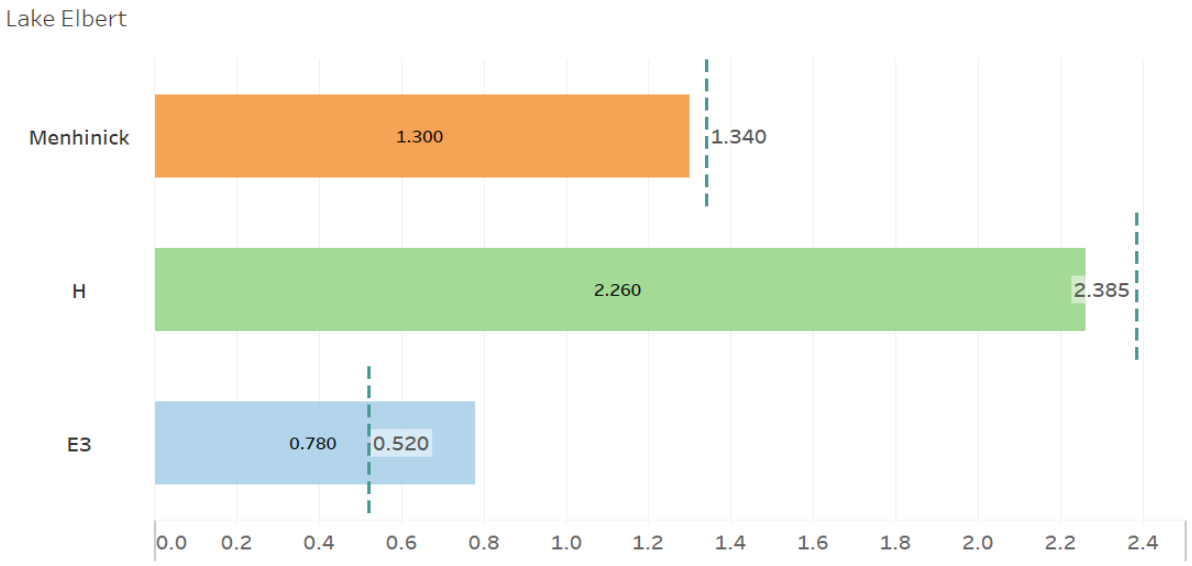


Figure 3-58. Chart depicting 2024 diversity indices for Lake Elbert. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Elbert's health index scores from 2018 to 2024 shows consistently low values, below 1.5 (Figure 3-59). The trend scores have been the primary contributor to the low lake health scores. However, the abundance of invasive species has been a consistent issue as well. The lake health score of 2023 marks the best Lake Elbert has been on record—mostly due to the improvements in the biological criteria. In 2024, invasive presence score improved, but this came with a drop in vegetation abundance and diversity scores which resulted in a slightly lower LHI score during this year.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	3	0	1	1	1	3	1	0	**1.3**
2019	3	0	0	1	1	3	0	2	**1.3**
2020	3	0	0	1	0	3	0	1	**1.0**
2021	3	0	0	0	0	3	0	3	**1.1**
2022	3	0	0	0	0	3	0	2	**1.0**
2023	3	0	0	1	0	2	2	3	**1.4**
2024	3	0	0	1	0	2	3	1	**1.3**

Figure 3-59. Chart depicting a comparison of Lake Elbert's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- The prevalence of older residential neighborhoods within Lake Elbert's drainage basin means that stormwater pollutant loading goes largely unmitigated. Managing this stormwater is a high priority.
- The management of invasive species like hydrilla is a constant concern. Recent efforts to reduce invasive presence have only been able to slow the spread. Large-scale herbicide applications are not advised due to the fragility of Lake Elbert's water quality.
- Lake Elbert's water quality metrics are significantly correlated with its surface level. This means that drought conditions could result in further declines in water quality.

Lake Management Strategy:

- In addition to conducting street sweeping (annual removal of 378 lbs of TN and 205 lbs of TP), the City has plans to address stormwater pollutant loading through construction of green infrastructure (swales and raingardens) as part of a planned trail improvement project. These structural management practices are estimated to remove an additional 125 lbs of TN and 19 lbs of TP annually.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Additionally, staff will advocate for alternative invasive management strategies to limit large-scale herbicide use to reduce further water quality declines.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.
- With the majority of land use in the drainage basin being residential, public education should be prioritized to increase residents' knowledge of best stormwater practices and ways they can collectively reduce their pollutant load.
- The loss in submerged vegetation may require supplemental planting efforts to restore the SAV habitat. City staff will explore potential funding avenues through FWC.

Lake Eloise

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Eloise	0	3	2	3	2	2	2	1	**1.9**

Features & Statistics:

Surface area	1185 acres
Mean depth	13 feet
Maximum depth	20 feet
Volume	15,544 acre-feet
Drainage basin area	1981.4 acres
Annual TN Load	3875.2 lbs
Annual TP Load	665.4 lbs
Limiting nutrient	Phosphorus

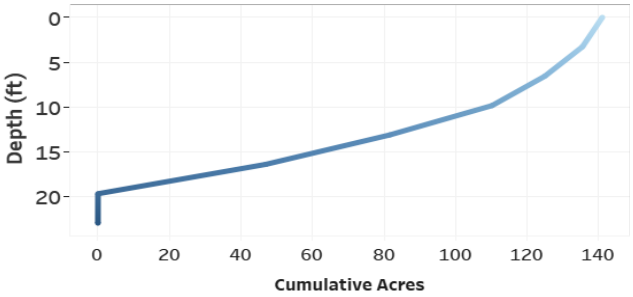


Figure 3-60. Hypsograph of Lake Eloise depicting the depth profile and morphology of the lake bed.

Hydrology:

At over 1,100 acres, Lake Eloise is the largest waterbody on Winter Haven's Chain of Lakes. Its mean depth is somewhat deeper than the regional average of 8.4 feet; and it has deeper areas around 20 feet (Figure 3-60). Due to its large size and relatively small littoral zone, wind and wave action is likely to contribute to increased sediment suspension in this lake.

Stormwater is conveyed to this waterbody from a 1,981 acre drainage basin—of which the lake makes up the majority (Figure 3-61). The terrestrial areas of the basin are comprised mostly of residential land uses, with some agricultural in small quantities. These land uses contribute up to 3,875 lbs of TN and 665 lbs of TP to the lake annually. There are 186 septic systems within this basin—mostly congregated in the north and



Figure 3-61. Map of Lake Eloise's drainage basin and nearby septic systems.

south areas of the basin. There exist few City-owned roadways with stormwater infrastructure that drain to the lake. As a result, the City does not conduct street sweeping services in this basin.

Lake Eloise is part of the South Chain of Lakes with navigable connections to Lakes Lulu, Summit, and Winterset. Due to these canal connections, surface levels fluctuate consistently across the South Chain of Lakes. Throughout the period of record, the South Chain's surface level has fluctuated between 127.5 and 133.7 feet above sea level. The normal range is much narrower—between 129.7 and 131.4 feet (Figure 3-62). That said, wetter and drier periods often result in more extreme peaks and troughs, respectively. During 2024, the South Chain reached a dry season low of 130.8 ft in June and a wet season peak of 131.8 ft in September. The level of the South Chain by the end of the year was slightly above the top of the normal range at 131.5 ft. The South Chain's level remained at or above the high end of the normal range throughout most of the year—consistent with annual level fluctuations over the last 10 years. According to linear regression analysis, changes in Lake Eloise's surface level do not correlate with water quality.

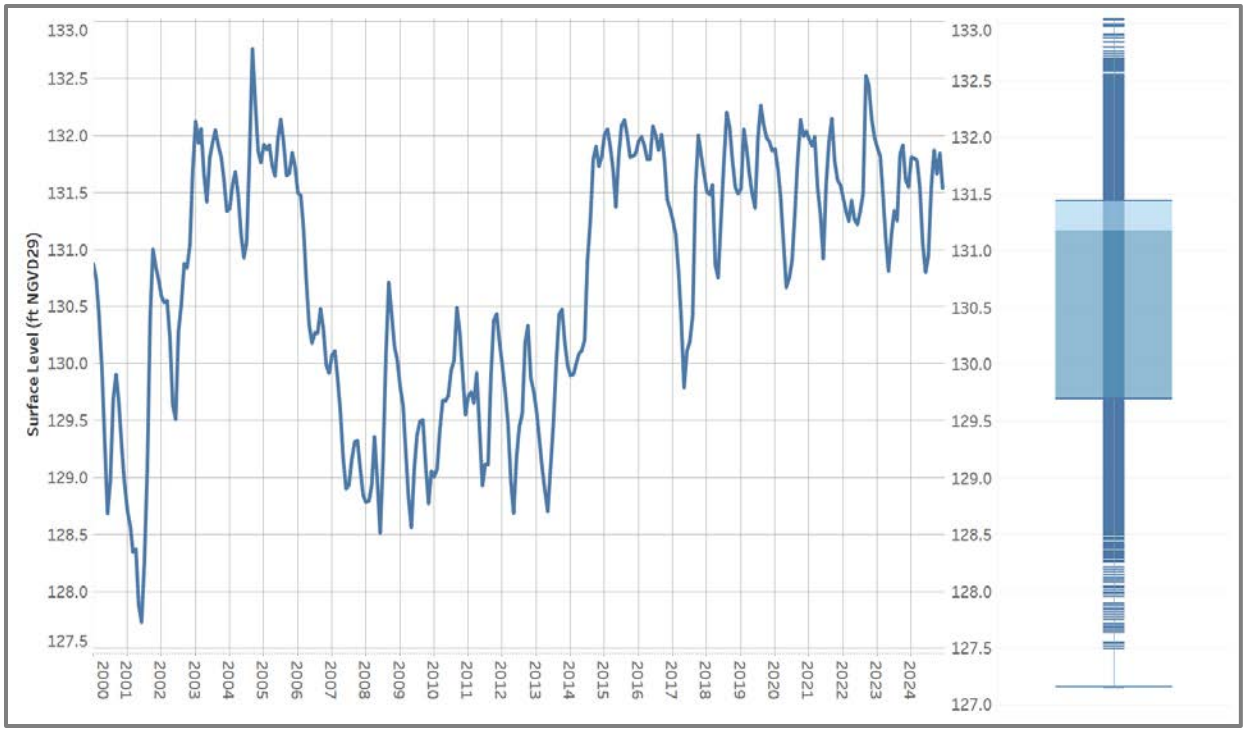


Figure 3-62. Hydrograph of the South Chain of Lakes depicting monthly surface level readings from 2000 to 2024. A box & whisker plot details the total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Eloise is categorized as a clear, alkaline waterbody. Based on NNC exceedances most years during the assessment period, Lake Eloise is considered impaired for Chl-a, TN, and TP—earning it an impairment criterion score of 0 (Figure 3-63). In 2019, the FDEP established a total maximum daily load (TMDL) for Lake Eloise stipulating a 39% reduction in TN in order to meet NNC guidelines.

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Based on the trend data, Chl-a and TP exhibited significant improving trends. Total nitrogen and Secchi depth exhibit non-significant improving

trends. The downgrade from significant to non-significant Secchi depth trend in 2024 marks a slight shift in the clarity trend and is something to monitor further for any future changes in water quality.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	-0.470	0.031	Decreasing	0	3
TN	Y	-0.287	0.208	No Trend		2
TP	Y	-0.513	0.017	Decreasing		3
Secchi	NA	0.339	0.132	No Trend		2

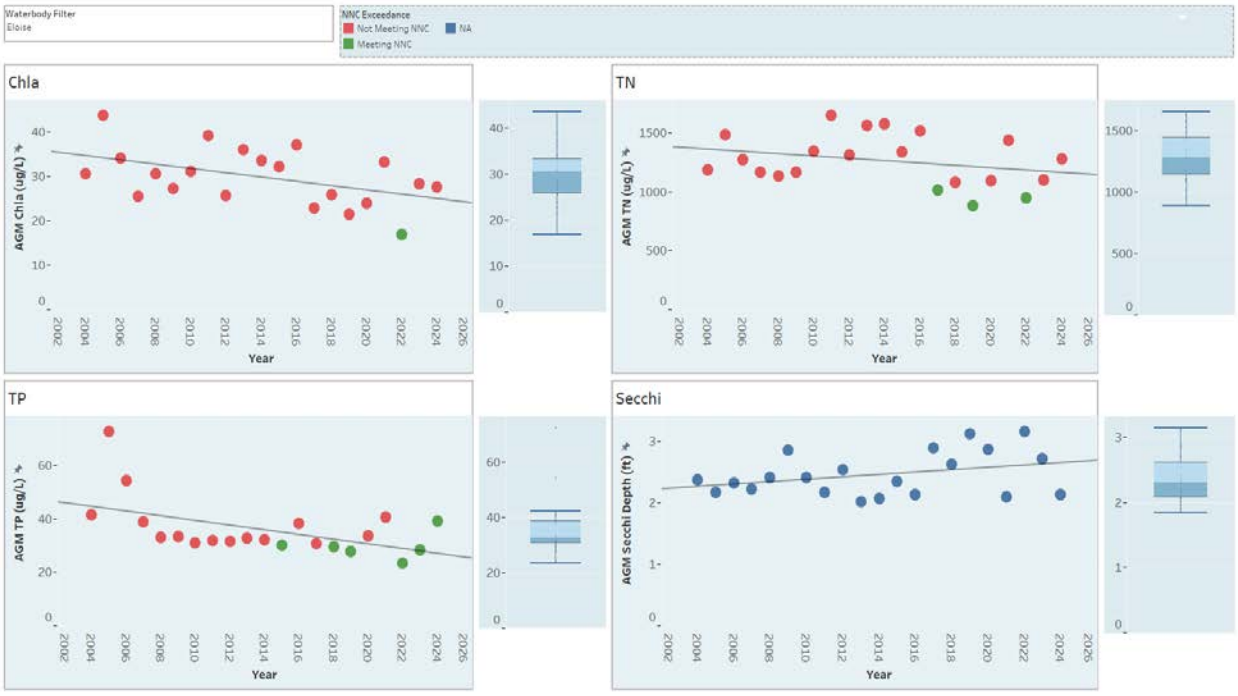


Figure 3-63. Lake Eloise AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative abundance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Eloise on 11/25/2024. The PAC during this survey was 18.2% and the total BV was 2.6% (Figure 3-64). A comparison of abundance metrics from previous years shows a surge in coverage to 36% in 2020 and then a general fluctuation within the 15%-20% range. The coverage in 2024 was slightly greater than that in 2023.

Invasive Species Management:

Based on 2024 species data, the native eelgrass was the most dominant species at 20% of the community (Figure 3-65). The remaining plants were comprised of a good mix of submerged and emergent species. The only managed invasive species was hydrilla at less than 1%--earning Lake Eloise an invasive presence score of 2. Hydrilla has historically been a very minor issue and is considered controlled in Lake Eloise.

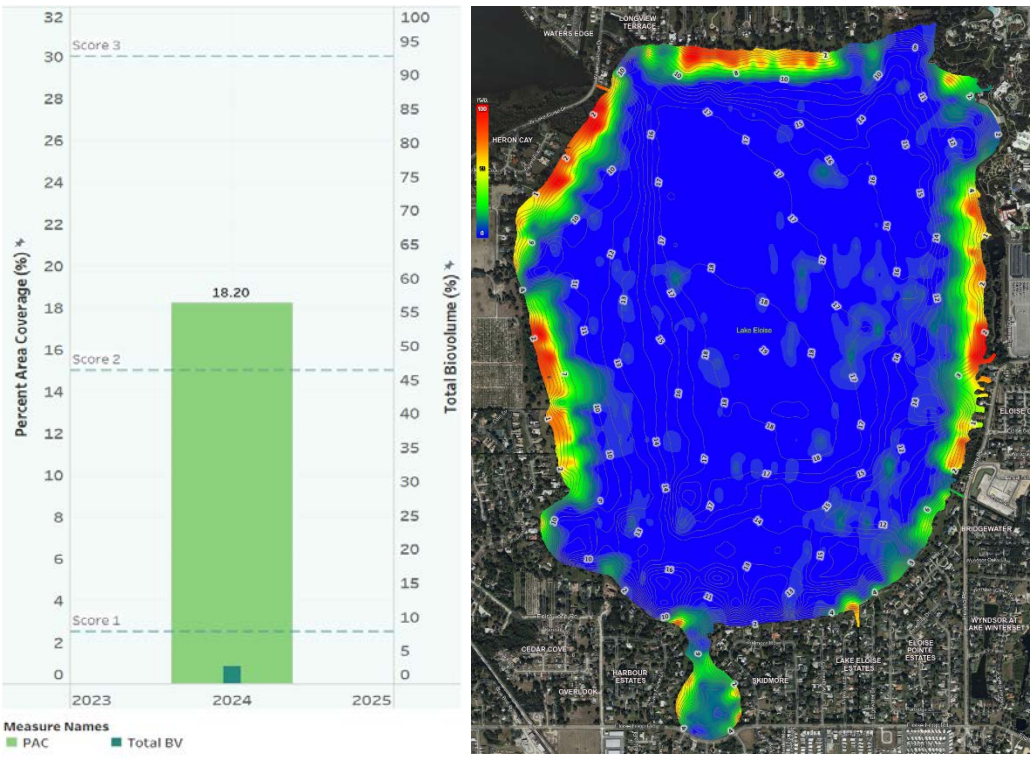


Figure 3-64. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Eloise; biovolume values range from green (lowest) to red (highest).

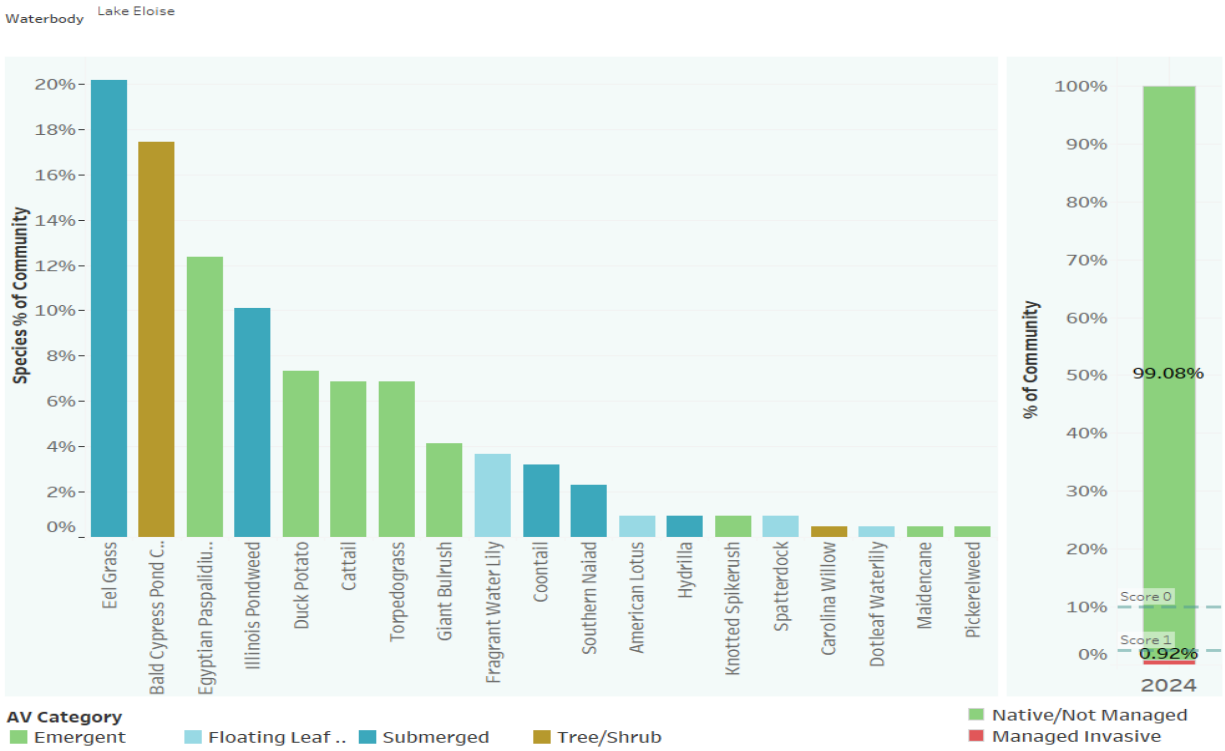


Figure 3-65. Chart depicting species frequency and invasive species percentage of Lake Eloise during 2024.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, richness was the only index that met or exceeded its median value—earning Lake Eloise a diversity criterion score of 1 (Figure 3-66). This is the second straight year that species evenness and overall diversity were below the lake's median. However, these changes are likely natural fluctuations in community dynamics. It should be noted that Lake Eloise's species diversity is not greatly impacted by active management efforts due to a lack of invasive species presence. The vegetation community in this lake largely self-regulates.

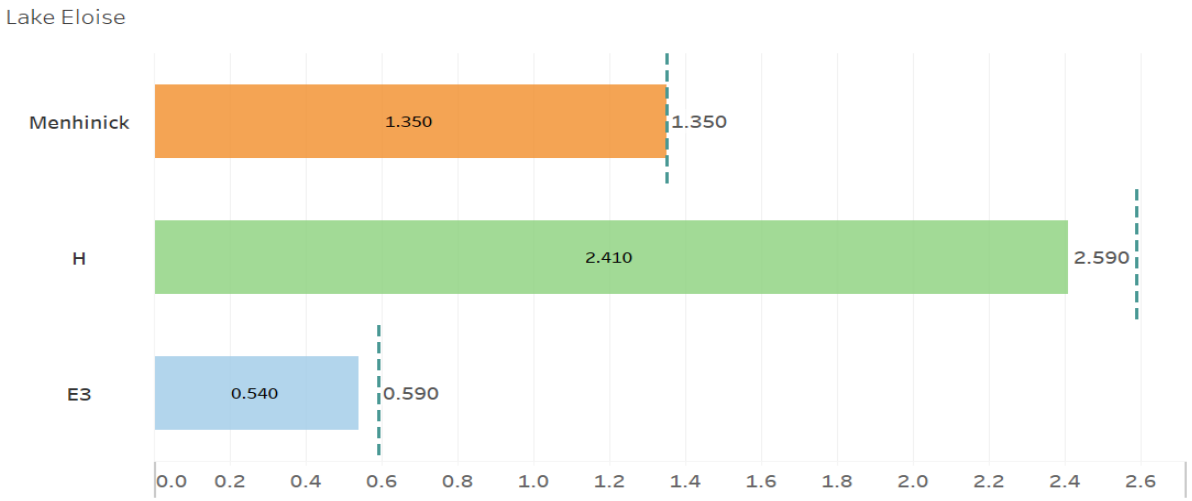


Figure 3-66. Chart depicting 2024 diversity indices for Lake Eloise. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Eloise's health index scores from 2018 to 2024 shows relative consistency (Figure 2-67). Since the City began documenting lake health, most of the changes to Lake Eloise's scores have come from the biological criteria. As stated previously, invasive species have not been a large component of the vegetation community and the vegetation community typically fluctuates naturally with minor management input. While the lake has remained impaired, the trends are showing gradual improvement in all water quality metrics.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	2	2	2	3	1	2	2	**1.8**
2019	0	2	2	2	3	2	2	2	**1.9**
2020	0	2	2	2	3	3	2	1	**1.9**
2021	0	2	2	2	3	2	2	2	**1.9**
2022	0	2	2	2	3	2	2	1	**1.8**
2023	0	3	2	3	3	2	2	1	**2.0**
2024	0	3	2	3	2	2	2	1	**1.9**

Figure 3-67. Chart depicting a comparison of Lake Eloise's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- In addition to the stormwater pollutant loads, Lake Eloise has had historic point source loading from the Cypress Gardens Wastewater Treatment Plant as late as 1975. There is potential for these legacy nutrients to be embedded in the lake sediments.
- While invasive species like hydrilla are generally in check, it can only take a single season for even a small population to take over large areas of a waterbody.
- The presence of OSTDs (septic) systems in the drainage basin could have potential impacts if they are leaching into the water table. Though with the lake being phosphorus-limited, the nitrogen leaching from septic systems are less of a concern.

Lake Management Strategy:

- With the majority of the drainage basin comprised of residential housing, public education and outreach is a viable strategy for mitigating stormwater pollutant loading. Staff have worked with individual communities and homeowner's associations within the basin to suggest the use of green infrastructure in their private stormwater systems.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large-scale herbicide treatments and potential water quality issues that follow.
- The City may explore source analysis to determine if septic systems in the drainage basin may be contributing nutrient loads to Lake Eloise. Further management may involve septic-to-sewer conversions in areas where the City provides sewer service.

Lake Fannie

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Fannie	3	3	3	2	2	2	0	3	**2.3**

Features & Statistics:

Surface area	800.3 acres
Mean depth	7.6 feet
Maximum depth	10.75 feet
Volume	5828.2 acre-feet
Drainage basin area	2208.8 acres
Annual TN Load	4133.2 lbs
Annual TP Load	717.7 lbs
Limiting nutrient	Co-limited (N & P)

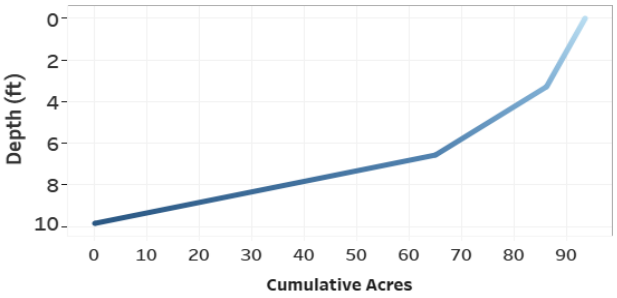


Figure 3-68. Hypsograph of Lake Fannie depicting the depth profile and morphology of the lake bed.

Hydrology:

Lake Fannie is a large, but shallow waterbody at 800 acres, with an average depth of 7.6 feet, and a maximum depth of only 10.75 feet (Figure 3-68). This makes it highly susceptible to sediment suspension via wind and wave action. Stormwater is conveyed to this waterbody from a 5,800 acre, mostly rural drainage basin (Figure 3-69). Though, the previously agricultural land uses are shifting more toward residential. These land uses contribute 4,133 lbs of TN and 717 lbs of TP to the lake annually. By area, however, these loads rank 35th compared to the other lakes in the region. There are 33 septic systems within this drainage basin. However, due to their low density, this isn't a major concern from a pollutant loading standpoint. There is also very little stormwater infrastructure present within the drainage basin—likely contributing to its relatively low pollutant loads.

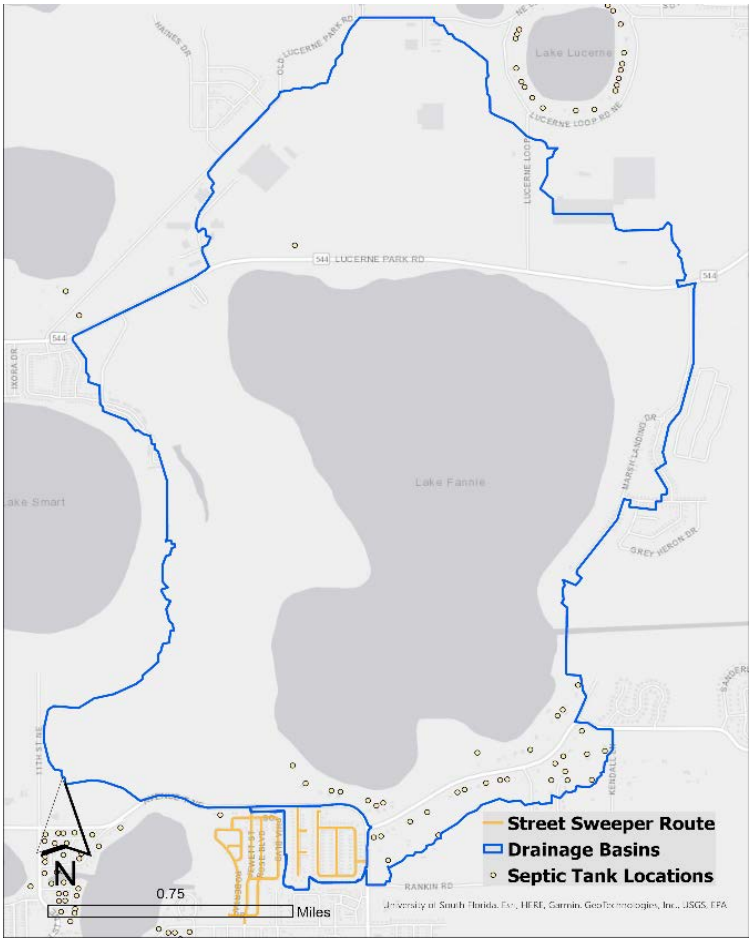


Figure 3-69. Map of Lake Fannie's drainage basin, City street sweeping services, and nearby septic systems.

Hydrology:

Lake Fannie is located within the North Chain of Lakes, but sits at a different elevation compared to its neighbors—Lake Smart, to the west; and Lake Hamilton to the east. Over its period of record, Lake Fannie's surface level has fluctuated between 119.8 and 128 feet above sea level. The normal range is between 121.4 and 125.1 feet (Figure 3-70). Though, since 2014, the amount of annual fluctuation has stabilized toward the high end of the normal range. During 2024, Lake Fannie reached a dry season low of 124.4 feet in June and a wet season peak of 125.4 feet in November. At the end of 2024, the surface level was 125.05 feet; right at the high range of levels. With District managed control structures on its upstream and downstream flow pathways, Lake Fannie's level is managed quite closely. Often levels are maintained at or near recommended highs until water must be released ahead of intense storms. According to 2019 regression analyses, changes in Lake Fannie's surface level significantly correlate with Chl-a, TN, TP, and clarity such that higher levels should result in improved water quality.

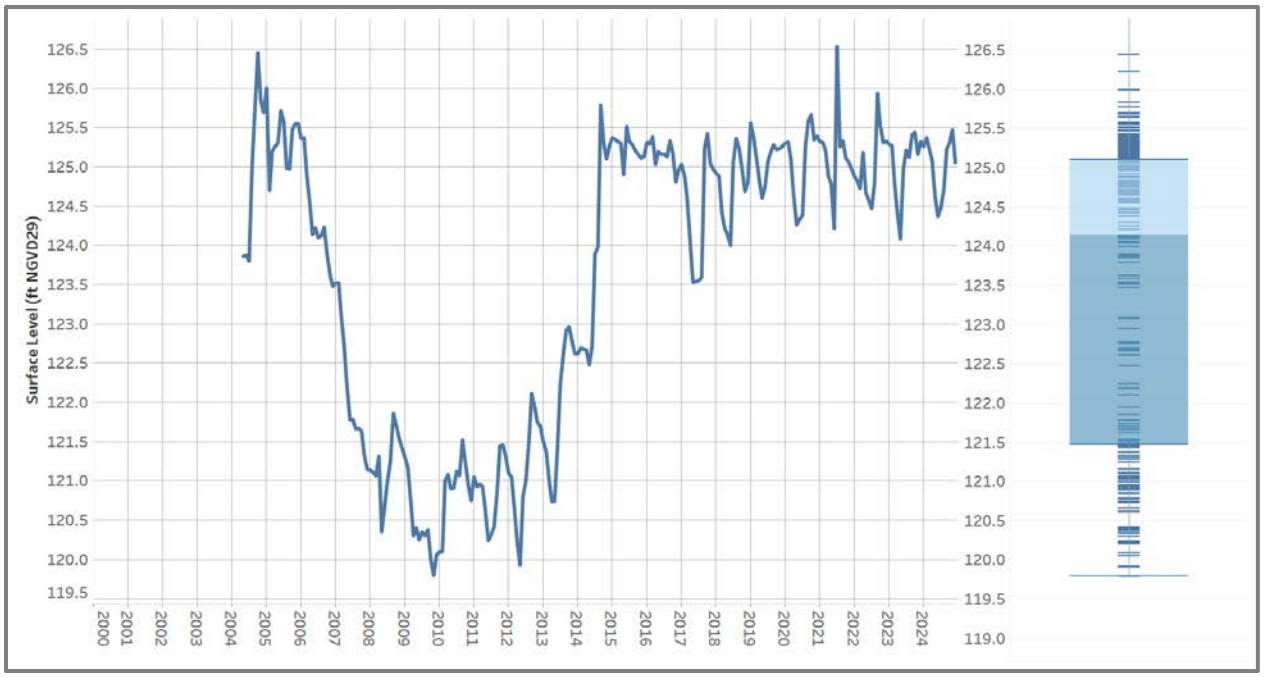


Figure 3-70. Hydrograph of Lake Fannie depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Fannie is categorized as a high color waterbody. Due to a lack of NNC exceedances in Chl-a, TN, and TP during the assessment period, Lake Fannie is considered unimpaired (Figure 3-71). The last exceedances recorded were in 2011; as a result, Lake Fannie has received an impairment criterion score of 3 since 2019.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	-0.644	0.002	Decreasing	3	3
TN	N	-0.465	0.034	Decreasing		3
TP	N	-0.301	0.186	No Trend		2
Secchi	NA	0.416	0.061	No Trend		2

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Based on the water quality data, Chl-a and TN exhibited significant improving trends—earning a trend criterion score of 3. The non-significant trends for TP and Secchi depth receive trend critera scores of 2. This was a departure from the previous year when Chl-a and Secchi depth were the significant improving trends. That said, trends can change due to abnormal values experienced from year to year. Overall, Lake Fannie appears to be mostly trending in an improving direction.

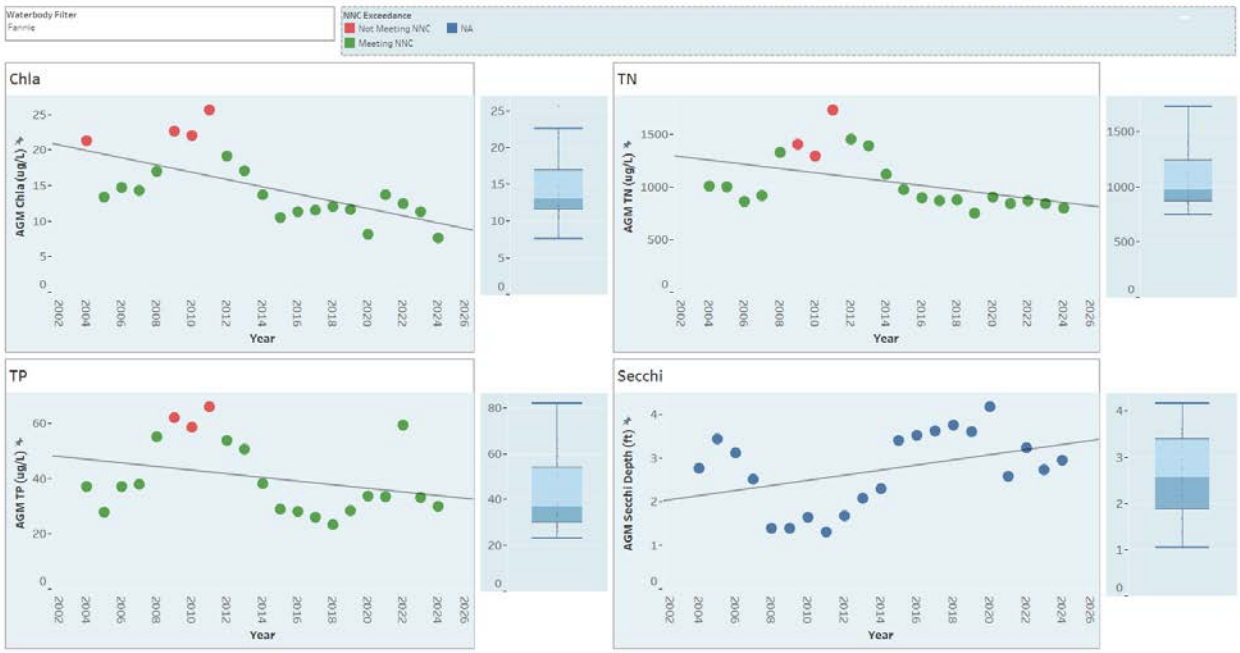


Figure 3-71. Lake Fannie AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Fannie on 10/31/2024. The PAC during this survey was 23.1% and the total BV was recorded at 4.2%(Figure 3-72). This was a slight increase in coverage from the previous year, but still earns a criterion rank of 2. This gradual increase in vegetation abundance is a good thing for a lake that generally lacks SAV due to the highly colored water.

Invasive Species Management:

Based on the data, the most dominant plant types in 2024 were emergent species, with SAV making up about 16% of the total community (Figure 3-73). Over the last five years, submerged species have increased in abundance; likely a result of gradually improving water clarity. Invasive species like burhead sedge and water hyacinth made up nearly 12% of the population. This places the invasive presence criterion score at 0. That said, this was a slight decrease in invasive presence from the previous year. It is a good sign when an increase in total vegetation abundance coincides with a decline in invasive abundance—meaning that native plants are filling the niches left open through management of non-native plants.

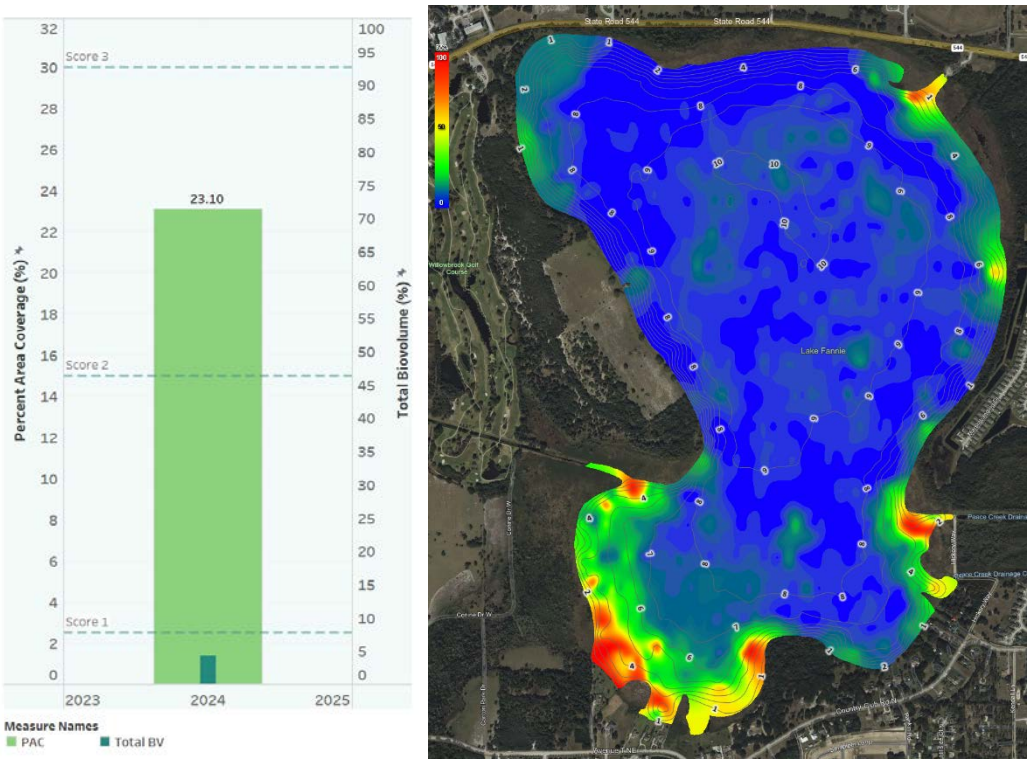


Figure 3-72. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Fannie; biovolume values range from green (lowest) to red (highest).

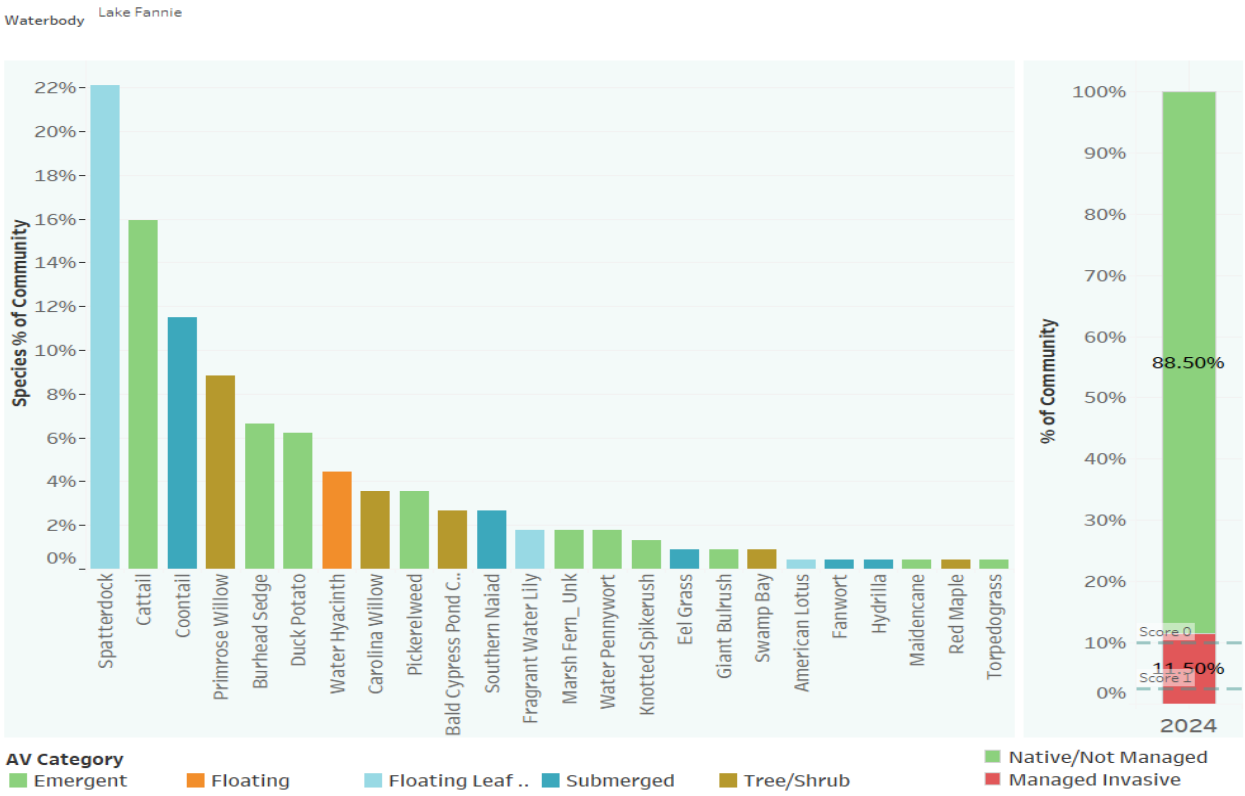


Figure 3-73. Chart depicting species frequency and invasive species percentage of Lake Fannie during 2024.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, all three of Lake Fannie's diversity indices exceeded their respective long-term medians—resulting in a diversity criterion score of 3 (Figure 3-74). This is likely due to the increased prevalence of less abundant species now that the large stands of burhead sedge and hydrilla have been treated. It should be noted that this is a second year running in which all three diversity indices exceeded their median values. Continued management of invasives should hopefully allow other native species to fill the newly opened ecological niches and improve the overall community in the long term.

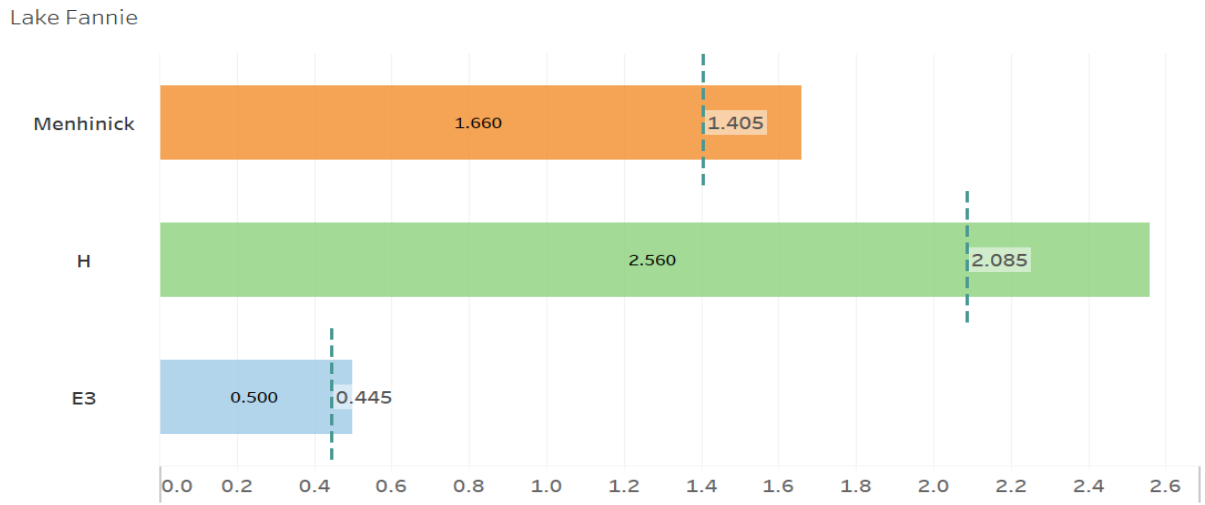


Figure 3-74. Chart depicting 2024 diversity indices for Lake Fannie. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Fannie's health index scores from 2018 to 2024 shows a significant improvement since monitoring began (Figure 3-75). The large jump in 2019 was due to water quality meeting NNC guidelines, while subsequent improvements are mostly due to positive shifts in the trend directions and significance. Despite invasive presence consistently underperforming, the recent downward trend in non-native abundance should eventually lead to improvements in that score. Species diversity has been consistently better since 2020—another positive improvement in lake health. Overall, Lake Fannie is doing substantially better than it was seven years ago.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	1	1	2	2	2	0	2	**1.3**
2019	3	2	2	2	3	2	0	1	**1.9**
2020	3	2	2	2	3	1	0	1	**1.8**
2021	3	2	2	2	3	2	0	2	**2.0**
2022	3	2	2	2	3	2	0	3	**2.1**
2023	3	3	2	2	3	2	0	3	**2.3**
2024	3	3	3	2	2	2	0	3	**2.3**

Figure 3-75. Chart depicting a comparison of Lake Fannie's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- While the majority of the drainage basin is undeveloped, new housing in the area carries potential for added stormwater pollutant loading. Fortunately, the majority of these newer developments are required to include stormwater treatment in their site plans.
- The management of invasive species like hydrilla and burhead sedge is a constant concern. Management that foregoes large-scale herbicide treatments is advised in order to prevent water quality decline.
- Lake Fannie's water quality metrics are significantly correlated with its surface level; likely due to increased flushing during wetter periods. This means that drought conditions could result in further water quality decline.

Lake Management Strategy:

- As the Lake Fannie drainage basin continues to develop into residential land uses, public education efforts aimed at improving residents' knowledge of proper stormwater management practices can help to ensure water quality continues to trend in a positive direction.
- Street sweeping services run within the small portion of the drainage basin that lies within City limits.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large-scale herbicide treatments and potential water quality issues that follow.
- Due to correlation between surface level and water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.

Lake Haines

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Haines	0	3	3	1	2	1	3	2	**1.9**

Features & Statistics:

Surface area	687.5 acres
Mean depth	9.6 feet
Maximum depth	15.5 feet
Volume	7380.9 acre-feet
Drainage basin area	2317.8 acres
Annual TN Load	5701 lbs
Annual TP Load	1055.9 lbs
Limiting nutrient	Co-limited (N & P)

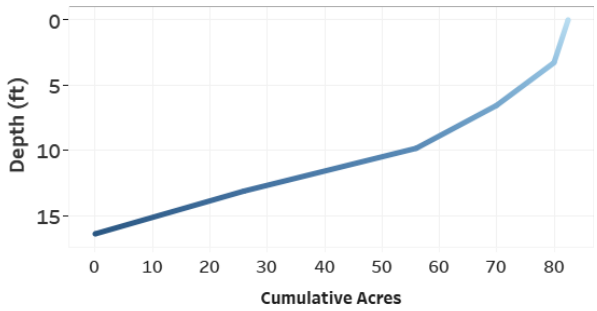


Figure 3-76. Hypsograph of Lake Haines depicting the depth profile and morphology of the lake bed.

Hydrology:

Lake Haines is one of the larger waterbodies in the region at nearly 700 acres in area. With a mean depth of 9.6 feet, Haines is somewhat deeper than other lakes in the North Chain, but is only slightly above the regional average depth of 8.5 feet (Figure 3-76). Like many other large and relatively shallow waterbodies, Lake Haines is more suceptible to sediment suspension via wind and wave action. Stormwater is conveyed to this waterbody from a massive and mostly rural drainage basin with a total area of 2,317 acres (Figure 3-77). The majority of the basin is comprised of wetland and agricultural land uses. This basin contributes 5,701 lbs of TN and 1,055 lbs of TP to the lake annually. However, on a per acre basis, these loads rank relatively low compared with other drainage basins in the area. There are 14 septic systems within the basin which is not at a density to cause potential harm via leaching to the water table.

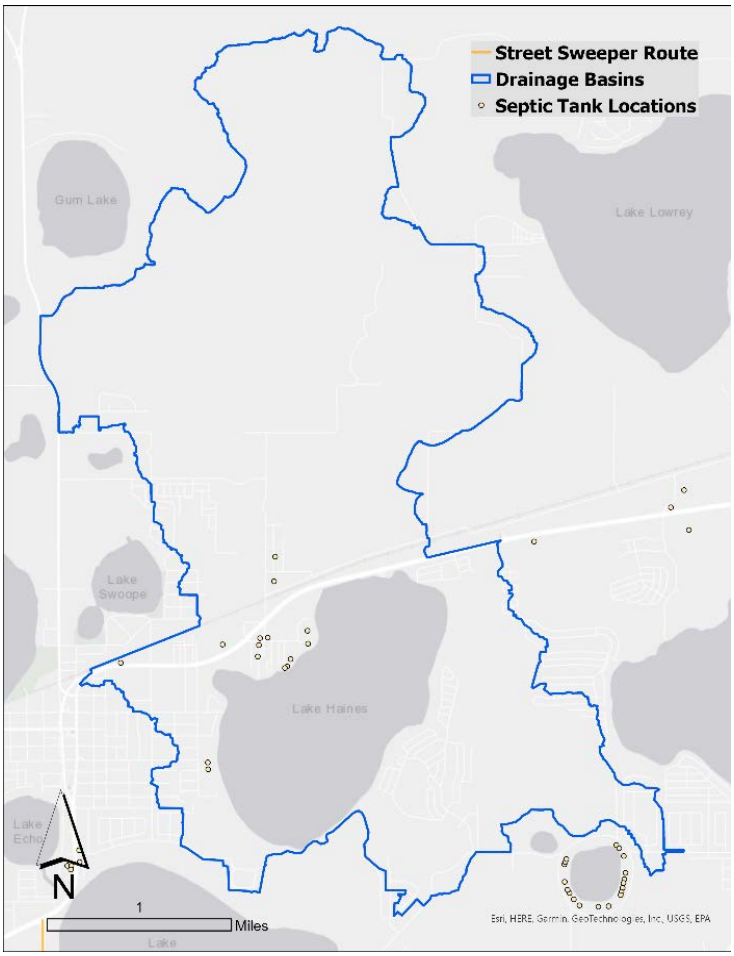


Figure 3-77. Map of Lake Haines' drainage basin and nearby septic systems.

As part of the Northern Chain, Lake Haines is connected via navigable canal to Lake Rochelle. Excess water from the North Chain eventually drains via the SWFWMD-managed P-8 control structure at the south of Lake Hamilton and enters the Peace Creek.Over the period of record, surface levels in this section of the North Chain (Lakes Conine, Haines, Rochelle, and Smart) have fluctuated between 122 and 129.5 feet above sea level. The normal range fluctuates much less between 126.1 and 128.2 feet (Figure 3-78). During 2024, the North Chain reached a dry season low of 127.8 feet in June and a wet season peak of 130.3 feet in October. The October peak was a record high for this chain of lakes; exceeding the previous record experienced during the triple hurricane season of 2004. The surface level ended the year above the high end of the normal range, at 128.5 feet. Changes in Lake Haines' surface level are directly correlated with water clarity and indirectly correlated with TN (see appendix). It is likely that the abundance of wetlands surrounding Lake Haines contributes to these relationships as higher surface levels would increase wetland inundation and the benefits they provide. This carries management implications as maintaining a higher surface level should result in improvements in these metrics.

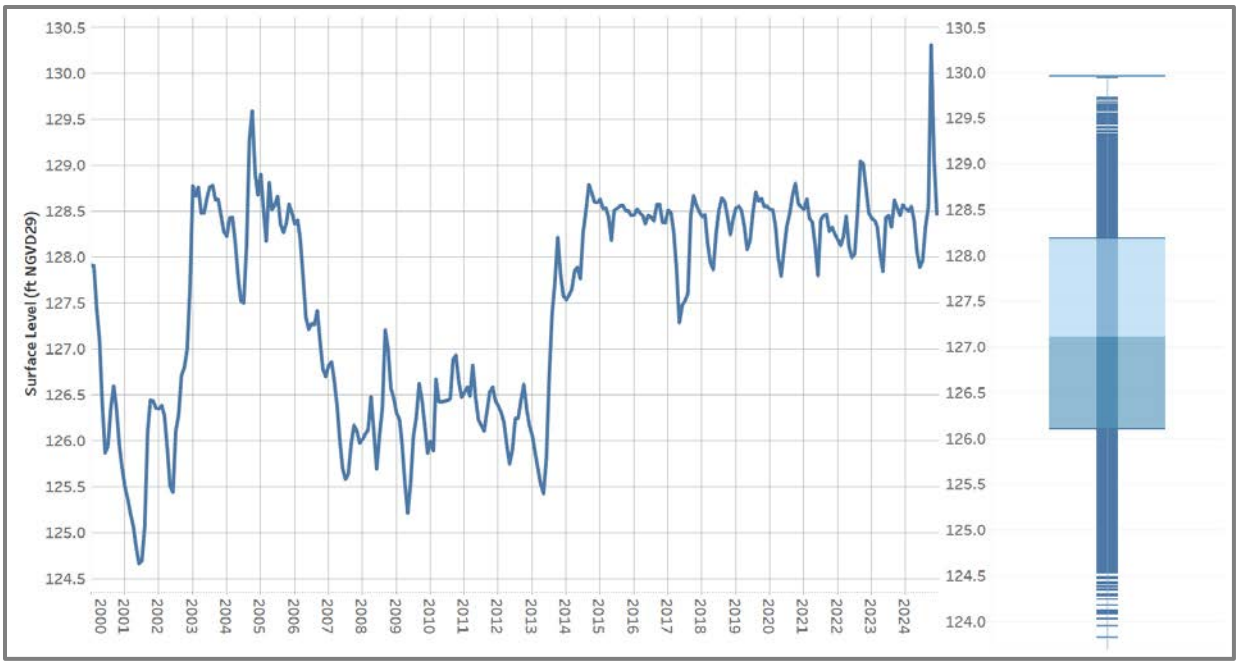


Figure 3-78. Hydrograph of Lake Haines depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairments based on the Numeric Nutrient Criteria (NNC), Lake Haines is categorized as a high-color waterbody. Based on multiple NNC exceedances during the assessment period, Lake Haines is considered impaired for Chl-a, TN, and TP—equating to an impairment score of 0 (Figure 2-79). While TN was not previously impaired since 2015, consecutive exceedances of the NNC threshold the last two years resulted in it becoming impaired in 2024. In 2018, the FDEP established a total maximum daily load (TMDL) for Lake Haines stipulating a 33% reduction in TN to achieve NNC guidelines.

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Based on the water quality data, Lake Haines exhibits

significant improving trends in Chl-a and TN—earning trend criteria scores of 3. Non-significant trends for TP and Secchi depth were observed, but TP was moving in an upward direction due to high concentrations in recent years.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	-0.583	0.006	Decreasing	0	3
TN	Y	-0.450	0.041	Decreasing		3
TP	Y	0.322	0.154	No Trend		1
Secchi	NA	0.314	0.166	No Trend		2

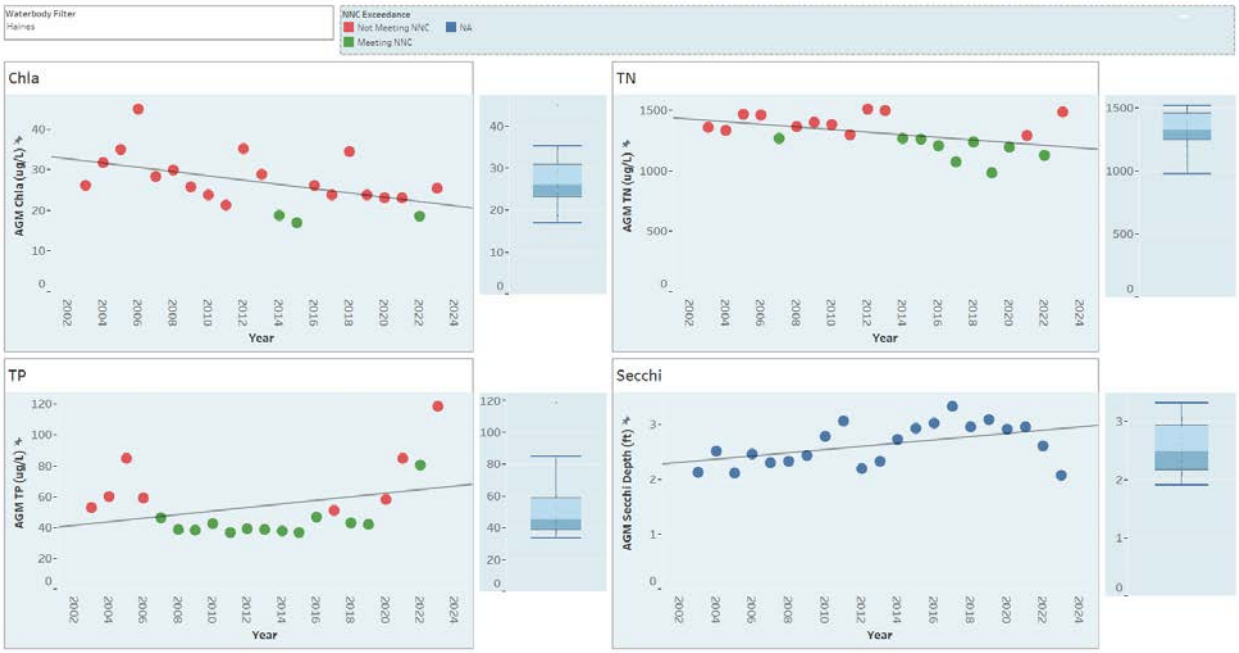


Figure 3-79. Lake Haines' AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Haines on 11/8/2024. The PAC during this survey was 12.1% and the total BV was 4.1% (Figure 3-80). This marks a considerable decrease in coverage from the previous year, but it is still higher than it was in 2021 and 2022. These abrupt changes in coverage are likely due to efforts in controlling invasive weeds like hydrilla. The result of the 2024 coverage value is that Lake Haines receives a vegetation abundance score of 1.

Invasive Species Management:

Based on 2024 species data, emergent vegetation remains the most dominant vegetation type in Lake Haines. Fortunately, no invasive plants were detected in 2024 (Figure 3-81). In previous years, invasive plants like hydrilla were abundant. Despite the decrease in overall abundance, the return of SAV and elimination of managed invasives demonstrates marked restoration in the aquatic plant community. That said, continued monitoring is critical to detect the future return of invasive plants and to plan for management action before populations can expand to extremes.

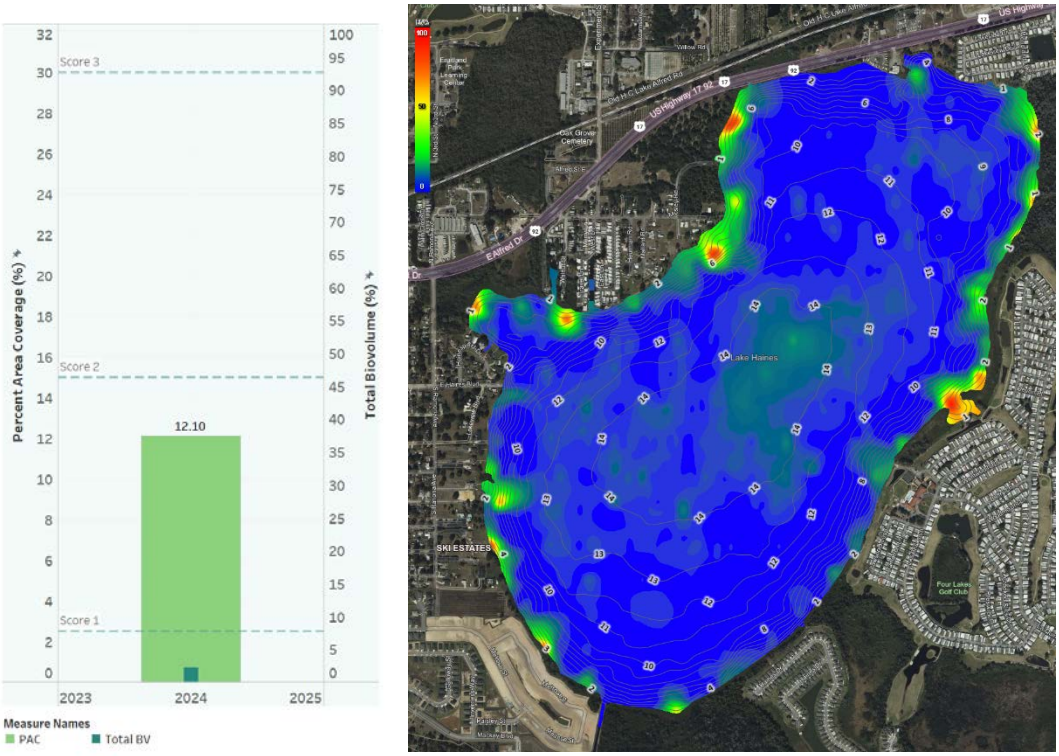


Figure 3-80. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Haines; biovolume values range from green (lowest) to red (highest).

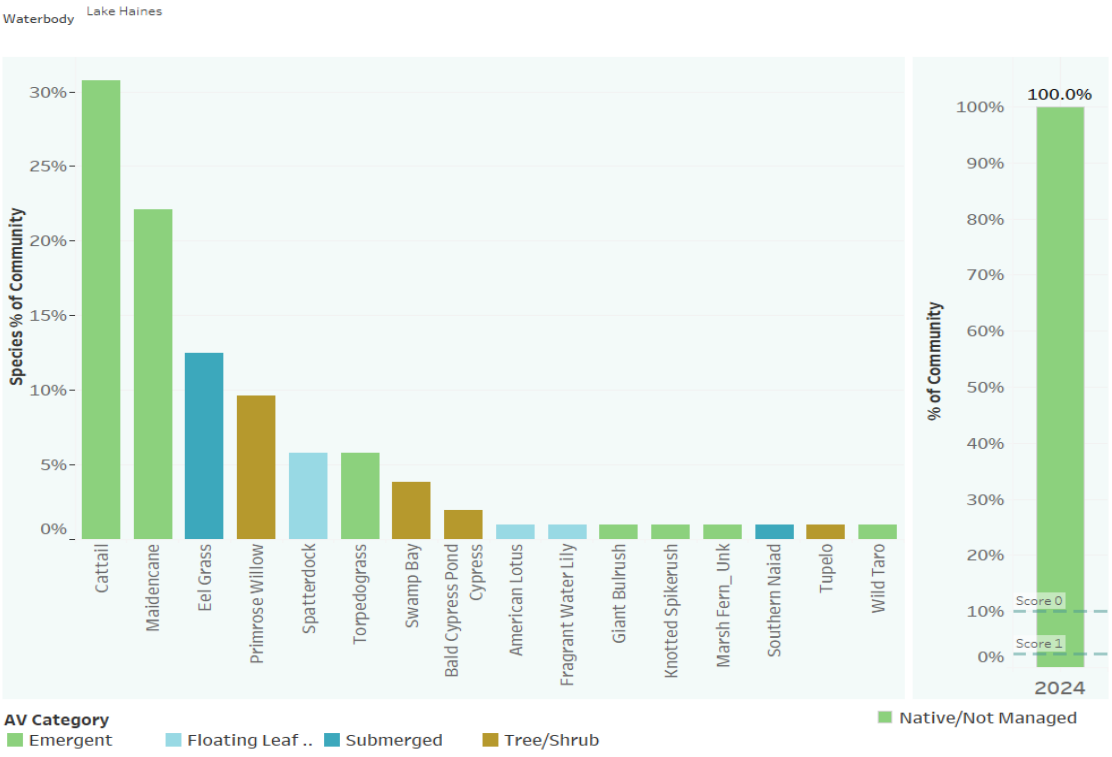


Figure 3-81. Chart depicting species frequency and invasive species percentage of Lake Haines during 2024.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, the species richness and overall diversity indices exceeded their respective median values (Figure 3-82). This equates to a diversity score of 2. The return of submerged species led to increases in the total number of species detected, but with the dominance of a few plant species, it is no surprise that evenness was below the long-term median. It is fortunate that invasive management efforts had a positive impact on the diversity in Lake Haines.

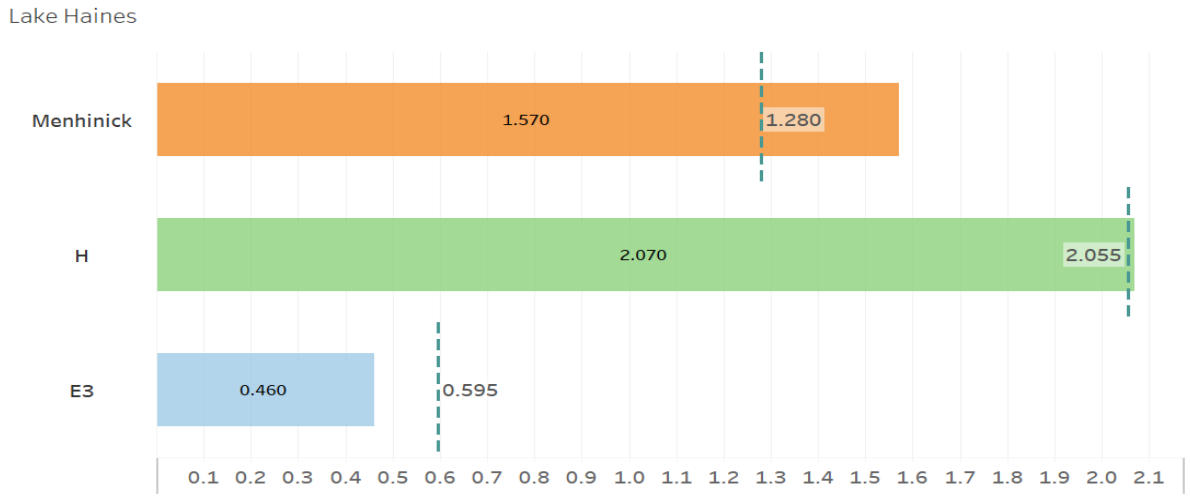


Figure 3-82. Chart depicting 2024 diversity indices for Lake Haines. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Haines' health index scores from 2018 to 2024 shows some variability over time (Figure 3-83). Despite meeting impairment targets in previous years, recent shifts in water quality have resulted in full impairment. Water quality trends are also variable, with improvement in Chl-a, but recent declines in TP and clarity. Vegetation abundance and diversity have fluctuated wildly, most likely due to repeated invasive treatment efforts. The one criterion demonstrating sole improvement has been invasive presence which has reached its highest score in 2024. Now that invasive plants have been reduced to undetectable levels, it will be important to monitor this lake closely to prevent rapid expansions when these plants inevitably return.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	2	3	2	3	2	0	1	**1.6**
2019	1	2	3	2	3	2	0	2	**1.9**
2020	2	2	3	2	3	3	0	2	**2.1**
2021	1	2	3	1	3	1	1	2	**1.8**
2022	1	2	3	1	3	1	1	1	**1.6**
2023	1	3	3	1	3	3	1	0	**1.9**
2024	0	3	3	1	2	1	3	2	**1.9**

Figure 3-83. Chart depicting a comparison of Lake Haines' Lake Health Index scores from 2018 to 2023.

Lake Health Impacts/Challenges:

- Due to the low density of urban development in the drainage basin, the per acre stormwater pollutant loading is relatively low. That said Lake Haines may possess some legacy nutrients from historic point-source loading via the Lake Alfred Wastewater Treatment Facility.
- The correlation between surface level and water quality is likely due in part to Lake Haines' morphology. As a large, shallow waterbody, it is more susceptible to sediment suspension from wind and wave action. This is exacerbated when lake levels are lower. The presence of large swathes of wetlands surrounding this lake also provide additional benefits when the lake level is higher.
- The management of invasive species like hydrilla is a constant concern. Even though it was not detected, these plants are never truly eradicated; it is expected they will return. Large-scale herbicide treatments may also impact both native vegetation and water quality.

Lake Management Strategy:

- Due to correlations between surface level and water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Additionally, staff will advocate for invasive management actions that limit the large-scale use of herbicides. Grass carp have been utilized in the Northern Chain to supplement herbicide treatments and to reduce the amount of chemicals needed to manage invasives in these lakes.
- Staff can support Polk County and the City of Lake Alfred in efforts to mitigate pollutant loading either through source analysis or guidance on the use of green infrastructure within the drainage basin.

Lake Hamilton

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Hamilton	0	0	0	3	0	2	1	3	**1.1**

Features & Statistics:

Surface area	2168.7 acres
Mean depth	6.39 feet
Maximum depth	17 feet
Volume	13,662.9 acre-feet
Drainage basin area	4177.6 acres
Annual TN Load	6701.7 lbs
Annual TP Load	1167.8 lbs
Limiting nutrient	Phosphorus

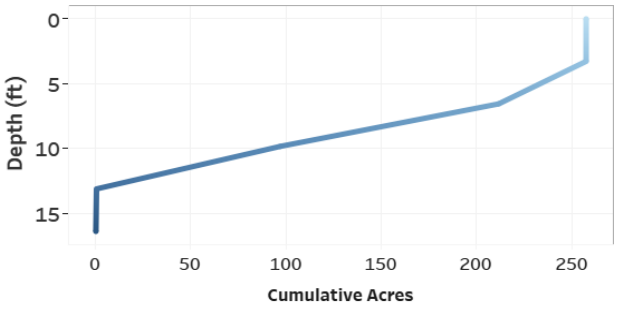


Figure 3-84. Hypsograph of Lake Hamilton depicting the depth profile and morphology of the lake bed.

Hydrology:

At 2,168 acres, Lake Hamilton is the largest lake within the study area. That said, it is one of the shallower waterbodies, with an average depth of just over 6 feet and a maximum depth of 17 feet (Figure 3-84). This makes it extremely susceptible to sediment suspension in windy conditions. Stormwater is conveyed to this waterbody from a 4,177 acre drainage basin comprised primarily of residential and wetland land uses which contributes 6,701 lbs of TN and 1,167 lbs of TP to the lake annually. On a per acre basis, these loading rates are some of the lowest in the study area. There are approximately 62 septic systems within this drainage basin—a relatively low density for its size. Lacking City roads and stormwater infrastructure conveying runoff to the lake, Winter Haven does not conduct any street sweeping services within this basin nor are there many stormwater improvements to be made.

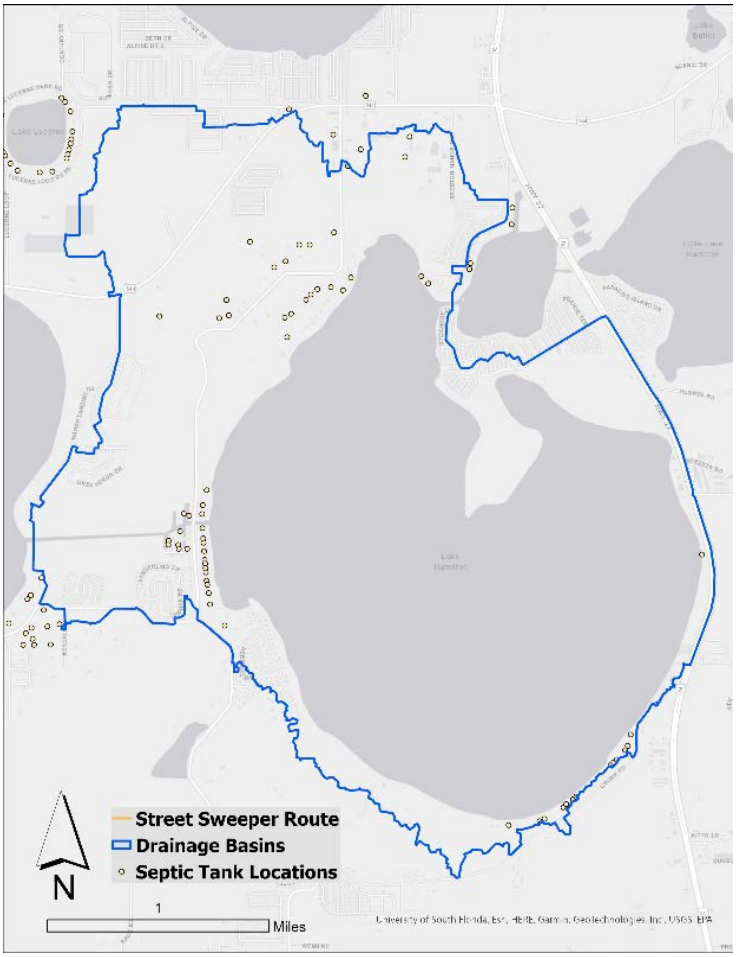


Figure 3-85. Map of Lake Hamilton's drainage basin and nearby septic systems.

Lake Hamilton is part of the North Chain of Lakes and receives excess water from Lake Fannie and Lake Henry—discharging its own excess water to the Peace Creek. Hamilton actually sits at the lowest level of all lakes within the study area. Over its period of record, Lake Hamilton's surface level has fluctuated between 117.5 and 123.6 feet above sea level. The normal range of fluctuation is between 119 and 121 feet (Figure 3-86). In 2017, the SWFWMD enacted new water level management protocols with the intent to restore seasonal level fluctuations within the lake's normal range. This is accomplished by releasing water downstream during the rainy season and storing water during the dry season. During 2024, Lake Hamilton reached a low of 120.26 feet in July and a wet season peak of 121.86 feet in October. The peak actually marks the highest the lake has reached since the record-breaking rainfall received during the hurricane season of 2004. Changes in Lake Hamilton's surface level are not correlated with Chl-a, TN, TP, or clarity (see appendix).

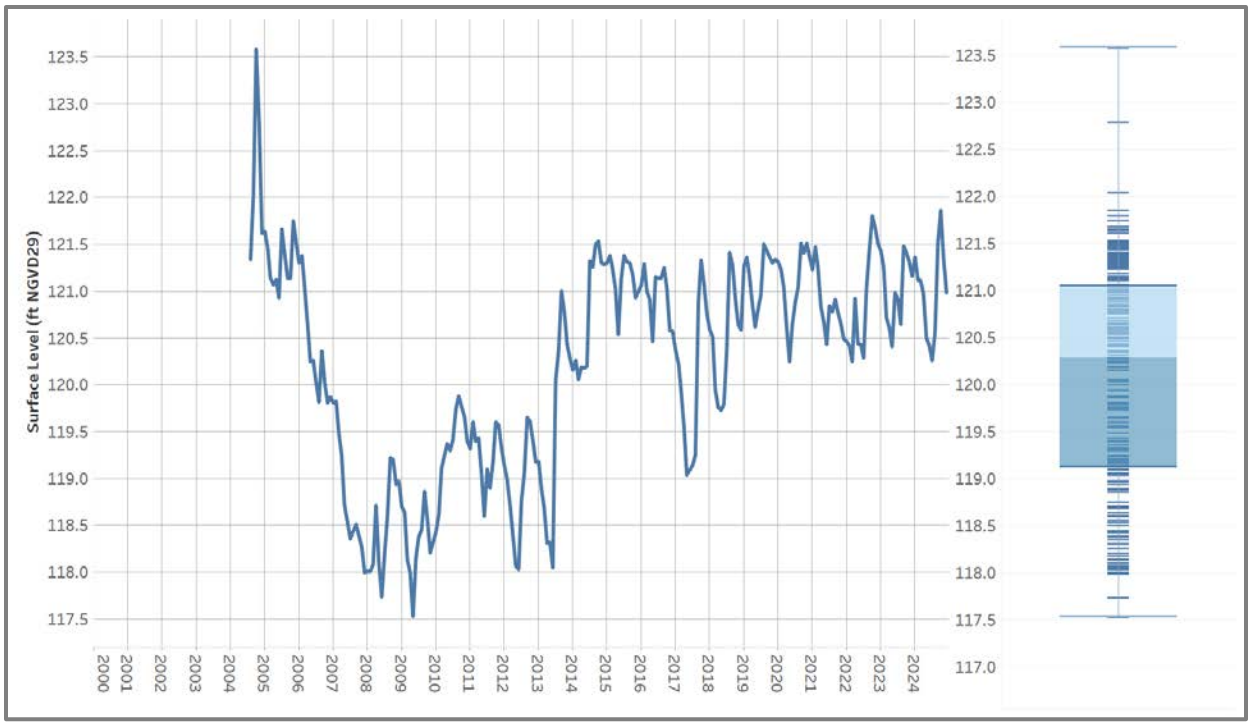


Figure 3-86. Hydrograph of Lake Hamilton depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Hamilton is categorized as a clear, alkaline waterbody. Based on multiple consecutive NNC exceedances during the assessment period, Lake Hamilton is considered impaired for Chl-a, TN, and TP (Figure 3-87). This equates to an impairment criterion score of 0. While the FDEP began developing a total maximum daily load (TMDL) for Lake Hamilton in 2020, the City and Polk County have introduced a pollutant reduction plan to address the water quality issues. This plan has been accepted by the FDEP.

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Chl-a, TN, and Secchi depth each exhibit significant deteriorating trends—earning trend criteria scores of 0. Surprisingly, TP exhibits a

significant improving trend, for a criterion score of 3. These trends are indicative of a cycle of nitrogen-fixing cyanobacteria blooms occuring in Lake Hamilton—increasing Chl-a and TN concentrations while decreasing TP and clarity. Further study is needed to assess other potential drivers of these trends.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	0.839	0.000	Increasing	0	0
TN	Y	0.817	0.000	Increasing		0
TP	Y	-0.800	0.000	Decreasing		3
Secchi	NA	-0.609	0.003	Decreasing		0

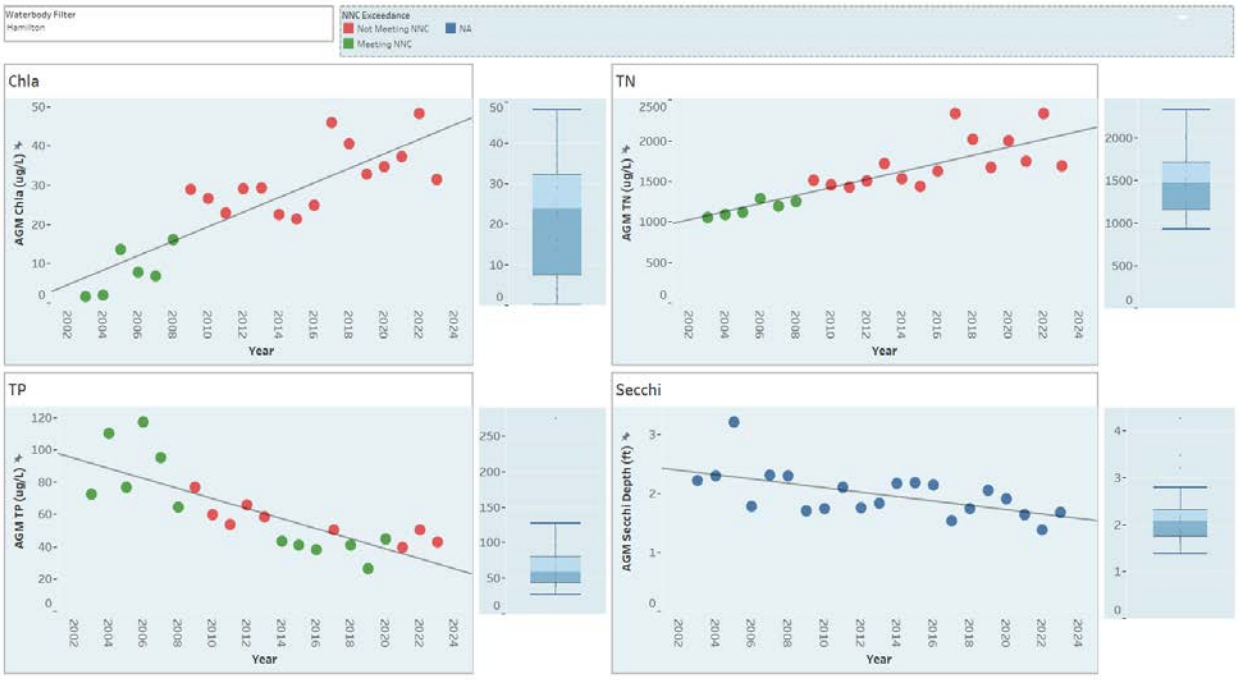


Figure 3-87. Lake Hamilton AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

Due to delays, an aquatic vegetation survey was conducted for Lake Hamilton on 1/10/2025. The PAC during this survey was 15.8% and the total BV was recorded at 2.1%; a slight increase from the previous year equating to a score of 2 (Figure 3-88). A comparison of data from previous years shows a slight, but consistent increase in coverage from 7.7% in 2018 to the current percentage. Based on Lake Hamilton's morphology and water clarity, this amount of coverage is expected.

Invasive Species Management:

Based on 2024 species data, the dominant plant type in the lake was emergent, with giant bulrush and cattail comprising over 30% of the community (Figure 3-89). Submerged plants made up less than 15% of the community. Invasive floating invasive plants (water hyacinth & water lettuce) comprised 5.7% of the community. This invasive percentage changed very little from the previous survey.

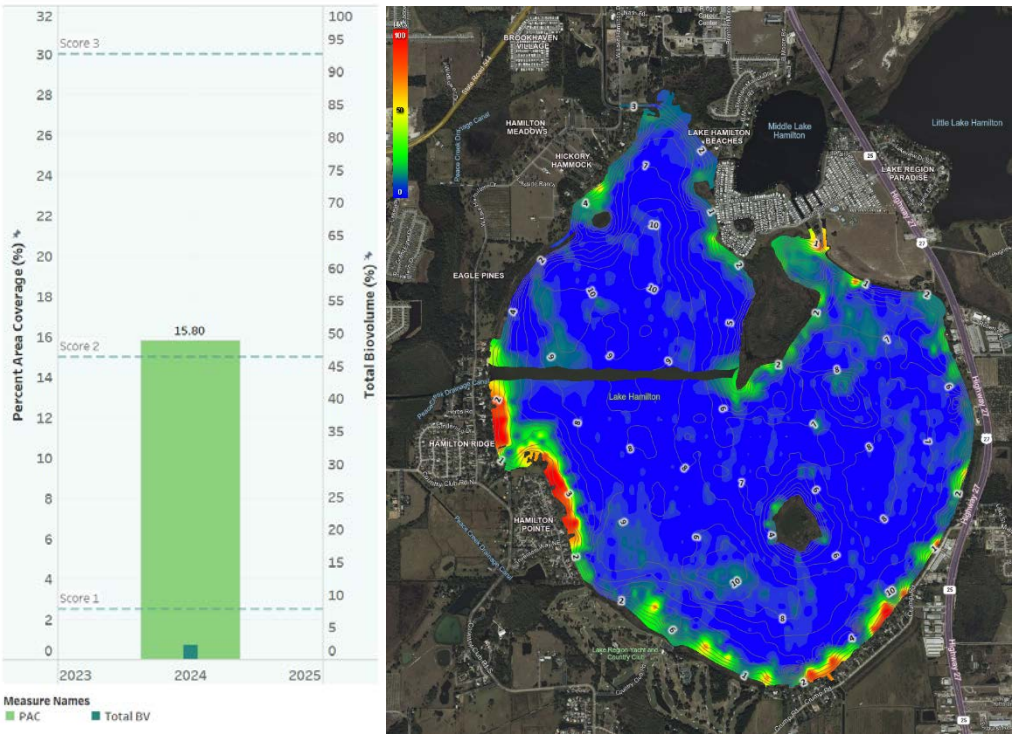


Figure 3-88. Graph depicting 2024 PAC/BV and biovolume of Lake Hamilton; biovolume values range from green (lowest) to red (highest).

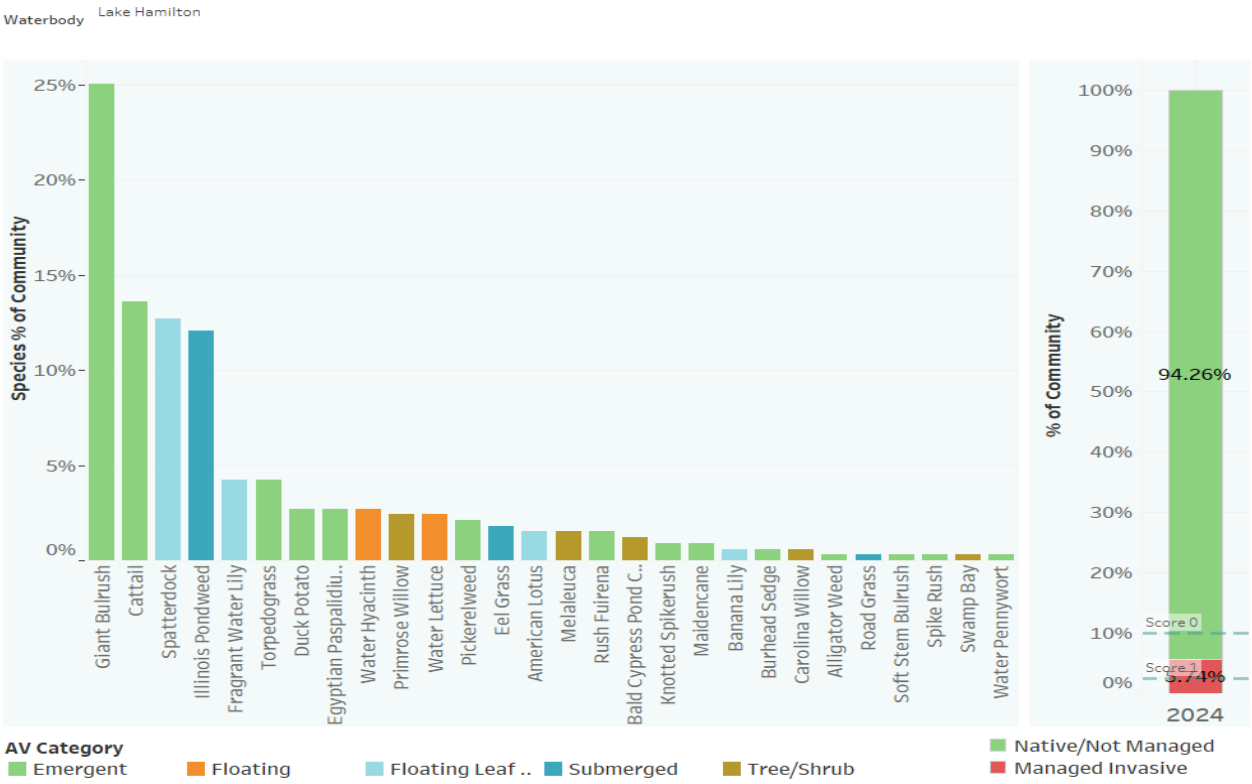


Figure 3-89. Chart depicting species frequency and invasive species percentage of Lake Hamilton during 2024.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, all three of Lake Hamilton's diversity indices exceeded their respective median values (Figure 3-90). This marks the second consecutive year exhibiting above-average species diversity. Maintaining this level of diversity may be accomplished through continued monitoring and management of invasive species in order to protect the native plants present.

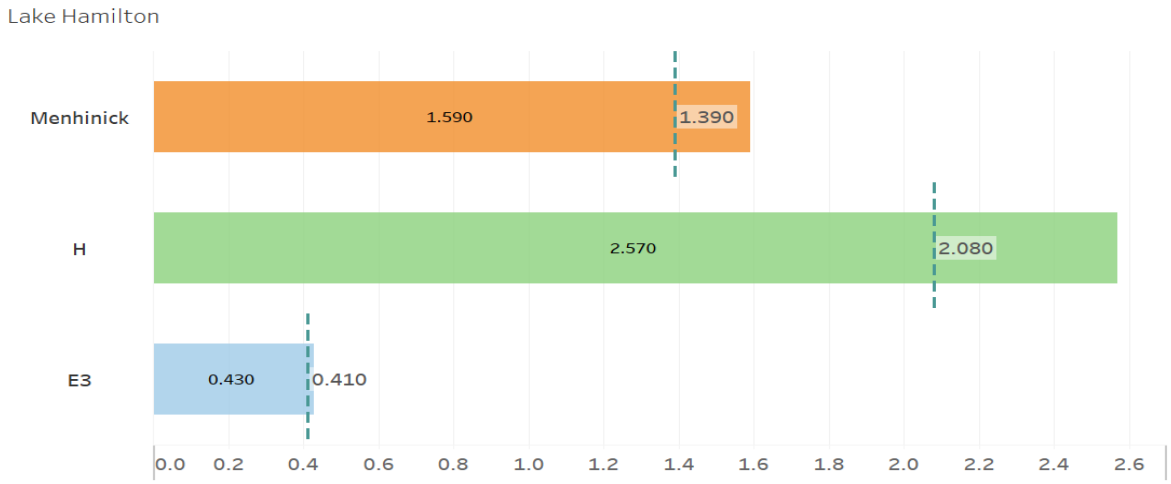


Figure 3-90. Chart depicting 2024 diversity indices for Lake Hamilton. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Hamilton's health index scores from 2018 to 2024 demonstrates why this waterbody is a high management priority (Figure 3-91). Besides an instance of TP meeting NNC guidelines for a year in 2021, the water quality scores have been consistently impaired and trending in a poor direction. Regarding the biological criteria, vegetation abundance has remained the same until 2024 where it saw a slight increase. Unfortunately, the reintroduction of non-native species dropped the invasive score down this year. Diversity has remained unchanged since 2021. Continued vegetation management is required to improve the invasive presence score with the goal of maintaining higher vegetation abundance and diversity scores as well.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	0	0	3	0	1	2	0	**0.8**
2019	0	0	0	3	0	1	2	2	**1.0**
2020	0	0	0	3	0	1	1	1	**0.8**
2021	1	0	0	3	0	1	1	3	**1.1**
2022	0	0	0	3	0	1	3	3	**1.3**
2023	0	0	0	3	0	1	3	3	**1.3**
2024	0	0	0	3	0	2	1	3	**1.1**

Figure 3-91. Chart depicting a comparison of Lake Hamilton's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Lake Hamilton's water quality is continuing to decline. The likely existence of nitrogen-fixing cyanobacteria (i.e. blue-green algae) is evidenced by the increases in chlorophyll-a and total nitrogen concerntations, coupled with a decrease in total phosphorus. It is unclear if this is due to stormwater, OSTDs, or other sources.
- Lake Hamilton continues to lack an abundance of aquatic vegetation. An increase in coverage could improve nutrient sequestration in the future.

Lake Management Strategy:

- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection will help to prevent a resurgence of invasive species.
- As part of the pollutant load reduction plan submitted by the County, there are several projects underway and planned that are intended to reduce the pollutant load to Lake Hamilton. These include:
    - Stormwater treatment BMPs at Lake Eva, Lake Conine (i.e. Lake Conine Nature Park), and a proposed treatment wetland on the west side of Lake Hamilton;
    - Street sweeping in the Haines City area to reduce stormwater pollutant loads;
    - Seepage study and septic-to-sewer conversion project proposed for the City of Lake Hamilton;
    - Installation of bioactive media in stormwater features along US Hwy 27 should help to reduce nitrogen and phosphorus pollutant loading from runoff.

Lake Hartridge

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Hartridge	1	0	0	3	0	3	3	3	**1.6**

Features & Statistics:

Surface area	446.4 acres
Mean depth	9 feet
Maximum depth	22 feet
Volume	4462.7 acre-feet
Drainage basin area	920 acres
Annual TN Load	2658.3 lbs
Annual TP Load	458.9 lbs
Limiting nutrient	Phosphorus

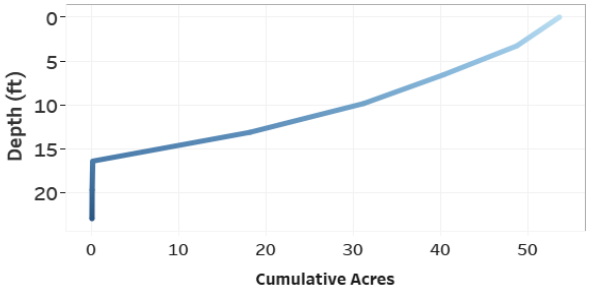


Figure 3-92. Hypsograph of Lake Hartridge depicting the depth profile and morphology of the lake bed.

Hydrology:

Lake Hartridge is a moderate-to-large waterbody at 446 acres, an average depth of 9 feet, and a maximum depth of over 20 feet (Figure 3-92). Hartidge's average depth is slightly deeper than the regional mean of 8.5 feet—meaning that sediment suspension is not necessarily a major issue. Stormwater is conveyed to this waterbody from a 920 acre drainage basin made up of a mix of residential, commercial, transportation, and industrial land uses (Figure 3-93). Based on stormwater modelling, Lake Hartridge receives 2,658 lbs of TN and 459 lbs of TP from this basin annually. There are 65 septic systems in the vicinity of the lake that may constitute a source of pollutant loading through groundwater. The City conducts monthly street sweeping services for over 17 miles along Havendale



Figure 3-93. Map of Lake Hartridge's drainage basin, City street sweeper routes, and nearby septic systems.

Blvd and US Hwy 17. Lake Hartridge is the northernmost waterbody in the South Chain with navigable connections to Lake Idylwild to the west and Lake Conine (via lock) to the northeast. Due to these canal connections, surface levels fluctuate consistently across the South Chain of Lakes. Throughout the period of record, the South Chain's surface level has fluctuated between 127.5 and 133.7 feet above sea level. The normal range is much narrower—between 129.7 and 131.4 feet (Figure 3-94). That said, wetter and drier periods often result in more extreme peaks and troughs, respectively. During 2024, the South Chain reached a dry season low of 130.8 ft in June and a wet season peak of 131.8 ft in September. The level of the South Chain by the end of the year was slightly above the top of the normal range at 131.5 ft. The South Chain's level remained at or above the high end of the normal range throughout most of the year—consistent with annual level fluctuations over the last 10 years. According to linear regression analysis, changes in Lake Hartridge's surface level correlates indirectly with TP—indicating that higher levels should result in lower TP concentrations (see appendix).

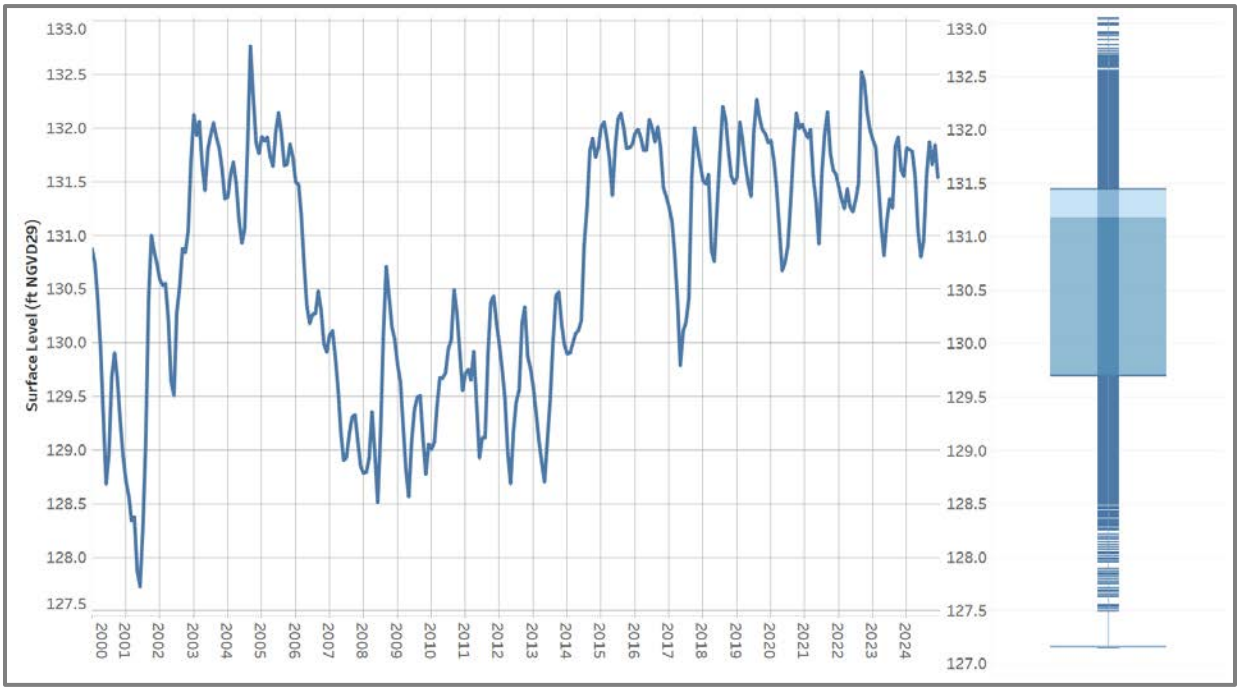


Figure 3-94. Hydrograph of the South Chain of Lakes depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Hartridge is categorized as a clear, alkaline waterbody. Based on numerous consecutive NNC threshold exceedances during the assessment period, Lake Hartridge is considered impaired for Chl-a and TN (Figure 3-95). Phosphorus concentrations have exceeded the NNC threshold in 2021 and now 2024, but impairment requires two consecutive exceedance years to be considered impaired. Lake Hartridge earns an impairment criterion score of 1.

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. During this period, Chl-a, TN, and Secchi depth exhibit significant deteriorating trends—equating to trend criteria scores of 0. TP exhibits a non-significant improving trend, for a criterion score of 2. This recent shift in the trend direction may point to the

presence of nitrogen-fixing bacteria in Lake Hartridge. It should be noted that looking specifically at more recent data (i.e. 2012 – 2024), the trends are much more static or even moving in improving directions. Future reports may explore these more short-term trends in-depth to provide additional context and nuance to this analysis.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	0.551	0.010	Increasing	1	0
TN	Y	0.532	0.013	Increasing		0
TP	N	-0.466	0.033	Decreasing		3
Secchi	NA	-0.750	0.000	Decreasing		0

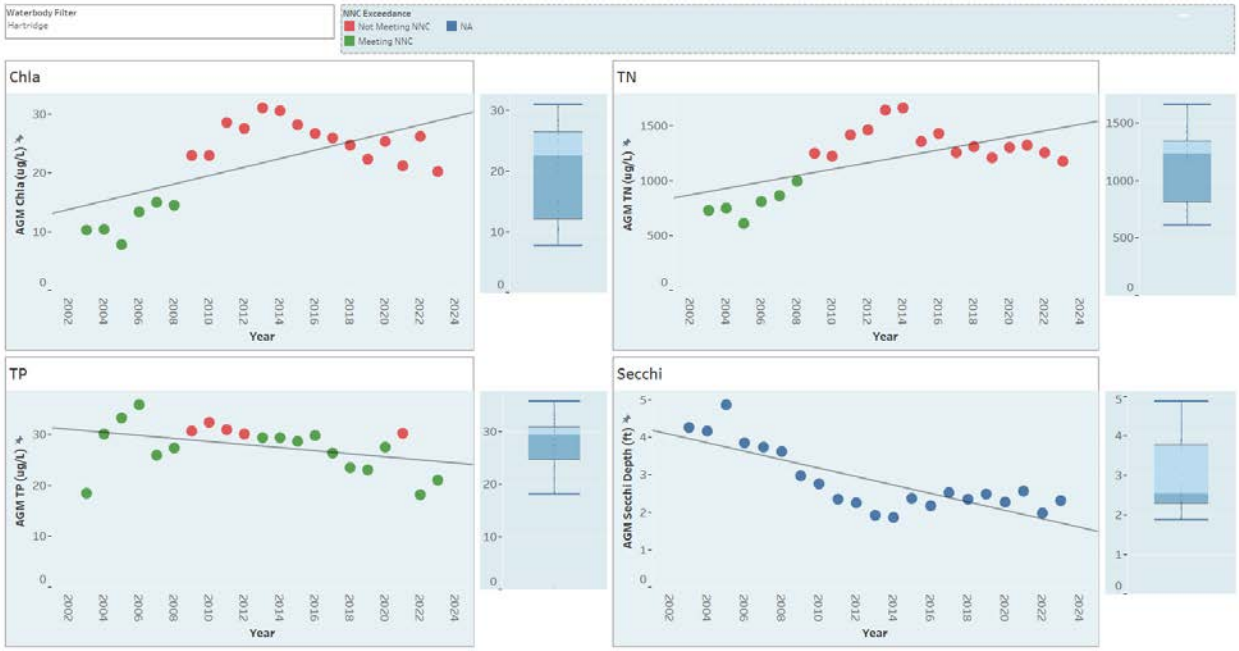


Figure 3-95. Lake Hartridge AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots showing relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Hartridge on 10/17/2024. The PAC during this survey was 43.1% and the total BV was 8.4% (Figure 3-96). A comparison to previous years shows that vegetation abundance has remained relatively consistent since monitoring began; with PAC values above 35%. Lake Hartridge's gently sloping morphology likely allows for a wide littoral zone that aquatic plants can occupy. This abundance equates to a lake health criterion score of 3.

Invasive Species Management:

Based on the 2024 data, the native Illinois pondweed continues to be the dominant species present, followed by a healthy mix of native emergent and floating leaf plants (Figure 3-97). There were no invasive species detected in 2024; resulting in a score of 3. A comparison to previous years shows that invasives are generally controlled, with total community percentages consistently falling below 2% each year since 2018. Overall, this lake has a great aquatic plant community of which management efforts should strive to maintain.

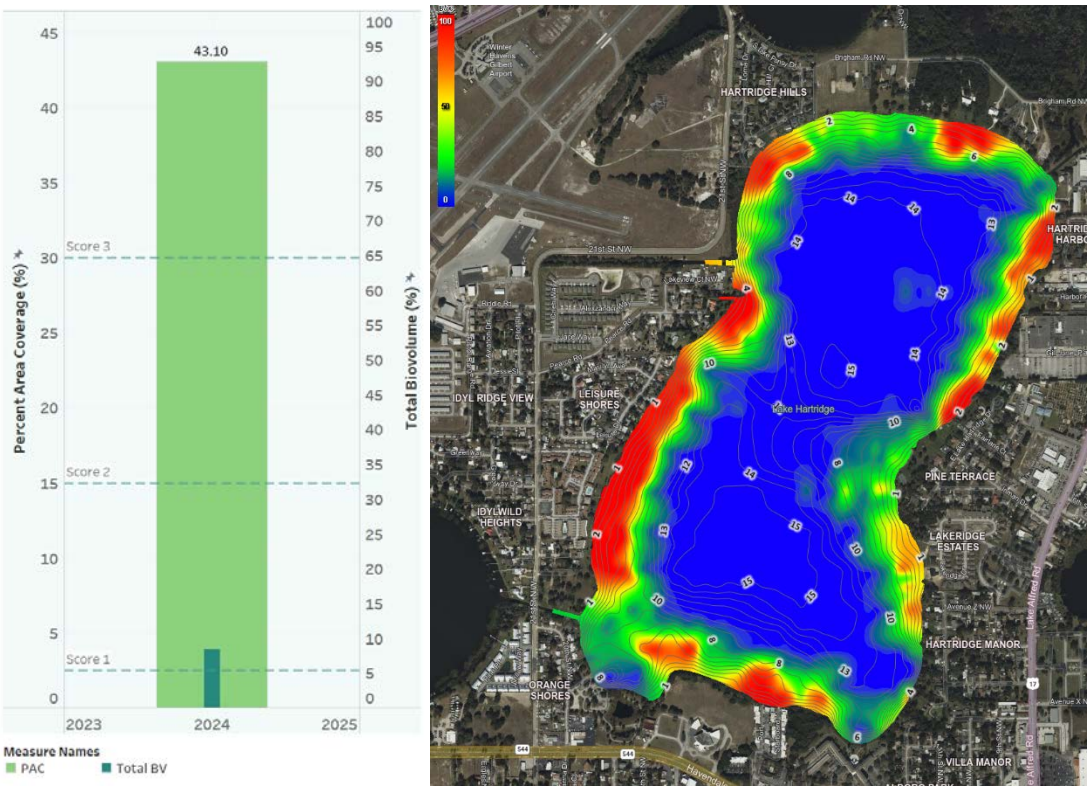


Figure 3-96. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Hartridge; biovolume values range from green (lowest) to red (highest).

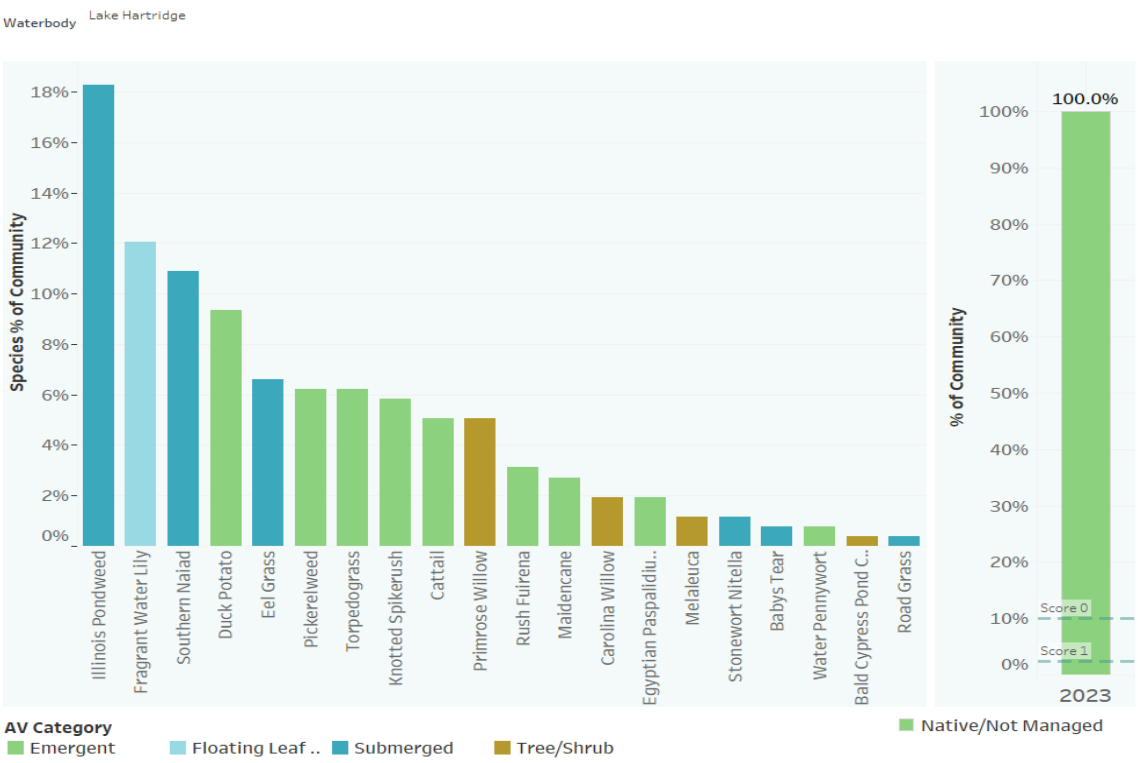


Figure 3-97. Chart depicting species frequency and invasive species percentage of Lake Hartridge during 2024.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, all three of Lake Hartridge's diversity indices exceeded their long-term median values (Figure 3-98). The richness index saw an increase from the previous year despite not having a reintroduction of invasive species. A community of 22 unique species, none of which are management invasives is a sign of a healthy aquatic ecosystem.

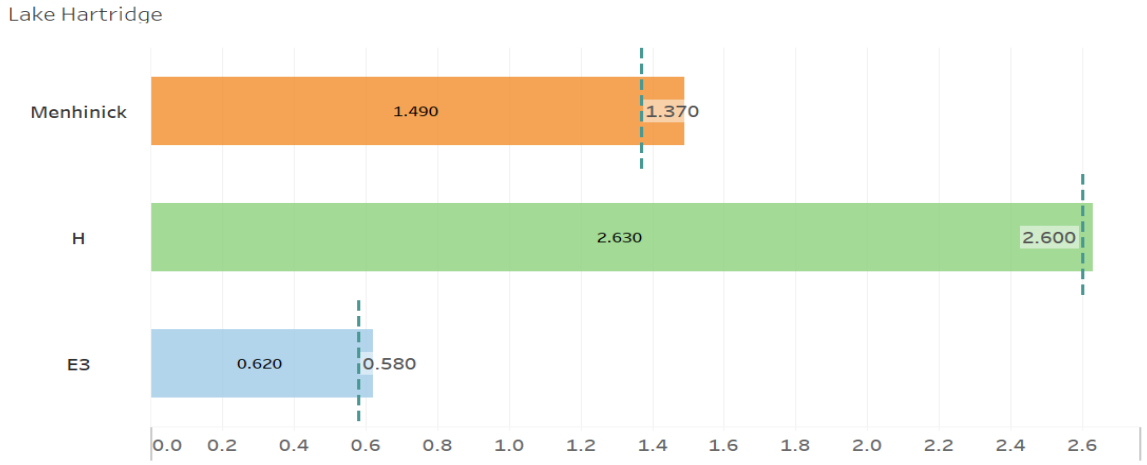


Figure 3-98. Chart depicting 2024 diversity indices for Lake Hartridge. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Hartridge's health index scores from 2018 to 2024 shows only minor changes (Figure 3-99). The impairment criterion score improved in 2019 due to TP no longer exceeding the NNC thresholds. However, with the exception of TP in the most recent assessment, the trend scores have consistently been pointing to deteriorating water quality. Vegetation abundance has remained high, with invasive and diversity scores exhibiting the most variability. This is likely due, in part, to invasive plant management efforts and the changes in the vegetation community that follow. Lake Hartridge's consistently low score places it high on the City's priority list for management action. However, it should be noted that 2024 marks this lake's highest LHI score since monitoring began.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	0	0	2	0	3	3	2	**1.3**
2019	1	0	0	1	0	3	2	2	**1.1**
2020	1	0	0	1	0	3	2	3	**1.3**
2021	1	0	0	1	0	3	3	3	**1.4**
2022	1	0	0	1	0	3	2	2	**1.1**
2023	1	0	0	2	0	3	3	2	**1.4**
2024	1	0	0	3	0	3	3	3	**1.6**

Figure 3-99. Chart depicting a comparison of Lake Hartridge's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Stormwater runoff, specifically from Hartridge's highly urbanized southern drainage basins remains one of the primary avenues for pollutant loading to the lake.

- In addition to stormwater, pollutant loading from OSTDs may be a potential contributor to Lake Hartridge's poor water quality. As these septic systems age, they may begin to leach nutrients into the water table—leading to additional water quality issues.
- The management of invasive species like hydrilla is a consistent concern. It can only take a single season for even a small population to take over large areas of a waterbody.

Lake Management Strategy:

- The City currently conducts street sweeping services in the southern drainage sub-basin that collects water from Havendale Blvd. This is estimated to remove 192 lbs of TN and 104 lbs of TP annually.
- Additionally, a wetland treatment park was constructed in the early 2000s to capture and treat a substantial amount of runoff from this basin. Future studies are required to determine the actual pollutant removal efficiency.
- The City may explore source analysis to determine if OSTD leachate is a contributor of pollutants to the lake. Further management may involve septic-to-sewer conversions.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large-scale herbicide treatments and the potential water quality issues that follow.

Lake Howard

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Howard	1	3	3	3	2	2	2	3	**2.4**

Features & Statistics:

Surface area	631.6 acres
Mean depth	8.71 feet
Maximum depth	16 feet
Volume	5844.9 acre-feet
Drainage basin area	1869 acres
Annual TN Load	6321.3 lbs
Annual TP Load	1097.5 lbs
Limiting nutrient	Phosphorus

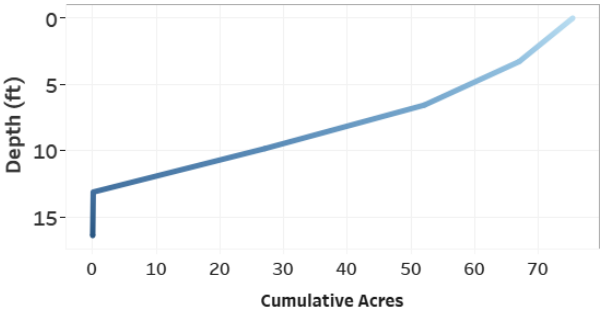


Figure 3-100. Hypsograph of Lake Howard depicting the depth profile and morphology of the lake bed.

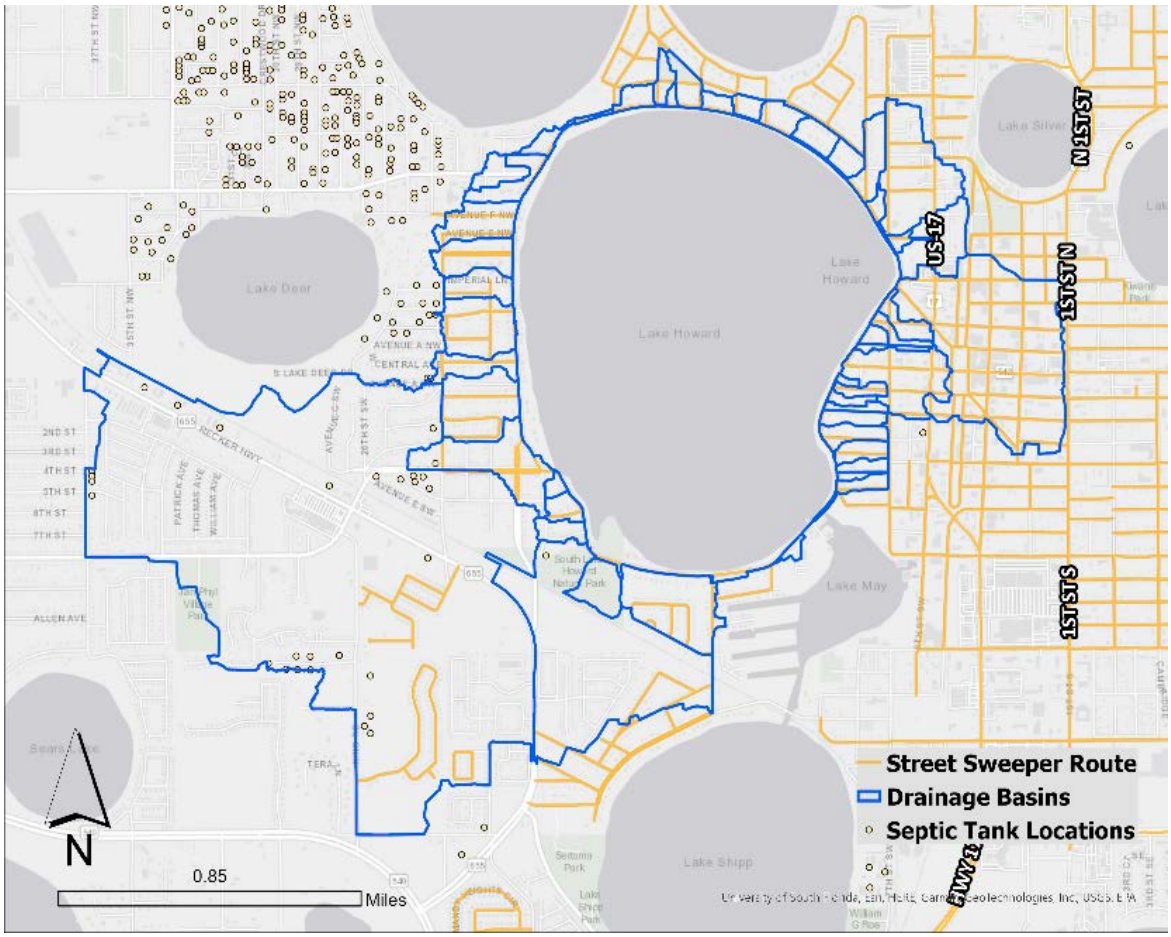


Figure 3-101. Map of Lake Howard's drainage basin, City street sweeping routes, and nearby septic systems.

Hydrology:

Lake Howard is one of the larger lakes in the South Chain at 632 acres. It's average depth of 8.7 feet is just slightly above the regional mean depth for the lakes in the study area; and its shallowly sloping bowl-shaped morphology provides ample littoral zone for aquatic vegetation to grow (Figure 3-100). Stormwater is conveyed to this waterbody from a large and complex drainage basin that is comprised of 53 separate sub-basins (Figure 3-101). Residential land uses make up the majority of this basin, contributing 6,321 lbs of TN and 1,097 lbs of TP to the lake annually. On a per acre basis, these loading rates rank 20th out of the 37 lakes in the study area There are fewer than 30 septic systems present within the drainage basin. This is likely too low of a density to contribute meaningful pollutant loads via septic leaching into the groundwater. Much of the stormwater from downtown streets and surrounding neighborhoods is not captured in traditional stormwater treatment ponds. Therefore, the City conducts monthly street sweeping services for more than 50 miles per month.

Lake Howard is located centrally in the Southern Chain with navigable connections to Lakes May and Cannon. Due to these canal connections, surface levels fluctuate consistently across the South Chain of Lakes. Throughout the period of record, the South Chain's surface level has fluctuated between 127.5 and 133.7 feet above sea level. The normal range is much narrower—between 129.7 and 131.4 feet (Figure 3-102). That said, wetter and drier periods often result in more extreme peaks and troughs, respectively. During 2024, the South Chain reached a dry season low of 130.8 ft in June and a wet season peak of 131.8 ft in September. The level of the South Chain by the end of the year was slightly above the top of the normal range at 131.5 ft. The South Chain's level remained at or above the high end of the normal range throughout most of the year—consistent with annual level fluctuations over the last 10 years. According to linear regression analysis, changes in Lake Howard's surface level correlate with Chl-a, TN, and clarity (see appendix). This carries management implications as maintaining higher levels should result in improved water quality.

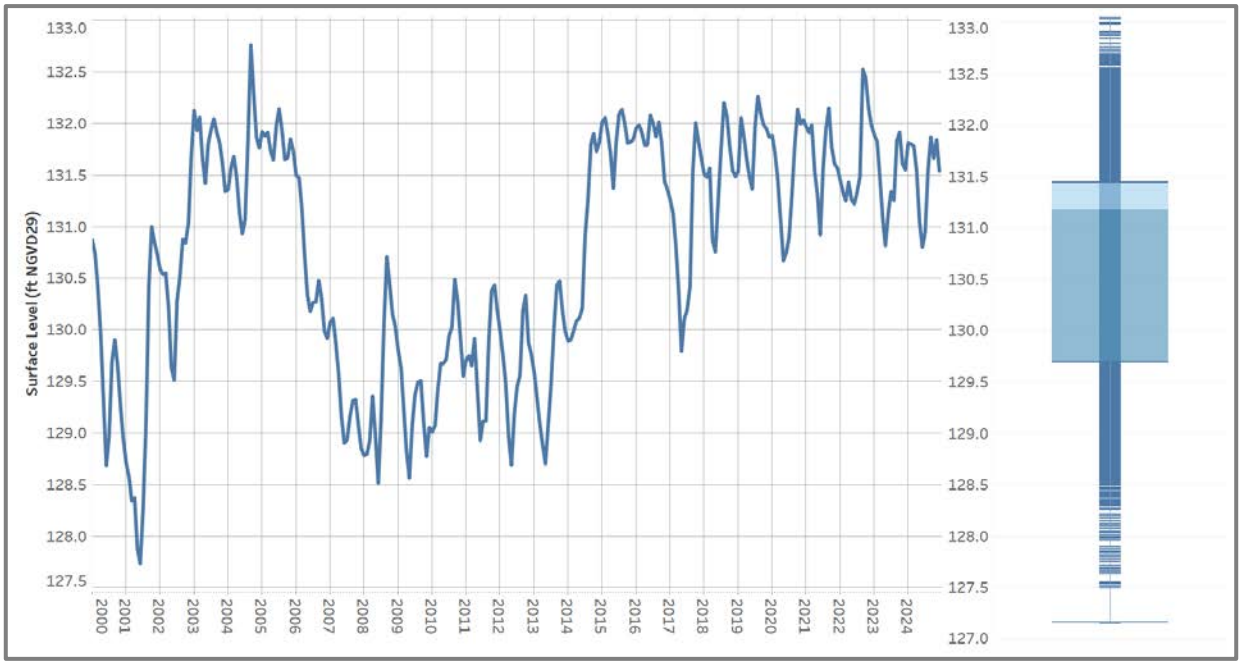


Figure 3-102. Hydrograph of Lake Howard depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Howard is categorized as a clear, alkaline waterbody. Due to numerous consecutive NNC exceedances during the assessment period, Lake Howard is considered impaired for Chl-a and TN (Figure 3-103). There have been no NNC exceedances for TP since 2009. In 2019, the FDEP established a total maximum daily load for Lake Howard, stipulating a 39% reduction in TN to meet NNC guidelines.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	-0.634	0.002	Decreasing	1	3
TN	Y	-0.618	0.003	Decreasing		3
TP	N	-0.687	0.001	Decreasing		3
Secchi	NA	0.392	0.079	No Trend		2

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Based on the data, Chl-a, TN, TP, and Secchi depth all exhibit significant improving trends—earning trend critera scores of 3. Despite its impairments, Lake Howard is on track to meet water quality targets if these trends continue.

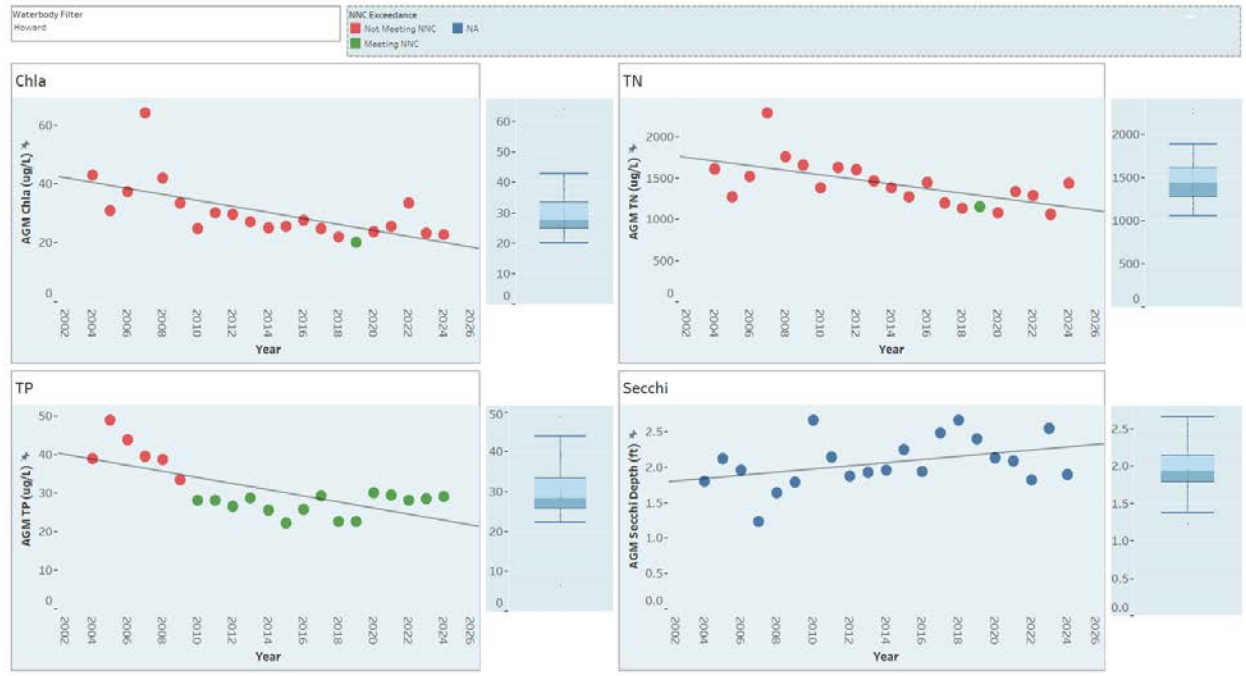


Figure 3-103. Lake Howard AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Howard on 5/3/2024. The PAC during this survey was 26.4% and the total BV was 3.8% (Figure 3-104). A review of abundance values from previous years shows that Lake Howard's coverage has fluctuated between 27% and 39%; this year's PAC values being the lowest on record. Lacking much of an invasive species presence, the majority of this variance in abundance can be attributed to natural fluctuations. The result of

the 2024 values equates to an abundance criterion score of 2. The highest density of aquatic vegetation appears to be concentrated along the southwest shoreline.

Invasive Species Management:

Based on data from the 2024 survey, Lake Howard has a healthy mix of native submerged, emergent, and floating leaf plant types (Figure 3-105). Lake Howard has historically not had issues with invasive plants, but in the last two years small populations of the floating plant water hyacinth have been detected. The small quantities of these invasives made up less than 1% of the community; even so, this equates to an invasive presence score of 2.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). In 2024, all three of these indices exceeded their long-term median values (Figure 3-106). With over 25 unique plant species present, it comes as no surprise that Lake Howard is one of the most diverse waterbodies in the area. However, the evenness index value in 2024 was the highest on record—indicating a more equal distribution of the species present.

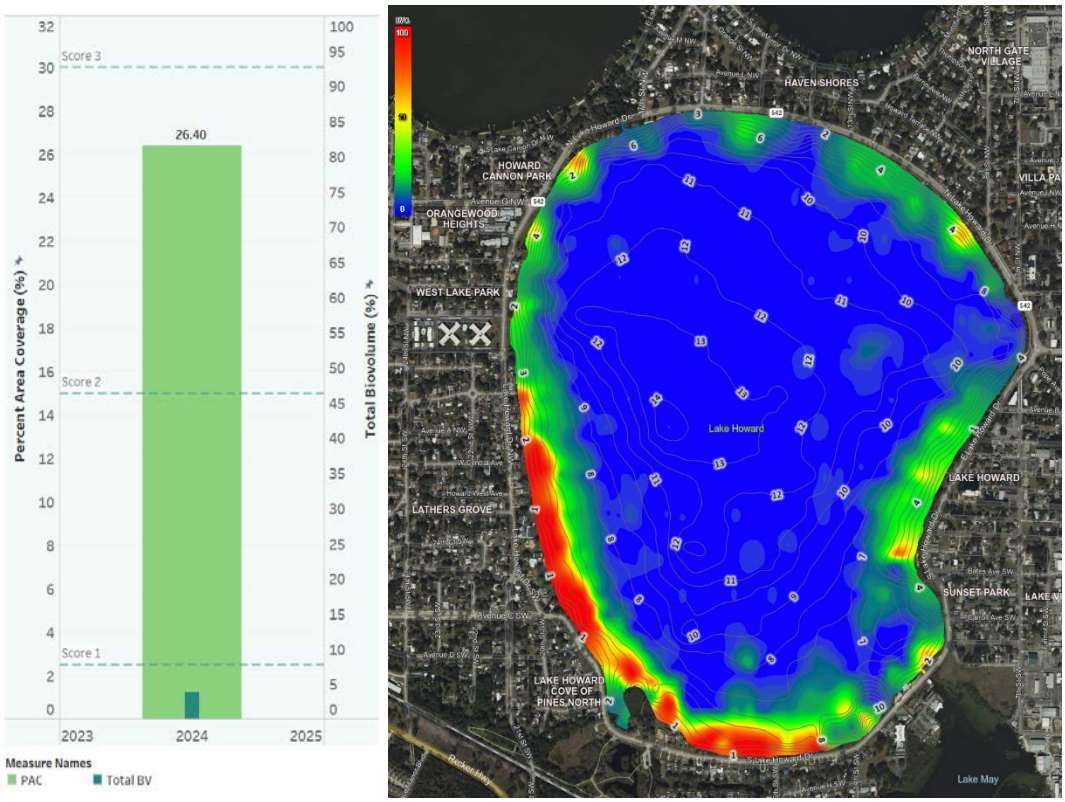


Figure 3-104. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Howard; biovolume values range from green (lowest) to red (highest).

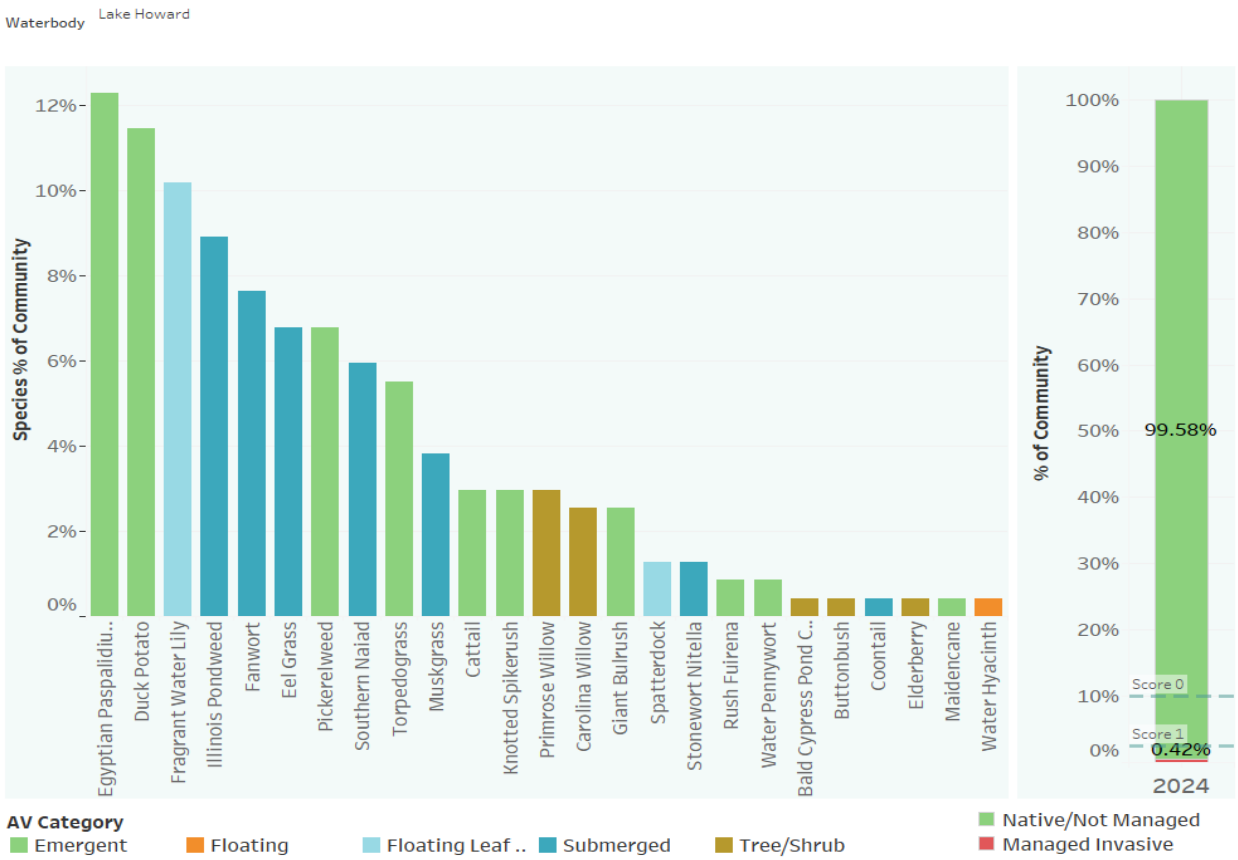


Figure 3-105. Chart depicting species frequency and invasive species percentage of Lake Howard during 2024.

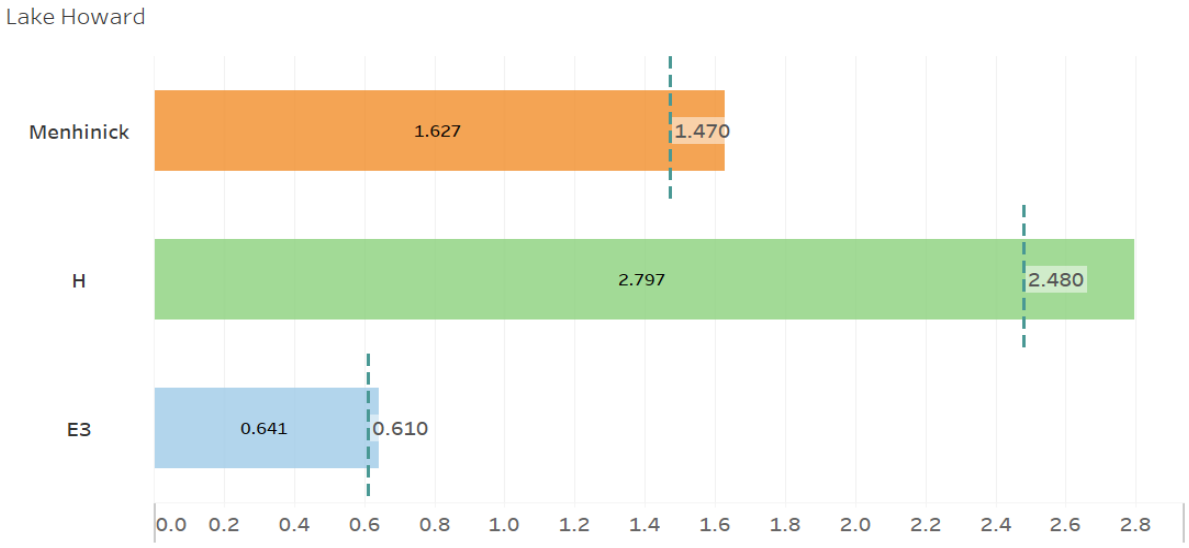


Figure 3-106. Chart depicting 2024 diversity indices for Lake Howard. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Howard's health index scores from 2018 to 2024 shows consistently good values and few changes (Figure 3-107). While it is impaired, Lake Howard's water quality is trending in a positive direction. Invasive percentage has remained minimal which indicates that the lake health changes are the result of natural fluctuations in the vegetation community. That said, minimal presence of invasive plants in the last two years highlights how non-native management is needed to prevent further spread and potential negative impacts.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	1	3	3	2	3	3	2	NA	**2.4**
2019	1	3	3	2	3	2	3	3	**2.5**
2020	1	3	3	2	3	3	3	1	**2.4**
2021	1	3	3	2	3	3	3	1	**2.4**
2022	1	3	3	2	3	2	3	2	**2.4**
2023	1	3	3	3	3	2	2	2	**2.4**
2024	1	3	3	3	2	2	2	3	**2.4**

Figure 3-107. Chart depicting a comparison of Lake Howard's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- In addition to stormwater inputs to the lake, the now decommissioned Jan Phyl Village Wastewater Treatment Plant was contributing point-source discharges as late as 1977. These discharges could be a source of legacy nutrients.
- Several water quality metrics are significantly correlated with Lake Howard's surface level; likely due to increased flushing during wetter periods. This means that drought conditions could result in water quality declines.
- While not currently an issue, the management of invasive species like water hyacinth is a potential concern. It can only take a single season for even a small population to take over large areas of a waterbody.

Lake Management Strategy:

- Treating stormwater from the surrounding drainage basin is one of the primary strategies for improving water quality. The City mitigates stormwater through various methods:
    - Street Sweeping over 50 miles per month in the downtown area.
    - Construction of a stormwater treatment/nature park on the south side of Lake Howard in the early 2000s.
    - Construction of an alum injection system in the mid-2000s estimated to reduce Lake Howard's TN loads by 4% and TP loads by 15% annually.
    - The Stormwater Assessment and Improvement Project: identified priority areas for green infrastructure in southern drainage sub-basins to prevent flooding and improve water quality.
    - Construction and maintenance of other green infrastructure; including over 12 raingardens that capture the first flush of stormwater in the downtown area.

- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC in order to coordinate invasive treatment efforts.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.
- A trash catchment system was installed at Heritage Park in 2020 to capture floating litter and debris from Lake Howard's largest drainage sub-basin.

Lake Idyl

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Idyl	0	0	0	0	0	3	0	2	**0.6**

Features & Statistics:

Surface area	19 acres
Mean depth	6.1 feet
Maximum depth	10 feet
Volume	108.1 acre-feet
Drainage basin area	231 acres
Annual TN Load	934.9 lbs
Annual TP Load	154.5 lbs
Limiting nutrient	Co-limited (N & P)

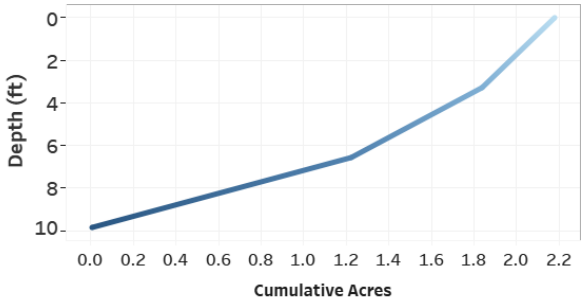


Figure 3-108. Hypsograph of Lake Idyl depicting the depth profile and morphology of the lake bed.

Hydrology:

One of Winter Haven's smallest waterbodies, Lake Idyl is 18 acres, has an average depth of 6.7 feet, and a maximum depth of just under 10 feet (Figure 3-108). With a depth much shallower than the regional average, sediment suspension is an issue for Lake Idyl. Stormwater is conveyed to this waterbody from a 231 acre drainage basin comprised of three separate sub-basins (Figure 3-109). Mostly comprised of residential land uses, the basin contributes 935 lbs of TN and 154 lbs of TP to the lake annually. On a per acre basis, these pollutant loads rank 12th compared with other lakes in the region. There are six septic systems present in the drainage basin. This low density is likely not a major contributor of pollutants via groundwater leaching. Due to stormwater inputs, the City conducts street sweeping services on the majority of roadways in the basin.

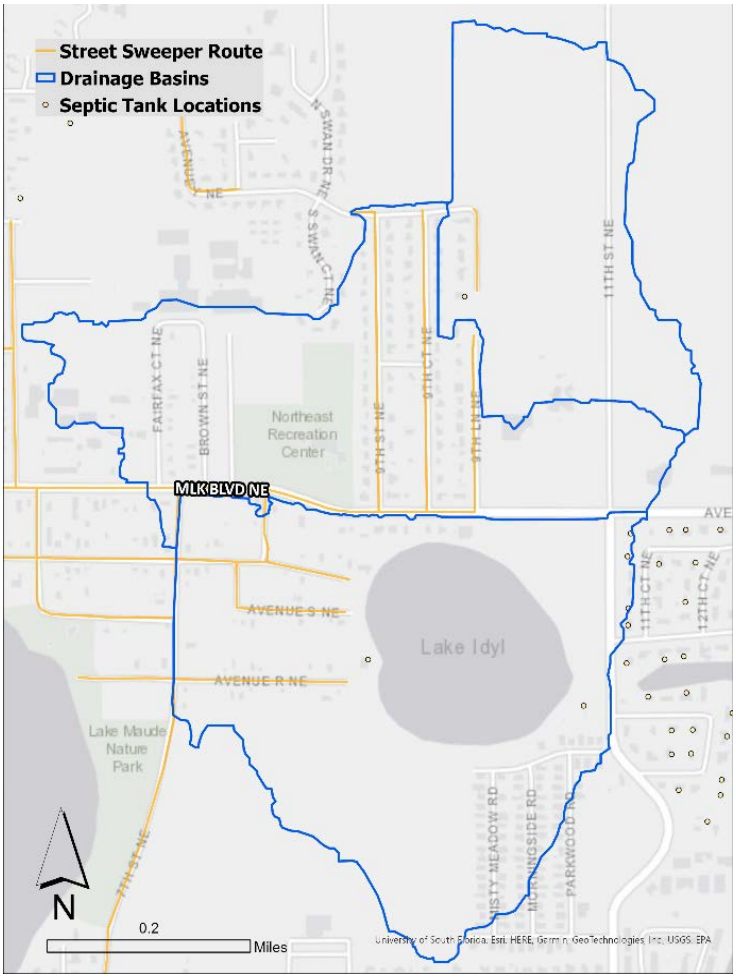


Figure 3-109. Map of Lake Idyl's drainage basin, City street sweeper routes, and nearby septic systems.

Lake Idyl receives excess flow from Lake Maude and discharges its overflow to Lake Buckeye. It's average surface elevation is at about the midway point within the Peace Creek watershed. Over its period of record, Lake Idyl's surface level has fluctuated between 131.3 and 133.9 feet above sea level. The normal level range fluctuates much more narrowly between 132.3 and 132.5 feet (Figure 3-110). During 2024, Lake Idyl reached a dry season low of 132.2 feet in May and a wet season peak of 132.8 feet after the hurricanes in October. Idyl ended the year with a surface level of 132.15—well below its normal range. Changes in Lake Idyl's surface level are not significantly correlated with any of the primary water quality metrics; likely because it exhibits such minimal fluctuation (see appendix).

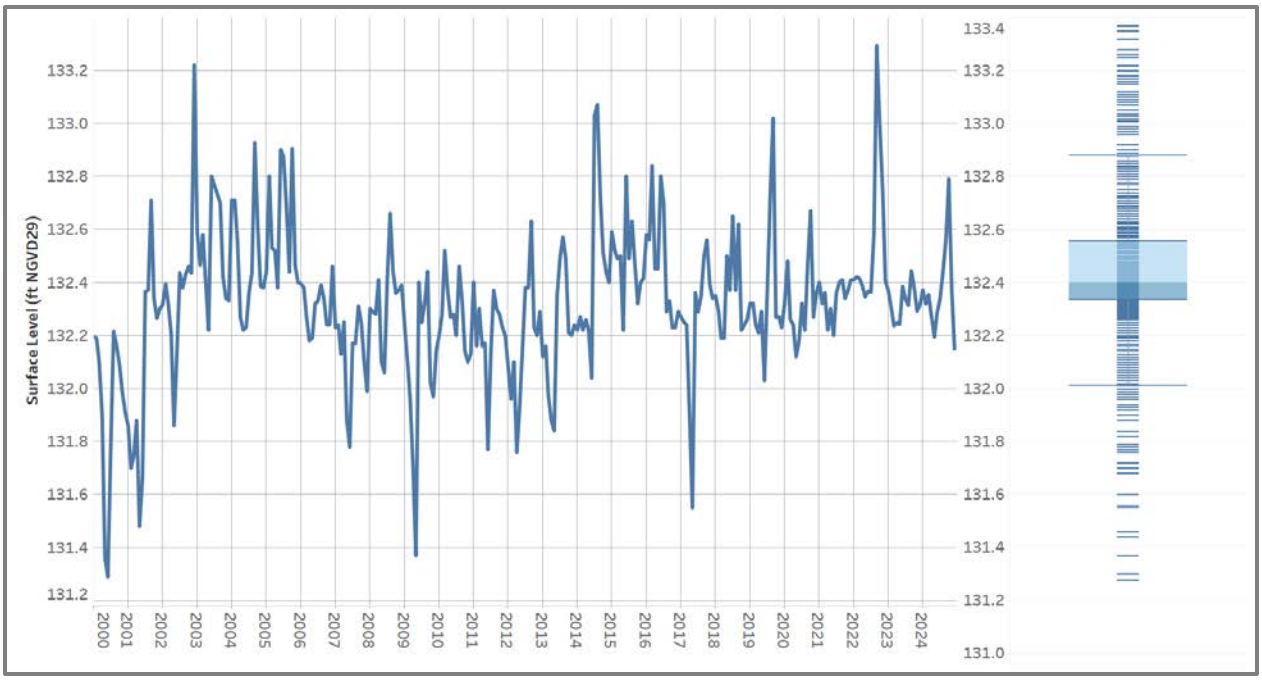


Figure 3-110. Hydrograph of Lake Idyl depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Idyl is categorized as a clear, alkaline waterbody. Due to multiple consecutive NNC exceedances during the assessment period, Lake Idyl is considered impaired for Chl-a, TN, and TP (Figure 3-111). This equates to an impairment criterion score of 0. From 2022 to 2024, Lake Idyl's TN and TP concentrations were below impairment thresholds. The Chl-a concentration was below the impairment threshold in 2022 and 2023, but exceeded it in 2024. Due to these impairments, the FDEP approved the City's draft alternative restoration plan for Lake Idyl in lieu of a total maximum daily load (TMDL).

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	0.574	0.008	Increasing	0	0
TN	Y	0.678	0.001	Increasing		0
TP	Y	0.755	0.000	Increasing		0
Secchi	NA	-0.635	0.003	Decreasing		0

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Based on the data, all four parameters exhibit significant deteriorating trends. These trends underscore the need to address the water quality issues in this lake. It is believed that stormwater pollutant loading has been the primary driver of water quality decline, but impacts from sediment suspension and invasive plant treatments likely contribute to sustained poor water quality in recent years.

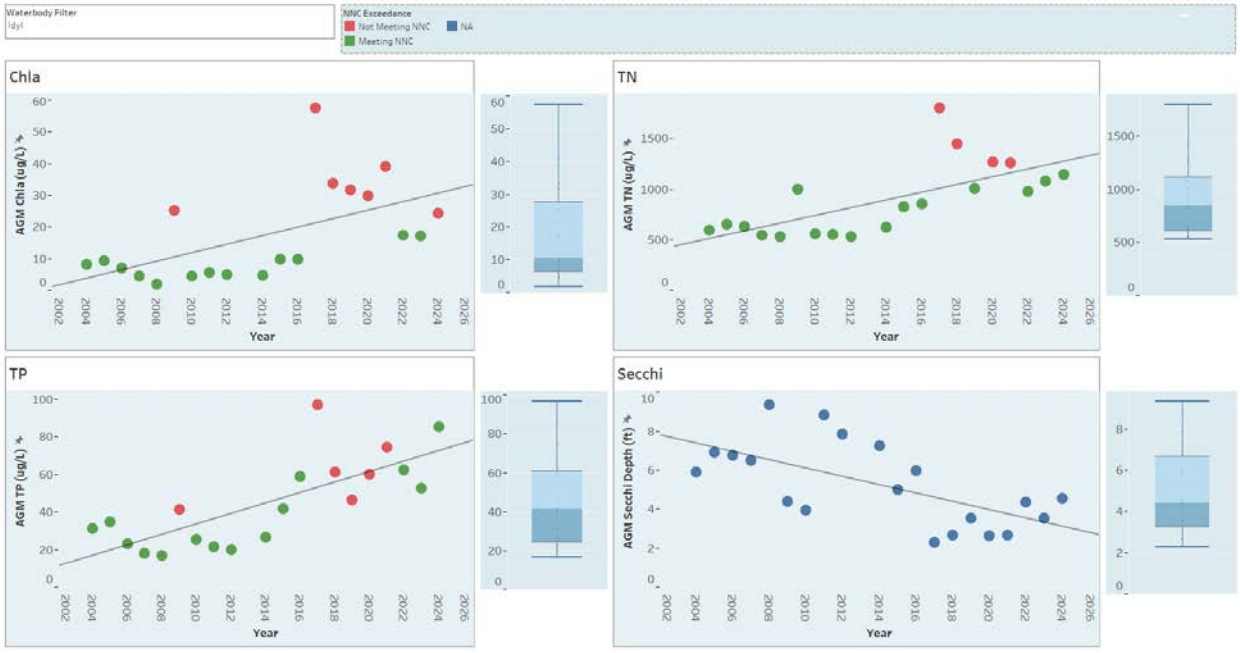


Figure 3-111. Lake Idyl AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Idyl on 2/9/2024. The PAC during this survey was 87.6% and the total BV was 9.6% (Figure 3-112). A comparison of abundance values from previous years shows that Lake Idyl typically exhibits high vegetation coverage in excess of 35%. Much of the lake is covered by spatterdock; a floating leaf plant that is usually found in shallow waters with mucky substrate. This amount of coverage equates to an abundance score of 3.

Invasive Species Management:

Based on the 2024 data, 35% of the plant community was comprised of spatterdock, followed by a mix of floating and submerged species (Figure 3-113). Managed invasive species made up 26% of the community; comprised of burhead sedge and floating water hyacinth. A comparison of data over the last six years shows that this is the highest abundance of invasives for this lake on record. The current percentage earns Lake Idyl an invasive criterion score of 0.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, Lake Idyl's overall diversity and evenness indices exceeded its long-term median values (Figure 3-114). This equates to a diversity criterion score of 2. Lake Idyl has traditionally had low species diversity, likely due to the

dominance of spatterdock and primrose willow. It is also likely that the mucky substrate hinders the growth of most native submerged species. However, the recent presence of submerged plants is a good sign of ecological improvement.

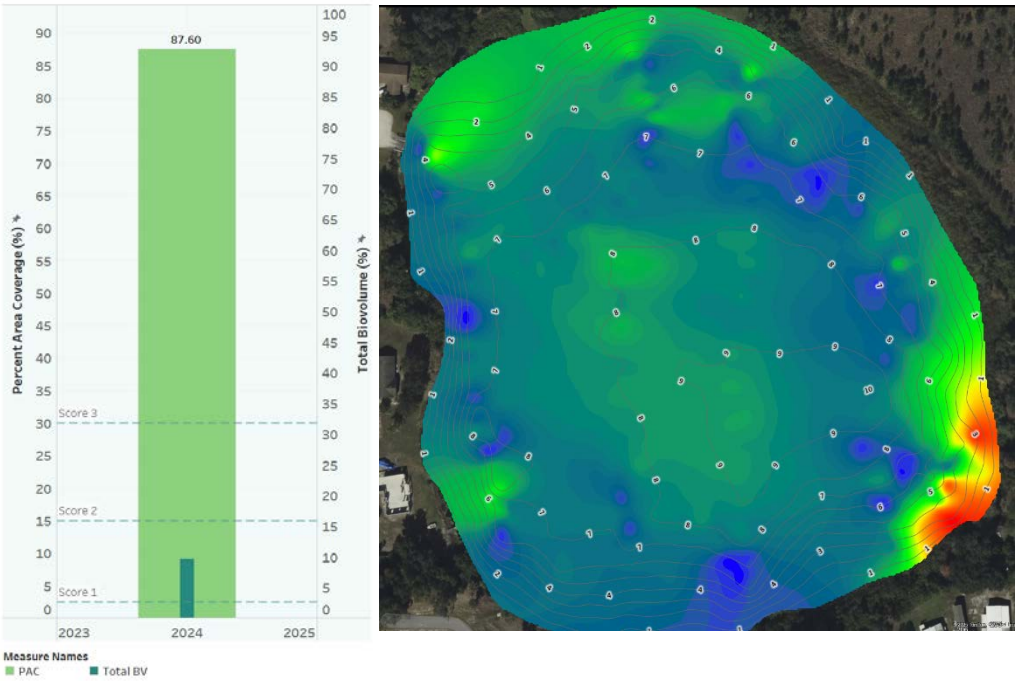


Figure 3-112. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Idyl; biovolume values range from green (lowest) to red (highest).

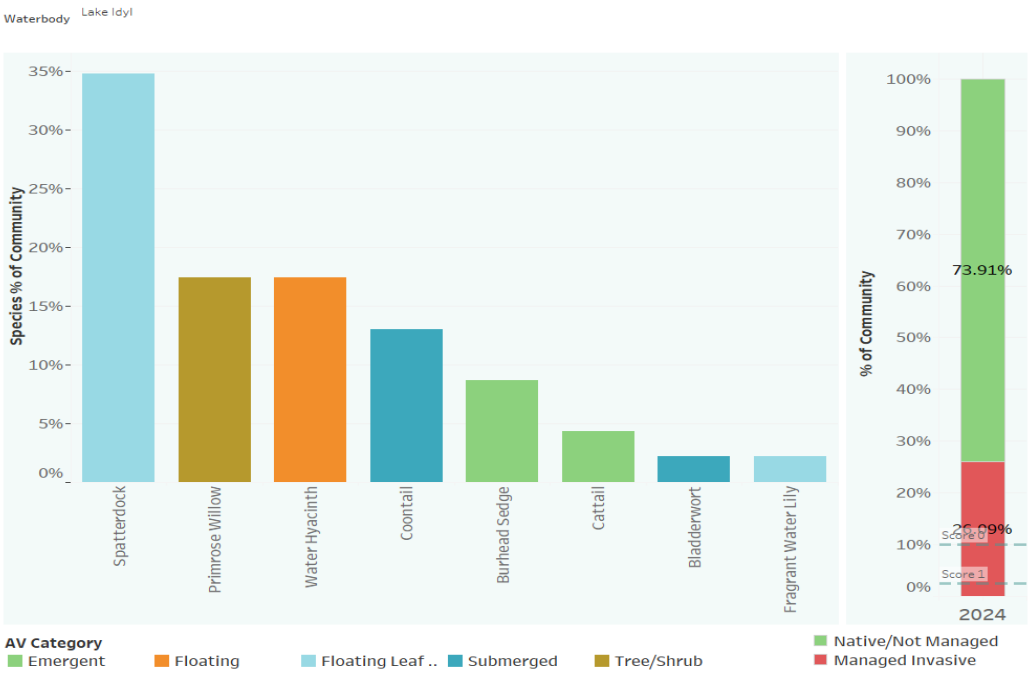


Figure 3-113. Chart depicting species frequency and invasive species percentage of Lake Idyl during 2024.

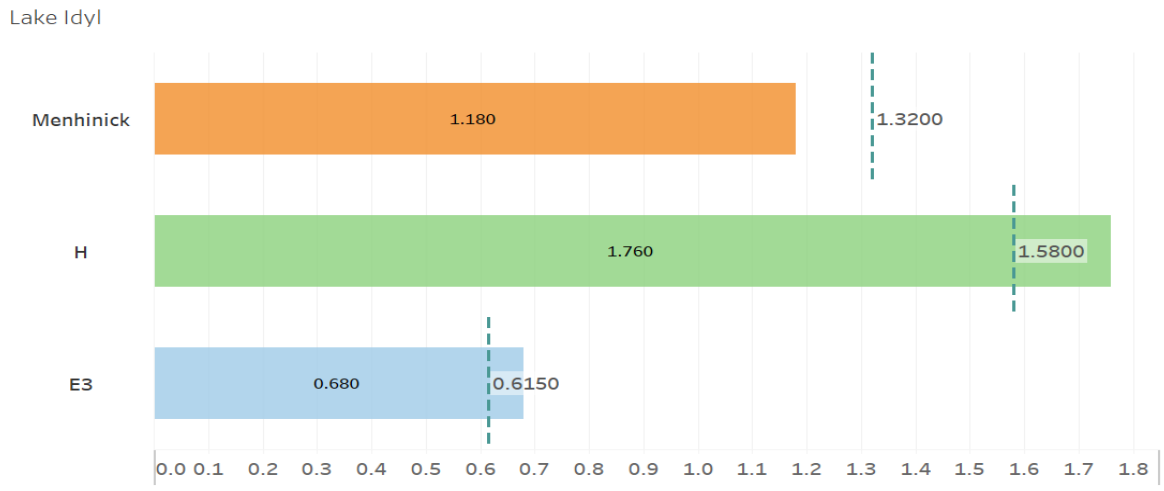


Figure 3-114. Chart depicting 2024 diversity indices for Lake Idyl. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Idyl's health index scores from 2018 to 2024 illustrates consistently low scores (Figure 3-115). Since monitoring began, Lake Idyl has remained impaired and exhibited a decline all of its water quality trends. The presence of managed invasive species has also been a consistent issue. Species diversity varies considerably—likely due to changes in the vegetation community as a result of increased invasive species presence and subsequent management efforts. On the whole, Lake Idyl is considered a high-priority lake on which to focus future management efforts on.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	1	1	1	2	3	1	1	**1.3**
2019	0	1	1	1	2	1	0	1	**0.9**
2020	0	1	1	1	1	3	0	2	**1.1**
2021	0	1	1	0	1	3	0	0	**0.8**
2022	0	1	1	0	1	3	1	2	**1.1**
2023	0	0	0	0	0	3	0	1	**0.5**
2024	0	0	0	0	0	3	0	2	**0.6**

Figure 3-115. Chart depicting a comparison of Lake Idyl's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Stormwater pollutant loading is one of the primary factors believed to be driving the decline in water quality.
- The management of invasive species and floating tussocks is a constant concern as these plants can quickly take over large areas of a lake and/or the shoreline in a single growing season.
- The dominance of spatterdock can often result in a higher occurence of tussocks. These tussocks can present navigation, drainage, and habitat problems.

Lake Management Strategy:

- In addition to street sweeping (annual removal of 45 lbs of TN and 25 lbs of TP), the City has submitted a water quality improvement plan to FDEP in 2024. This plan includes:

  - A raingarden at the Recreation & Cultural Center is estimated to remove 17.6 lbs of TN and 0.76 lbs of TP annually.
  - Stormwater improvements in the drainage basin which are estimated to remove 386 lbs of TN and 60 lbs of TP annually.
  - Sediment inactivation treatment designed to neutralize 1,113 lbs of bioavailable phosphorus from the lake's sediment and water column.

- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large-scale herbicide treatments and potential water quality issues that follow.

Lake Idylwild

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Idylwild	2	3	2	3	3	3	1	3	**2.5**

Features & Statistics:

Surface area	95.2 acres
Mean depth	8.3 feet
Maximum depth	14 feet
Volume	834 acre-feet
Drainage basin area	225.4 acres
Annual TN Load	669.14 lbs
Annual TP Load	121.61 lbs
Limiting nutrient	Co-limited (N & P)

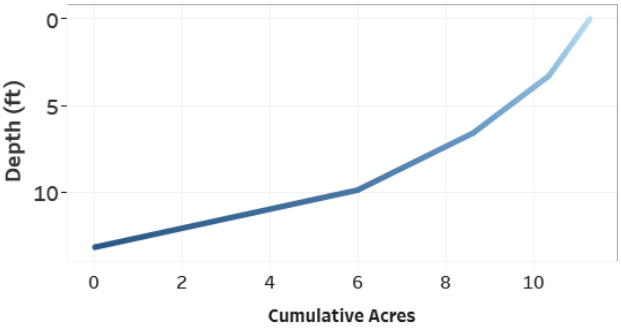


Figure 3-116. Hypsograph of Lake Idylwild depicting the depth profile and morphology of the lake bed.

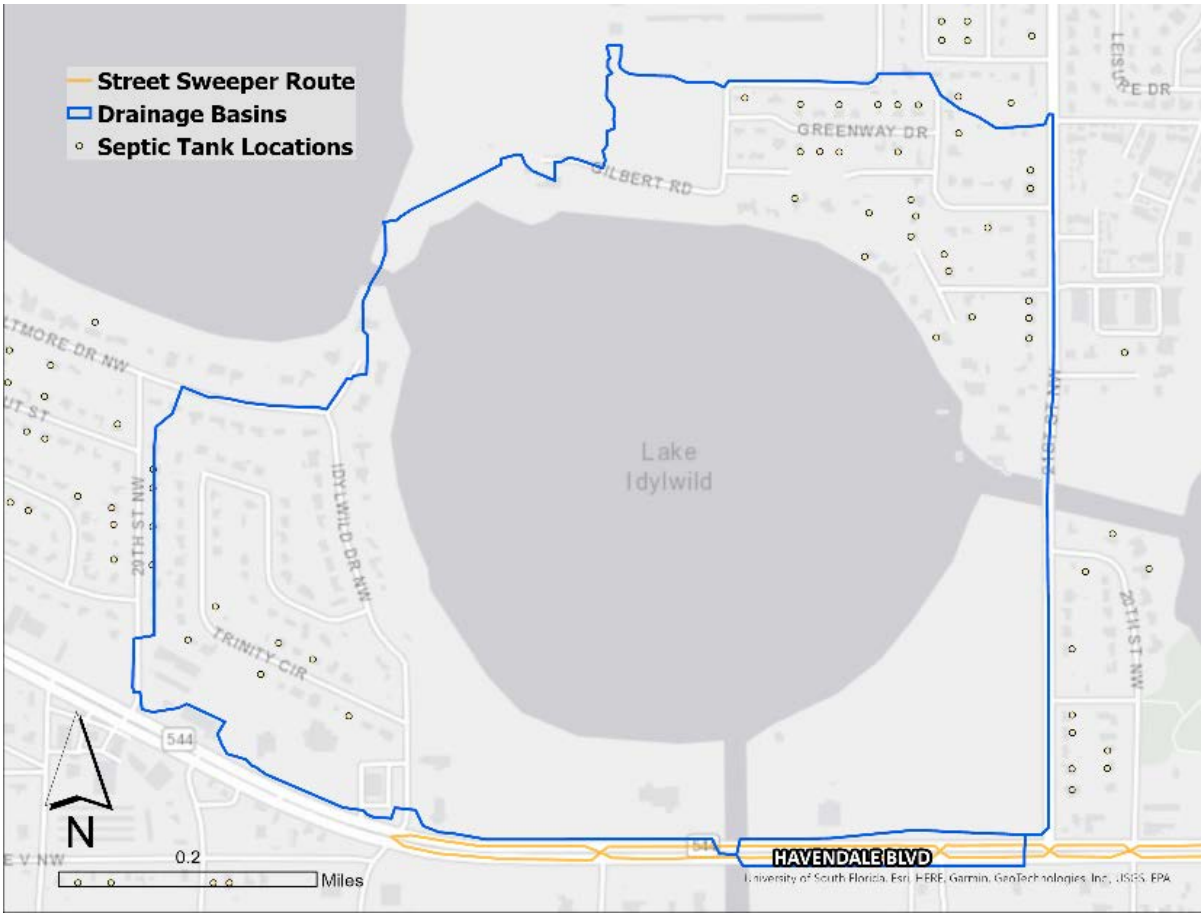


Figure 3-117. Map of Lake Idylwild's drainage basin, City street sweeper routes, and nearby septic systems.

Hydrology:

Lake Idylwild is one of the City's smaller lakes at 95 acres. Its depth is right around the regional mean, with an average depth of 8.3 feet and maximum depth approaching 15 feet (Figure 3-116). Stormwater is conveyed to this waterbody from a 225 acre drainage basin made up primarily of residential land uses; though there is a small transportation-heavy sub-basin that includes Havendale Blvd (Figure 3-117). These land uses contribute 669 lbs of TN and 121 lbs of TP to Lake Idylwild annually. On a per acre basis, these pollutant loading rates rank 23rd out of the 37 area lakes. There are 33 known septic systems in this drainage basin; a relatively low density, but septic systems can pose a potential pollutant loading issue. To manage stormwater from the main arterial roads to the south of the lake, the City conducts street sweeping services of up to 6 miles twice per month.

Lake Idylwild is part of the South Chain of Lakes with navigable connections to Lake Cannon, Hartridge, and Jessie. Due to these canal connections, surface levels fluctuate consistently across the South Chain of Lakes. Throughout the period of record, the South Chain's surface level has fluctuated between 127.5 and 133.7 feet above sea level. The normal range is much narrower—between 129.7 and 131.4 feet (Figure 3-118). That said, wetter and drier periods often result in more extreme peaks and troughs, respectively. During 2024, the South Chain reached a dry season low of 130.8 ft in June and a wet season peak of 131.8 ft in September. The level of the South Chain by the end of the year was slightly above the top of the normal range at 131.5 ft. The South Chain's level remained at or above the high end of the normal range throughout most of the year—consistent with annual level fluctuations over the last 10 years. According to linear regression analysis, changes in Lake Idylwild's surface level correlate with Chl-a, TN, and clarity (see appendix). This carries management implications as maintaining higher levels should correlate with improved water quality.

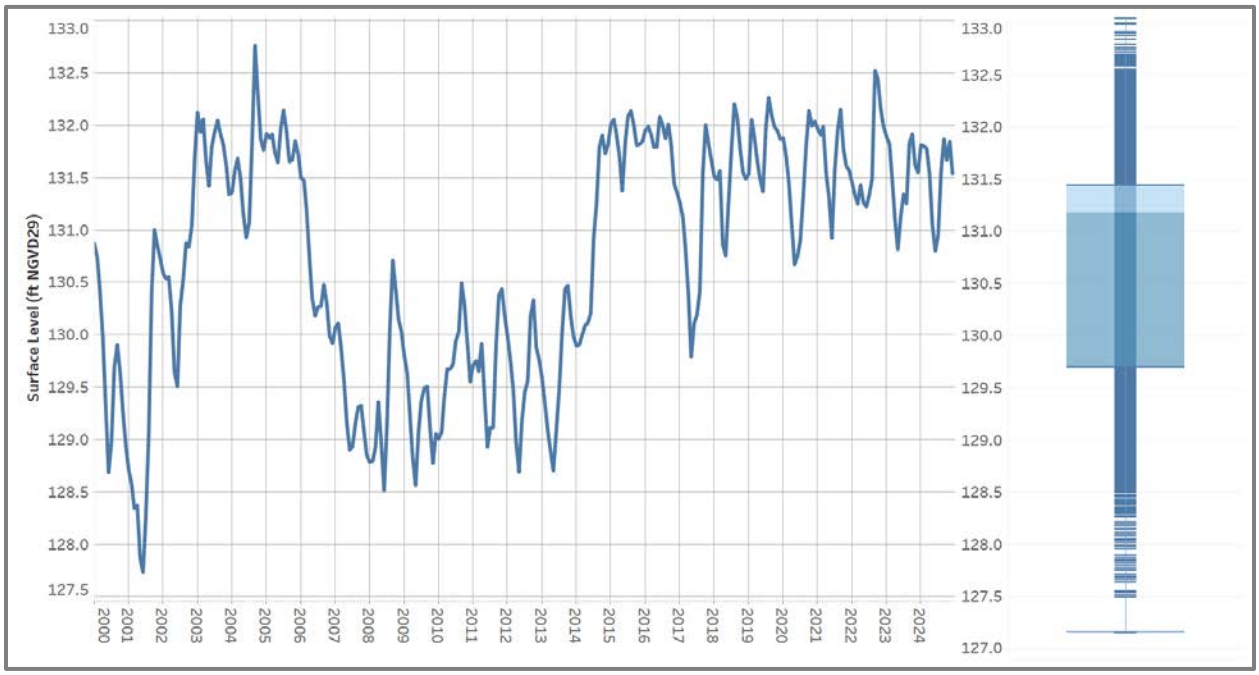


Figure 3-118. Hydrograph of Lake Idylwild depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Idylwild is categorized as a clear, alkaline waterbody. Due to consecutive NNC exceedances in 2017 and 2018, Lake Idylwild is considered impaired for Chl-a (Figure 3-119). This equates to an impairment criterion score of 2. Concentrations of Chl-a also exceeded the NNC threshold in 2022 and 2024. In 2019, the FDEP established a total maximum daily load for Lake Idylwild, stipulating a 31% reduction in TN to meeting NNC guidelines.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	-0.489	0.025	Decreasing	2	3
TN	N	-0.190	0.409	No Trend		2
TP	N	-0.557	0.009	Decreasing		3
Secchi	NA	0.441	0.046	Increasing		3

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Based on the data, Chl-a, TP, and Secchi depth exhibit significant improving trends; which equate to trend criterion scores of 3. While also improving, the TN trend is not statistically significant; which results in a trend score of 2. With the Chl-a concentrations continuing to trend in a downward direction, there should be a point in the near future where Chl-a becomes unimpaired, thereby increasing its water quality scores. Considering Lake Idylwild's previous impairments, these trends highlight how much the lake has improved in the last two decades.

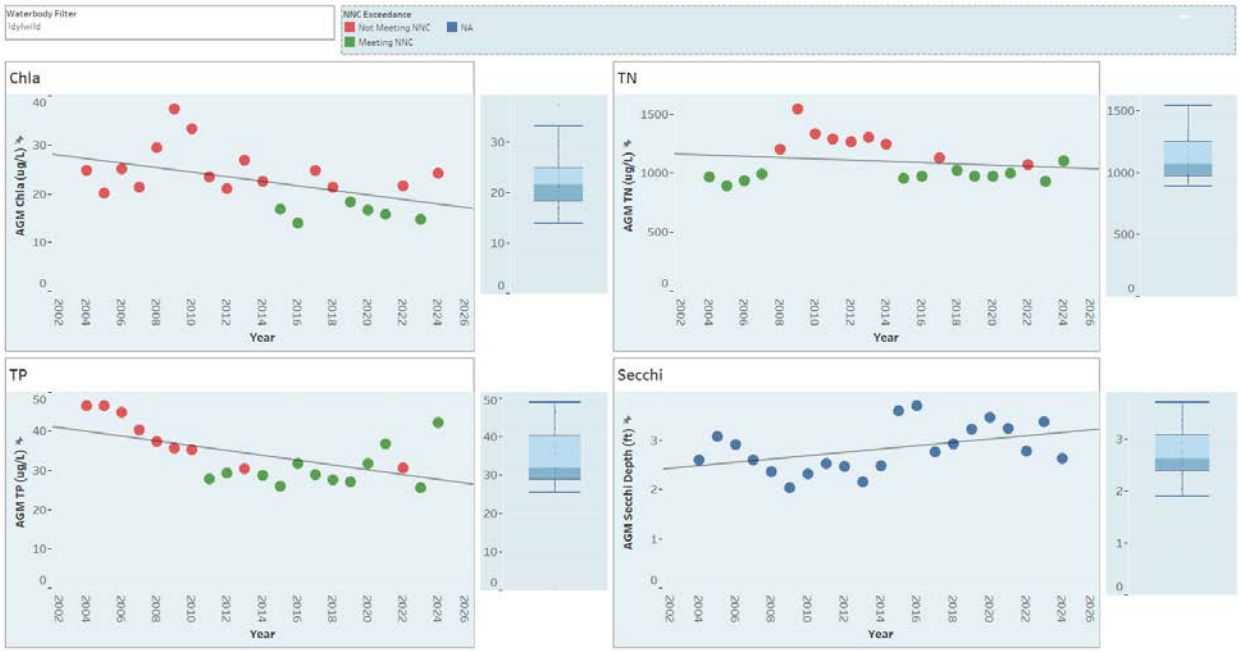


Figure 3-119. Lake Idylwild AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Idylwild on 4/25/2024. The PAC during this survey was 87% and the total BV was 26.8% (Figure 3-120). The 2024 coverage value was the highest on record and equates to a vegetation abundance criterion score of 3. A comparison of abundance data since 2018 shows that Lake Idylwild consistently maintains high vegetation coverage and biovolume via its large littoral zone in proportion to the entire lake surface area—demonstrated by the vegetation heatmap. This likely contributes to the water quality improvements observed in recent years.

Invasive Species Management:

Based on the 2024 survey data, native species dominated the vegetation community. Lake Idylwild exhibits a fairly even mix of emergent, submerged, and floating-leaf vegetation (Figure 3-121). Fragrant water lily and eel grass made up nearly 30% of the community, followed by 19 other unique species. Managed invasive species present were hydrilla and burhead sedge making up 3.2% of the vegetation community; resulting in an invasive criterion score of 1. That said, this was a more than 50% reduction in invasives from the previous year. Based on data from 2018 to 2023, the invasive percentage has consistently been between 1.75% and 7%. This indicates that invasive populations are in a relatively controlled state.

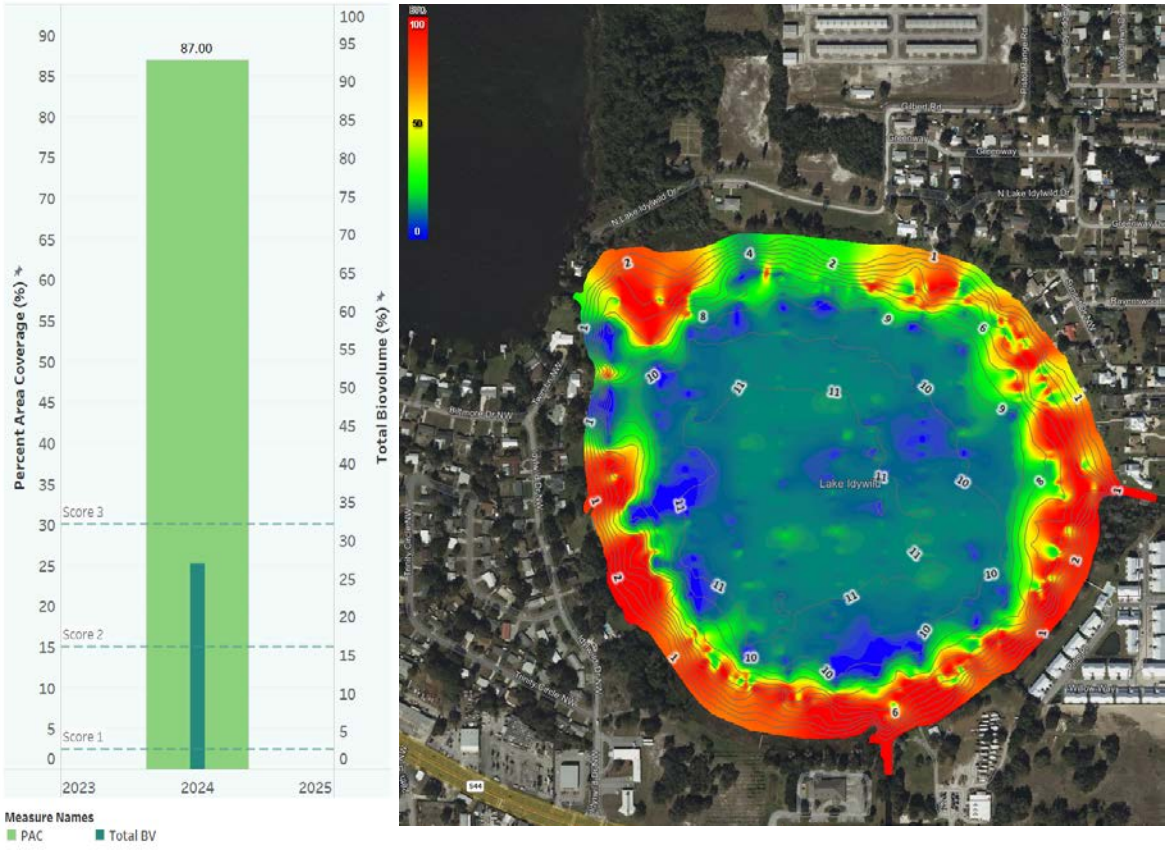


Figure 3-120. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Idylwild; biovolume values range from green (lowest) to red (highest).

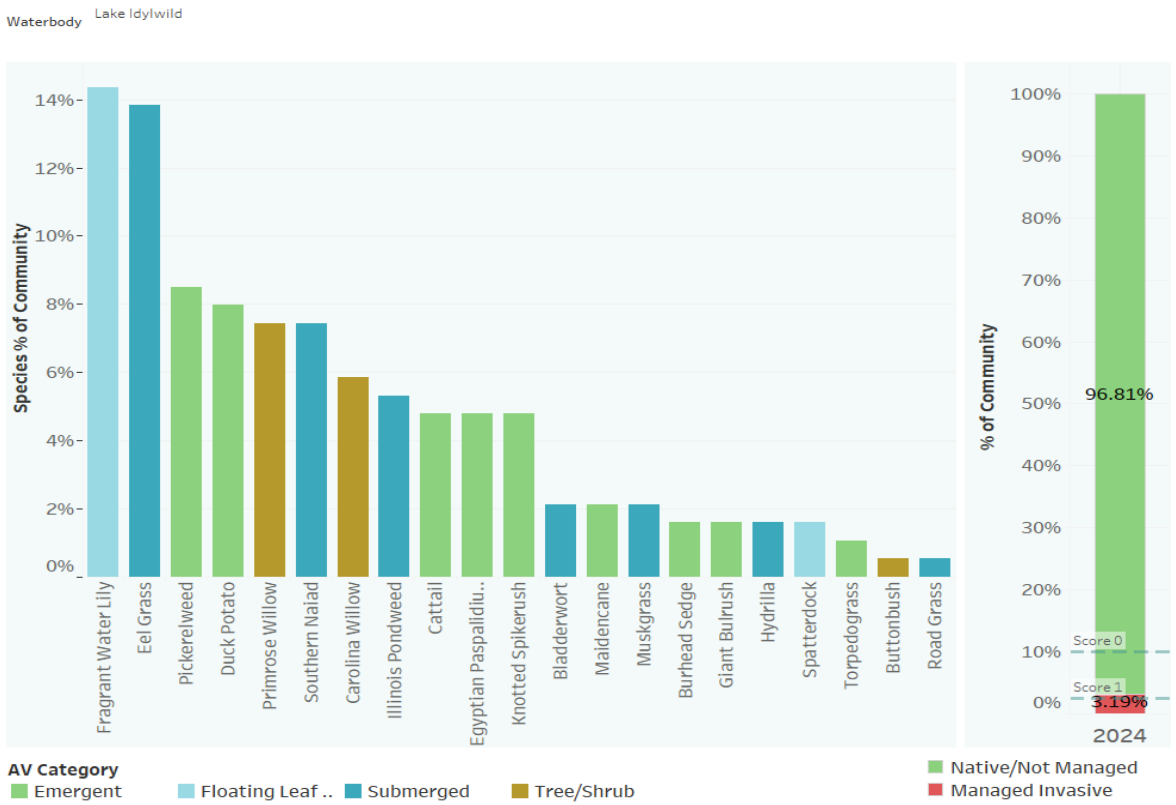


Figure 3-121. Chart depicting species frequency and invasive species percentage of Lake Idylwild during 2024.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, all three of Lake Idylwild's diversity indices exceeded their respective median values (Figure 3-122). This equates to a diversity criterion score of 3. In general, the shifts in the vegetation community are the result of natural processes since invasive species management is minimal. Continued monitoring should be prioritized to prevent the spread of invasive species in the future.

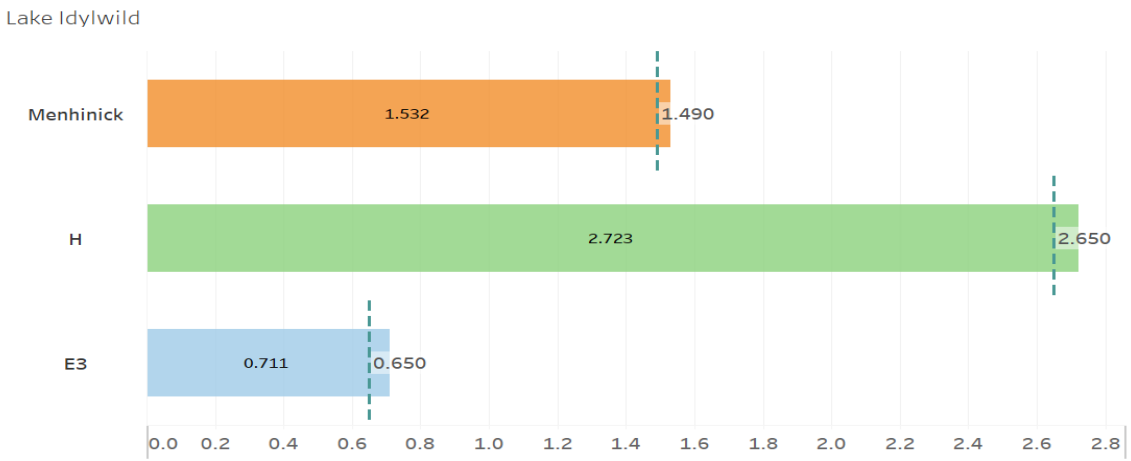


Figure 3-122. Chart depicting 2024 diversity indices for Lake Idylwild. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Idylwild's health index scores from 2018 to 2024 shows general improvement (Figure 3-123). The majority of this has come from water quality improvements. TN began meeting the NNC guidelines in 2020—resulting in impairment score increases. The trend scores in all parameters have also improved since monitoring began. Lake Idylwild consistently maintains excellent vegetation abundance. The continual cycle of invasive species resurgence and treatment creates the annual fluctuations in the invasive and diversity scores. Ultimately, Lake Idylwild's lake health scores have been somewhat higher than average—placing it lower on the priority ranking.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	1	2	1	3	2	3	2	1	**1.9**
2019	1	2	1	2	3	3	1	3	**2.0**
2020	1	2	2	2	3	3	1	0	**1.8**
2021	2	2	2	2	3	3	1	2	**2.1**
2022	2	2	2	2	3	3	1	2	**2.1**
2023	2	3	2	3	3	3	1	3	**2.5**
2024	2	3	2	3	3	3	1	3	**2.5**

Figure 3-123. Chart depicting a comparison of Lake Idylwild's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- While water quality is improving, managing stormwater runoff is important for the continued control of nitrogen and phosphorus loading to Lake Idylwild.
- Several water quality metrics are significantly correlated with Lake Idylwild's surface level; likely due to increased flushing during wetter periods. This means that drought conditions could result in water quality declines.
- The management of invasive species like hydrilla is a constant concern. It can only take a single season for even a small population to take over large areas of a waterbody.

Lake Management Strategy:

- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large-scale herbicide treatments and the potential water quality issues that follow.
- The City currently conducts street sweeping in the basin to combat stormwater pollutant loads. Residential education campaigns can be implemented to promote green stormwater infrastructure and reduce pollutant loads from urban stormwater runoff.

Lake Jessie

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Jessie	0	2	1	2	1	3	0	1	**1.3**

Features & Statistics:

Surface area	185 acres
Mean depth	7.9 feet
Maximum depth	10 feet
Volume	1697.1 acre-feet
Drainage basin area	973.4 acres
Annual TN Load	3871.2 lbs
Annual TP Load	652.3 lbs
Limiting nutrient	Co-limited (N & P)

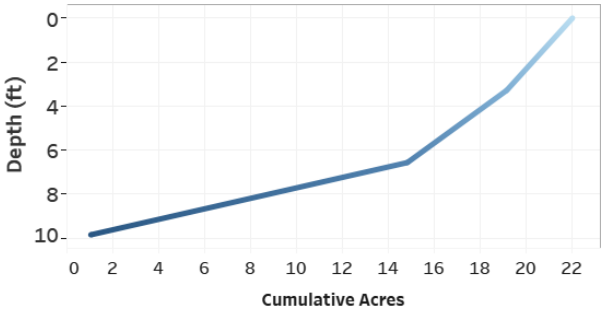


Figure 3-124. Hypsograph of Lake Jessie depicting the depth profile and morphology of the lake bed.

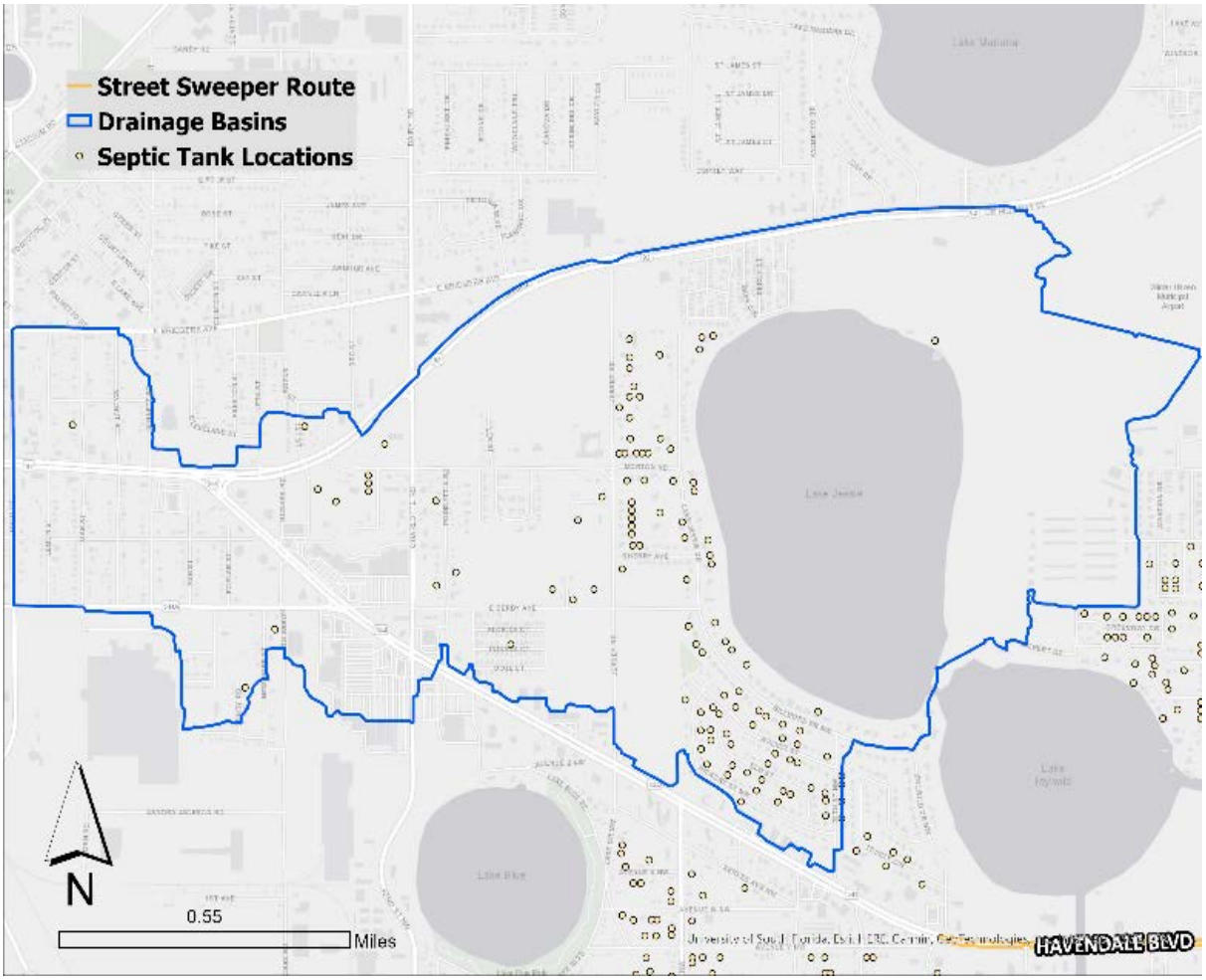


Figure 3-125. Map of Lake Jessie's drainage basin, City street sweeper routes, and nearby septic systems.

Hydrology:

Lake Jessie is a moderately sized, but shallow waterbody at 185 acres, an average depth of 8 feet, and a maximum depth of around 10 feet (Figure 3-124). The shallow depth provides ample viable space for aquatic vegetation to grow, but also makes sediment suspension from wind action more likely. Stormwater is conveyed to this waterbody from a 1600 acre drainage basin comprised of a mix of residential, commercial, and agricultural land uses (Figure 3-125). Based on pollutant load modelling, these land uses contribute 3,871 lbs of TN and 652 lbs of TP to Lake Jessie annually. Due to the size of the drainage basin in relation to the lake, these pollutant loads rank 11th out of 37 on a per acre basis. There are 111 septic systems present within the unincorporated Polk County side of the drainage basin. This constitutes a relatively high density and a potential nutrient source via septic leaching into groundwater. Lacking City-owned roadways or stormwater infrastructure on the east side of the lake, the City does not conduct any street sweeping services within this basin.

Lake Jessie is part of the South Chain of Lakes with a navigable connection to Lake Idylwild to the southeast. Due to these canal connections, surface levels fluctuate consistently across the South Chain of Lakes. Throughout the period of record, the South Chain's surface level has fluctuated between 127.5 and 133.7 feet above sea level. The normal range is much narrower—between 129.7 and 131.4 feet (Figure 3-126). That said, wetter and drier periods often result in more extreme peaks and troughs, respectively. During 2024, the South Chain reached a dry season low of 130.8 ft in June and a wet season peak of 131.8 ft in September. The level of the South Chain by the end of the year was slightly above the top of the normal range at 131.5 ft. The South Chain's level remained at or above the high end of the normal range throughout most of the year—consistent with annual level fluctuations over the last 10 years. According to linear regression analysis, changes in Lake Jessie's surface level correlate with Chl-a, TN, and clarity (see appendix). This carries management implications as maintaining higher levels should result in improved water quality.

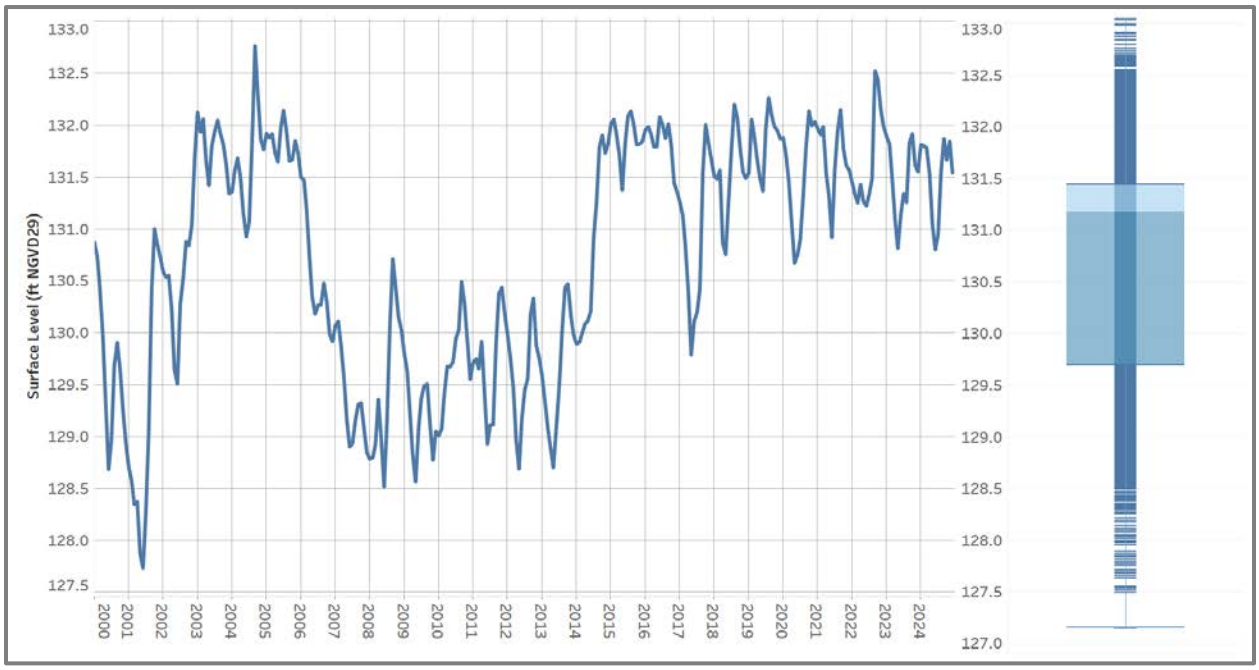


Figure 3-126. Hydrograph of Lake Jessie depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface levels during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Jessie is categorized as a clear, alkaline waterbody. Due to multiple consecutive NNC exceedances during the assessment period, Lake Jessie is considered impaired for Chl-a, TN, and TP. This results in an impairment criterion score of 0. In 2019, the FDEP established a total maximum daily load for Lake Jessie, stipulating a 12% reduction in TN to meet NNC guidelines.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	-0.223	0.331	No Trend	0	2
TN	Y	0.054	0.816	No Trend		1
TP	Y	-0.351	0.119	No Trend		2
Secchi	NA	-0.040	0.862	No Trend		1

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. None of these parameters exhibited statistically significant trends. Whereas, Chl-a and TN earn a trend criteria score of 1 for their non-significant deteriorating trends and Secchi depth receives a criteria score of 2 for improving trend (Figure 3-127). Individual AGM values and trend statistics can be found in the appendix.

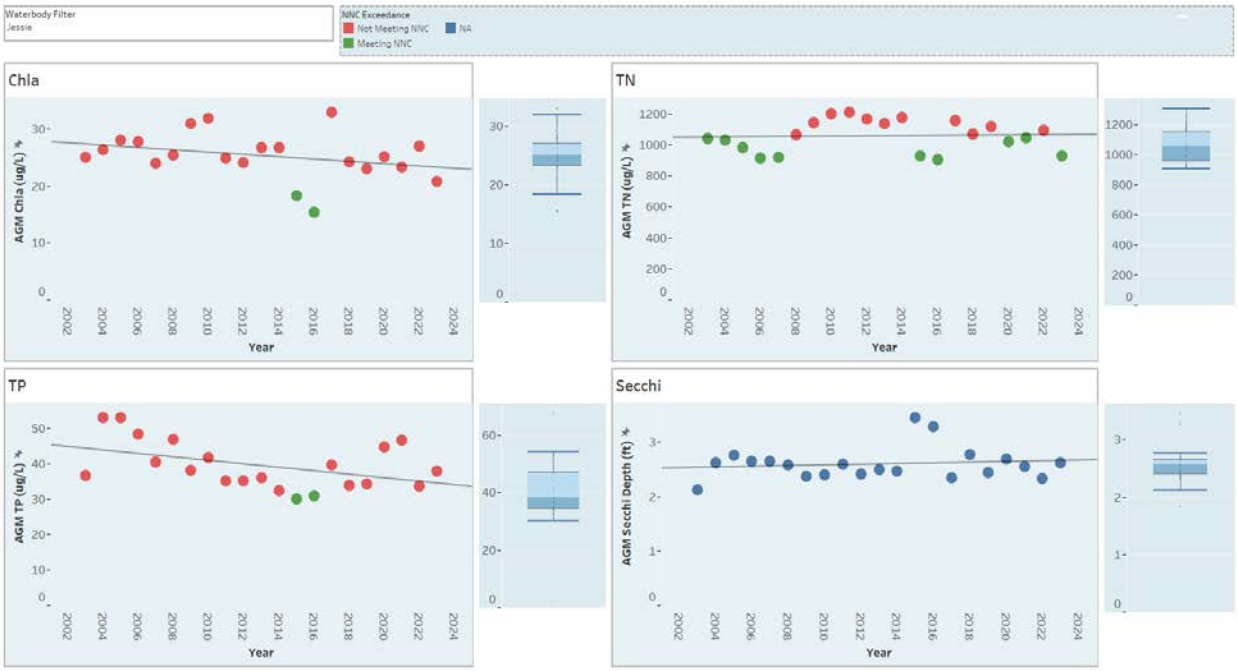


Figure 3-127. Lake Jessie AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Jessie on 2/20/2024. The PAC during this survey was 86.3% and the total BV was 14.2%; exhibiting little change from the previous year (Figure 3-128). A comparison of abundance data from 2018 to 2024 indicates that Lake Jessie consistently maintains coverage above 30%. This is unsurprising due to the gradual slope of the

lake bed allowing for a wide littoral zone. The result is a vegetation abundance criterion score of 3.

Invasive Species Management:

Based on data from the 2024 survey, Lake Jessie is clearly dominated by eelgrass, making up 21% of species (Figure 3-129). The remaining plants are comprised of a mix of emergent, submerged, and floating leaf. Unfortunately, the proportion of invasive species increased from 6% in 2023 to 11% in 2024. The invasives present include hydrilla and burhead sedge. This has resulted in an invasive criterion score of 0 and indicates the need for management action to prevent further spread.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 survey, the species evenness and overall diversity indices met or exceeded their long-term median values (Figure 3-130). The number of unique species (i.e. 23) is high compared with the other study lakes. However, a couple of less abundant species were not detected in 2024, resulting in a relatively lower richness index value for Lake Jessie. Due to this, the 2024 diversity criterion score for Lake Jessie is 2.

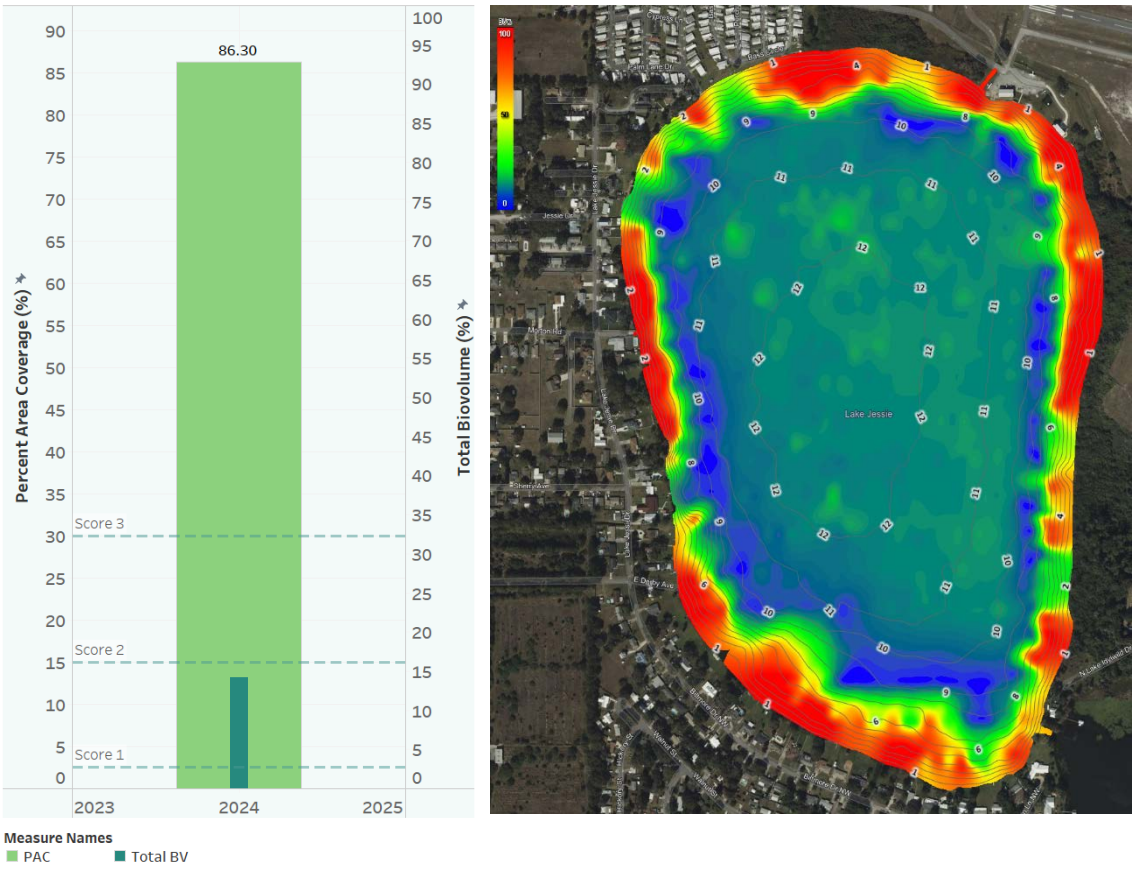


Figure 3-128. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Jessie; biovolume values range from green (lowest) to red (highest).

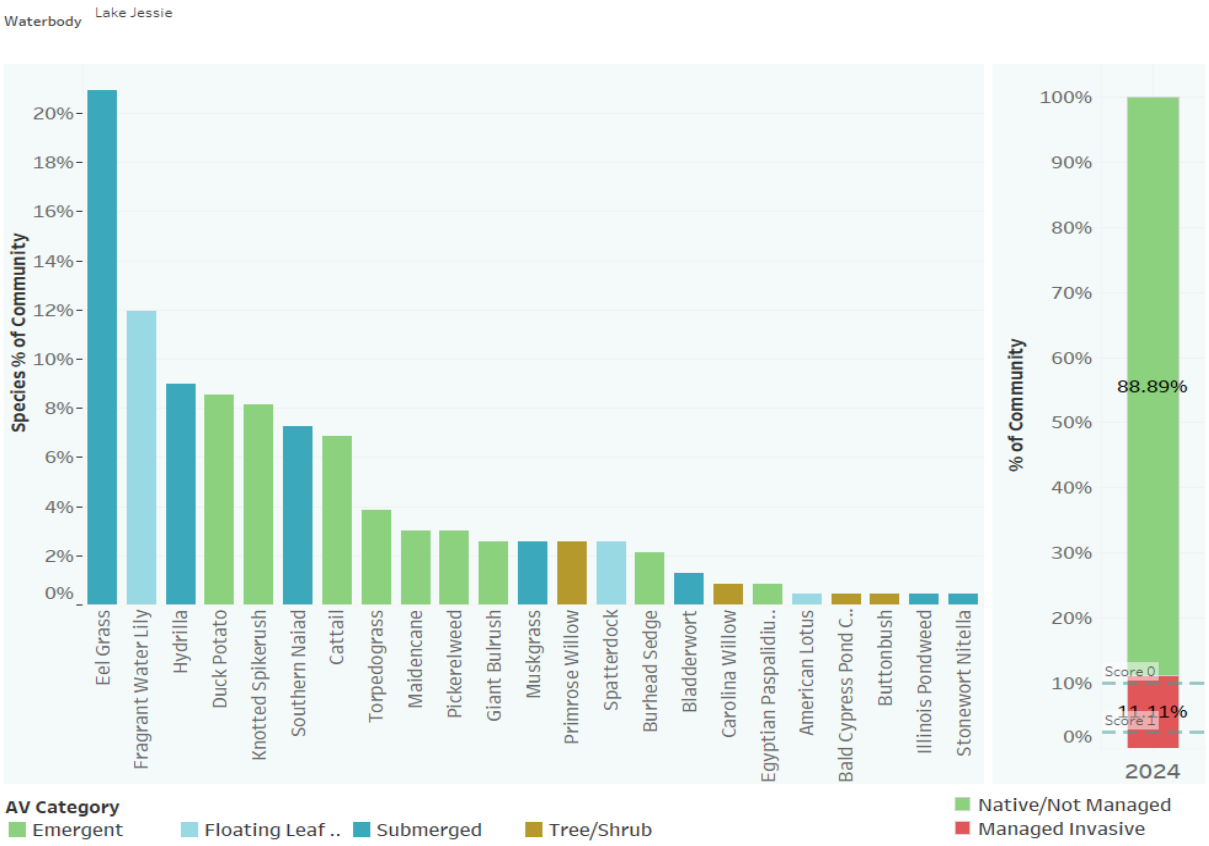


Figure 3-129. Chart depicting species frequency and invasive species percentage of Lake Jessie during 2024.

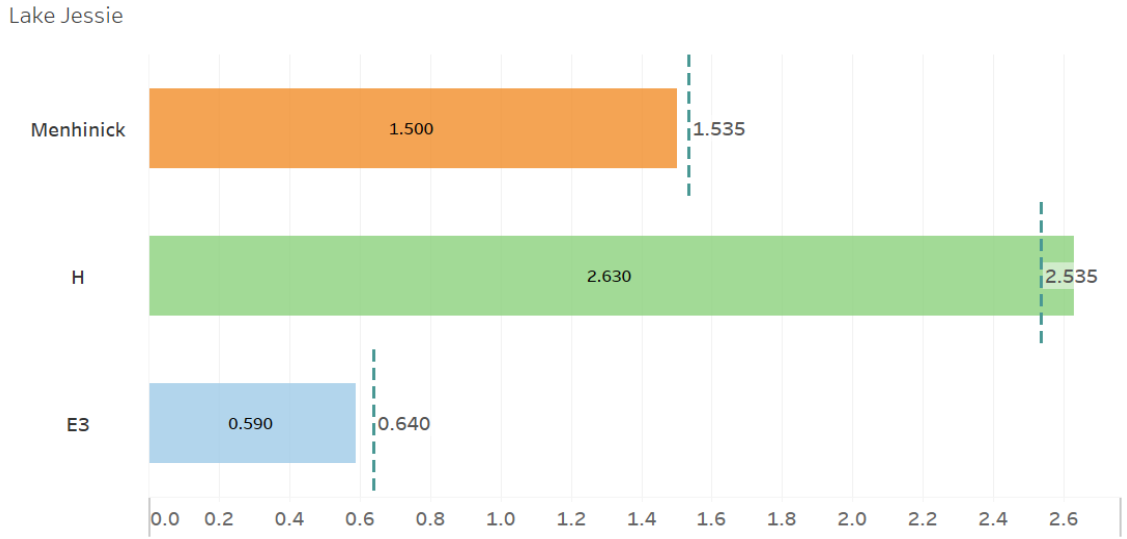


Figure 3-130. Chart depicting 2024 diversity indices for Lake Jessie. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Jessie's health index scores from 2018 to 2024 some variability (Figure 3-131). While impairment criterion scores have not changed in this five year span, trend scores have fluctuated somewhat. Most notable are the improvement to the Chl-a trend statistics. The

majority of the score variance has come from invasive species presence and species diversity. This is likely a reflection of changes in the vegetation community, due in part to the invasive species management efforts. Lake Jessie's water quality and invasive management issues place it higher on the City's priority list for management action.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	1	1	3	2	3	2	1	**1.6**
2019	0	1	1	2	2	3	1	3	**1.6**
2020	0	1	1	2	2	3	1	0	**1.3**
2021	0	2	1	2	2	3	0	1	**1.4**
2022	0	1	1	2	2	3	1	1	**1.4**
2023	0	2	1	3	2	3	1	2	**1.8**
2024	0	2	1	2	1	3	0	1	**1.3**

Figure 3-131. Chart depicting a comparison of Lake Jessie's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- In addition to stormwater pollutant loading, there are reports of historic wastewater treatment plant discharges for this waterbody. The volume and time frame for these discharges is unconfirmed, however. Regardless, these historic point-source pollutants could be impacting water quality now.
- The density of OSTDs within this basin could be a source for nutrient pollutant loading if they are leaching into the nearby water table.
- Several water quality metrics are significantly correlated with Lake Jessie's surface level, likely due to increased flushing during wetter periods. This means that drought conditions could result in water quality declines.
- The management of invasive species is a constant concern for this waterbody. While invasive presence is low this year, it can take a single growing season for many of these species to take over large areas of the lake.

Lake Management Strategy:

- City staff may explore source analysis of both the historic point source and OSTD pollutant loading. Future management actions may involve sediment removal/inactivation and/or septic-to-sewer conversion.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Reducing the recent hydrilla infestation is necessary to get Lake Jessie back into a maintenance routine comprised of smaller-scale treatments that will have less water quality and habitat impacts.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.

Lake Link

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Link	3	1	2	1	2	2	3	1	**1.9**

Features & Statistics:

Surface area	27.7 acres
Mean depth	8.84 feet
Maximum depth	22 feet
Volume	257 acre-feet
Drainage basin area	63.1 acres
Annual TN Load	197.2 lbs
Annual TP Load	31.7 lbs
Limiting nutrient	Phosphorus

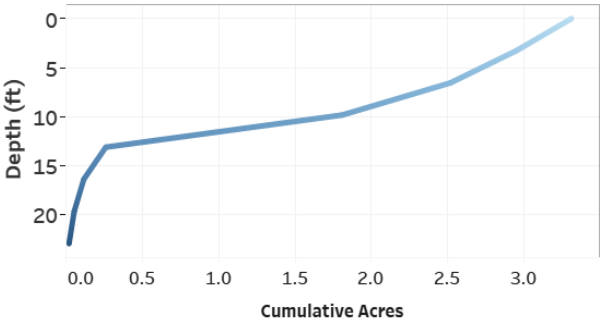


Figure 3-132. Hypsograph of Lake Link depicting the depth profile and morphology of the lake bed.

Hydrology:

Lake Link is a small but deep waterbody at 28 acres, an average depth of 8.8 feet, and a maximum depth of 22 feet (Figure 3-132). This is representative of a classic sinkhole lake, but the steep slopes of the lake bed limits the available habitat for aquatic plant growth. Stormwater is conveyed to this waterbody from a 63-acre drainage basin comprised of four separate sub-basins (Figure 3-133). Made up almost entirely of residential land uses, the drainage basin contributes 197 lbs of TN and 32 lbs of TP to Lake Link annually. On a per acre basis, these loading rates rank 25th out of the 37 area lakes. There are 15 septic systems present within Link's drainage basin. This constitutes a low density and likely doesn't contribute much pollutant loading. To combat stormwater loading, the City conducts street sweeping services of 2.9 miles per month along the north side of the drainage basin.

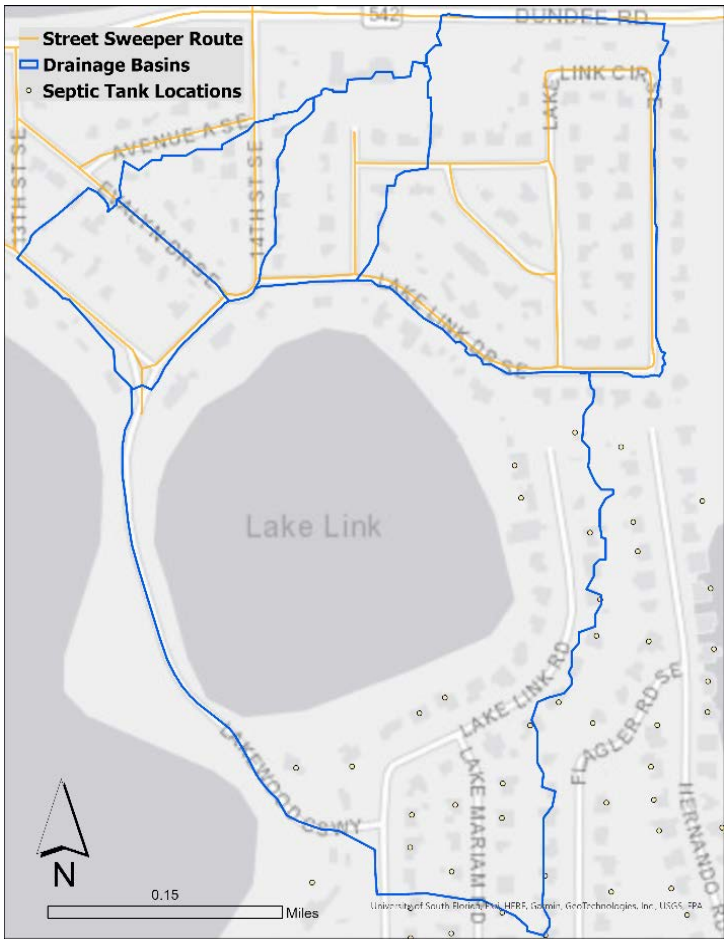


Figure 3-133. Map of Lake Link's drainage basin, City street sweeper routes, and nearby septic systems.

Lake Link is connected to Lake Otis via a navigable canal and overflows via underground pipe to Lake Mariam. The surface elevation of these two lakes sits near the bottom of the Peace Creek watershed. Over its period of record, the shared surface level of Lakes Link and Otis has fluctuated between 120.3 and 128.8 feet above sea level. The wide range of fluctuation is possible because of the steep-sloped morphology of these lakes. The normal range of fluctuation is much narrower—between 124.9 and 127.2 feet (Figure 3-134). During 2024, Lake Link reached its peak of 126.4 feet in June and plummeted to a low of 125 feet in November; ending the year near the low end of the normal range at 125.2 feet. This is strange due to the tremendous amount of rainfall received during the 2024 hurricane season. It is likely that the Lake Region Lakes Management District opened the control structure to lower the lake level prior to the storms. According to linear regression analysis, changes in Lake Link's surface level are inversely correlated with TN and TP concentrations (see appendix). This carries management implications as an increase in level should result in improved water quality.

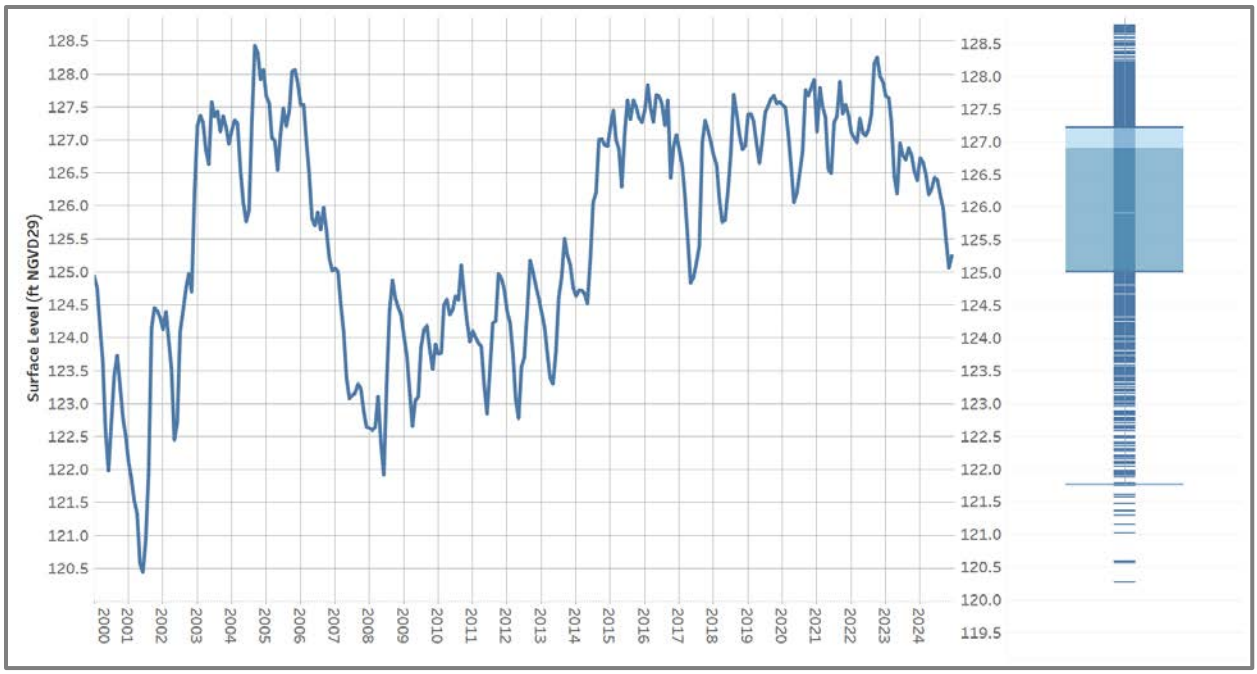


Figure 3-134. Hydrograph of Lake Link depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria, Lake Link is categorized as a clear, alkaline waterbody. Based on the water quality data, Lake Link has not exhibited NNC exceedances in any of the primary water quality parameters during the assessment period (Figure 3-135). This equates to an impairment criterion score of 3.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	0.418	0.107	No Trend	3	1
TN	N	-0.104	0.703	No Trend		2
TP	N	0.071	0.794	No Trend		1
Secchi	NA	-0.483	0.058	No Trend		2

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. None of the parameters exhibited statistically significant trends. However, TN and Secchi depth are moving in a generally improving direction while Chl-a and TP are moving in a deteriorating direction. These trends aren't worrisome considering Lake Link's water quality is currently meeting intended use standards.

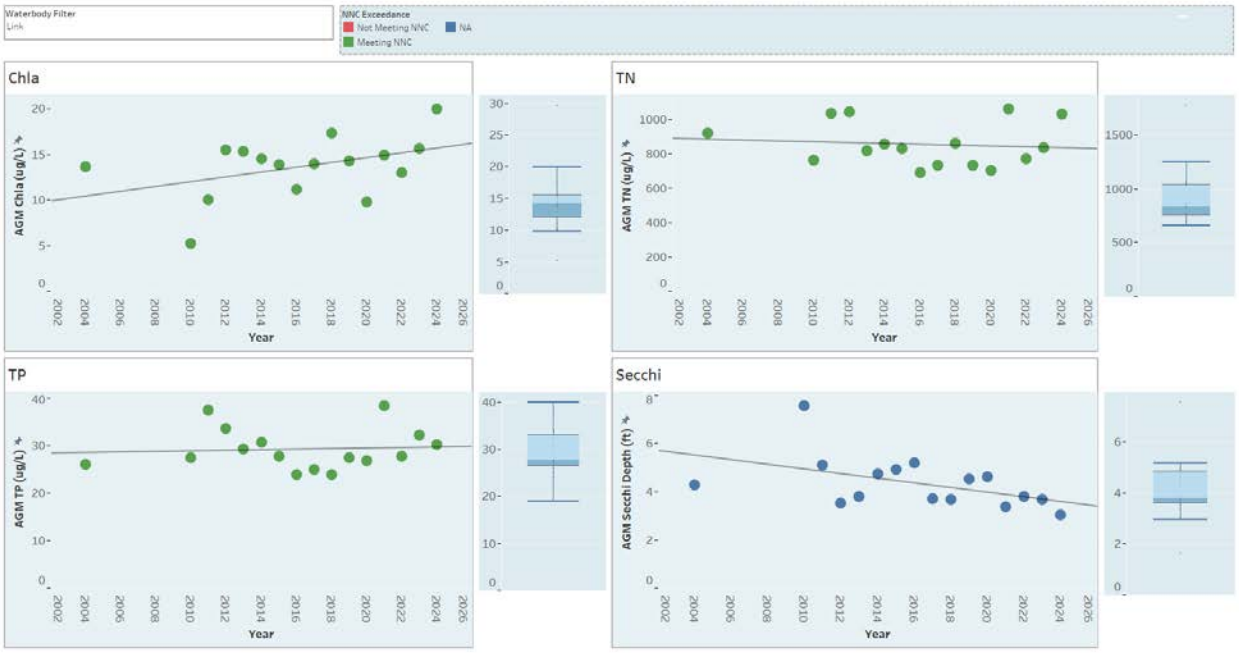


Figure 3-135. Lake Link AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots showing relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Link on 9/6/2024. The PAC during this survey was 25.8% and the total BV was 3.6% (Figure 3-136). This was a slight decrease in coverage from the previous year and equates to an abundance criterion score of 2. Over the period of record, Lake Link has had generally high abundance values. Management of invasive species like hydrilla is the primary driver behind changes in coverage and biovolume.

Invasive Species Management:

Based on the 2024 survey, Lake Link possessed a fairly even mix of emergent, floating-leaf and submerged species. While SAV was previously much more prominent, invasive management efforts have reduced their numbers somewhat (Figure 3-137). Fortunately, no managed invasives were detected in 2024—highlighting an effective hydrilla treatment in the previous year. This equates to an invasive criterion score of 3, but continued monitoring is necessary for early detection and rapid response to any future outbreaks.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Due to the reduction in the invasive species previously present, Lake Link's species richness and overall diversity indices were lower than the median (Figure 3-138). The evenness index value indicates a more equal spread of unique species in 2024, however. These index values equate to a diversity criterion score of 1.

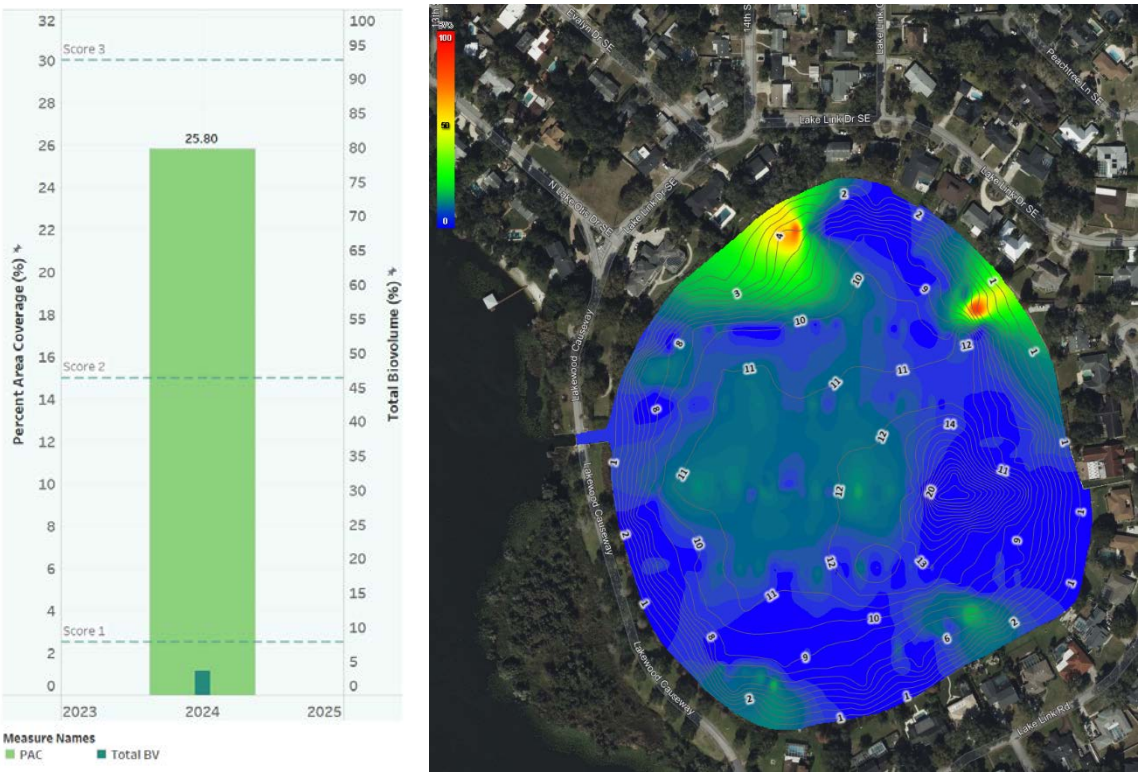


Figure 3-136. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Link; biovolume values range from green (lowest) to red (highest).

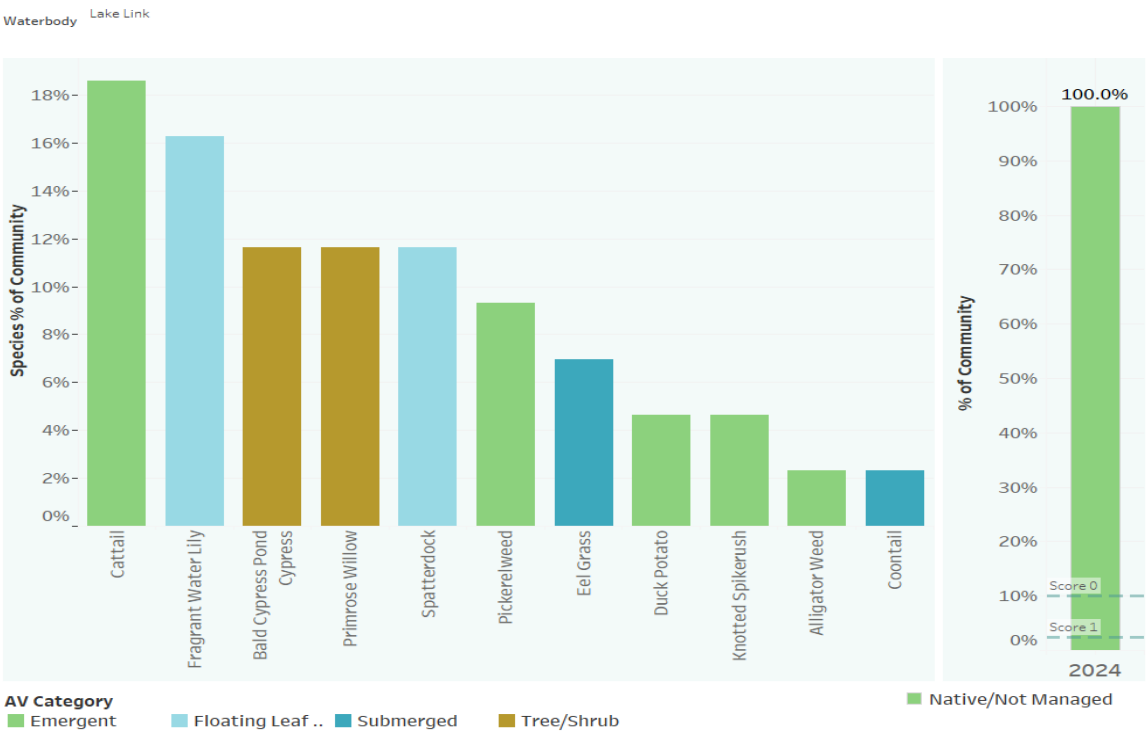


Figure 3-137. Chart depicting species frequency and invasive species percentage of Lake Link during 2024.

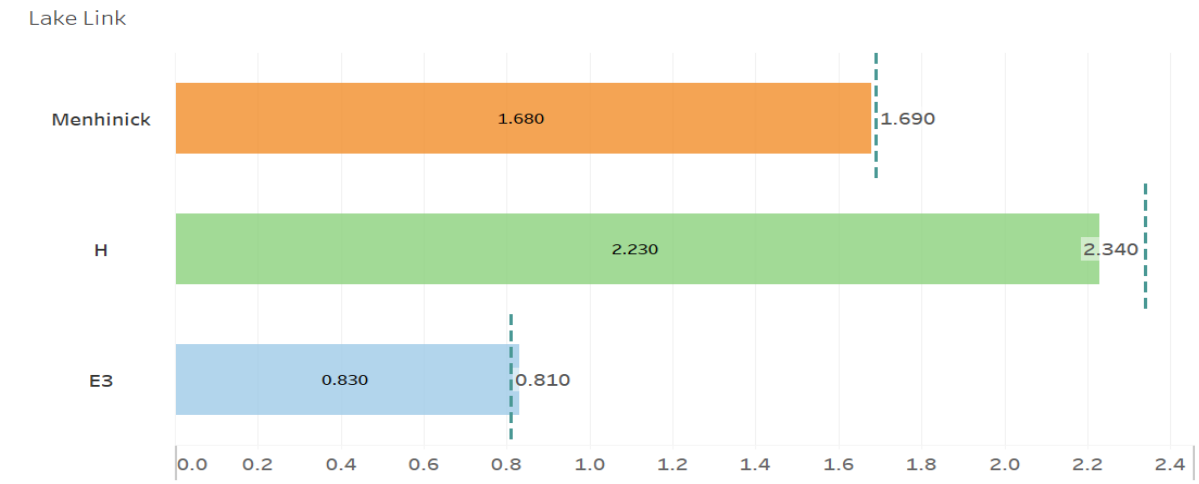


Figure 3-138. Chart depicting 2024 diversity indices for Lake Link. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Link's health index scores from 2018 to 2024 shows some decline over time (Figure 3-139). While this is a decrease in overall lake health, it should be noted that the 2019 and 2020 scores were artificially higher due to a lack of biological data to balance the water quality scores. Based on the 2018 score, it appears that invasive species management has been a constant issue. The treatment of invasive species has likely caused the declines in abundance and diversity. It remains to be seen if these effects will continue into subsequent years. While there have been downward shifts in the trend scores, these are concerning since the lake doesn't exhibit impairments and the increasing trajectories of Chl-a and TP aren't statistically significant. However, management action should be considered if these trends become more pronounced in the future.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	3	2	3	2	2	3	0	2	**2.1**
2019	3	2	3	2	2	NA	NA	NA	**2.4**
2020	3	2	3	2	2	3	NA	NA	**2.5**
2021	3	2	3	2	2	2	1	1	**2.0**
2022	3	2	3	2	2	2	1	1	**2.0**
2023	3	1	2	1	1	3	2	1	**1.8**
2024	3	1	2	1	2	2	3	1	**1.9**

Figure 3-139. Chart depicting a comparison of Lake Link's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Lake Link currently exhibits healthy water quality. However, pollutant loading via stormwater is a potential concern if water quality trends begin deteriorating.
- The management of invasive species like hydrilla has been a consistent concern. It can only take a single growing season for even a small population to take over large areas of a waterbody.
- Several water quality metrics are significantly correlated with Lake Link's surface level; likely due to increased flushing during wetter periods. This means that drought conditions could result in water quality declines.

Lake Management Strategy:

- The City currently conducts street sweeping in the northern drainage sub-basins. Since much of the zoning in this basin is residential, public outreach and education are ideal management strategies. Education aims to increase residents' knowledge of best stormwater practices and ways they can collectively reduce their pollutant load.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response is the best management strategy to prevent large-scale herbicide treatments and the potential water quality issues that follow.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.

Lake Lulu

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Lulu	0	3	3	3	3	3	1	3	**2.4**

Features & Statistics:

Surface area	307.5 acres
Mean depth	6.8 feet
Maximum depth	10 feet
Volume	2093.6 acre-feet
Drainage basin area	1006.5 acres
Annual TN Load	2791.5 lbs
Annual TP Load	483 lbs
Limiting nutrient	Phosphorus

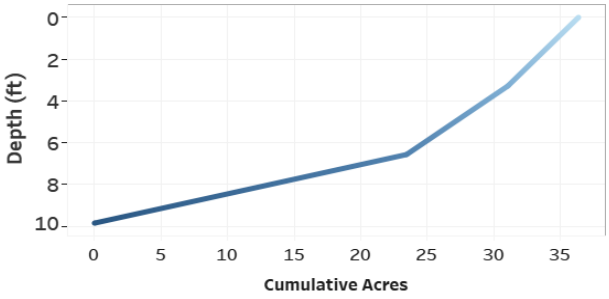


Figure 3-140. Hypsograph of Lake Lulu depicting the depth profile and morphology of the lake bed.

Hydrology:

One of the larger waterbodies on the South Chain, Lake Lulu has a total area of 307 acres. While large, Lulu is one of the shallower lakes with a mean depth of 6.8 feet and a maximum depth of 10 feet (Figure 3-140). The shallowness of the lake makes is much more susceptible to sediment suspension via wind and wave action. Stormwater is conveyed to this waterbody from a 1,006 acre drainage basin comprised of 13 individual sub-basins (Figure 3-141). The primary land uses in this drainage area are commercial, wetlands and residential which contribute 2,791 lbs of TN and 483 lbs of TP to Lake Lulu annually. Though these loads rank on the low side compared with the other 36 lakes in the study area. There are 46 septic systems located within the County portion of the basin. This constitutes a moderate density which can have potential impacts on water quality. To combat stormwater pollutant loading, the City conducts 11.6 miles of street sweeping monthly for residential roads and twice monthly for larger roadways.

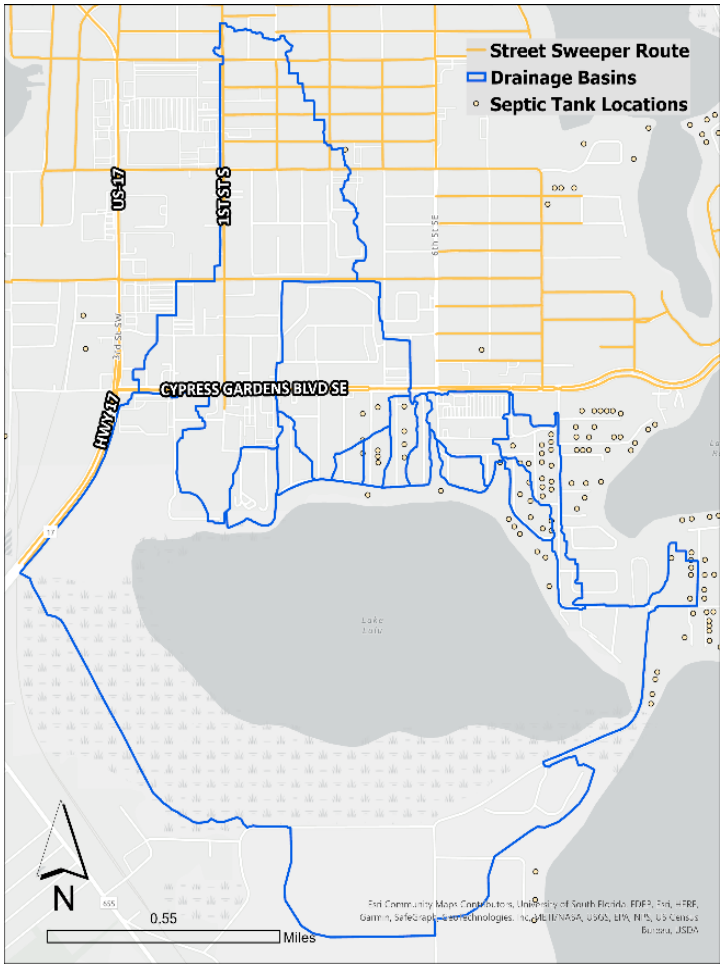


Figure 3-141. Map of Lake Lulu's drainage basin, City street sweeper routes, and nearby septic systems.

Lake Lulu is centrally located on the South Chain with navigable connections to Lakes Eloise and Shipp. Due to these canal connections, surface levels fluctuate consistently across the South Chain of Lakes. Throughout the period of record, the South Chain's surface level has fluctuated between 127.5 and 133.7 feet above sea level. The normal range is much narrower—between 129.7 and 131.4 feet (Figure 3-142). That said, wetter and drier periods often result in more extreme peaks and troughs, respectively. During 2024, the South Chain reached a dry season low of 130.8 ft in June and a wet season peak of 131.8 ft in September. The level of the South Chain by the end of the year was slightly above the top of the normal range at 131.5 ft. The South Chain's level remained at or above the high end of the normal range throughout most of the year—consistent with annual level fluctuations over the last 10 years. According to linear regression analysis, changes in Lake Lulu's surface level correlate with TN and clarity (see appendix). This carries management implications as an increase in levels should result in improved water quality.

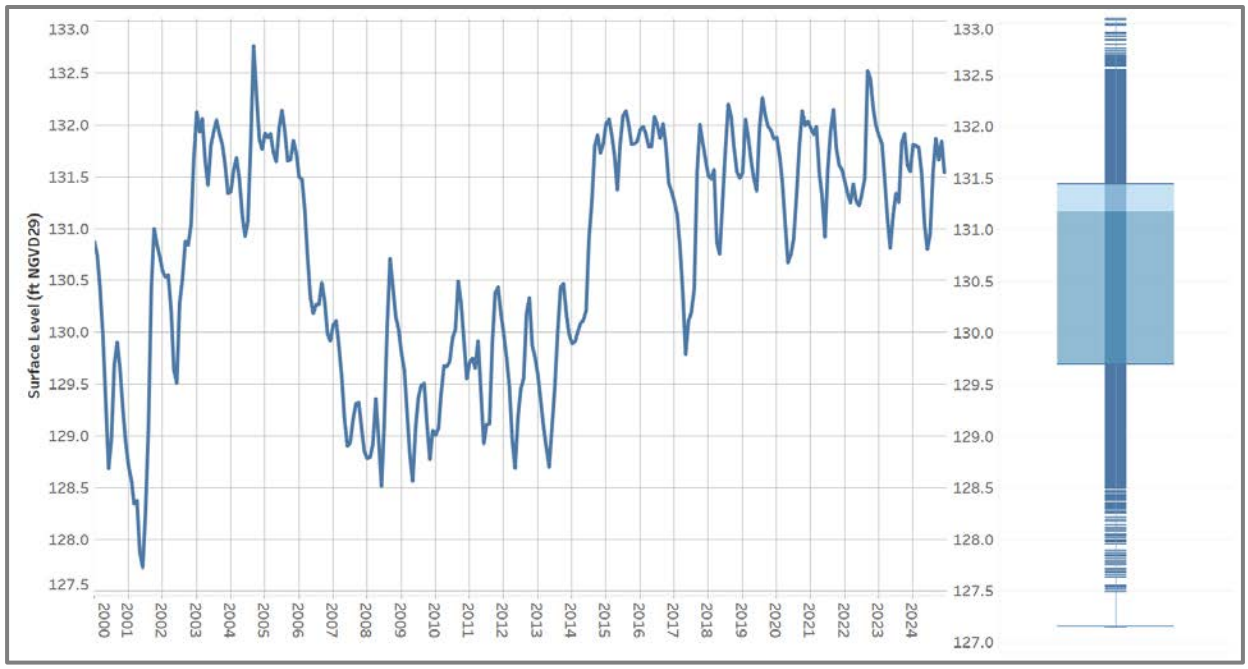


Figure 3-142. Hydrograph of Lake Lulu depicting monthly surface level readings from 2000 to 2024. A box and whisker plot detail total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Lulu is categorized as a clear, alkaline waterbody. Due to consistent NNC exceedances during the assessment period, Lake Lulu is considered impaired for Chl-a, TN, and TP (Figure 3-143). This equates to an impairment criterion score of 0. In 2019, the FDEP established a total maximum daily load for Lake Lulu stipulating a 35% reduction in TN in order to meet NNC guidelines.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	-0.659	0.001	Decreasing	0	3
TN	Y	-0.532	0.013	Decreasing		3
TP	Y	-0.686	0.001	Decreasing		3
Secchi	NA	0.545	0.011	Increasing		3

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Based on these data, all four of these parameters exhibit significant improving trends. While on the right track, it will still take some time for water quality values to consistently meet NNC guidelines for Lake Lulu to be considered unimpaired.

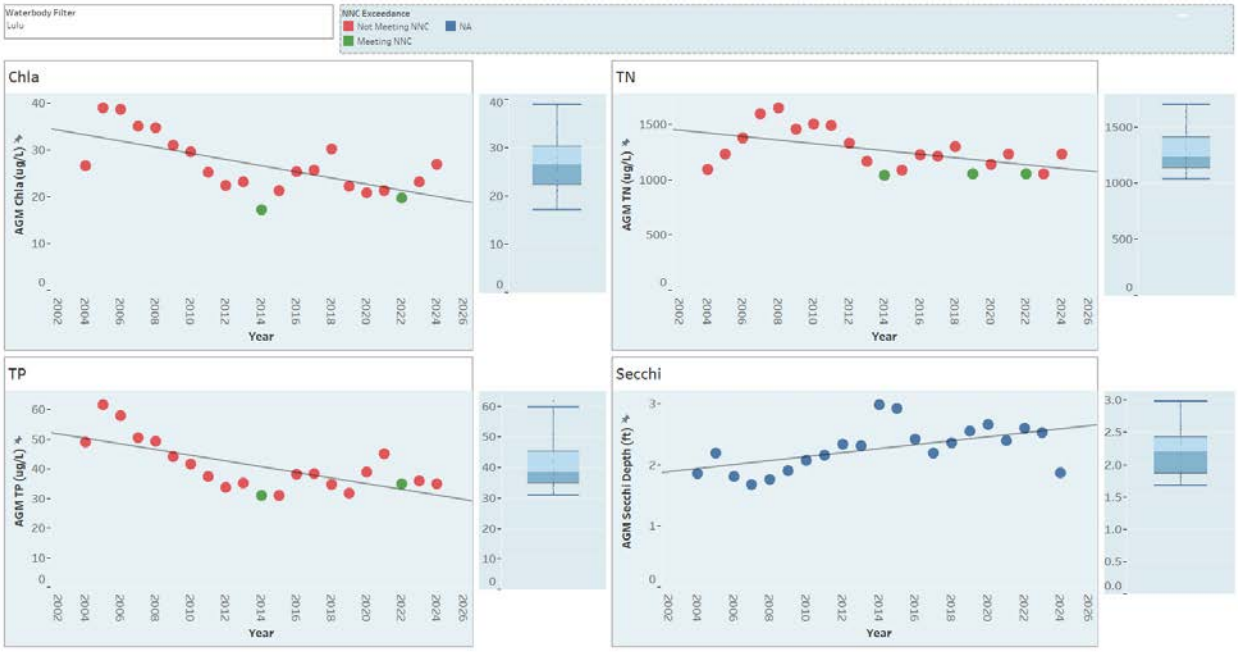


Figure 3-143. Lake Lulu AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Lulu on 7/2/2024. The PAC during this survey was 46.2% and the total BV was 1%; though such a low BV value may be due to a processing error (Figure 3-144). This equates to a vegetation abundance criterion score of 3. Lake Lulu has traditionally supported high vegetation abundance due to its shallow depth and gradually sloping lake bed.

Invasive Species Management:

Based on data from the 2024 survey, Lake Lulu maintains a healthy mix of submerged, emergent, and floating leaf plants. The most dominant species present is the native fragrant water lily around 12% (Figure 3-145). Hydrilla was the only managed invasive species detected during the survey at 2.6%; earning an invasive criterion score of 1. Throughout the period of record, the invasive presence in Lake Lulu has traditionally fluctuated between zero and four percent—requiring continual maintenance to keep invasives from expanding.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, all three of Lake Lulu's diversity indices met or exceeded their respective median values; equating to a diversity criterion score of 3 (Figure 3-145). The overall vegetation community has been relatively diverse through the period of record, with over 22 unique species detected. A portion of this diversity may be due to the

undeveloped shoreline to the south of the lake. A lack of disturbance on this shoreline may provide an opportunity for smaller or less robust species to survive.

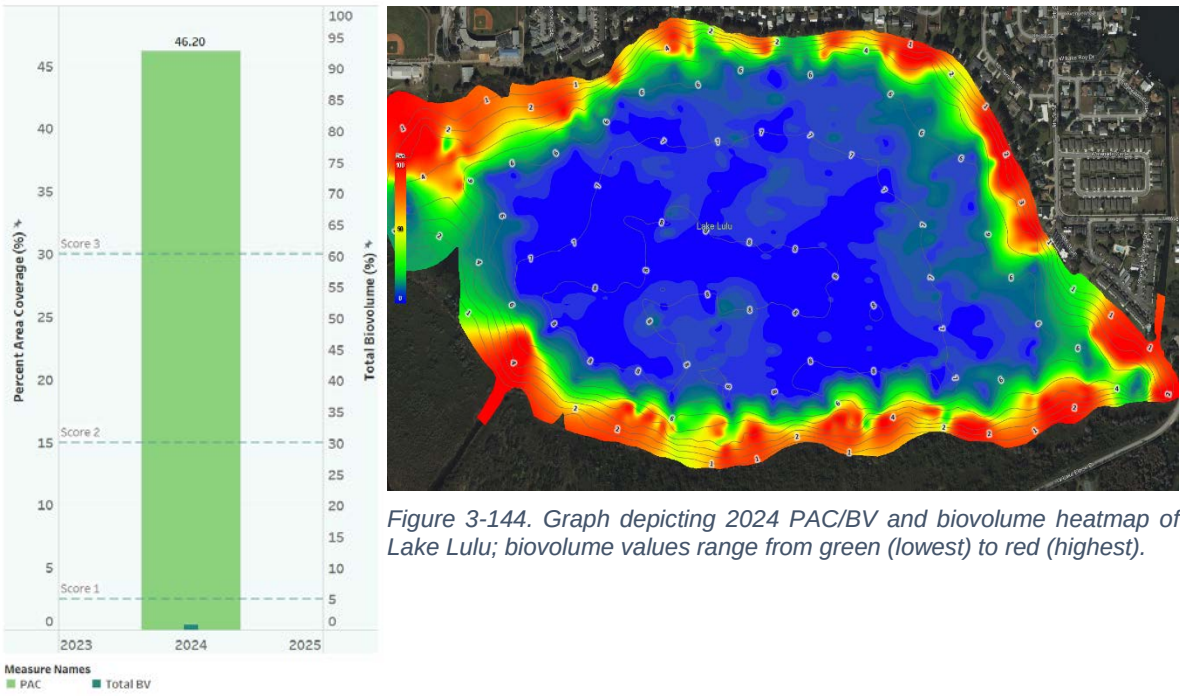


Figure 3-144. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Lulu; biovolume values range from green (lowest) to red (highest).

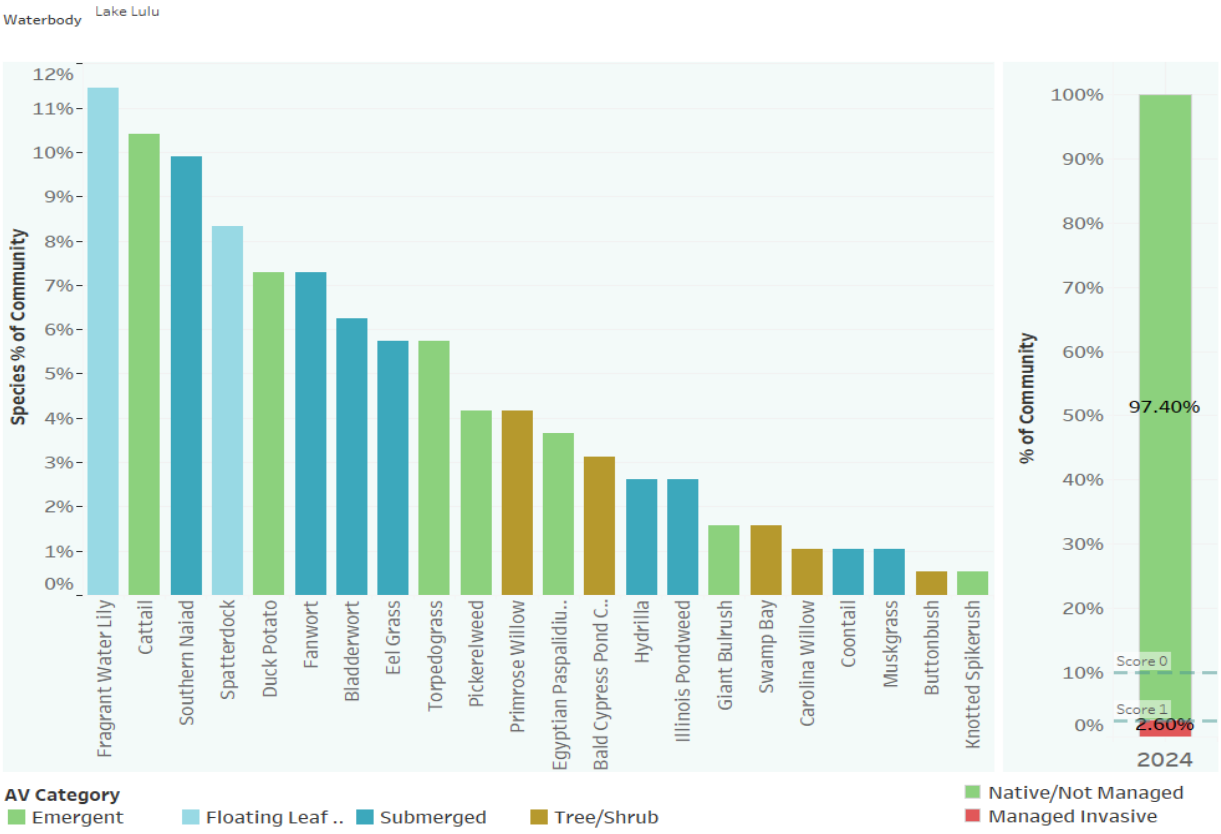


Figure 3-145. Chart depicting species frequency and invasive species percentage of Lake Lulu during 2024.

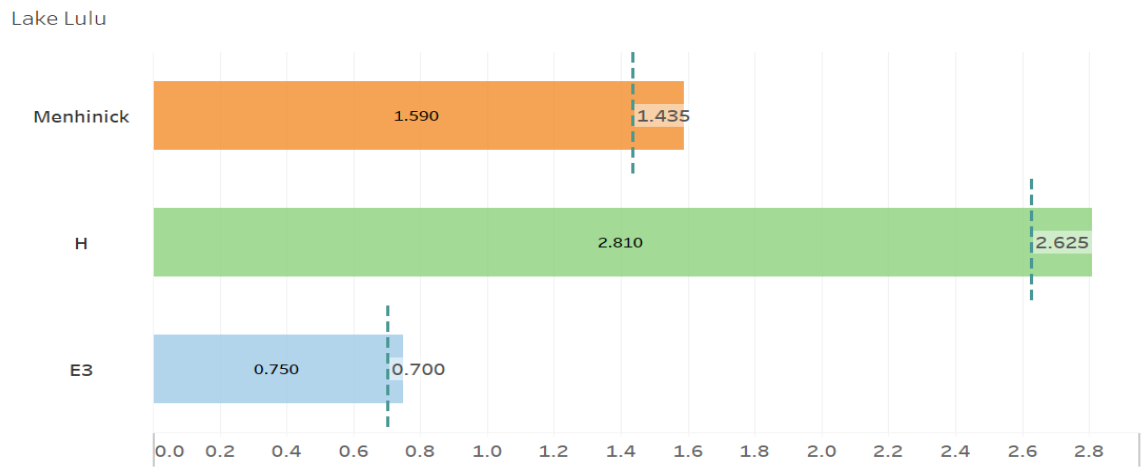


Figure 3-146. Chart depicting 2024 diversity indices for Lake Lulu. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Lulu's health index scores from 2018 to 2024 shows some improvement, increasing from 2.1 to 2.4 (Figure 3-147). Regarding the water quality metrics, impairment hasn't changed. However, TN concentrations began to exhibit significant improving trends starting in 2020. From a biological perspective, Lake Lulu has consistently maintained high vegetation abundance. However, the invasive presence and diversity metrics have been the largest source of score fluctuation. This is mostly due to cycles of invasive expansion and subsequent management efforts. Overall, Lake Lulu is lower on the priority list, but also a lake on which to keep a close eye to ensure that it continues to improve.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	3	2	3	3	3	1	1	**2.0**
2019	0	3	2	3	3	3	2	1	**2.1**
2020	0	3	3	3	3	3	3	1	**2.4**
2021	0	3	3	3	3	3	2	3	**2.5**
2022	0	3	3	3	3	3	1	3	**2.4**
2023	0	3	3	3	3	3	1	3	**2.4**
2024	0	3	3	3	3	3	1	3	**2.4**

Figure 3-147. Chart depicting a comparison of Lake Lulu's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- In addition to stormwater and potential septic pollutant loads, Lake Lulu received historic point-source discharges from a now defunct City wastewater treatment plant as well as several citrus fertilizer processing facilities. These historic pollutant loads may contribute to internal nutrient loading from the legacy sediments.

- The management of invasive species remains a consistent concern. Species like hydrilla can take over large areas of a waterbody in a single growing season.

- Several water quality metrics are significantly correlated with Lake Link's surface level; likely due to increased flushing during wetter periods. This means that drought conditions could result in water quality declines.

Lake Management Strategy:

- City staff may explore source analysis of both the historic point-source and septic pollutant loading. Future management actions may involve sediment removal/inactivation, septic-to-sewer conversion, and stormwater infrastructure improvements.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response is the best management strategy to prevent large-scale herbicide treatments and the potential water quality issues that follow.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.
- In addition to street sweeping, the City combats stormwater loading through an alum injection system designed to reduce TN loads by 8% and TP loads by 21% annually.

Lake Mariam

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Mariam	3	0	2	1	1	3	1	1	**1.5**

Features & Statistics:

Surface area	203.7 acres
Mean depth	4.65 feet
Maximum depth	6.5 feet
Volume	820.9 acre-feet
Drainage basin area	622.1 acres
Annual TN Load	1609.45 lbs
Annual TP Load	274.8 lbs
Limiting nutrient	Co-limited (N & P)

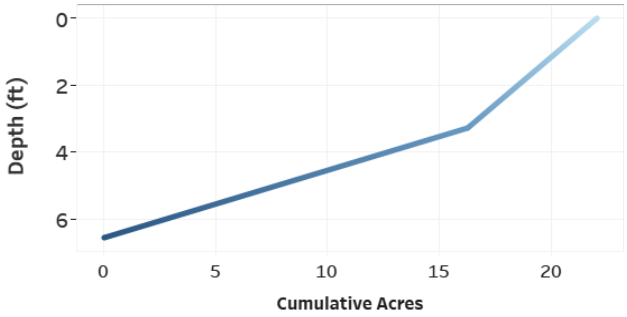


Figure 3-148. Hypsograph of Lake Mariam depicting the depth profile and morphology of the lake bed.

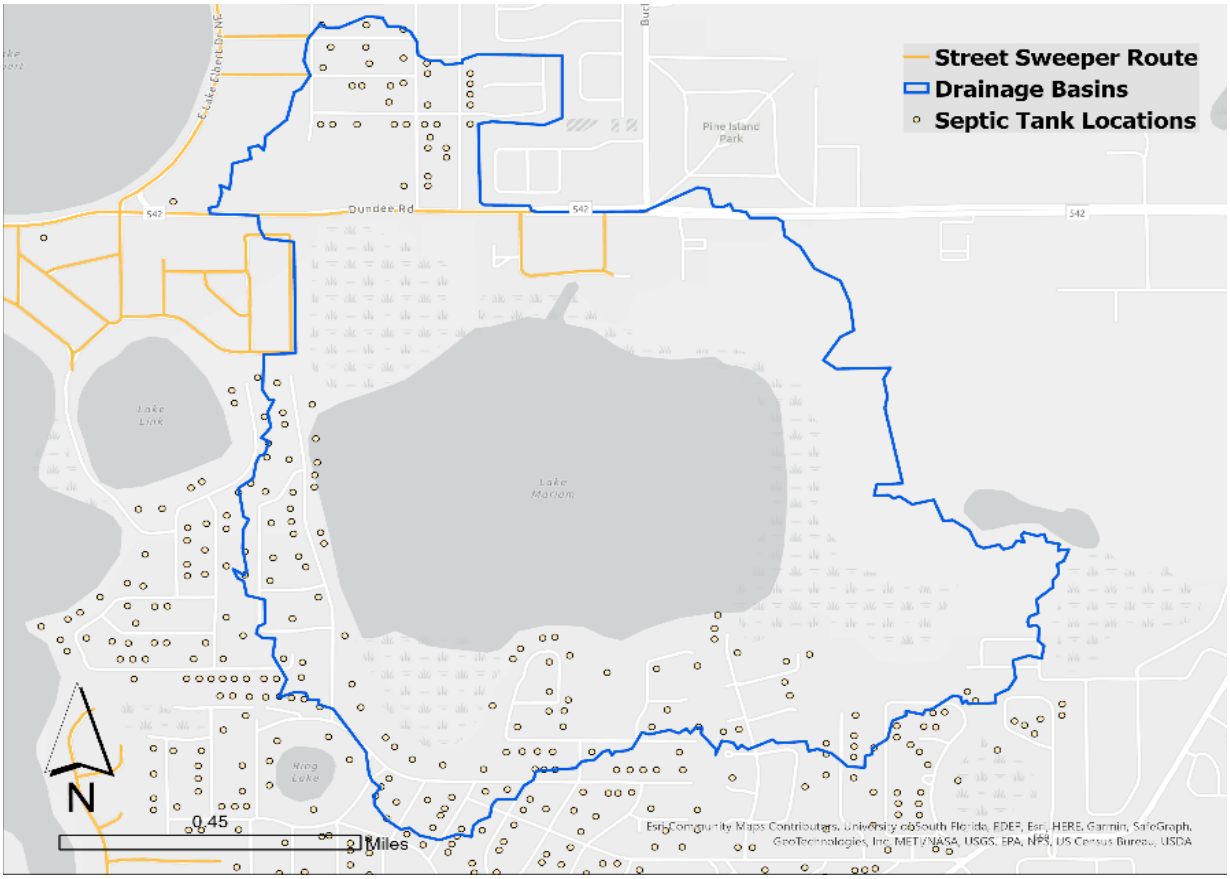


Figure 3-149. Map of Lake Mariam's drainage basin, City street sweeper routes, and nearby septic systems.

Hydrology:

Lake Mariam is a moderately sized, but very shallow waterbody at 203 acres, an average depth of 4.6 feet, and a maximum depth of around 7 feet (Figure 3-148). The shallow nature of this waterbody likely contributes to higher sediment suspension and while it should support a large amount of vegetation, the higher turbidity likely prevents many species from receiving sunlight through the water column. Stormwater is conveyed to this waterbody from a 622 acre drainage basin comprised of wetlands, residential and commercial land uses (Figure 3-149). This basin contributes 1,609 lbs of TN and 275 lbs of TP to Lake Mariam annually; but on a per acre basis, these pollutant loads rank 32nd out of 37 lakes. There are 132 septic systems located within this drainage area which is fairly dense and may be a potential contributor of nutrient loading via groundwater leaching. To combat stormwater loading, the City conducts 1.9 miles of street sweeping twice monthly on Dundee Rd.

Lake Mariam receives excess water from Lake Link and discharges overflow to the Peace Creek via a network of ditches. Its surface elevation sits second lowest within the Peace Creek watershed. Over the period of record, Lake Mariam's surface level has fluctuated between 120.5 and 125.8 feet above sea level. The normal range for this waterbody is between 122.2 and 124.5 feet (Figure 3-150). During 2024, Lake Mariam's level dropped 122.6 feet in June and rose to a wet season high of 124.1 feet in November. Changes in Lake Mariam's surface level are not correlated with its water quality metrics.

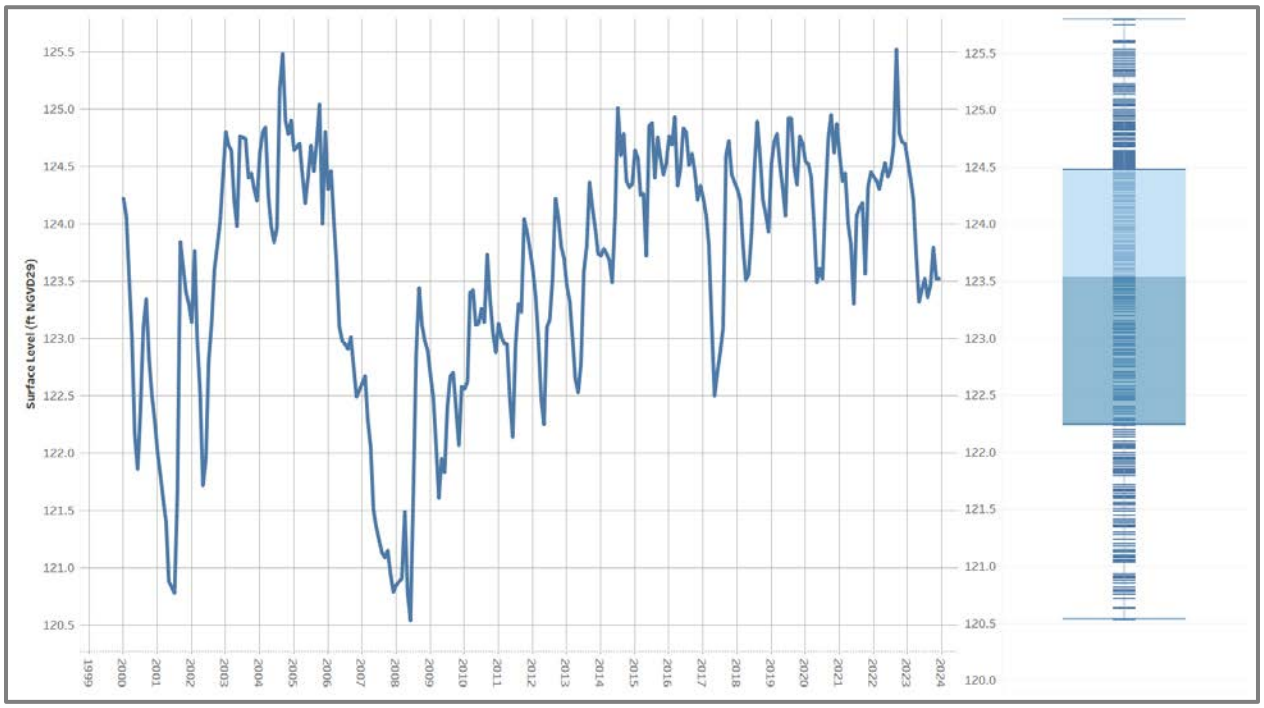


Figure 3-150. Hydrograph of Lake Mariam depicting monthly surface level readings from 2000 to 2023. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Mariam is categorized as a high-color waterbody; likely due to its large connected wetland that contributes tannins to the water column. Based on the water quality data, Lake Mariam exhibited no NNC exceedances during the assessment period (Figure 3-151). This equates to an impairment criterion score of 3.

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Based on these data, Chl-a exhibits a significant deteriorating trend, earning a score of 0. The remaining parameters exhibit non-significant trends; TP and Secchi in deteriorating directions and TN with an improving direction. The Chl-a trend remains the only concern as it could be highlighting potential impairment in the future. That said, the Chl-a concentrations are currently well below the impairment threshold.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	0.466	0.033	Increasing	3	0
TN	N	-0.194	0.399	No Trend		2
TP	N	0.271	0.234	No Trend		1
Secchi	NA	-0.074	0.749	No Trend		1

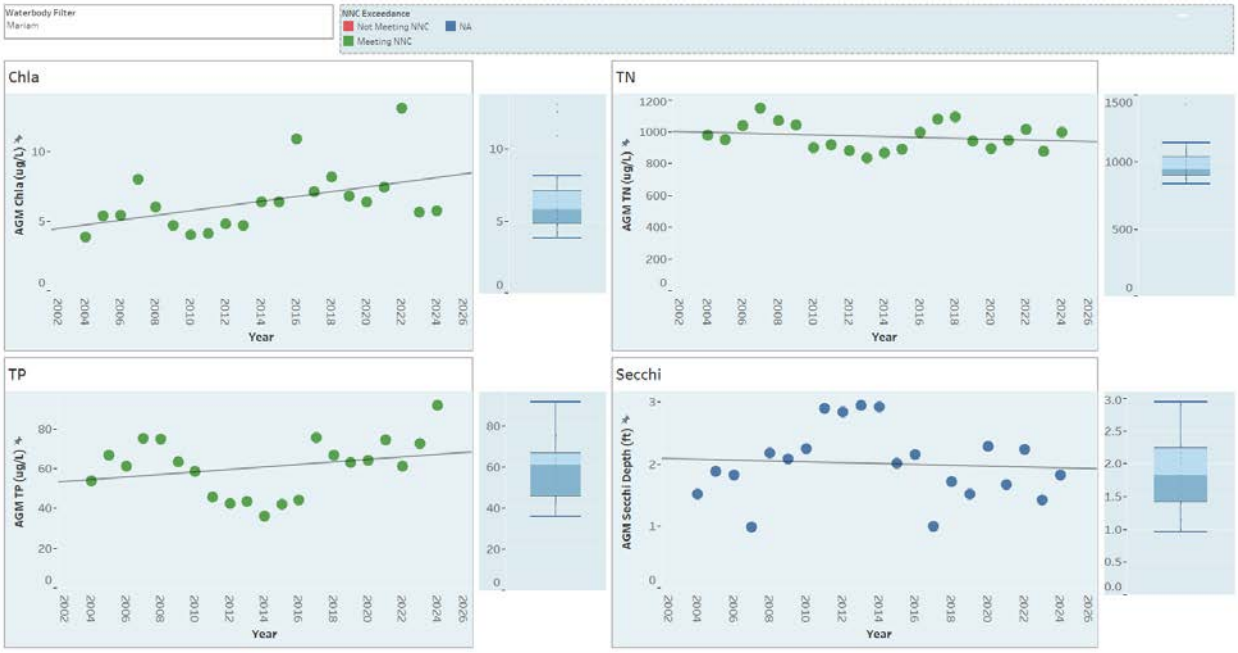


Figure 3-151. Lake Mariam AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Mariam on 5/14/2024. The PAC during this survey was 85.8% and the total BV was 4.8% (Figure 3-152). However, these abundance values almost certainly contain errors during the SONAR mapping as there is little to no submerged vegetation growing in the center of the lake. That said, there is a considerable amount of emergent vegetation present along the periphery due to the extensive wetland areas surrounding this lake. Therefore, Lake Mariam receives an abundance score of 3. It should be noted that the turbidity and high color present in Lake Mariam likely side effects from the lake's shallow morphology and dense surrounding wetlands that contribute organic matter. Therefore, the lack of SAV is not a major concern.

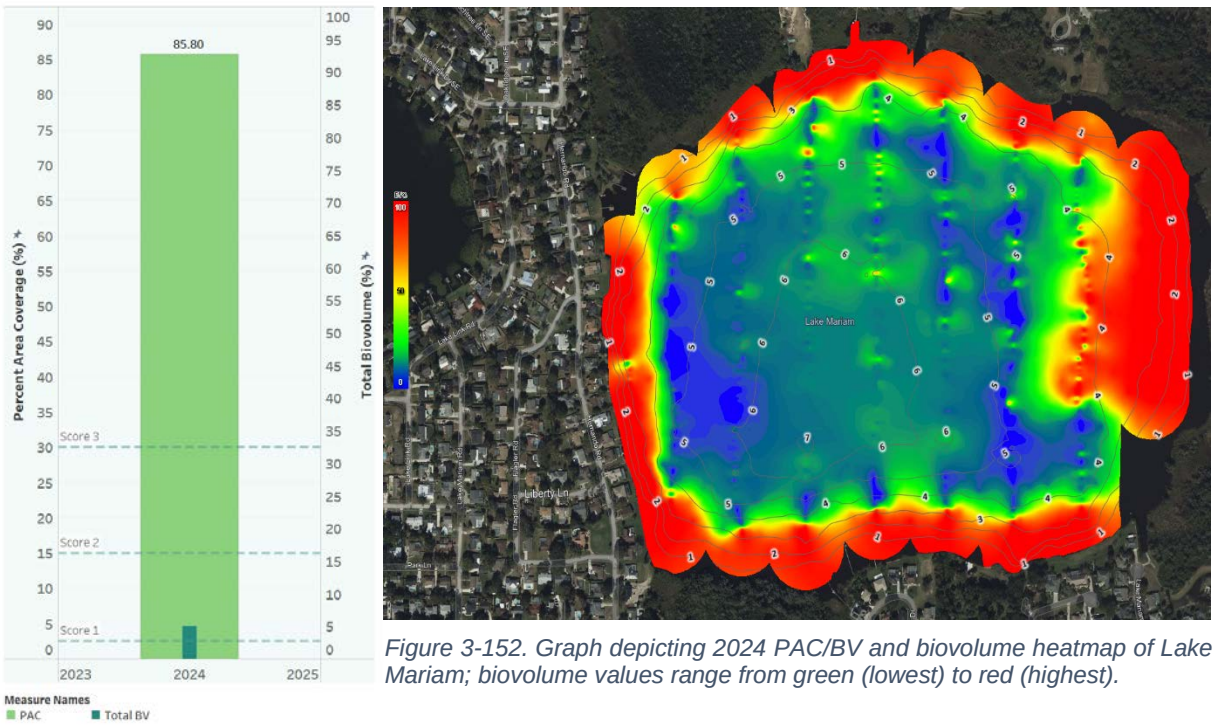


Figure 3-152. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Mariam; biovolume values range from green (lowest) to red (highest).

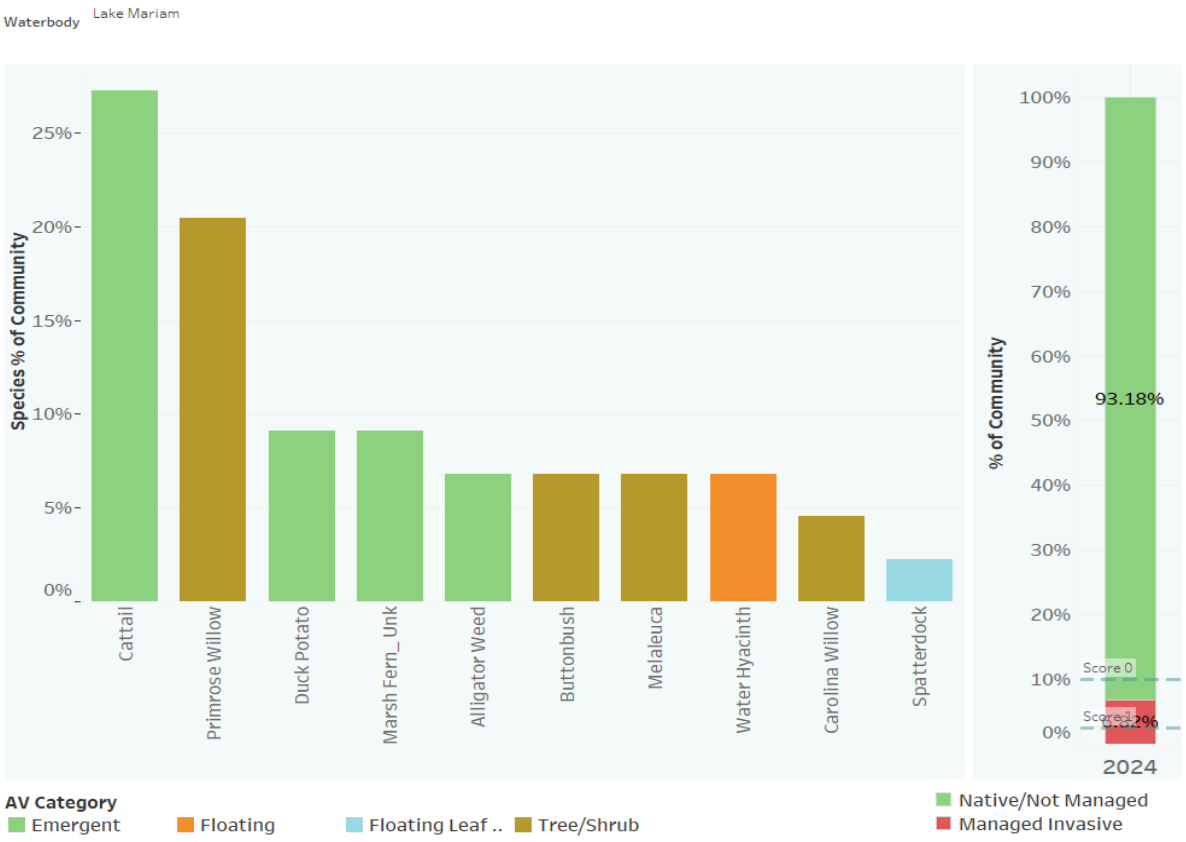


Figure 3-153. Chart depicting species frequency and invasive species percentage of Lake Mariam during 2024.

Invasive Species Management:

Based on Lake Mariam's high color concentration, it is dominated by emergent species like cattail and primrose willow with almost no submerged plants present in the lake (Figure 3-153). Invasive presence in Mariam has undergone a boom and bust cycle in recent years. A large percentage of the community (11.3%) was comprised of burhead sedge and water hyacinth in 2023, but these numbers have dropped down to just 6.8% in 2024 due to management efforts. Continued treatment will be necessary to keep these non-natives under control.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, just Lake Mariam's evenness index exceeded its long-term median (Figure 3-154). Relative to other waterbodies, Lake Mariam has low species richness since it can mostly only support emergent plant types. The decrease in richness and overall diversity was likely due to shifts in the community, driven by the invasive treatments.

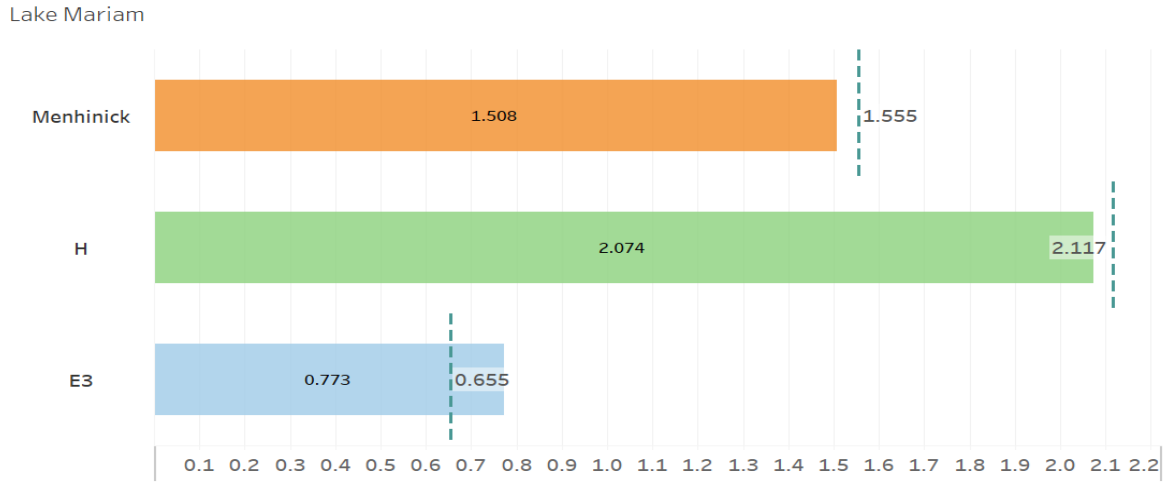


Figure 3-154. Chart depicting 2024 diversity indices for Lake Mariam. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Mariam's health index scores from 2018 to 2024 show some variation (Figure 3-155). While the impairment score has remained stable over the last six years, the water quality trend scores have gotten progressively worse. Vegetation abundance has increased, but this may be due to some errors with the SONAR detecting detritus in the center of the lake. The invasive presence has decreased considerably since monitoring began while diversity has gotten better in the last few years. Overall, Lake Mariam is in the middle of the priority rankings. It may not currently be impaired, but it is important to continue monitoring the water quality trends as well as the presence of invasive species.

Lake Health Impacts/Challenges:

- In addition to the moderate level of stormwater runoff from the drainage basin, the presence of so many septic systems may be a contributing factor for nutrient pollutant loading. As these systems age, they may begin to leach nutrients into the water table—leading to water quality declines.

- The management of invasive species is a consistent concern for this waterbody. It can only take a single growing season for even a small population to take over large areas of a waterbody.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	3	1	2	2	3	1	0	1	**1.6**
2019	3	1	2	2	2	2	0	2	**1.8**
2020	3	1	2	1	2	1	1	1	**1.5**
2021	3	1	2	1	2	3	3	2	**2.1**
2022	3	1	2	1	2	3	2	2	**2.0**
2023	3	0	2	1	2	3	0	3	**1.8**
2024	3	0	2	1	1	3	1	1	**1.5**

Figure 3-155. Chart depicting a comparison of Lake Mariam's Lake Health Index scores from 2018 to 2024

Lake Management Strategy:

- City staff may explore source analysis to determine if OSTD leachate is a potential contributor of nutrient pollutant loading. Further management action may involve working with Polk County in septic-to-sewer conversions.

- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large-scale herbicde treatments and potential water quality issues that follow.

Lake Mariana

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Mariana	0	1	1	3	0	2	3	0	**1.3**

Features & Statistics:

Surface area	515.6 acres
Mean depth	8.99 feet
Maximum depth	20 feet
Volume	5228.9 acre-feet
Drainage basin area	1935.7 acres
Annual TN Load	6530.8 lbs
Annual TP Load	1160.6 lbs
Limiting nutrient	Phosphorus

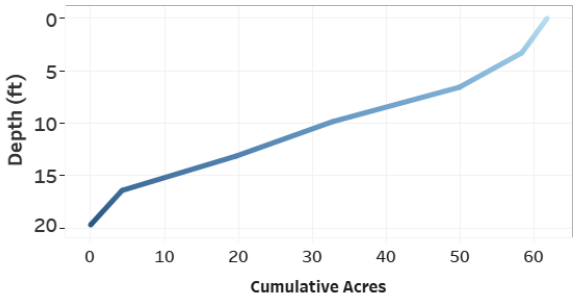


Figure 3-156. Hypsograph of Lake Mariana depicting the depth profile and morphology of the lake bed.

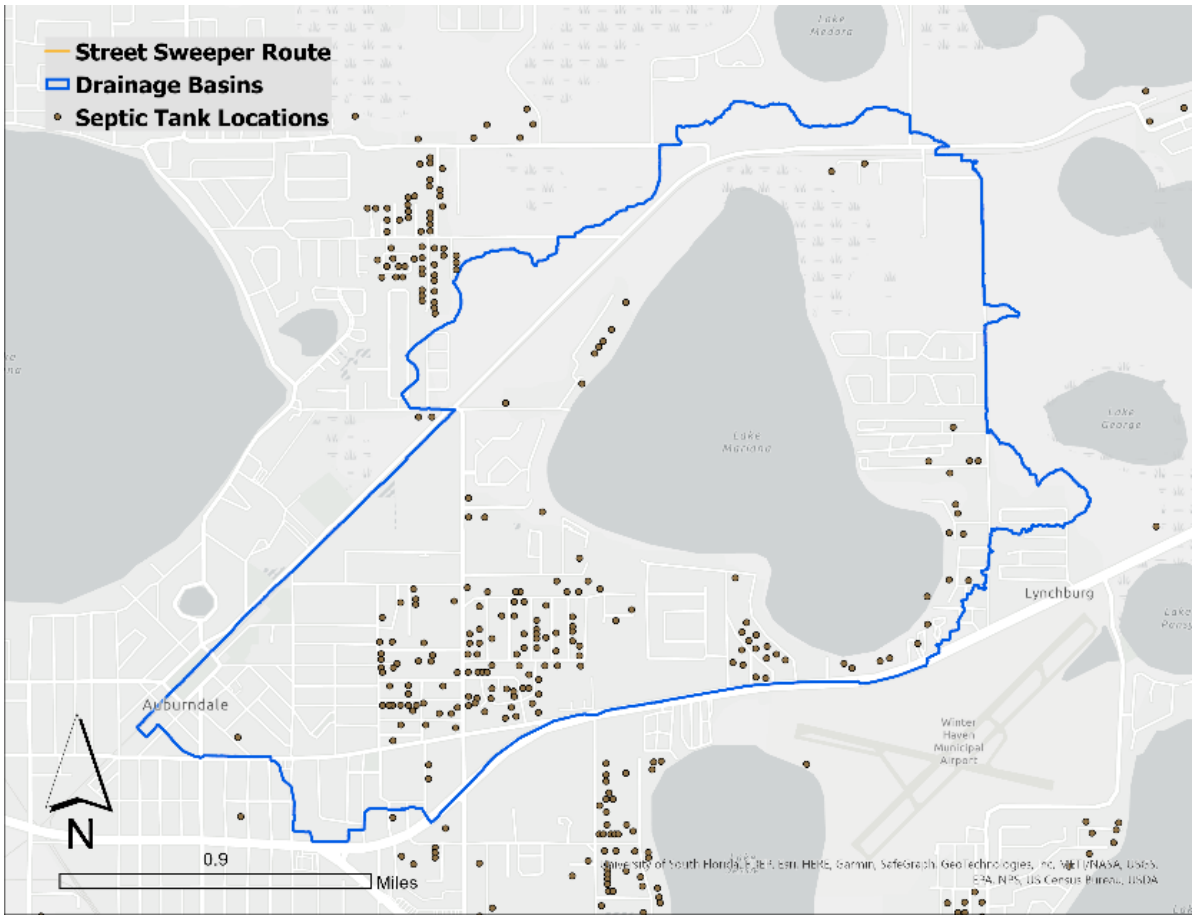


Figure 3-157. Map of Lake Mariana's drainage basin and nearby septic systems.

At over 515 acres in surface area, Lake Mariam is one of the larger lakes in the study area. It has an average depth of 9 feet and a maximum depth of over 20 feet (Figure 3-156). Stormwater is conveyed to this waterbody from a 1,935 acre drainage basin which includes residential, commercial, industrial, and agricultural land uses (Figure 3-157). The drainage basin contributes 6,530 lbs of TN and 1,160 lbs of TP annually; these pollutant loads rank around 20th out of 37 on a per acre basis. There are 158 known Onsite Sewage Treatment and Disposal (OSTD/septic) systems within this basin. This constitutes a high density and could be a potential contributor to nutrient loading via groundwater leaching.

Lake Mariana is located mostly outside Winter Haven limits to the northwest of the city center. The lake discharges excess water via a ditch to Lake Jessie with a range of surface elevations that sit higher in the Peace Creek watershed. Over its period of record, Lake Mariana's surface level has fluctuated between 135.7 and 137.8 feet above sea level. The normal range for this lake is 136.6 and 137.3 feet (Figure 3-158). During 2024, Lake Mariana reached a dry seaon low of 136.3 feet in April and a wet season high of 137.5 feet in October. The surface level did bounce back and ended the year in the lower portion of the normal range at 136.7 feet Changes in this lake's level are not correlated with the primary water quality metrics.

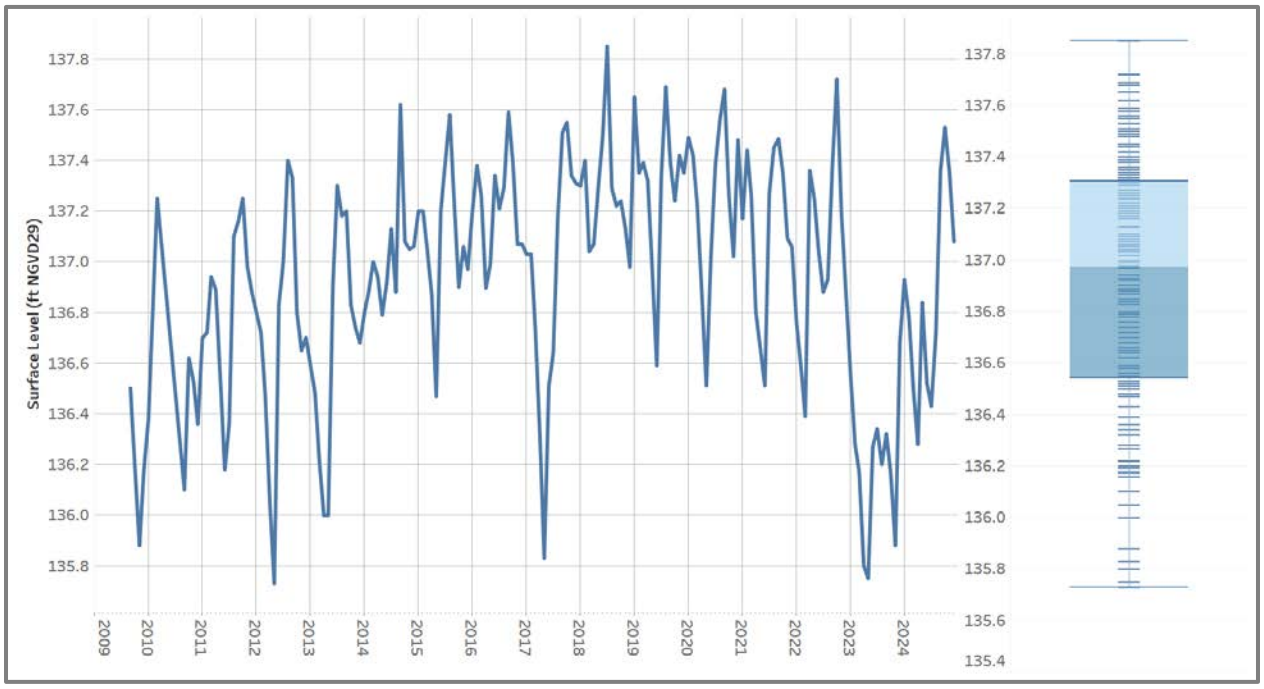


Figure 3-158. Hydrograph of Lake Mariana depicting monthly surface level readings from 2010 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairments:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Mariana is categorized as a clear, alkaline waterbody. Due to numerous, consecutive NNC exceedances during the assessment period, Lake Mariana is considered impaired for Chl-a, TN, and TP (Figure 3-159). This equates to an impairment criterion score of 0. In 2018, the FDEP established a total maximum daily load for this lake, stipulating a 44% reduction in TN loading in order to meet NNC guidelines. It should be noted that while Chl-a and TN concentrations have fluctuated widely over the period of record, TP concentrations have remained relatively static over the last 15 years.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	0.223	0.330	No Trend	0	1
TN	Y	0.183	0.426	No Trend		1
TP	Y	-0.535	0.013	Decreasing		3
Secchi	NA	-0.491	0.024	Decreasing		0

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. According to the data, only Secchi depth exhibited a significant deteriorating trend. Chl-a and TN shifted in their trend statistics such that their deteriorating trends in 2022 are now non-significant—indicating some improvement. The TP concentrations, on the other hand, are trending significantly in a downward direction.

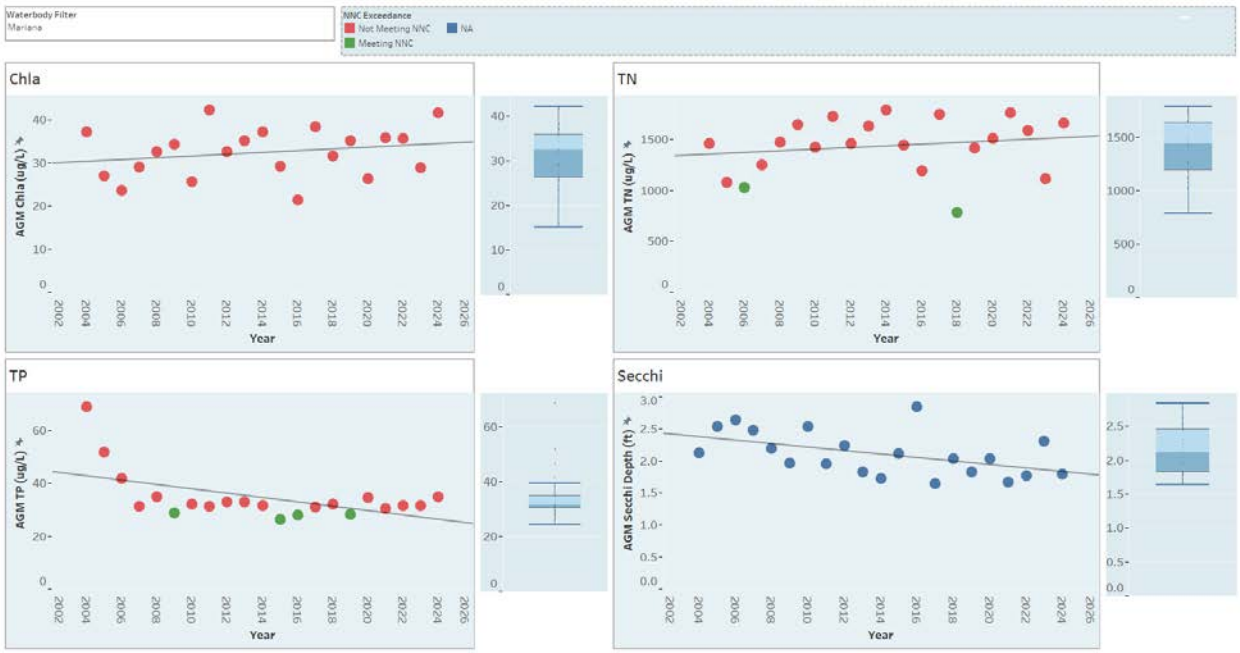


Figure 3-159. Lake Mariana AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots showing relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Mariana on 11/15/2024. The PAC during this survey was 27.7% and the total BV was 4.05% (Figure 3-160). The 2024 coverage value decreased slightly from the previous year and equates to an abundance criterion score of 2. Throughout the monitoring period, Lake Mariana has maintained vegetation coverage between 22% and 31%. Due to its morphology, Lake Mariana has ample habitat space for submerged aquatic vegetation, but low clarity prevents growth in deeper areas of the lake. According to the BV heatmap, the denser vegetation areas are concentration along the eastern and northwestern shorelines.

Invasive Species Management:

Based on data from the 2024 survey, Lake Mariana is dominated by emergent plants including cattail and maidencane (Figure 3-161). This is a striking departure from previous years where

Illinois pondweed was the dominant species present. In fact, the total lack of pondweed in 2024 is somewhat concerning. There has not been a presence of invasive species in Mariana since 2022; therefore, no invasive treatments should have taken place that would potentially impact the pondweed population. The City, County, and FWC are currently examining the lake to determine what could be the cause of the pondweed decline. The lack of invasive species in 2024 earns Mariana an invasive presence score of 3.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, none of Lake Mariana's diversity indices met or exceeded their long-term median values (Figure 3-162). This equates to a diversity criterion score of 0. These diversity numbers can be mostly explained by the absence of pondweed reducing the total number of unique species present. The lack of pondweed changed the community dynamics and relative proportions of the remaining plant species. This clearly demonstrates how a loss in just a single species can have substantial impacts on the entire vegetation community and ecosystem as a whole.

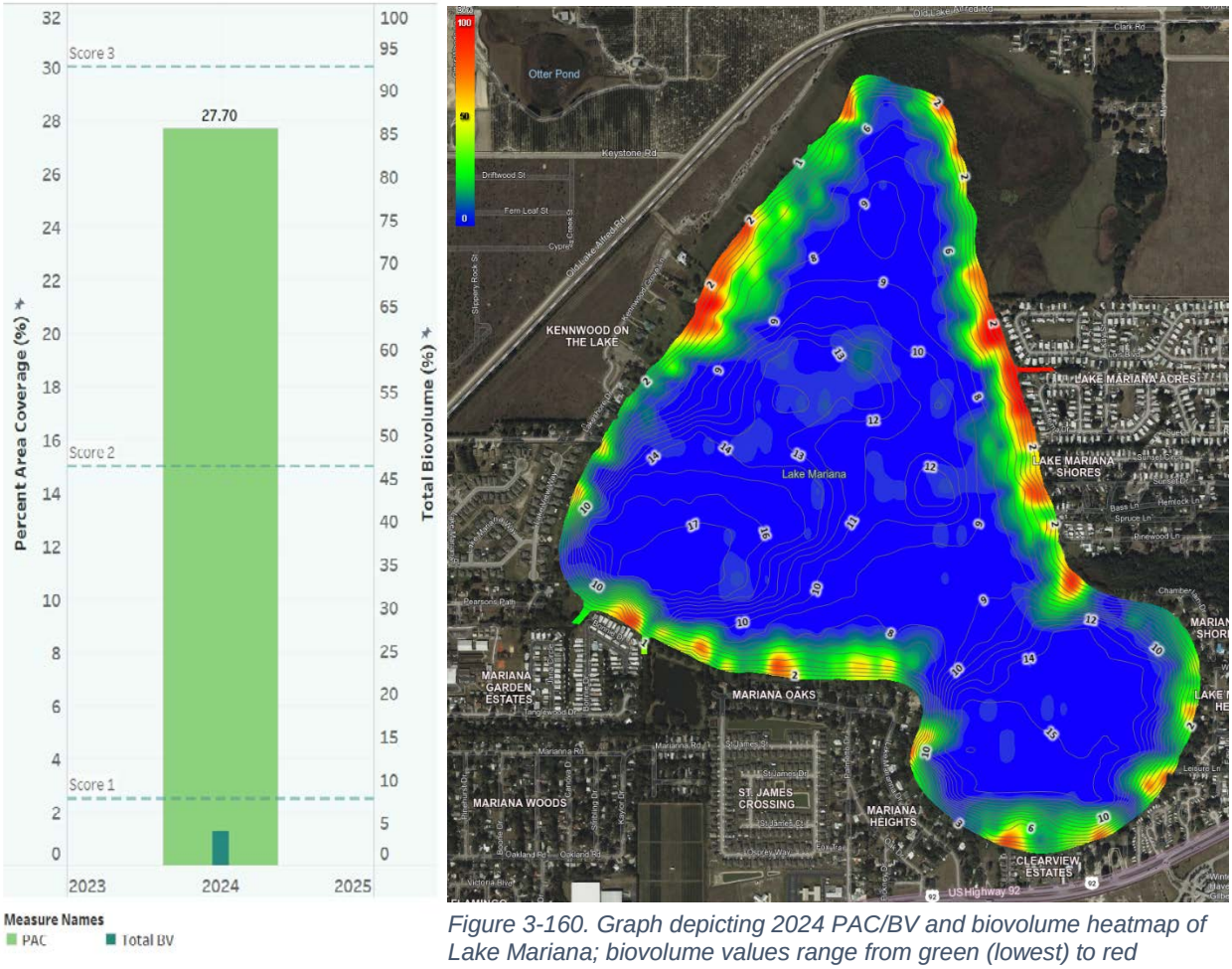


Figure 3-160. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Mariana; biovolume values range from green (lowest) to red (highest).

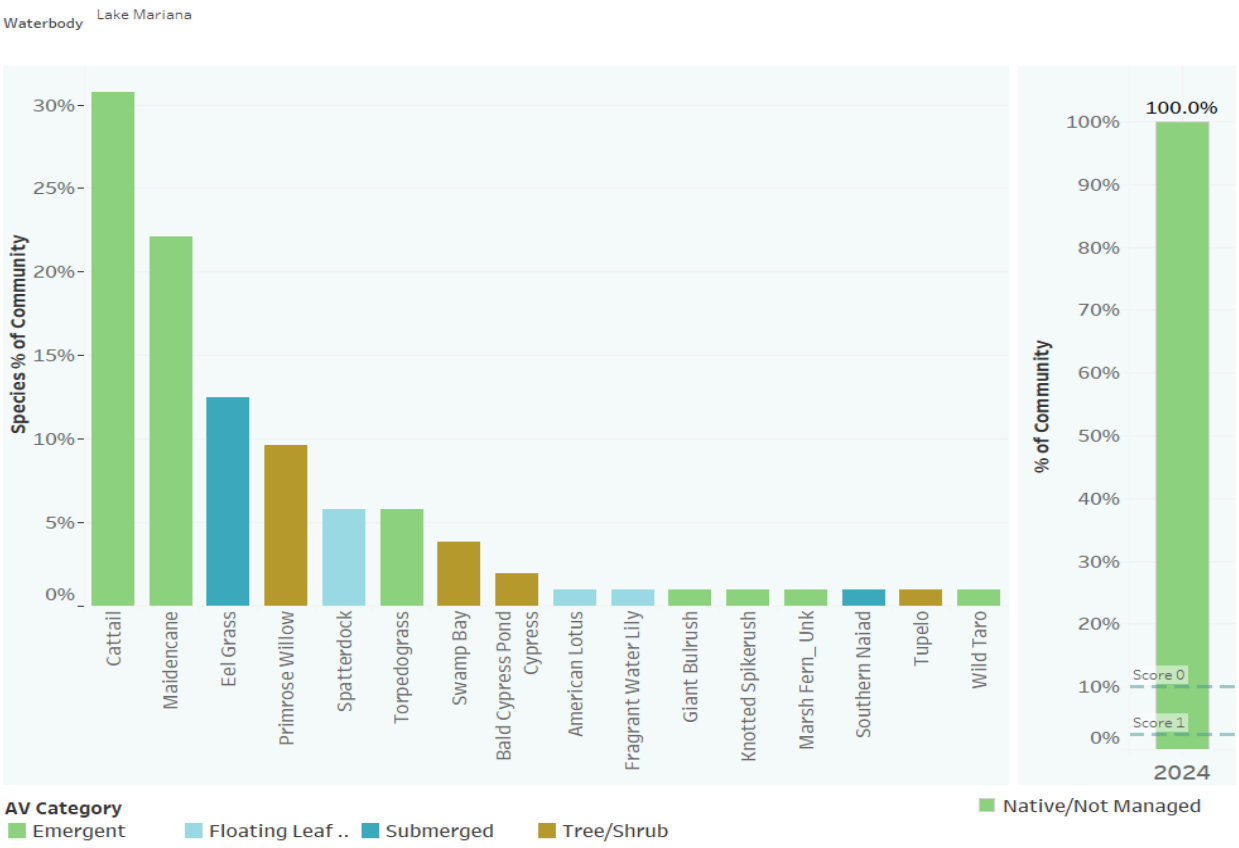


Figure 3-161. Chart depicting species frequency and invasive species percentage of Lake Mariana during 2024.

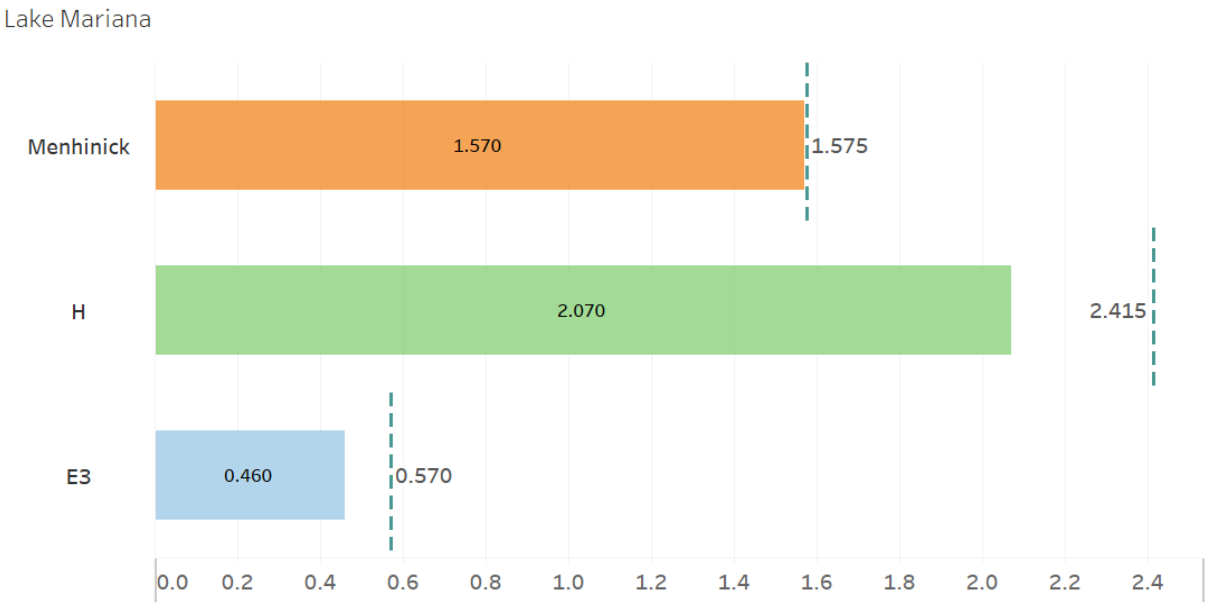


Figure 3-162. Chart depicting 2024 diversity indices for Lake Mariana. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Mariana's health index scores from 2018 to 2024 shows little change (Figure 3-163). The impairment scores have remained static over this span. A dip in the Chl-a and TN trend scores in 2022 was corrected the following year. There hasn't been much change in the vegetation abundance and invasive scores either. Most of the annual fluctuation has occurred with the diversity scores. With that, Lake Mariana is still considered a relatively high priority due to its water quality impairments and poor water clarity trend.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	1	1	2	1	2	2	1	**1.3**
2019	0	1	1	2	0	2	3	2	**1.4**
2020	0	1	1	2	0	2	3	1	**1.3**
2021	0	1	1	2	0	2	2	2	**1.3**
2022	0	0	0	3	0	2	3	1	**1.1**
2023	0	1	1	3	0	3	3	2	**1.6**
2024	0	1	1	3	0	2	3	0	**1.3**

Figure 3-163. Chart depicting a comparison of Lake Mariana's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- The presence of such a high density of OSTDs in the drainage basin is currently one of the larger concerns regarding water quality. That said, stormwater runoff presents another form of pollutant loading to the lake.
- While invasive species aren't currently an issue, management of these is a consistent concern. It can only take a single growing season for even a small population to take over large areas of a waterbody.
- One major potential challenge in managing Lake Mariana is the coordination and collaboration between the various municipalities responsible for it. Unfortunately, many of the OSTDs in the basin aren't within the Winter Haven limits. Management efforts will require strong direction to implement basin-wide improvements.

Lake Management Strategy:

- The City plans to provide what support it can to manage the water quality issues in this basin. This may involve exploring source analysis of the nutrients in the water to identify the cause of water quality deterioration. Staff will also advocate for septic-to-sewer conversions where appropriate.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large-scale herbicide treatments and potential water quality issues that follow. The City is also exploring the lack of pondweed in the lake in 2024.

Lake Martha

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Martha	3	0	1	1	0	1	3	0	**1.1**

Features & Statistics:

Surface area	82.5 acres
Mean depth	10.21 feet
Maximum depth	19 feet
Volume	1141.8 acre-feet
Drainage basin area	307.5 acres
Annual TN Load	1217.1 lbs
Annual TP Load	199.1 lbs
Limiting nutrient	Phosphorus

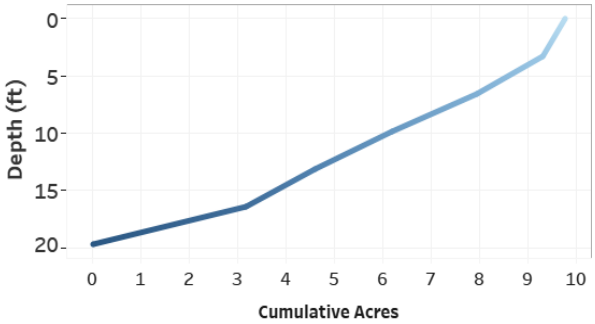


Figure 3-164. Hypsograph of Lake Martha depicting the depth profile and morphology of the lake bed.

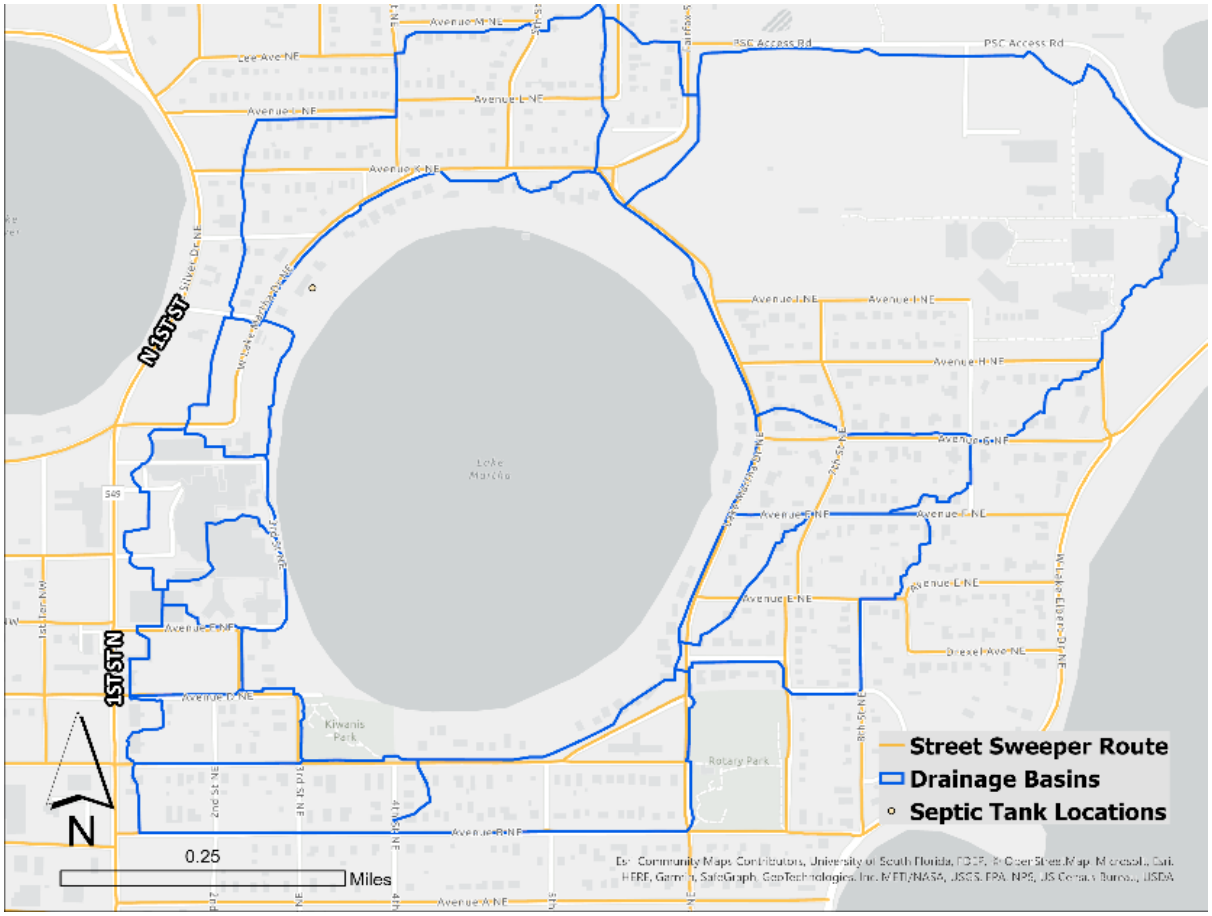


Figure 3-165. Map of Lake Martha's drainage basin, City street sweeper routes, and nearby septic systems.

Hydrology:

Lake Martha is a smaller, but deeper waterbody at 82 acres, an average depth of 10.2 feet, and a maximum depth of about 19 feet (Figure 3-164). This lake morphology is indicative of a classic sinkhole lake. Despite Martha's average depth being almost two feet deeper than the regional mean lake depth, the slope of its lake bed should still support a healthy abundance of aquatic vegetation. Stormwater is conveyed to this waterbody from a 307 acre drainage basin comprised of 14 individual sub-basins (Figure 3-165). Located in a mostly residential area, the primary land uses in this basin are medium density residential and institutional (e.g. schools). This basin contributes 1,217 lbs of TN and 199 lbs of TP to the lake annually; which ranks 13th out of 37 lakes on a loading per acre basis. The City combats the local stormwater pollutant loading by conducting 7.15 miles of street sweeping in this basin per month.

In the heart of downtown Winter Haven, Lake Martha receives overflow from Lake Silver and discharges excess water to Lake Maude. Martha's surface elevation sits near the top of the Peace Creek watershed. Over its period of record, Lake Martha's surface level has fluctuated between 136.7 and 142.6 feet above sea level. The normal range is much narrower—between 139.7 and 141.2 feet (Figure 3-166). During 2024, Lake Martha's surface level dropped to a low of 140.6 feet in June and rose to a wet season high of 141.8 feet in November. The surface level ended the year above the normal range at 141.6 feet. Based on linear regression analysis, Chl-a rises as Lake Martha's surface level increases; which is opposite to what would be expected. This correlation is most likely coincidental.

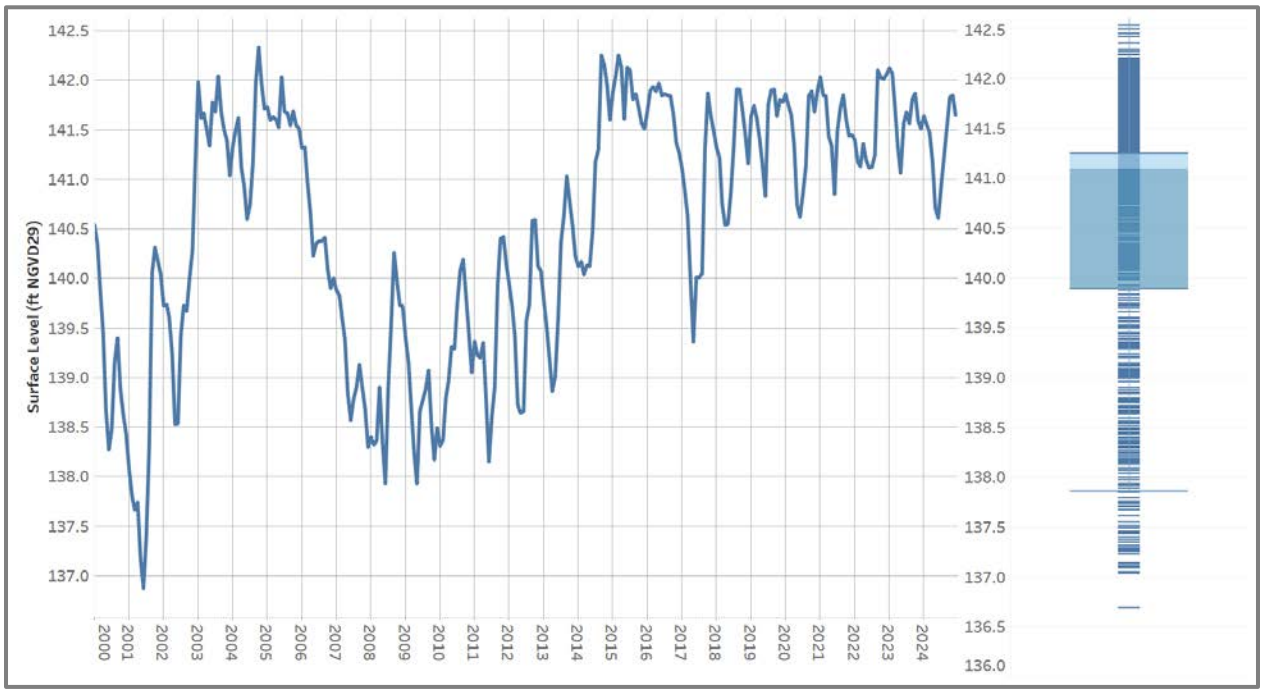


Figure 3-166. Hydrograph of Lake Martha depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Martha is categorized as a clear, alkaline waterbody. Throughout recent monitoring, Lake Martha has not exhibited any NNC exceedances in Chl-a, TN, or TP (Figure 3-167). This equates to an impairment score of 3. It should be noted that these parameters have remained relatively low

since 2019. If these low concentrations continue, it could shift Lake Martha's trends into a positive direction.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	0.601	0.004	Increasing	3	0
TN	N	0.286	0.208	No Trend		1
TP	N	0.133	0.566	No Trend		1
Secchi	NA	-0.723	0.000	Decreasing		0

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. According to the data, Chl-a and Secchi depth exhibited significant deteriorating trends. These equate to trend criteria scores of 0. The TN and TP trends, while in a deteriorating direction, were not significant—earning scores of 1. This is a slight change from previous years and indicates that some water quality metrics are exhibiting improvement. As stated previously, continued low Chl-a, TN, and TP concentrations may end up shifting all of these trends toward more favorable directions.

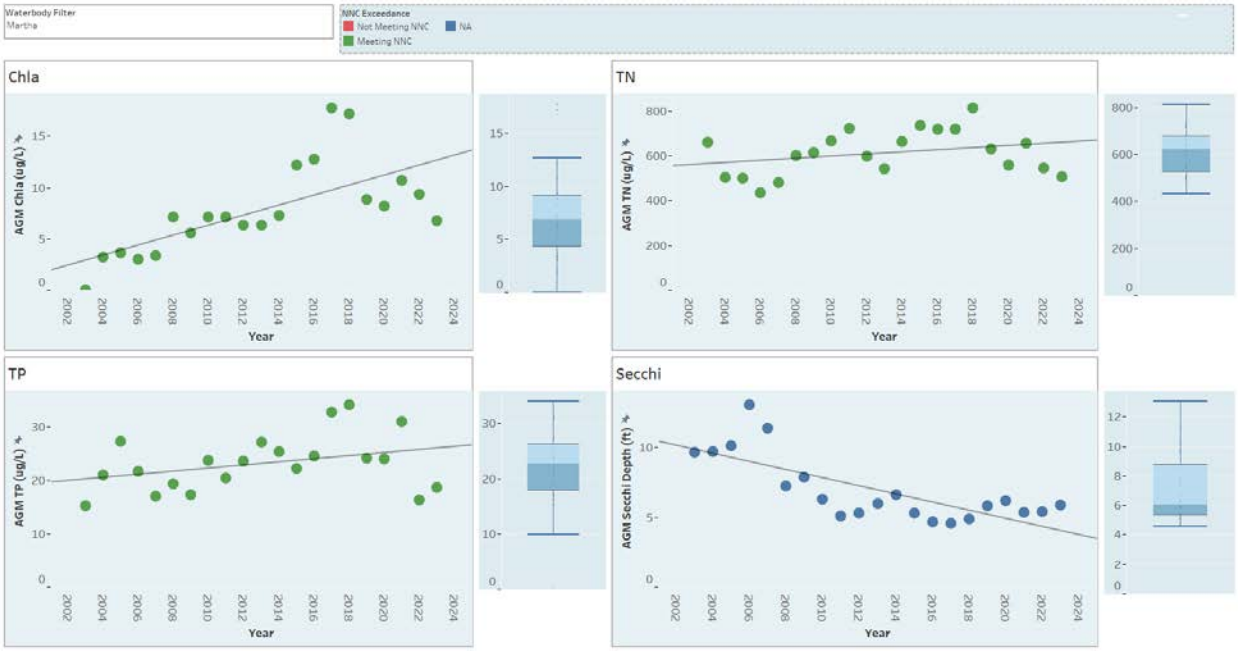


Figure 3-167. Lake Martha AGM Chl-a, TN, TP, and Secchi depth values from 2003 to 2023. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Martha on 8/6/2024. The PAC during this survey was 4.8% and the total BV was 0.43% (Figure 3-168). This equates to an abundance score of 1. A review of Lake Martha's abundance values from 2018 to 2024 shows a consistent lack of vegetation coverage and biovolume. While the lake bed steeply slopes into deeper water, its relatively high water clarity should support much more vegetation than is currently present. The reason for this lack of aquatic plants still remains unclear. The City attempted to plant some native SAV species near the Martha boat ramp in 2024, but these plantings did not survive. It is likely that grass carp stocked in 2011 are eating any plants introduced to the lake.

Invasive Species Management:

Based on data from the 2024 survey, it is clear that emergent species dominate the vegetation community. At over 30% of the community, the exotic torpedo grass is the most abundant species by far (Figure 3-169). While there are several exotic species present, they don't pose much of a management concern. The result is an invasive presence criterion score of 3. The lack of submerged vegetation is much more concerning since this lake should support it. The leading theory is that triploid grass carp were stocked in the 2010s in an effort to biologically control hydrilla in the lake. The density of carp was likely higher than needed and this population has since denuded the lake of SAV.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, all three of Martha's diversity indices failed to meet or exceed their long-term median values (Figure 3-170). Reviewing the species frequencies from the previous year, many plant species were in higher proportions in 2023 than 2024. The species present were also much more evenly distributed in 2023 compared to 2024. Overall, there was a slightly decrease in diversity in the most recent report year. Since there are no managed invasive species present, these changes have occurred due to natural fluctuations in the community.

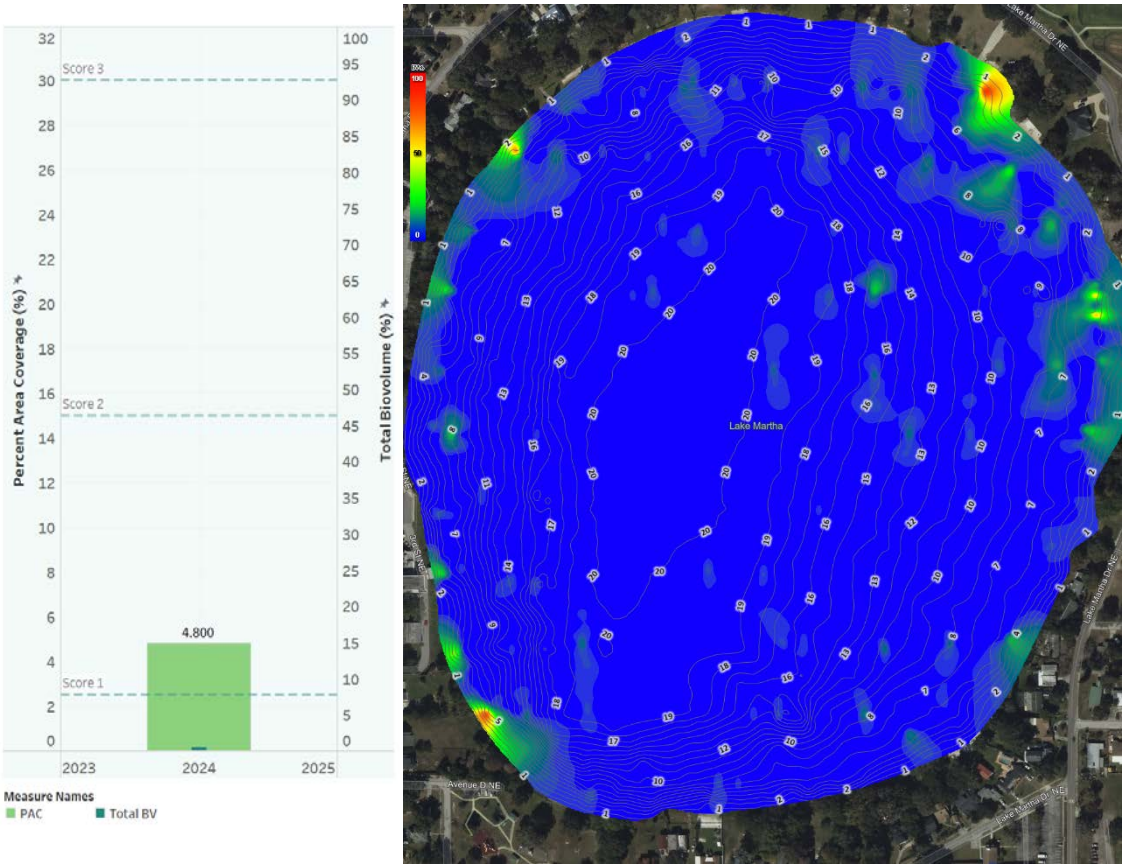


Figure 3-168. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Martha; biovolume values range from green (lowest) to red (highest).

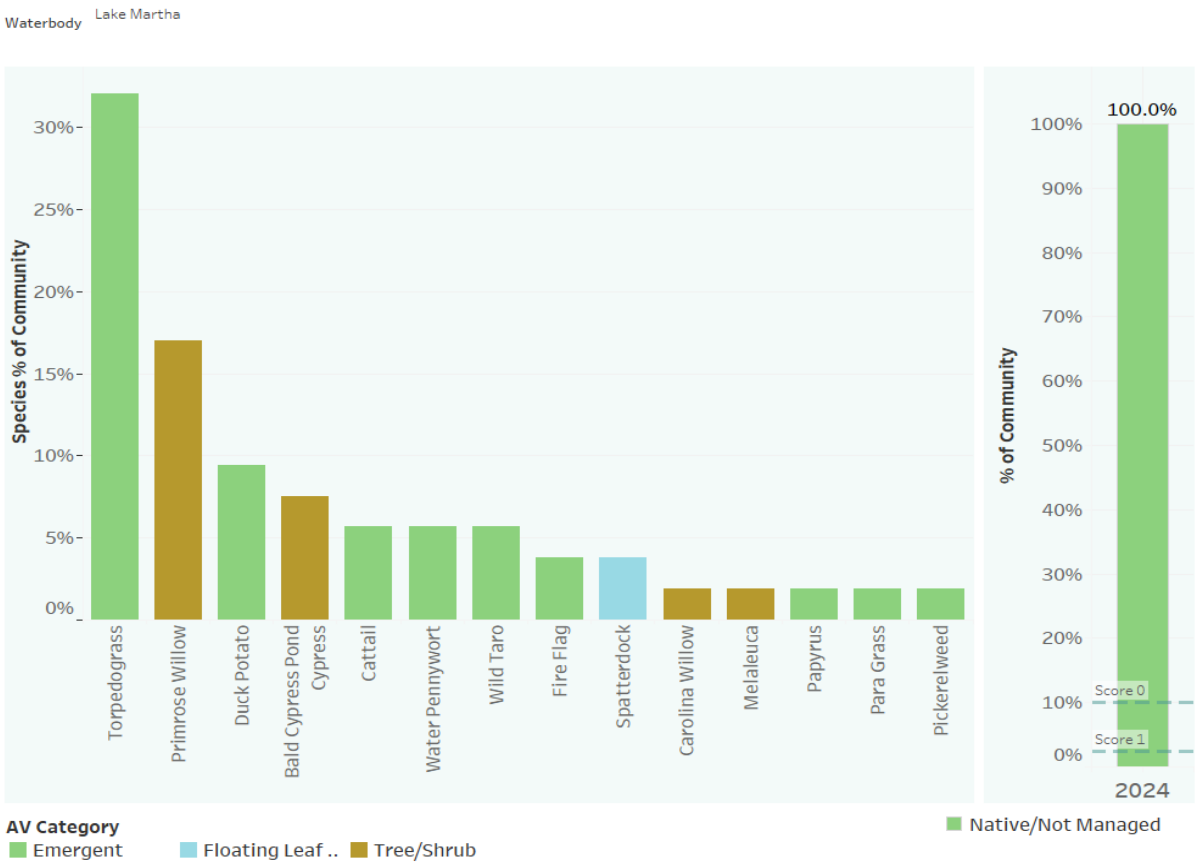


Figure 3-169. Chart depicting species frequency and invasive species percentage of Lake Martha during 2024.

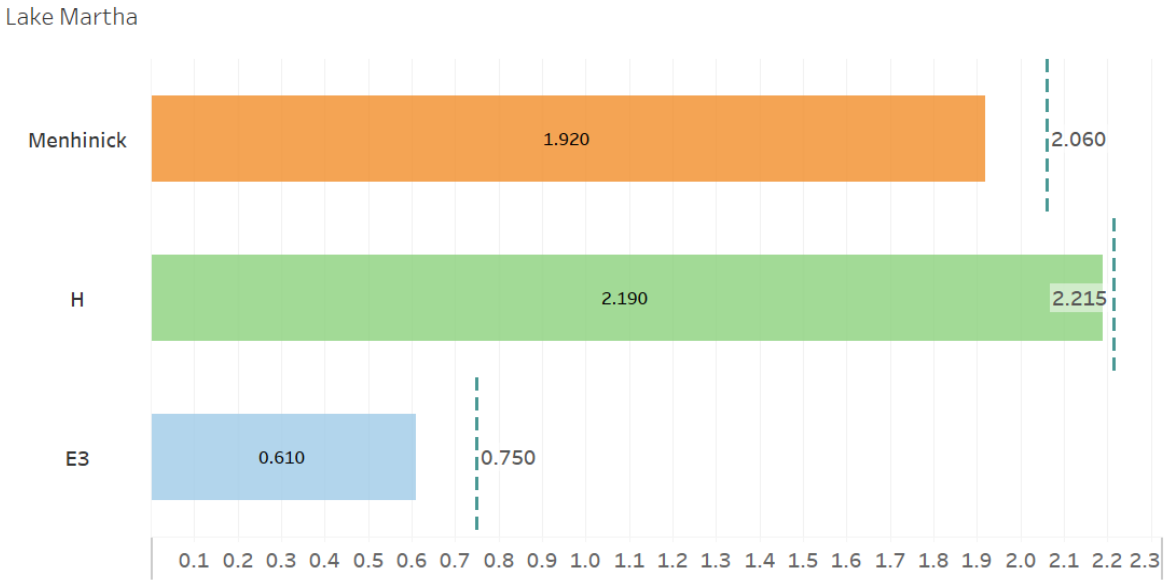


Figure 3-170. Chart depicting 2024 diversity indices for Lake Martha. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Martha's health index scores from 2018 to 2024 shows marginal improvement (Figure 3-171). Since the City began documenting lake health, Lake Martha has exhibited no changes in impairment but has undergone some positive changes in the trend scores. Also notable is how the vegetation abundance has increased since the first year of monitoring. Diversity largely changes through natural selection in the vegetation community and the invasive presence has consistently remained low. Overall, improving Lake Martha's water quality before it becomes impaired places it higher on the priority ranking.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	3	0	0	0	0	0	3	0	**0.8**
2019	3	0	0	0	0	1	2	3	**1.1**
2020	3	0	0	0	0	1	3	1	**1.0**
2021	3	0	0	0	0	1	3	2	**1.1**
2022	3	0	1	0	0	1	3	2	**1.3**
2023	3	0	1	1	0	1	3	2	**1.4**
2024	3	0	1	1	0	1	3	0	**1.1**

Figure 3-171. Chart depicting a comparison of Lake Martha's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Despite Lake Martha not being impaired, its water quality trends are concerning. Stormwater pollutant loading from the surrounding drainage basin is one of the City's primary management concerns for combating these water quality issues.
- A healthy, robust vegetation community is considered to provide a buffer against changes in water quality from increased nutrient loading. The lack of submerged vegetation and overall abundance is a concern. However, efforts to increase vegetation abundance through planting are curtailed by the presence of grass carp in the waterbody.
- In 2019, Lake Martha experienced a diesel fuel spill. While likely not a contributor to increased Chl-a or nutrient concentrations, this event led to a significant ecological disturbance. Fortunately, remediation efforts were successful at removing petroleum from the lake.

Lake Management Strategy:

- Implementing stormwater infrastructure improvements to address the water quality trends is an ongoing goal.
- With the majority of the drainage basin comprised of residential housing, public education and outreach is a valid management strategy. These efforts aim to increase residents' knowledge of best stormwater practices and ways they can individually reduce their pollutant load.
- City staff have explored habitat restoration via vegetation planting initiatives. However, the presence of grass carp poses a significant roadblock to successful implementation. Staff will continue to monitor vegetation and work with the FWC to track the presence of grass carp until such a time that planting becomes a viable solution.

Lake Maude

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Maude	3	3	3	2	2	3	2	3	**2.6**

Features & Statistics:

Surface area	51 acres
Mean depth	8.18 feet
Maximum depth	14 feet
Volume	413.4 acre-feet
Drainage basin area	385.75 acres
Annual TN Load	1900.5 lbs
Annual TP Load	320.03 lbs
Limiting nutrient	Co-limited (N & P)

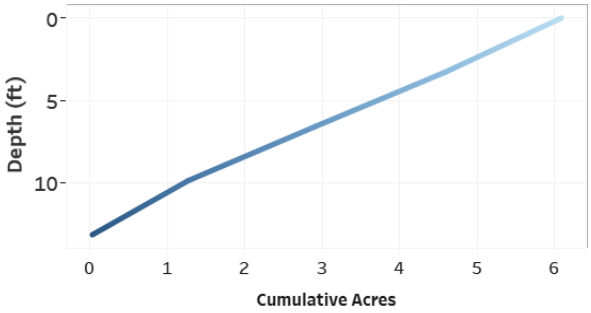


Figure 3-172. Hypsograph of Lake Maude depicting the depth profile and morphology of the lake bed.

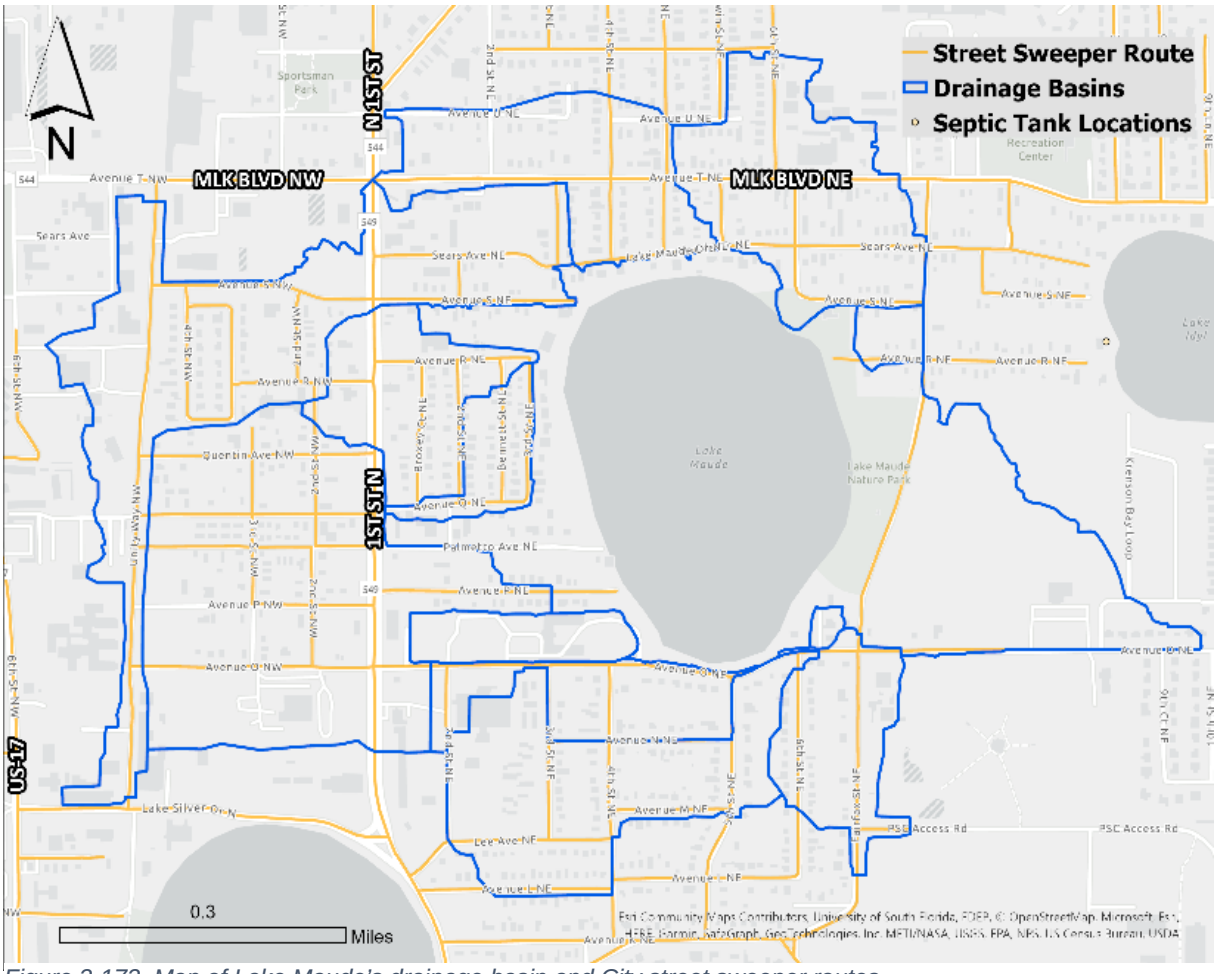


Figure 3-173. Map of Lake Maude's drainage basin and City street sweeper routes.

Hydrology:

Lake Maude is a smaller waterbody at 51 acres, an average depth of 8.2 feet, and a maximum depth of 14 feet in deeper areas (Figure 3-172). The shallowness of the lake provides ample habitat for aquatic vegetation to grow. Stormwater is conveyed to this waterbody from a 385 acre drainage basin, comprised of 14 individual sub-basins (Figure 3-173). The primary land uses within this basin include residential, recreational, and commercial which contribute 1,900 lbs of TN and 320 lbs of TP to the lake annually. These pollutant loads rank very high on a per acre basis. To combat stormwater pollutant loading, the City conducts 15.7 miles of street sweeping in this basin on a monthly frequency.

Lake Maude is near Winter Haven's downtown; it receives excess water from Lake Martha and discharges overflow to Lake Idyl. The mean surface elevation for the lake sits relatively high in the entire Peace Creek watershed. Over its period of record, Lake Maude's surface level has fluctuated between 136 and 140.9 feet above sea level. The normal range is much narrower—between 138.9 and 139.5 feet (Figure 3-174). During 2024, Lake Maude dropped to a dry season low of 138.5 feet in June then rose to a wet season peak of 140.2 feet in September. The surface level ended the year well above the high range at 139.9 feet. Changes in Lake Maude's surface level are weakly correlated with TN (see appendix). This carries some management considerations as maintaining higher surface levels should result in a decrease in TN concentrations.

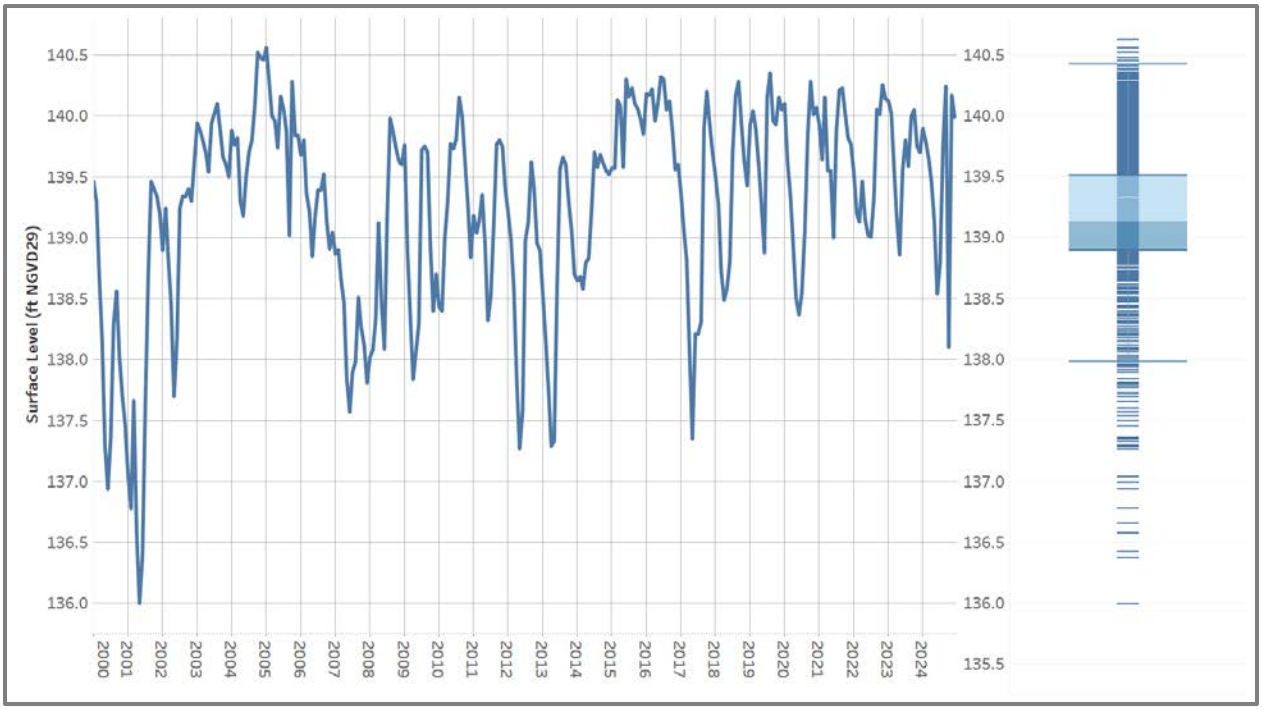


Figure 3-174. Hydrograph of Lake Maude depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Maude is categorized as a clear, alkaline waterbody. Lake Maude has not exhibited any NNC exceedances during the assessment period (Figure 3-175). This equates to an impairment criterion score of 3. While the 2023 water quality parameters were poorer than usual, in 2024 these returned to more normal and preferable levels.

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Based on the data, Chl-a and TN exhibited significant improving trends—earning trend criteria score of 3. Lake Maude's TP and Secchi depth trends, while not statistically significant, are also improving. This equates to a trend criterion score of 2. While Secchi depth was previously trending upward, the recent change to the statistical significance indicates that some recent activities have negatively impacted water clarity. This is something to monitor, but is not an inherently concerning shift.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	-0.568	0.007	Decreasing	3	3
TN	N	-0.491	0.024	Decreasing		3
TP	N	-0.181	0.431	No Trend		2
Secchi	NA	0.390	0.081	No Trend		2

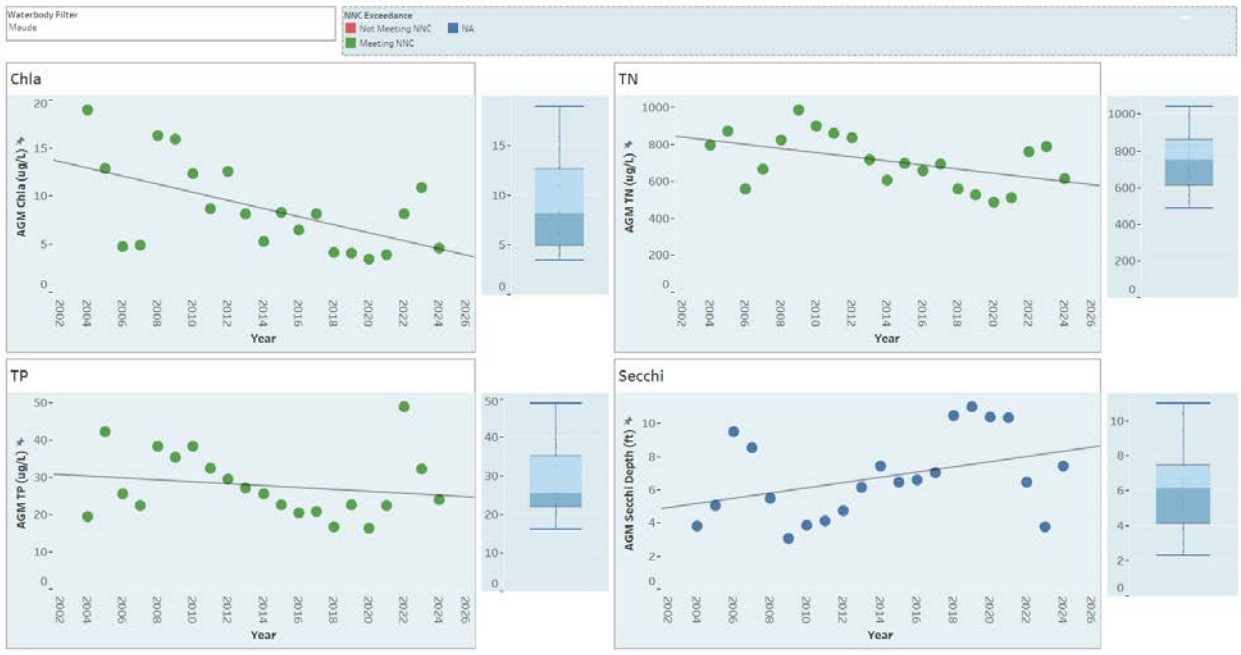


Figure 3-175. Lake Maude AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Maude on 1/19/2024. The PAC during this survey was 43.4% and the total BV was 4.5% (Figure 3-176). This equates to a vegetation abundance criterion score of 3. This was actually a considerable decline in overall abundance from the previous year. This recent decline in coverage and BV may be a response to invasive hydrilla treatments reducing the overall abundance in the lake.

Invasive Species Management:

Based on the data from the 2024 survey, Lake Maude experienced a shift in the vegetation community, with the floating-leaf spatterdock taking the most dominant place (Figure 3-177). The remaining vegetation types include an even mix of submerged and emergent plants. Regarding managed invasive species, hydrilla and burhead sedge made up 2.4% of the total population. This equates to an invasive presence criterion score of 2 and constitutes a slight decrease from the previous year. While currently in a managed state, the presence of invasives requires constant management to keep it under control.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, all three of Lake Maude's diversity indices exceeded their long-term median values (Figure 3-178). This equates to a diversity criterion score of 3. The increases in diversity were likely caused by efforts to control hydrilla and burhead sedge in the lake. By reducing the abundance of these invasive species, other native plants were able to fill in the niches left behind and create a more diverse and evenly distributed vegetation community.

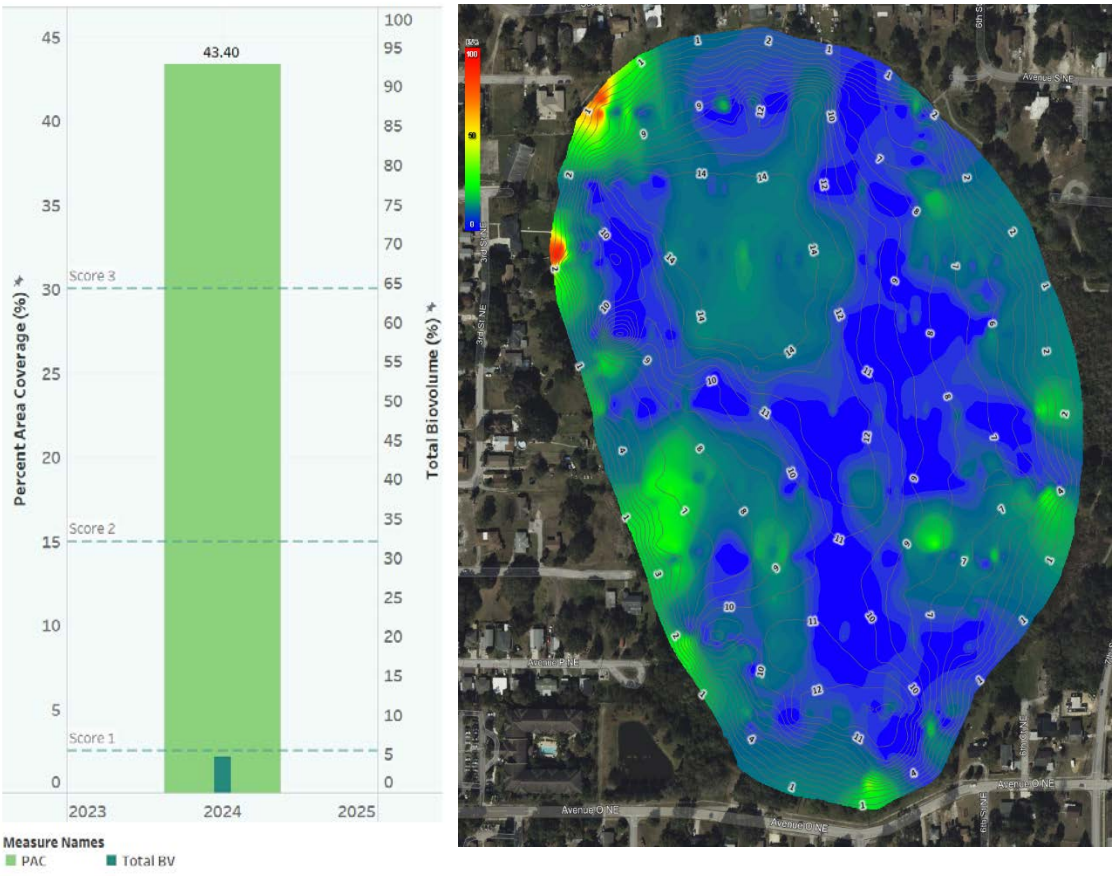


Figure 3-176. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Maude. Biovolume values range from green (lowest) to red (highest).

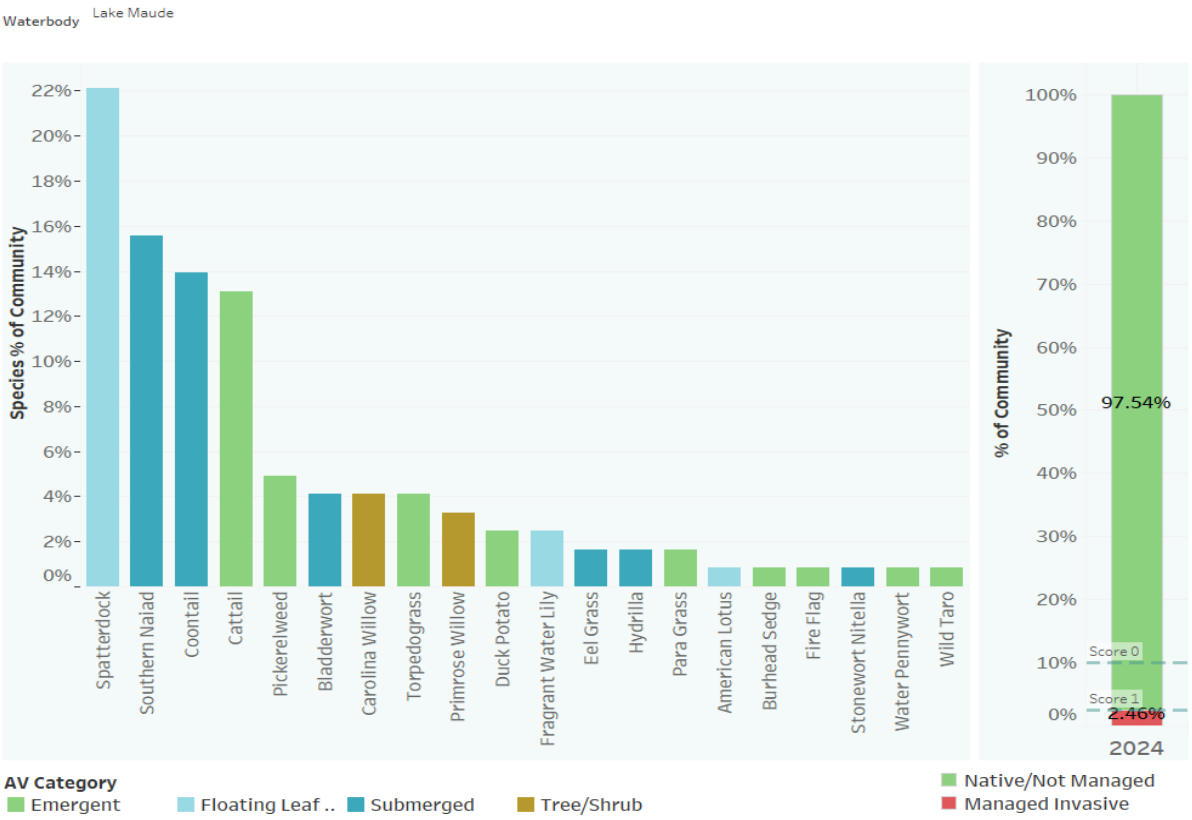


Figure 3-177. Chart depicting species frequency and invasive species percentage of Lake Maude during 2024.

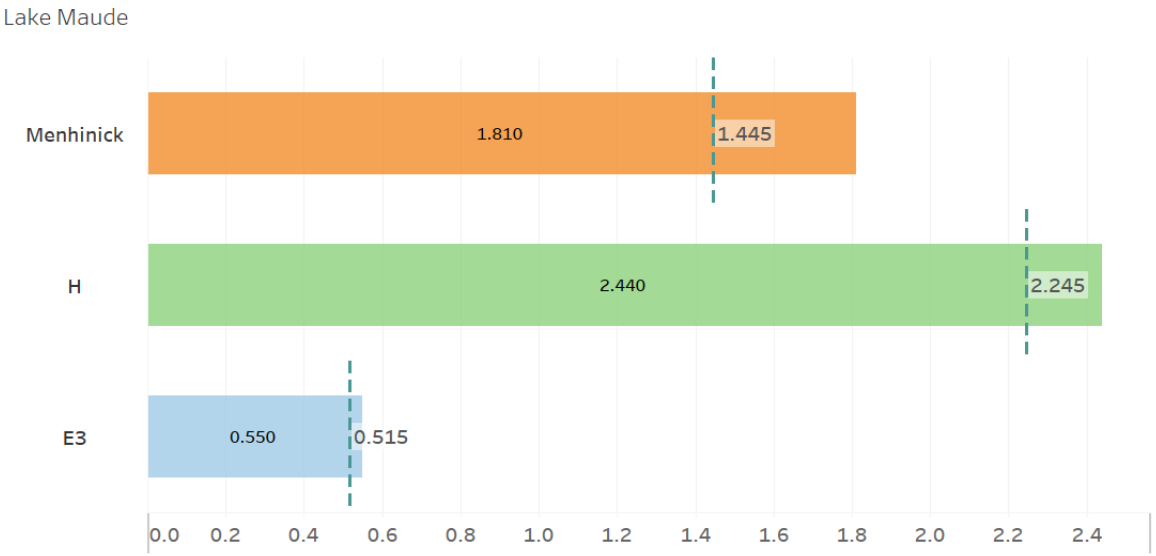


Figure 3-178. Chart depicting 2024 diversity indices for Lake Maude. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Maude's health index scores from 2018 to 2024 shows relative stability with index scores ranging from 2.4 to 2.8 (Figure 3-179). Throughout the monitoring period, water quality impairment, trends, and vegetation abundance have remained largely positive. There have been some minor changes in the statistical significance of the TP and Secchi depth trends, however. Where the majority of the score changes derive are from the invasive species presence and species diversity scores. This is to be expected as invasive plant populations expand and are treated. Overall, Lake Maude falls lower on the priority ranking due to its excellent water quality and robust vegetation community.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	3	3	3	2	3	3	1	3	**2.6**
2019	3	3	3	2	3	3	1	1	**2.4**
2020	3	3	3	3	3	3	2	1	**2.6**
2021	3	3	3	3	3	3	1	0	**2.4**
2022	3	3	3	2	3	3	2	3	**2.8**
2023	3	3	3	2	2	3	1	2	**2.4**
2024	3	3	3	2	2	3	2	3	**2.6**

Figure 3-179. Chart depicting comparison of Lake Maude's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Lake Maude currently exhibits excellent water quality. However, stormwater pollutant loading is a potential concern if water quality trends begin to deteriorate.
- The management of invasive species like burhead sedge and hydrilla is a consistent concern. It can only take a single growing season for even a small population to take over large areas of a waterbody.

Lake Management Strategy:

- The City already mitigates quite a bit of stormwater pollutant loading through extensive street sweeping as well as the construction and maintenance of the Lake Maude Stormwater Treatment Park—a form of green stormwater infrastructure.
- With so much residential housing in the basin, public education and outreach is another viable strategy. Education aims to increase residents' knowledge of best stormwater practices and ways they can individually reduce their pollutant load.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large-scale herbicide treatments and potential water quality issues that follow.

Lake May

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake May	0	3	3	3	3	3	1	2	**2.3**

Features & Statistics:

Surface area	50.5 acres
Mean depth	5.28 feet
Maximum depth	10 feet
Volume	196 acre-feet
Drainage basin area	353.6 acres
Annual TN Load	1732.7 lbs
Annual TP Load	292.9 lbs
Limiting nutrient	Co-limited (N & P)

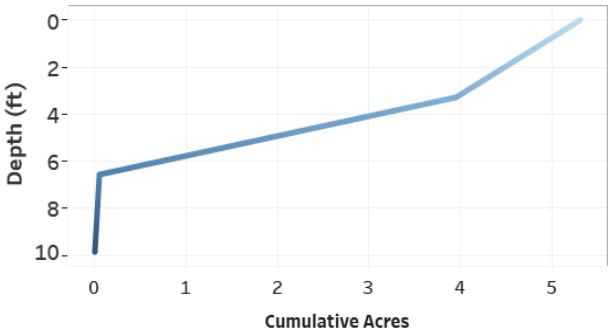


Figure 3-180. Hypsograph of Lake May depicting the depth profile and morphology of the lake bed.

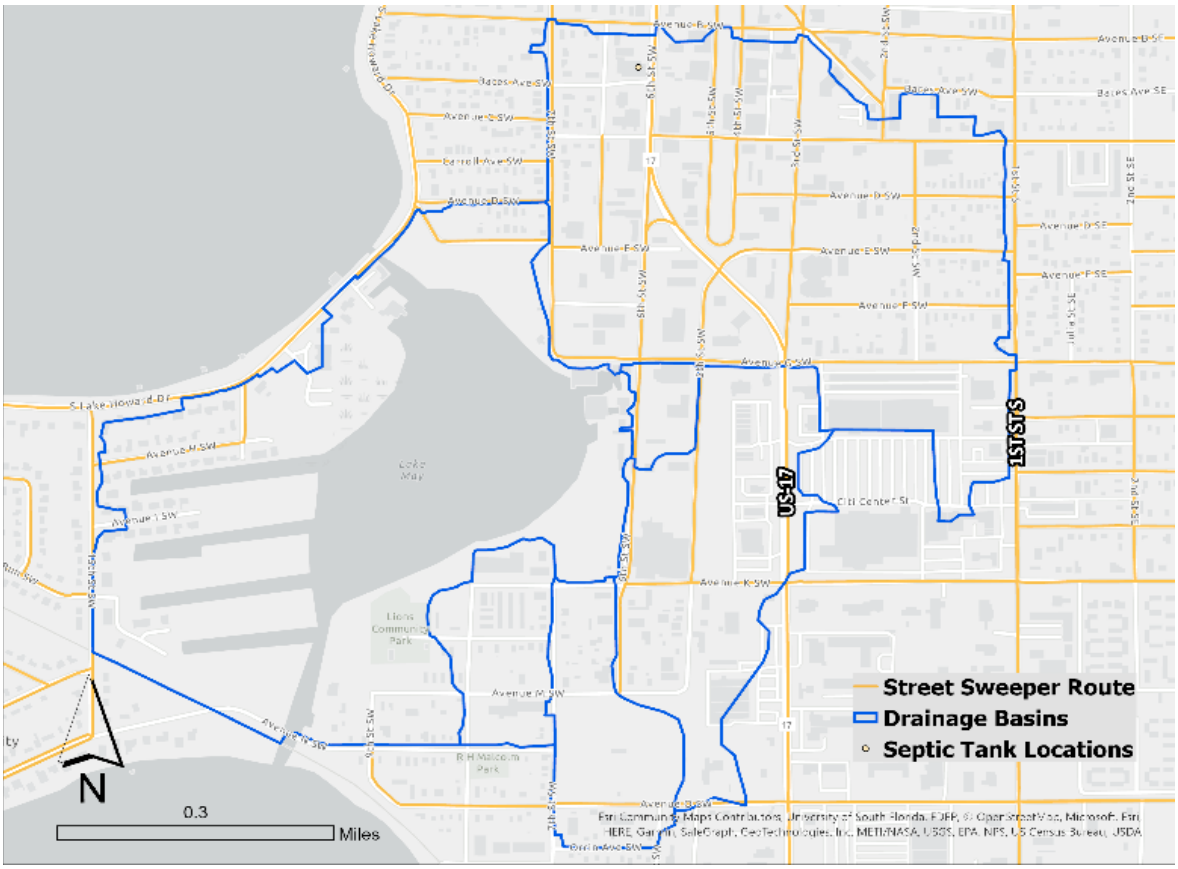


Figure 3-181. Map of Lake May's drainage basin, City street sweeper routes, and nearby septic systems.

Hydrology:

Lake May is a small and shallow waterbody with a surface area of 50 acres, an average depth of 5.3 feet, and a maximum depth of around 10 feet (Figure 3-180). Lake May's shallowness coupled with its high boat traffic means that it likely has low water clarity and poorer water quality due in part to the increase suspended solids. That said, the shallowness of the lake supports an abundance of aquatic vegetation. Stormwater is conveyed to this waterbody from a 353 acre urbanized drainage basin comprised of six individual sub-basins Figure 3-181). The basin is comprised of commercial, industrial, and residential land uses that contribute 1,733 lbs of TN and 293 lbs of TP to the lake annually. On a per acre basis, these pollutant loads rank Lake May 4th out of 37 lakes. To mitigate stormwater nutrient loads, the City conducts 27.3 miles of street sweeping services within the drainage area on a monthly basis and an alum injection system to treat runoff from Lake May's primary drainage sub-basin.

Lake May is centrally located on the South Chain with navigable canals leading to Lake Howard and Lake Shipp. Due to these canal connections, surface levels fluctuate consistently across the South Chain of Lakes. Throughout the period of record, the South Chain's surface level has fluctuated between 127.5 and 133.7 feet above sea level. The normal range is much narrower—between 129.7 and 131.4 feet (Figure 3-182). That said, wetter and drier periods often result in more extreme peaks and troughs, respectively. During 2024, the South Chain reached a dry season low of 130.8 ft in June and a wet season peak of 131.8 ft in September. The level of the South Chain by the end of the year was slightly above the top of the normal range at 131.5 ft. The South Chain's level remained at or above the high end of the normal range throughout most of the year—consistent with annual level fluctuations over the last 10 years. According to linear regression analysis, changes in Lake May's surface level correlate with Chl-a, TN, TP, and clarity (see appendix). This carries management implications as an increase in levels should result in improved water quality across the board.

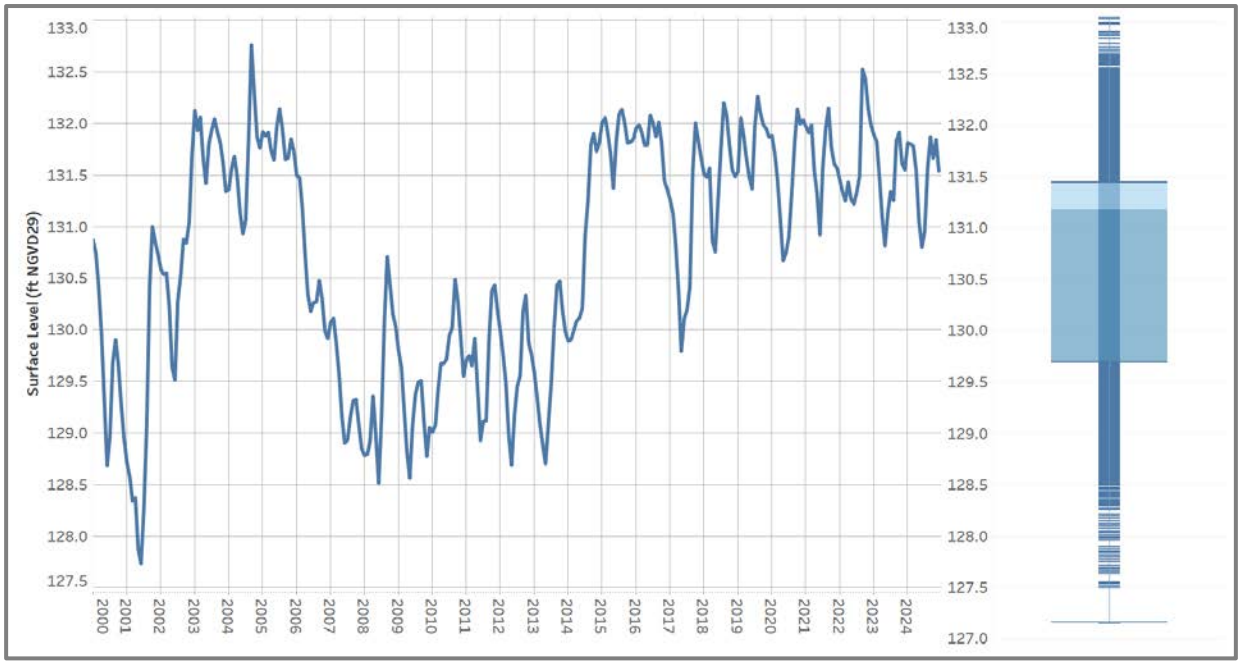


Figure 3-182. Hydrograph of Lake May depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake May is categorized as a clear, alkaline waterbody. Due to numerous consecutive NNC exceedances during the assessment period, Lake May is considered impaired for Chl-a, TN, and TP (Figure 3-183). This equates to an impairment criterion score of 0. In 2019, the FDEP established a total maximum daily load for Lake May, stipulating a 44% TN and 57% TP reduction to meet NNC guidelines.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	-0.701	0.000	Decreasing	0	3
TN	Y	-0.727	0.000	Decreasing		3
TP	Y	-0.740	0.000	Decreasing		3
Secchi	NA	0.603	0.004	Increasing		3

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Based on the data, each of Lake May's water quality parameters exhibited significant improving trends. The result is trend criteria scores of 3 for each of these parameters. Over time, with continued improving trends, Lake May should begin to meet the NNC impairment guidelines and exhibit much better water quality than when monitoring began.

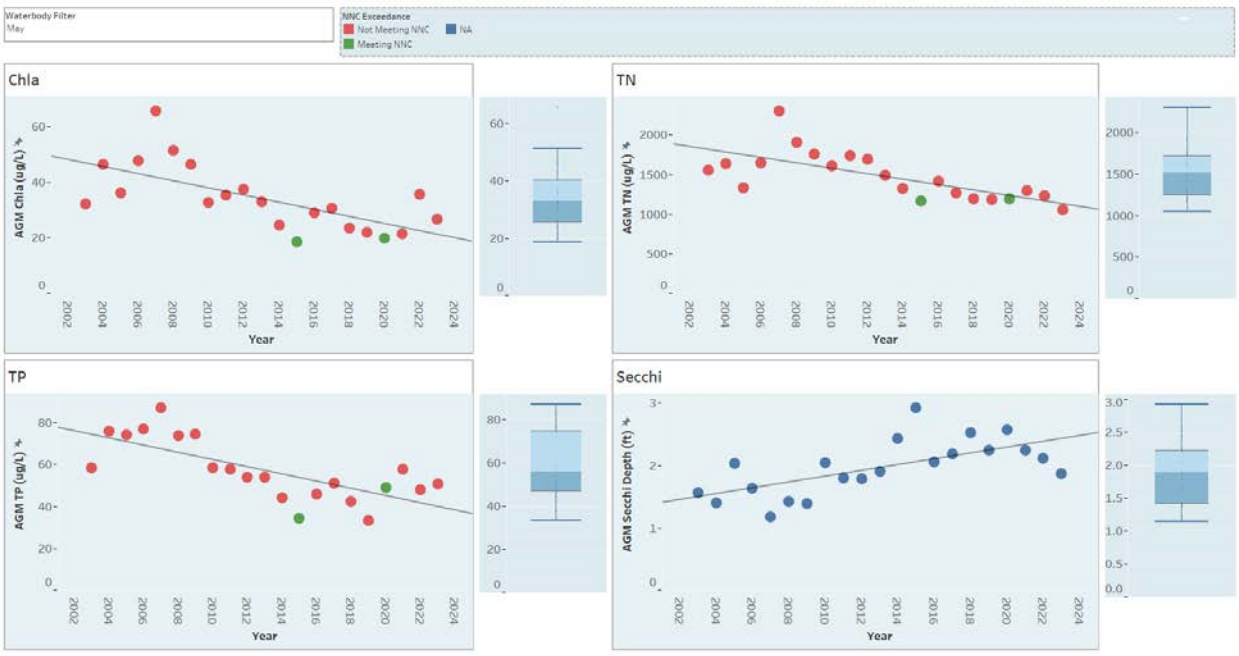


Figure 3-183. Lake May AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake May on 6/13/2024. The PAC during this survey was 97.1% and the total BV was 29.3% (Figure 3-184). This equates to an abundance criterion score of 3. Lake May has traditionally maintained a high vegetation abundance. Its

shallow depth and gradually sloping lake bed lend itself well to a wide littoral zone. This has occasionally raised navigation concerns in the past as over 50% of the surface is occupied by aquatic plants. Striking a balance between ecology and recreation is one of the City's management goals for this waterbody, but for now the navigational lanes remain open and usable.

Invasive Species Management:

Based on the 2024 survey, the floating-leaf plant spatterdock was the most dominant species in the lake (Figure 3-185). This was followed by a healthy mix of submerged and emergent species. With the amount of boat traffic and commercial land uses surrounding this lake, invasive species have been a constant concern. In 2024, burhead sedge, hydrilla, and water hyacinth made up 5.2% of the plant community; resulting in an invasive presence score of 1. Fortunately, this percentage decreased considerably from the previous years—constituting the lowest presence of invasive species since monitoring began. Continued management is still necessary to get these exotic plants into a controlled state.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, Lake May's species richness and overall diversity indices exceeded their long-term median values (Figure 3-186). This equates to a diversity criterion score of 2. While the eveness index was slightly below average, it was not by much. The invasive plant control efforts likely shifted the species dynamics such that the myriad plants present were slightly less equally distributed.

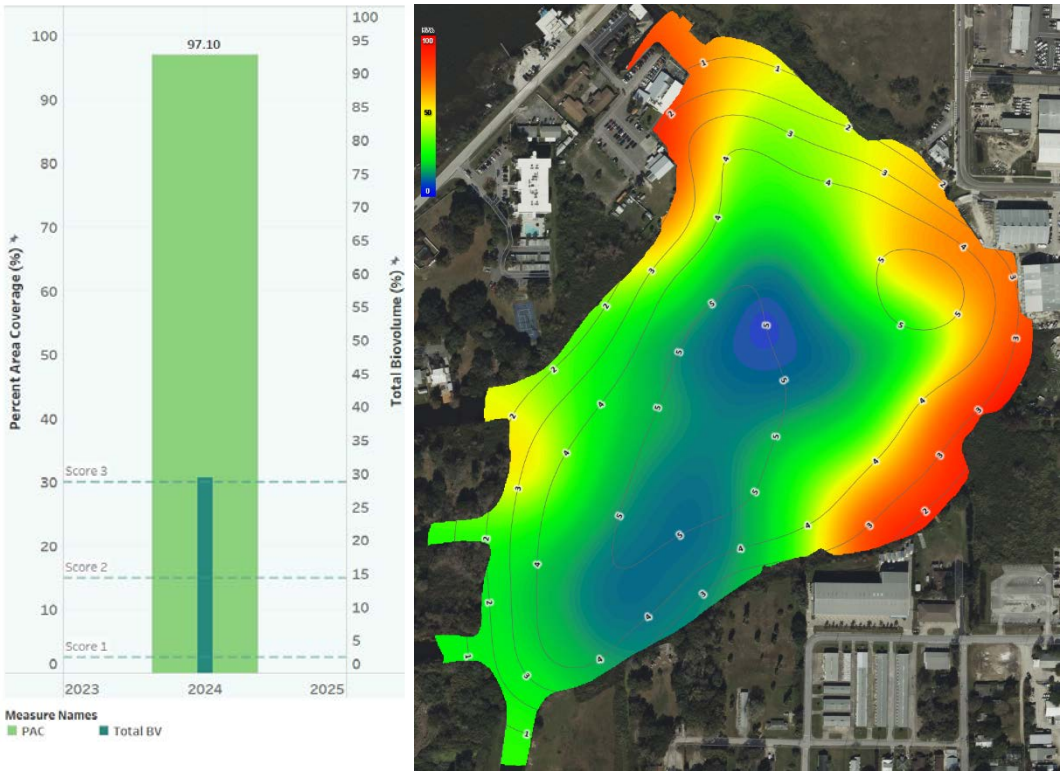


Figure 3-184. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake May; biovolume values range from green (lowest) to red (highest).

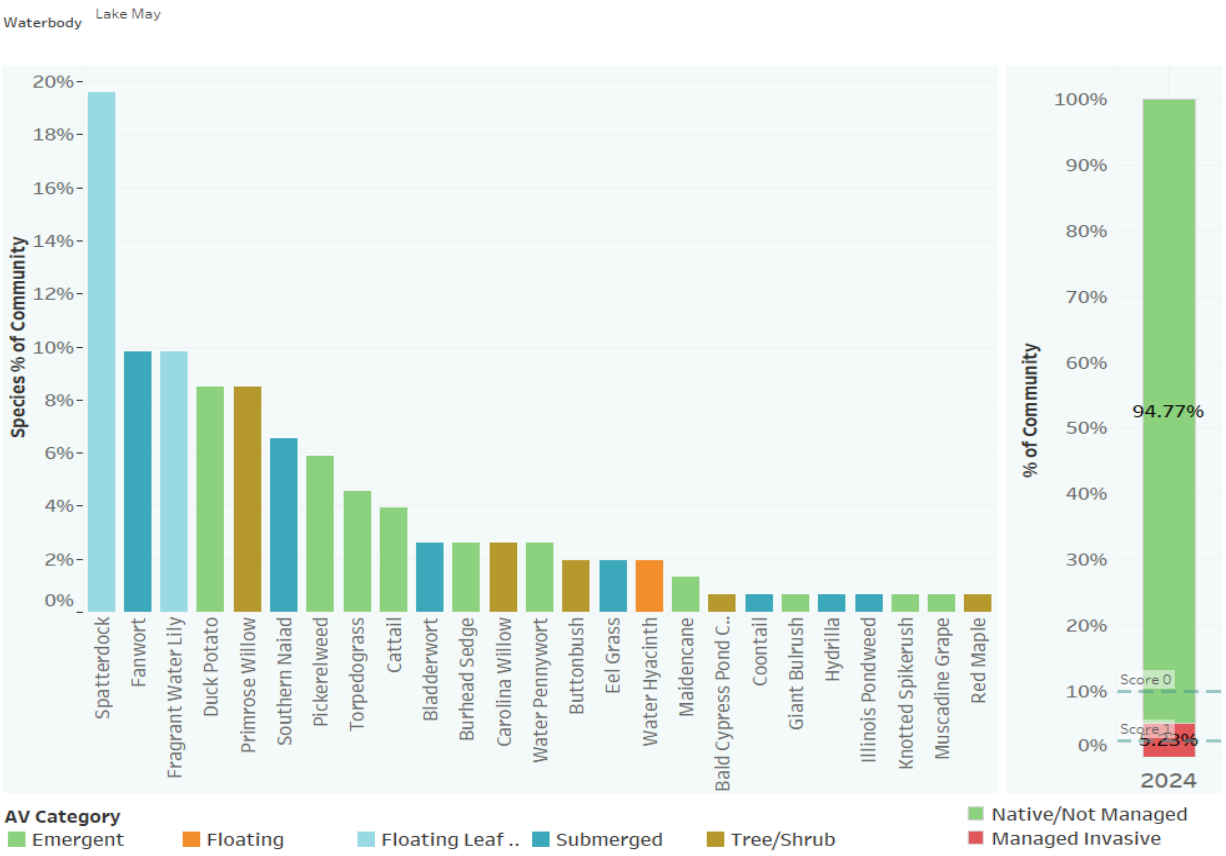


Figure 3-185. Chart depicting species frequency and invasive species percentage of Lake May during 2024.

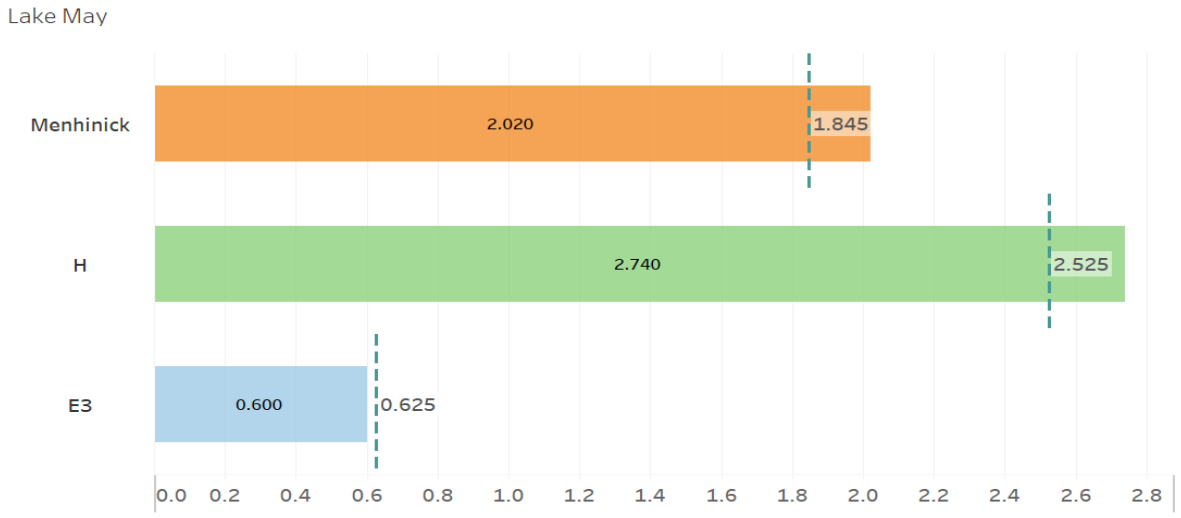


Figure 3-186. Chart depicting 2024 diversity indices for Lake May. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake May's health index scores from 2018 to 2024 shows relative stability—with lake health ranging from 2.0 to 2.3 (Figure 3-186). In the seven-year span that Lake May has been monitored, the only changes in score have been in the invasive presence and diversity

criteria. Based on these scores, it appears that the changes in diversity have mostly been the result of invasive species management efforts. Overall, Lake May ranks in the middle of the pack with regards to management priority. While it is impaired, its water quality and vegetation abundance indicate that its overall health is improving.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	3	3	3	3	3	1	0	**2.0**
2019	0	3	3	3	3	3	0	1	**2.0**
2020	0	3	3	3	3	3	0	3	**2.3**
2021	0	3	3	3	3	3	0	2	**2.1**
2022	0	3	3	3	3	3	0	2	**2.1**
2023	0	3	3	3	3	3	0	3	**2.3**
2024	0	3	3	3	3	3	1	2	**2.3**

Figure 3-187. Chart depicting a comparison of Lake May's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- In addition to stormwater pollutant loading, Lake May received historic point-source discharges from the Imhoff Wastewater Treatment Plan as well as those from citrus and dairy processing facilities. The sediments in Lake May could house a considerable amount of these legacy nutrients and be a constant source of internal loading.
- Several water quality metrics are significantly correlated with Lake May's surface level; likely due to increased flushing during wetter periods. The means that drought conditions could result in water quality declines.
- Management of invasive species is a consistent concern. Lake May's invasive populations, while lower, still need control efforts to reach a maintained state. The large scale use of herbicides can result in water quality declines.
- In addition to invasives, tussock formation from the floating-leaf spatterdock can impact recreational navigation.

Lake Management Strategy:

- To mitigate stormwater pollutant loading, the City has implemented street sweeping, an alum injection system designed to reduce TN loads by 10% and TP loads by 45%, and general stormwater infrastructure improvements as part of the 7th Street Complete Streets Project.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC for invasive species management planning.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.

Lake Mirror

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Mirror	1	3	3	2	2	3	2	3	**2.4**

Features & Statistics:

Surface area	130.1 acres
Mean depth	8.86 feet
Maximum depth	15.5 feet
Volume	1408.3 acre-feet
Drainage basin area	277.9 acres
Annual TN Load	749.6 lbs
Annual TP Load	120.9 lbs
Limiting nutrient	Co-limited (N & P)

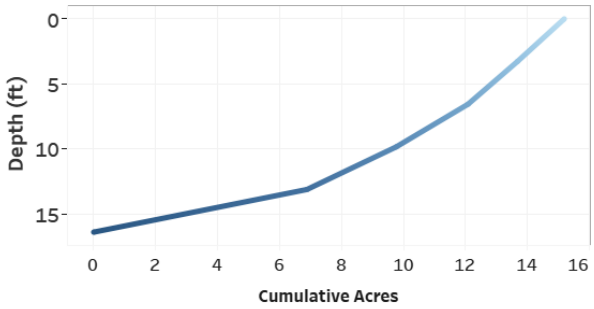


Figure 3-188. Hypsograph of Lake Mirror depicting the depth profile and morphology of the lake bed.

Hydrology:

Lake Mirror is a moderately sized waterbody with a surface area of 130 acres. Mirror's mean depth is slightly deeper than the regional average with deeper areas over 15 feet (Figure 3-188). Lake Mirror's bowl-shaped morphology provides adequate habitat for a robust aquatic vegetation community. Stormwater is conveyed to this waterbody from a 278 acre drainage basin comprised of 11 individual sub-basins (Figure 3-189). Residential land uses make up the vast majority of the drainage basin, contributing 750 lbs of TN and 121 lbs of TP to the lake annually—which is relatively low on a per acre basis. To mitigate stormwater loading, the City conducts 6.7 miles of street sweeping in this basin on a monthly basis.

Lake Mirror is located on the South Chain with navigable canals conncecting to Lake Cannon and Spring. Due to these canal connections, surface levels fluctuate consistently across the South Chain

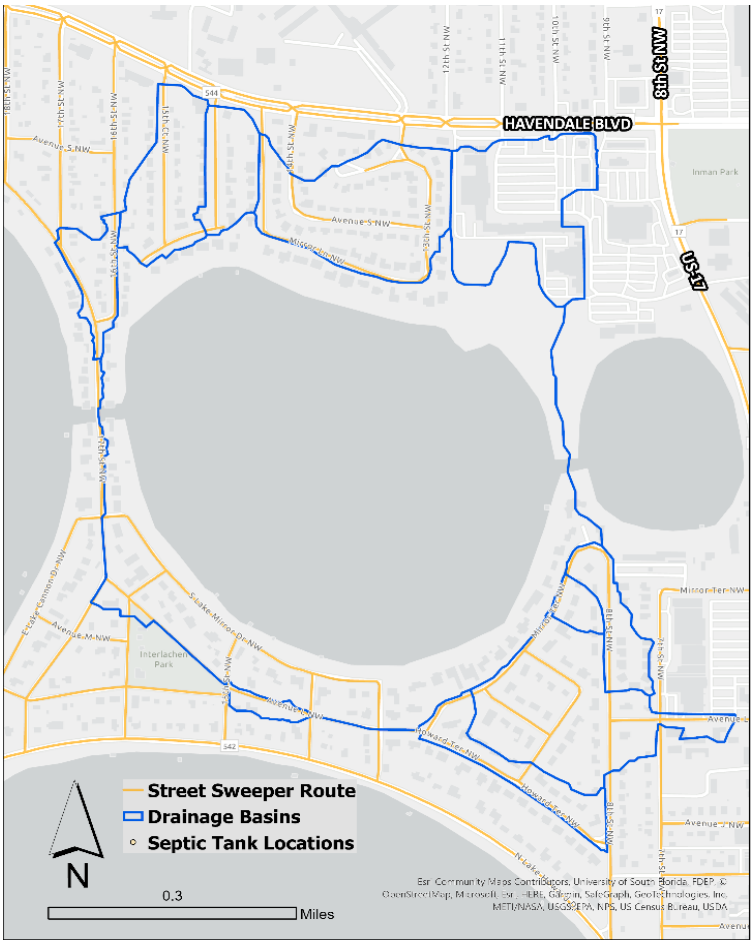


Figure 3-189. Map of Lake Mirror's drainage basin and City street sweeper routes.

of Lakes. Throughout the period of record, the South Chain's surface level has fluctuated between 127.5 and 133.7 feet above sea level. The normal range is much narrower—between 129.7 and 131.4 feet (Figure 3-190). That said, wetter and drier periods often result in more extreme peaks and troughs, respectively. During 2024, the South Chain reached a dry season low of 130.8 ft in June and a wet season peak of 131.8 ft in September. The level of the South Chain by the end of the year was slightly above the top of the normal range at 131.5 ft. The South Chain's level remained at or above the high end of the normal range throughout most of the year—consistent with annual level fluctuations over the last 10 years. According to linear regression analysis, changes in Lake Mirror's surface level correlate with TN (see appendix). This carries some management implications as maintaining higher levels should result in a decrease in TN concentrations.

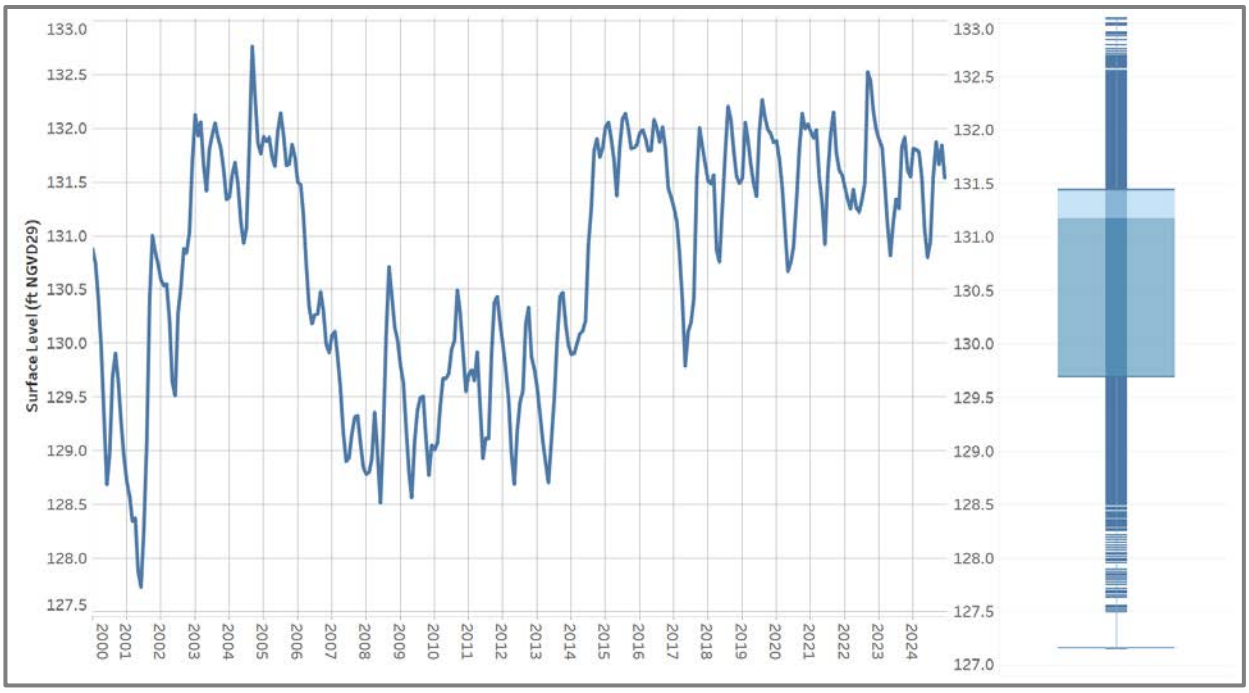


Figure 3-190. Hydrograph of Lake Mirror depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Mirror is categorized as a clear, alkaline waterbody. While previously un-impaired, recent NNC exceedances for Chl-a and TP during 2023 and 2024 have resulted in impairments in those parameters (Figure 3-191). This equates to an impairment score of 1. These recent concentrations are uncharacteristically high for a lake that has been meeting requirements since 2010. The FDEP established a total maximum daily load for Lake Mirror in 2007.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	-0.456	0.038	Decreasing	1	3
TN	N	-0.668	0.001	Decreasing		3
TP	Y	-0.337	0.136	No Trend		2
Secchi	NA	0.312	0.168	No Trend		2

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Lake Mirror exhibited significant improving trends in Chl-a and TN, and non-significant improving trends in TP and Secchi depth. Despite the recent impairment classification, it is a good sign that Mirror's chlorophyll and nitrogen levels are still trending downward.

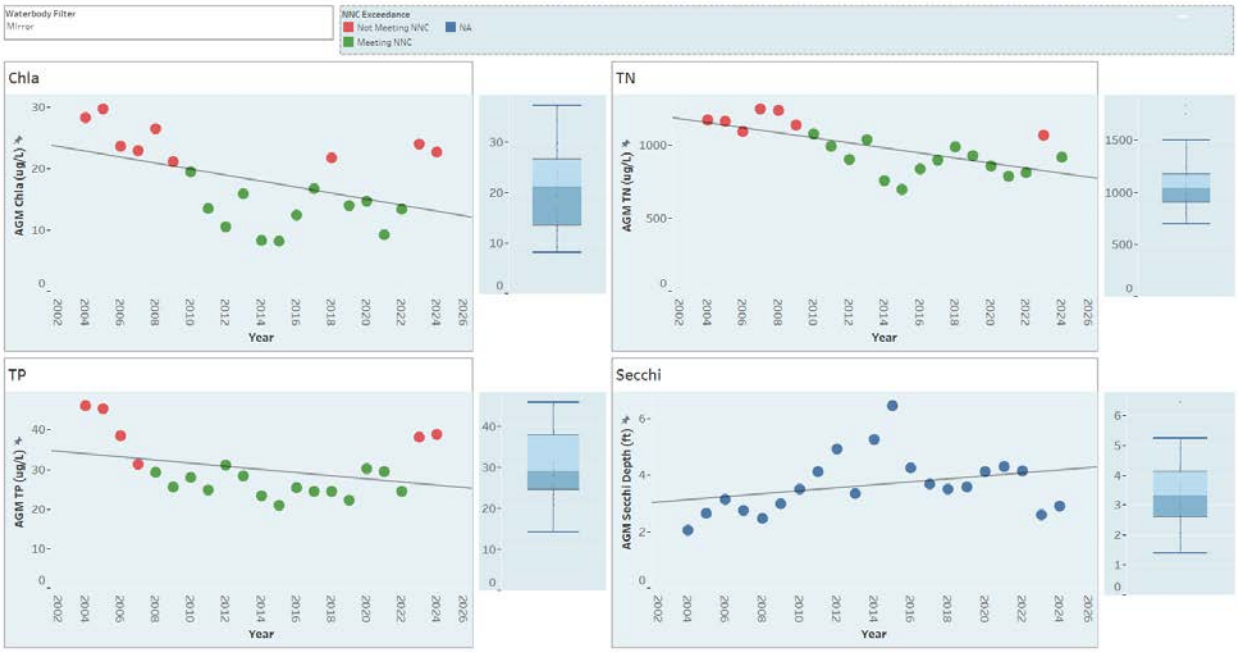


Figure 3-191. Lake Mirror AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots showing relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Mirror on 1/25/2024. The PAC during this survey was 62.1% and the total BV was 8.6% (Figure 3-192). Not only does this equate to a vegetation abundance criterion score of 3, but these are the highest coverage and biovolume numbers on record. Throughout the period of record, Lake Mirror has maintained exceptional vegetation abundance; which has likely contributed to its water quality improvements and should hopefully help to buffer against continued increases in Chl-a and TN.

Invasive Species Management:

Based on the 2024 survey, Lake Mirror is dominated by submerged vegetation. Eelgrass, Illinois pondweed, and southern naiad comprised over 46% of the community (Figure 3-193). A high number of remaining plants include a mix of emergent, floating-leaf and submerged species—indicative of high diversity. The invasive burhead sedge was the only managed exotic species present—making up just 1.9% of the community. This is a reduction from previous years and equates to an invasive criterion score of 2. Hydrilla, which made up almost 5% of the community in 2022, was absent during 2024—highlighting how invasive treatment efforts have been successful. The reduction in invasives coupled with an increase in overall plant abundance also exemplifies successful invasive plant management. That said, continued monitoring and maintence is necessary to prevent future infestations.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, all three of Mirror's diversity indices met or exceeded their long-term median values (Figure 3-194). This equates to a diversity criterion score of 3 and is a large shift from the previous year where two of the indices were below average. From 2023 to 2024, the number of unique species detected increased from 17 to 24. In addition to an increase in species richness, the distribution of these species was much more equitable. Both of these improvements then led to an increase in the overall diversity index.

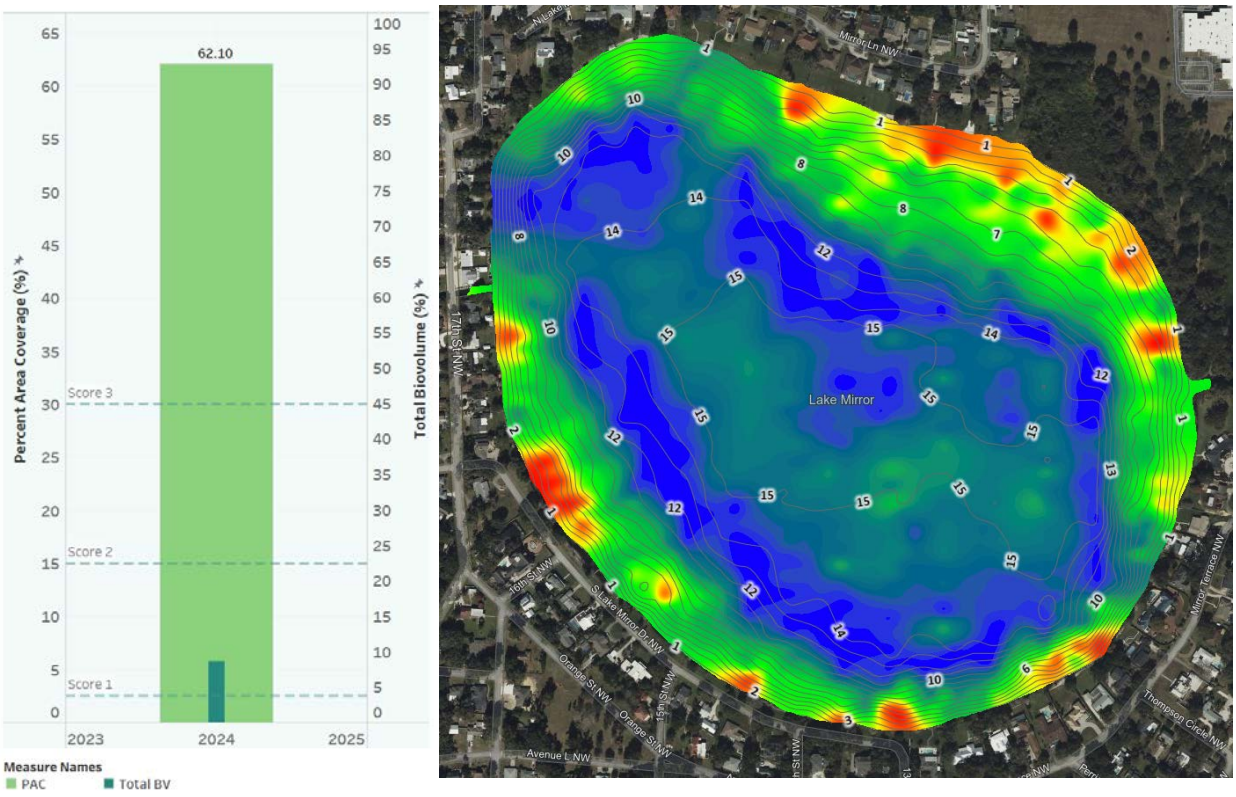


Figure 3-192. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Mirror; biovolume values range from green (lowest) to red (highest).

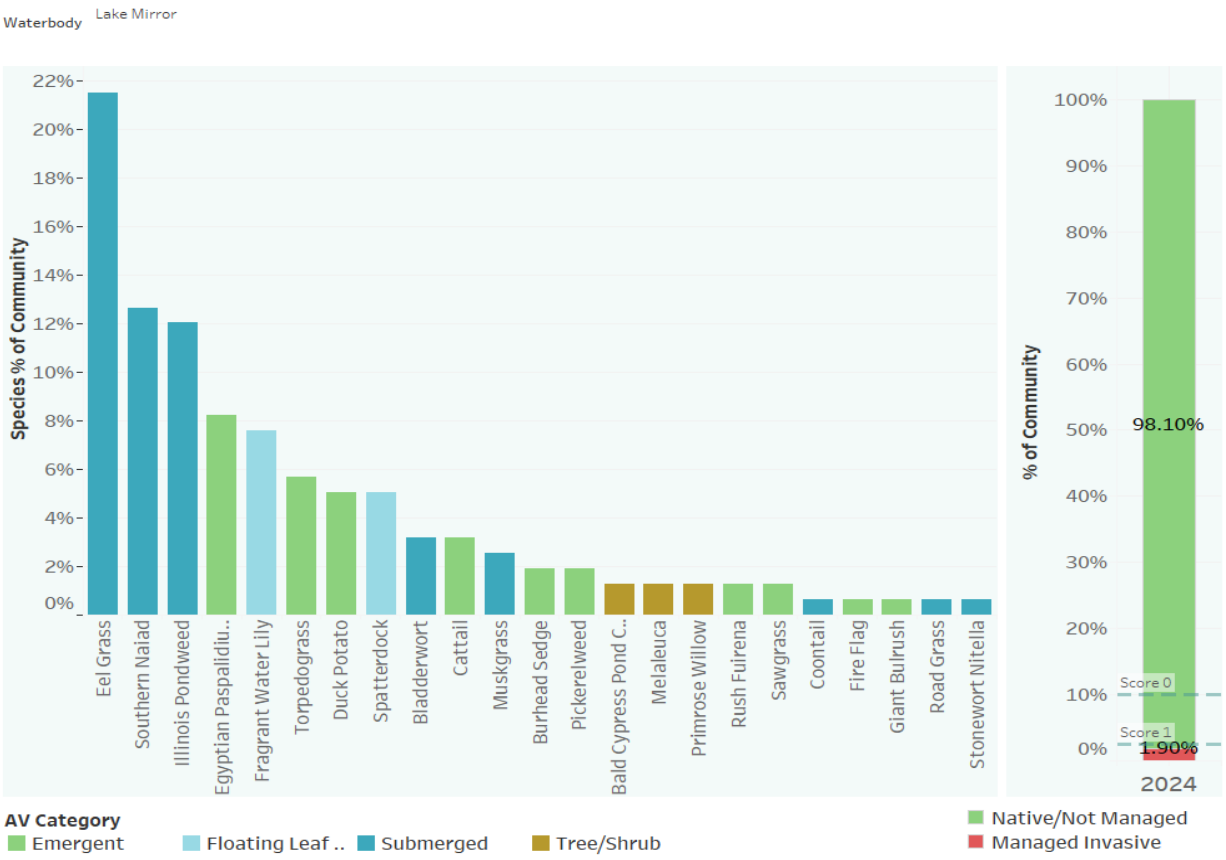


Figure 3-193. Chart depicting species frequency and invasive species presence of Lake Mirror during 2024.

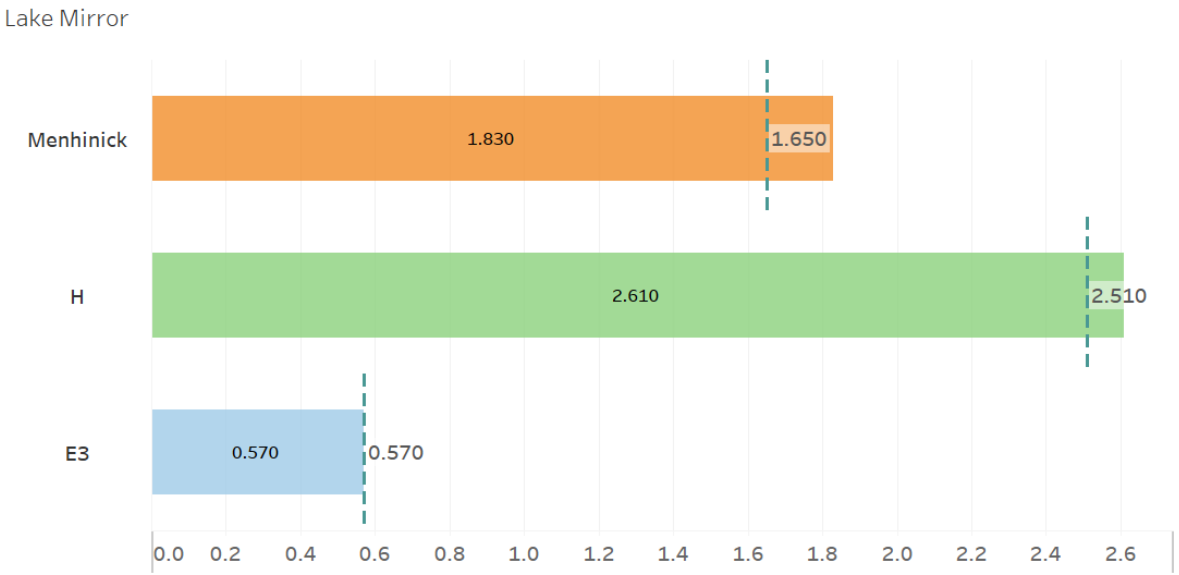


Figure 3-194. Chart depicting 2024 diversity indices for Lake Mirror. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Mirror's health index scores from 2018 to 2024 shows relatively good lake health with slight alterations (Figure 3-195). Unfortunately, the latest LHI score is the lowest on record due to the recent impairments in Chl-a and TN and shift in the TP and Secchi depth trends. Invasive presence and diversity have vascillated over time, mostly due to invasive management efforts and the resulting impacts on the vegetaiton community. Lake Mirror was previously lower on the priority list, but recent shifts in water quality require closer inspection to determine the underlying causes and to develop management strategies to address them.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	3	3	3	3	3	3	2	0	**2.5**
2019	3	3	3	3	3	3	1	2	**2.6**
2020	3	3	3	3	3	3	1	1	**2.5**
2021	3	3	3	3	3	3	2	1	**2.6**
2022	3	3	3	3	3	3	1	3	**2.8**
2023	3	3	3	3	3	3	1	1	**2.5**
2024	1	3	3	2	2	3	2	3	**2.4**

Figure 3-195. Chart depicting a comparison of Lake Mirror's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Stormwater pollutant loading is one of the primary concerns with regards to water quality decline. While the per acre pollutant loads are relatively low, there are very few structural stormwater practices present in the basin that help to reduce these loads
- The management of invasive species like hydrilla is a consistent concern. As observed in Lake May during 2022, it can only take a single growing season for even a small population to take over large areas of a waterbody.

Lake Management Strategy:

- With the majority of the drainage basin comprised of residential housing, public education and outreach is a valid stormwater management strategy. Education aims to increase residents' knowledge of best stormwater practices and ways they can individually reduce their pollutant load.
- The Stormwater Assessment and Improvement Project has identified a priority area in the southeastern part of Lake Mirror's drainage basin. Implementation of green infrastructure can reduce flooding in addition to stormwater pollutant loads where treatment has historically been lacking. Staff can explore funding opportunities to implement green infrastructure in these areas.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large-scale herbicide treatments and potential water quality issues that follow.

Lake Ned

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Ned	3	0	0	1	0	3	2	1	**1.3**

Features & Statistics:

Surface area	76.4 acres
Mean depth	7.2 feet
Maximum depth	16 feet
Volume	549.8 acre-feet
Drainage basin area	256.9 acres
Annual TN Load	1002.9 lbs
Annual TP Load	202.7 lbs
Limiting nutrient	Phosphorus

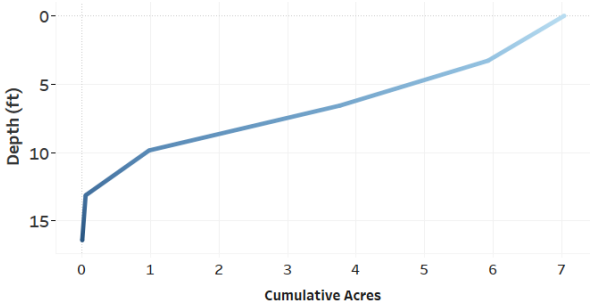


Figure 3-196. Hypsograph of Lake Ned depicting the depth profile and morphology of the lake bed.

Hydrology:

Lake Ned is a relatively small waterbody at 76 acres, an average depth of 7.2 feet, and a maximum depth approaching 16 feet (Figure 3-196). This is one of Winter Haven's shallower lakes which not only makes the lake more susceptible to sediment suspension, but should also support a dense aquatic vegetation community. Stormwater is conveyed to this waterbody from a 257 acre drainage basin made up mostly of residential and agricultural land uses (Figure 3-197). Based on stormwater pollutant load modelling, this drainage area contributes 1,003 lbs of TN and 203 lbs of TP to the lake annually. On a per acre basis the TN and TP loads rank 14th and 6th highest, respectively, out of the 37 area lakes. There are 53 known septic systems within the basin. These could be a contributor of pollutant loads via groundwater leaching.

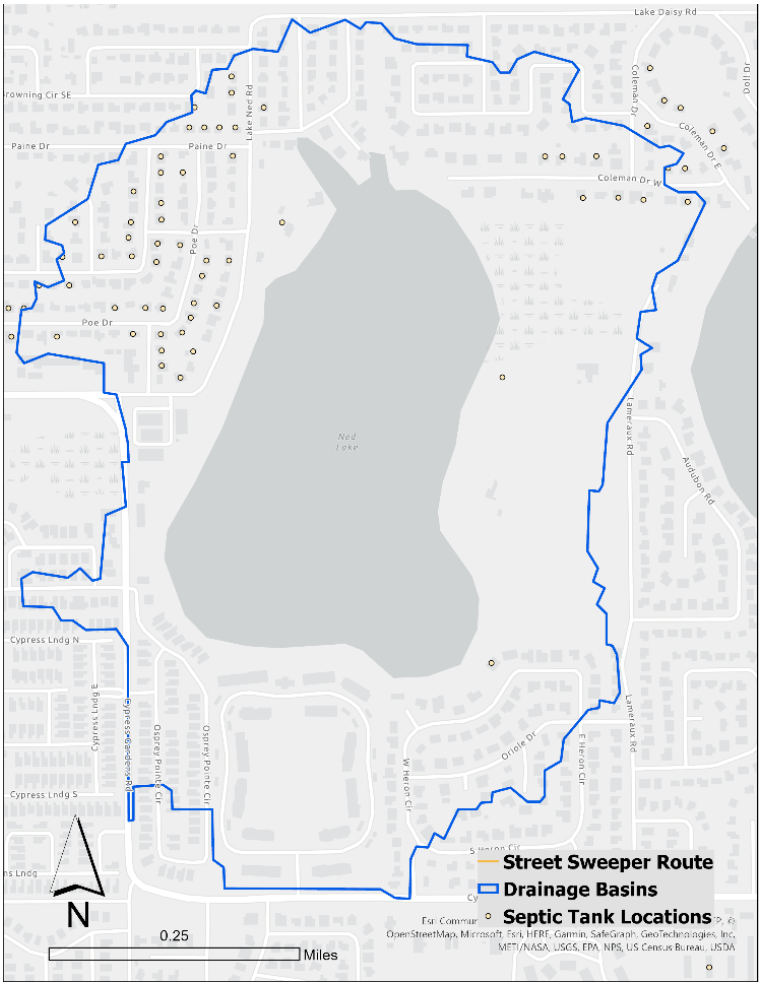


Figure 3-197. Map of Lake Ned's drainage basin and nearby septic systems.

Lake Ned is located almost entirely outside City limits to the southeast of downtown Winter Haven. Its average surface elevation sits relatively low in the Peace Creek watershed when compared to the other study area lakes. Over its period of record, Lake Ned's surface level has fluctuated between 124 and 129.2 feet above sea level. The normal range fluctuates between 126.9 and 128 feet (Figure 3-198). During 2024, Lake Ned's surface level dropped to 126.9 feet in June and then climbed to a wet season high of 128.2 feet in October after the hurricanes. The surface level ended the year just below the high end of the normal range at 127.9 feet. Changes in Lake Ned's surface level are not correlated with its primary water quality metrics.

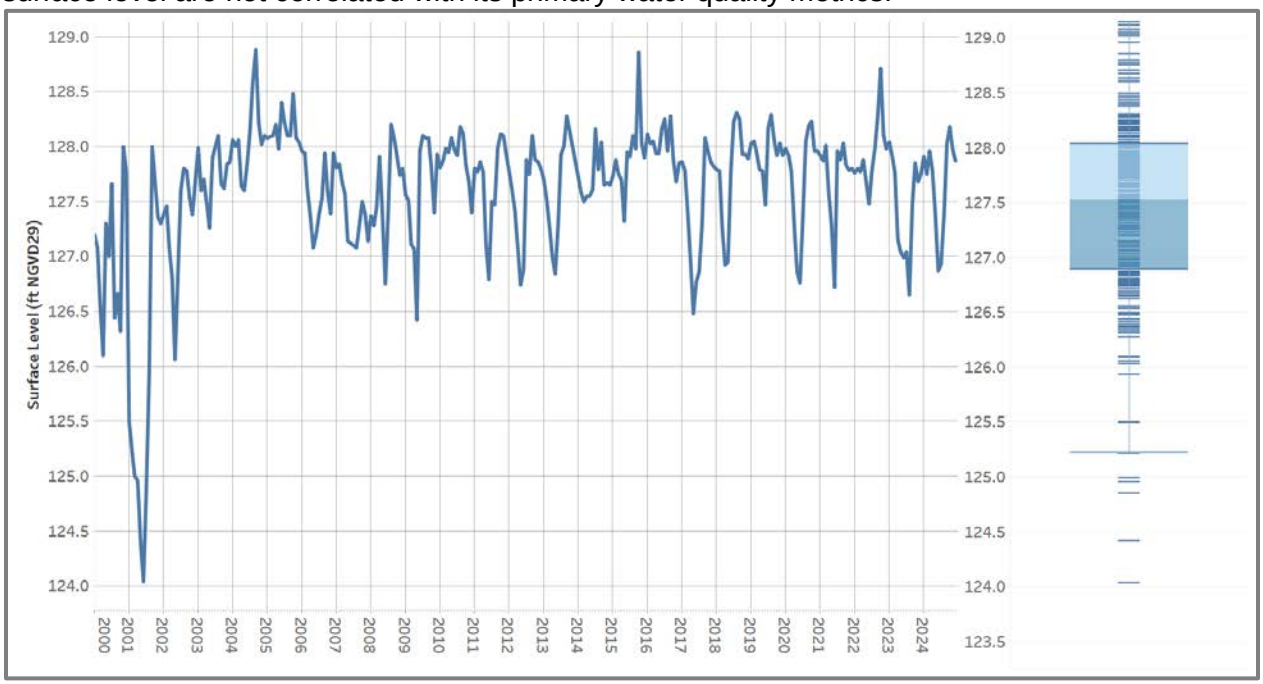


Figure 3-198. Hydrograph of Lake Ned depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Ned is categorized as a clear, alkaline waterbody. Due to a lack of exceedances in any of the NNC parameters during the assessment period, Lake Ned is considered un-impaired (Figure 3-199). This equates to an impairment criterion score of 3. Recently, concentrations of Chl-a, TN, and TP have been higher than normal; with Secchi depths at or below median levels—indicating water quality declines.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	0.779	0.000	Increasing	3	0
TN	N	0.750	0.000	Increasing		0
TP	N	0.394	0.077	No Trend		1
Secchi	NA	-0.856	0.000	Decreasing		0

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Chl-a, TN, and Secchi depth all exhibited

significant deteriorating trends. This equates to trend critera scores of 0. While a deterioating TP trend was present in 2023, this has shifted to a non-significant deteriorating trend in 2024. It is evident that Lake Ned's water quality is trending in a negative trajectory. Management efforts will be critical in order to prevent water quality impairement in the future.

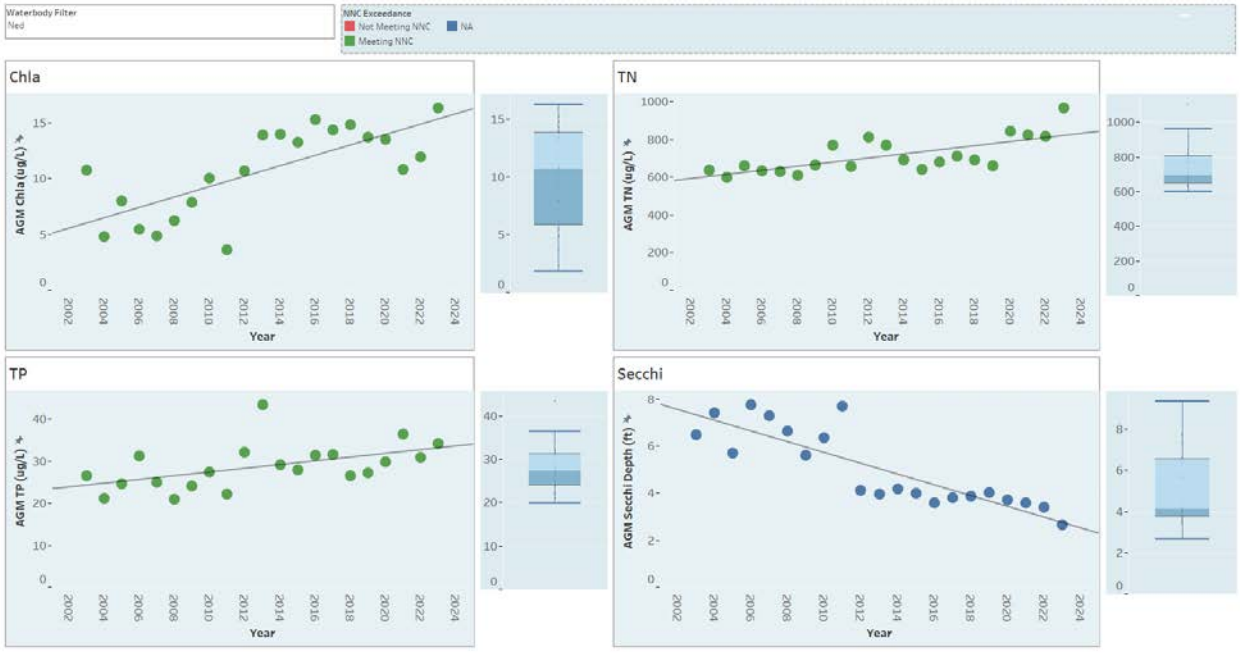


Figure 3-199. Lake Ned AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots showing relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Ned on 5/24/2024. The PAC during this period was 42.4% and the total BV was 9% (Figure 3-200). By exceeding the 30% coverage threshold, Ned receives a vegetation abundance criterion score of 3. Since monitoring began, Lake Ned has consistently had low vegetation abundance scores below 10%. However, in recent years, these coverage and biovolume values have increased significantly; indicating improvement in the vegetation community. The 2024 abundance values are the highest on record for Lake Ned and will hopefully provide much needed fish and wildlife habitat as well as water quality improvements.

Invasive Species Management:

Based on the 2024 survey data, the vegetation community in Lake Ned has completely shifted away from an emergent dominated lake to one supporting an abundance of submerged species (Figure 3-201). Eelgrass became the most dominant species in the lake, making up over 20% of the community. Behind it, a mix of other submerged, emergent, and floating-leaf plants made up the remainder of the ecosystem. The only managed invasive species detected during 2024 was hydrilla which made up just 1.1% of the community. This equates to an invasive presence score of 2. Lake Ned has not traditionally had a major issue with invasive plants; never exceeding 6% of the total community since monitoring began. Management efforts to treat hydrilla will eventually be necessary to prevent it from spreading and taking over the lake.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, Lake Ned's species richness index was the only one of the three that met or exceeded its long-term median value (Figure 3-202). This equates to a diversity criterion score of 1. In 2024, the richness index increased from previous years due to detection of multiple new plant species. The tremendous increase in eelgrass and other SAV varieties, while good, did slightly decrease the evenness and overall diversity indices mostly due to the dominance of a few plants over other less represented species. Since invasive species management has not occurred in or around Lake Ned in several years, it can be assumed that these shifts in the vegetation community have occurred naturally.

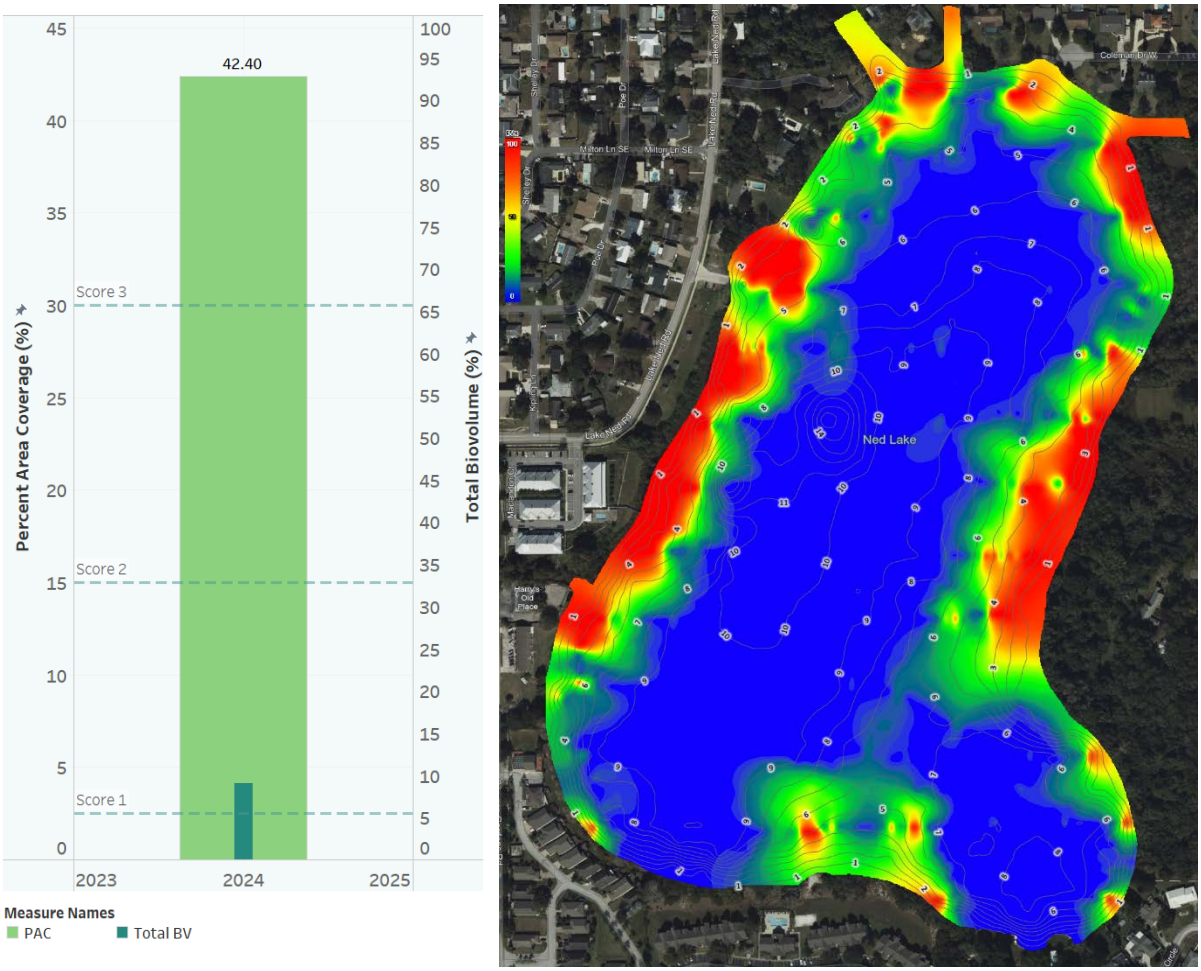


Figure 3-200. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Ned; biovolume values range from green (lowest) to red (highest).

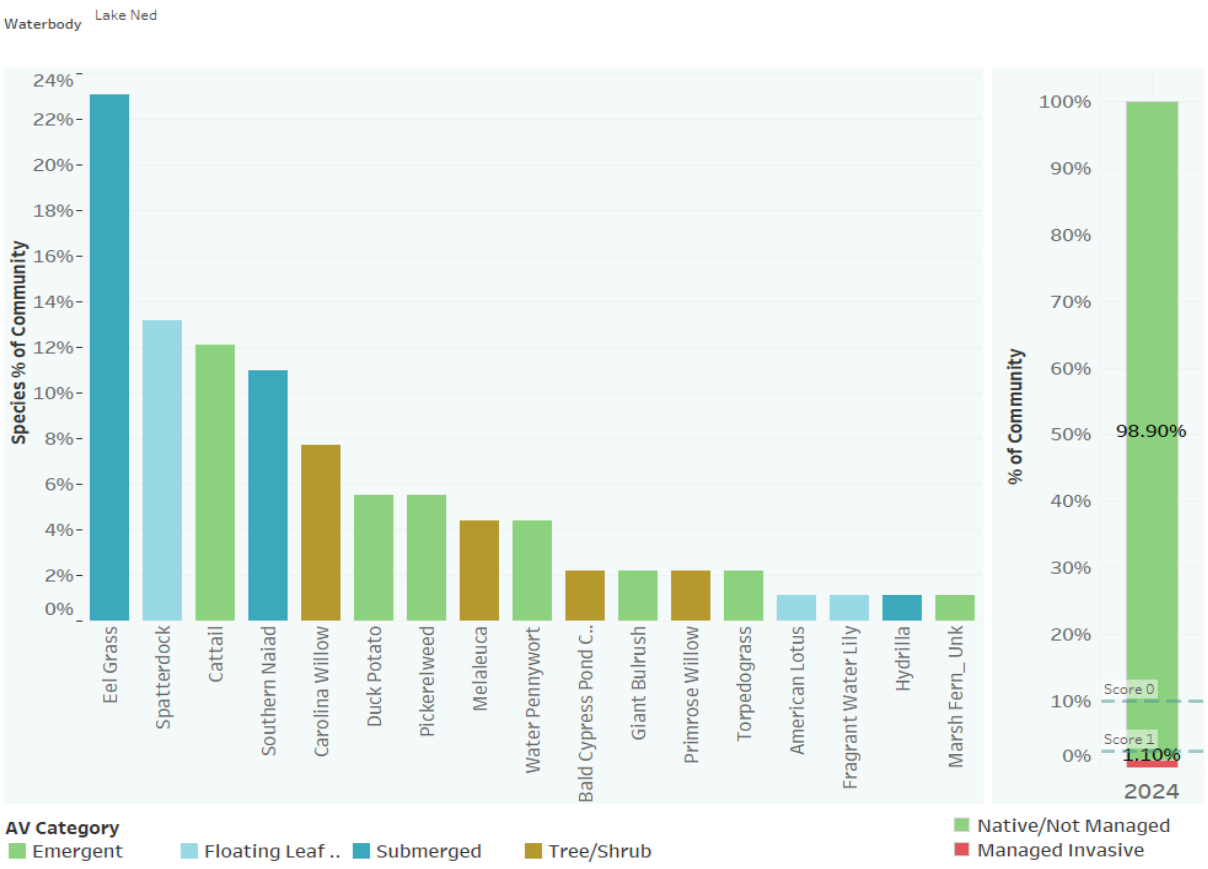


Figure 3-201. Chart depicting species frequency and invasive species percentage of Lake Ned during 2024.

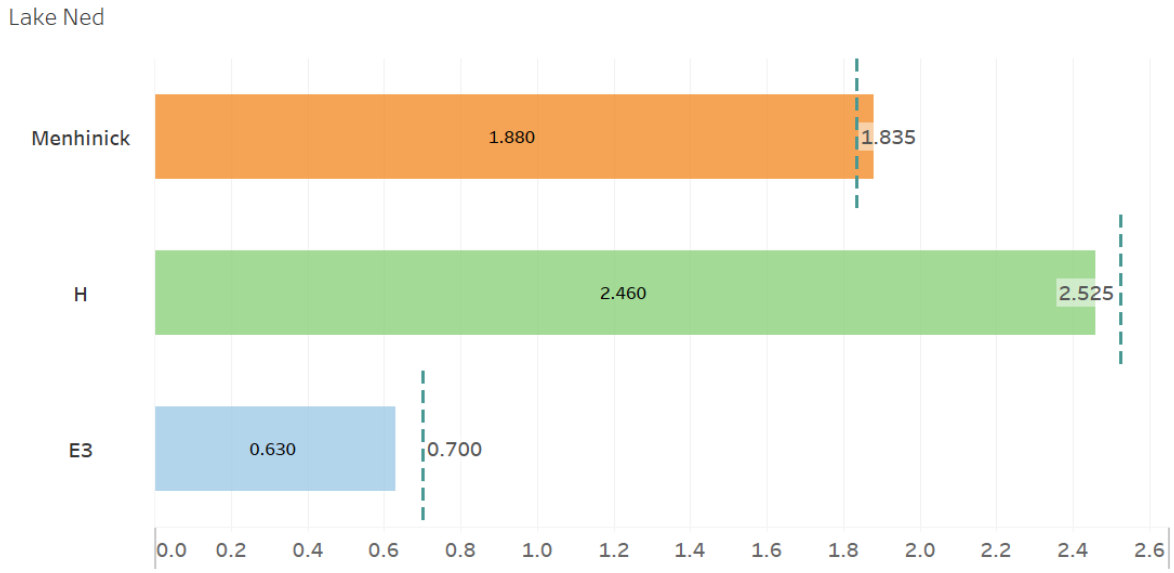


Figure 3-202. Chart depicting 2024 diversity indices for Lake Ned. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Ned's health index scores from 2018 to 2024 shows relatively stability, but consistently low scores (Figure 3-203). Water quality is relatively good in Lake Ned with no change to its impairment score. However, there was a shift in the TN trend toward deterioration. The majority of the score fluctuation has occurred from the biological criteria. As stated, vegetation abundance is recovering. Invasive presence has been relatively low throughout the monitoring timeline, but the diversity score has fluctuated widely. Overall, Lake Ned is in the middle of the priority list. Efforts should focus on improving water quality trends before the lake becomes impaired.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	3	0	1	0	0	1	1	3	**1.1**
2019	3	0	2	0	0	1	1	3	**1.3**
2020	3	0	2	0	0	1	3	0	**1.1**
2021	3	0	2	0	0	1	3	1	**1.3**
2022	3	0	1	0	0	2	2	3	**1.4**
2023	3	0	0	0	0	2	3	2	**1.3**
2024	3	0	0	1	0	3	2	1	**1.3**

Figure 3-203. Chart depicting a comparison of Lake Ned's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- While stormwater pollutant loading remains a potential concern, the presence of so many OSTDs within the basin may be a contributor of nutrients via groundwater leaching and may be why the TN trend has shifted to the negative.
- The management of the vegetation community includes ensuring adequate abundance and invasive species control. Early detection and rapid response is crucial to keep these invasive plants from becoming a larger problem that would necessitate larger-scale control (which comes with potentially negative impacts). Fortunately, the abundance of SAV has increased tremendously in recent years.

Lake Management Strategy:

- City staff can provide support to Polk County in exploring source analysis to determine if the OSTDs are contributing to increased pollutant loads in Lake Ned. Further management efforts may explore septic-to-sewer conversions.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large scale herbicide treatments and the potential water quality issues that follow.

Lake Otis

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Otis	3	2	2	1	1	3	3	3	**2.3**

Features & Statistics:

Surface area	135 acres
Mean depth	10.63 feet
Maximum depth	32 feet
Volume	1719.9 acre-feet
Drainage basin area	586.9 acres
Annual TN Load	2291 lbs
Annual TP Load	372.6 lbs
Limiting nutrient	Co-limited (N & P)

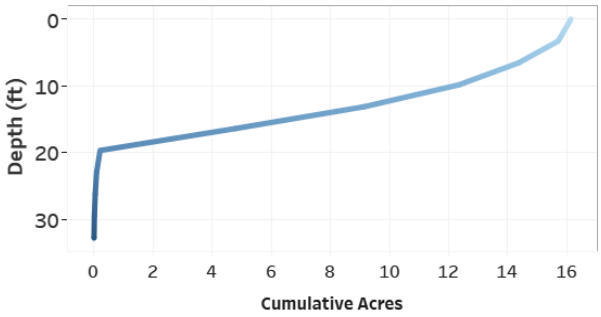


Figure 3-204. Hypsograph of Lake Otis depicting the depth profile and morphology of the lake bed.

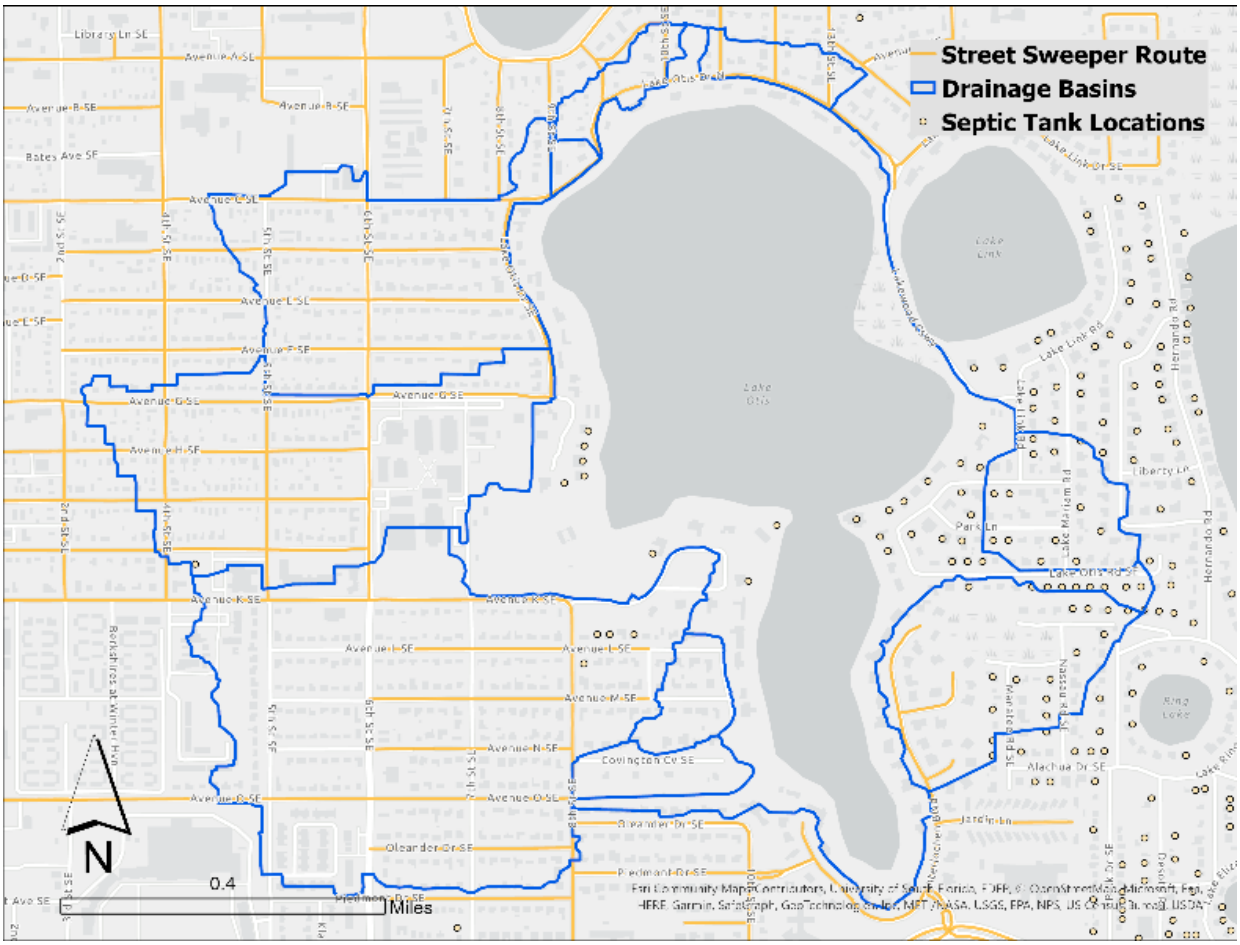


Figure 3-205. Map of Lake Otis' drainage basin, City street sweeper routes, and nearby septic systems.

Hydrology:

Lake Otis is a moderately sized waterbody comprised of a main lake basin and Little Lake Otis to the south. It has a surface area of 135 acres, an average depth of 10.6 feet, and a maximum depth of over 30 feet in deeper areas (Figure 3-204). The average depth of Lake Otis is generally deeper than the regional mean depth, with the deepest sections in Little Lake Otis. The main lake is shallower and should have enough of a littoral zone to support a robust aquatic plant community. Stormwater is conveyed to this waterbody from a 587 acre drainage basin comprised of 11 individual sub-basins (Figure 3-205). By far, the most dominant land uses in this basin are residential which contribute 2,291 lbs of TN and 372 lbs of TP to the lake annually. On a per acre basis, these pollutant loads rank moderately high compared with the other 36 lakes in the study area. There are 66 septic systems located within the drainage basin. These constitute a moderate density and may contribute to pollutant loading via groundwater leaching. To mitigate stormwater loads, the City conducts 12.8 miles of street sweeping within the basin.

Lake Otis and its neighbor, Lake Link, are connected via a navigable canal—indicating that they are held at the same surface level. Excess water discharges from Lake Link to Lake Mariam to the east. The surface elevation of these two lakes sits near the bottom of the Peace Creek watershed. Over its period of record, the shared surface level of Lakes Link and Otis has fluctuated between 120.3 and 128.8 feet above sea level. The wide range of fluctuation is possible because of the steep-sloped morphology of these lakes. The normal range of fluctuation is much narrower—between 124.9 and 127.2 feet (Figure 3-206). During 2024, Lake Otis reached its peak of 126.4 feet in June and plummeted to a low of 125 feet in November; ending the year near the low end of the normal range at 125.2 feet. This is strange due to the tremendous amount of rainfall received during the 2024 hurricane season. It is likely that the Lake Region Lakes Management District opened the control structure to lower the lake level prior to the storms. According to linear regression analysis, changes in Lake Otis' surface level are correlated with Chl-a, TN, and Secchi depth (see appendix). This carries management implications as maintaining higher levels should result in improved water quality.

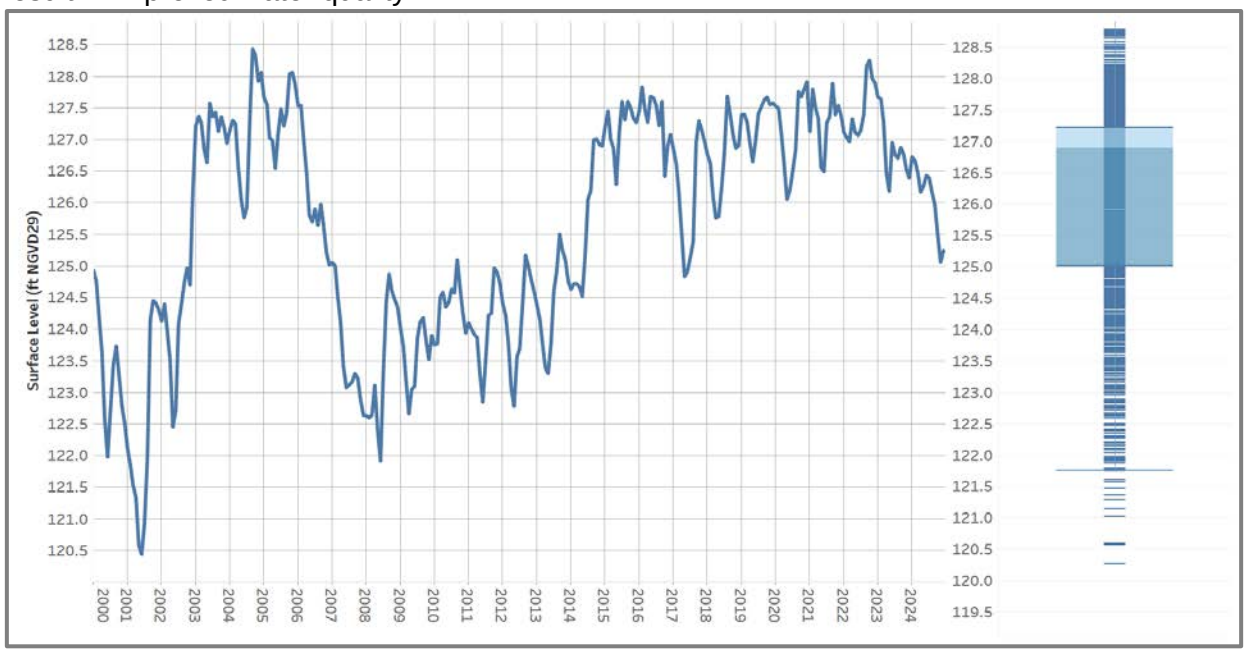


Figure 3-206. Hydrograph of Lake Otis depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

For the purposes of determining water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Otis is categorized as a clear, alkaline waterbody. Due to a lack of NNC exceedances during the assessment period, Lake Otis is considered un-impaired (Figure 3-207). This equates to an impairment criterion score of 3. Lake Otis did exhibit Chl-a impairment as late as 2019, but has since improved to the point of being delisted.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	-0.124	0.646	No Trend	3	2
TN	N	-0.182	0.499	No Trend		2
TP	N	0.026	0.924	No Trend		1
Secchi	NA	-0.103	0.703	No Trend		1

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Lake Otis exhibits no statistically significant trends. However, TP and Secchi depth trends are in a deteriorating direction, while the Chl-a and TN trends are in an improving direction. Deteriorating trend directions earn scores of 1 while improving directions earn scores of 2.

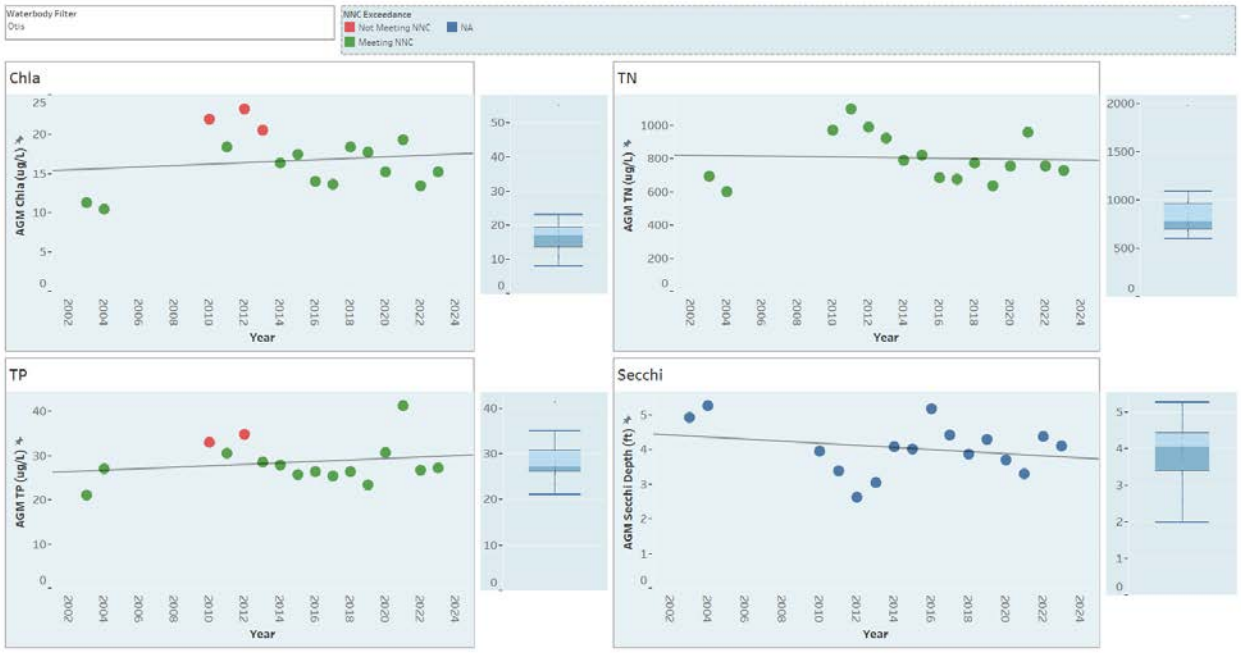


Figure 3-207. Lake Otis AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots showing relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Otis on 8/23/2024. The PAC during this survey was 30.9% and the total BV was 3.18% (Figure 3-208). Exceeding the 30% PAC threshold results in an abundance criteria of 3. A comparison of abundance records from 2018 to the present shows that Lake Otis' coverage is typically between 15% and 30%. The coverage value for 2024 is the second highest on record, indicating a general increasing trend in abundance.

Invasive Species Management:

Based on the 2024 survey data, Lake Otis maintains a healthy mix of vegetation types. The most dominant species was fragrant water lily at 14% of the population (Figure 3-209). There were no managed invasive species present in Lake Otis in 2024. This equates to an invasive criterion score of 3. Prior to 2018, hydrilla was the primary invasive species to be controlled. Grass carp were stocked in 2019 and appear to be having a positive impact on the control of the hydrilla while also allowing other native submerged species to grow.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on 2024 species data, all three of Lake Otis's diversity indices exceeded their respective median values; equating to a diversity criterion score of 3 (Figure 3-210). This is a positive change considering the elimination of invasive species did not negatively impact species richness, the distribution of the plant community, nor the overall diversity in the lake.

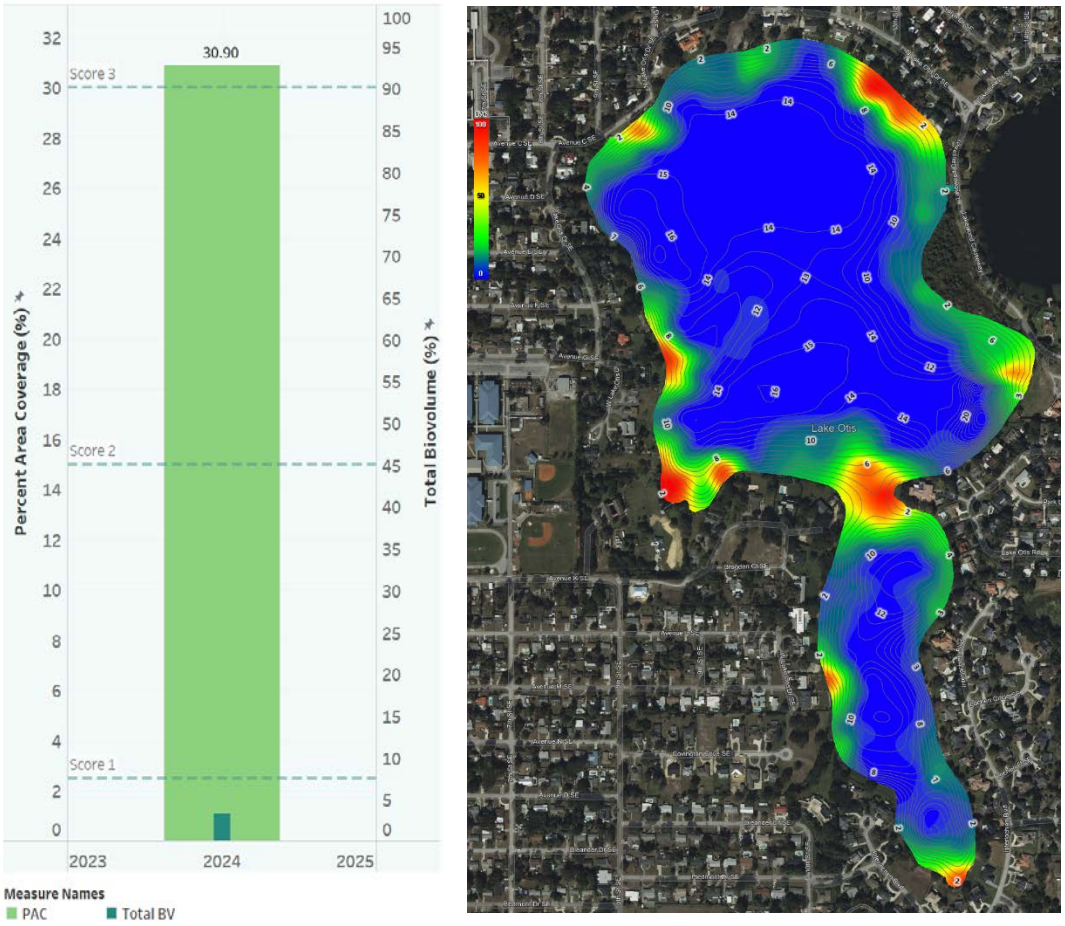


Figure 3-208. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Otis; biovolume values range from green (lowest) to red (highest).

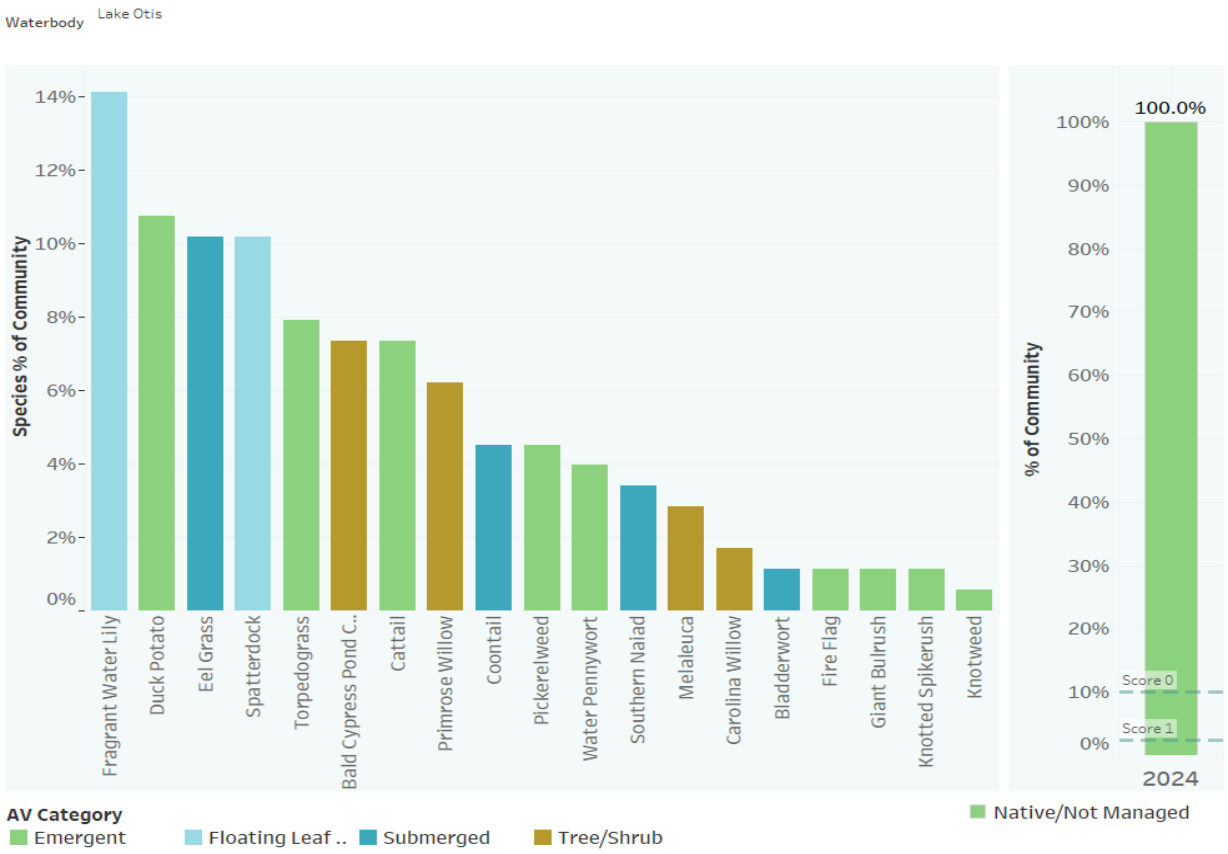


Figure 3-209. Chart depicting species frequency and invasive species percentage of Lake Otis during 2024.

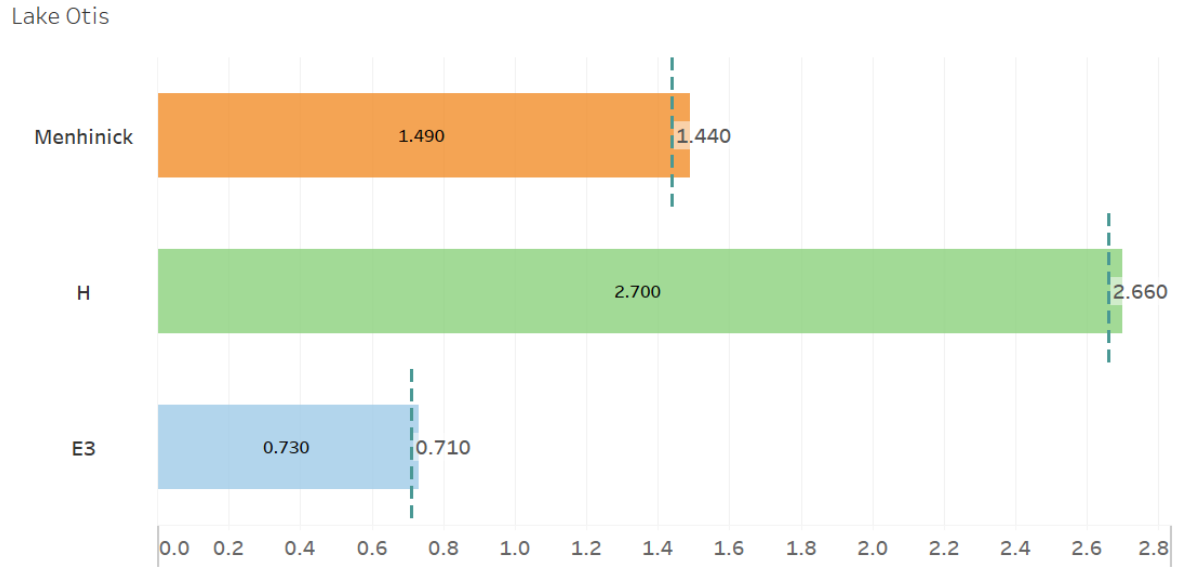


Figure 3-210. Chart depicting 2024 diversity indices for Lake Otis. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Otis' health index scores from 2018 to 2024 shows values ranging from 1.6 to 2.3 (Figure 3-211). During this time the impairment criterion has seen improvement as Chl-a began meeting NNC guidelines. The water quality trends have remained relatively static, with TP and Clarity shifting directions slightly from year to year. Vegetation abundance and species diversity have exhibited the most improvement in recent years. Overall, Lake Otis ranks lower on the priority list as it is currently meeting water quality standards and the trends do not indicate deterioration.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	2	2	2	2	2	2	1	2	**1.9**
2019	2	2	2	2	2	2	0	2	**1.8**
2020	3	2	2	2	2	2	NA	NA	**2.2**
2021	3	2	2	1	1	1	2	1	**1.6**
2022	3	2	2	1	2	2	2	2	**2.0**
2023	3	1	2	1	1	3	1	2	**1.8**
2024	3	2	2	1	1	3	3	3	**2.3**

Figure 3-211. Chart depicting a comparison of Lake Otis' Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Stormwater pollutant loading from the western portion of the basin is a concern. Additionally, the presence of septic systems on the eastern side of the basin could potentially leach pollutants to the lake via groundwater.
- The management of invasive species like hydrilla is a consistent concern. There are also potential impacts from all types of invasive management strategies. Finding the right balance is important.
- Several water quality metrics are significantly correlated with Lake Otis' surface level; likely due to increased flushing during wetter periods. This means that drought conditions could result in water quality declines.

Lake Management Strategy:

- The City's current stormwater management strategy includes street sweeping and the implementation of green infrastructure (swales) along 6th St SE. The Stormwater Assessment and Improvement Plan has also identified several potential areas in the basin where stormwater improvements can be made. Staff will explore funding opportunities to implement these.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC.
- The City may explore source analysis to determine if the septic systems in the basin are a contributor of pollutant loading. Further management may involve septic-to-sewer conversions.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.

Lake Pansy

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Pansy	3	1	2	1	1	2	3	2	**1.9**

Features & Statistics:

Surface area	49.4 acres
Mean depth	6.8 feet
Maximum depth	14 feet
Volume	397 acre-feet
Drainage basin area	243.8 acres
Annual TN Load	880.7 lbs
Annual TP Load	111.2 lbs
Limiting nutrient	Phosphorus

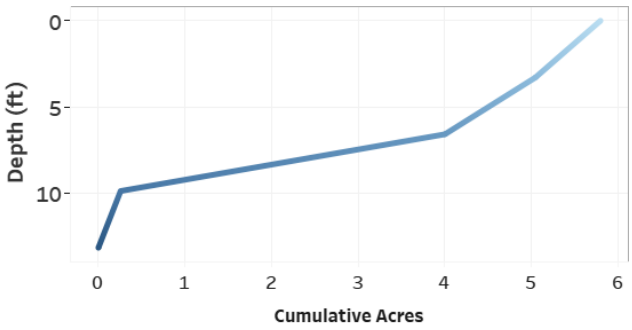


Figure 3-212. Hypsograph of Lake Pansy depicting the depth profile and morphology of the lake bed.



Figure 3-213. Map of Lake Pansy's drainage basin and nearby septic systems.

Hydrology:

Lake Pansy is a relatively small and shallow waterbody at just 49 acres, an average depth of 7 feet, and a maximum depth of 14 feet (Figure 3-212). Such a shallow waterbody should support a robust littoral zone for aquatic vegetation. However, in the absence of vegetation coverage, this shallowness increases susceptibility to sediment suspension via wind and wave action. Stormwater is conveyed to this waterbody from a nearly 400 acre drainage basin that extends to the Winter Haven Gilbert airfield (Figure 3-213). The land uses directly surrounding the lake are residential and wetlands while those from the airport section are institutional. Based on stormwater pollutant load modelling, this drainage area contributes 880 lbs of TN and 111 lbs of TP to the lake annually—relatively low pollutant loading rates when compared with the other drainage basins in the study area.

Lake Pansy is considered an isolated waterbody located to the northwest of downtown Winter Haven. It is believed that excess water can discharge from Lake Pansy to Lake Rochelle via the wetland to the east. Pansy's surface elevation sits at a slightly higher level than the North Chain of Lakes. Over its period of record, Lake Pansy's surface level has fluctuated between 124.5 and 129.7 feet above sea level. The normal range of fluctuation is much narrower—between 126.6 and 128.5 feet (Figure 3-214). During 2024, Lake Pansy dropped to a dry season low of 127.5 feet in June, then rose to end the year at a record peak of 129.68 feet by December. According to linear regression analysis, changes in Lake Pansy's surface level correlates directly with water clarity (see appendix). This indicates that higher surface levels result in increased flushing and water clarity.

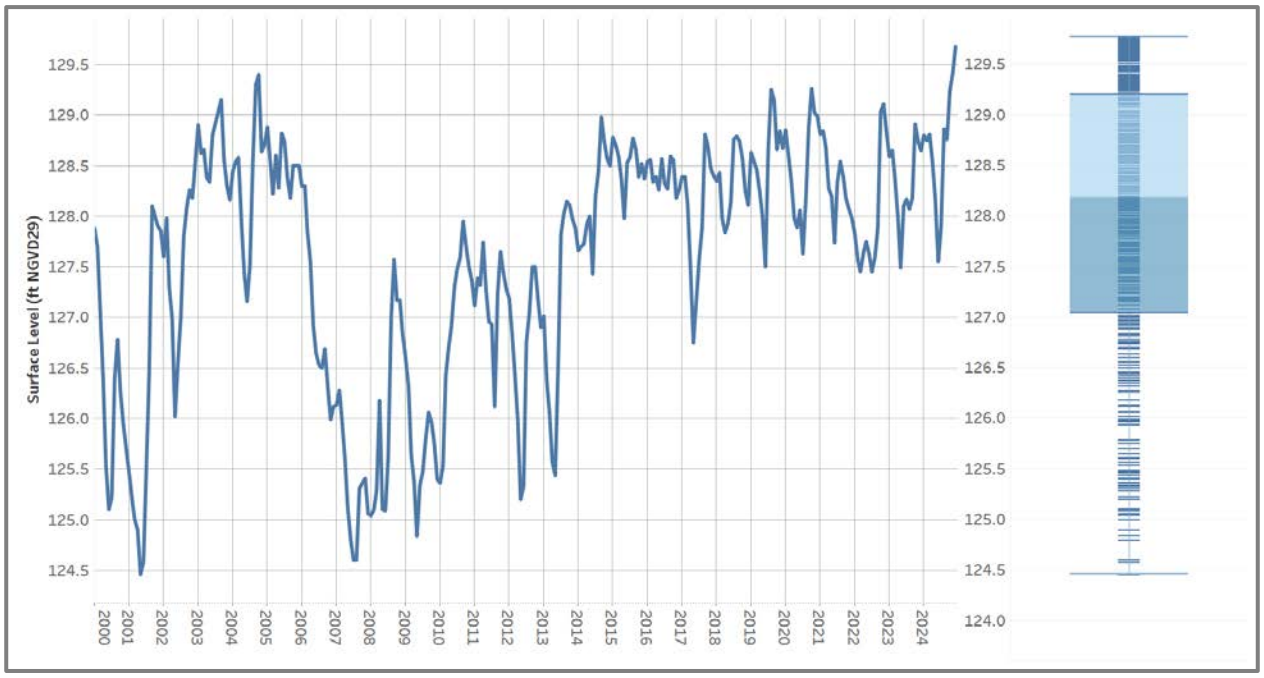


Figure 3-214. Hydrograph of Lake Pansy depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Pansy is categorized as a highly colored waterbody. Aside from a single NNC exceedance of Chl-a during 2023, Lake Pansy's water quality has met the NNC guidelines (Figure 3-215). Pansy's status is currently un-impaired which earns it an impairment criterion score of 3.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	0.300	0.199	No Trend	3	1
TN	N	-0.203	0.390	No Trend		2
TP	N	0.043	0.857	No Trend		1
Secchi	NA	-0.118	0.621	No Trend		1

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. During this time frame, none of the NNC parameters exhibited a statistically significant trend. The trends for Chl-a, TP, and Secchi depth moved in a deteriorating direction, earning a trend criterion score of 1; whereas the TN trend moved in an improving direction, for a criterion score of 2. Considering the lack of impairments, these trends are not concerning as they don't indicate declining water quality.

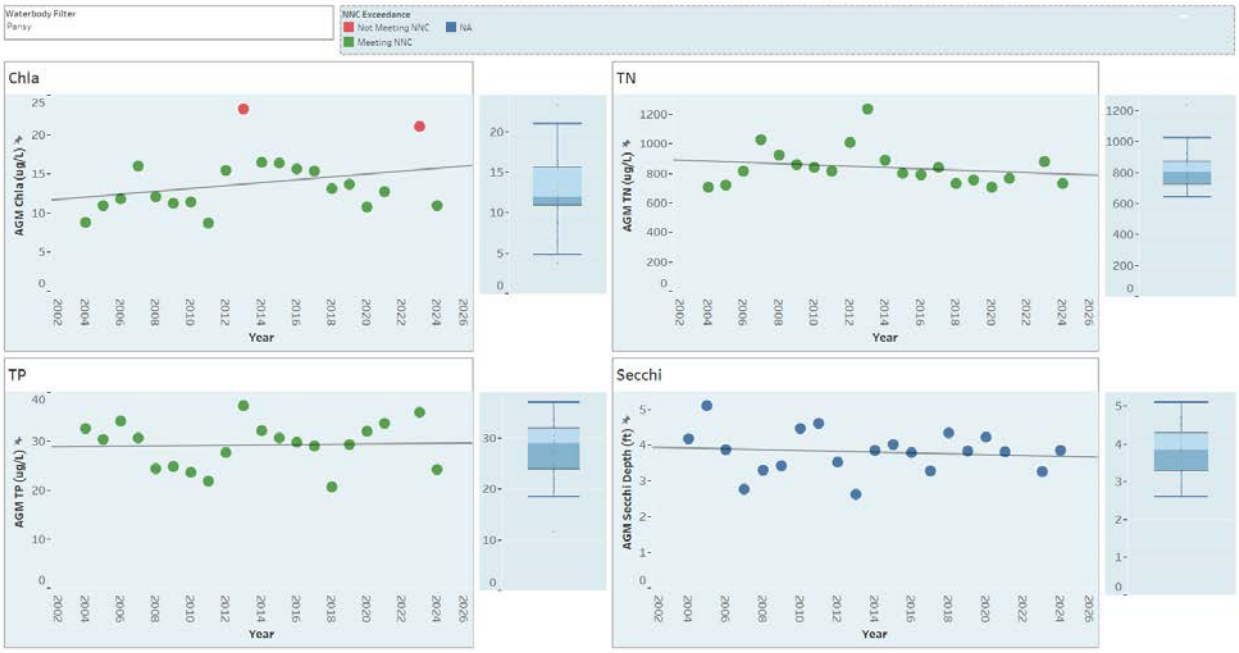


Figure 3-215. Lake Pansy AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Pansy on 8/15/2024. The PAC during this survey was 20.7% and the total BV was 4.1% (Figure 3-216). Since the PAC exceeded the 15% threshold, this equates to an abundance criterion score of 2. Comparing Lake Pansy's abundance values from 2018 to 2023 indicates that its coverage often fluctuates between 15% and 45%. This may be the result of consistent invasive species treatments. There was practically no change in vegetation coverage from 2023 to 2024.

Invasive Species Management:

Based on the 2024 survey, Lake Pansy possesses a fairly diverse and vegetation community made up of many types of flora (Figure 3-217). The native fragrant water lily was the most dominant species followed by several other emergent and submerged species. SAV became a

much more integral part of the ecosystem with eelgrass, coontail, southern naiad, and bladderwort making up nearly 20% of the community. There were no managed invasive species detected in 2024; equating to an invasive criterion score of 3. In previous years, hydrilla and water hyacinth have been problematic, but their absence indicates that control efforts have been effective.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, Lake Pansy's species evenness and overall diversity indices met or exceeded their long-term median values (Figure 3-218). This equates to a diversity criterion score of 2. Since species richness met the median in 2023, it is likely that the lack of invasive species detected have resulted in this change. Comparing the species frequency charts from previous years, the distribution of aquatic plants is much more equitable in 2024—also resulting in an increase in the overall diversity value.

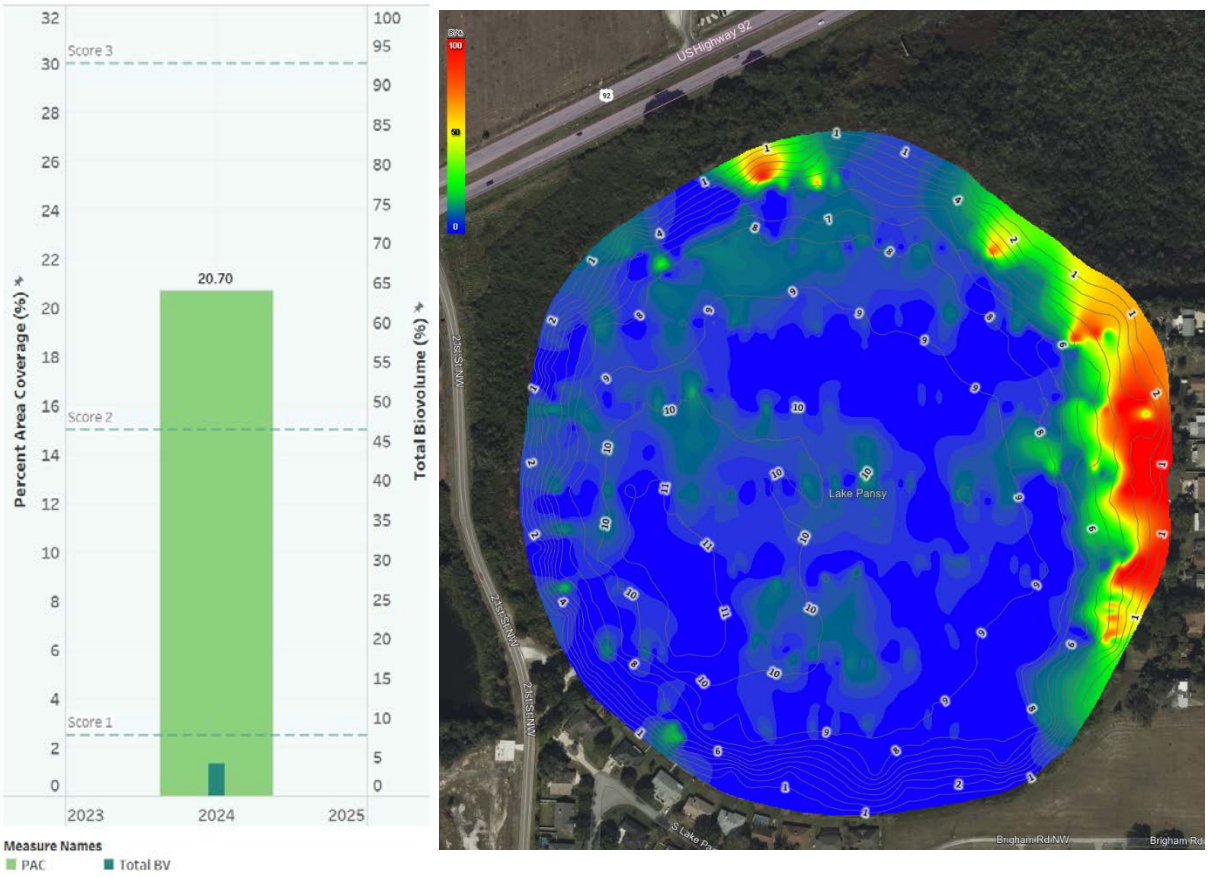


Figure 3-216. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Pansy; biovolume values range from green (lowest) to red (highest).

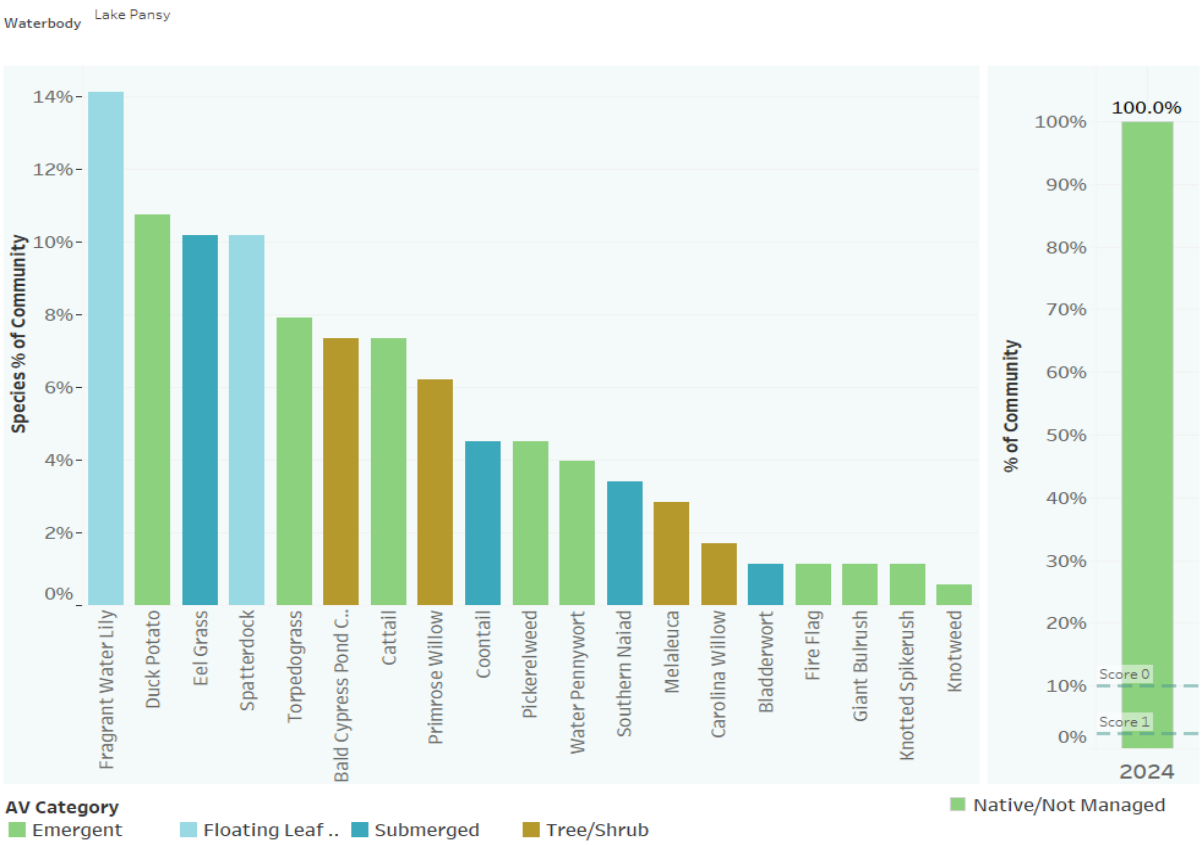


Figure 3-217. Chart depicting species frequency and invasive species percentage of Lake Pansy during 2024.

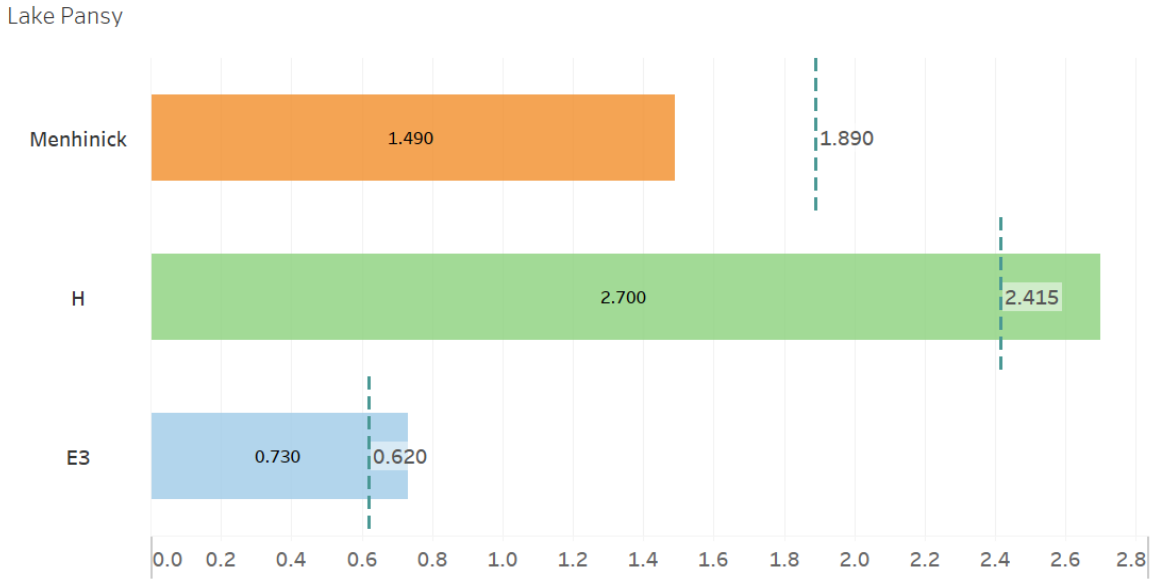


Figure 3-218. Chart depicting 2024 diversity indices for Lake Pansy. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Pansy's health index scores from 2018 to 2024 demonstrates general consistency (Figure 3-219). There has been no change in the impairment scores during this time frame. However, trend scores have mostly improved, with the most recent shift in the Chl-a trend being an important positive change in lake health. While Pansy's abundance and diversity scores have vascillated, the major takeaway from recent years is a dramatic improvement in the invasive presence scores. Overall, Lake Pansy sits in the middle of the priority ranking. While it is not currently impaired, its water quality trends are not ideal and the invasive treatments it undergoes could impact water quality and vegetation diversity in the future.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	3	0	1	1	1	2	0	1	**1.1**
2019	3	0	1	1	1	3	0	3	**1.5**
2020	3	0	1	1	2	2	0	3	**1.5**
2021	3	0	1	1	2	3	0	2	**1.5**
2022	3	0	1	1	2	2	1	0	**1.3**
2023	3	0	2	1	1	2	2	1	**1.5**
2024	3	1	2	1	1	2	3	2	**1.9**

Figure 3-219. Chart depicting a comparison of Lake Pansy's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Stormwater pollutant loading is one of the primary concerns for water quality management. While the City does not possess much stormwater infrastructure in the area, there is room for measures to reduce pollutant loading in the drainage basin.
- The management of invasive species is a consistent concern. It can only take a single growing season for even a small population to take over large areas of a waterbody.
- Lake Pansy's water clarity is correlated with surface level; likely due to increased flushing during wetter periods. This means that drought conditions could result in water quality declines.

Lake Management Strategy:

- The City can explore expanding street sweeping services to 21st Street to reduce potential stormwater pollutant loading.
- The residential communities around the lake provide opportunities for public outreach and education. This aims to increase residents' knowledge of best stormwater practices and ways they can individually reduce their pollutant load.
- City staff will continue to monitor aquatic vegetation and share the information with Polk County and the FWC. Staff will also take a more active role in advocating for the most effective, but least impactful invasive management strategies to ensure proper balance of the vegetation community.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.

Lake Rochelle

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Rochelle	3	3	3	2	3	3	1	2	**2.5**

Features & Statistics:

Surface area	559.9 acres
Mean depth	8.96 feet
Maximum depth	20 feet
Volume	6060.2 acre-feet
Drainage basin area	1667.7 acres
Annual TN Load	3002.6 lbs
Annual TP Load	522.2 lbs
Limiting nutrient	Phosphorus

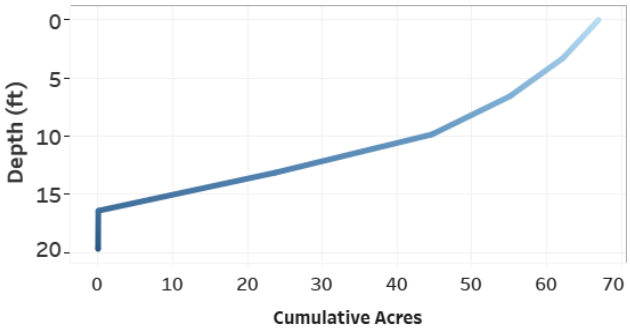


Figure 3-220. Hypsograph of Lake Rochelle depicting the depth profile and morphology of the lake bed.

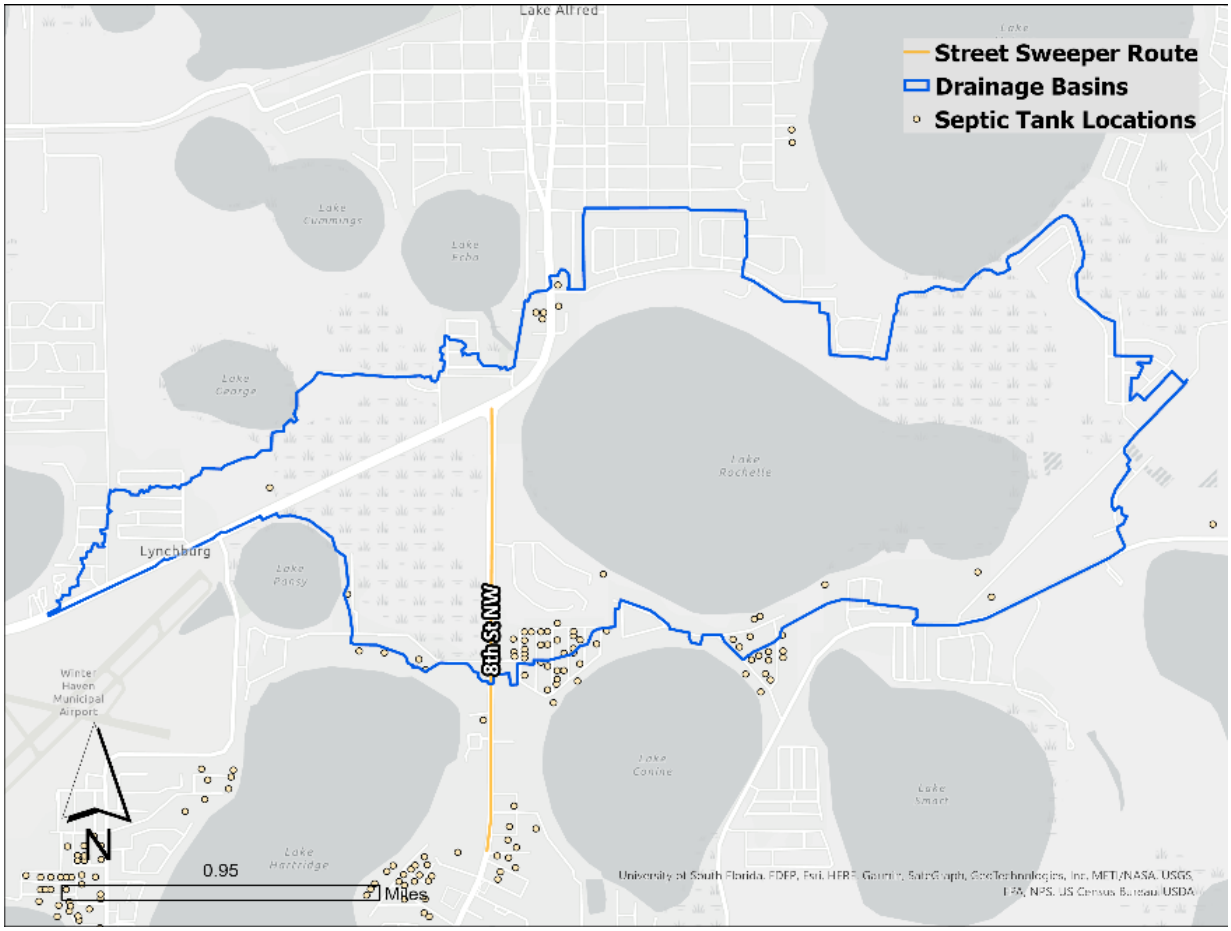


Figure 3-221. Map of Lake Rochelle's drainage basin, City street sweeper routes, and nearby septic systems.

Hydrology:

Lake Rochelle is one of Winter Haven's larger waterbodies with a surface area of 560 acres. Rochelle is slightly deeper than the regional average with a mean depth of nearly 9 feet and a maximum depth of 20 feet (Figure 3-220). Despite the depth, the slope of the lake bed is relatively gradual—allowing for a large littoral zone to support a robust vegetation community. Stormwater is conveyed to this waterbody from a 1,670 acre, relatively rural drainage basin (Figure 3-221). Wetland, residential, agricultural, and commercial land uses comprise the drainage basin, contributing 3,002 lbs of TN and 522 lbs of TP to the lake annually. On a per acre basis, these are some of the lowest pollutant loading rates in the study area. There are over 40 septic systems within the basin. These constitute a relatively low density based on the number of systems per acre. To mitigate stormwater pollutant loading, the City conducts 4.4 miles of street sweeping twice monthly along US Highway 17.

As part of the North Chain of Lakes, Lake Rochelle is connected to Lakes Conine and Haines via navigable canals. Excess water from the North Chain eventually drains via the SWFWMD-managed P-8 control structure at the south of Lake Hamilton and enters the Peace Creek. Over the period of record, surface levels in this section of the North Chain (Lakes Conine, Haines, Rochelle, and Smart) have fluctuated between 122 and 129.5 feet above sea level. The normal range fluctuates much less between 126.1 and 128.2 feet (Figure 3-222). During 2024, the North Chain reached a dry season low of 127.8 feet in June and a wet season peak of 130.3 feet in October. The October peak was a record high for this chain of lakes; exceeding the previous record experienced during the triple hurricane season of 2004. The surface level ended the year above the high end of the normal range, at 128.5 feet. Changes in Lake Rochelle's surface level are directly correlated with water clarity and indirectly correlated with Chl-a and TN (see appendix). This carries management implications as maintaining higher levels should result in improved water quality.

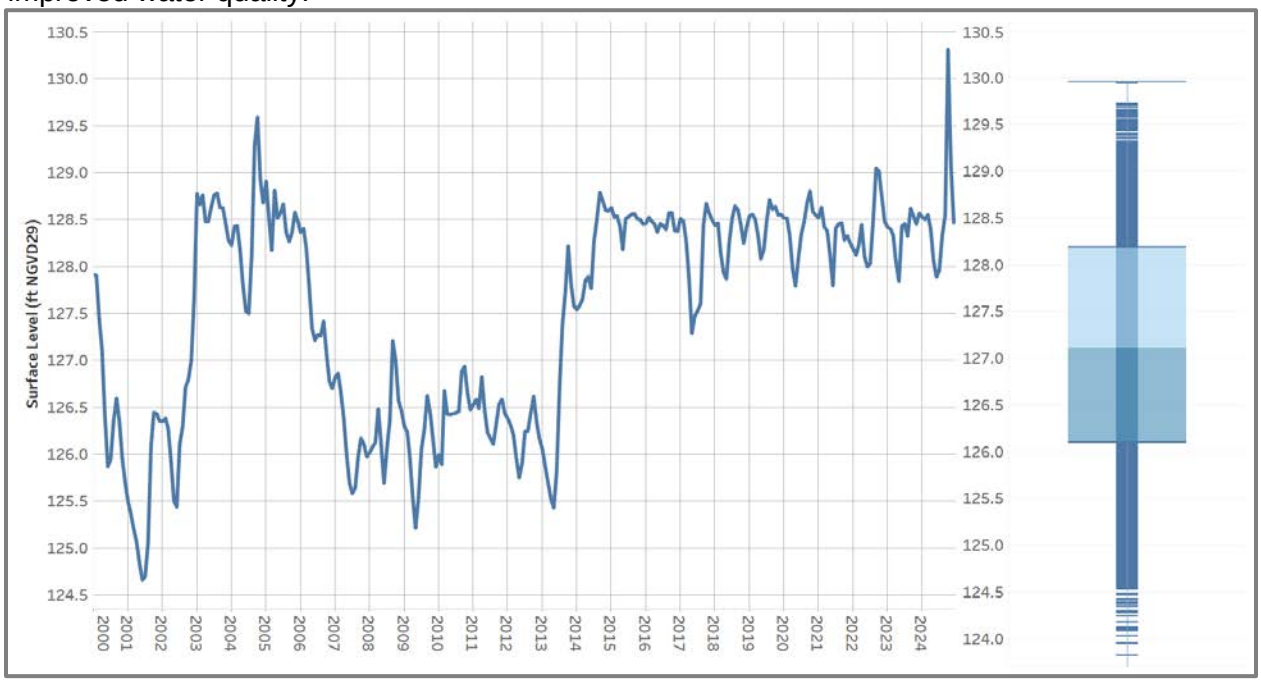


Figure 3-222. Hydrograph of Lake Rochelle depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria, Lake Rochelle is categorized as a clear, alkaline waterbody. While Lake Rochelle was previously impaired, a lack of NNC exceedances during the assessment period has resulted in its currently un-impaired status (Figure 3-224). This equates to an impairment criterion score of 3. In 2018, the FDEP established a total maximum daily load stipulating a 32% TN reduction to meet NNC guidelines. While Lake Rochelle has been meeting all NNC thresholds since 2015, the TP concentrations in the last three years have been relatively high.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	-0.841	0.000	Decreasing	3	3
TN	N	-0.637	0.002	Decreasing		3
TP	N	-0.222	0.334	No Trend		2
Secchi	NA	0.452	0.040	Increasing		3

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. During the most recent analysis, Ch-la, TN, and Secchi depth exhibited significant improving trends—equating to trend criteria scores of 3. TP exhibited a non-significant improving trend; for a trend score of 2.

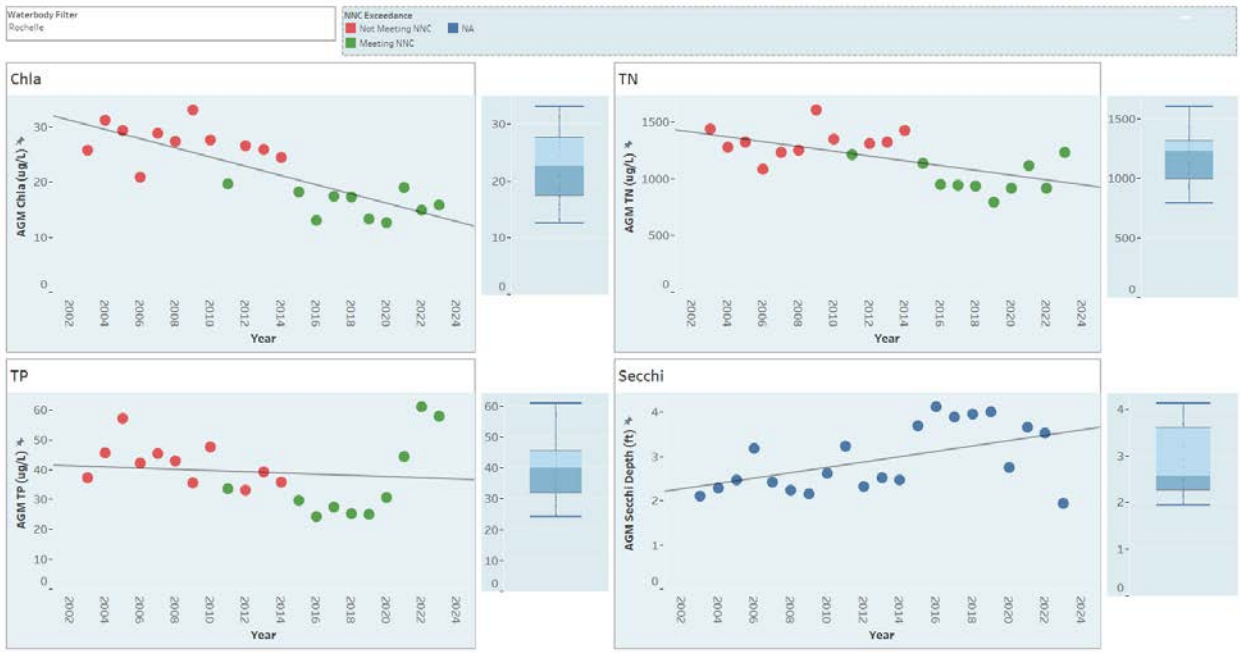


Figure 3-223. Lake Rochelle AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Rochelle on 2/27/2024. The PAC during this survey was 45.9% and the total BV was 5.1% (Figure 3-224). This equates to an abundance criterion score of 3. Lake Rochelle has consistently maintained vegetation coverage above 30% until it dipped below this threshold in 2023. Fortunately, coverage rose considerably to a new

record PAC value in 2024. Looking to the species data for explanation, it appears that an increase in invasive plants may be partially responsible for this.

Invasive Species Management:

Based on data from the 2024 survey, Lake Rochelle boasts a healthy mix of both submerged and emergent vegetation—with eelgrass dominating the community at 22% (Figure 3-225). Hydrilla, burhead sedge, and water hyacinth comprised the managed invasive species present at over 7% of the community; equating to an invasive presence criterion score of 1. The invasive presence has been a constant issue since 2019 but has exhibited a gradual decline until 2024 where it rose somewhat from the 3% recorded in 2023. Continued management is necessary to keep these plants under control.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, only Lake Rochelle's richness and evenness indices met their long-term median values (Figure 3-226). This equates to a diversity criterion score of 2. Overall, Lake Rochelle exhibits moderate diversity compared with other waterbodies in the area. Despite not meeting its median value, the overall diversity index was just slightly low and not a major concern.

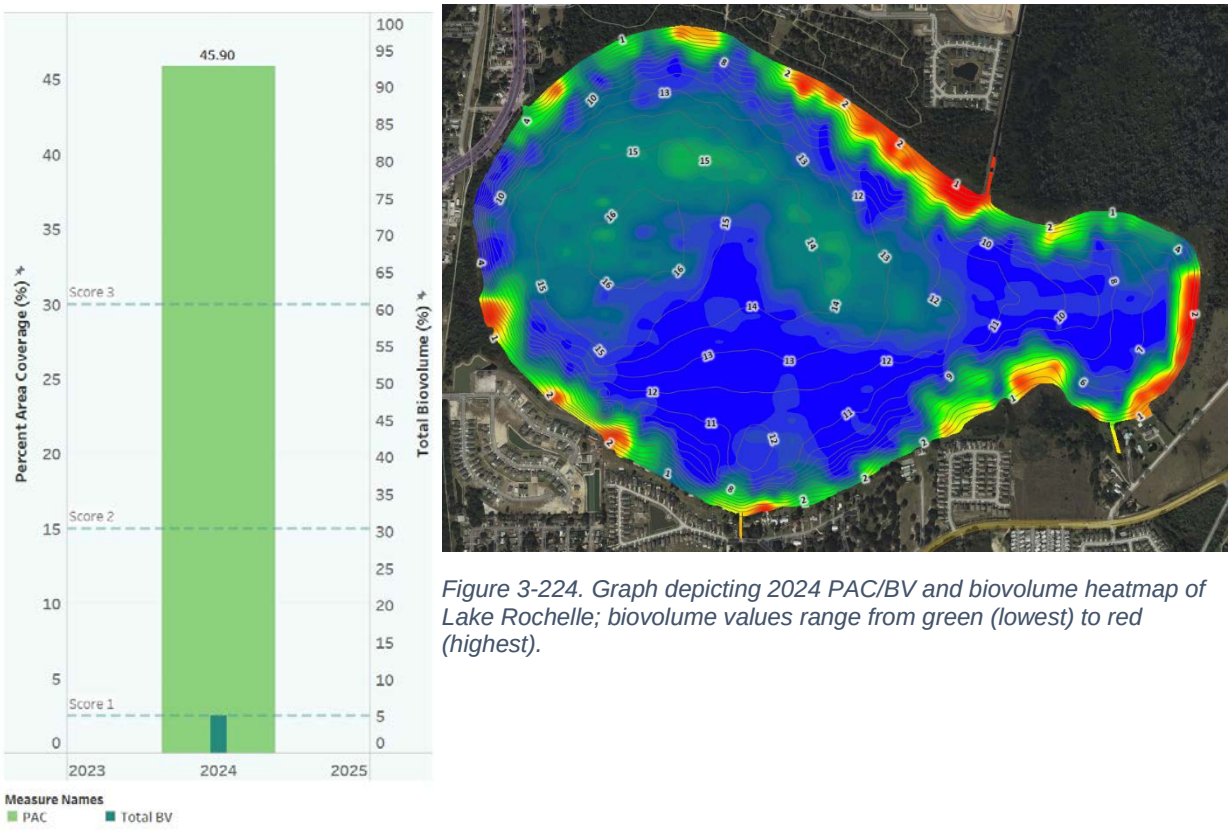


Figure 3-224. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Rochelle; biovolume values range from green (lowest) to red (highest).

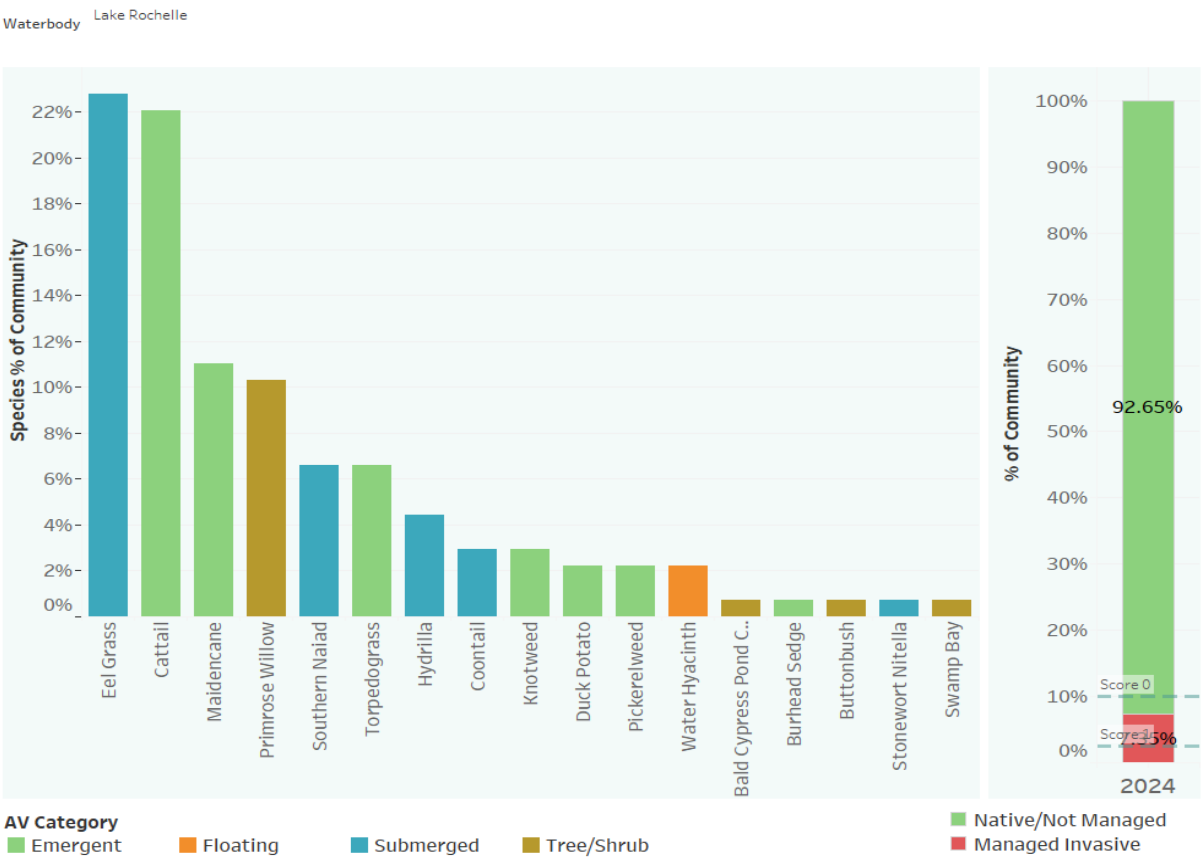


Figure 3-225. Chart depicting species frequency and invasive species percentage of Lake Rochelle during 2024.

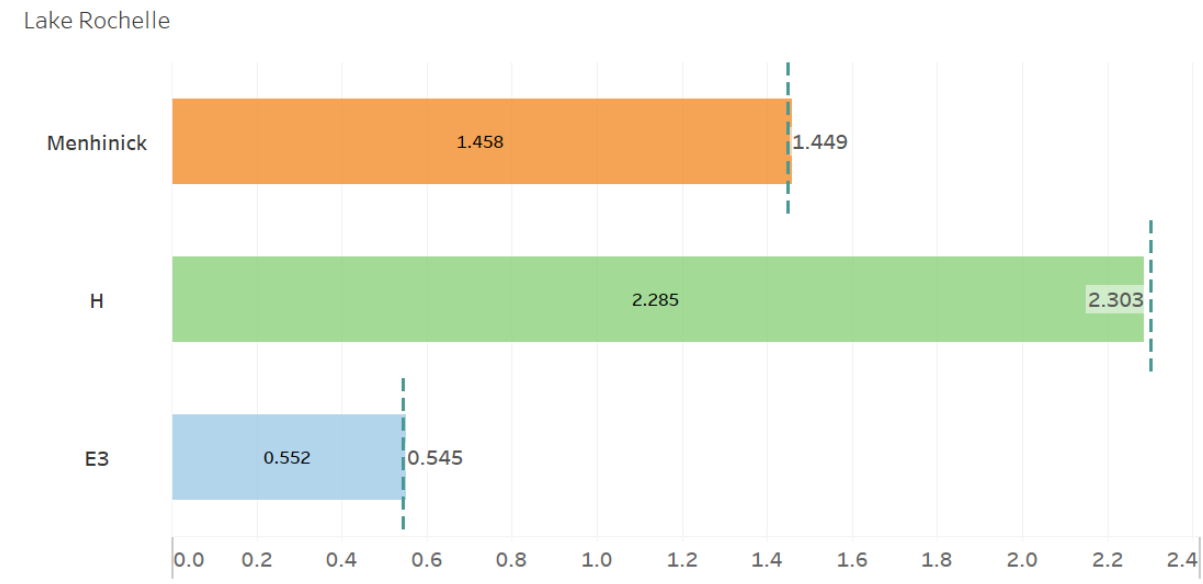


Figure 3-226. Chart depicting 2024 diversity indices for Lake Rochelle. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Rochelle's health index scores from 2018 to 2024 shows relative stability (Figure 3-227). Over this span, Rochelle's water quality has improved considerably; both exhibiting improving trends and meeting NNC guidelines after 2020. Its vegetation abundance scores have remained high. Much of the lake health score variability has been the result of shifts in the invasive species and diversity criteria over the years. Overall, Lake Rochelle ranks lower on the priority list since its water quality is now meeting standards and continues to exhibit improvement. The main area for management action is controlling invasive plants.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	3	2	3	3	3	1	3	**2.3**
2019	0	3	3	3	3	3	0	3	**2.3**
2020	0	3	3	3	3	3	0	1	**2.0**
2021	3	3	3	3	3	3	0	0	**2.3**
2022	3	3	3	3	3	3	0	2	**2.5**
2023	3	3	3	2	3	2	1	1	**2.3**
2024	3	3	3	2	3	3	1	2	**2.5**

Figure 3-227. Chart depicting a comparison of Lake Rochelle's Lake Health Index scores from 2018 to 2024.

Lake Health Impact/Challenges:

- Lake Rochelle currently exhibits good water quality and improving trends. However, stormwater pollutant loading is a potential concern and one of the primary factors to look to if water quality begins trending in an unfavorable direction.
- Several of Lake Rochelle's water quality parameters are correlated with surface level, likely due to increased flushing during wetter periods. This means that drought conditions could result in water quality declines.
- The management of invasive species like hydrilla is one of the primary concerns. Large-scale herbicide treatments can lead to water quality declines; which is a possibility as hydrilla is still not in a controlled state.

Lake Management Strategy:

- In order to mitigate stormwater pollutant loading, the City conducts street sweeping along one of the few public roads in the basin. The addition of new housing in the area provides opportunities for public education and outreach. This aims to increase residents' knowledge of best stormwater practices and ways they can individually reduce their pollutant loads.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Recent invasive species management efforts have included herbicide treatment and minimal stocking of triploid grass carp. This measured, but integrated approach appears to be gradually improving the invasive presence in Lake Rochelle, but more effort is required to keep these species under control.

Lake Roy

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Roy	3	3	2	3	2	3	3	1	2.5

Features & Statistics:

Surface area	74.3 acres
Mean depth	10.76 feet
Maximum depth	26 feet
Volume	1063.1 acre-feet
Drainage basin area	353.7 acres
Annual TN Load	1448.3 lbs
Annual TP Load	241.53 lbs
Limiting nutrient	Phosphorus

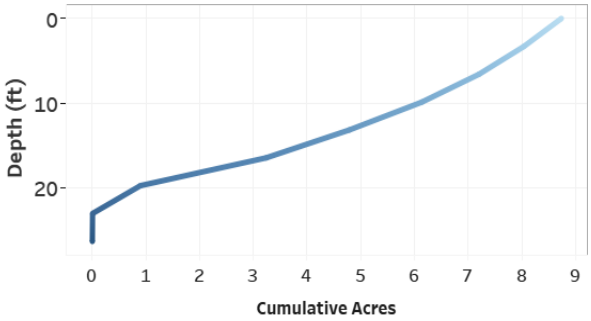


Figure 3-228. Hypsograph of Lake Roy depicting the depth profile and morphology of the lake bed.

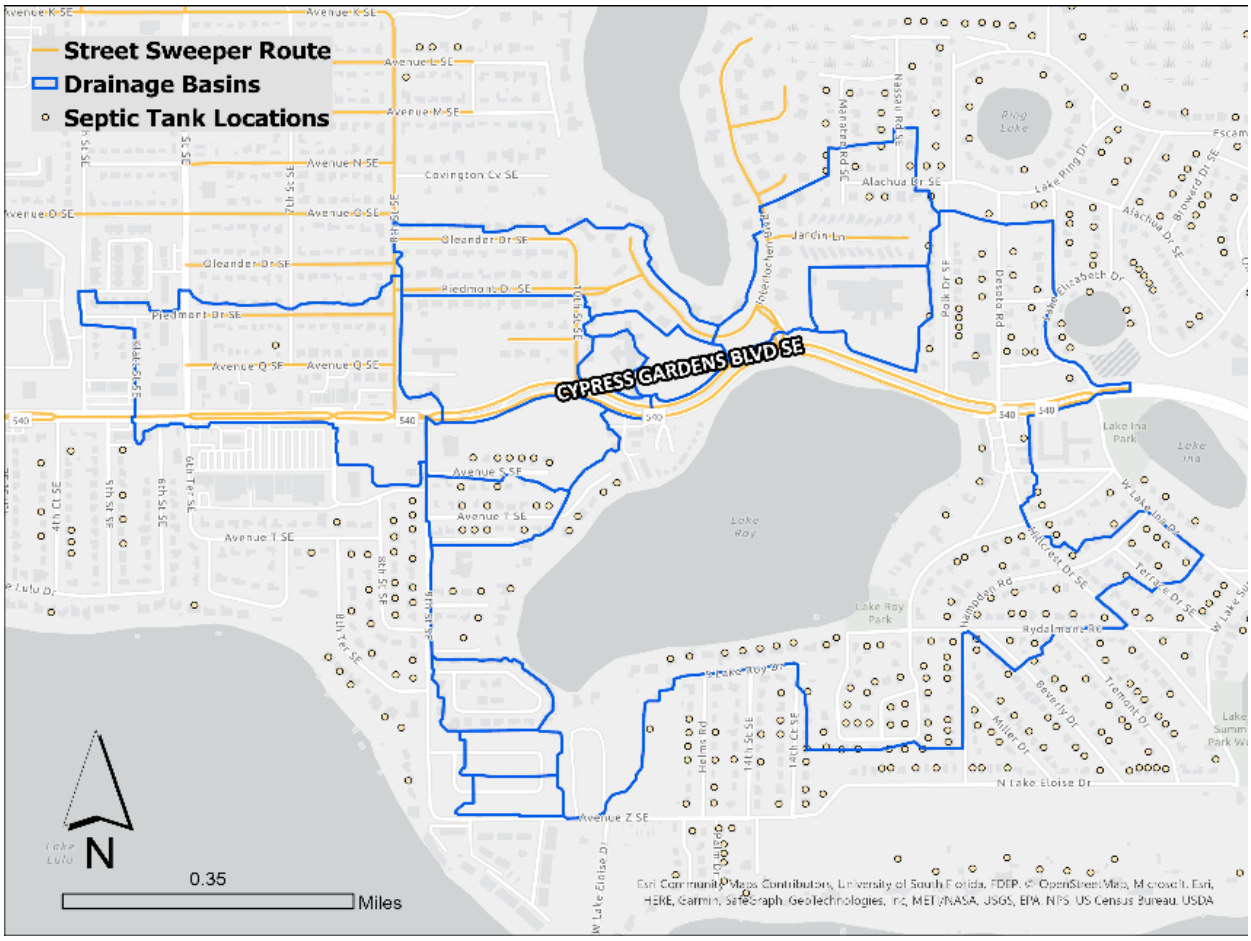


Figure 3-229. Map of Lake Roy's drainage basin, City street sweeper routes, and nearby septic systems.

Hydrology:

Lake Roy is a smaller, but deeper waterbody at 74 acres, an average depth of roughly 11 feet, and a maximum depth of over 25 feet (Figure 3-228). While Roy is deeper than many other lakes in the region, it possesses a gradual sloping lake bed which can support a large littoral zone and a robust aquatic plant community. Stormwater is conveyed to this waterbody from a 354 acre drainage basin comprised of 13 individual sub-basins (Figure 3-229). The basin is comprised mostly of residential land uses, but does include some commercial and transportation uses. This basin contributes 1,448 lbs of TN and 241 lbs of TP to the lake annually; the nitrogen load, in particular, is relatively high within the region on a per acre basis. There are 125 septic systems located within the basin—constituting a high density and greater potential for pollutant loading via groundwater leaching. To combat stormwater pollutant loading within the Winter Haven portion of the drainage area, the City conducts 11.8 miles of street sweeping on a monthly basis.

Lake Roy is located on the South Chain of Lakes, connecting to Lake Lulu via navigable canal. Due to the canal connections, surface levels fluctuate consistently across the South Chain of Lakes. Throughout the period of record, the South Chain's surface level has fluctuated between 127.5 and 133.7 feet above sea level. The normal range is much narrower—between 129.7 and 131.4 feet (Figure 3-230). That said, wetter and drier periods often result in more extreme peaks and troughs, respectively. During 2024, the South Chain reached a dry season low of 130.8 ft in June and a wet season peak of 131.8 ft in September. The level of the South Chain by the end of the year was slightly above the top of the normal range at 131.5 ft. The South Chain's level remained at or above the high end of the normal range throughout most of the year—consistent with annual level fluctuations over the last 10 years. According to linear regression analysis, changes in Lake Roy's surface level correlates with TN and water clarity (see appendix). This carries management implications as maintaining higher levels should result in water quality improvements.

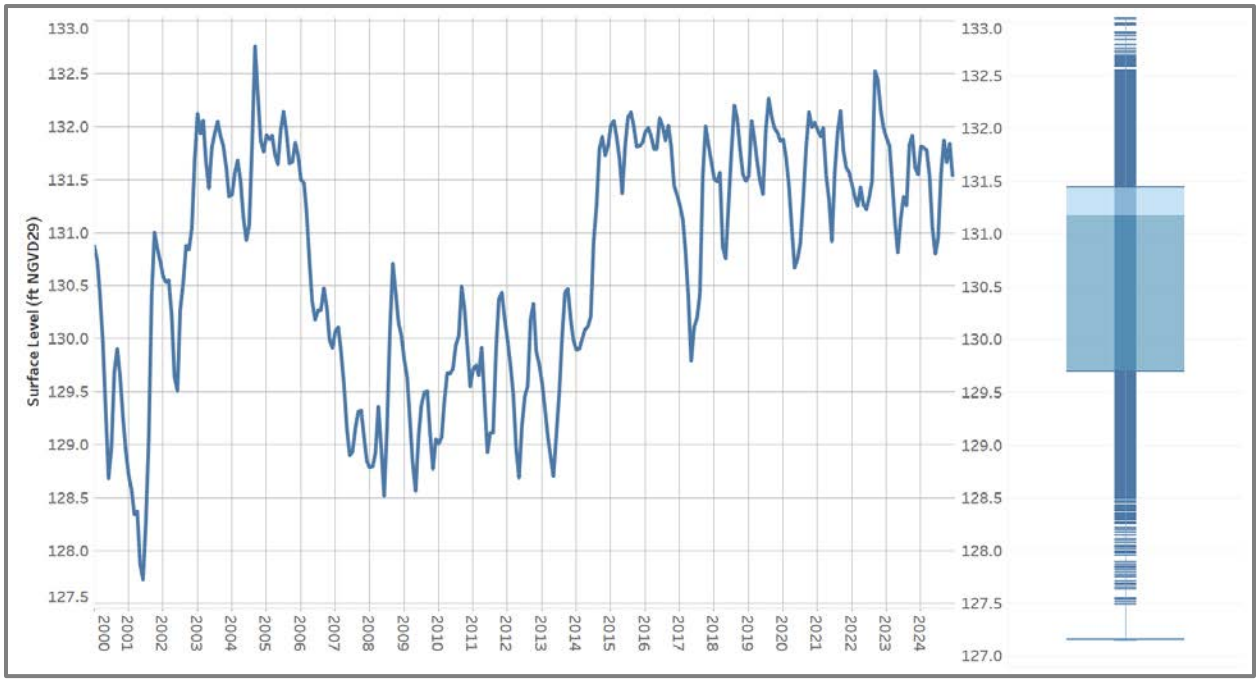


Figure 3-230. Hydrograph of Lake Roy depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Roy is categorized as a clear, alkaline waterbody. Aside from an outlier year during 2021, Lake Roy has not exhibited any NNC exceedances during the assessment period (Figure 3-231). As a result, Roy is considered un-impaired and earns an impairment criterion score of 3. Despite the high Chl-a and nutrient concentrations in 2021, Lake Roy has exhibited low Chl-a, TN, and TP concentrations in recent years.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	-0.511	0.018	Decreasing	3	3
TN	N	-0.309	0.173	No Trend		2
TP	N	-0.569	0.007	Decreasing		3
Secchi	NA	0.303	0.182	No Trend		2

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. During this period, Chl-a and TP exhibited significant improving trends. This equates to a trend criteria score of 3 for these parameters. Secchi depth and TN exhibited non-significant improving trends; for criterion scores of 2.

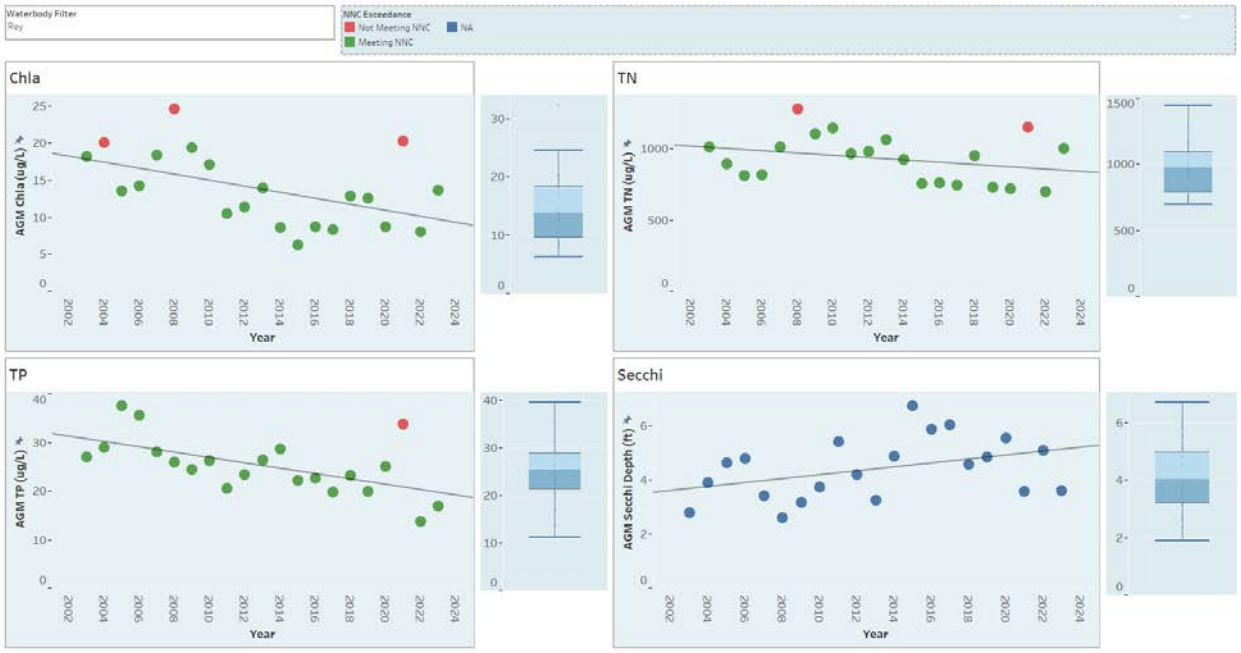


Figure 3-231. Lake Roy AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots showing relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Roy on 3/29/2024. The PAC during this survey was 43% and the total BV was 7.6% (Figure 3-232). PAC over the 30% threshold equates to an abundance criterion score of 3. In 2018, Lake Roy had a PAC of over 50%. However, in 2019, this abundance value dropped to 17%. This was likely due to large-scale invasive species

treatments between these two surveys. Fortunately, the abundance has recovered significantly, remaining above 30% since 2021.

Invasive Species Management:

Based on data from the 2024 survey, Lake Roy is very clearly dominated by submerged plants with native eelgrass and Illinois pondweed making up over 40% of the community (Figure 3-233). The remaining plants include a mix of other SAV and emergent species. There were no managed invasives detected in 2024; equating to an invasive presence criterion score of 3. Lake Roy has typically possessed at least a minor presence of invasive hydrilla in the past, but this population has gradually decreased in recent years. This indicates general success in managing and controlling invasives.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). Based on the 2024 species data, Lake Roy's overall diversity index exceeded its long-term median value with both the species richness and evenness being slightly below-average (Figure 3-234). This equates to a diversity criterion score of 1. The decrease in species richness from 2023 was likely due to the removal of hydrilla, whereas the slightly lower evenness value can be explained by an even greater dominance of eelgrass and pondweed compared with previous years. Neither of these occurrences are negative, but the diversity indices do not distinguish between native or exotic species. Overall, Lake Roy's vegetation community is healthy.

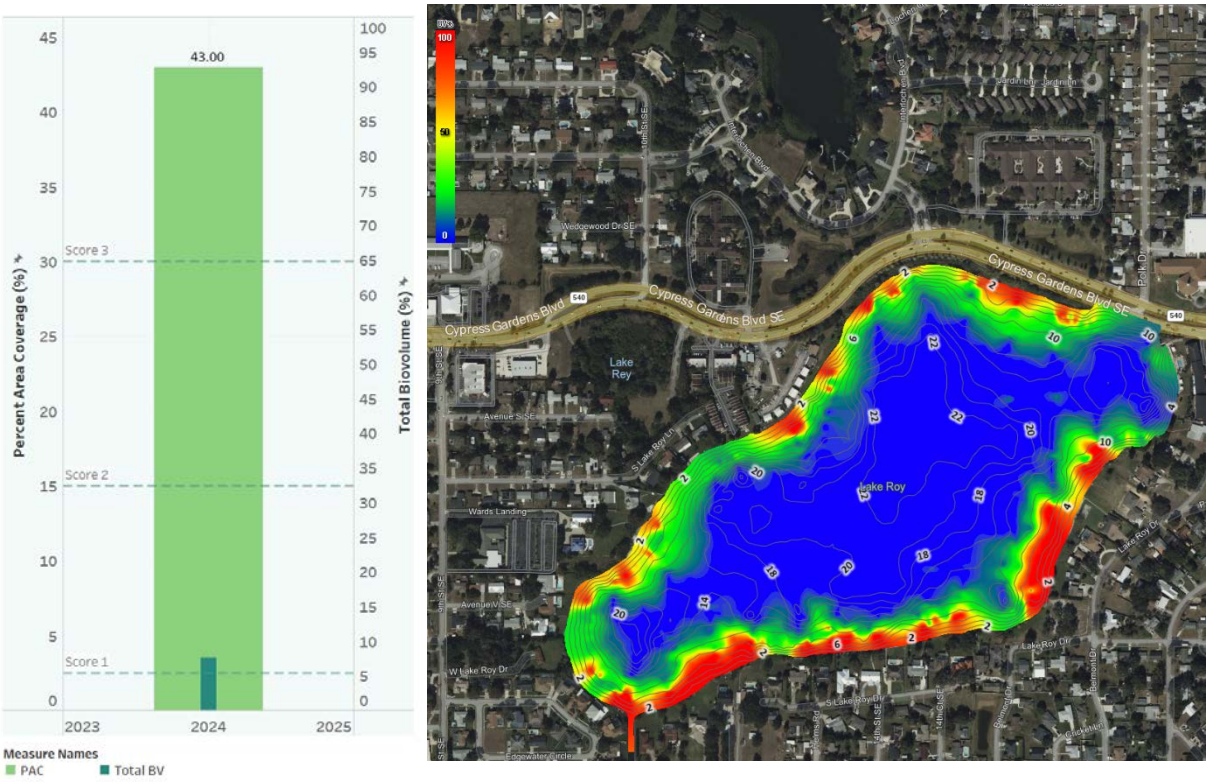


Figure 3-232. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Roy; biovolume values range from green (lowest) and red (highest).

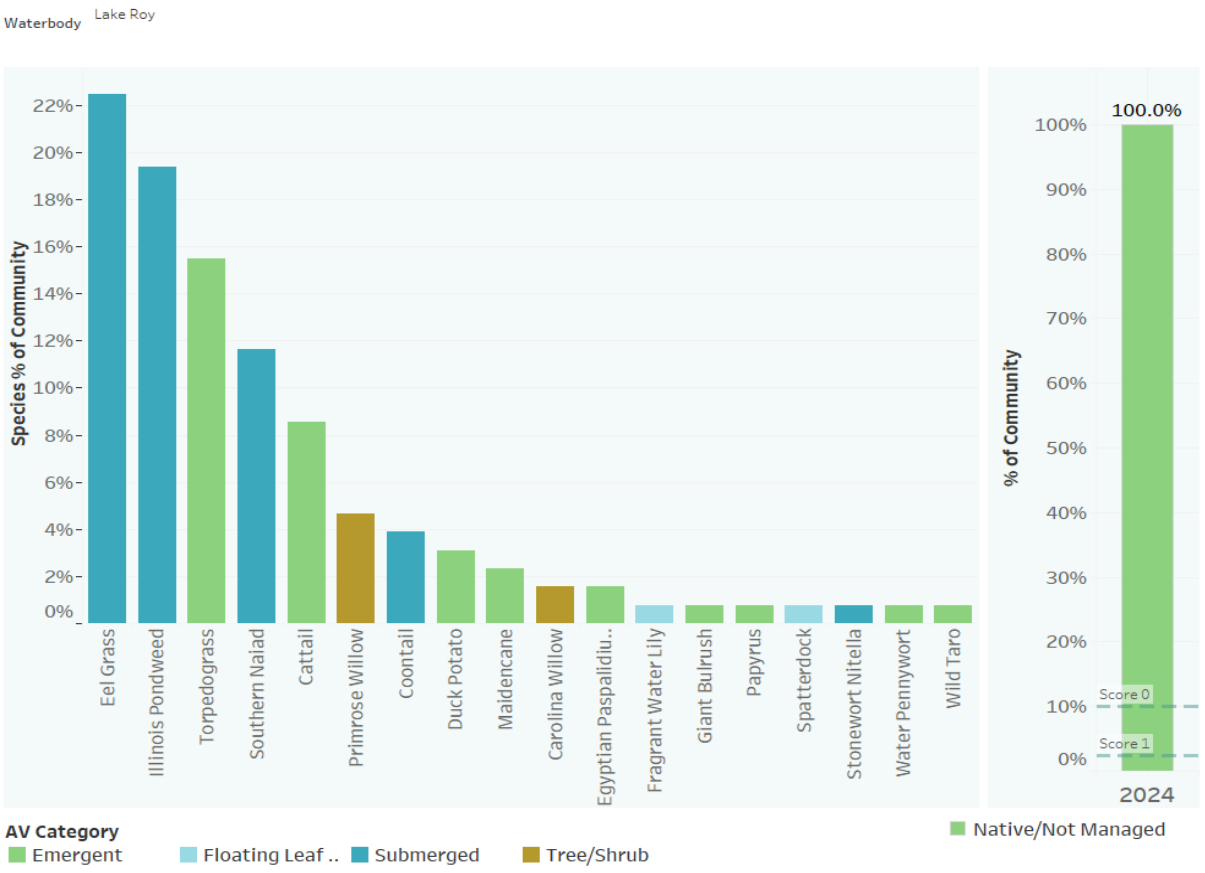


Figure 3-233. Chart depicting species frequency and invasive species percentage of Lake Roy during 2024.

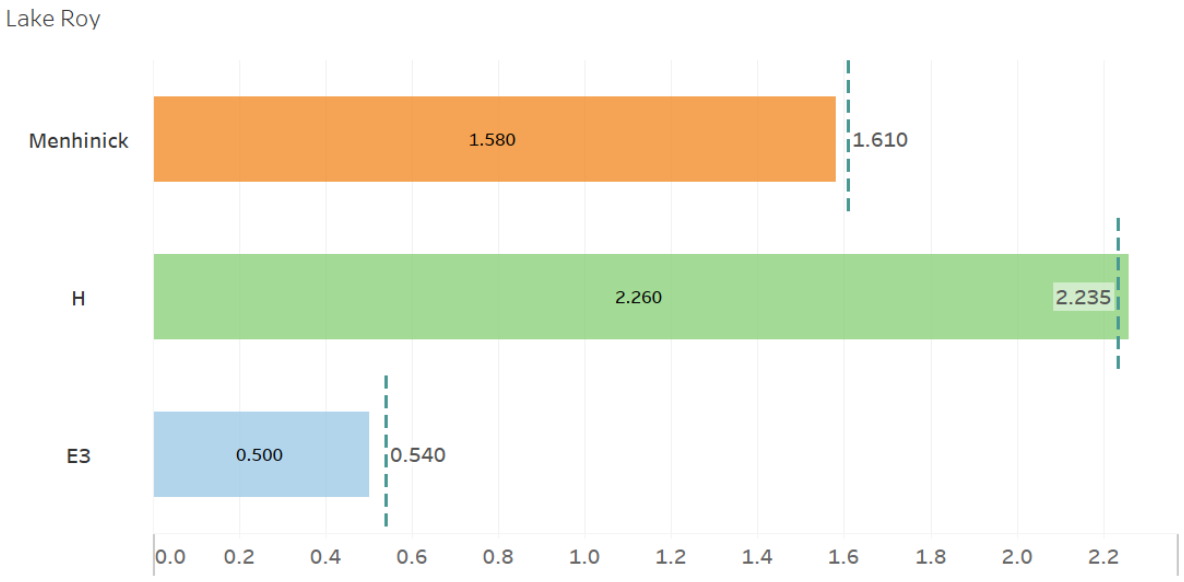


Figure 3-234. Chart depicting 2024 diversity indices for Lake Roy. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Roy's health index scores from 2018 to 2024 shows consistently high lake health (Figure 3-235). Over this span, the water quality criteria scores have changed very little. Lake Roy has excellent water quality and continues to exhibit generally improving trends. Vegetation abundance exhibited a decline in 2019 and 2020, but has since recovered. Invasive presence and its impact on species diversity continues to fluctuate and is the primary source of lake health changes at this point. Overall, Lake Roy is ranked low on the priority list due to these higher lake health scores.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	3	3	3	2	3	3	0	2	**2.4**
2019	3	3	3	3	3	2	1	2	**2.5**
2020	3	3	3	3	3	2	2	3	**2.8**
2021	3	3	3	2	3	3	1	2	**2.5**
2022	3	3	3	2	3	3	2	3	**2.8**
2023	3	3	2	3	2	3	2	2	**2.5**
2024	3	3	2	3	2	3	3	1	**2.5**

Figure 3-235. Chart depicting a comparison of Lake Roy's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Lake Roy currently exhibits excellent water quality with no signs of deterioration. However, if this changes, the City would look to stormwater and the septic presence as potential primary drivers of water quality decline.
- The management of invasive species like hydrilla has been a concern in the past. While current populations appear to be controlled, it can take just a single growing season for these to take over large areas of a waterbody.
- Several of Lake Roy's water quality parameters are correlated with surface level; likely due to increased flushing during wetter periods. This means that drought conditions could result in water quality declines.

Lake Management Strategy:

- The City currently conducts street sweeping and has implemented treatment swales in the northern portion of the drainage basin. Future stormwater mitigation efforts may be construction of green infrastructure in one of the northern sub-basins identified by the Stormwater Assessment and Improvement Plan.
- If water quality begins to decline, the City may explore source analysis to determine if septic systems may be leaching pollutants into the water table. Further management may be septic-to-sewer conversions.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response helps to prevent large-scale herbicide treatments and potential water quality impacts that follow.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.

Lake Shipp

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Shipp	0	3	3	3	3	3	1	2	**2.3**

Features & Statistics:

Surface area	279.4 acres
Mean depth	7.25 feet
Maximum depth	14 feet
Volume	2044.5 acre-feet
Drainage basin area	910.6 acres
Annual TN Load	3614.3 lbs
Annual TP Load	654.7 lbs
Limiting nutrient	Phosphorus

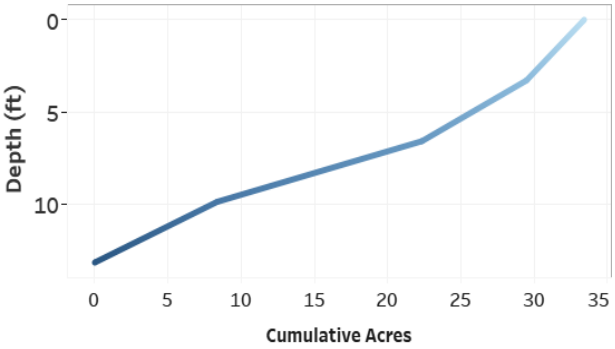


Figure 3-236. Hypsograph of Lake Shipp depicting the depth profile and morphology of the lake bed.

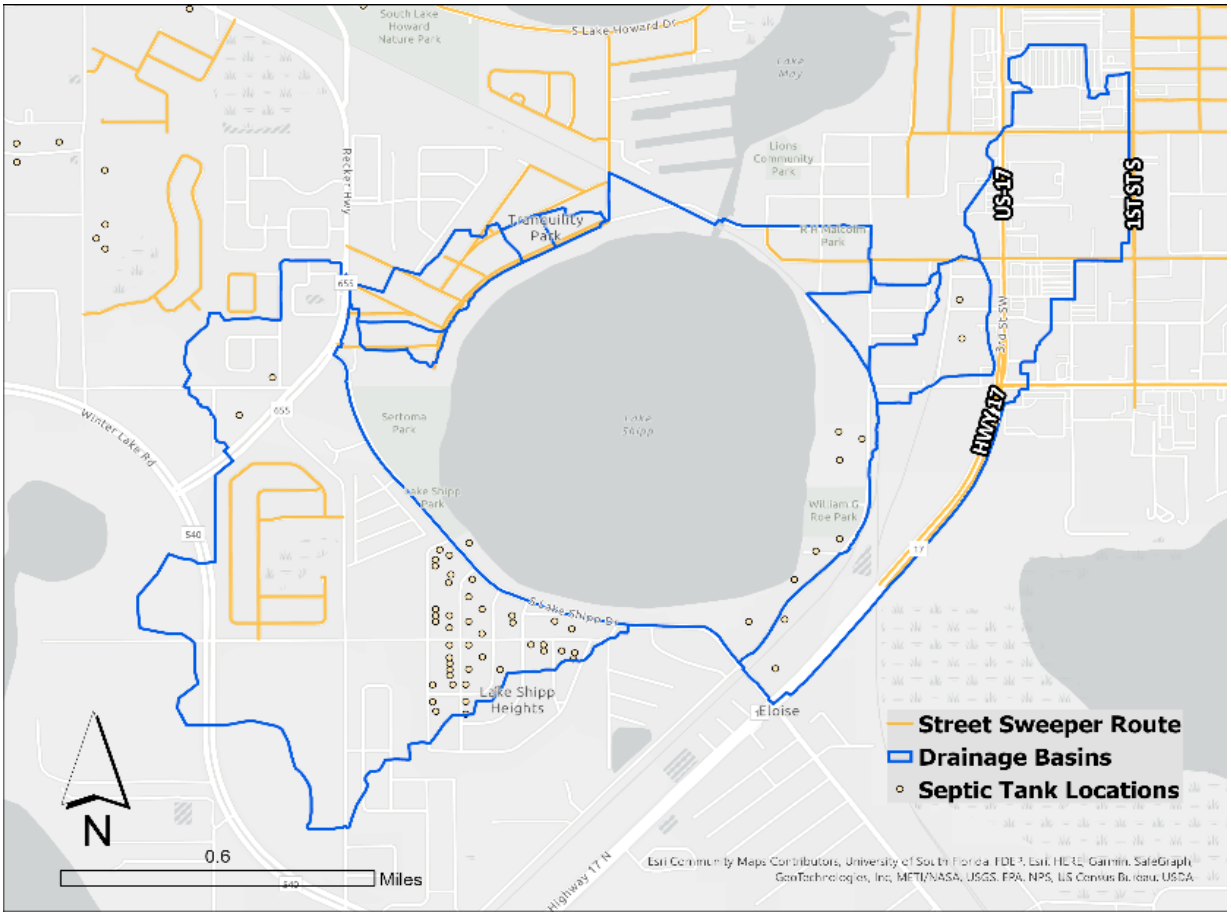


Figure 3-237. Map of Lake Shipp's drainage basin, City street sweeper routes, and nearby septic systems.

Hydrology:

Lake Shipp is a moderately-sized waterbody with a surface area of 280 acres. An average depth of 7.2 feet and a maximum depth of over 13 feet make Shipp a relatively shallow lake compared with other waterbodies in the region (Figure 3-236). The shallowness of the lake should allow it to support a wide littoral zone and robust aquatic vegetation community. Stormwater is conveyed to this waterbody from a 910 acre drainage basin comprised of 9 individual sub-basins (Figure 3-237). Ranked by area, the primary land uses in this basin are medium-density residential, commercial, high-density residential, industrial, and agricultural/open land. Based on stormwater pollutant load modeling, this drainage area contributes 3,614 lbs of TN and 655 lbs of TP to the lake annually; on a per acre basis, these loads are fairly high compared with other lakes in the study area. There are over 50 septic systems within the basin—constituting a moderate density with some potential for pollutant loading through groundwater leaching. To combat stormwater pollutant loading, the City conducts 12.4 miles of street sweeping in the basin on a monthly basis.

Lake Shipp is located centrally within the South Chain of Lakes with navigable connections to Lakes Lulu and May. Due to these canal connections, surface levels fluctuate consistently across the South Chain of Lakes. Throughout the period of record, the South Chain's surface level has fluctuated between 127.5 and 133.7 feet above sea level. The normal range is much narrower—between 129.7 and 131.4 feet (Figure 3-238). That said, wetter and drier periods often result in more extreme peaks and troughs, respectively. During 2024, the South Chain reached a dry season low of 130.8 ft in June and a wet season peak of 131.8 ft in September. The level of the South Chain by the end of the year was slightly above the top of the normal range at 131.5 ft. The South Chain's level remained at or above the high end of the normal range throughout most of the year—consistent with annual level fluctuations over the last 10 years. According to linear regression analysis, changes in Lake Shipp's surface level correlates with TN and water clarity (see appendix). This carries management implications as maintaining higher levels should result in improved water quality.

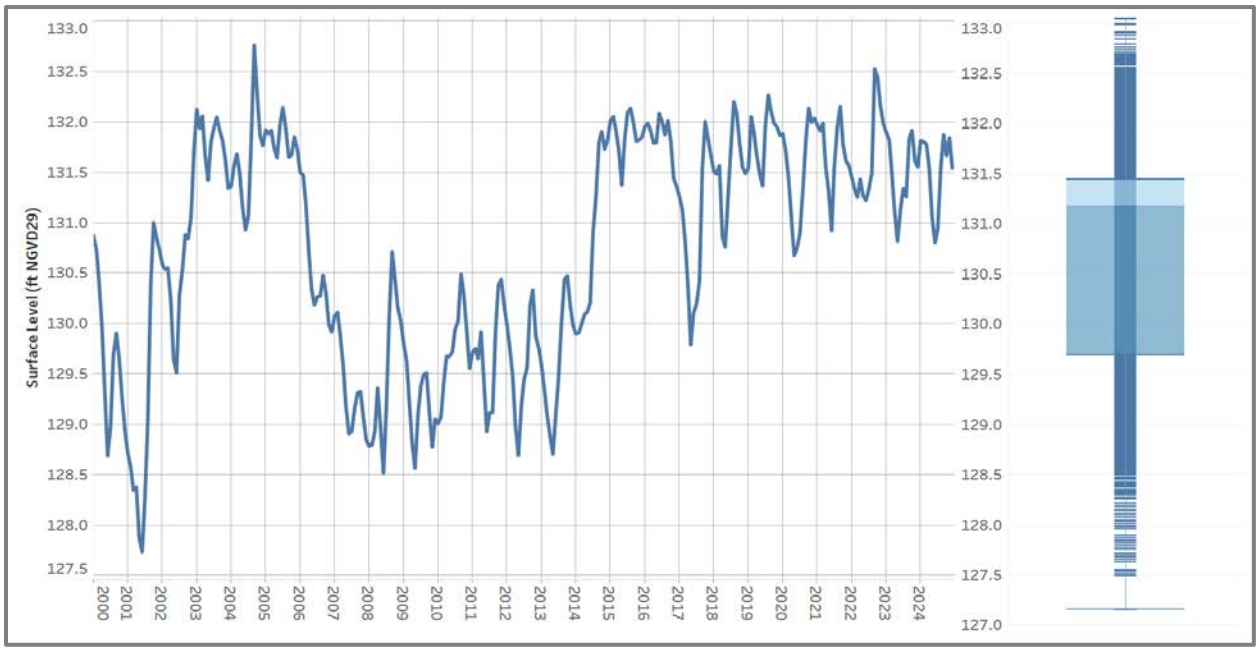


Figure 3-238. Hydrograph of Lake Shipp depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Shipp is categorized as a clear, alkaline waterbody. Due to consistent NNC exceedances during the assessment period, Lake Shipp is considered impaired for Chl-a, TN, and TP (Figure 3-239). This equates to an impairment criterion score of 0. In 2019, the FDEP established a total maximum daily load stipulating a 53% reduction in TN in order for Lake Shipp to meet NNC guidelines.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	-0.621	0.003	Decreasing	0	3
TN	Y	-0.653	0.001	Decreasing		3
TP	Y	-0.585	0.005	Decreasing		3
Secchi	NA	0.741	0.000	Increasing		3

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Each of Lake Shipp's water quality parameters exhibited significant improving trends during this period. This equates to trend criteria scores of 3 for Chl-a, TN, TP, and Secchi depth. It should be noted that despite the long-term trends, Chl-a, TP, and TN concentrations appear to have generally increased over the last four years.

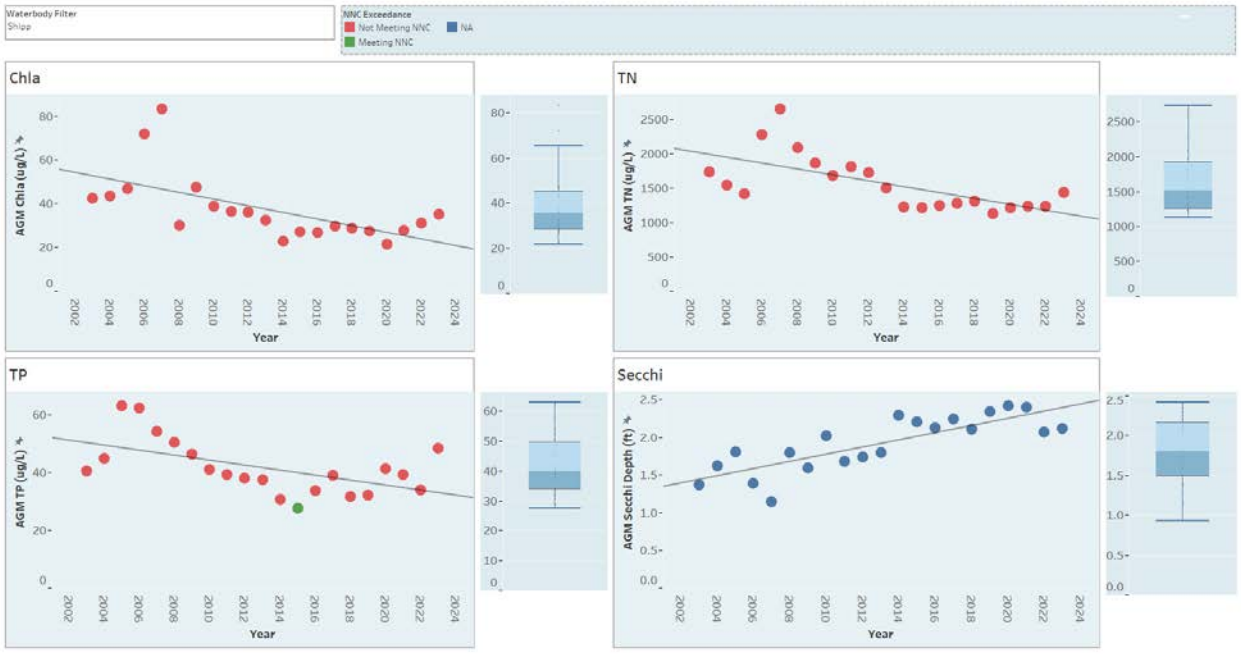


Figure 3-239. Lake Shipp AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Shipp on 10/6/2024. The PAC during this survey was 52.5% and the total BV was 14.4% (Figure 3-240). A PAC exceeding the 30% threshold equates to an abundance criterion score of 3. Since monitoring began, Lake Shipp has consistently exhibited PAC around in the 50% range. The robustness of this lake's littoral zone can be attributed to its gradual sloping bed and the abundance of vegetation likely contributes to

the improving water quality trends. The southern portion of Lake Shipp is much more gradually sloping than the north—supporting a much wider littoral zone.

Invasive Species Management:

Based on the 2024 survey data, Lake Shipp has a healthy mix of vegetation types. It is currently dominated by submerged species like eelgrass and southern naiad (Figure 3-241). Managed invasive species made up 5.3% of the community; comprised of burhead sedge and hydrilla. This was a moderate increase from the 1.7% invasive percentage from 2023 and equates to an invasive presence criterion score of 1. Hydrilla has previously been the major management concern for Lake Shipp. Its recent expansion requires additional management action to prevent further expansion.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). According to the 2024 species data, Lake Shipp's richness and overall diversity indices met or exceeded their respective median values (Figure 3-241). This equates to a diversity criterion score of 2. Species evenness was only a small amount below the average value—inidicating that the distribution of species was only slightly less equitable in 2024. Despite the lower evenness score, Lake Shipp does boast relatively high overall diversity which has held somewhat constant despite regular minor invasive treatment efforts.

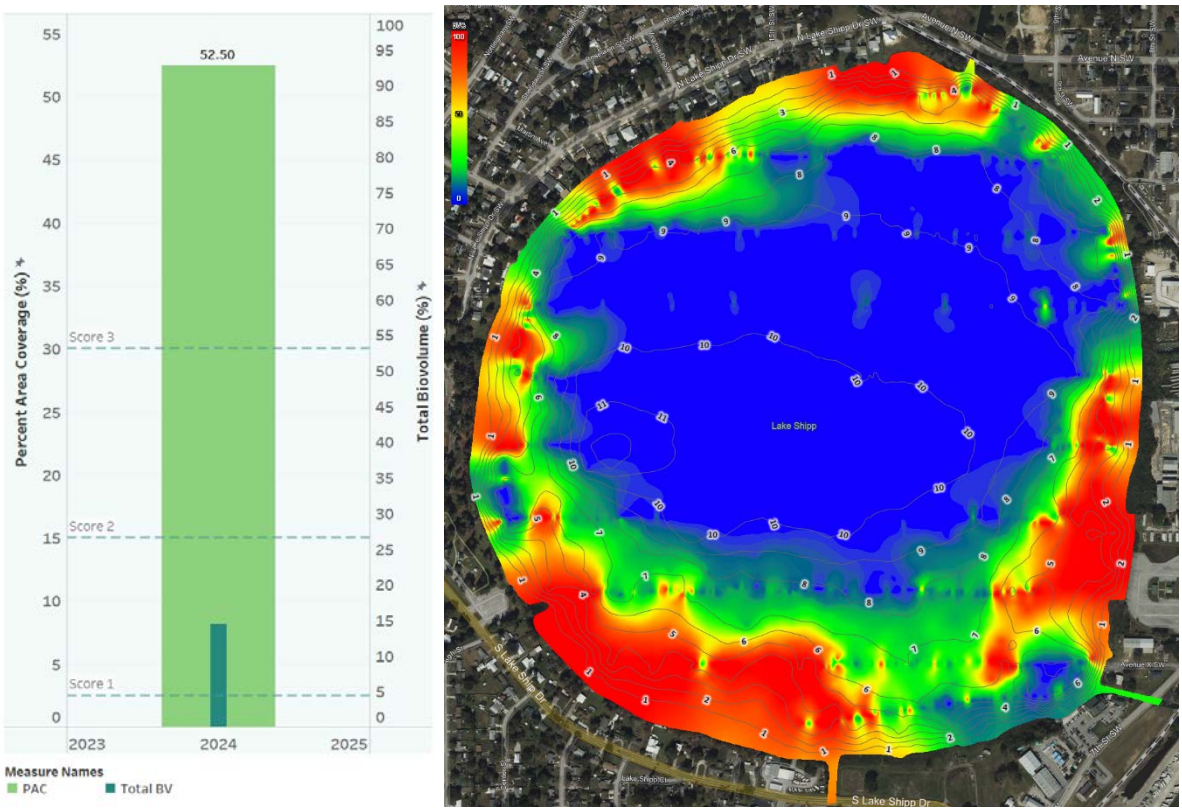


Figure 3-240. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Shipp; biovolume values range from green (lowest) to red (highest).

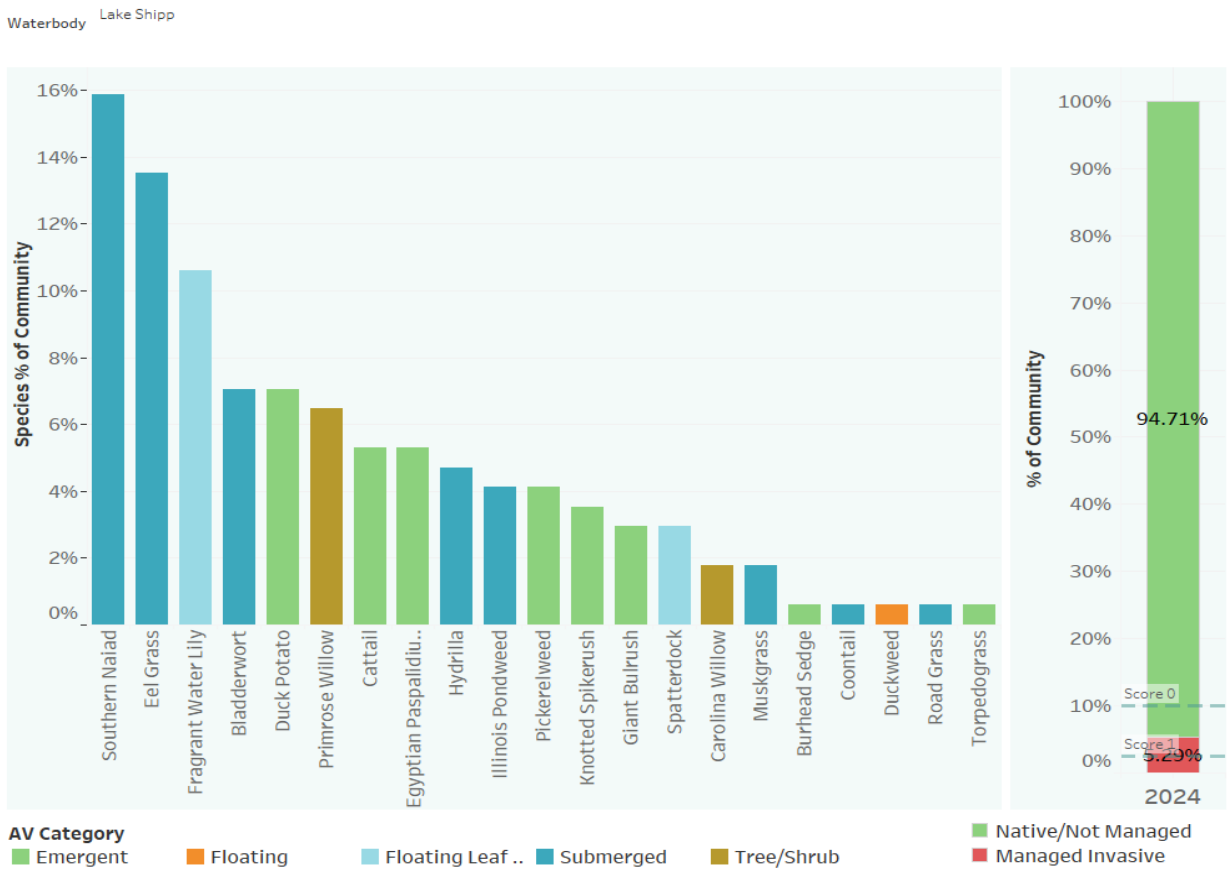


Figure 3-241. Chart depicting species frequency and invasive species percentage of Lake Shipp during 2024.

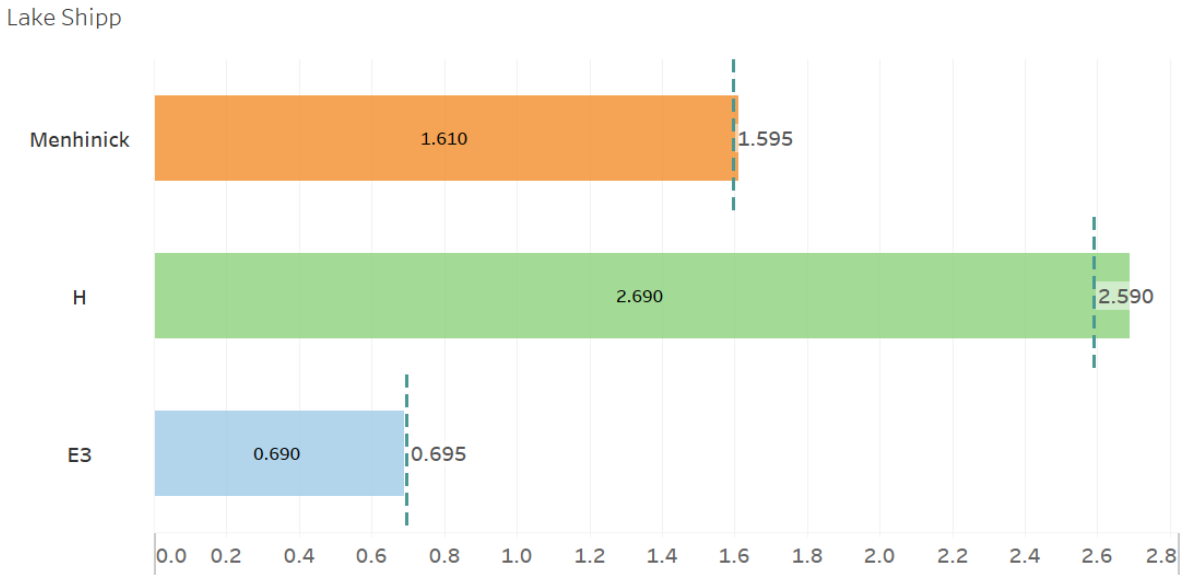


Figure 3-242. Chart depicting 2024 diversity indices for Lake Shipp. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Shipp's health index scores from 2018 to 2024 shows relative consistency (Figure 3-243). Throughout this span, the water quality criteria have remained the same. While Lake Shipp remains impaired, its water quality has been consistently improving. The only fluctuation has been in the invasive presence and diversity criteria—shifting due to expansion and treatment of exotic plant species. Overall, Lake Shipp ranks moderately low on the priority list. While it is impaired, the trend and biological scores indicate that management efforts have been having a positive impact.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	3	3	3	3	3	1	1	**2.1**
2019	0	3	3	3	3	3	1	1	**2.1**
2020	0	3	3	3	3	3	1	1	**2.1**
2021	0	3	3	3	3	3	2	1	**2.3**
2022	0	3	3	3	3	3	2	2	**2.4**
2023	0	3	3	3	3	3	2	2	**2.4**
2024	0	3	3	3	3	3	1	2	**2.3**

Figure 3-243. Chart depicting a comparison of Lake Shipp's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- In addition to considerable stormwater pollutant loading, Lake Shipp historically received point-source inputs from multiple agricultural processing facilities. These legacy sediments may contribute to internal nutrient loading. Furthermore, the moderate density of septic systems may potentially contribute to additional loading.
- The management of invasive species like hydrilla has been a concern in the past. While current populations appear to be controlled, it can take just a single growing season for these to take over large areas of a waterbody.
- Several of Lake Shipp's water quality parameters are correlated with surface level; likely due to increased flushing during wetter periods. This means that drought conditions could result in water quality declines.

Lake Management Strategy:

- To mitigate stormwater loading, the City has implemented street sweeping in the basin and has plans to construct green infrastructure along the northwest portion of the drainage basin as part of a Complete Streets improvement project.
- The City may explore sediment removal and/or septic system source analysis to determine if these alternative loading pathways are a significant contributor of nutrients.
- City staff will continue to monitor aquatic vegetation and share that informaiton with Polk County and the FWC. Now that hydrilla is in a controlled state, maintaining that control is a high priority to prevent future large scale herbicide treatments.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.

Lake Silver

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Silver	3	2	2	3	1	2	3	1	**2.1**

Features & Statistics:

Surface area	54.3 acres
Mean depth	11.9 feet
Maximum depth	32 feet
Volume	1040.1 acre-feet
Drainage basin area	164.2 acres
Annual TN Load	633.2 lbs
Annual TP Load	106.1 lbs
Limiting nutrient	Phosphorus

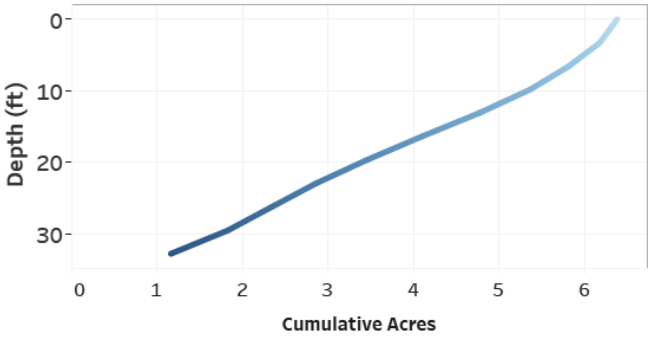


Figure 3-244. Hypsograph of Lake Silver depicting the depth profile and morphology of the lake bed.

Hydrology:

Lake Silver is a small, but deep waterbody with a surface area of 55 acres, an average depth of 12 feet, and a maximum depth of over 32 feet (Figure 3-244). Silver's depth likely results in increased interactions with the aquifer. Despite its depth, there are still areas near the shore where aquatic vegetation can grow. Stormwater is conveyed to this waterbody from an urbanized 164 acre drainage basin, comprised of 12 individual sub-basins (Figure 3-244). By far, the most dominant land use in this basin is commercial, followed by institutional, medium-density residential, recreational, and industrial. Based on stormwater pollutant load modeling, this drainage area contributes 633 lbs of TN and 106 lbs of TP to the lake annually; on a per acre basis, these loads rank relatively high compared with other drainage basins in the study area. To combat stormwater pollutant loading, the City conducts 20.15 miles of street sweeping—nearly all roads in this basin are swept monthly.

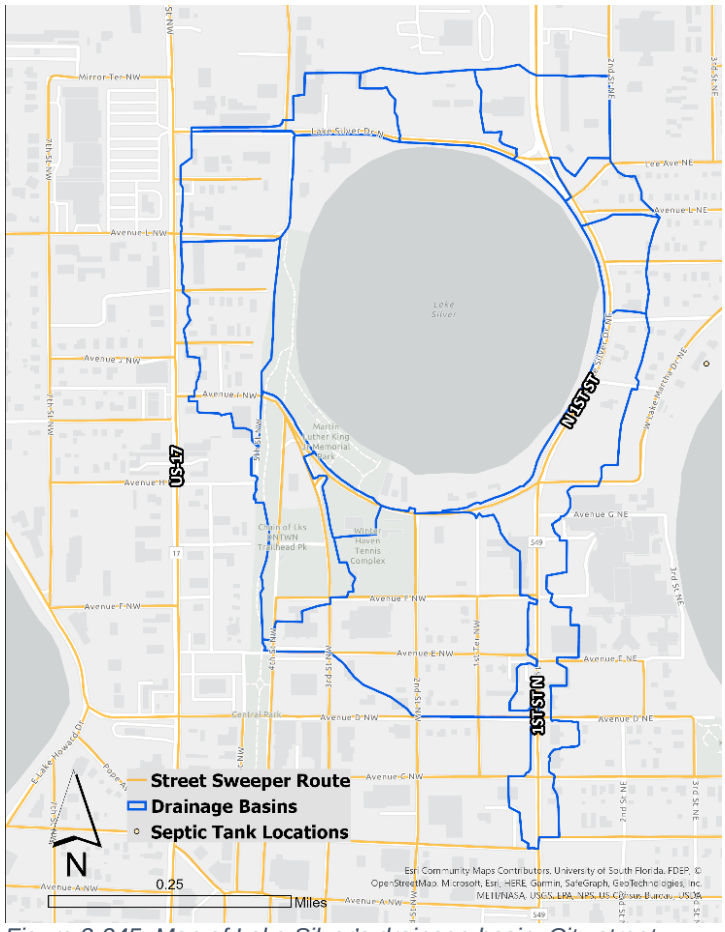


Figure 3-245. Map of Lake Silver's drainage basin, City street sweeper routes, and nearby septic systems.

Lake Silver is located in the center of downtown Winter Haven. Sitting at one of the highest elevations in the Peace Creek watershed, it discharges excess water downstream to Lake Martha via pipe. Over its period of record, Lake Silver's surface level has fluctuated between 139.9 and 147.1 feet above sea level. The normal level range fluctuates between 142.3 and 145.3 feet (Figure 3-246). During 2024, Lake Silver dropped to a dry season low of 144 feet in June, then rose to a peak of 146.5 feet in October; ending the year at an above-average level of 145.8 feet. Changes in Lake Silver's surface level are not significantly correlated with any of its water quality metrics (see appendix).

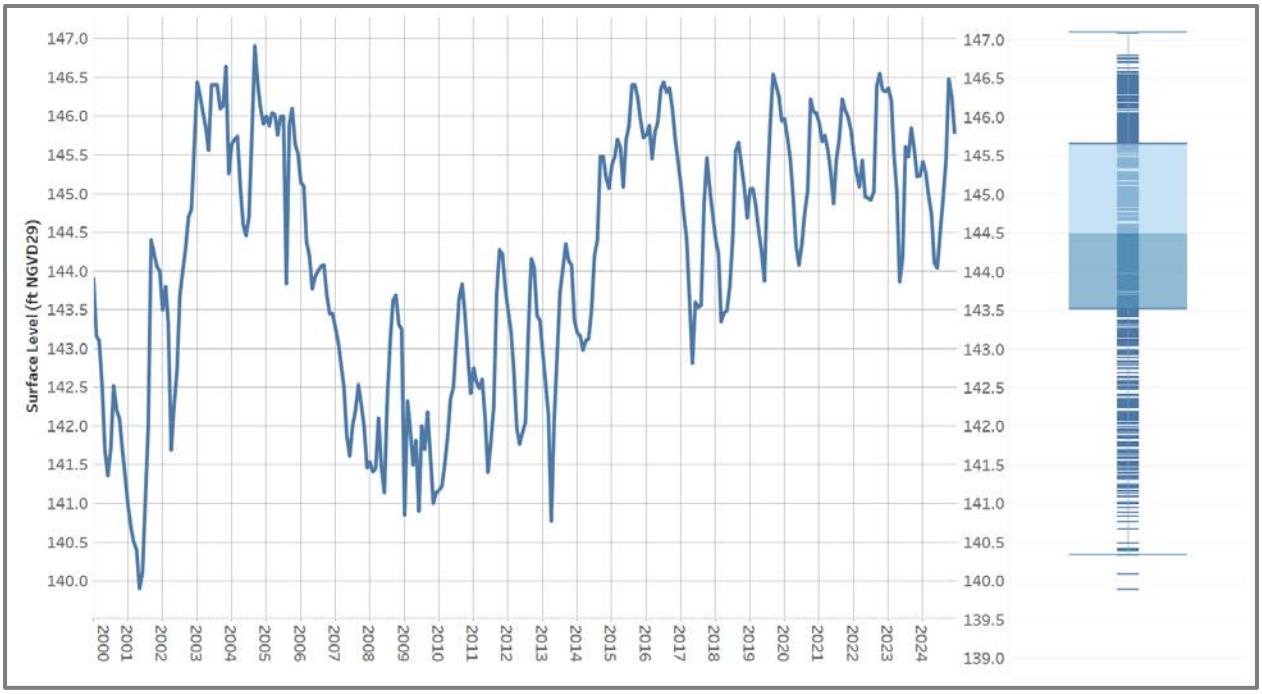


Figure 3-246. Hydrograph of Lake Silver depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria, Lake Silver is categorized as a clear, alkaline waterbody. Aside from an exceedance of the Chl-a threshold in 2017, Lake Silver has not exhibited any other NNC exceedances during the assessment period (Figure 3-247). Consequently, Lake Silver is not considered impaired and earns an impairment criterion score of 3. It should be noted that Silver's 2024 Chl-a and TP concentrations were well below the normal range—indicating better water quality than normal.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	-0.224	0.342	No Trend	3	2
TN	N	-0.276	0.239	No Trend		2
TP	N	-0.523	0.018	Decreasing		3
Secchi	NA	-0.015	0.952	No Trend		1

Water Quality Trends

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. During this period, Chl-a, TN, and Secchi depth

exhibited non-significant trends. The trends for Chl-a and TN were in an improving direction equating to a trend score of 2; whereas Secchi depth was in a negative direction for a score of 1. Exhibiting a significant improving trend, TP earned a trend score of 3. Overall, Lake Silver's trends do not indicate that water quality is deteriorating at all.

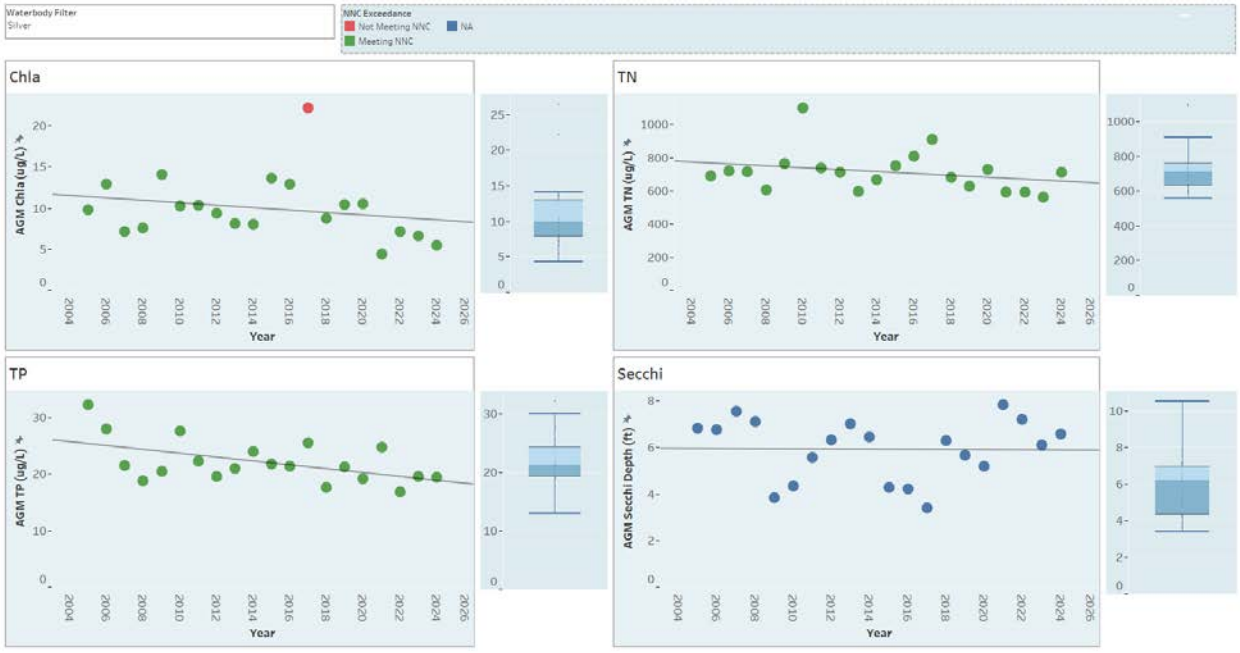


Figure 3-247. Lake Silver AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Silver on 8/6/2024. The PAC during this survey was 18.8% and the total BV was 1.3% (Figure 3-248). This level of coverage is the highest on record and earns Silver a vegetation abundance criterion score of 2. Since monitoring began, Lake Silver has displayed very low vegetation abundance, often lacking much submerged presence. However, there was a noticeable increase in the native SAV species eelgrass which should provide additional water quality and fish habitat enhancements.

Invasive Species Management:

Based on data from the 2024 survey, Lake Silver's vegetation community has undergone a dramatic, but positive shift. The native SAV species, eelgrass, became the most dominant plant detected during the survey, followed by the typical emergent species (Figure 3-249). The newfound presence of SAV is a positive change that should result in improved water quality and possibly better fish and wildlife habitat. As usual, Lake Silver lacked any managed invasive species during the survey; earning an invasive presence score of 3.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). According to the 2024 species data, Lake Silver's species richness index was the only diversity value that exceeded its long-term median; equating to a diversity score of 1 (Figure 3-250). The shift in species distribution with the increase in eelgrass likely led to the slightly lower evenness and overall diversity scores. However, since there has not been any invasive management efforts in Silver, these changes are mostly natural fluctuations.

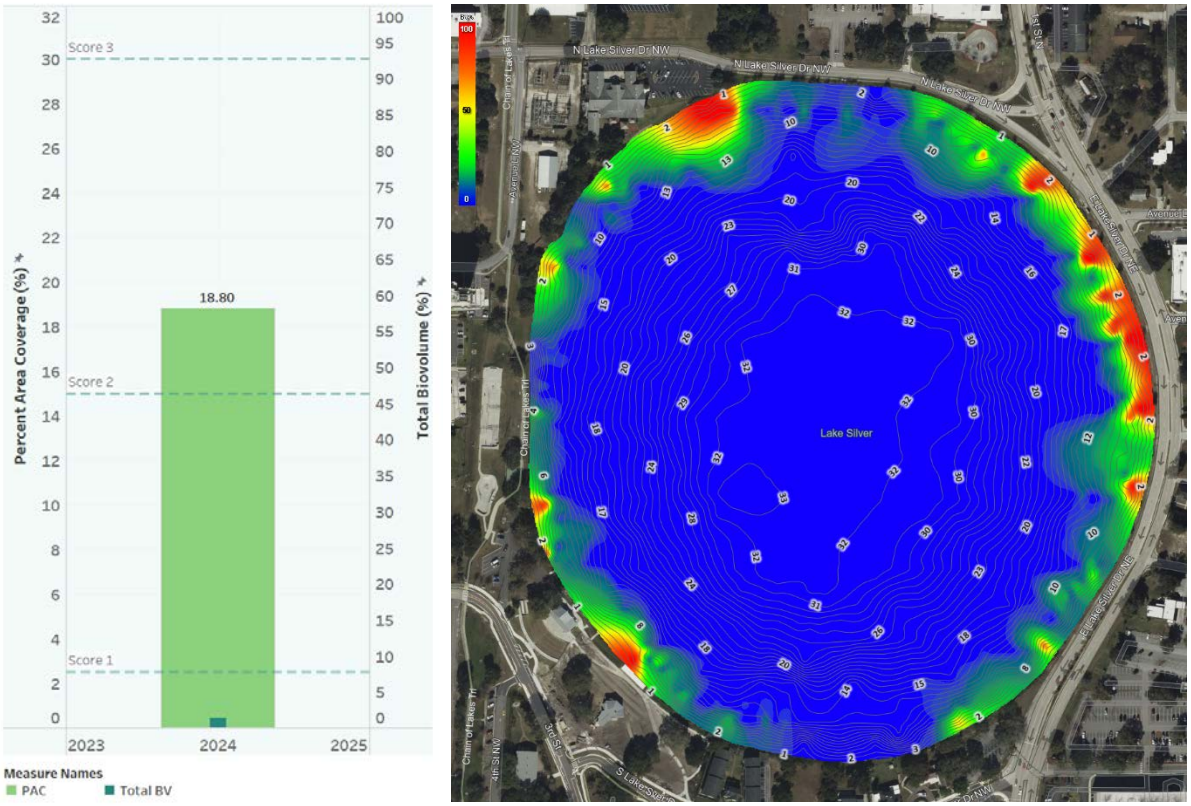


Figure 3-248. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Silver; biovolume values range from green (lowest) to red (highest).

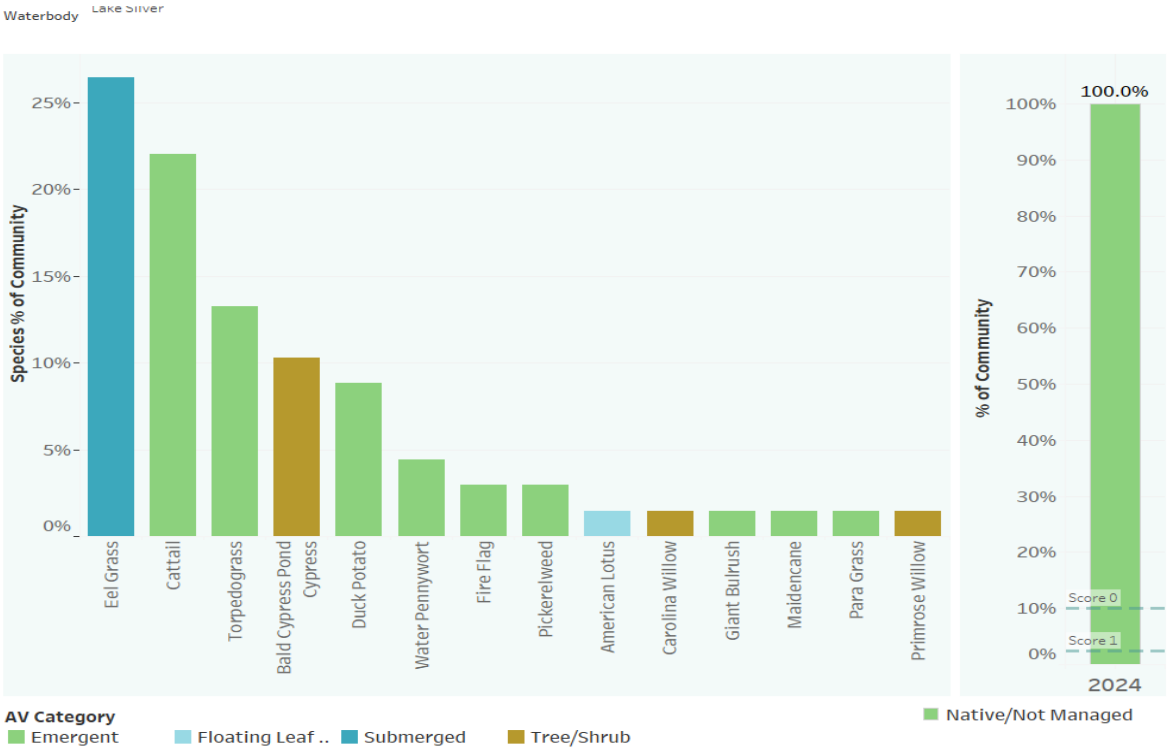


Figure 3-249. Chart depicting species frequency and invasive species percentage of Lake Silver during 2024.

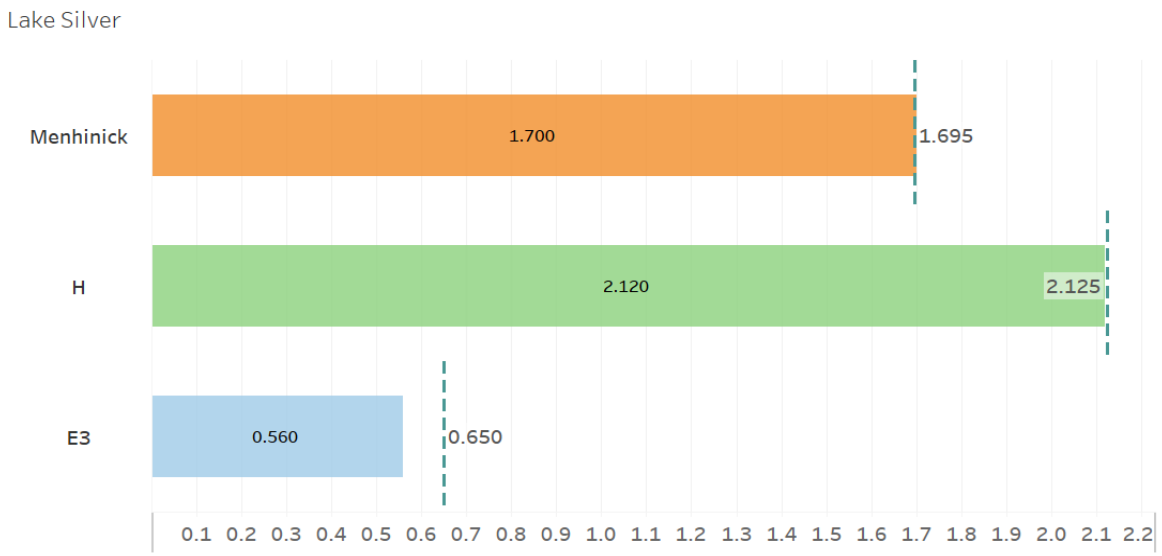


Figure 3-250. Chart depicting 2024 diversity indices for Lake Silver. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Silver's health index scores from 2018 to 2024 shows some variability, with values ranging from 1.6 to 2.1 (Figure 3-251). Over this span, the impairment, trends, and invasive presence criteria were unchanged. The primary form of score variance came from vegetation abundance and diversity—with wide swings from year to year. The consistent lack of vegetation coverage was one of the primary criteria that brought its score down. Overall, Lake Silver ranks lower on the priority list. Its water quality is good, trends don't indicate deterioration, and it does not have issues with invasive plants. The recent shift in the vegetation community is a good sign that one of the primarily lacking areas is undergoing improvement.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	3	2	2	2	1	0	3	1	**1.8**
2019	3	2	2	2	1	1	3	3	**2.1**
2020	3	2	2	2	1	0	3	0	**1.6**
2021	3	2	2	2	1	0	3	3	**2.0**
2022	3	2	2	2	1	0	3	0	**1.6**
2023	3	2	2	2	2	1	3	2	**2.1**
2024	3	2	2	3	1	2	3	1	**2.1**

Figure 3-251. Chart depicting a comparison of Lake Silver's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Lake Silver currently exhibits good water quality. However, stormwater pollutant loading is still a potential concern if trends begin to indicate a decline.
- While Lake Silver has no invasive species present, its lack of vegetation abundance has previously hindered its ability to buffer against changes in water quality in addition to negative impacts on fish and wildlife habitat.

Lake Management Strategy:

- To mitigate stormwater loading, the City conducts over 20 miles of street sweeping within the drainage basin. Raingardens and other green infrastructure have been constructed along streets in the drainage basin south of the lake. There are opportunities to construct additional green infrastructure within the drainage basin, however.
- While the lake now has a growing population of submerged aquatic vegetation, there is only one species of SAV present. Ideally, Lake Silver should have 3 or 4 SAV species in order to prevent decimation from pests, disease, or human disturbance. The City should continue to explore the possibility of planting other varieties of SAV to bolster the vegetation community. This would also help to improve the species diversity scores in the future.

Lake Smart

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Smart	0	2	2	2	2	3	1	3	**1.9**

Features & Statistics:

Surface area	281.2 acres
Mean depth	9.42 feet
Maximum depth	16 feet
Volume	2903.8 acre-feet
Drainage basin area	642.6 acres
Annual TN Load	1673.4 lbs
Annual TP Load	348.9 lbs
Limiting nutrient	Phosphorus

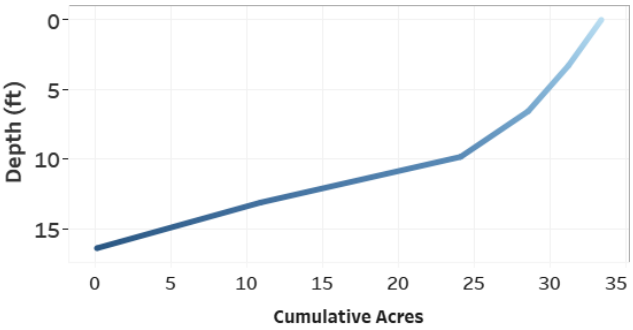


Figure 3-252. Hypsograph of Lake Smart depicting the depth profile and morphology of the lake bed.

Hydrology:

Lake Smart is moderately sized at 282 acres, but is actually one of the smaller lakes on the North Chain. Lake Smart is relatively deep with an average depth of 9.4 feet and a maximum depth of over 15 feet (Figure 3-252). Despite this depth, the lake supports a moderate littoral zone that should support a robust vegetation community. Stormwater is conveyed to this waterbody from a 643 acre drainage basin made up of residential, agricultural, and wetland land uses (Figure 3-253). Based on stormwater pollutant modelling, this drainage area contributes 1,673 lbs of TN and 349 lbs of TP to the lake annually; on a per acre basis, these loading rates are relatively average compared to other lakes in the study area. Due to a lack of drainage infrastructure discharging stormwater from City roadways, Winter Haven does not currently conduct street sweeping services in Lake Smart's drainage basin.

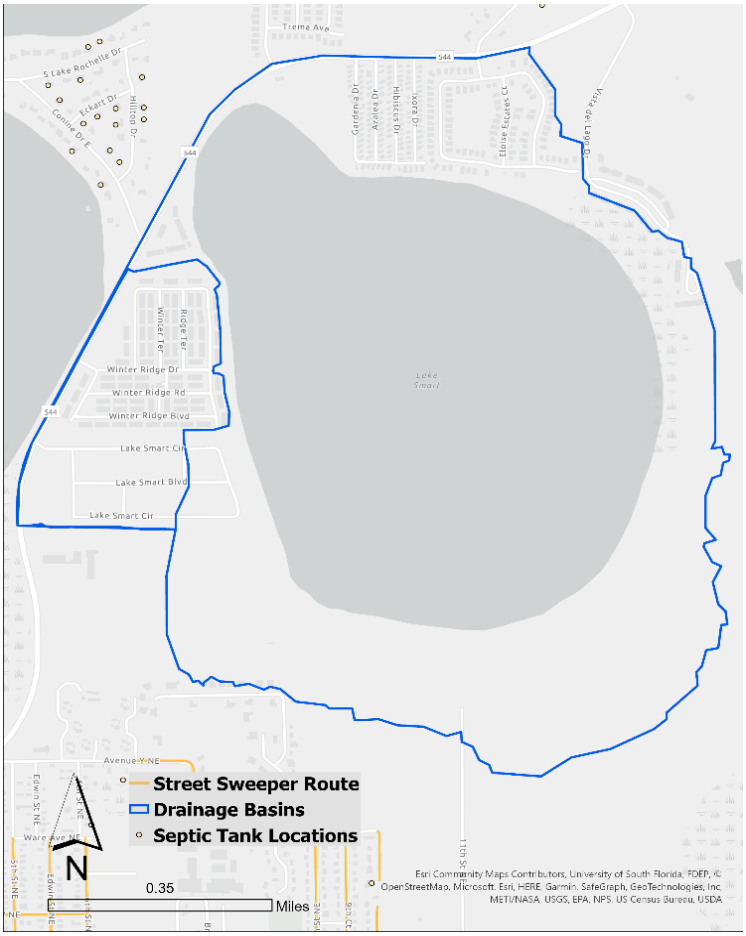


Figure 3-253. Map of Lake Smart's drainage basin and nearby septic systems.

As part of the North Chain of Lakes, Smart is connected to Lake Conine to the west via navigable canal and Lake Fannie to the east via a non-navigable canal. Excess water from the North Chain eventually drains via the SWFWMD-managed P-8 control structure at the south of Lake Hamilton and enters the Peace Creek. Over the period of record, surface levels in this section of the North Chain (Lakes Conine, Haines, Rochelle, and Smart) have fluctuated between 122 and 129.5 feet above sea level. The normal range fluctuates much less between 126.1 and 128.2 feet (Figure 3-254). During 2024, the North Chain reached a dry season low of 127.8 feet in June and a wet season peak of 130.3 feet in October. The October peak was a record high for this chain of lakes; exceeding the previous record experienced during the triple hurricane season of 2004. The surface level ended the year above the high end of the normal range, at 128.5 feet. Changes in Lake Smart's surface level are directly correlated with water clarity and indirectly correlated with Chl-a and TN (see appendix). This carries management implications as maintaining higher levels should result in water quality improvements.

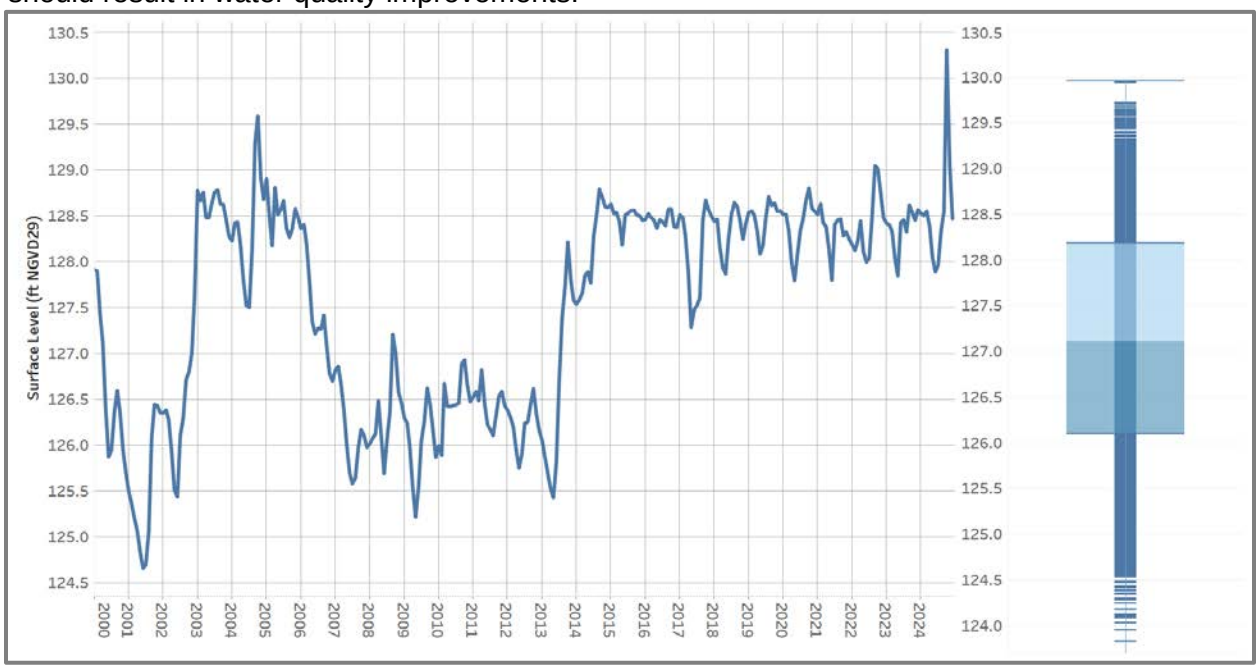


Figure 3-254. Hydrograph of Lake Smart depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Smart is categorized as a clear, alkaline waterbody. Due to numerous NNC exceedances during the assessment period, Lake Smart is considered impaired for Chl-a, TN, and TP (Figure 3-255). This equates to an impairment criterion score of 0. In 2024, an alternative restoration plan, submitted by Polk County, was accepted by the FDEP. This plan includes several projects aimed at improving water quality in the lake.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	-0.457	0.056	No Trend	0	2
TN	Y	-0.312	0.207	No Trend		2
TP	Y	-0.450	0.061	No Trend		2
Secchi	NA	0.303	0.222	No Trend		2

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. All four of these parameters exhibited non-significant improving trends during this period. The result is that each parameters receives a trend criterion score of 2. It should be noted that the 2024 concentrations of Chl-a and TP met the NNC impairment thresholds—indicating recently better water quality than in the past.

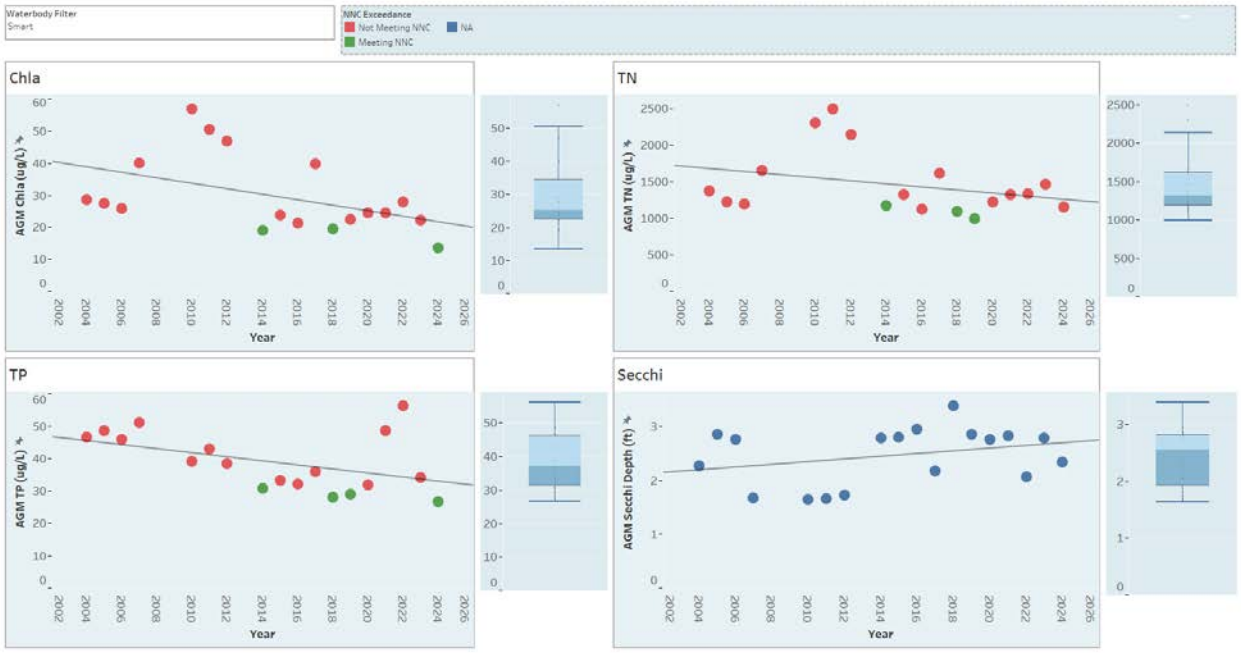


Figure 3-255. Lake Smart AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Smart on 3/15/2024. The PAC during this survey was 56.1% and the total BV was 7.7% (Figure 3-256). A PAC value above 30% equates to an abundance criterion score of 3. An increase in vegetation abundance provides more wildlife habitat and increased water quality improvement potential. This coverage value is the second highest on record.

Invasive Species Management:

Based on data from the 2024 survey, Lake Smart supports a healthy mix of vegetation types, with elgrass and cattail being the most dominant (Figure 3-257). The invasive hydrilla made up 6.7% of the community—resulting in an invasive presence criterion score of 1. Hydrilla has historically been the primary invasive concern for Lake Smart. Its population peaked at 12.9% in 2019 but has remained below 10% since. Management efforts have effectively kept it in a controlled state.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). According to the 2024 species data, all three of Lake Smart's diversity indices met or exceeded their respective median values (Figure 3-258). This equates to a diversity score of 3. This marks the second consecutive year where all diversity measures have been above-average in Lake Smart.

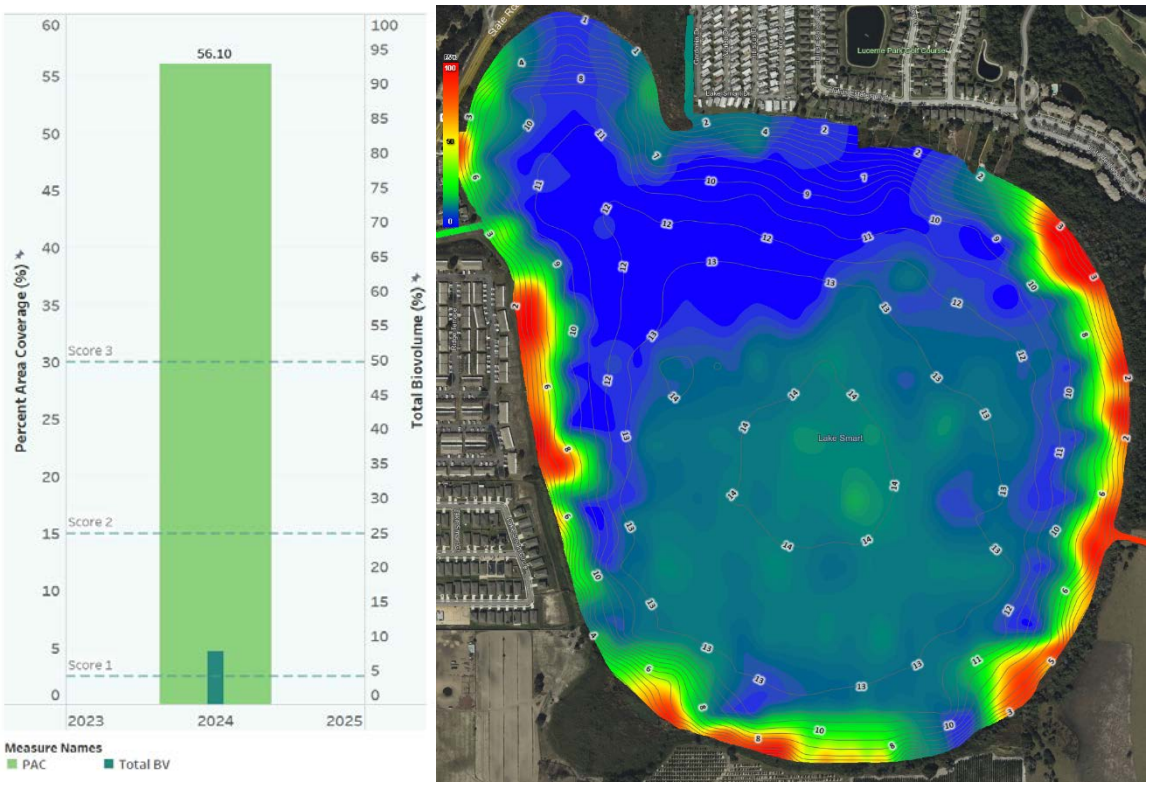


Figure 3-256. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Smart; biovolume values range from green (lowest) to red (highest).

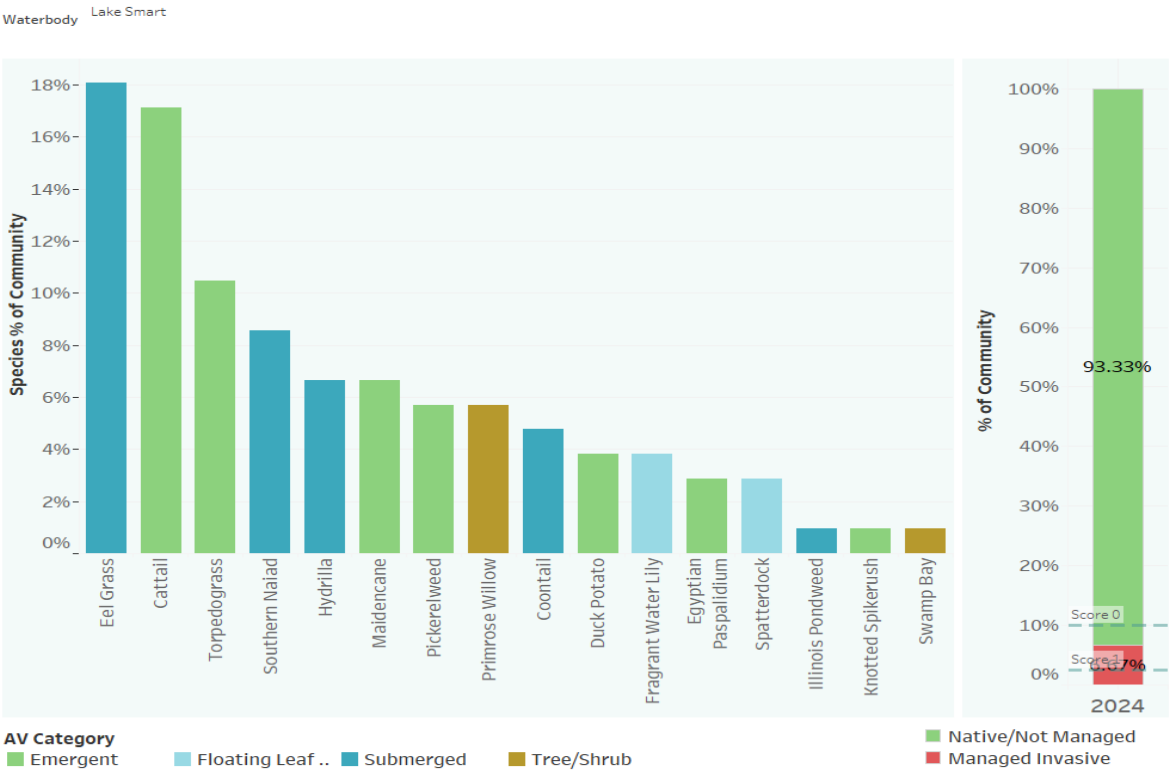


Figure 3-257. Chart depicting species frequency and invasive species percentage of Lake Smart during 2024.

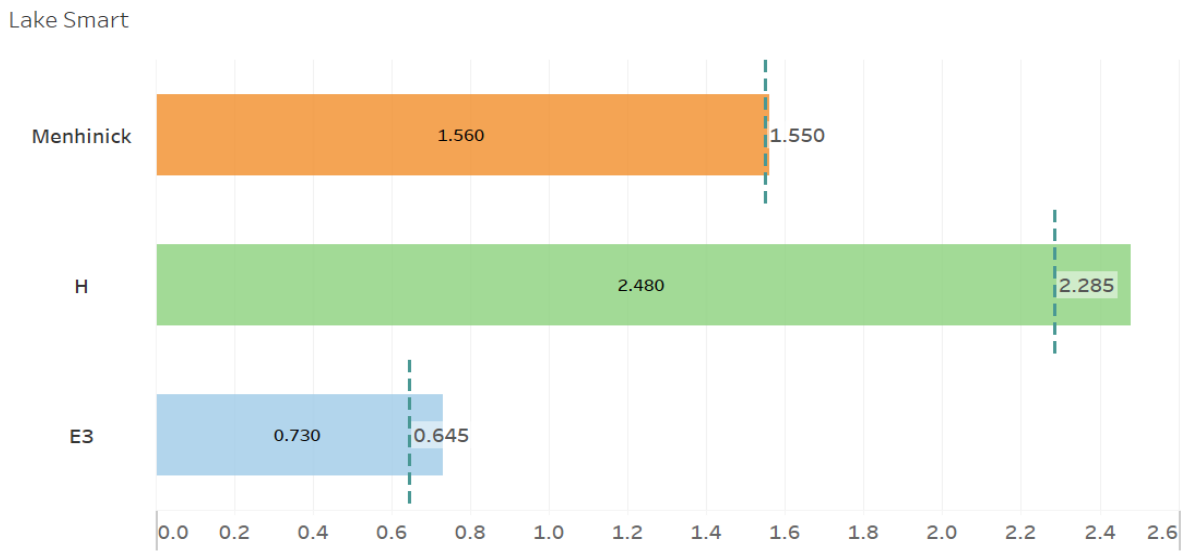


Figure 3-258. Chart depicting 2024 diversity indices for Lake Smart. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Smart's health index scores from 2018 to 2024 shows some improvement—with values ranging from 1.3 to 2.0 (Figure 3-259). The impairment criterion score has not shifted during this period. However, the trend scores have varied somewhat with both the TP and Clarity trends shifting from significant to non-significant improving. Lake Smart's initial vegetation abundance was low, but has since improved; as have its diversity scores. Invasive presence is the primary criterion exhibiting decline. Overall, Lake Smart ranks moderate-to-high on the ranking list. Management action is required to definitively improve water quality and control invasive plants.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	2	1	2	2	1	2	0	**1.3**
2019	0	2	2	3	2	3	0	1	**1.6**
2020	0	2	2	3	2	2	2	3	**2.0**
2021	0	2	2	2	3	2	1	2	**1.8**
2022	0	2	2	2	3	3	1	2	**1.9**
2023	0	2	2	2	2	2	1	3	**1.8**
2024	0	2	2	2	2	3	1	3	**1.9**

Figure 3-259. Chart depicting a comparison of Lake Smart's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- While stormwater loading may be a potential contributor to water quality impairment, much of Lake Smart's basin lacks direct stormwater inflows to the waterbody. The large presence of agriculture on the south side of the basin may be an area for runoff mitigation, but much of this land is currently being converted to residential land uses.
- The management of invasive species like hydrilla is a consistent concern. The hydrilla population, while low, can rapidly take over large areas of the lake without constant management.

- Several of Lake Smart's water quality parameters are correlated with surface level; likely due to increased flushing during wetter periods. This means that drought conditions could result in water quality declines.

Lake Management Strategy:

- Polk County submitted a pollutant reduction plan for Lake Smart in 2023 which was accepted by the FDEP in 2024. The plan involves sediment inactivation to help reduce phosphorus flux into the water column by the highly organic material in the lake bed.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large-scale herbicide treatments and potential water quality issues that follow.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.

Lake Spring

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Spring	3	3	2	2	2	3	0	3	**2.3**

Features & Statistics:

Surface area	25.2 acres
Mean depth	9.02 feet
Maximum depth	23 feet
Volume	306.9 acre-feet
Drainage basin area	120.2 acres
Annual TN Load	520.7 lbs
Annual TP Load	90.8 lbs
Limiting nutrient	Co-limited (N & P)

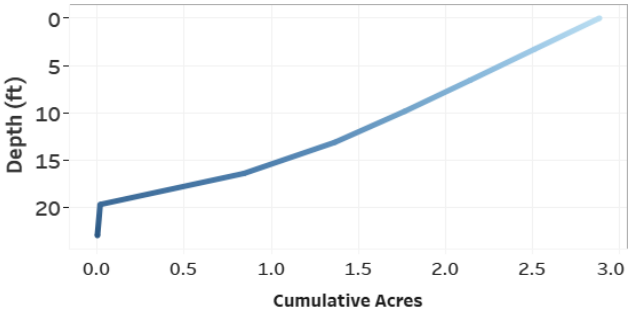


Figure 3-260. Hypsograph of Lake Spring depicting the depth profile and morphology of the lake bed.

Hydrology:

Lake Spring is the smallest lake on the South Chain at just 25 acres. While small, it is one of the South Chain's deeper lakes with an average depth of 9 feet and maximum depth of over 20 feet (Figure 3-260). Spring's morphology is indicative of a traditional sinkhole-formed lake. Despite its depth, Lake Spring's gradually sloping lake bed supports a wide littoral zone and robust vegetation community. Stormwater is conveyed to this waterbody from a 120 acre drainage basin, comprised of 7 individual sub-basins (Figure 3-261). The most dominant land use within this basin is commercial, followed by residential and institutional. Based on stormwater pollutant load modeling, this drainage area contributes 520 lbs of TN and 91 lbs of TP to the lake annually. These pollutant loads rank 6th highest (out of 37) on a per acre basis; mostly due to the high density of commercial land uses in the basin. To combat stormater loading, the City conducts 7.4 miles of street sweeping in this basin on a monthly basis.

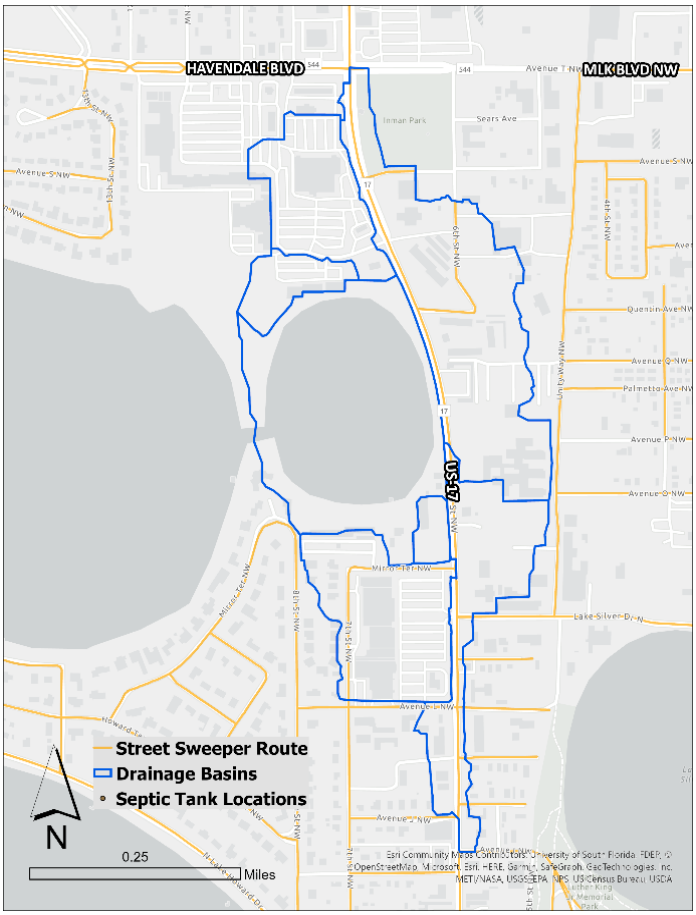


Figure 3-261. Map of Lake Spring's drainage basin and City street sweeper routes.

Lake Spring is located on the South Chain with a navigable connection to Lake Mirror to the west. Due to these canal connections, surface levels fluctuate consistently across the South Chain of Lakes. Throughout the period of record, the South Chain's surface level has fluctuated between 127.5 and 133.7 feet above sea level. The normal range is much narrower—between 129.7 and 131.4 feet (Figure 3-262). That said, wetter and drier periods often result in more extreme peaks and troughs, respectively. During 2024, the South Chain reached a dry season low of 130.8 ft in June and a wet season peak of 131.8 ft in September. The level of the South Chain by the end of the year was slightly above the top of the normal range at 131.5 ft. The South Chain's level remained at or above the high end of the normal range throughout most of the year—consistent with annual level fluctuations over the last 10 years. According to linear regression analysis, Lake Spring's surface level is not correlated with its water quality parameters (see appendix).

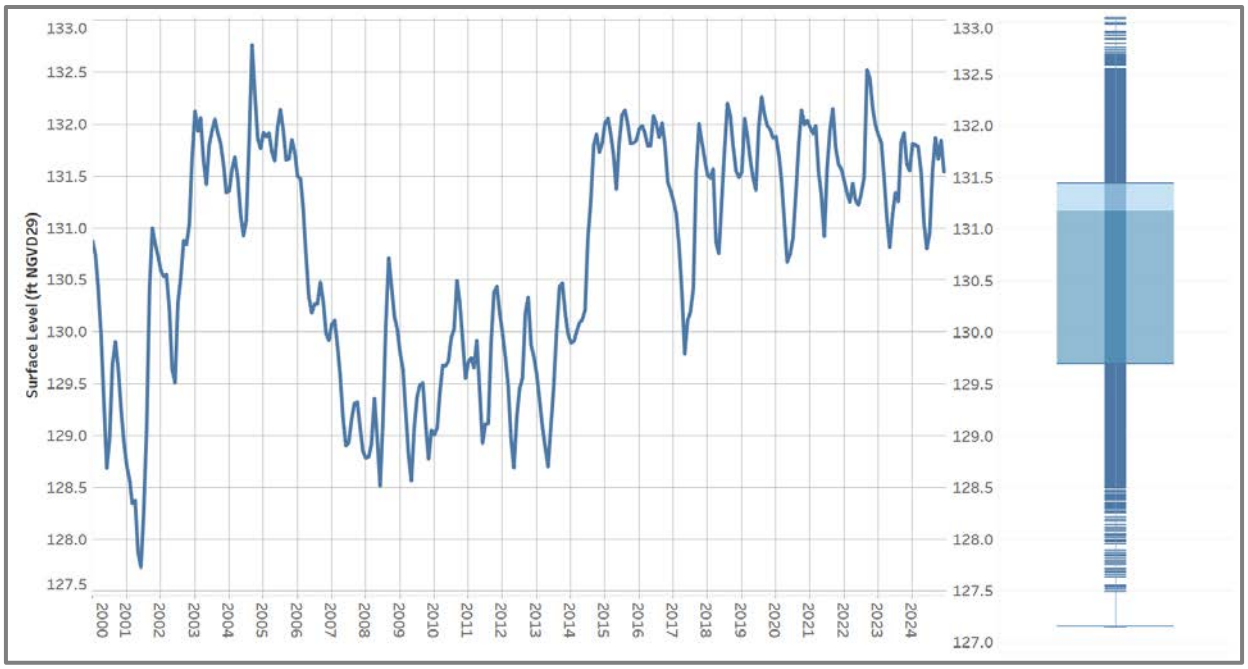


Figure 3-262. Hydrograph of Lake Spring depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Spring is categorized as a clear, alkaline waterbody. Despite an exceedance of Chl-a in 2015, Lake Spring has exhibited no other NNC exceedances during the assessment period (Figure 3-263). Due to this, Spring is considered un-impaired and earns an impairment criterion score of 3. It should be noted that the Chl-a, TN, and TP concentrations were higher than average during 2024; it is unclear what caused this recent spike in NNC parameters.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	-0.434	0.049	Decreasing	3	3
TN	Y	-0.380	0.089	No Trend		2
TP	Y	-0.151	0.513	No Trend		2
Secchi	NA	0.344	0.127	No Trend		2

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Chl-a exhibited a significant improving trend during this period; equating to a trend criteria score of 3. The trends for TN, TP, and Secchi depth, while in an improving direction, were not statistically significant; earning trend scores of 2. This is a recent shift from the previous year when all four parameters exhibited significantly improving trends—likely due to the elevated Chl-a, TN, and TP concentrations in 2024.

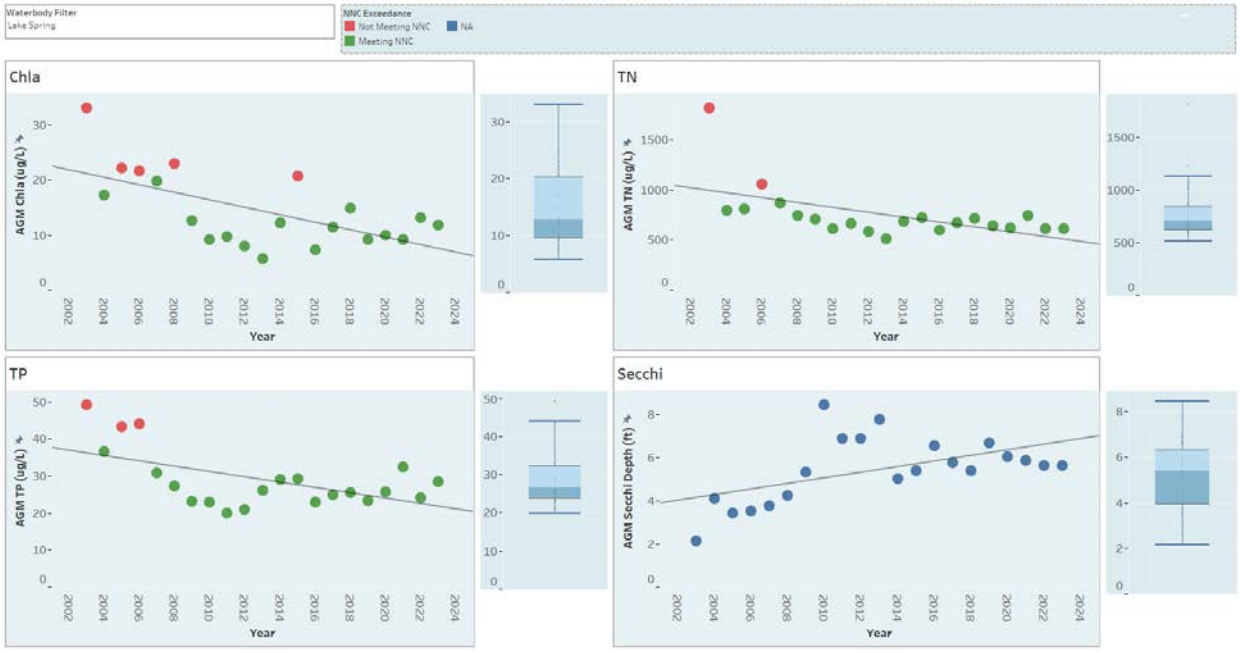


Figure 3-263. Lake Spring AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Spring on 1/25/2024. The PAC during this survey was 80.4% and the total BV was 12.5% (Figure 3-264). A PAC over the 30% threshold equates to a vegetation abundance criterion score of 3. Over the last six years, Lake Spring has maintained high vegetation abundance with coverage consistently above 50%. The PAC during 2024 was the highest on record and is surprising considering this increase occurred despite a reduction in invasive species abundance.

Invasive Species Management:

Based on data from the 2024 survey, Lake Spring possesses a mix of vegetation types. The submerged plant, eelgrass, was the most dominant at over 18% (Figure 3-264). Invasive species, represented by hydrilla and burhead sedge, made up 13.5% of the community. Despite this percentage equating to an invasive criterion score of 0, it was actually a substantial reduction in invasive presence from the previous year. Historically, hydrilla has been an issue in Lake Spring. Due to the small size of the lake, even a minor expansion in invasive abundance constitutes a large proportion of the lake's total area. For a species like hydrilla that can grow roughly a foot per day under the right conditions, it does not take long for it to exceed a managed state. Future management efforts may require more frequent vegetation monitoring in order to facilitate early detection and rapid invasive response.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). According to the 2024 species data, all three of Lake Spring's diversity indices exceeded their long-term median values, for a diversity criterion score of 3 (Figure 3-266). While species richness did not deviate from the previous year, the evenness and overall diversity indices experienced an increase. This is likely due to the reduction in hydrilla which led to a more even distribution of all plant species. Indeed, the next eight species with a community frequency below eelgrass' were in relatively equal proportions. This demonstrates how control of invasives can have a positive impact on the ecological community, making it more diverse and equitable.

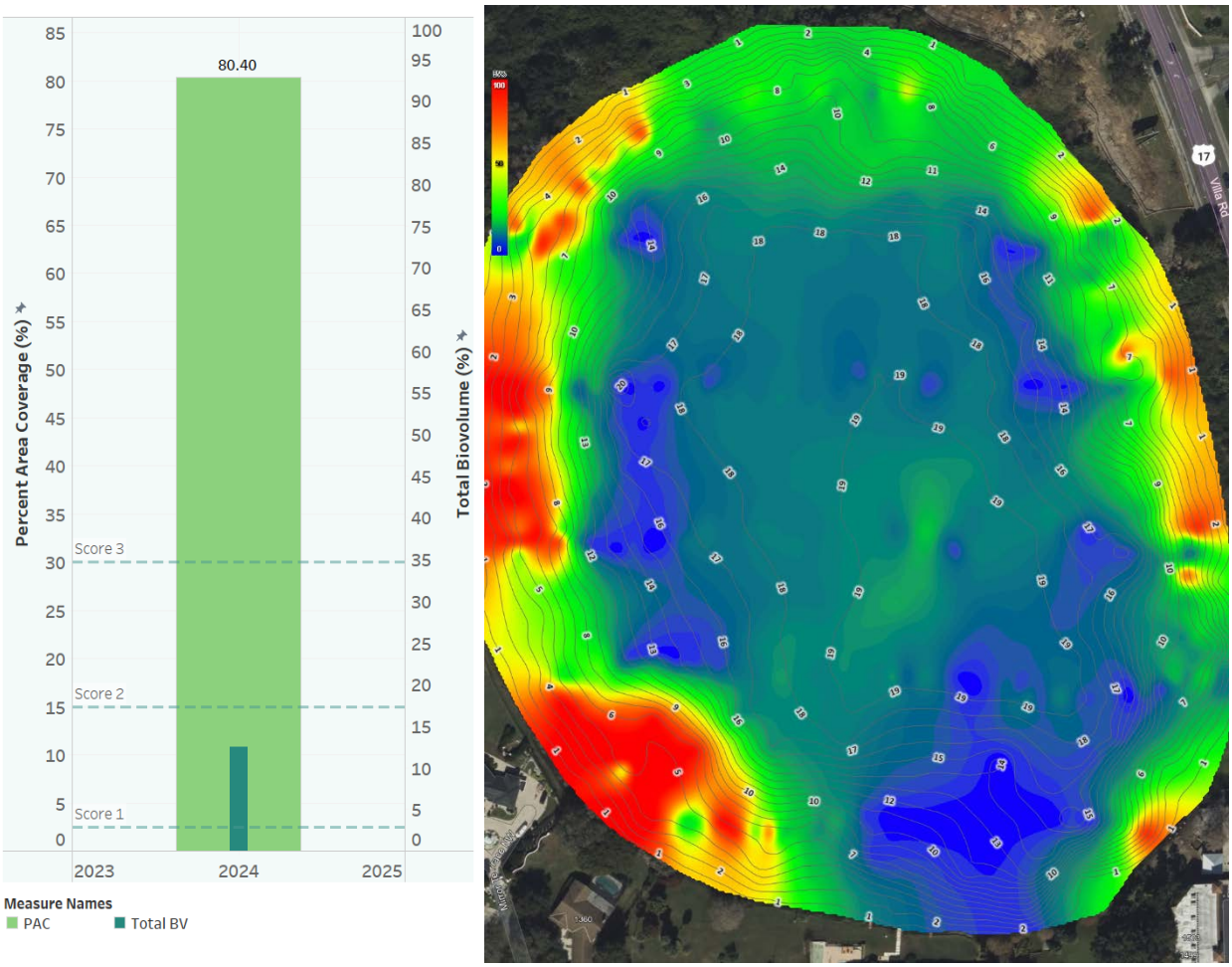


Figure 3-264. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Spring: biovolume values range from green (lowest) to red (highest).

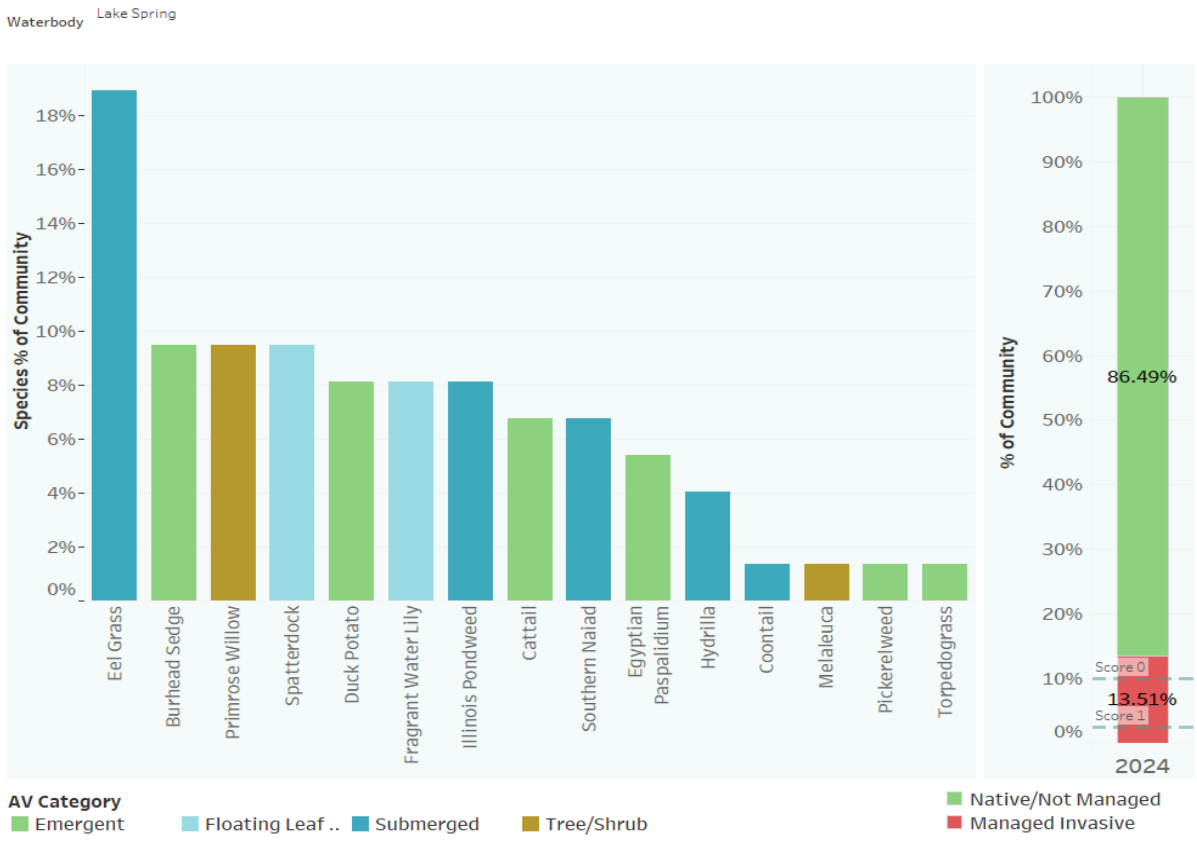


Figure 3-265. Chart depicting species frequency and invasive species percentage of Lake Spring during 2024.

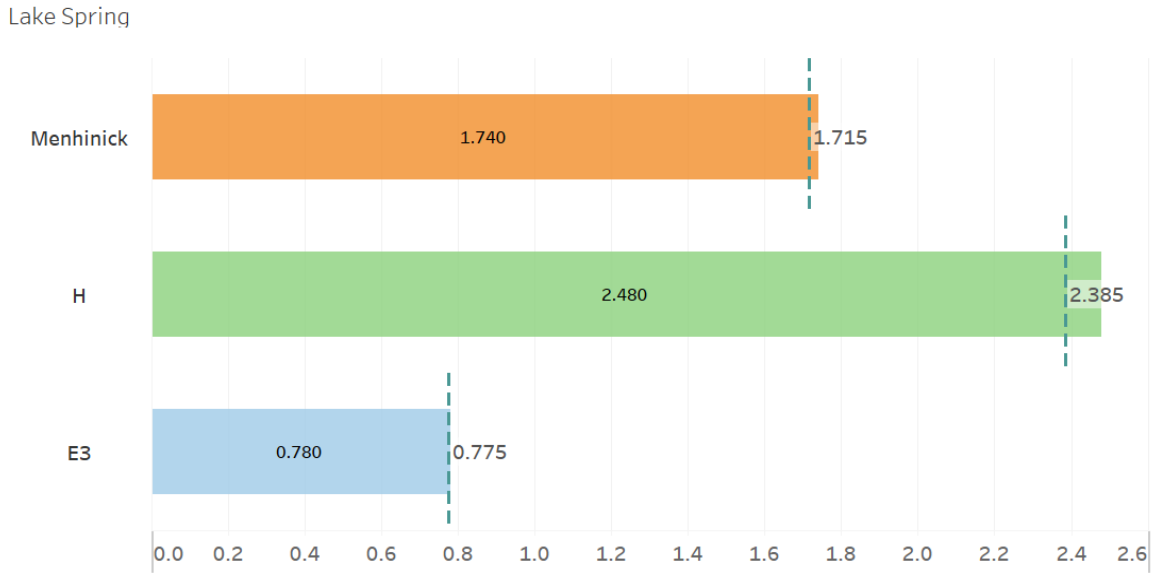


Figure 3-266. Chart depicting 2024 diversity indices for Lake Spring. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Spring's health index scores from 2018 to 2024 shows consistently good values ranging from 2.3 to 2.6 (Figure 3-267). During this span, there have been no changes in the impairment or vegetation abundance criteria scores. While the TN, TP, and Clarity trends underwent a downgrade due to a loss in significance, this does not necessarily indicate a decline in water quality—just that the water quality is stabilizing. The primary source of lake health change has been through the surge and subsequent treatment of invasive plants; which impacts species diversity in turn. Overall, Lake Spring ranks low on the priority list due to it exhibiting good water quality, generally good trends, and excellent vegetation abundance.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	3	3	3	3	3	3	0	1	**2.4**
2019	3	3	3	3	3	3	0	2	**2.5**
2020	3	3	3	3	3	3	0	2	**2.5**
2021	3	3	3	3	3	3	0	1	**2.4**
2022	3	3	3	3	3	3	1	2	**2.6**
2023	3	3	3	3	3	3	0	1	**2.4**
2024	3	3	2	2	2	3	0	3	**2.3**

Figure 3-267. Chart depicting a comparison of Lake Spring's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Lake Spring currently exhibits excellent water quality. However, stormwater pollutant loading is the leading vector for water quality issues if trends shift toward a deteriorating direction in the future.
- The management of invasive species is currently the primary management concern for Lake Spring. While hydrilla and burhead sedge abundance was lower in 2024, their proportions are still above the ideal range. These invasives can also quickly rebound and expand in the future; requiring additional management effort to control.

Lake Management Strategy:

- The City currently conducts over seven miles of street sweeping along the major roadways in the drainage basin to mitigate stormwater loading. Future stormwater management may aim to implement green infrastructure, if applicable locations can be identified.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best strategy to prevent large-scale herbicide treatments and potential water quality issues that follow.

Lake Summit

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Summit	3	3	2	1	3	3	2	1	**2.3**

Features & Statistics:

Surface area	67.4 acres
Mean depth	10.71 feet
Maximum depth	29 feet
Volume	900 acre-feet
Drainage basin area	166.5 acres
Annual TN Load	513.3 lbs
Annual TP Load	82.7 lbs
Limiting nutrient	Co-limited (N & P)

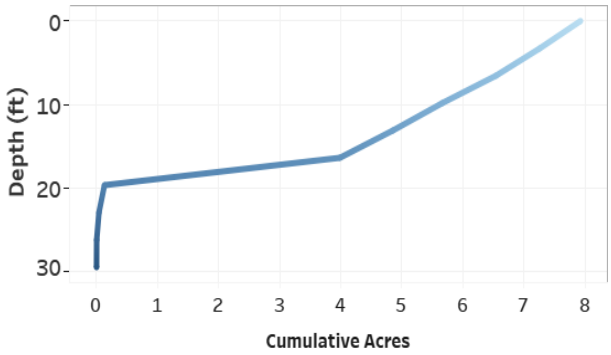


Figure 3-268. Hypsograph of Lake Summit depicting the depth profile and morphology of the lake bed.

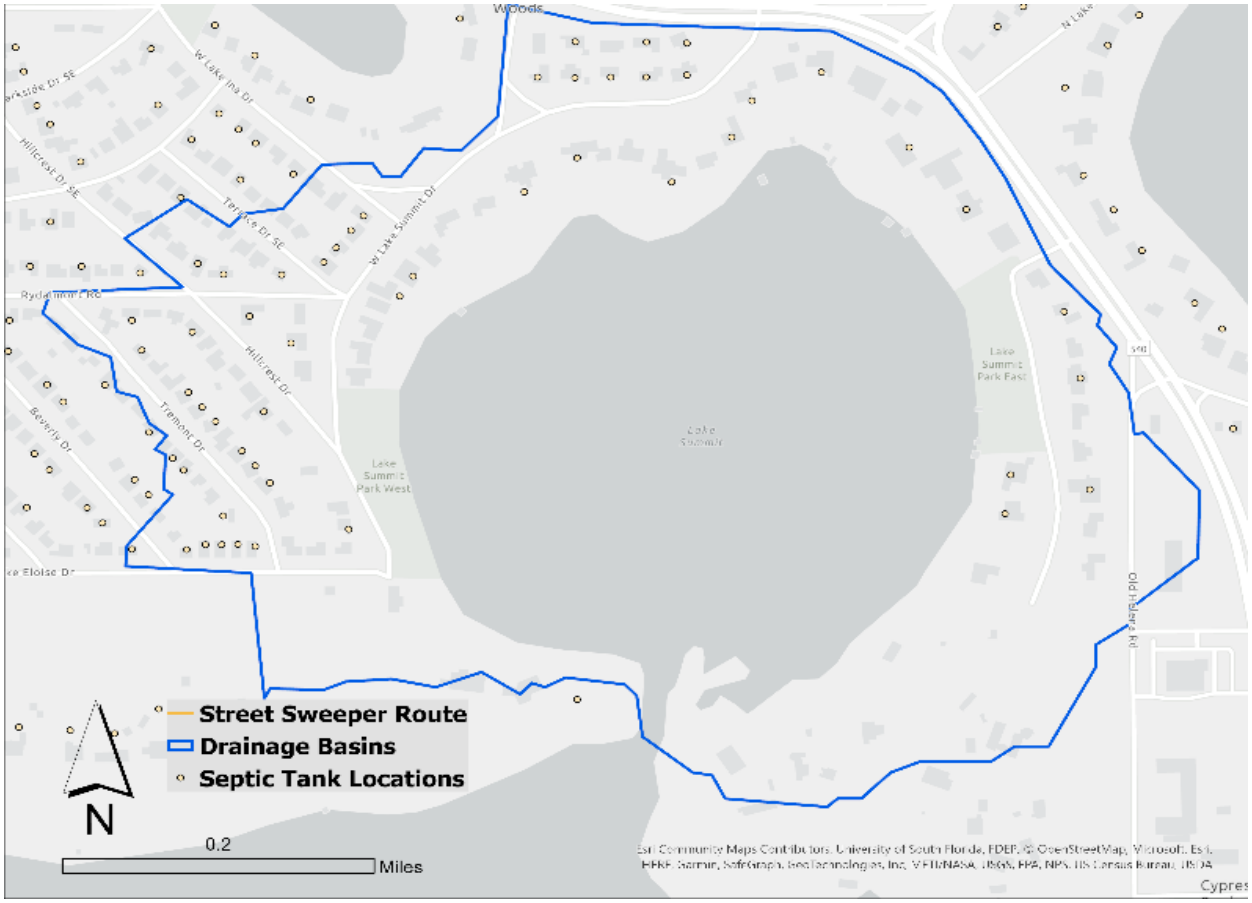


Figure 3-269. Map of Lake Summit's drainage basin and nearby septic systems.

Hydrology:

Lake Summit is a small, but deep waterbody at 67 acres, an average depth of 10.7 feet, and a maximum depth of almost 30 feet (Figure 3-268). Summit's average depth is almost two feet deeper than the regional mean. Coupled with the small size of the lake, the lake bed has a steeper slope. While this would normally significantly limit the littoral zone, Lake Summit has very high water clarity which allows its aquatic plants to grow in deeper water than many other lakes in the study area. Stormwater is conveyed to this waterbody from a 166 acre drainage basin (Figure 3-269). The basin is dominaeted by residential land uses, contributing 513 lbs of TN and 83 lbs of TP to the lake annually. On a per acre basis, these pollutant loading rates are fairly low compared with other drainage basins in the study area. There are 52 septic systems present in the basin. This constitutes a moderate density that may contribute some pollutant loading through groundwater leaching. Due to the drainage basin being mostly outside of Winter Haven limits, the City does not conduct any street sweeping that benefits this lake.

As part of the South Chain, Lake Summit is connected to Lake Eloise via navigable canal. Due to these canal connections, surface levels fluctuate consistently across the South Chain of Lakes. Throughout the period of record, the South Chain's surface level has fluctuated between 127.5 and 133.7 feet above sea level. The normal range is much narrower—between 129.7 and 131.4 feet (Figure 3-270). That said, wetter and drier periods often result in more extreme peaks and troughs, respectively. During 2024, the South Chain reached a dry season low of 130.8 ft in June and a wet season peak of 131.8 ft in September. The level of the South Chain by the end of the year was slightly above the top of the normal range at 131.5 ft. The South Chain's level remained at or above the high end of the normal range throughout most of the year—consistent with annual level fluctuations over the last 10 years. According to linear regression analysis, changes in Lake Summit's surface level are correlated with Chl-a, TN, and water clarity (see appendix). This carries management implications as maintaining higher levels should result in water quality improvements.

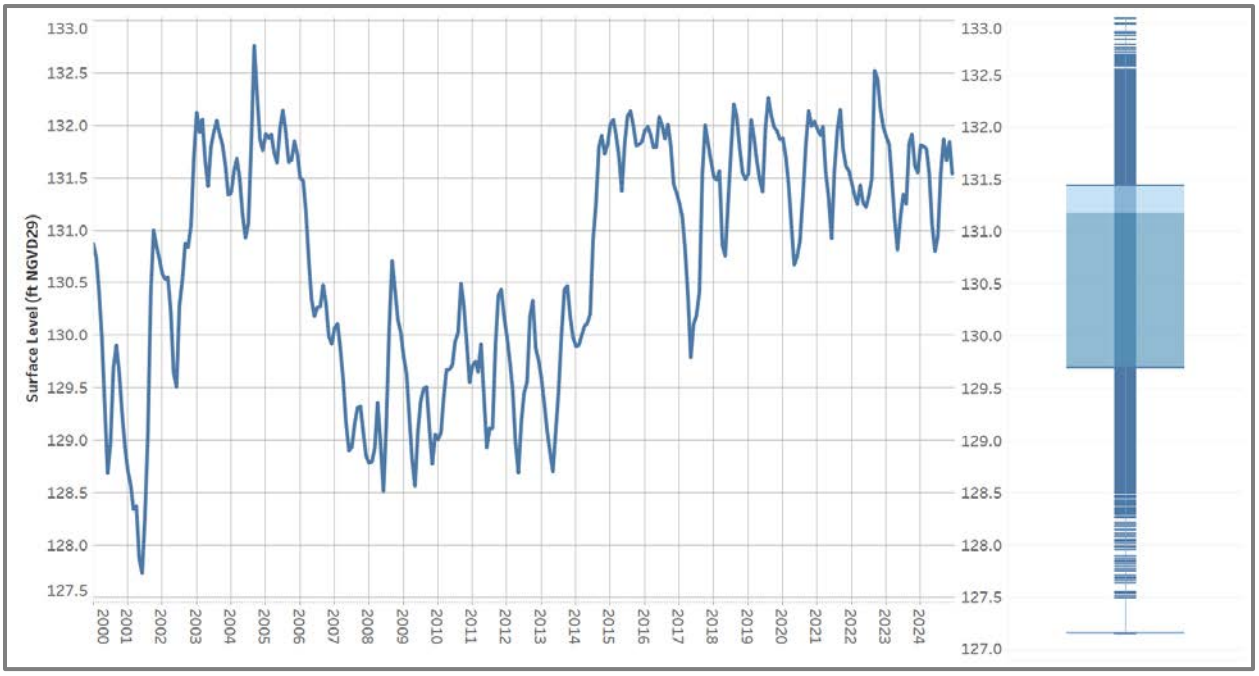


Figure 3-270. Hydrograph of Lake Summit depicting monthly surface level readings from 2000 to 2024. A box and whisker plot detail total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Summit is categorized as a clear, alkaline waterbody. Lake Summit has not exhibited any NNC exceedances during the assessment period (Figure 3-271). This equates to an impairment criterion score of 3. Lake Summit has consistently maintained excellent water quality throughout its period of record. It should be noted that the 2024 AGM TP concentration was the highest on record. This spike warrants some closer inspection to determine the cause.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	-0.817	0.000	Decreasing	3	3
TN	N	-0.512	0.018	No Trend		2
TP	N	0.051	0.827	No Trend		1
Secchi	NA	0.721	0.000	Increasing		3

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. During this period, Chl-a and Secchi depth exhibited significant improving trends; earning trend a criteria score of 3 for these parameters. TN exhibited non-significant improving trend and TP a non-significant deteriorating trend; for trend criterion scores of 2 and 1, respectively. The recent shifts in TN and TP trends aren't necessarily concerning; they just indicate that the previously improving water quality is beginning to stabilize.

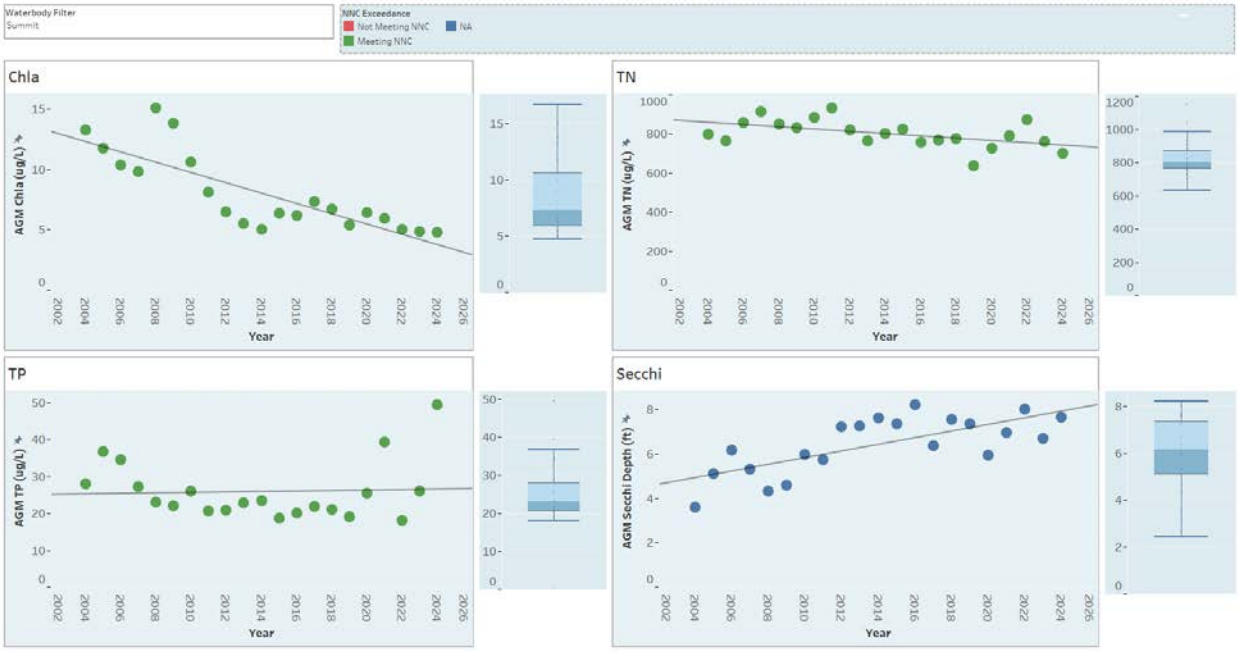


Figure 3-271. Lake Summit AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Summit on 3/7/2024. The PAC during this survey was 55.7% and the total BV was 9.6% (Figure 3-272). A PAC above the 30% threshold equates to a vegetation abundance criterion score of 3. Since 2018, Lake Summit has maintained

consistently high abundance, with coverage between 48% and 63%. The excellent water clarity is likely the main factor for this robust vegetation community and vice versa—creating a positive feedback loop of great water quality and biological abundance.

Invasive Species Management:

Based on the 2024 data, Lake Summit is dominated by submerged aquatic vegetation as evidenced by the top three species, making up over 50% of the community, are SAV varieties (Figure 3-273). Water hyacinth was the only invasive species detected in 2024. At only 1.1% of the community, this earns the lake an invasive species criterion score of 2. Hydrilla has historically been the primary invasive species requiring management in Lake Summit. Therefore, this reduction constitutes a significant improvement in the vegetation community.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). According to the 2024 species data, only Lake Summit's evenness index met or exceeded its median value (Figure 3-274). This equates to a diversity criterion score of 1. All three diversity indices underwent a decline from the previous year. The total number of unique species decreased from 15 to 12, and the distribution of these species was slightly less equitable in 2024. The invasive management efforts in 2023 and 2024 were the likely causes for these shifts in diversity.

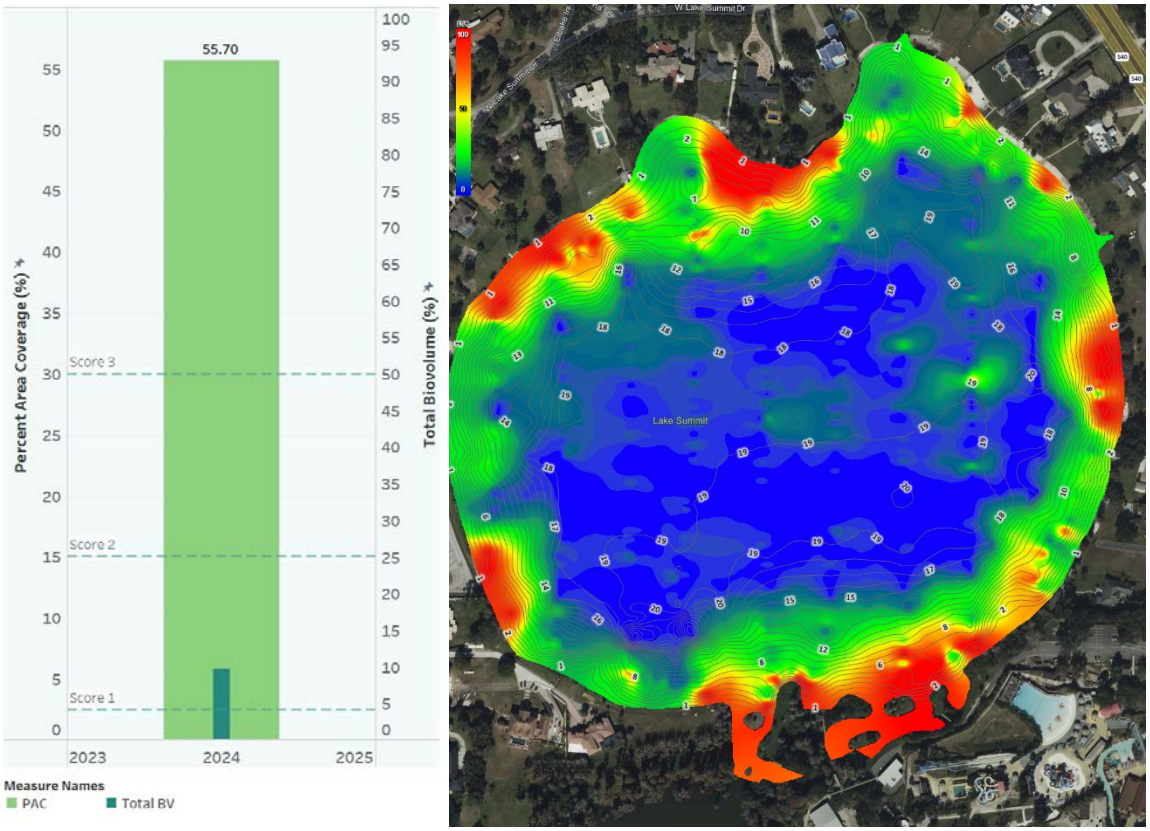


Figure 3-272. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Summit; biovolume values range from green (lowest) to red (highest).

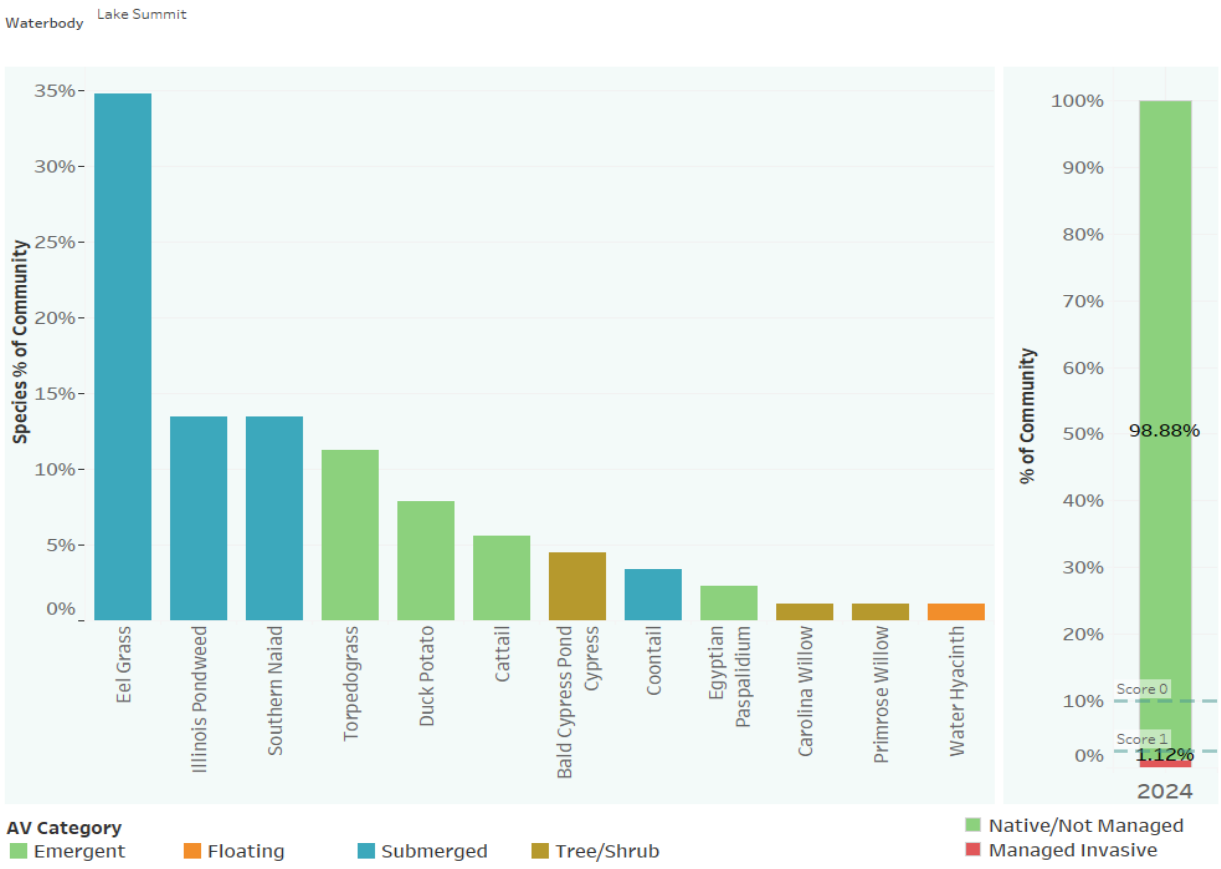


Figure 3-273. Chart depicting species frequency and invasive species percentage of Lake Summit during 2024.

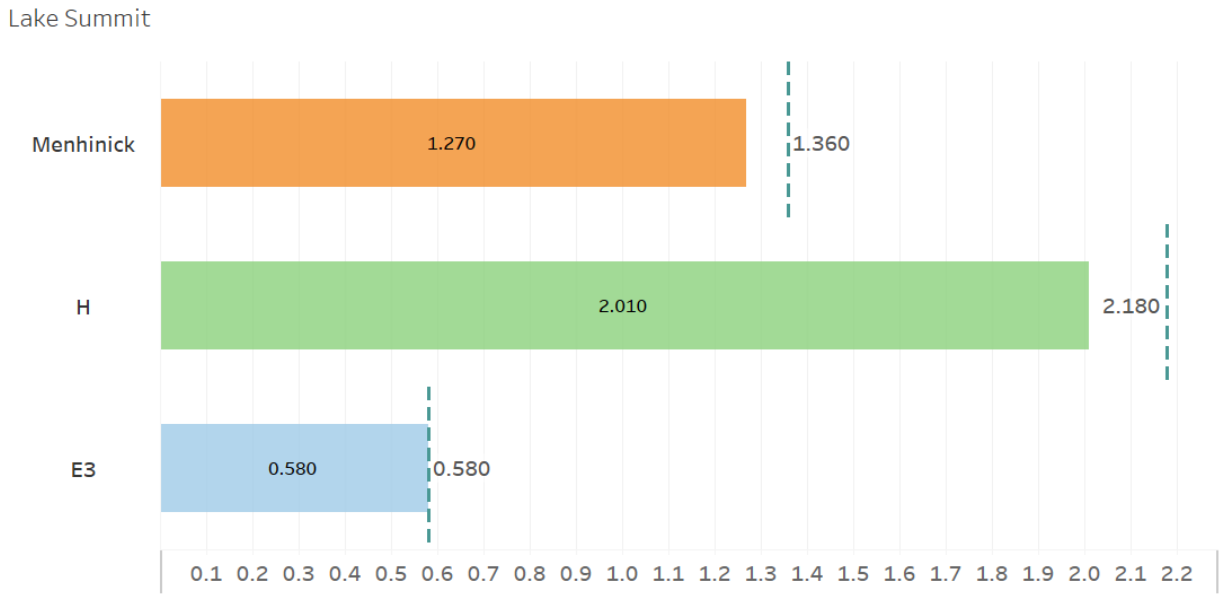


Figure 3-274. Chart depicting 2024 diversity indices for Lake Summit. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Summit's health index scores from 2018 to 2024 shows consistently good values ranging from 2.3 to 2.6 (Figure 3-275). The impairment and vegetation abundance criteria have been consistently good. There have been some recent declining shifts in the trend scores, but the majority of lake health fluctuation has been due to invasive species presence and diversity criterion scores. These criteria likely change in response to natural factors as well as invasive species treatment efforts. Overall, Lake Summit ranks low on the City's management priority list due to its excellent water quality and improving trends.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	3	3	3	3	3	3	1	1	**2.5**
2019	3	3	3	2	3	3	1	2	**2.5**
2020	3	3	3	2	3	3	1	1	**2.4**
2021	3	3	3	2	3	3	1	1	**2.4**
2022	3	3	3	2	3	3	1	3	**2.6**
2023	3	3	2	2	3	3	1	3	**2.5**
2024	3	3	2	1	3	3	2	1	**2.3**

Figure 3-275. Chart depicting a comparison of Lake Summit's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Lake Summit currently exhibits excellent water quality. However, stormwater and septic system pollutant sources remain a potential concern if trends ever begin to deteriorate.
- The management of invasive species like hydrilla is a consistent concern. It can only take a single growing season for even a small population to take over large areas of a waterbody.
- Several of Lake Summit's water quality parameters are correlated with surface level, likely due to increased flushing during wetter periods. This means that drought conditions could result in water quality declines.

Lake Management Strategy:

- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best strategy to prevent large-scale herbicide treatments and potential water quality issues that follow.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.

Lake Winterset

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Lake Winterset	3	3	3	3	3	3	1	2	**2.6**

Features & Statistics:

Surface area	555.5 acres
Mean depth	14.26 feet
Maximum depth	32 feet
Volume	10,133.6 acre-feet
Drainage basin area	1074.5 acres
Annual TN Load	2258.8 lbs
Annual TP Load	407.59 lbs
Limiting nutrient	Phosphorus

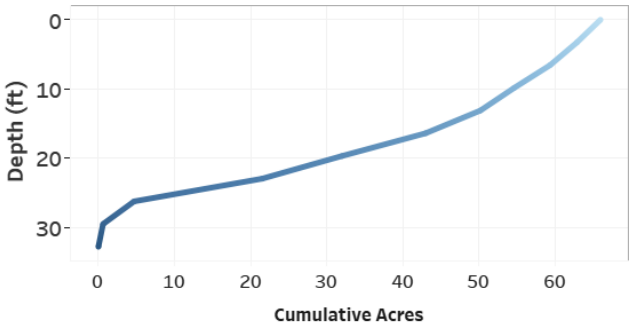


Figure 3-276. Hypsograph of Lake Winterset depicting the depth profile and morphology of the lake bed.

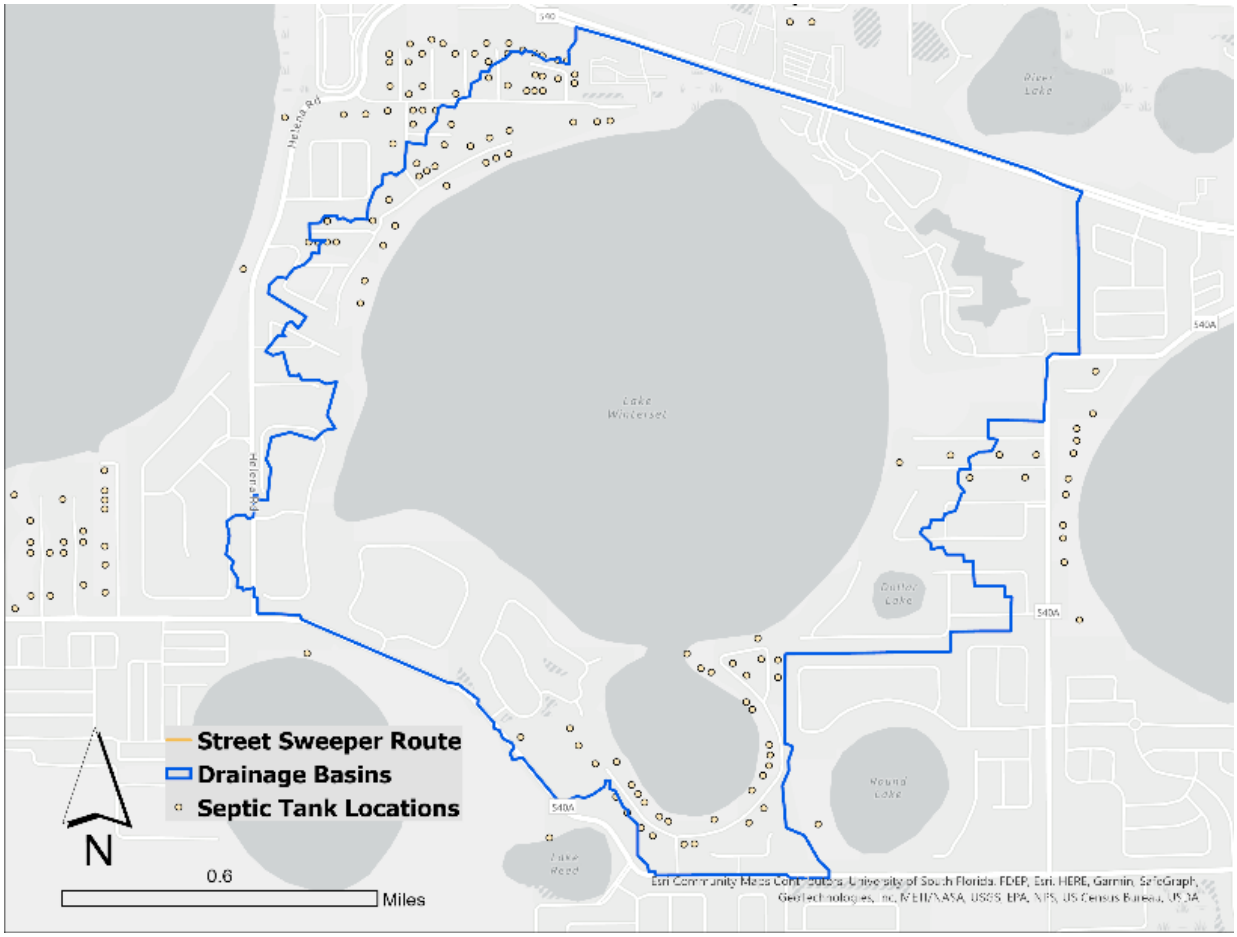


Figure 3-277. Map of Lake Winterset's drainage basin and nearby septic systems.

Hydrology:

Lake Winterset is one of the largest lakes on the South Chain at 555 acres. It is also one of the deepest lakes in the study area, with an average depth of over 14 feet, and a maximum depth of 32 feet (Figure 3-276). Similar to Lake Summit, Winterset has a steeper sloping lake bed which would normally severely limit its littoral zone. However, like Summit, Lake Winterset's water clarity is high enough to allow aquatic vegetation to grow in deeper water. Stormwater is conveyed to this waterbody from a 1,074 acre drainage basin. The primary land uses in this basin are residential, commercial, wetlands, and agricultural. Based on stormwater pollutant load modelling, this drainage area contributes 2,259 lbs of TN and 408 lbs of TP to the lake annually. Since the relative size of the drainage basin is small, the per acre pollutant loading rates are actually some of the lowest in the study area. There are 71 septic systems located within the basin. These constitute a moderate density with pollutant load potential via groundwater leaching. Located mostly outside Winter Haven limits, the City does not conduct any street sweeping services within Lake Winterset's drainage basin.

Lake Winterset is at the very southern end of the South Chain with a navigable connection to Lake Eloise. Due to these canal connections, surface levels fluctuate consistently across the South Chain of Lakes. Throughout the period of record, the South Chain's surface level has fluctuated between 127.5 and 133.7 feet above sea level. The normal range is much narrower—between 129.7 and 131.4 feet (Figure 3-278). That said, wetter and drier periods often result in more extreme peaks and troughs, respectively. During 2024, the South Chain reached a dry season low of 130.8 ft in June and a wet season peak of 131.8 ft in September. The level of the South Chain by the end of the year was slightly above the top of the normal range at 131.5 ft. The South Chain's level remained at or above the high end of the normal range throughout most of the year—consistent with annual level fluctuations over the last 10 years. According to linear

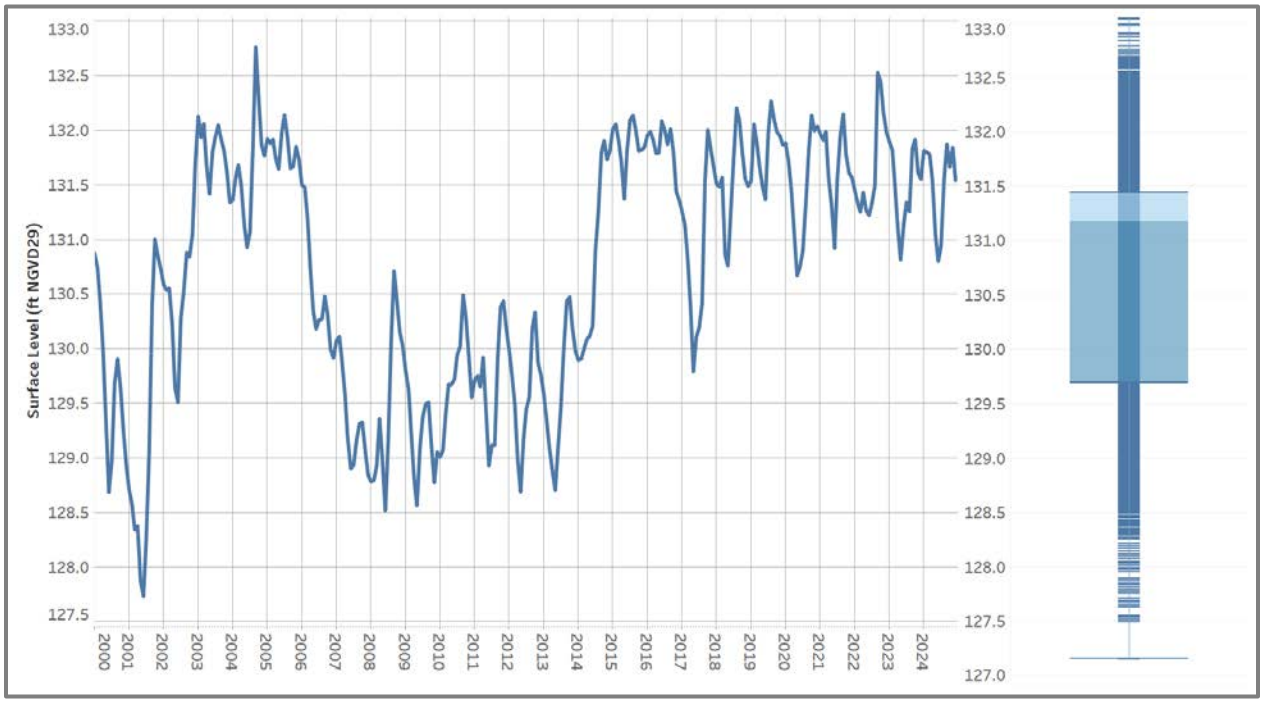


Figure 3-278. Hydrograph of Lake Winterset depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

regression analysis, changes in Lake Winterset's surface level are correlated with TN concentrations—likely due to slight increases in flushing during rainy periods (see appendix).

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Lake Winterset is categorized as a clear, alkaline waterbody. Due to the presence of no NNC exceedances of Chl-a, TN, or TP during the assessment period, Lake Winterset is considered un-impaired (Figure 3-279).

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	N	-0.815	0.000	Decreasing	3	3
TN	N	-0.778	0.000	Decreasing		3
TP	N	-0.686	0.001	Decreasing		3
Secchi	NA	0.767	0.000	Increasing		3

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. During this period, all four of these parameters exhibited statistically significant improving trends. This equates to trend criteria scores of 3 for each of these. Lake Winterset likely has the best water quality in Winter Haven and will continue to be as long as the trends consistently maintain these improving directions.

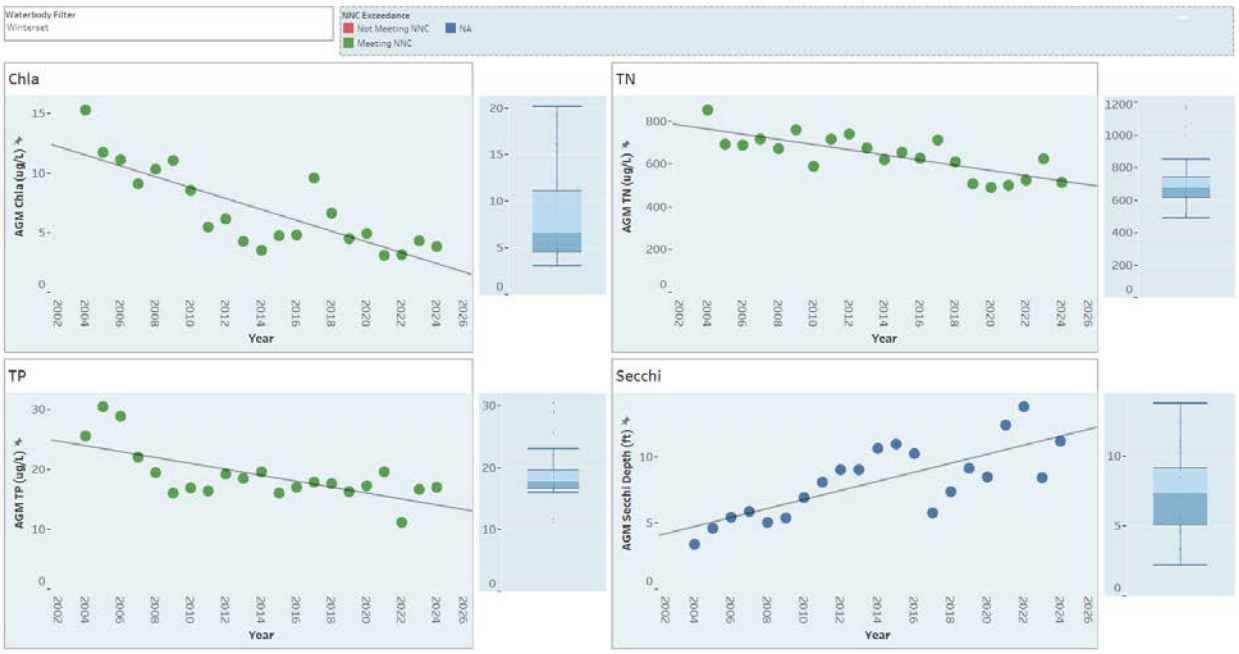


Figure 3-279. Lake Winterset AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Lake Winterset on 3/19/2024. The PAC during this survey was 42.3% and the total BV was 4.3% (Figure 3-280). A PAC value over the 30% threshold equates to a vegetation abundance criterion score of 3. Since 2018, Lake Winterset's vegetation coverage percentage has remained high. This robust vegetation community is likey

the result of and a contributor to Winterset's excellent water clarity and improving water quality trends.

Invasive Species Management:

Based on data from the 2024 survey, Lake Winterset is dominated by submerged species. Eelgrass and southern naiad made up over 30% of the vegetation community (Figure 3-281). Invasives like hydrilla and burhead sedge constituted 6.4% of the population. This equates to an invasive percentage score of 1. This invasive percentage was a slight decrease from the previous year and continues a trend of invasive population reduction since 2022. Continued monitoring and management efforts will be required to bring these invasive percentages down below a 2.5% threshold constituting a maintained status.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity. According to the 2024 species data, Lake Winterset's species richness and overall diversity indices exceeded their long-term median values (Figure 3-282). This equates to a diversity criterion score of 2. Both species richness and overall diversity increased in 2024. While the species evenness decreased slightly in 2024, this change was likely due to natural shifts in the vegetation community.

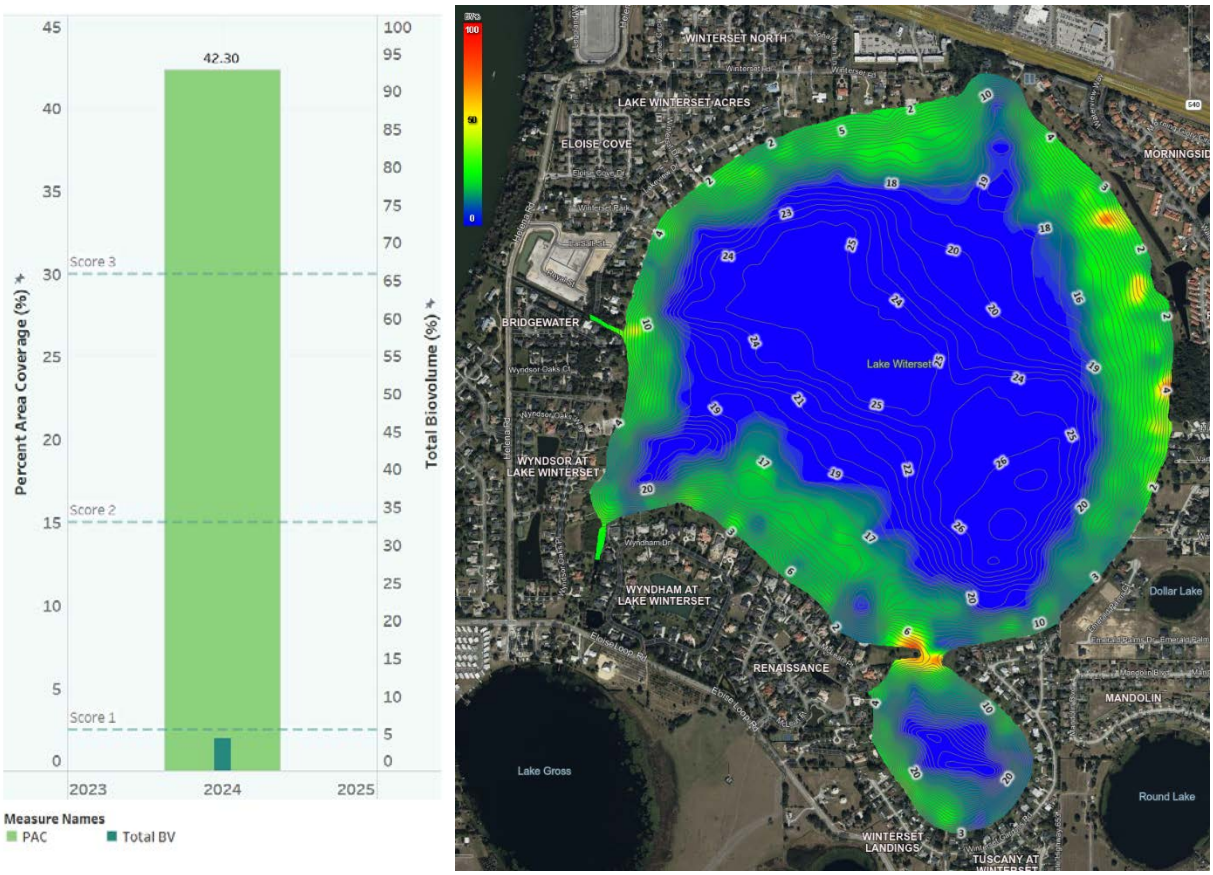


Figure 3-280. Graph depicting 2024 PAC/BV and biovolume heatmap of Lake Winterset; biovolume values range from green (lowest) to red (highest).

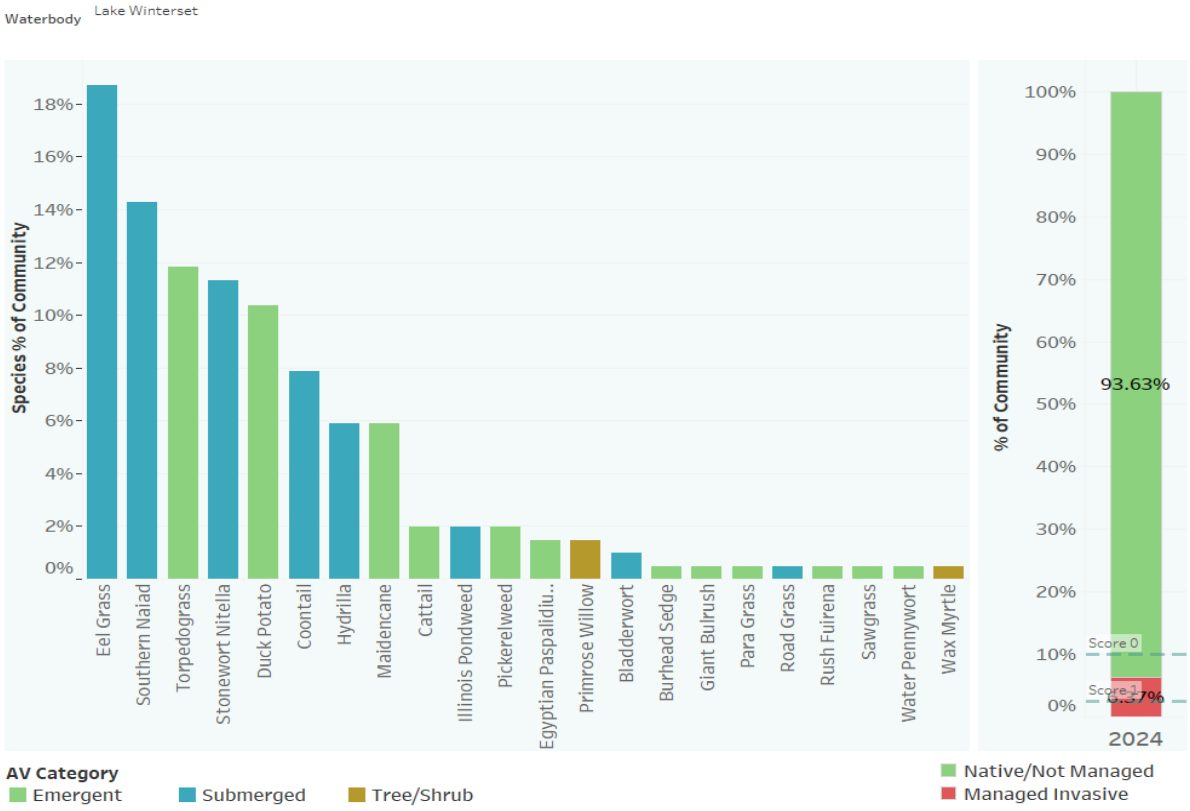


Figure 3-281. Chart depicting species frequency and invasive species presence of Lake Winterset during 2024.

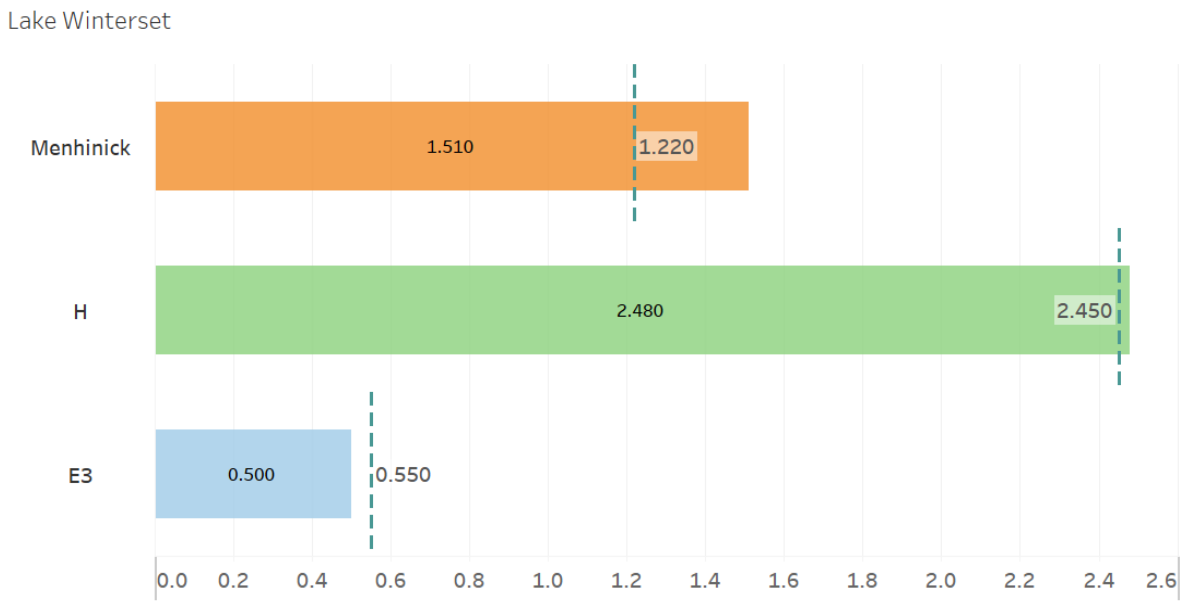


Figure 3-282. Chart depicting 2024 diversity indices for Lake Winterset. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Lake Winterset's health index scores from 2018 to 2024 shows consistently high values ranging from 2.4 to 2.8 (Figure 3-283). The primary changes in score have been the result of invasive species presence and diversity criteria fluctuations. Management efforts to control invasive species, while necessary, likely impact species diversity in some way. Overall, Lake Winterset ranks low on the City's management priority list due to its excellent water quality and improving trends.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	3	3	3	3	3	2	1	1	**2.4**
2019	3	3	3	3	3	3	1	3	**2.8**
2020	3	3	3	3	3	3	1	3	**2.8**
2021	3	3	3	3	3	3	0	3	**2.6**
2022	3	3	3	3	3	3	0	1	**2.4**
2023	3	3	3	3	3	3	1	2	**2.6**
2024	3	3	3	3	3	3	1	2	**2.6**

Figure 3-283. Chart depicting a comparison of Lake Winterset's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Lake Winterset currently exhibits excellent water quality. However, stormwater and septic system loading are potential concerns if trends ever shift toward deterioration.
- The management of invasive species like hydrilla is a consistent concern. Based on the species data, the hydrilla population appears to be expanding in Lake Winterset. This may prompt the FWC to conduct more impactful treatment efforts in order to control it; which may result in some temporary declines in water quality.

Lake Management Strategy:

- If water quality becomes a future issue, City staff may explore source analysis to determine if septic leachate is a potential contributor of nutrient pollutant loading. Further management may involve septic-to-sewer conversions.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Bringing the hydrilla population down to a managed state should reduce the future need for large scale herbicide treatments and the potential water quality issues that follow.
- With the majority of the drainage basin comprised of residential housing, future management of stormwater may consist of public education and outreach. This aims to increase residents' knowledge of best stormwater practices and ways they can individually reduce their nutrient load.

Little Lake Hamilton

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Little Lake Hamilton	0	2	1	2	1	3	3	1	**1.6**

Features & Statistics:

Surface area	359.6 acres
Mean depth	8.46 feet
Maximum depth	22 feet
Volume	3095.7 acre-feet
Drainage basin area	1015.9 acres
Annual TN Load	1472.7 lbs
Annual TP Load	198 lbs
Limiting nutrient	Phosphorus

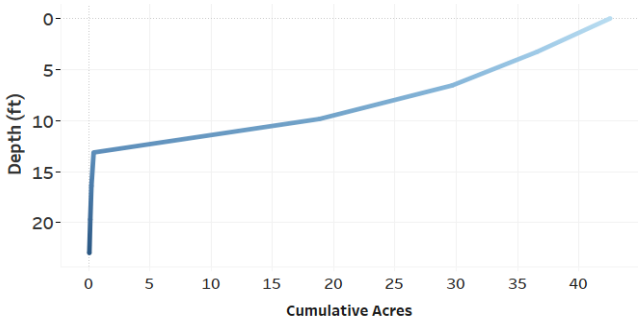


Figure 3-284. Hypsograph of Little Lake Hamilton depicting the depth profile and morphology of the lake bed.

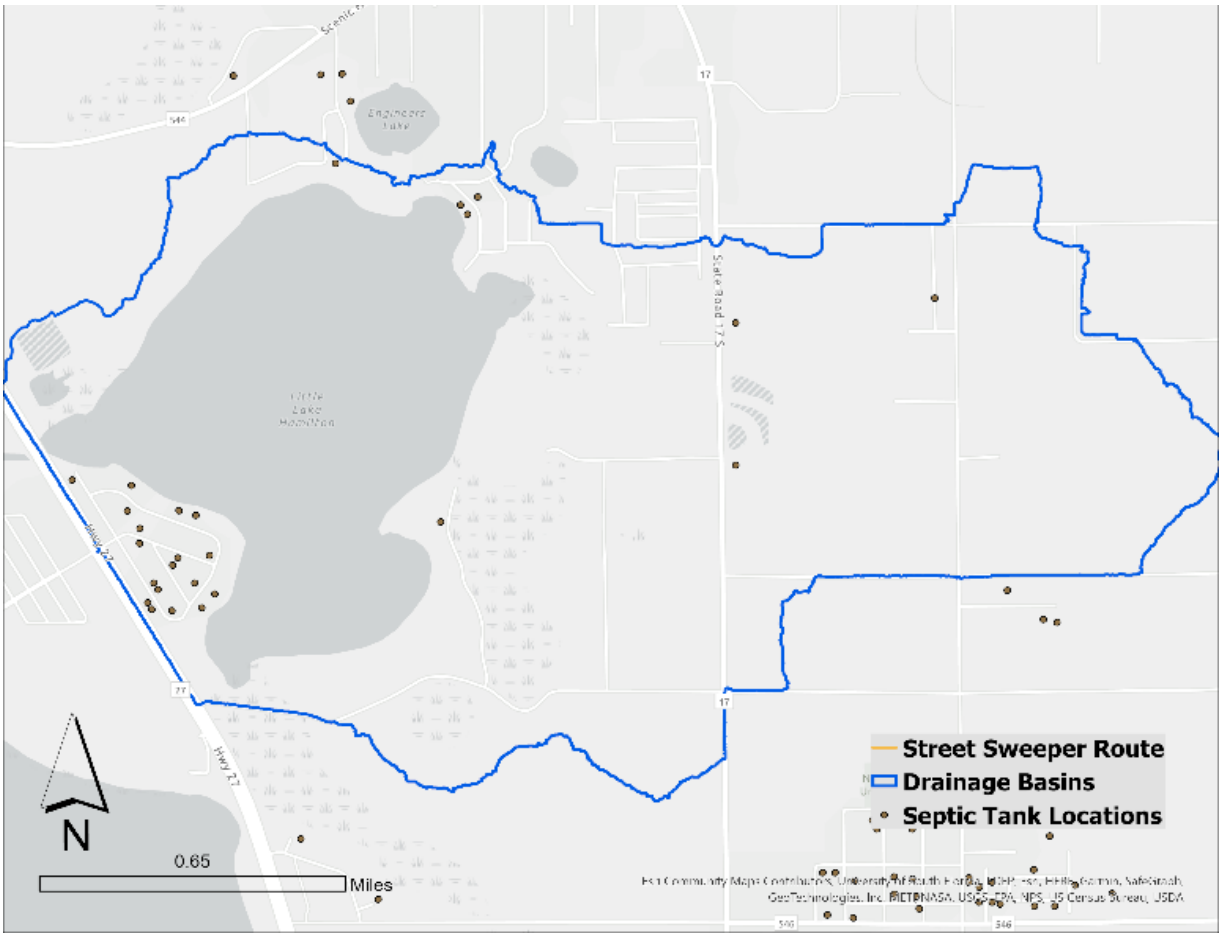


Figure 3-285. Map of Little Lake Hamilton's drainage basin and nearby septic systems.

Hydrology:

A moderately sized waterbody, Little Lake Hamilton has a surface area of 351 acres, an average depth of 8.5 feet, and a maximum depth of over 20 feet in a few deeper areas (Figure 3-284). With an average surface area and depth, Little Hamilton is able to support a moderate littoral zone and aquatic plant community. Stormwater is conveyed to this waterbody from a 1,016 acre drainage basin made up of agricultural, residential, and wetland land uses (Figure 3-285). Based on stormwater pollutant load modelling, this drainage area contributes 1,472 lbs of TN and 198 lbs of TP to the lake annually—some of the lowest pollutant loading rates in the region by area. There are 26 septic systems present in the basin—constituting a low density. Since Little Hamilton is completely outside Winter Haven limits, the City does not conduct any street sweeping services in the basin.

Little Lake Hamilton is part of the North Chain with navigable connections to Lake Hamilton and Middle Lake Hamilton via canals. The North Chain discharges to the Peace Creek via the P-8 water control structure on the south side of Lake Hamilton. The three Hamilton lakes' surface levels all sit at the lowest elevation of all the waterbodies in the study area. Over its period of record, the Hamilton surface level has fluctuated between 117.5 and 123.6 feet above sea level. The normal range of fluctuation is between 119 and 121 feet (Figure 3-286). In 2017, the SWFWMD enacted new water level management protocols with the intent to restore seasonal level fluctuations within the lake's normal range. This is accomplished by releasing water downstream during the rainy season and storing water during the dry season. During 2024, these lakes reached a low of 120.26 feet in July and a wet season peak of 121.86 feet in October. The peak actually marks the highest the lake has reached since the record-breaking rainfall received during the hurricane season of 2004. According to linear regression analysis, changes in Little Hamilton's surface level are strongly correlated with Chl-a, TN, TP, and water clarity (see appendix). This carries management implications as maintaining higher levels should result in water quality improvements.

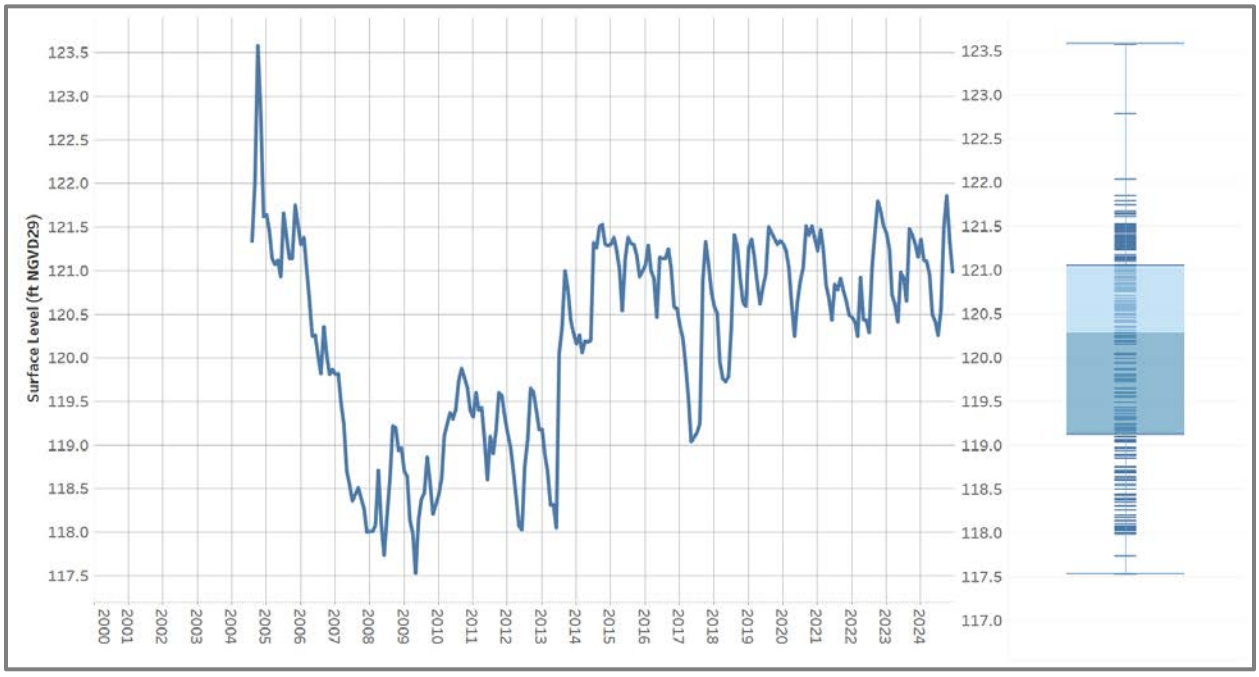


Figure 3-286. Hydrograph of Little Lake Hamilton depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Little Lake Hamilton is categorized as a clear, alkaline waterbody. Since impairment can be determined by more than one exceedance in any three year span during the assessment period, Little Hamilton is considered impaired for Chl-a, TN, and TP based on exceedances in the last two years (Figure 3-287). This equates to an impairment criterion score of 0. In 2021, the FDEP adopted a Polk County proposed pollutant reduction plan for the Lake Hamilton Chain. This plan stipulates that existing or planned pollutant reduction strategies have been accepted in lieu of a total maximum daily load.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	-0.058	0.808	No Trend	0	2
TN	Y	0.112	0.640	No Trend		1
TP	Y	-0.410	0.072	No Trend		2
Secchi	NA	-0.333	0.151	No Trend		1

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. During this period, Chl-a and TP depth exhibited non-significant improving trends while TN and Secchi depth exhibited non-significant deteriorating trends; equating to trend criterion scores of 2 and 1, respectively. The trend direction for Chl-a actually shifted from deteriorating to improving from 2023 to 2024—a positive change. That said, with the water quality being impaired, the ideal situation would be to have all significant improving trends to reverse these impairments.

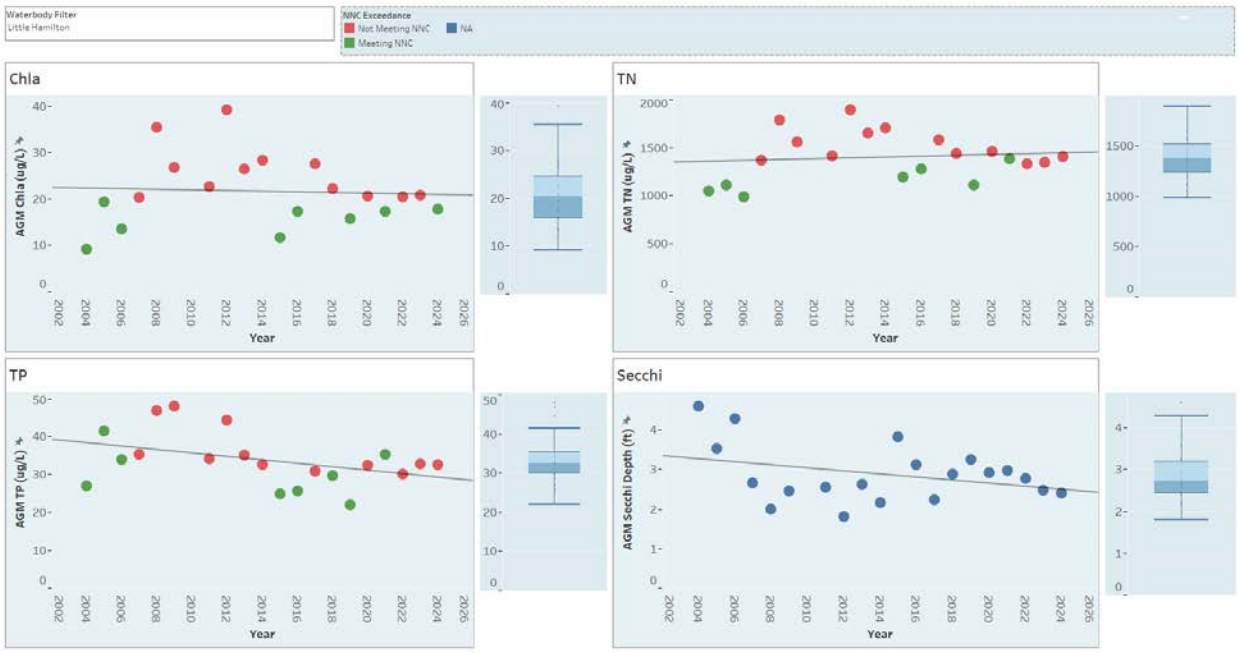


Figure 3-287. Little Lake Hamilton AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Little Lake Hamilton on 10/13/2024. The PAC during this survey was 35% and the total BV was 4%; a significant increase in abundance from the previous year (Figure 3-288). A PAC above 30% equates to an abundance criterion score of 3. Since 2018, Little Hamilton has exhibited moderate vegetation abundance with values less than 20%. However, the increase in 2024 demonstrates some improvement in the vegetation community.

Invasive Species Management:

Based on the 2024 survey data, Little Lake Hamilton is dominated by emergent and floating-leaf plants. Cattail, spatterdock, and fragrant water lily made up nearly 50% of the community (Figure 3-289). Fortunately, there were no managed invasive species detected during the last three annual surveys. This absence equates to an invasive criterion score of 3. In previous years, hydrilla, burhead sedge, and elodea were invasives to be managed. This continued lack of invasive plants indicates successful management of exotics and a relatively healthy aquatic plant community.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). According to the 2024 species data, only Little Hamilton's evenness index met or exceeded its long-term median value (Figure 3-290). This equates to a diversity criterion score of 1. The total number of unique species dropped from 20 to 16 in the last year. This negatively impacted the species richness and overall diversity indices. Due to the lack of invasive species presence, it is likely that this shift in the vegetation community was due to natural fluctuations

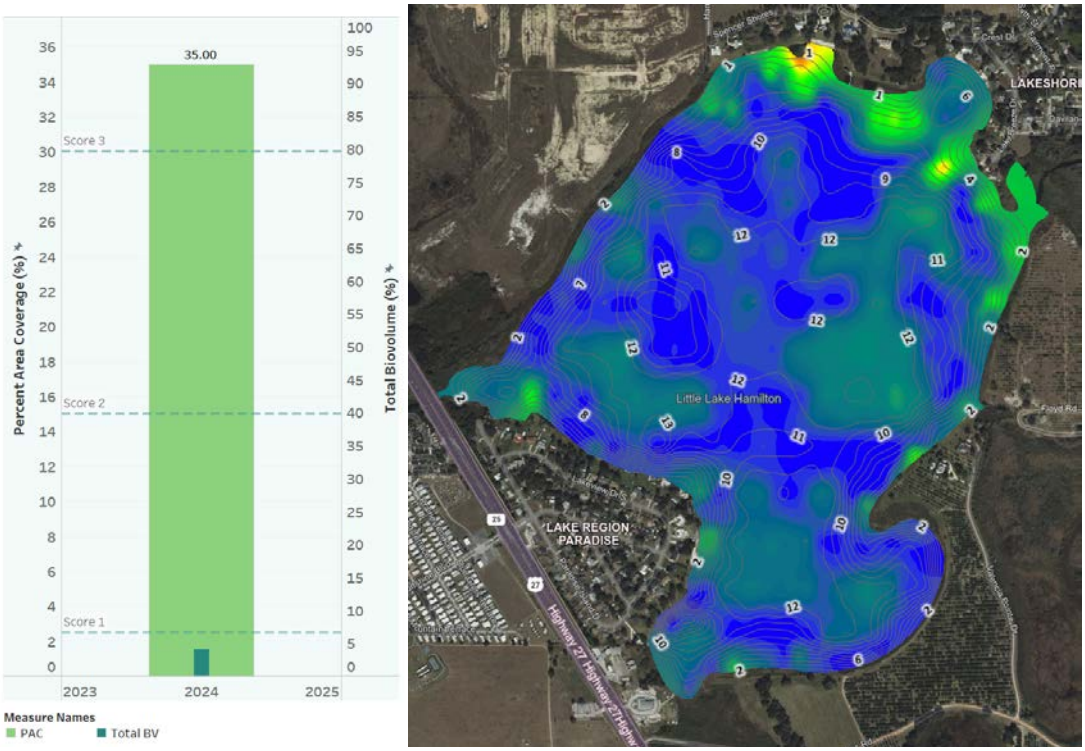


Figure 3-288. Graph depicting 2024 PAC/BV and biovolume heatmap of Little Lake Hamilton; biovolume values range from green (lowest) to red (highest).

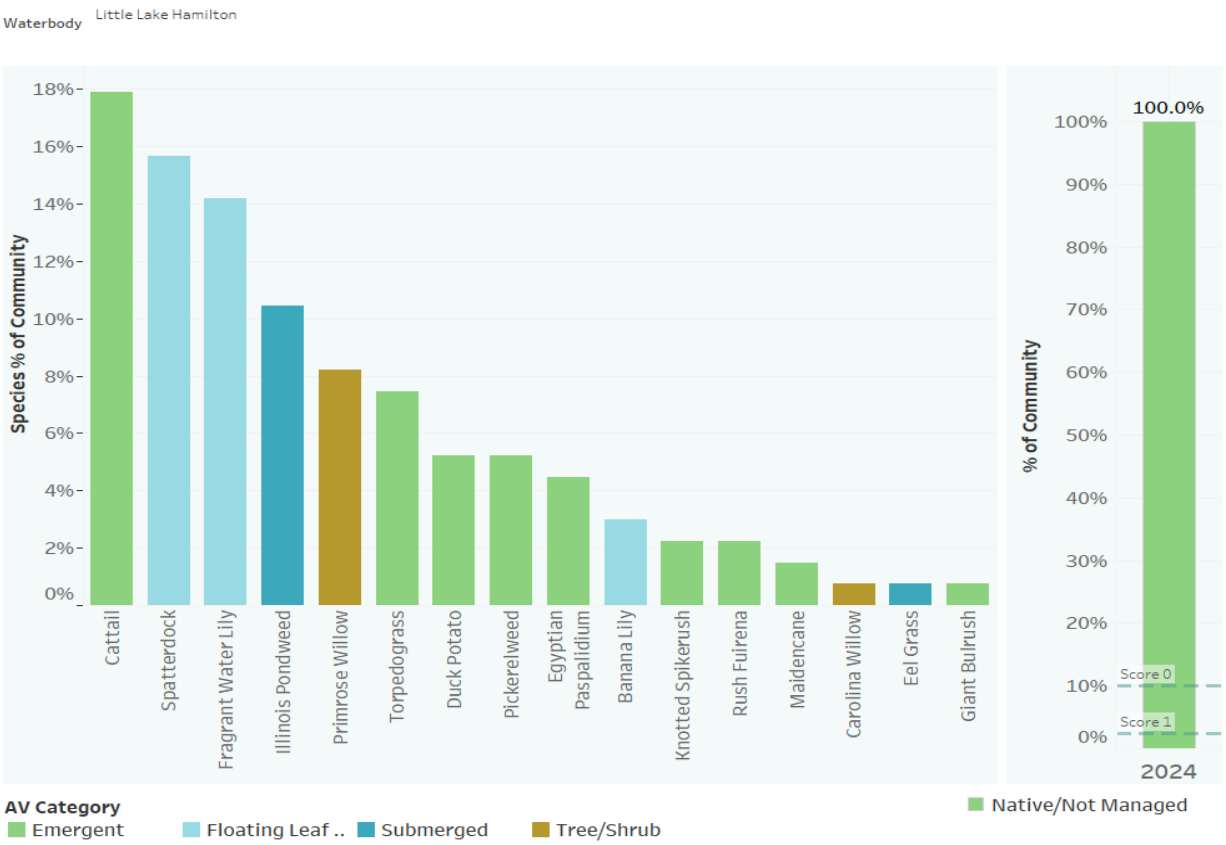


Figure 3-289. Chart depicting species frequency and invasive species percentage of Little Lake Hamilton during 2024.

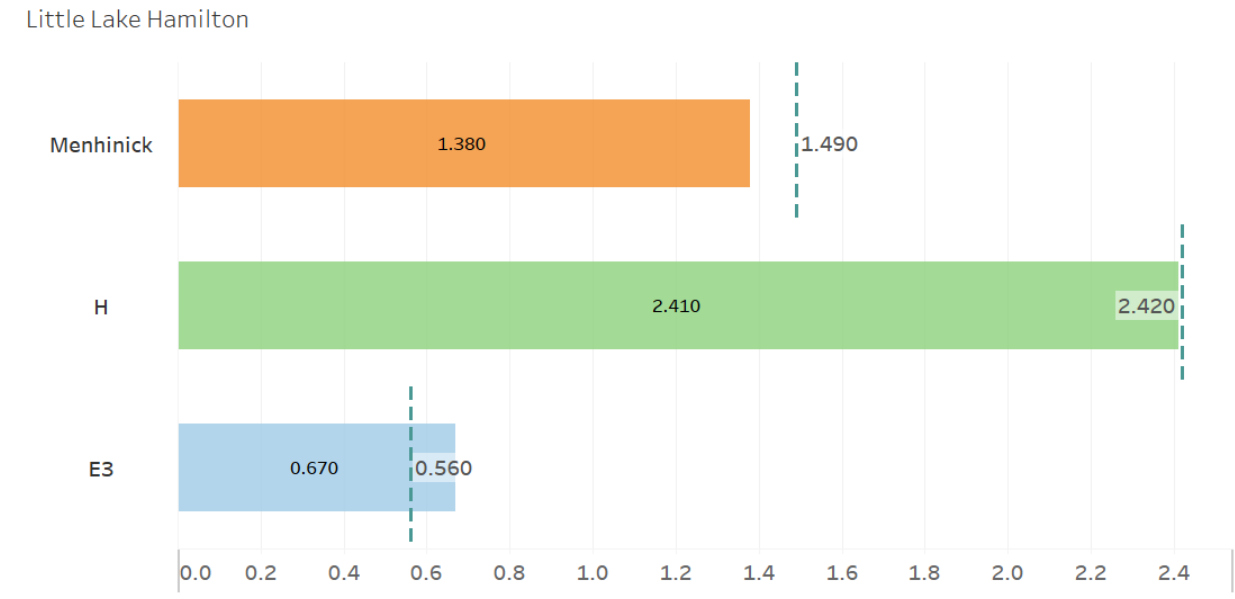


Figure 3-290. Chart depicting 2024 diversity indices for Little Lake Hamilton. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Little Lake Hamilton's health index scores from 2018 to 2024 shows slight improvement—with values ranging from 1.3 to 1.6 (Figure 3-291). During this time frame, there has been very little change in the water quality criteria scores. Vegetation abundance increased in 2024, while invasive species presence has been effectively null since 2022. Species diversity has presented the greatest fluctuation in scores over the course of monitoring. Overall Little Lake Hamilton ranks high on the priority list due to its water quality impairments and little indication that water quality will begin to trend upwards.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	1	1	2	1	2	2	1	**1.3**
2019	0	1	1	2	1	2	3	0	**1.3**
2020	0	1	1	2	1	2	2	3	**1.5**
2021	1	1	1	2	1	1	1	3	**1.4**
2022	0	1	1	2	1	2	3	3	**1.6**
2023	0	1	1	2	1	2	3	2	**1.5**
2024	0	2	1	2	1	3	3	1	**1.6**

Figure 3-291. Chart depicting a comparison of Little Lake Hamilton's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Stormwater and septic system pollutant loading remain the primary factors likely impacting water quality. Since Little Hamilton's drainage basin falls outside of Winter Haven's jurisdiction, the City is limited in its capacity to manage these potential pollution sources.
- Several of Little Lake Hamilton's water quality parameters are correlated with surface level; likely due to increased flushing during wetter periods. This means that drought conditions could result in water quality declines.
- The management of invasive species is a consistent concern. While invasive species were not detected in the last three years, it can take a single growing season for a previously undetected population to take over large areas of a waterbody.

Lake Management Strategy:

- The City plans to provide support to Polk County and other municipalities in the vicinity of Little Lake Hamilton as water quality management plans are developed and implemented.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large-scale herbicide treatments and the potential water quality issues that follow.

Middle Lake Hamilton

Lake Health Index									
Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
Middle Lake Hamilton	0	1	2	3	3	3	0	3	**1.9**

Features & Statistics:

Surface area	102.6 acres
Mean depth	5.01 feet
Maximum depth	7 feet
Volume	425.7 acre-feet
Drainage basin area	1539.9 acres
Annual TN Load	11,621.3 lbs
Annual TP Load	1072 lbs
Limiting nutrient	Co-limited (N & P)

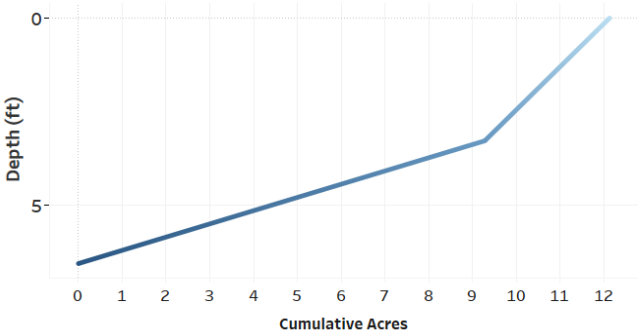


Figure 3-292. Hypsograph of Middle Lake Hamilton depicting the depth profile and morphology of the lake bed.

Hydrology:

Middle Lake Hamilton is the smallest lake part of the North Chain at just 103 acres. It also is one of the shallowest lakes in the study area with an average depth of 5 feet and a maximum depth of just 7 feet (Figure 3-292). This shallow depth makes the lake susceptible to sediment suspension via wind and wave action, and the high level of tannins in the water prevent much submerged vegetation from growing. Stormwater is conveyed to this waterbody from a comparatively enormous 1540 acre drainage basin that extends far to the north (Figure 3-293). The basin is comprised of residential, commercial, agricultural, and wetland land uses which contribute 11,621 lbs of TN and 1,072 lbs of TP to the lake annually. Despite these massive pollutant loads, on a per acre basis, these only rank 8th highest out of the 37 lakes in the area. There are a little over 30 septic systems in the basin. However, the majority of these are very far from the actual waterbody and don't

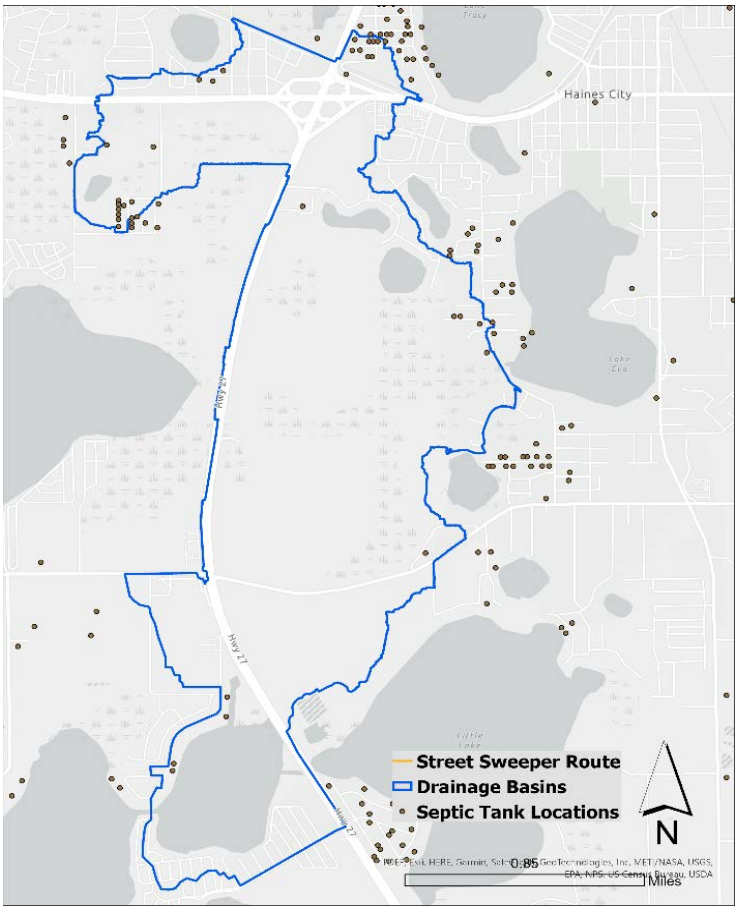


Figure 3-293. Map of Middle Lake Hamilton's drainage basin and nearby septic systems.

constitute a high enough density to be a major pollutant concern. With the majority of the basin outside of Winter Haven limits, the City does not conduct any street sweeping services in the vicinity.

Middle Lake Hamilton is part of the North Chain with navigable connections to Lake Hamilton and Little Lake Hamilton via canals. The North Chain discharges to the Peace Creek via the P-8 water control structure on the south side of Lake Hamilton. The three Hamilton lakes' surface levels all sit at the lowest elevation of all the waterbodies in the study area. Over its period of record, the Hamilton surface level has fluctuated between 117.5 and 123.6 feet above sea level. The normal range of fluctuation is between 119 and 121 feet (Figure 3-294). In 2017, the SWFWMD enacted new water level management protocols with the intent to restore seasonal level fluctuations within the lake's normal range. This is accomplished by releasing water downstream during the rainy season and storing water during the dry season. During 2024, these lakes reached a low of 120.26 feet in July and a wet season peak of 121.86 feet in October. The peak actually marks the highest the lake has reached since the record-breaking rainfall received during the hurricane season of 2004. According to linear regression analysis, changes in Middle Hamilton's surface level are strongly correlated with Chl-a, TN, TP, and water clarity (see appendix). This carries management implications as maintaining higher levels should result in water quality improvements.

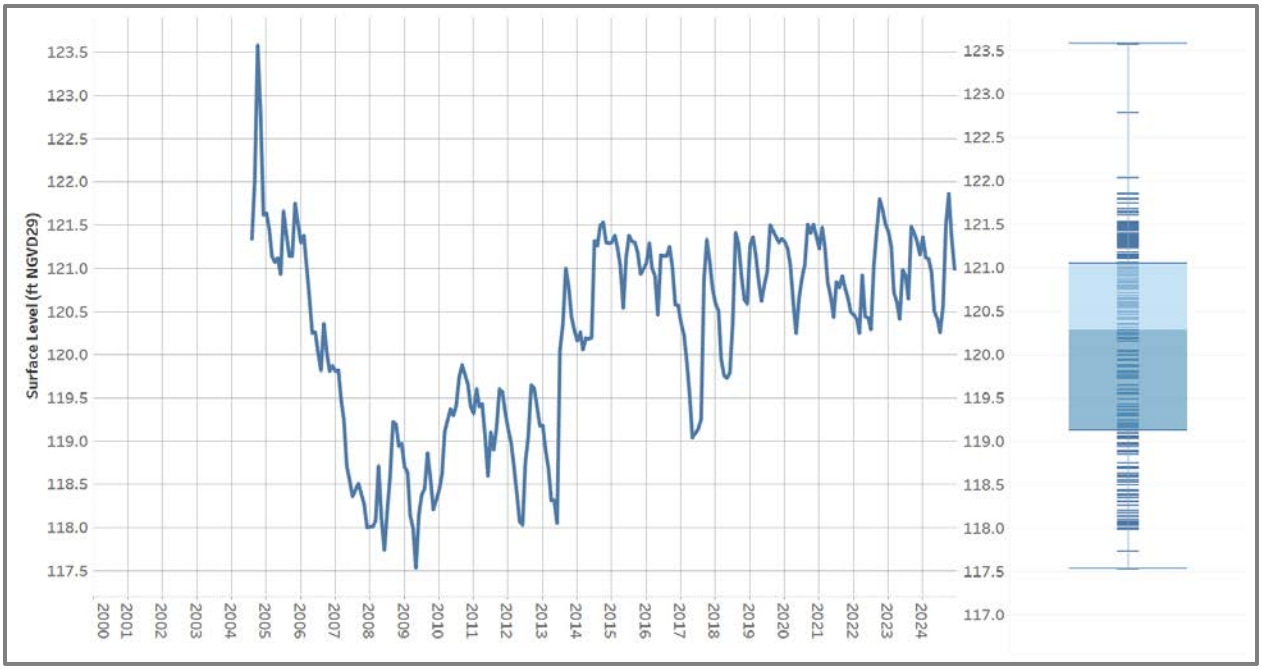


Figure 3-294. Hydrograph of Middle Lake Hamilton depicting monthly surface level readings from 2000 to 2024. A box and whisker plot details total range, median, and normal range of surface level during the period of record.

Water Quality Impairment:

To determine water quality impairment based on the Numeric Nutrient Criteria (NNC), Middle Lake Hamilton is categorized as a clear, alkaline waterbody. Due to numerous NNC exceedances during the assessment period, Middle Hamilton is considered impaired for Chl-a, TN, and TP (Figure 3-295). Like Lakes Hamilton and Little Hamilton, the FDEP has adoped a Polk County-developed pollutant reduction plan in lieu of a total maximum daily load. It should be noted that the 2024 AGM Chl-a concentration actually met the NNC threshold—indicating marginal improvement in water quality.

Water Quality Trends:

Long-term trend evaluation was conducted using linear regression analysis of AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. During this period, TP and Secchi depth exhibited significant improving trends; for trend criteria score of 3. TN exhibited a non-significant improving trend and Chl-a exhibited a non-significant deteriorating trend; for trend criterion scores of 2 and 1, respectively. Despite its impairments, these water quality trends indicate marginal improvement in water quality over the last 20 years.

Parameter	Impaired	R Coefficient	p-value	Trend	Impairment Score	Trend Score
Chla	Y	0.350	0.120	No Trend	0	1
TN	Y	-0.363	0.106	No Trend		2
TP	Y	-0.536	0.012	Decreasing		3
Secchi	NA	0.455	0.038	Increasing		3

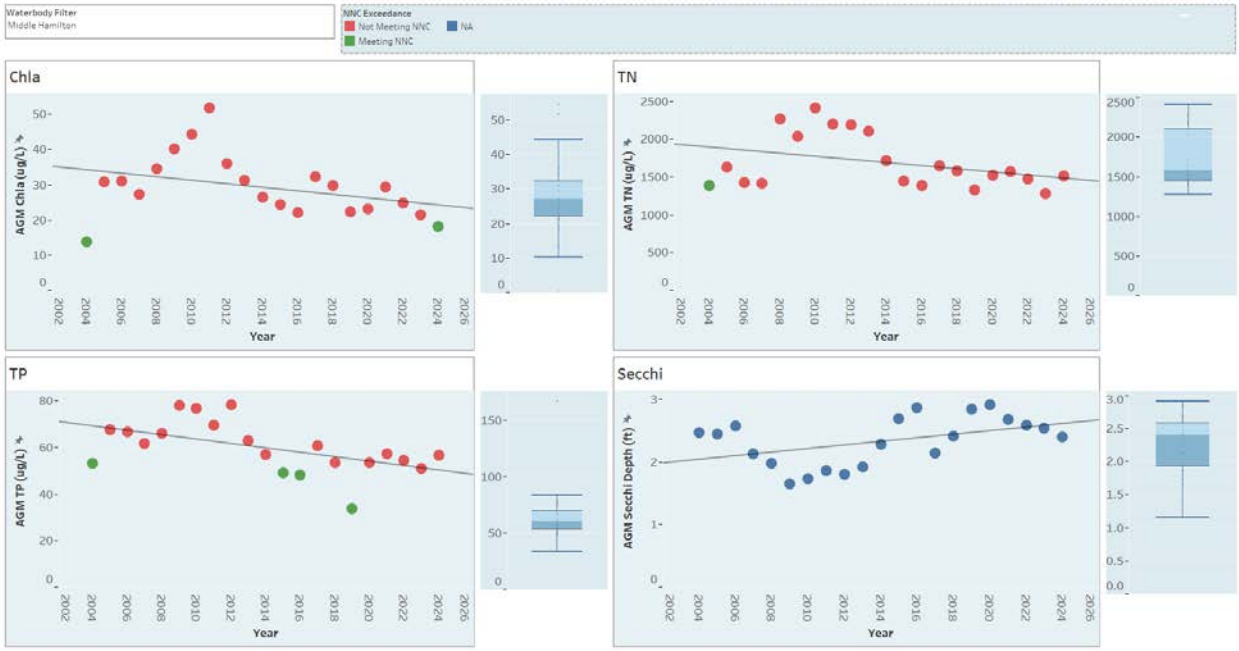


Figure 3-295. Middle Lake Hamilton AGM Chl-a, TN, TP, and Secchi depth values from 2004 to 2024. Data points colored in red depict NNC exceedances. Also detailed are trend lines and box & whisker plots that show relative variance.

Aquatic Vegetation Abundance:

An aquatic vegetation survey was conducted for Middle Lake Hamilton on 6/7/2024. The PAC during this survey was 52.9% and the total BV was 7% (Figure 3-296). A PAC above 30% equates to an abundance criterion score of 3. Middle Hamilton's vegetation abundance has previously been low. Values have ranged from 8.6% in 2021 to above 50% the last two years. These record highs are indicative of an expanding vegetation community—most likely due to invasive species.

Invasive Species Management:

Based on data from the 2024 survey, Middle Hamilton's vegetation community has shifted considerably in the last year (Figure 3-297). The most dominant plant present was the floating-leaf spatterdock at just under 20%. This was followed by a mix of emergent, submerged, and

floating plants. Invasive species like hydrilla, water hyacinth, and burhead sedge made up 22% of the community. While a slight decrease from the previous year, this equates to an invasive criterion score of 0. Considering that hydrilla and hyacinth were the first and third most dominant species in 2023, the invasive control efforts were successful at reducing their relative proportions. However, Middle Hamilton is far from being in a controlled state. Additional treatments will be required in the future.

Species Diversity:

This evaluation examines three diversity indices: species richness (Menhinick), species evenness (E3), and overall diversity (H). According to 2024 species data, all three of Middle Hamilton's diversity indices exceeded their respective median values, earning a diversity criterion score of 3 (Figure 3-298). The actual number of unique species didn't change from the previous year, but the relative proportions of each were much more evenly distributed; increasing not just the evenness index, but the richness and overall diversity indices as well. Species diversity does not discriminate between natives and invasives, so these increases aren't necessarily a good outcome for the ecological health of the lake.

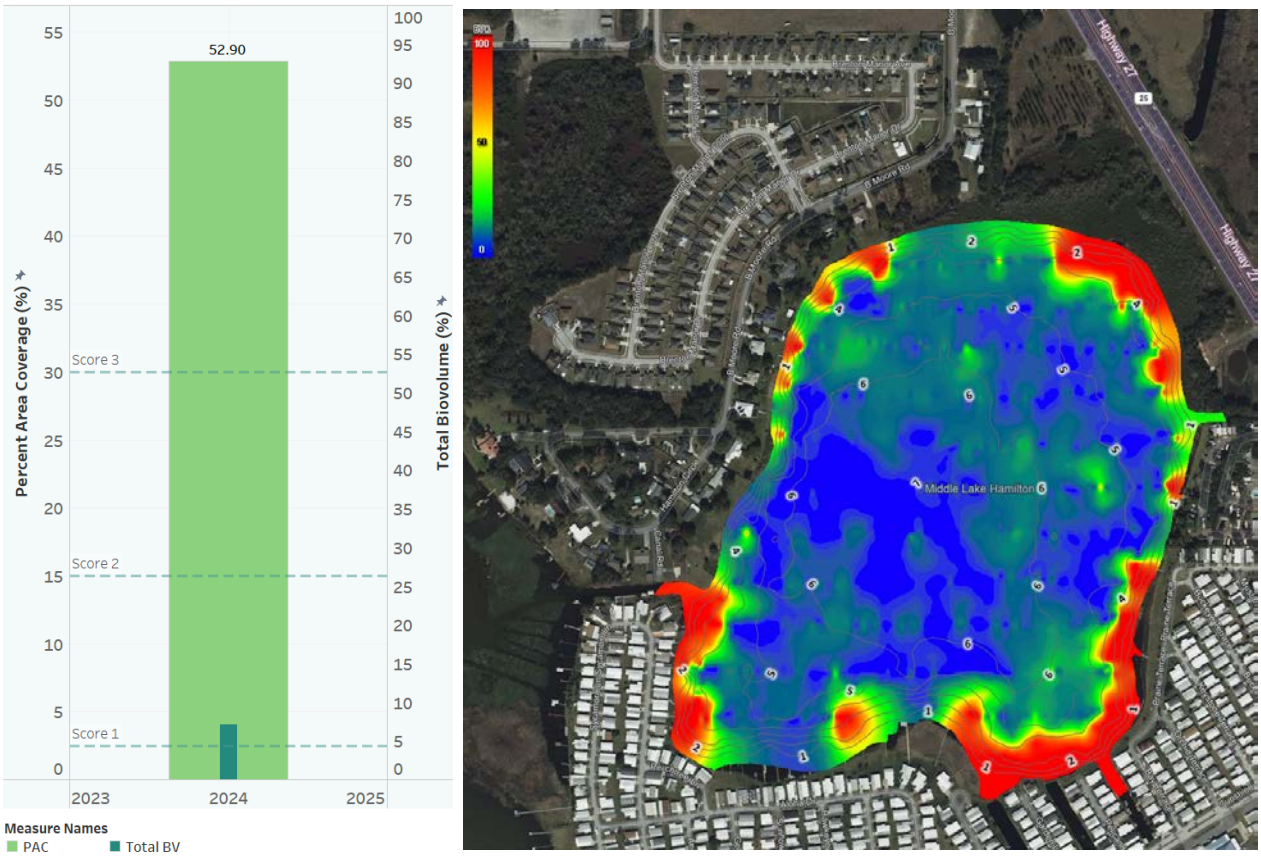


Figure 3-296. Graph depicting 2024 PAC/BV and biovolume heatmap of Middle Lake Hamilton; biovolume values range from green (lowest) to red (highest).

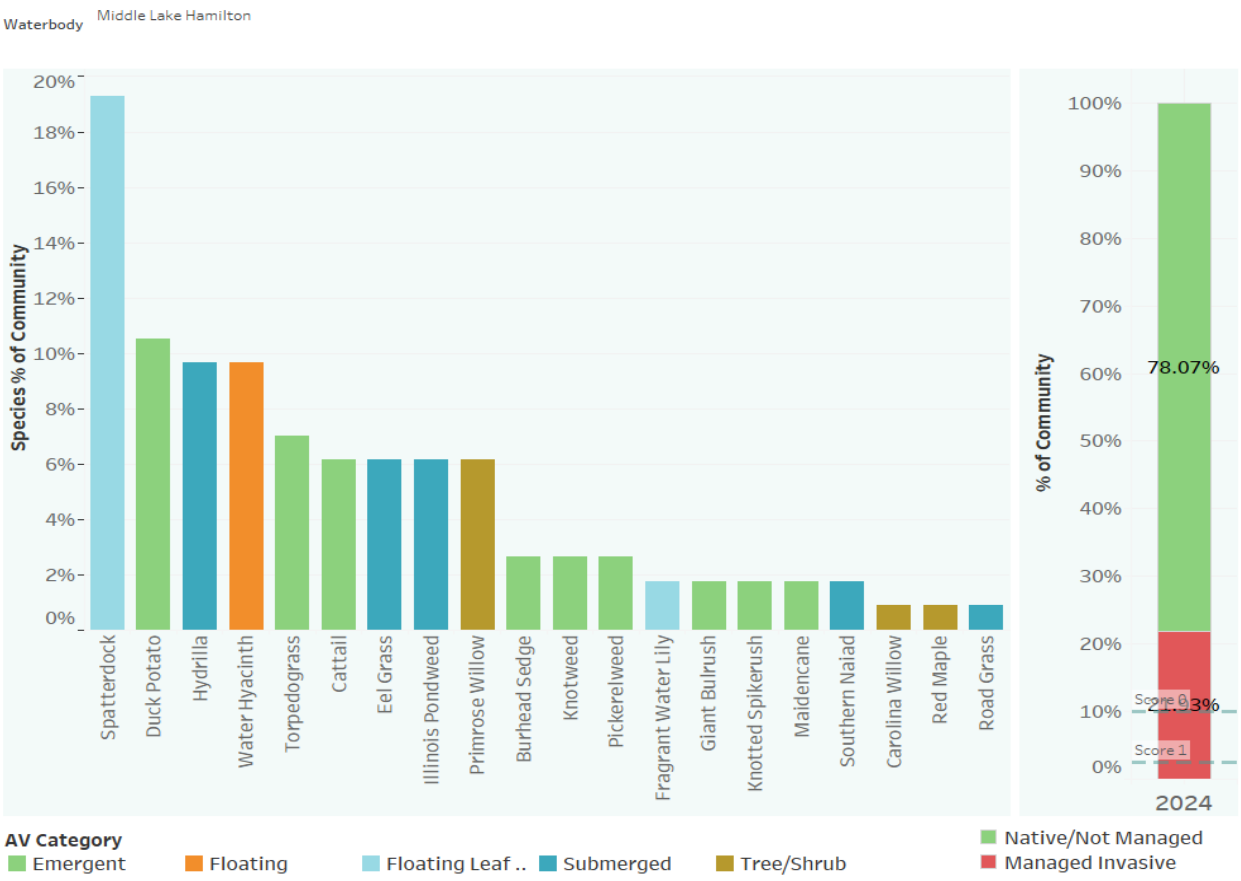


Figure 3-297. Chart depicting species frequency and invasive species percentage of Middle Lake Hamilton during 2024.

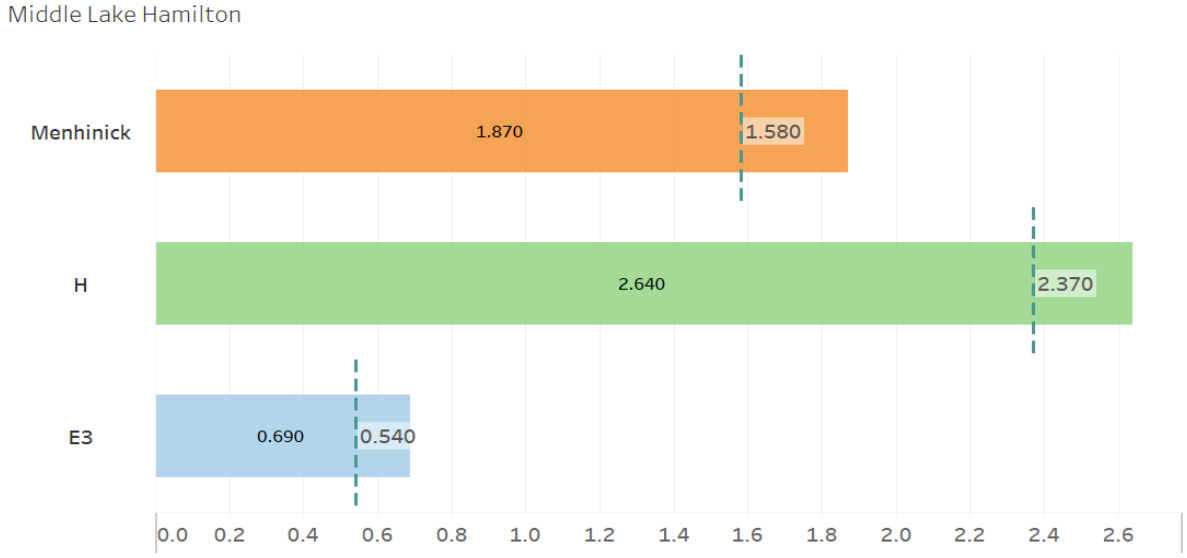


Figure 3-298. Chart depicting 2022 diversity indices for Middle Lake Hamilton. Dashed lines represent median values.

Lake Health Tracking:

A comparison of Middle Lake Hamilton's health index scores shows gradual improvement from values of 1.3 in 2018 to 1.9 in the last three years (Figure 3-299). While impairment has not changed during this span, the water clarity trend score has increased to a significant improving trend. Aquatic vegetation abundance has improved, but at the cost of the increase in invasive species. Surprisingly, the species diversity criterion has remained high since 2021. Overall, Middle Lake Hamilton ranks moderately high due to its water quality impairments coupled with invasive management issues.

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health
2018	0	1	2	3	2	1	1	0	**1.3**
2019	0	1	2	3	2	2	1	1	**1.5**
2020	0	1	2	3	2	1	3	2	**1.8**
2021	0	1	2	3	3	1	1	3	**1.8**
2022	0	1	2	3	3	2	1	3	**1.9**
2023	0	1	2	3	3	3	0	3	**1.9**
2024	0	1	2	3	3	3	0	3	**1.9**

Figure 3-299. Chart depicting a comparison of Middle Lake Hamilton's Lake Health Index scores from 2018 to 2024.

Lake Health Impacts/Challenges:

- Stormwater pollutant loading remains the primary factor likely impacting water quality. Since the majority of Middle Hamilton's drainage basin falls outside of Winter Haven's jurisdiction, the City is limited in its capacity to manage these potential pollution sources.
- Several of Little Lake Hamilton's water quality parameters are correlated with surface level, likely due to increased flushing during wetter periods. This means that drought conditions could result in water quality declines.
- The management of invasive species is a consistent concern. The current infestation almost certainly requires large-scale treatment which can have negative impacts on water quality and species diversity.

Lake Management Strategy:

- The City will provide support to Polk County as water quality management plans are developed and implemented.
- Due to the surface level correlations with water quality, One Water projects that focus on surface water storage and aquifer recharge can help to mitigate declines in surface level during drier periods.
- City staff will continue to monitor aquatic vegetation and share that information with Polk County and the FWC. Early detection and rapid response to invasive species is the best management strategy to prevent large-scale herbicide treatments and the potential water quality issues that follow.

Lake Management Summary

Using the Lake Health Index scores as a ranking system, the City is able to objectively prioritize management efforts for the study area lakes according to where the need is greatest. The following table displays the current priority ranking based on the 2024 Lake Health Index scores (Table 3-1).

Waterbody	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health Score
Lake Idyl	0	0	0	0	0	3	0	2	**0.6**
Lake Hamilton	0	0	0	3	0	2	1	3	**1.1**
Lake Martha	3	0	1	1	0	1	3	0	**1.1**
Lake Elbert	3	0	0	1	0	2	3	1	**1.3**
Lake Jessie	0	2	1	2	1	3	0	1	**1.3**
Lake Mariana	0	1	1	3	0	2	3	0	**1.3**
Lake Ned	3	0	0	1	0	3	2	1	**1.3**
Lake Mariam	3	0	2	1	1	3	1	1	**1.5**
Lake Hartridge	1	0	0	3	0	3	3	3	**1.6**
Little Lake Hamilton	0	2	1	2	1	3	3	1	**1.6**
Lake Eloise	0	3	2	3	2	2	2	1	**1.9**
Lake Haines	0	3	3	1	2	1	3	2	**1.9**
Lake Link	3	1	2	1	2	2	3	1	**1.9**
Lake Pansy	3	1	2	1	1	2	3	2	**1.9**
Lake Smart	0	2	2	2	2	3	1	3	**1.9**
Middle Lake Hamilton	0	1	2	3	3	3	0	3	**1.9**
Lake Blue	0	2	2	3	1	3	3	2	**2.0**
Lake Cannon	2	2	2	2	2	3	1	2	**2.0**
Lake Silver	3	2	2	3	1	2	3	1	**2.1**
Lake Buckeye	3	2	2	2	2	3	1	3	**2.3**
Lake Fannie	3	3	3	2	2	2	0	3	**2.3**
Lake May	0	3	3	3	3	3	1	2	**2.3**
Lake Otis	3	2	2	1	1	3	3	3	**2.3**
Lake Shipp	0	3	3	3	3	3	1	2	**2.3**
Lake Spring	3	3	2	2	2	3	0	3	**2.3**
Lake Summit	3	3	2	1	3	3	2	1	**2.3**
Lake Howard	1	3	3	3	2	2	2	3	**2.4**
Lake Lulu	0	3	3	3	3	3	1	3	**2.4**
Lake Conine	3	3	3	2	3	2	1	3	**2.5**
Lake Deer	3	3	3	3	3	3	1	1	**2.5**
Lake Idylwild	2	3	2	3	3	3	1	3	**2.5**
Lake Rochelle	3	3	3	2	3	3	1	2	**2.5**
Lake Roy	3	3	2	3	2	3	3	1	**2.5**
Lake Maude	3	3	3	2	2	3	2	3	**2.6**
Lake Mirror	3	3	3	2	2	3	2	3	**2.6**
Lake Winterset	3	3	3	3	3	3	1	2	**2.6**
Lake Daisy	3	3	3	3	3	3	2	2	**2.8**

Table 3-1. 2024 Lake Health Index scores ranking the Winter Haven study area lakes from highest to lowest priority.

The highest ranked waterbodies possess similar qualities—exhibiting water quality impairments and/or multiple significantly deteriorating water quality trends. While the biological criteria also factor into these lake health scores, changes in vegetation abundance, invasive species presence, and species diversity are more variable and generally less impactful to overall lake health compared with water quality. Water quality issues are typically more challenging and costly to solve as well.

According to the 2024 Lake Health Index, the highest priority waterbodies include Lake Idyl (p. 148), a tie between Lake Hamilton (p. 129) and Lake Martha (p. 190), and a four-way tie among Lake Elbert (p.105), Lake Jessie (p. 160), Lake Mariana (p. 184), and Lake Ned (p. 214). The City and partnering agencies are engaged in various management strategies to improve the water quality in these lakes. These strategies can be reviewed in each lake's respective section (see the page numbers listed above). Specific management strategies are highlighted below:

Lake Idyl Water Quality Improvement Plan. The City submitted a restoration plan to the Florida Department of Environmental Protection (FDEP) aimed at addressing the pollutant sources to the lake. Projects associated with this plan include construction of stormwater improvements to reduce and treat runoff from the neighborhoods north of the lake and application of nutrient inactivation products to reduce internal pollutant loading from the lake sediments. Both of these projects will be dependent on funding availability. In 2024, the City submitted grant applications to FDEP seeking funding to assist with these projects.

Lake Hamilton Water Quality Restoration Plan. Polk County Environmental Lands submitted a restoration plan to FDEP with projects that are designed to improve water quality in the three Hamilton waterbodies (i.e. Lake Hamilton, Middle Lake Hamilton, Little Lake Hamilton). The projects detailed in this plan include: stormwater enhancements at Lake Eva and Lake Henry restoration projects designed to improve water quality from these lakes to downstream receivers, street sweeping within the Lake Hamilton drainage basins, groundwater seepage study to provide evidence as to the impacts from septic systems, and a City of Lake Hamilton septic to sewer conversion.

Lake Martha SAV Planting. A lack of submerged aquatic vegetation in Lake Martha has resulted in diminished fish and wildlife habitat and capacity to buffer against stormwater pollutant loads. In 2024, the City partnered with the Florida Fish and Wildlife Commission (FWC) to transplant Illinois pondweed from Lake Hartridge into Lake Martha. This native species was planted along the Lake Martha boatramp and Kiwanis Park shorelines. Unfortunately, the remnant grass carp originally stocked in 2011 to combat hydrilla ended up destroying the new plantings. City staff are exploring alternative options to increase SAV presence in the currently denuded lake; possibly replanting with carp-exclusion cages.

Lake Elbert Green Stormwater Infrastructure. The Lake Elbert trail project, started in 2024, includes several raingardens and bioswales along the trail to help filter runoff from Lake Elbert Drive. The neighborhoods surrounding Lake Elbert were constructed before current stormwater management regulations were in place. As a result, these residential and commercial areas lack meaningful stormwater treatment features. City staff plan to prioritize public education and outreach activities in these communities to reduce residential runoff and pollutant loading.

Comparing the Lake Health Index scores over time provides insights into how successful these management strategies have been. Taking the mean of Lake Health criteria values from 2018 to

2024 shows that Winter Haven's lakes have improved in most areas (Table 3-2). The following are some highlights of this comparison:

Year	Impairment	Chla Trend	TN Trend	TP Trend	Clarity Trend	Vegetation Abundance	Invasive Presence	Diversity	Lake Health Score
2018	1.3	1.8	1.9	2.2	2.1	2.2	1.3	1.3	**1.8**
2019	1.5	1.9	2.0	2.2	2.1	2.3	1.1	2.0	**1.9**
2020	1.5	1.9	2.1	2.2	2.1	2.4	1.3	1.5	**1.9**
2021	1.7	1.9	2.1	2.0	2.1	2.3	1.3	1.7	**1.9**
2022	1.7	1.9	2.1	2.0	2.2	2.5	1.5	1.9	**2.0**
2023	1.8	1.9	2.0	2.2	1.9	2.5	1.5	2.1	**2.0**
2024	1.8	2.0	2.0	2.1	1.7	2.6	1.7	2.0	**2.0**

Table 3-2. Mean Lake Health Index scores for all Winter Haven area lakes from 2018 to 2024.

The impairment criterion is based on the annual average concentrations of chlorophyll-a, total nitrogen, and total phosphorus compared to State and Federal regulatory thresholds. Since 2018, several lakes have started to meet the Numeric Nutrient Criteria (NNC), resulting in gradual improvements to the impairment criterion scores: Lakes Cannon, Conine, Deer, Fannie, Idylwild, Otis, and Rochelle are the waterbodies that have started to meet the NNC for one or more parameters. Fortunately, none of the lakes in the study have undergone significant declines in this criterion since monitoring began.

The chlorophyll-a (Chla) trends have exhibited a slight trend toward improvement; with 2024 having the best average trend scores on record. Chlorophyll-a trend scores improved for Lakes Deer, Otis, Pansy, and Little Hamilton from 2023 to 2024, with a slight downgrade in Lake Buckeye's trend score.

The total nitrogen (TN) trends have remained relatively static, fluctuating between an annual average of 1.9 to 2.1. The average TN trend score remained the same from 2023 to 2024 due to slight increases in the scores for Lakes Deer and Fannie, but slight declines in the scores for Lakes Buckeye and Spring.

The total phosphorus (TP) trends have undergone marginal variation with annual average scores vascillating between 2.0 and 2.2. The average TP trend score decreased slightly from 2023 to 2024 due to slight decreases in the scores for Lakes Cannon, Jessie, Spring, and Summit; despite slight increases in the TP scores for Lakes Hartridge, Ned, and Silver.

The water clarity trends have undergone considerable declines in recent years with large decreases in annual average trend scores in 2023 and 2024. The latest decrease was due to a decline in Secchi depth trend scores for Lakes Buckeye, Eloise, Fannie, Haines, Howard, Jessie, Mariam, Mirror, Silver, and Spring. Fortunately, most of these decreased trend scores were due to shifts in statistical significance for lakes that are currently meeting water quality targets. None of the trend score decreases were indicative of a change to significantly deteriorating water clarity. It should also be noted that Lakes Deer and Link underwent increases to their clarity trend scores; with the trend in Lake Deer shifting to significant improving.

The vegetation abundance criterion scores have undergone a steady increase from 2018 to 2024, with the latest annual average abundance scores the highest on record. While Lakes Haines, Link, and Mariana underwent slight decreases in vegetation coverage, these were more than made up for by improved abundance scores for Lakes Buckeye, Daisy, Hamilton, Ned, Rochelle,

Silver, Smart, and Little Hamilton. It should be noted that several of these lakes (Daisy, Hamilton, Ned, and Silver) have traditionally supported very sparse vegetation communities—indicating substantial improvements for these waterbodies.

The nature of invasive plants allows them to quickly spread, taking over vegetation communities within the lakes. As a result, this criterion has the capacity to shift considerably from year to year. That said, the annual average scores for this criterion have generally increased over time. From 2023 to 2024, Lakes Daisy, Deer, Elbert, Haines, Link, Mariam, Maude, May, Mirror, Otis, Pansy, Roy, and Summit exhibited decreases in the abundance of invasive plant species. This more than made up for the slight increases in invasive plants in Lakes Buckeye, Hamilton, Jessie, Ned, and Shipp. Monitoring for invasive species is the primary means of preventing these scores from declining—indicating that these monitoring efforts have been successful.

Due to the ability for aquatic vegetation communities to shift based on both natural ecological dynamics and human-mediated management efforts, the species diversity criterion has the capacity to undergo the most volatility out of all the lake health metrics. This is evidenced by the fluctuation in annual average diversity scores from 1.3 to 2.1. From 2023 to 2024, almost every lake in the study area underwent some change in their diversity criterion score. Unfortunately, there was a slight net decreased in average diversity during this period. That said, 2024's average diversity score is still relatively high compared with previous years.

Overall, the annual average Lake Health Index (LHI) scores have steadily increased from a score of 1.8 in 2018 to the current average of 2.0 achieved in 2022, 2023, and 2024. It is worth noting that the outcomes of lake management efforts are often incremental which is why the average LHI values have not exhibited substantial changes during this time frame. Additionaly, some management strategies can have unintended consequences on other aspects of lake health—the short-term water quality impacts from invasive plant treatment efforts, for example. Therefore, the slow, but steady upward trend towards higher LHI scores is a success worth underscoring. Considering the state of other waterbodies throughout Florida, even maintaining consistent lake health can be viewed as an achievement.

While these scores show general improvement, many individual waterbodies still aren't meeting the high standards set forth by both the State of Florida and the City of Winter Haven. There is still much to accomplish to meet these goals. It will take the combined efforts of the City, partner organizations, local stakeholders, and Winter Haven residents in order to make these improvements a reality. Please reach out to the Winter Haven Natural Resources Division if you would like more information about a specific lake or management strategy.

Email: naturalresources@mywinterhaven.com

Phone: 863-291-5881

#4 | Appendix



4.1 References

1. Andrejewski, R., Mowen, A. J., & Kerstetter, D. L. (2011). An examination of children's outdoor time, nature connection, and environmental stewardship.

2. Barko, J. & James, W. (1998). Effects of Submerged Aquatic Macrophytes on Nutrient Dynamics, Sedimentation, and Resuspension. Chapter in *Ecological Studies (Analysis and Synthesis)* volume 131.

3. Black & Veatch. (2021). *Winter Haven One Water Blueprint.* Document drafted for the City of Winter Haven, in part, by GAI Consultants and Community Solutions Group.

4. Cavitt, Mark. (2015). Winter Haven's canals got start 100 years ago. News Chief. Retrieved June 12, 2024 from https://www.theledger.com/story/news/local/2015/11/22/winter-havens-canals-got-start-100-years-ago/27090766007/

5. City of Winter Haven Code of Ordinances. Sec. 21-161. Municode. Retrieved March 21, 2020, from https://library.municode.com/fl/winter_haven/codes/code_of_ordinances?nodeId=PTIICOOR_CH21UNLADECO_ARTIIIDEDEIMST_DIV5STMA

6. Copetti, D., Finsterle, K., Marziali, L., Stefani, F., Tartari, G., Douglas, G., & Lürling, M. (2016). Eutrophication management in surface waters using lanthanum modified bentonite: a review. *Water research*, *97*, 162-174.

7. Denny. (1980). Solute Movement in Submerged Angiosperms. *Biological Review* 55: 65-92.

8. Environmental Research & Design. (2018). Lake Conine Alum Treatment Project. ERD Clients & Projects Page. http://www.erd.org/project_lake-conine.htm

9. Environmental Research & Design. (2010). Winter Haven Chain-of-Lakes Sediment Removal Feasibility Study. Document produced, in part, by the SWFWMD.

10. FDEP. (2007). Nutrient TMDL for the Winter Haven Southern Chain of Lakes (WDIDs 1521, 1521D, 1521E, 1521F, 1521G, 1521H, 1521J, 1521K). Division of Water Resource Management, Bureau of Watershed Management, Tallahassee, Florida.

11. FDEP. (2013). Implementation of Florida's Numeric Nutrient Standards. Document Submitted to EPA in Support of the Department of Environmental Protection's Adopted Nutrient Standards for Streams, Spring Vents, Lakes, and Selected Estuaries.

12. Gernert. (2016). Beneath the Chinaberry Tree: 1915…A vision of our Chain of Lakes. *Winter Haven Sun*. https://www.yoursun.com/polk/newsarchives/a-vision-of-our-chain-of-lakes/article_7bc05f4f-2f5f-529d-ab48-93b35c63c850.html

13. Harper. (2007). Current Research and Trends in Alum Treatment of Stormwater Runoff. University of Central Florida Stormwater Research.

14. Ludwig, J. & Reynolds, J. (1988). *Statistical Ecology A Primer on Methods and Computing*.

15. Moore, D., Carnevale, M., Thornhill, M., Winstanley, S. (2019). *2018 Annual Lakes Report.* City of Winter Haven Natural Resources Division.

16. Paddock, L. (2004). *Environmental Accountability and Public Involvement*. Pace Environmental Law Review 21(2), 243-264.

17. PBS&J. (2010). *Winter Haven Chain of Lakes Water Quality Management Plan.*

18. Schueler, T. (1987). *Controlling Urban Runoff: A Practice Manual for Planning and Designing Urban BMPs.* Washington D.C.: Metropolitan Washington Council of Governments.

19. SWFWMD. (2019). Operational Guidelines for the North Winter Haven Chain of Lakes: P-5, P-6, P-7, and P-8 Water Conservation Structures.

20. UF/IFAS Florida Lakewatch (2000). A Beginner's Guide to Water Management – Nutrients [*Information Circular 102*].

21. UF/IFAS Florida Lakewatch (2000). A Beginner's Guide to Water Management – The ABCs [*Information Circular 101*].

22. UF/IFAS. (2018). Plant Directory. UF/IFAS Center for Aquatic and Invasive Plants. http://plants.ifas.ufl.edu/plant-directory/

23. USEPA. (2015). Connectivity of Streams & Wetlands to Downstream Waters: A Review & Synthesis of the Scientific Evidence. Report published by the US EPA.

24. US Census Bureau. (2018). New Census Bureau Population Estimates Show Dallas-Fort Worth-Arlington Has Largest Growth in the United States. Press Release. https://www.census.gov/newsroom/press-releases/2018/popest-metro-county.html

25. USGS. (1998). Hydrology of Central Florida Lakes – A Primer [*USGS Circular 1137*].

26. Whitmore, T., Brenner, M., & Schelske, C.L. (1996). Highly variable sediment distribution in shallow, wind-stressed lakes: a case for sediment-mapping surveys in paleolimnological studies. *Journal of Paleolimnology* 15: 207-221.

27. Whitmore, T. & Brenner, M. (2002). Paleolimnological Characterization of Pre-disturbance Water Quality Conditions in EPA-Defined Florida Lake Regions. Report submitted to the FDEP by the University of Florida Department of Fisheries and Aquatic Sciences.

28. Xanthopoulou, M., Giliopoulos, D., Tzollas, N., Triantafyllidis, K. S., Kostoglou, M., & Katsoyiannis, I. A. (2021). Phosphate removal using polyethylenimine functionalized silica-based materials. *Sustainability*, *13*(3), 1502.

4.2 Data Sources:

Water Quality Data

Collected from: https://polk.wateratlas.usf.edu/datadownload/; Surface Water Quality

Parameters:

- Akalinity, Total (hydroxide+carbonate+bicarbonate)
- Chlorophyll-a, corrected for pheophytin
- Nitrogen, Total
- Phosphorus as P, Total
- Secchi disk depth
- True Color, Total

Data Sources:

- POLKCO_NRD_WQ
- WIN_21FLPOLK
- WIN_21FLCEN
- LAKEWATCH_V
- SWFWMD_LAKES_WQ
- STORET_21FLTPA
- LEGACYSTORET_21FLA
- USGS_NWIS

Hydrologic Data

Southwest Florida Water Management District Environmental Data Portal: https://www.swfwmd.state.fl.us/resources/data-maps/environmental-data-portal

- Rainfall
- Lake (surface elevation)
- Well (Upper Floridan Aquifer elevation)

University of Florida IFAS Extension; Florida Automtated Weather Network: https://fawn.ifas.ufl.edu/data/

- Rainfall
- Evapotranspiration

City of Winter Haven Lake Level Sensors: http://hydrometcloud.com/hydrometcloud/index.jsp

- Lake (surface elevation)

Biological Data

Aquatic vegetation abundance collected using SONAR devices (e.g. Lowrance, Garmin, etc.).

SONAR data is processed using BIOBASE:
https://www.biobasemaps.com/Solutions/AquaticPlants

Species data is collected using the Florida Fish and Wildlife Commission (FWC) point-intercept sampling methodology.

- Collected by City of Winter Haven staff, Polk County staff, and FWC staff.

4.3 Supplemental Data

Annual Geometric Mean Data

Table 4-1. Annual geometric mean corrected chlorophyll-a concentrations from 2004 – 2024 for all study area lakes.

Waterbody	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Lake Blue	79.2	53.8	66.8	122.4	75.7	120.5	58.8	70.7	34.4	57.7	52.3	58.1	65.9	70.9	59.8	72.6	61.1	49.0	60.0	51.3	82.6
Lake Buckeye	14.3	24.2	12.1	13.6	10.6	10.2	7.4	6.0	7.1	4.9	7.1	5.3	5.4	4.9	6.5	9.5	3.4	3.6	9.3	18.1	20.7
Lake Cannon	30.6	27.8	18.5	22.9	23.7	32.2	28.0	28.7	23.1	31.7	27.3	16.5	19.0	19.0	21.5	25.0	22.6	18.9	35.0	18.3	25.7
Lake Conine	32.0	39.6	36.8	45.9	34.0	36.1	36.2	44.1	34.5	30.1	23.3	22.7	19.0	22.3	17.5	17.6	15.7	24.0	15.1	25.6	17.9
Lake Daisy	3.6	4.8	9.0	8.5	5.7	5.7	4.8	3.7	4.9	4.8	4.4	3.8	3.4	4.5	4.5	3.9	3.0	3.0	3.0	2.6	3.3
Lake Deer	7.6	16.4	17.3	21.6	31.6	27.9	18.8	11.5	28.4	22.2	10.3	12.4	8.1	11.3	4.9	8.7	7.2	10.8	4.2	10.1	4.1
Lake Elbert	3.1	6.2	5.2	3.7	3.1	3.7	3.6	4.9	5.0	4.0	4.4	5.5	3.7	6.2	5.6	8.2	10.6	8.2	13.0	8.0	10.4
Lake Eloise	30.6	43.7	34.1	25.5	30.5	27.1	31.0	39.0	25.6	36.0	33.5	32.0	37.0	22.8	25.9	21.4	23.8	33.2	16.9	28.3	27.6
Lake Fannie	21.3	13.4	14.7	14.3	16.9	22.6	22.0	25.6	19.1	17.1	13.7	10.5	11.3	11.5	12.0	11.6	8.1	13.6	12.4	11.3	7.6
Lake Haines	31.7	34.9	44.8	28.3	29.8	25.8	23.7	21.3	35.2	28.7	18.7	16.8	26.0	23.8	34.4	23.7	23.1	23.0	18.5	25.5	18.0
Lake Hamilton	2.0	13.6	7.7	6.8	16.0	28.9	26.5	22.8	29.0	29.2	22.5	21.3	24.9	45.8	40.5	32.8	34.7	37.1	48.2	31.4	38.2
Lake Hartridge	10.3	7.7	13.3	14.9	14.4	22.9	22.8	28.5	27.5	31.0	30.5	28.1	26.7	25.9	24.6	22.3	25.2	21.1	26.1	20.1	23.9
Lake Howard	42.9	31.0	37.4	64.0	41.9	33.3	24.7	30.0	29.6	26.9	25.0	25.4	27.6	24.7	21.7	20.0	23.7	25.5	33.4	23.0	22.6
Lake Idyl	8.0	9.2	7.0	4.4	1.9	25.1	4.4	5.5	4.8		4.7	9.7	9.6	57.5	33.6	31.7	29.7	38.9	17.4	17.1	24.3
Lake Idylwild	24.7	20.1	25.0	21.3	29.3	37.3	33.2	23.3	21.0	26.8	22.5	16.8	13.9	24.8	21.3	18.3	16.6	15.8	21.6	14.8	24.2
Lake Jessie	26.4	28.1	27.8	24.0	25.4	30.9	31.9	25.0	24.0	26.8	26.8	18.3	15.4	33.0	24.3	23.0	25.2	23.3	27.0	20.8	29.7
Lake Link	13.6						5.2	10.0	15.5	15.3	14.5	13.8	11.1	13.9	17.3	14.2	9.8	14.9	13.0	15.6	19.9
Lake Lulu	26.7	39.0	38.6	35.0	34.8	30.9	29.6	25.2	22.3	23.1	17.2	21.2	25.4	25.7	30.2	22.3	20.8	21.3	19.8	23.1	26.9
Lake Mariam	3.8	5.4	5.4	8.0	6.0	4.7	4.0	4.1	4.8	4.7	6.3	6.3	10.9	7.1	8.2	6.8	6.3	7.4	13.1	5.6	5.7
Lake Mariana	37.0	26.9	23.4	28.9	32.5	34.2	25.5	42.1	32.4	35.0	37.1	29.1	21.3	38.2	31.5	35.1	26.3	35.6	35.6	28.8	41.5
Lake Martha	3.2	3.6	3.0	3.4	7.1	5.6	7.1	7.1	6.3	6.3	7.3	12.2	12.7	17.7	17.2	8.8	8.2	10.7	9.3	6.7	9.3
Lake Maude	18.9	12.8	4.7	4.9	16.3	15.9	12.3	8.7	12.6	8.2	5.3	8.3	6.5	8.2	4.1	4.0	3.4	3.9	8.1	10.9	4.6
Lake May	46.4	36.1	47.6	65.6	51.3	46.3	32.6	35.3	37.3	33.0	24.4	18.5	29.1	30.6	23.5	21.7	19.9	21.3	35.6	26.6	30.8
Lake Mirror	28.2	29.6	23.6	22.9	26.4	21.0	19.5	13.5	10.5	15.8	8.2	8.1	12.4	16.7	21.7	14.0	14.7	9.2	13.4	24.0	22.7
Lake Ned	4.8	8.0	5.4	4.9	6.2	7.9	10.0	3.6	10.7	13.9	13.9	13.2	15.2	14.3	14.8	13.7	13.5	10.8	11.9	16.3	13.1
Lake Otis	10.4					21.9	18.3	23.2	20.4	16.3	17.3	13.9	13.5	18.3	17.7	15.1	19.3	13.3	15.2	15.2	
Lake Pansy	8.8	10.9	11.7	15.9	12.1	11.2	11.4	8.7	15.4	23.3	16.5	16.4	15.6	15.3	13.0	13.7	10.7	12.7	13.1	21.0	10.9
Lake Rochelle	31.2	29.3	20.9	28.8	27.4	33.1	27.6	19.7	26.6	26.0	24.5	18.2	13.0	17.4	17.2	13.3	12.6	19.0	14.9	15.8	10.9
Lake Roy	20.0	13.5	14.2	18.4	24.6	19.4	17.1	10.4	11.4	13.9	8.6	6.2	8.7	8.3	12.8	12.5	8.7	20.3	8.0	13.7	8.3
Lake Shipp	43.6	46.9	71.7	83.2	30.0	47.5	38.8	36.4	36.2	32.5	22.7	27.2	26.6	29.6	28.9	27.4	21.5	27.7	30.9	35.2	31.2
Lake Silver		9.8	12.9	7.1	7.6	14.0	10.2	10.4	9.4	8.1	8.0	13.6	12.9	22.2	8.7	10.4	10.5	4.3	7.2	6.5	5.4
Lake Smart	28.7	27.5	25.7	40.1		56.9	50.5	46.9		19.0	23.7	21.3	39.8	19.5	22.4	24.5	24.3	28.0	22.1	13.5
Lake Spring	17.2	22.1	21.6	19.7	22.9	12.6	9.2	9.7	8.0	5.7	12.3	20.7	7.4	11.4	14.8	9.1	9.9	9.2	13.1	11.8	17.3
Lake Summit	13.2	11.7	10.3	9.8	15.1	13.8	10.6	8.1	6.4	5.5	5.0	6.3	6.2	7.3	6.7	5.4	6.4	5.9	5.0	4.8	4.8
Lake Winterset	15.2	11.7	11.1	9.1	10.3	11.0	8.5	5.5	6.2	4.2	3.5	4.7	4.8	9.5	6.6	4.5	4.9	3.0	3.1	4.3	3.8
Little Lake Hamilton	9.1	19.4	13.6	20.4	35.4	26.8		22.6	39.2	26.4	28.3	11.6	17.3	27.5	22.2	15.8	20.6	17.3	20.5	20.9	17.8
Middle Lake Hamilton	13.6	30.6	31.0	27.2	34.4	40.1	44.3	51.7	35.9	31.1	26.3	24.3	22.0	32.2	29.8	22.2	23.1	29.2	24.7	21.3	18.0

Table 4-2. Annual geometric mean total nitrogen concentrations from 2004 - 2024 for all study area lakes.

Waterbody	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Lake Blue	2692.6	1836.2	2239.6	3561.0	2633.2	3691.4	2508.2	3155.2	2308.2	2633.9	2280.7	2203.4	2515.2	2587.2	2387.2	2332.2	2528.3	3127.2	3242.9	1764.8	3033.4
Lake Buckeye	888.8	944.3	818.3	834.9	870.2	830.4	864.2	773.2	671.7	716.7	744.2	657.7	592.0	618.9	653.9	784.9	571.5	663.2	757.2	1046.8	966.0
Lake Cannon	1142.8	1061.8	856.1	1137.4	1046.9	1306.1	1206.3	1328.2	1162.7	1355.1	1289.6	931.8	1059.8	922.6	985.7	1143.9	995.0	1046.3	1304.0	848.1	1120.8
Lake Conine	1289.9	1460.6	1278.6	1464.4	1378.7	1475.8	1455.7	1647.9	1359.1	1364.1	1193.2	1140.2	1056.7	1054.4	970.0	859.7	997.9	1211.1	938.7	1356.4	1043.6
Lake Daisy	448.2	598.9	585.8	533.0	531.8	558.7	569.5	532.3	509.5	479.6	459.4	459.6	439.8	524.3	506.4	463.0	435.3	425.2	376.1	377.8	449.4
Lake Deer	980.8	955.2	932.4	1235.3	1425.5	1511.5	1519.0	1129.2	1629.6	1515.7	1079.4	990.6	782.3	850.8	716.1	846.5	821.9	1035.5	774.9	1052.8	763.0
Lake Elbert	409.5	520.7	504.1	424.7	353.7	415.4	409.9	560.0	506.3	397.0	454.2	477.1	476.7	501.3	542.3	616.9	669.2	665.9	777.9	544.2	594.1
Lake Eloise	1186.3	1480.1	1270.1	1166.6	1134.4	1167.2	1344.5	1648.2	1313.7	1559.7	1574.9	1336.2	1519.4	1012.7	1078.5	883.8	1094.3	1436.5	948.5	1100.2	1275.0
Lake Fannie	1003.1	997.5	863.4	913.5	1326.9	1401.4	1288.3	1727.9	1453.5	1389.2	1114.5	970.3	898.2	870.0	873.5	750.3	899.2	842.5	869.8	841.1	795.5
Lake Haines	1329.2	1464.2	1458.5	1263.5	1363.9	1398.7	1379.8	1292.2	1506.4	1497.0	1267.2	1258.0	1204.3	1069.2	1232.2	979.9	1192.9	1289.4	1126.9	1483.9	1287.1
Lake Hamilton	1083.0	1113.9	1286.9	1194.5	1244.7	1511.3	1451.0	1426.4	1503.2	1715.9	1524.7	1432.8	1620.9	2329.0	2016.4	1672.6	1994.1	1741.0	2332.5	1689.8	1946.2
Lake Hartridge	744.5	608.9	808.0	860.8	991.8	1246.7	1217.5	1415.4	1463.1	1638.1	1659.3	1355.7	1425.4	1251.6	1308.5	1204.6	1297.6	1318.5	1252.3	1172.1	1258.8
Lake Howard	1605.2	1266.3	1521.1	2288.3	1758.0	1652.8	1381.3	1628.9	1597.2	1461.6	1378.6	1267.8	1439.4	1196.6	1134.1	1150.9	1077.2	1336.7	1283.1	1054.2	1438.5
Lake Idyl	594.0	649.8	630.0	544.4	530.0	1000.0	557.8	546.8	529.6		619.3	825.2	850.2	1797.4	1446.9	1000.4	1266.9	1254.0	971.5	1079.4	1143.8
Lake Idylwild	965.7	891.5	937.7	988.8	1203.7	1540.9	1328.4	1288.4	1260.8	1299.4	1243.2	955.9	973.4	1125.5	1022.2	969.6	971.4	998.2	1069.6	927.6	1101.5
Lake Jessie	1027.3	980.0	914.4	916.8	1063.3	1140.5	1197.3	1208.6	1163.6	1134.2	1174.0	927.9	902.1	1153.5	1067.4	1117.5	1021.3	1043.5	1091.1	929.6	1087.8
Lake Link	920.0					764.9	1036.5	1043.3	816.5	855.2	829.0	688.3	734.2	862.4	732.8	701.6	1060.7	769.6	834.4	1030.1
Lake Lulu	1087.4	1226.5	1373.9	1587.7	1643.1	1454.7	1495.6	1482.5	1327.1	1164.7	1037.9	1084.7	1219.6	1204.9	1296.0	1047.5	1132.2	1228.9	1051.3	1051.3	1230.4
Lake Mariam	976.3	947.5	1036.9	1147.3	1070.5	1042.3	897.1	915.7	878.2	836.4	867.3	891.0	996.5	1078.0	1092.6	939.9	893.2	945.7	1012.2	877.8	993.7
Lake Mariana	1456.3	1075.1	1030.1	1250.7	1476.0	1648.0	1421.1	1726.8	1456.3	1635.1	1789.2	1441.2	1190.6	1746.0	786.9	1415.4	1509.6	1759.3	1589.7	1110.7	1659.1
Lake Martha	500.4	500.1	433.3	479.2	601.1	613.0	664.4	720.1	597.1	539.6	660.5	732.7	716.3	717.2	811.3	630.7	558.9	656.4	545.7	505.5	550.0
Lake Maude	796.1	870.4	559.2	663.1	822.7	984.9	898.3	859.1	836.4	718.1	607.2	694.8	658.5	691.5	559.3	524.9	488.4	512.1	760.5	787.1	611.9
Lake May	1635.4	1326.4	1640.6	2298.1	1904.8	1756.5	1609.6	1731.9	1688.7	1490.8	1322.8	1163.8	1409.7	1268.1	1190.9	1182.1	1188.7	1291.3	1224.8	1053.5	1269.9
Lake Mirror	1169.5	1161.1	1091.6	1246.5	1234.8	1138.2	1077.6	991.4	900.0	1038.8	756.2	696.5	836.7	897.9	984.4	926.0	856.2	784.3	810.6	1067.1	914.9
Lake Ned	598.7	659.4	632.4	627.3	609.6	661.6	767.8	656.7	808.9	766.2	691.3	639.9	678.0	708.5	691.2	657.5	842.0	820.6	814.4	965.0	977.6
Lake Otis	600.0					970.0	1095.3	985.8	921.0	788.0	819.8	681.1	673.0	769.7	634.2	753.1	953.5	750.9	727.3	806.5
Lake Pansy	705.8	720.3	810.7	1025.4	920.9	855.6	835.3	813.2	1007.9	1233.7	885.8	796.2	788.9	835.8	726.1	753.4	703.4	761.4	739.2	876.3	726.9
Lake Rochelle	1274.2	1322.9	1084.7	1228.4	1249.6	1603.5	1346.9	1208.9	1306.6	1319.5	1426.7	1134.0	946.5	942.1	934.6	792.8	914.3	1114.2	916.4	1228.1	798.4
Lake Roy	890.9	812.8	814.9	1009.2	1277.0	1103.3	1142.8	964.3	977.3	1062.2	925.4	754.1	759.1	742.0	950.8	729.9	720.5	1148.5	697.8	1000.3	823.7
Lake Shipp	1544.2	1415.8	2277.6	2647.7	2082.6	1859.5	1681.1	1808.3	1722.2	1495.5	1228.1	1217.1	1249.6	1274.7	1307.9	1130.9	1210.5	1234.0	1235.8	1433.9	1424.0
Lake Silver		689.4	718.6	713.0	603.7	763.1	1098.1	735.7	712.1	595.9	666.8	749.4	805.7	910.1	681.4	624.2	726.7	591.3	591.2	560.3	708.1
Lake Smart	1374.9	1221.8	1194.7	1654.9			2300.0	2490.1	2141.4		1173.0	1316.8	1122.0	1606.6	1093.4	989.2	1217.0	1320.7	1327.8	1460.9	1152.0
Lake Spring	793.6	809.7	1052.9	867.8	741.2	707.8	613.3	665.3	580.0	510.6	680.5	721.0	593.7	666.1	712.8	643.3	615.5	742.7	611.5	613.2	872.6
Lake Summit	798.0	764.0	856.8	912.2	849.1	830.5	882.4	931.1	819.9	762.4	800.2	821.6	755.6	767.2	773.4	635.1	726.6	789.1	870.2	758.2	701.2
Lake Winterset	851.0	688.9	686.6	713.8	669.4	760.4	589.7	713.0	739.0	674.7	618.6	654.0	625.2	712.5	609.9	506.2	490.0	499.6	523.1	621.6	511.3
Little Lake Hamilton	1052.0	1108.0	986.7	1365.8	1786.2	1559.7		1416.7	1891.5	1650.0	1701.6	1191.7	1274.2	1580.4	1433.1	1111.8	1455.5	1384.8	1332.1	1345.0	1405.2
Middle Lake Hamilton	1388.0	1630.4	1426.8	1412.3	2260.0	2030.0	2408.9	2196.3	2183.4	2096.8	1711.7	1442.3	1379.1	1648.2	1582.0	1325.9	1520.2	1563.9	1467.0	1273.3	1507.2

Table 4-3. Annual geometric mean total phosphorus concentrations from 2004 – 2024 for all study area lakes.

Waterbody	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Lake Blue	95.2	74.2	83.2	91.2	71.2	89.3	60.6	62.4	55.4	65.7	53.1	54.1	55.8	61.0	49.4	51.9	67.0	56.8	74.6	50.5	73.0
Lake Buckeye	28.8	42.5	33.3	26.5	24.8	21.6	26.1	20.5	20.9	25.9	26.5	17.8	18.2	21.7	19.2	22.3	18.2	27.1	24.0	40.6	27.7
Lake Cannon	36.3	46.0	39.2	34.8	30.4	27.3	33.8	31.0	29.9	30.6	29.0	25.7	30.0	27.6	24.9	26.7	30.0	31.6	39.3	29.3	44.2
Lake Conine	48.1	63.2	56.6	66.5	50.9	47.7	52.7	61.5	47.2	47.1	37.4	36.9	37.6	39.1	30.4	33.4	43.7	56.5	66.7	62.7	36.1
Lake Daisy	24.0	39.4	38.1	31.2	28.3	30.0	27.2	23.7	26.9	29.2	25.9	22.4	20.4	23.7	22.1	23.7	23.9	25.7	15.4	16.7	20.7
Lake Deer	38.1	55.4	42.5	33.7	27.9	30.8	34.7	26.5	36.2	40.5	32.0	20.4	19.2	19.4	17.5	25.3	25.1	36.3	18.7	28.8	29.6
Lake Elbert	15.6	28.4	27.0	18.8	16.3	15.2	15.2	20.7	18.4	18.5	21.7	16.4	17.3	16.2	15.5	18.4	21.7	26.7	19.2	17.7	24.0
Lake Eloise	41.2	72.5	54.0	38.6	32.8	33.2	30.8	31.7	31.3	32.6	31.9	29.9	38.2	30.7	29.3	27.6	33.5	40.5	23.3	28.2	39.0
Lake Fannie	37.1	27.7	37.0	37.9	55.1	62.0	58.4	65.9	53.8	50.4	38.2	28.8	28.1	26.1	23.3	28.3	33.7	33.3	59.2	33.2	30.0
Lake Haines	60.0	84.7	58.9	45.9	38.4	38.2	42.3	36.7	39.0	38.4	37.4	36.8	46.6	50.9	42.6	41.8	58.1	84.5	80.3	118.3	51.9
Lake Hamilton	110.0	76.8	117.1	95.2	64.5	76.6	59.8	53.7	66.0	58.2	43.3	41.1	38.2	50.1	40.9	26.5	44.6	39.5	50.1	42.8	47.5
Lake Hartridge	30.0	33.2	35.8	25.9	27.3	30.6	32.3	30.9	30.1	29.4	29.4	28.6	29.8	26.3	23.5	23.0	27.4	30.1	18.1	21.0	35.4
Lake Howard	38.8	48.8	43.8	39.4	38.5	33.3	28.0	28.1	26.4	28.6	25.5	22.2	25.7	29.3	22.6	22.6	29.9	29.4	28.1	28.4	28.9
Lake Idyl	31.0	34.7	23.0	17.9	16.7	41.3	25.1	21.4	20.0		26.5	41.6	58.8	96.8	61.0	46.2	59.9	74.1	62.3	52.6	85.1
Lake Idylwild	46.3	46.4	44.8	40.2	37.3	35.5	35.2	27.7	29.2	30.4	28.7	25.8	31.6	28.9	27.5	27.0	31.7	36.7	30.6	25.5	42.1
Lake Jessie	53.0	53.1	48.4	40.5	46.9	38.2	41.7	35.1	35.1	36.0	32.4	30.0	31.0	39.7	34.0	34.4	44.7	46.6	33.7	38.0	49.2
Lake Link	26.0					27.5	37.5	33.7	29.2	30.7	27.7	23.9	25.0	23.9	27.4	26.9	38.4	27.7	32.3	30.3	
Lake Lulu	49.0	61.6	58.0	50.5	49.1	44.2	41.6	37.3	33.7	35.1	31.0	30.9	38.0	38.3	34.6	31.7	38.9	45.0	35.0	35.9	34.9
Lake Mariam	53.6	66.7	61.1	75.0	74.8	63.2	58.5	45.7	42.3	43.6	35.9	42.0	44.1	75.4	66.8	62.8	64.1	74.4	61.0	72.6	91.7
Lake Mariana	68.7	51.7	41.6	31.1	34.8	28.6	32.1	31.1	33.0	32.7	31.4	26.2	27.9	30.9	31.9	28.1	34.6	30.4	31.4	31.6	34.7
Lake Martha	20.9	27.3	21.6	16.9	19.3	17.2	23.7	20.3	23.5	27.1	25.2	22.1	24.5	32.7	34.0	24.0	23.9	30.9	16.2	18.6	17.9
Lake Maude	19.5	42.1	25.5	22.3	38.3	35.4	38.2	32.3	29.5	27.1	25.4	22.6	20.4	20.8	16.7	22.6	16.2	22.4	48.9	32.2	23.9
Lake May	76.0	74.2	77.0	87.0	73.7	74.6	58.2	57.7	53.7	53.9	44.0	34.3	45.7	51.1	42.4	33.0	48.9	57.8	48.0	50.7	51.8
Lake Mirror	46.0	45.2	38.5	31.2	29.1	25.5	27.9	24.7	31.0	28.2	23.4	20.9	25.2	24.3	24.3	22.2	30.1	29.5	24.4	38.1	38.7
Lake Ned	21.0	24.5	31.1	24.9	20.9	24.0	27.3	22.2	32.1	43.3	29.0	27.9	31.3	31.6	26.4	27.1	29.7	36.4	30.8	34.1	23.6
Lake Otis	27.0					33.0	30.5	34.8	28.5	27.8	25.6	26.3	25.4	26.4	23.3	30.6	41.2	26.7	27.2	31.2	
Lake Pansy	32.4	30.3	33.9	30.5	24.2	24.8	23.5	21.8	27.6	37.1	32.0	30.6	29.6	28.9	20.5	29.2	31.9	33.6	30.6	35.7	24.1
Lake Rochelle	45.6	56.9	42.0	45.3	42.8	35.5	47.4	33.6	33.0	39.2	35.7	29.6	24.2	27.4	25.1	25.0	30.6	44.2	60.9	57.7	25.7
Lake Roy	28.9	37.5	35.5	28.0	25.8	24.4	26.2	20.4	23.3	26.3	28.6	22.2	22.6	19.7	23.2	19.9	25.0	33.7	13.7	16.9	24.6
Lake Shipp	44.8	63.1	62.3	54.2	50.5	46.2	40.9	39.3	37.9	37.4	30.7	27.5	33.7	39.0	31.6	32.2	41.2	39.2	34.0	48.4	38.8
Lake Silver		32.2	27.9	21.4	18.8	20.4	27.6	22.2	19.5	21.0	23.9	21.7	21.3	25.5	17.5	21.2	19.1	24.6	16.8	19.5	19.4
Lake Smart	46.5	48.6	45.9	51.0		39.0	42.9	38.5		30.6	33.2	32.1	35.9	28.1	29.0	31.9	48.5	56.2	34.1	26.7	
Lake Spring	36.5	43.3	44.0	30.8	27.2	23.2	22.8	19.9	21.0	26.1	29.1	29.3	22.9	24.8	25.6	23.3	25.7	32.3	24.1	28.5	47.6
Lake Summit	27.9	36.7	34.4	27.2	23.0	22.0	26.0	20.6	20.8	22.9	23.4	18.7	20.1	21.8	21.1	19.0	25.3	39.3	18.1	26.0	49.4
Lake Winterset	25.5	30.4	28.8	21.9	19.4	16.0	16.9	16.4	19.1	18.5	19.5	15.9	16.9	17.7	17.6	16.2	17.2	19.5	11.1	16.5	17.0
Little Lake Hamilton	27.0	41.4	33.9	35.2	46.9	48.0		34.1	44.4	35.0	32.6	24.9	25.7	30.9	29.8	22.0	32.4	35.3	30.0	32.8	32.5
Middle Lake Hamilton	53.0	67.4	66.5	61.4	66.0	78.0	76.6	69.5	78.2	62.8	56.8	49.0	48.2	60.7	53.5	33.6	53.4	57.1	54.4	51.0	56.6

Table 4-4. Annual geometric mean Secchi depth from 2004 – 2024 for all study area lakes.

Waterbody	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Lake Blue	1.18	1.81	1.66	1.00	1.26	0.98	1.50	1.13	1.86	1.18	1.43	1.42	1.30	1.18	1.22	1.29	1.31	1.01	0.97	1.20	0.92
Lake Buckeye	3.26	3.31	5.26	3.97	4.65	5.25	5.81	6.89	9.29	9.11	6.59	8.27	7.06	7.26	8.86	7.00	10.93	8.72	6.26	3.26	3.46
Lake Cannon	2.46	2.64	3.49	3.07	2.70	2.29	2.60	2.51	2.65	2.13	2.23	3.89	3.14	3.45	3.14	2.36	3.24	3.00	2.22	2.91	2.52
Lake Conine	2.38	2.47	2.56	2.02	2.31	2.08	2.40	2.27	2.46	2.51	2.67	3.47	3.70	3.24	3.96	3.67	3.52	3.11	3.63	3.04	3.06
Lake Daisy	5.68	5.80	6.00	5.45	4.50	5.03	7.06	6.46	5.80	5.16	6.47	6.63	6.59	5.00	5.69	5.56	6.40	8.26	10.06	7.60	6.11
Lake Deer	5.68	4.56	4.96	2.83	2.37	2.35	2.71	4.48	2.28	2.37	4.11	4.07	5.39	4.83	8.18	6.28	6.03	4.50	7.26	4.68	7.14
Lake Elbert	9.19	7.54	9.62	12.05	12.61	11.76	13.73	9.69	9.28	11.09	8.65	8.84	10.70	8.03	8.63	6.53	5.96	6.24	5.09	5.64	4.74
Lake Eloise	2.36	2.16	2.31	2.21	2.40	2.85	2.40	2.16	2.53	2.01	2.06	2.34	2.13	2.88	2.61	3.11	2.86	2.09	3.15	2.71	2.12
Lake Fannie	2.75	3.43	3.11	2.51	1.38	1.38	1.64	1.31	1.68	2.07	2.29	3.40	3.51	3.62	3.75	3.59	4.16	2.57	3.22	2.73	2.94
Lake Haines	2.51	2.10	2.46	2.29	2.31	2.43	2.78	3.05	2.19	2.32	2.72	2.92	3.01	3.32	2.94	3.07	2.90	2.95	2.60	2.07	2.33
Lake Hamilton	2.30	3.21	1.78	2.30	2.30	1.70	1.74	2.11	1.75	1.83	2.16	2.18	2.14	1.54	1.74	2.05	1.91	1.63	1.38	1.67	1.58
Lake Hartridge	4.16	4.86	3.85	3.72	3.61	2.97	2.74	2.35	2.25	1.91	1.86	2.36	2.16	2.52	2.34	2.47	2.26	2.55	1.98	2.30	2.32
Lake Howard	1.80	2.12	1.96	1.23	1.64	1.78	2.66	2.14	1.87	1.92	1.95	2.25	1.93	2.47	2.66	2.39	2.13	2.09	1.82	2.55	1.89
Lake Idyl	5.91	6.89	6.76	6.50	9.34	4.40	3.94	8.80	7.85		7.24	5.00	5.96	2.27	2.68	3.51	2.62	2.65	4.35	3.51	4.53
Lake Idylwild	2.60	3.07	2.92	2.60	2.36	2.03	2.32	2.53	2.47	2.16	2.48	3.60	3.70	2.77	2.93	3.23	3.47	3.25	2.78	3.37	2.62
Lake Jessie	2.62	2.76	2.65	2.65	2.58	2.36	2.39	2.59	2.42	2.50	2.47	3.45	3.29	2.35	2.76	2.44	2.68	2.55	2.32	2.62	2.49
Lake Link	4.27						7.55	5.08	3.52	3.80	4.73	4.92	5.17	3.70	3.68	4.51	4.61	3.37	3.80	3.67	3.03
Lake Lulu	1.86	2.19	1.80	1.68	1.75	1.90	2.07	2.15	2.34	2.31	2.98	2.92	2.42	2.19	2.35	2.55	2.65	2.39	2.59	2.52	1.87
Lake Mariam	1.51	1.88	1.82	0.98	2.18	2.08	2.25	2.90	2.84	2.94	2.91	2.00	2.16	0.99	1.72	1.51	2.28	1.67	2.24	1.41	1.82
Lake Mariana	2.12	2.53	2.63	2.47	2.18	1.95	2.53	1.95	2.24	1.83	1.72	2.11	2.84	1.65	2.03	1.82	2.03	1.67	1.77	2.30	1.79
Lake Martha	9.68	10.12	13.06	11.40	7.24	7.85	6.29	5.09	5.30	5.96	6.59	5.32	4.67	4.55	4.87	5.80	6.19	5.35	5.40	5.90	5.25
Lake Maude	3.81	5.04	9.48	8.49	5.46	3.03	3.85	4.08	4.72	6.12	7.40	6.44	6.58	6.99	10.45	10.98	10.36	10.33	6.42	3.73	7.43
Lake May	1.39	2.03	1.64	1.18	1.42	1.39	2.04	1.79	1.91	2.43	2.92	2.05	2.19	2.53	2.24	2.57	2.25	2.11	1.87	2.09
Lake Mirror	2.04	2.64	3.12	2.74	2.47	2.97	3.49	4.10	4.92	3.33	5.25	6.43	4.24	3.67	3.48	3.58	4.11	4.30	4.13	2.60	2.89
Lake Ned	7.41	5.70	7.75	7.29	6.63	5.61	6.33	7.69	4.10	3.95	4.17	3.97	3.59	3.79	3.85	4.00	3.71	3.57	3.40	2.66	3.57
Lake Otis	5.25						3.94	3.38	2.62	3.03	4.07	4.00	5.17	4.41	3.85	4.28	3.69	3.30	4.37	4.09	3.78
Lake Pansy	4.18	5.09	3.87	2.77	3.29	3.43	4.45	4.61	3.51	2.61	3.85	4.00	3.79	3.27	4.33	3.83	4.22	3.81	3.68	3.25	3.84
Lake Rochelle	2.29	2.47	3.17	2.42	2.23	2.15	2.62	3.23	2.32	2.51	2.47	3.69	4.12	3.88	3.96	4.00	2.74	3.66	3.52	1.94	3.13
Lake Roy	3.88	4.60	4.77	3.39	2.58	3.15	3.72	5.39	4.17	3.24	4.86	6.72	5.84	6.02	4.55	4.84	5.54	3.55	5.08	3.59	4.62
Lake Shipp	1.62	1.80	1.39	1.15	1.80	1.59	2.02	1.68	1.74	1.80	2.29	2.20	2.12	2.24	2.10	2.34	2.42	2.39	2.07	2.11	1.99
Lake Silver		6.80	6.74	7.53	7.09	3.82	4.33	5.56	6.31	7.01	6.44	4.26	4.20	3.40	6.27	5.66	5.17	7.82	7.20	6.09	6.57
Lake Smart	2.27	2.86	2.76	1.67			1.64	1.66	1.73		2.79	2.80	2.95	2.17	3.38	2.86	2.76	2.83	2.06	2.78	2.34
Lake Spring	4.12	3.44	3.53	3.75	4.24	5.31	8.45	6.90	6.89	7.76	5.04	5.39	6.56	5.77	5.40	6.67	6.02	5.87	5.62	5.64	4.82
Lake Summit	3.59	5.10	6.15	5.32	4.31	4.59	5.98	5.75	7.22	7.27	7.61	7.34	8.22	6.38	7.56	7.35	5.93	6.96	8.02	6.70	7.66
Lake Winterset	3.36	4.59	5.43	5.88	5.03	5.35	6.88	8.05	8.97	8.98	10.57	10.92	10.19	5.72	7.34	9.09	8.44	12.39	13.75	8.39	11.13
Little Lake Hamilton	4.59	3.53	4.29	2.66	1.99	2.46		2.55	1.80	2.62	2.16	3.81	3.12	2.23	2.88	3.25	2.91	2.96	2.77	2.48	2.40
Middle Lake Hamilton	2.46	2.44	2.57	2.12	1.97	1.64	1.73	1.86	1.80	1.92	2.27	2.68	2.86	2.14	2.40	2.83	2.91	2.67	2.58	2.53	2.39

Linear Regression Statistics

Table 4-5. Trendline statistics for linear regressions of chl-a, TN, TP, and Secchi depth from 2004 - 2024. Stats include regression direction (+/-), R-squared value, and p-value.

Waterbody	Chl-a			Secchi			TN			TP		
	Dir.	R^2	p-value	Dir.	R^2	p-value	Dir.	R^2	p-value	Dir.	R^2	p-value
Lake Blue	-	0.0978	0.168	-	0.1737	0.060	-	0.0009	0.898	-	0.3414	0.005
Lake Buckeye	-	0.0394	0.388	+	0.1195	0.125	-	0.0488	0.336	-	0.0436	0.364
Lake Cannon	-	0.0534	0.313	+	0.0040	0.786	-	0.0255	0.489	-	0.0431	0.366
Lake Conine	-	0.6686	0.000	+	0.5633	0.000	-	0.4476	0.001	-	0.0858	0.198
Lake Daisy	-	0.4377	0.001	+	0.2674	0.016	-	0.5614	0.000	-	0.5755	0.000
Lake Deer	-	0.3699	0.003	+	0.2986	0.010	-	0.2304	0.028	-	0.3463	0.005
Lake Elbert	+	0.5878	0.000	-	0.5211	0.000	+	0.4938	0.000	+	0.0006	0.919
Lake Eloise	-	0.2213	0.031	+	0.1151	0.132	-	0.0822	0.208	-	0.2631	0.017
Lake Fannie	-	0.4144	0.002	+	0.1727	0.061	-	0.2161	0.034	-	0.0903	0.186
Lake Haines	-	0.3402	0.006	+	0.0987	0.166	-	0.2027	0.041	+	0.1040	0.154
Lake Hamilton	+	0.7032	0.000	-	0.3705	0.003	+	0.6668	0.000	-	0.6398	0.000
Lake Hartridge	+	0.3036	0.010	-	0.5622	0.000	+	0.2829	0.013	-	0.2169	0.033
Lake Howard	-	0.4015	0.002	+	0.1534	0.079	-	0.3823	0.003	-	0.4721	0.001
Lake Idyl	+	0.3291	0.008	-	0.4031	0.003	+	0.4601	0.001	+	0.5698	0.000
Lake Idylwild	-	0.2390	0.025	+	0.1942	0.046	-	0.0362	0.409	-	0.3102	0.009
Lake Jessie	-	0.0499	0.331	-	0.0016	0.862	+	0.0029	0.816	-	0.1233	0.119
Lake Link	+	0.1751	0.107	-	0.2336	0.058	-	0.0107	0.703	+	0.0050	0.794
Lake Lulu	-	0.4342	0.001	+	0.2974	0.011	-	0.2829	0.013	-	0.4709	0.001
Lake Mariam	+	0.2175	0.033	-	0.0055	0.749	-	0.0377	0.399	+	0.0736	0.234
Lake Mariana	+	0.0499	0.330	-	0.2412	0.024	+	0.0336	0.426	-	0.2858	0.013
Lake Martha	+	0.3614	0.004	-	0.5232	0.000	+	0.0821	0.208	+	0.0177	0.566
Lake Maude	-	0.3221	0.007	+	0.1520	0.081	-	0.2408	0.024	-	0.0329	0.431
Lake May	-	0.4911	0.000	+	0.3632	0.004	-	0.5283	0.000	-	0.5477	0.000
Lake Mirror	-	0.2079	0.038	+	0.0975	0.168	-	0.4469	0.001	-	0.1136	0.136
Lake Ned	+	0.6071	0.000	-	0.7332	0.000	+	0.5621	0.000	+	0.1555	0.077
Lake Otis	-	0.0155	0.646	-	0.0107	0.703	-	0.0332	0.499	+	0.0007	0.924
Lake Pansy	+	0.0899	0.199	-	0.0139	0.621	-	0.0413	0.390	+	0.0019	0.857
Lake Rochelle	-	0.7080	0.000	+	0.2039	0.040	-	0.4063	0.002	-	0.0493	0.334
Lake Roy	-	0.2611	0.018	+	0.0918	0.182	-	0.0952	0.173	-	0.3239	0.007
Lake Shipp	-	0.3858	0.003	+	0.5490	0.000	-	0.4269	0.001	-	0.3417	0.005
Lake Silver	-	0.0502	0.342	-	0.0002	0.952	-	0.0761	0.239	-	0.2731	0.018
Lake Smart	-	0.2090	0.056	+	0.0916	0.222	-	0.0974	0.207	-	0.2023	0.061
Lake Spring	-	0.1888	0.049	+	0.1181	0.127	-	0.1447	0.089	-	0.0228	0.513
Lake Summit	-	0.6679	0.000	+	0.5199	0.000	-	0.2621	0.018	+	0.0026	0.827
Lake Winterset	-	0.6647	0.000	+	0.5878	0.000	-	0.6059	0.000	-	0.4703	0.001
Little Lake Hamilton	-	0.0034	0.808	-	0.1111	0.151	+	0.0124	0.640	-	0.1683	0.072
Middle Lake Hamilton	+	0.1224	0.120	+	0.2070	0.038	-	0.1315	0.106	-	0.2878	0.012

Table 4-6. Trend statistics for linear regressions of lake surface levels against chl-a, TN, TP, and Secchi depth from 2000 - 2021. Stats include regression direction (+/-), R-squared value, and p-value.

Waterbody	Chl-a			Secchi			TN			TP		
	Dir.	R2	p-value	Dir.	R2	p-value	Dir.	R2	p-value	Dir.	R2	p-value
Lake Blue	-	0.006	0.740	+	0.002	0.830	-	0.081	0.200	+	0.010	0.660
Lake Buckeye	-	0.020	0.540	+	0.171	0.056	-	0.041	0.370	+	0.010	0.676
Lake Cannon	-	0.610	0.002	+	0.386	0.023	-	0.550	0.004	-	0.151	0.189
Lake Conine	-	0.350	0.004	+	0.533	0.000	-	0.314	0.007	-	0.102	0.146
Lake Daisy	-	0.053	0.315	+	0.054	0.310	-	0.009	0.684	+	0.011	0.653
Lake Deer	-	0.124	0.107	+	0.107	0.138	-	0.060	0.270	+	0.041	0.368
Lake Elbert	+	0.315	0.007	-	0.466	0.000	+	0.289	0.010	+	0.193	0.041
Lake Eloise	-	0.024	0.612	+	0.006	0.800	-	0.073	0.371	-	0.013	0.710
Lake Fannie	-	0.588	0.000	+	0.809	0.000	-	0.724	0.000	-	0.868	0.000
Lake Haines	-	0.003	0.794	+	0.263	0.015	-	0.244	0.020	+	0.233	0.023
Lake Hamilton	-	0.007	0.734	+	0.094	0.215	+	0.002	0.853	-	0.012	0.661
Lake Hartridge	-	0.039	0.517	-	0.044	0.491	-	0.040	0.512	-	0.346	0.035
Lake Howard	-	0.235	0.022	+	0.191	0.042	-	0.449	0.001	-	0.024	0.489
Lake Idyl	-	0.080	0.227	+	0.053	0.331	-	0.049	0.350	-	0.003	0.819
Lake Idylwild	-	0.681	0.001	+	0.855	0.000	-	0.915	0.000	-	0.097	0.301
Lake Jessie	-	0.379	0.025	+	0.353	0.032	-	0.553	0.004	-	0.015	0.695
Lake Link	-	0.172	0.110	+	0.097	0.240	-	0.524	0.002	-	0.415	0.007
Lake Lulu	-	0.138	0.212	+	0.413	0.018	-	0.453	0.012	-	0.074	0.370
Lake Mariam	+	0.001	0.906	+	0.016	0.575	-	0.114	0.124	-	0.044	0.352
Lake Mariana	-	0.034	0.548	-	0.002	0.873	-	0.137	0.213	-	0.004	0.833
Lake Martha	+	0.219	0.032	-	0.031	0.431	+	0.046	0.340	+	0.172	0.061
Lake Maude	-	0.091	0.172	+	0.157	0.068	-	0.248	0.018	-	0.112	0.128
Lake May	-	0.762	0.000	+	0.622	0.001	-	0.794	0.000	-	0.616	0.002
Lake Mirror	-	0.135	0.217	+	0.157	0.180	-	0.544	0.004	-	0.113	0.262
Lake Ned	+	0.202	0.036	+	0.013	0.615	-	0.171	0.056	+	0.040	0.374
Lake Otis	-	0.341	0.018	+	0.398	0.009	-	0.570	0.001	-	0.129	0.172
Lake Pansy	+	0.017	0.569	+	0.274	0.012	-	0.144	0.081	+	0.011	0.636
Lake Rochelle	-	0.334	0.005	+	0.328	0.005	-	0.232	0.023	-	0.096	0.161
Lake Roy	-	0.157	0.180	+	0.359	0.030	-	0.414	0.018	-	0.001	0.941
Lake Shipp	-	0.207	0.034	+	0.318	0.006	-	0.521	0.000	-	0.111	0.130
Lake Silver	+	0.067	0.256	-	0.046	0.350	-	0.000	0.955	+	0.000	0.977
Lake Smart	-	0.866	0.000	+	0.800	0.000	-	0.869	0.000	-	0.216	0.150
Lake Summit	-	0.361	0.030	+	0.331	0.040	-	0.378	0.025	+	0.015	0.692
Lake Winterset	-	0.255	0.078	+	0.272	0.068	-	0.440	0.014	-	0.001	0.943
Little Lake Hamilton	-	0.537	0.001	+	0.519	0.001	-	0.448	0.003	-	0.522	0.001
Middle Lake Hamilton	-	0.541	0.001	+	0.661	0.000	-	0.540	0.001	-	0.486	0.001
Spring Lake	+	0.118	0.251	-	0.176	0.153	+	0.110	0.268	+	0.233	0.095

Table 4-7. Stormwater pollutant loading rates for all study area lakes.

Waterbody	Drainage Basin Area (Acres)	Total TN Load	Total TP Load	TN Load/Acre	TP Load/Acre
Lake Blue	183.72	871.51	154.23	4.74	0.84
Lake Buckeye	305.78	867.10	154.76	2.84	0.51
Lake Cannon	1039.11	3863.09	637.80	3.72	0.61
Lake Conine	796.43	2836.20	474.36	3.56	0.60
Lake Daisy	356.67	1717.66	382.25	4.82	1.07
Lake Deer	377.43	1451.11	261.19	3.84	0.69
Lake Elbert	605.00	2365.80	385.07	3.91	0.64
Lake Eloise	1981.43	3875.24	665.40	1.96	0.34
Lake Fannie	2208.68	4133.27	717.67	1.87	0.32
Lake Haines	2317.85	5701.02	1055.90	2.46	0.46
Lake Hamilton	4177.60	6701.70	1167.79	1.60	0.28
Lake Hartridge	920.07	2658.28	458.94	2.89	0.50
Lake Henry	2409.92	6902.81	1379.68	2.86	0.57
Lake Howard	1869.01	6321.28	1097.50	3.38	0.59
Lake Idyl	230.98	934.96	154.55	4.05	0.67
Lake Idylwild	225.44	669.14	121.61	2.97	0.54
Lake Jessie	973.41	3871.23	652.31	3.98	0.67
Lake Link	63.11	197.24	31.74	3.13	0.50
Lake Lulu	1006.48	2791.48	483.02	2.77	0.48
Lake Mariam	622.11	1609.45	274.81	2.59	0.44
Lake Mariana	1935.67	6530.83	1160.57	3.37	0.60
Lake Martha	307.50	1217.07	199.11	3.96	0.65
Lake Maude	385.75	1900.55	320.03	4.93	0.83
Lake May	353.57	1732.69	292.88	4.90	0.83
Lake Mirror	277.95	749.60	120.88	2.70	0.43
Lake Ned	256.97	1002.90	202.66	3.90	0.79
Lake Otis	586.90	2291.05	372.60	3.90	0.63
Lake Pansy	243.82	880.73	111.22	3.61	0.46
Lake Rochelle	1669.70	3002.65	522.22	1.80	0.31
Lake Roy	353.73	1448.34	241.53	4.09	0.68
Lake Shipp	910.64	3614.35	654.69	3.97	0.72
Lake Silver	164.17	633.20	106.11	3.86	0.65
Lake Smart	642.59	1673.37	348.90	2.60	0.54
Lake Spring	120.18	520.71	90.81	4.33	0.76
Lake Summit	166.52	513.32	82.73	3.08	0.50
Lake Winterset	1074.54	2258.84	407.59	2.10	0.38
Little Lake Hamilton	1015.97	1472.72	198.04	1.45	0.19
Middle Lake Hamilton	1539.88	11621.29	1072.03	7.55	0.70

Table 4-8. Count and density of known OSTD systems within each lake drainage basin.

Waterbody	OSTD Count	Density (OSTD/acre)
Lake Blue	0	0.00
Lake Buckeye	42	0.18
Lake Cannon	338	0.49
Lake Conine	40	0.07
Lake Daisy	33	0.15
Lake Deer	48	0.18
Lake Elbert	2	0.00
Lake Eloise	186	0.23
Lake Fannie	33	0.02
Lake Haines	15	0.01
Lake Hamilton	62	0.03
Lake Hartridge	65	0.14
Lake Howard	30	0.02
Lake Idyl	6	0.03
Lake Idylwild	33	0.25
Lake Jessie	111	0.14
Lake Link	15	0.23
Lake Lulu	42	0.06
Lake Mariam	132	0.32
Lake Mariana	0	0.00
Lake Martha	1	0.00
Lake Maude	0	0.00
Lake May	1	0.00
Lake Mirror	0	0.00
Lake Otis	66	0.15
Lake Pansy	0	0.00
Lake Rochelle	38	0.03
Lake Roy	125	0.44
Lake Shipp	57	0.09
Lake Silver	0	0.00
Lake Smart	0	0.00
Lake Summit	52	0.52
Lake Winterset	71	0.14
Little Lake Hamilton	0	0.00
Middle Lake Hamilton	4	0.02
Ned Lake	53	0.29
Spring Lake	0	0.00

Table 4-9. List of aquatic plant species detected in Winter Haven area lakes.

Common Name	Scientific Name	Common Name	Scientific Name
Alligator Weed	Alternanthera philoxeroides	Red Maple	Acer rubrum
American Lotus	Nelumbo lutea	Redtop Panicum	Panicum rigidulum
Bald Cypress Pond Cypress	Taxodium spp.	Road Grass	Eleocharis baldwinii
Banana Lily	Nymphoides aquatica	Rosy Camphorweed	Pluchea rosea
Bladderwort	Utricularia spp.	Rush Fuirena	Fuirena scirpoidea
Brazilian Pepper	Schinus terebinthifolius	Sacred Lotus	Nelumbo nucifera
Bulrushes	Scirpus spp.	Sawgrass	Cladium jamaicense
Burhead Sedge	Oxycaryum cubense	Soft Rush	Juncus effusus
Buttonbush	Cephalanthus occidentalis	Southern naiad	Najas guadalupensis
Carolina Willow	Salix caroliniana	Spatterdock	Nuphar advena
Cattail	Typha spp.	Stonewort Nitella	Nitella spp.
Climbing Hempweed	Mikania scandens	Swamp Bay	Persea palustris
Coontail	Ceratophyllum demersum	Sweetbay Magnolia	Magnolia virginiana
Duck Potato	Sagittaria lancifolia	Torpedograss	Panicum repens
Duckweed	Lemna spp.	Water Hyacinth	Eichhornia crassipes
Eel Grass	Vallisneria americana	Water Lettuce	Pistia stratiotes
Egyptian Paspalidium	Paspalidium geminatum	Water Pennywort	Hydrocotyle spp.
Elodea Waterweed	Egeria densa	Water Spangles	Salvinia minima
Filamentous Algae	Lyngbya species	Wild Taro	Colocasia esculenta
Fire Flag	Thalia geniculata		
Fragrant Water Lily	Nymphaea odorata		
Hairy Maiden Fern	Thelypteris hispidula		
Hydrilla	Hydrilla verticillata		
Illinois Pondweed	Potamogeton illinoensis		
Knotted Spikerush	Eleocharis interstincta		
Knotweed	Polygonum spp.		
Maidencane	Panicum hemitomon		
Melaleuca	Melaleuca quinquenervia		
Muskgrass	Chara spp.		
Papyrus	Cyperus papyrus		
Para grass	Urochloa mutica		
Parrot Feather	Myriophyllum aquaticum		
Pickerelweed	Pontederia cordata		
Primrose Willow	Ludwigia spp.		

Table 4-10. Percent area coverage values from 2018 – 2024 for all study area lakes.

Waterbody	2018	2019	2020	2021	2022	2023	2024
Lake Blue	19.5	6.5		17.6	46.9	78.9	78
Lake Buckeye	98	99.7	99.1	98.9	98.8	20.1	55.2
Lake Cannon	32.4	34.9	33.6	37.1	31.8	30.5	34.1
Lake Conine	29	38.8	36.5	24.2	25.7	23.1	28.1
Lake Daisy	3.4	14.3	9	21.7	31.1		32.3
Lake Deer	83.6	91	57.6	80.3	71.9	86.6	90.6
Lake Elbert	59.7	58.9	54.9	48.4	46.4	23.3	18.2
Lake Eloise	12.2	17.1	36.7	29	17.6	17	18.2
Lake Fannie	26.9	26.2	13.3	21.4	26.6	21	23.1
Lake Haines	24.1	26	34.7	10.4	7.5	31	12.1
Lake Hamilton	7.7	8.8	9.5	9.6	10.2	13.5	15.8
Lake Hartridge	35.6	39.7	63.1	36.4	37.9	42.4	43.1
Lake Howard	28.35	29	30	39.2	27.1	27.6	26.4
Lake Idyl	52.9	3.6	35.2	52.9	53	50.5	87.6
Lake Idylwild	49.1	52.5	54	66.7	58.9	60.4	87
Lake Jessie	35.7	51.6	36.1	34.7	43.5		86.3
Lake Link	53.5		47.7	26.5	24.6	34.9	25.8
Lake Lulu	37.5	40	38.2	38.9	45.7	46.3	46.2
Lake Mariam	5.8	20	13.5	45.7	34.9	96.9	85.8
Lake Mariana	22.4	26.1	27.3	24.5	27.8	31.4	27.7
Lake Martha	0.7	3.1	4.1	4.3	7.8	7.3	4.8
Lake Maude	96.2	99.1	99.1	96.3	71.6	79.3	43.4
Lake May	56	69.7	71	78	63.2	76.7	97.1
Lake Mirror	42.9	43.6	39.9	41.7	49.3	48.4	62.1
Lake Ned	7	13.6	4.8	10.1	16	27.5	42.4
Lake Otis	21.2	23.3	27.7	11.4	19.6	31.9	30.9
Lake Pansy	20.4	45	24.1	31	15.1	20.6	20.7
Lake Rochelle	34.3	33.9	34.1	31.5	43.8	27	45.9
Lake Roy	53.5	17	29.9	32.9	34.8	43.3	43
Lake Shipp	49.3	52.3	56.4	50.7	51.8	50.6	52.5
Lake Silver	1	7.3	2.4	1.7	2.3	5	18.8
Lake Smart	13.1	30.6	16.6	28.9	61.9	28.5	80.4
Lake Spring	56.7	57.8	60.4	53.9	56.3	56.9	56.1
Lake Summit	59.5	48.4	61.2	54.8	63	54.3	55.7
Lake Winterset	28.1	36.3	37.5	44.7	56	44.7	42.3
Little Lake Hamilton	18.2	17.4	15.9	14.9	21.3	18.6	35
Middle Lake Hamilton	12.3	19	12.2	8.6	21.8	61.2	52.9

Table 4-11. Invasive species percentage values from 2018 to 2024 for all study area lakes.

Waterbody	2018	2019	2020	2021	2022	2023	2024
Lake Blue	0	0	0	0	0	0	0
Lake Buckeye	14.18	11.32	13.14	6.8	2.98	2.22	6.61157
Lake Cannon	1.89	1.47	3.1	7.04	1.17	6.98	5.309735
Lake Conine	13.29	25.24	16.87	10.84	6.02	6.1	3.947368
Lake Daisy	0	0	0.94	0.65	0.66	5.1	0.719424
Lake Deer	8.13	26.33	15.33	28.39	19.05	17.78	2.739726
Lake Elbert	9.31	11.83	15.48	20.22	38.32	1.75	0
Lake Eloise	1.26	2.3	1.61	1.03	1.13	0.42	0.917431
Lake Fannie	16.41	17.79	11.81	14.37	16.97	13.86	11.06383
Lake Haines	24.07	28.99	25.76	4.29	5.19	4.76	0
Lake Hamilton	1.39	0.74	3.73	3.6	0	5.83	5.740181
Lake Hartridge	0	1.81	0.43	0	0.97	0	0
Lake Howard	0.96	0	0	0	0	0.52	0.423729
Lake Idyl	4.35	16.67	13.33	24	6.06	15.38	26.08696
Lake Idylwild	1.76	3.76	3.14	5.94	3.65	7.37	3.191489
Lake Jessie	1.27	6.33	4.65	11.84	2.55	5.14	11.11111
Lake Link	10.71	0	0	5.66	5.45	2	0
Lake Lulu	4.07	1.55	0	1.63	3.55	3.12	2.590674
Lake Mariam	30.65	23.6	3.03	0	2	11.32	6.818182
Lake Mariana	1.63	0	0	0.57	0	0	0
Lake Martha	0	2.33	0	0	0	0	0
Lake Maude	2.86	4.38	2.23	5.69	1.63	2.88	2.459016
Lake May	7.37	11.32	11.32	13.83	18.33	17.24	5.228758
Lake Mirror	0.65	3.36	3.68	1.23	7.14	2.99	1.898734
Lake Ned	5.81	5.48	0	0	1.27	0	1.075269
Lake Otis	3.96	11.16	0	1.18	2.29	2.53	0
Lake Pansy	13.16	12.5	16	21.28	6.06	1.64	0
Lake Rochelle	8	22.5	20.11	15.48	14.71	7.37	7.29927
Lake Roy	17.69	4.76	1.08	7.81	1.55	4.62	0
Lake Shipp	3.68	6.25	6.63	1.8	2.33	1.67	5.294118
Lake Silver	0	0	0	0	0	0	0
Lake Smart	1.33	12.9	2.25	3.16	3.39	4.44	6.666667
Lake Spring	17.81	18.64	17.65	11.86	5.8	22.5	13.51351
Lake Summit	4.4	3.45	4.21	2.86	4.96	3.7	1.123596
Lake Winterset	3.09	7.93	6.49	13.82	17.55	7.89	6.372549
Little Lake Hamilton	1.27	0	1.86	3.43	0	0	0
Middle Lake Hamilton	3.85	3.29	0	2.61	6.34	25	21.73913

4.3 List of Figures

FIGURE 1-1. MAP OF PEACE RIVER & PEACE CREEK WATERSHEDS....12
FIGURE 1-2. MAP OF THE PEACE CREEK SUB-BASIN, CITY OF WINTER HAVEN LIMITS, CONTRIBUTING LAKES AND FLOW-WAYS....13
FIGURE 1-3. MAP OF WINTER HAVEN LAKES, NAVIGABLE CANALS, NON-NAVIGABLE FLOW-WAYS, AND MAJOR OUTFLOWS....16
FIGURE 2-1. BIOVOLUME HEAT MAP OF LAKE MAUDE. COLOR SCALE REPRESENTS PERCENT OF WATER COLUMN OCCUPIED BY PLANTS. ...37
FIGURE 2-2. PHOTO OF A RAINGARDEN CAPTURING RUNOFF AND ROAD DEBRIS IN DOWNTOWN WINTER HAVEN. 39
FIGURE 2-3. MAP DEPICTING THE WINTER HAVEN NATURE PARKS AND THEIR DRAINAGE BASINS....40
FIGURE 2-4 DIAGRAM OF ALUM FLOC ADSORPTION PROPERTIES. [BIONICS, 2013] 45
FIGURE 2-5. RENDERING OF THE SAPPHIRE NECKLACE CONCEPT THAT INCLUDES WATER STORAGE, AQUIFER RECHARGE, AND NATURE PARK AREAS. 48
FIGURE 3-1. 2024 MONTHLY AND ANNUAL RAINFALL TOTALS IN RELATION TO THE LONG-TERM AVERAGE. 65
FIGURE 3-2. ANNUAL RAINFALL TOTALS FOR THE WINTER HAVEN AREA FROM 2000 TO 2024. 66
FIGURE 3-3. MONTHLY UPPER FLORIDAN AQUIFER LEVELS FROM 2000 TO 2024. UFA LEVELS GRAPHED IN RELATION TO LONG-TERM MEAN AND NORMAL RANGE. 67
FIGURE 3-4. HYPSOGRAPH OF LAKE BLUE DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED....69
FIGURE 3-5. MAP OF LAKE BLUE'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 69
FIGURE 3-6. HYDROGRAPH OF LAKE BLUE DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS THE TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 70
FIGURE 3-7. LAKE BLUE AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 71
FIGURE 3-8. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST)....72
FIGURE 3-9. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE BLUE DURING 2024. 73
FIGURE 3-10. CHART DEPICTING 2024 DIVERSITY INDEX VALUES FOR LAKE BLUE. 73
FIGURE 3-11. CHART DEPICTING A COMPARISON OF LAKE BLUE'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 74
FIGURE 3-12. HYPSOGRAPH OF LAKE BUCKEYE DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 75
FIGURE 3-13. MAP OF LAKE BUCKEYE'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 75
FIGURE 3-14. HYDROGRAPH OF LAKE BUCKEYE DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 76
FIGURE 3-15. LAKE BUCKEYE AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 77
FIGURE 3-16. GRAPH DEPICTING 2023 PAC/BV AND BIOVOLUME HEATMAP; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST)....78
FIGURE 3-17. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE BUCKEYE DURING 2024. 79
FIGURE 3-18. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE BUCKEYE. DASHED LINES REPRESENT MEDIAN VALUES....79
FIGURE 3-19. CHART DEPICTING A COMPARISON OF LAKE BUCKEYE'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 80
FIGURE 3-20. HYPSOGRAPH OF LAKE CANNON DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 81
FIGURE 3-21. MAP OF LAKE CANNON'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 81
FIGURE 3-22. HYDROGRAPH OF THE SOUTH CHAIN OF LAKES DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX & WHISKER PLOT DETAILS THE TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD....82
FIGURE 3-23. LAKE CANNON AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 83
FIGURE 3-24. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST)....84
FIGURE 3-25. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE CANNON DURING 2024. 84
FIGURE 3-26. CHART DEPICTING 2024 DIVERSITY INDEX VALUES FOR LAKE CANNON. DASHED LINES REPRESENT MEDIAN VALUES. 85
FIGURE 3-27. CHART DEPICTING A COMPARISON OF LAKE CANNON'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 86

FIGURE 3-28. HYPSOGRAPH OF LAKE CONINE DEPICTING THE DEPTH PROFILE AND BED MORPHOLOGY. 87
FIGURE 3-29. MAP OF LAKE CONINE'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 87
FIGURE 3-30. HYDROGRAPH OF LAKE CONINE DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX & WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 88
FIGURE 3-31. LAKE CONINE AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 89
FIGURE 3-32. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE CONINE; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 90
FIGURE 3-33. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE CONINE DURING 2024. 90
FIGURE 3-34. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE CONINE. DASHED LINE REPRESENT MEDIAN VALUES. 91
FIGURE 3-35. CHART DEPICTING A COMPARISON OF LAKE BUCKEYE'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 92
FIGURE 3-36. HYPSOGRAPH OF LAKE DAISY DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 93
FIGURE 3-37. MAP OF LAKE DAISY'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 93
FIGURE 3-38. HYDROGRAPH OF LAKE DAISY DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAIL TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 94
FIGURE 3-39. LAKE DAISY AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 95
FIGURE 3-40. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE DAISY; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 96
FIGURE 3-41. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE DAISY DURING 2024. 97
FIGURE 3-42. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE DAISY. DASHED LINES REPRESENT MEDIAN VALUES. 97
FIGURE 3-43. CHART DEPICTING A COMPARISON OF LAKE DAISY'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 98
FIGURE 3-44. HYPSOGRAPH OF LAKE DEER DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 99
FIGURE 3-45. MAP OF LAKE DEER'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 99
FIGURE 3-46. HYDROGRAPH OF LAKE DEER DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVELS DURING THE PERIOD OF RECORD. 100
FIGURE 3-47. LAKE DEER AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2003 TO 2023. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 101
FIGURE 3-48. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE DEER; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 102
FIGURE 3-49. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE DEER DURING 2024. 102
FIGURE 3-50. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE DEER. DASHED LINES REPRESENT MEDIAN VALUES. 103
FIGURE 3-51. CHART DEPICTING A COMPARISON OF LAKE DEER'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2023. 103
FIGURE 3-52. HYPSOGRAPH OF LAKE ELBERT DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 105
FIGURE 3-53. MAP OF LAKE ELBERT'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 105
FIGURE 3-54. HYDROGRAPH OF LAKE ELBERT DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 106
FIGURE 3-55. LAKE ELBERT AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 107
FIGURE 3-56.CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE ELBERT DURING 2024. 108
FIGURE 3-57. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE ELBERT; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 108
FIGURE 3-58. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE ELBERT. DASHED LINES REPRESENT MEDIAN VALUES. 109
FIGURE 3-59. CHART DEPICTING A COMPARISON OF LAKE ELBERT'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 110
FIGURE 3-60. HYPSOGRAPH OF LAKE ELOISE DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 111
FIGURE 3-61. MAP OF LAKE ELOISE'S DRAINAGE BASIN AND NEARBY SEPTIC SYSTEMS. 111
FIGURE 3-62. HYDROGRAPH OF THE SOUTH CHAIN OF LAKES DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX & WHISKER PLOT DETAILS THE TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 112

FIGURE 3-63. LAKE ELOISE AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE ABUNDANCE...113
FIGURE 3-64. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE ELOISE; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 114
FIGURE 3-65. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE ELOISE DURING 2024. 114
FIGURE 3-66. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE ELOISE. DASHED LINES REPRESENT MEDIAN VALUES....115
FIGURE 3-67. CHART DEPICTING A COMPARISON OF LAKE ELOISE'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 115
FIGURE 3-68. HYPSOGRAPH OF LAKE FANNIE DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 117
FIGURE 3-69. MAP OF LAKE FANNIE'S DRAINAGE BASIN, CITY STREET SWEEPING SERVICES, AND NEARBY SEPTIC SYSTEMS....117
FIGURE 3-70. HYDROGRAPH OF LAKE FANNIE DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 118
FIGURE 3-71. LAKE FANNIE AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 119
FIGURE 3-72. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE FANNIE; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 120
FIGURE 3-73. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE FANNIE DURING 2024. 120
FIGURE 3-74. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE FANNIE. DASHED LINES REPRESENT MEDIAN VALUES....121
FIGURE 3-75. CHART DEPICTING A COMPARISON OF LAKE FANNIE'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 121
FIGURE 3-76. HYPSOGRAPH OF LAKE HAINES DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 123
FIGURE 3-77. MAP OF LAKE HAINES' DRAINAGE BASIN AND NEARBY SEPTIC SYSTEMS. 123
FIGURE 3-78. HYDROGRAPH OF LAKE HAINES DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 124
FIGURE 3-79. LAKE HAINES' AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 125
FIGURE 3-80. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE HAINES; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 126
FIGURE 3-81. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE HAINES DURING 2024. 126
FIGURE 3-82. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE HAINES. DASHED LINES REPRESENT MEDIAN VALUES....127
FIGURE 3-83. CHART DEPICTING A COMPARISON OF LAKE HAINES' LAKE HEALTH INDEX SCORES FROM 2018 TO 2023. 127
FIGURE 3-84. HYPSOGRAPH OF LAKE HAMILTON DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 129
FIGURE 3-85. MAP OF LAKE HAMILTON'S DRAINAGE BASIN AND NEARBY SEPTIC SYSTEMS. 129
FIGURE 3-86. HYDROGRAPH OF LAKE HAMILTON DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 130
FIGURE 3-87. LAKE HAMILTON AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 131
FIGURE 3-88. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME OF LAKE HAMILTON; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 132
FIGURE 3-89. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE HAMILTON DURING 2024. 132
FIGURE 3-90. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE HAMILTON. DASHED LINES REPRESENT MEDIAN VALUES. 133
FIGURE 3-91. CHART DEPICTING A COMPARISON OF LAKE HAMILTON'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 133
FIGURE 3-92. HYPSOGRAPH OF LAKE HARTRIDGE DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 135
FIGURE 3-93. MAP OF LAKE HARTRIDGE'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 135
FIGURE 3-94. HYDROGRAPH OF THE SOUTH CHAIN OF LAKES DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 136
FIGURE 3-95. LAKE HARTRIDGE AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS SHOWING RELATIVE VARIANCE. 137
FIGURE 3-96. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE HARTRIDGE; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 138

FIGURE 3-97. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE HARTRIDGE DURING 2024. 138
FIGURE 3-98. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE HARTRIDGE. DASHED LINES REPRESENT MEDIAN VALUES. 139
FIGURE 3-99. CHART DEPICTING A COMPARISON OF LAKE HARTRIDGE'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 139
FIGURE 3-100. HYPSOGRAPH OF LAKE HOWARD DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 141
FIGURE 3-101. MAP OF LAKE HOWARD'S DRAINAGE BASIN, CITY STREET SWEEPING ROUTES, AND NEARBY SEPTIC SYSTEMS. 141
FIGURE 3-102. HYDROGRAPH OF LAKE HOWARD DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 142
FIGURE 3-103. LAKE HOWARD AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 143
FIGURE 3-104. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE HOWARD; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 144
FIGURE 3-105. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE HOWARD DURING 2024. 145
FIGURE 3-106. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE HOWARD. DASHED LINES REPRESENT MEDIAN VALUES. 145
FIGURE 3-107. CHART DEPICTING A COMPARISON OF LAKE HOWARD'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 146
FIGURE 3-108. HYPSOGRAPH OF LAKE IDYL DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 148
FIGURE 3-109. MAP OF LAKE IDYL'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 148
FIGURE 3-110. HYDROGRAPH OF LAKE IDYL DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 149
FIGURE 3-111. LAKE IDYL AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 150
FIGURE 3-112. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE IDYL; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 151
FIGURE 3-113. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE IDYL DURING 2024. 151
FIGURE 3-114. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE IDYL. DASHED LINES REPRESENT MEDIAN VALUES. 152
FIGURE 3-115. CHART DEPICTING A COMPARISON OF LAKE IDYL'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 152
FIGURE 3-116. HYPSOGRAPH OF LAKE IDYLWILD DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 154
FIGURE 3-117. MAP OF LAKE IDYLWILD'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 154
FIGURE 3-118. HYDROGRAPH OF LAKE IDYLWILD DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 155
FIGURE 3-119. LAKE IDYLWILD AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 156
FIGURE 3-120. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE IDYLWILD; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 157
FIGURE 3-121. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE IDYLWILD DURING 2024. 158
FIGURE 3-122. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE IDYLWILD. DASHED LINES REPRESENT MEDIAN VALUES. 158
FIGURE 3-123. CHART DEPICTING A COMPARISON OF LAKE IDYLWILD'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 159
FIGURE 3-124. HYPSOGRAPH OF LAKE JESSIE DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 160
FIGURE 3-125. MAP OF LAKE JESSIE'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 160
FIGURE 3-126. HYDROGRAPH OF LAKE JESSIE DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVELS DURING THE PERIOD OF RECORD. 161
FIGURE 3-127. LAKE JESSIE AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 162
FIGURE 3-128. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE JESSIE; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 163
FIGURE 3-129. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE JESSIE DURING 2024. 164
FIGURE 3-130. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE JESSIE. DASHED LINES REPRESENT MEDIAN VALUES. 164
FIGURE 3-131. CHART DEPICTING A COMPARISON OF LAKE JESSIE'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 165
FIGURE 3-132. HYPSOGRAPH OF LAKE LINK DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 166
FIGURE 3-133. MAP OF LAKE LINK'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 166

FIGURE 3-134. HYDROGRAPH OF LAKE LINK DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 167
FIGURE 3-135. LAKE LINK AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS SHOWING RELATIVE VARIANCE. 168
FIGURE 3-136. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE LINK; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 169
FIGURE 3-137. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE LINK DURING 2024. 169
FIGURE 3-138. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE LINK. DASHED LINES REPRESENT MEDIAN VALUES.....170
FIGURE 3-139. CHART DEPICTING A COMPARISON OF LAKE LINK'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 170
FIGURE 3-140. HYPSOGRAPH OF LAKE LULU DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED.....172
FIGURE 3-141. MAP OF LAKE LULU'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 172
FIGURE 3-142. HYDROGRAPH OF LAKE LULU DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAIL TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 173
FIGURE 3-143. LAKE LULU AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 174
FIGURE 3-144. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE LULU; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 175
FIGURE 3-145. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE LULU DURING 2024. 175
FIGURE 3-146. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE LULU. DASHED LINES REPRESENT MEDIAN VALUES.....176
FIGURE 3-147. CHART DEPICTING A COMPARISON OF LAKE LULU'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 176
FIGURE 3-148. HYPSOGRAPH OF LAKE MARIAM DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 178
FIGURE 3-149. MAP OF LAKE MARIAM'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS.....178
FIGURE 3-150. HYDROGRAPH OF LAKE MARIAM DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2023. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 179
FIGURE 3-151. LAKE MARIAM AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 180
FIGURE 3-152. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE MARIAM; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 181
FIGURE 3-153. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE MARIAM DURING 2024. 181
FIGURE 3-154. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE MARIAM. DASHED LINES REPRESENT MEDIAN VALUES.....182
FIGURE 3-155. CHART DEPICTING A COMPARISON OF LAKE MARIAM'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024.....183
FIGURE 3-156. HYPSOGRAPH OF LAKE MARIANA DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 184
FIGURE 3-157. MAP OF LAKE MARIANA'S DRAINAGE BASIN AND NEARBY SEPTIC SYSTEMS. 184
FIGURE 3-158. HYDROGRAPH OF LAKE MARIANA DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2010 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 185
FIGURE 3-159. LAKE MARIANA AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS SHOWING RELATIVE VARIANCE. 186
FIGURE 3-160. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE MARIANA; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 187
FIGURE 3-161. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE MARIANA DURING 2024. 188
FIGURE 3-162. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE MARIANA. DASHED LINES REPRESENT MEDIAN VALUES. 188
FIGURE 3-163. CHART DEPICTING A COMPARISON OF LAKE MARIANA'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024.....189
FIGURE 3-164. HYPSOGRAPH OF LAKE MARTHA DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 190
FIGURE 3-165. MAP OF LAKE MARTHA'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS.....190
FIGURE 3-166. HYDROGRAPH OF LAKE MARTHA DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 191
FIGURE 3-167. LAKE MARTHA AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2003 TO 2023. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 192

FIGURE 3-168. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE MARTHA; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 193
FIGURE 3-169. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE MARTHA DURING 2024. 194
FIGURE 3-170. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE MARTHA. DASHED LINES REPRESENT MEDIAN VALUES. 194
FIGURE 3-171. CHART DEPICTING A COMPARISON OF LAKE MARTHA'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 195
FIGURE 3-172. HYPSOGRAPH OF LAKE MAUDE DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 196
FIGURE 3-173. MAP OF LAKE MAUDE'S DRAINAGE BASIN AND CITY STREET SWEEPER ROUTES. 196
FIGURE 3-174. HYDROGRAPH OF LAKE MAUDE DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 197
FIGURE 3-175. LAKE MAUDE AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 198
FIGURE 3-176. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE MAUDE. BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 199
FIGURE 3-177. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE MAUDE DURING 2024. 200
FIGURE 3-178. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE MAUDE. DASHED LINES REPRESENT MEDIAN VALUES. 200
FIGURE 3-179. CHART DEPICTING COMPARISON OF LAKE MAUDE'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 201
FIGURE 3-180. HYPSOGRAPH OF LAKE MAY DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 202
FIGURE 3-181. MAP OF LAKE MAY'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 202
FIGURE 3-182. HYDROGRAPH OF LAKE MAY DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 203
FIGURE 3-183. LAKE MAY AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 204
FIGURE 3-184. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE MAY; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 205
FIGURE 3-185. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE MAY DURING 2024. 206
FIGURE 3-186. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE MAY. DASHED LINES REPRESENT MEDIAN VALUES. 206
FIGURE 3-187. CHART DEPICTING A COMPARISON OF LAKE MAY'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 207
FIGURE 3-188. HYPSOGRAPH OF LAKE MIRROR DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 208
FIGURE 3-189. MAP OF LAKE MIRROR'S DRAINAGE BASIN AND CITY STREET SWEEPER ROUTES. 208
FIGURE 3-190. HYDROGRAPH OF LAKE MIRROR DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 209
FIGURE 3-191. LAKE MIRROR AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS SHOWING RELATIVE VARIANCE. 210
FIGURE 3-192. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE MIRROR; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 211
FIGURE 3-193. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PRESENCE OF LAKE MIRROR DURING 2024. 212
FIGURE 3-194. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE MIRROR. DASHED LINES REPRESENT MEDIAN VALUES. 212
FIGURE 3-195. CHART DEPICTING A COMPARISON OF LAKE MIRROR'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 213
FIGURE 3-196. HYPSOGRAPH OF LAKE NED DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 214
FIGURE 3-197. MAP OF LAKE NED'S DRAINAGE BASIN AND NEARBY SEPTIC SYSTEMS. 214
FIGURE 3-198. HYDROGRAPH OF LAKE NED DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 215
FIGURE 3-199. LAKE NED AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS SHOWING RELATIVE VARIANCE. 216
FIGURE 3-200. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE NED; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 217
FIGURE 3-201. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE NED DURING 2024. 218
FIGURE 3-202. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE NED. DASHED LINES REPRESENT MEDIAN VALUES. 218
FIGURE 3-203. CHART DEPICTING A COMPARISON OF LAKE NED'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 219

FIGURE 3-204. HYPSOGRAPH OF LAKE OTIS DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 220
FIGURE 3-205. MAP OF LAKE OTIS' DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 220
FIGURE 3-206. HYDROGRAPH OF LAKE OTIS DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 221
FIGURE 3-207. LAKE OTIS AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS SHOWING RELATIVE VARIANCE. 222
FIGURE 3-208. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE OTIS; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 223
FIGURE 3-209. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE OTIS DURING 2024. 224
FIGURE 3-210. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE OTIS. DASHED LINES REPRESENT MEDIAN VALUES. 224
FIGURE 3-211. CHART DEPICTING A COMPARISON OF LAKE OTIS' LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 225
FIGURE 3-212. HYPSOGRAPH OF LAKE PANSY DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 226
FIGURE 3-213. MAP OF LAKE PANSY'S DRAINAGE BASIN AND NEARBY SEPTIC SYSTEMS. 226
FIGURE 3-214. HYDROGRAPH OF LAKE PANSY DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 227
FIGURE 3-215. LAKE PANSY AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 228
FIGURE 3-216. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE PANSY; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 229
FIGURE 3-217. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE PANSY DURING 2024. 230
FIGURE 3-218. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE PANSY. DASHED LINES REPRESENT MEDIAN VALUES. 230
FIGURE 3-219. CHART DEPICTING A COMPARISON OF LAKE PANSY'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 231
FIGURE 3-220. HYPSOGRAPH OF LAKE ROCHELLE DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 232
FIGURE 3-221. MAP OF LAKE ROCHELLE'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 232
FIGURE 3-222. HYDROGRAPH OF LAKE ROCHELLE DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 233
FIGURE 3-223. LAKE ROCHELLE AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 234
FIGURE 3-224. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE ROCHELLE; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 235
FIGURE 3-225. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE ROCHELLE DURING 2024. 236
FIGURE 3-226. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE ROCHELLE. DASHED LINES REPRESENT MEDIAN VALUES. 236
FIGURE 3-227. CHART DEPICTING A COMPARISON OF LAKE ROCHELLE'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 237
FIGURE 3-228. HYPSOGRAPH OF LAKE ROY DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 238
FIGURE 3-229. MAP OF LAKE ROY'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 238
FIGURE 3-230. HYDROGRAPH OF LAKE ROY DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 239
FIGURE 3-231. LAKE ROY AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS SHOWING RELATIVE VARIANCE. 240
FIGURE 3-232. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE ROY; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) AND RED (HIGHEST). 241
FIGURE 3-233. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE ROY DURING 2024. 242
FIGURE 3-234. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE ROY. DASHED LINES REPRESENT MEDIAN VALUES. 242
FIGURE 3-235. CHART DEPICTING A COMPARISON OF LAKE ROY'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 243
FIGURE 3-236. HYPSOGRAPH OF LAKE SHIPP DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 244
FIGURE 3-237. MAP OF LAKE SHIPP'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 244
FIGURE 3-238. HYDROGRAPH OF LAKE SHIPP DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 245

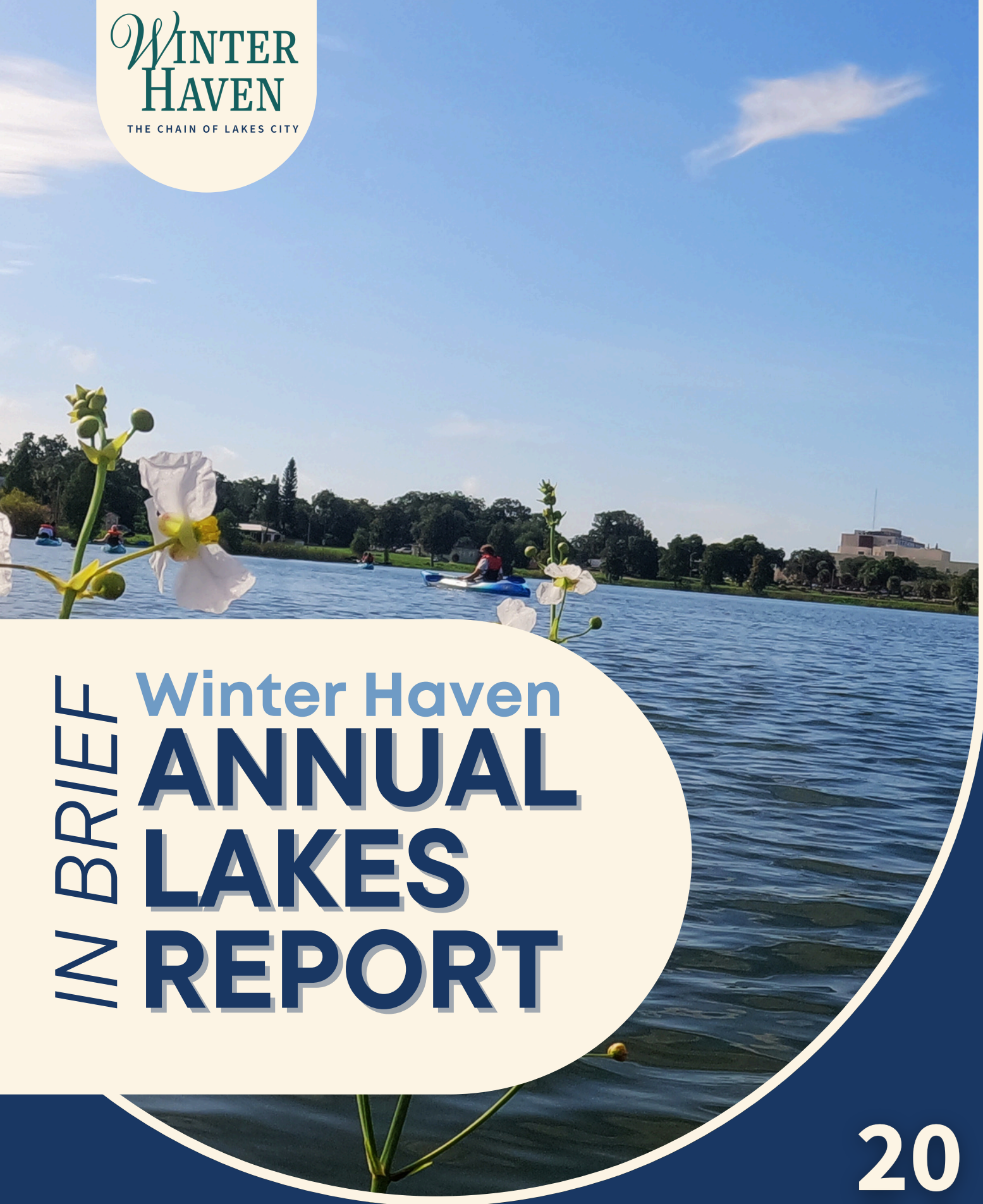
FIGURE 3-239. LAKE SHIPP AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 246
FIGURE 3-240. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE SHIPP; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 247
FIGURE 3-241. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE SHIPP DURING 2024.....248
FIGURE 3-242. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE SHIPP. DASHED LINES REPRESENT MEDIAN VALUES. 248
FIGURE 3-243. CHART DEPICTING A COMPARISON OF LAKE SHIPP'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 249
FIGURE 3-244. HYPSOGRAPH OF LAKE SILVER DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED.....250
FIGURE 3-245. MAP OF LAKE SILVER'S DRAINAGE BASIN, CITY STREET SWEEPER ROUTES, AND NEARBY SEPTIC SYSTEMS. 250
FIGURE 3-246. HYDROGRAPH OF LAKE SILVER DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 251
FIGURE 3-247. LAKE SILVER AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 252
FIGURE 3-248. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE SILVER; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 253
FIGURE 3-249. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE SILVER DURING 2024. 253
FIGURE 3-250. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE SILVER. DASHED LINES REPRESENT MEDIAN VALUES. 254
FIGURE 3-251. CHART DEPICTING A COMPARISON OF LAKE SILVER'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 254
FIGURE 3-252. HYPSOGRAPH OF LAKE SMART DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 256
FIGURE 3-253. MAP OF LAKE SMART'S DRAINAGE BASIN AND NEARBY SEPTIC SYSTEMS. 256
FIGURE 3-254. HYDROGRAPH OF LAKE SMART DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 257
FIGURE 3-255. LAKE SMART AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 258
FIGURE 3-256. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE SMART; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 259
FIGURE 3-257. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE SMART DURING 2024. 259
FIGURE 3-258. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE SMART. DASHED LINES REPRESENT MEDIAN VALUES. 260
FIGURE 3-259. CHART DEPICTING A COMPARISON OF LAKE SMART'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 260
FIGURE 3-260. HYPSOGRAPH OF LAKE SPRING DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED.....262
FIGURE 3-261. MAP OF LAKE SPRING'S DRAINAGE BASIN AND CITY STREET SWEEPER ROUTES. 262
FIGURE 3-262. HYDROGRAPH OF LAKE SPRING DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 263
FIGURE 3-263. LAKE SPRING AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 264
FIGURE 3-264. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE SPRING: BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 265
FIGURE 3-265. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE SPRING DURING 2024. 266
FIGURE 3-266. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE SPRING. DASHED LINES REPRESENT MEDIAN VALUES.....266
FIGURE 3-267. CHART DEPICTING A COMPARISON OF LAKE SPRING'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 267
FIGURE 3-268. HYPSOGRAPH OF LAKE SUMMIT DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 268
FIGURE 3-269. MAP OF LAKE SUMMIT'S DRAINAGE BASIN AND NEARBY SEPTIC SYSTEMS. 268
FIGURE 3-270. HYDROGRAPH OF LAKE SUMMIT DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAIL TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 269
FIGURE 3-271. LAKE SUMMIT AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 270
FIGURE 3-272. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE SUMMIT; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 271
FIGURE 3-273. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LAKE SUMMIT DURING 2024. 272

FIGURE 3-274. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE SUMMIT. DASHED LINES REPRESENT MEDIAN VALUES. 272
FIGURE 3-275. CHART DEPICTING A COMPARISON OF LAKE SUMMIT'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 273
FIGURE 3-276. HYPSOGRAPH OF LAKE WINTERSET DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 274
FIGURE 3-277. MAP OF LAKE WINTERSET'S DRAINAGE BASIN AND NEARBY SEPTIC SYSTEMS. 274
FIGURE 3-278. HYDROGRAPH OF LAKE WINTERSET DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. 275
FIGURE 3-279. LAKE WINTERSET AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE.276
FIGURE 3-280. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LAKE WINTERSET; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 277
FIGURE 3-281. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PRESENCE OF LAKE WINTERSET DURING 2024. 278
FIGURE 3-282. CHART DEPICTING 2024 DIVERSITY INDICES FOR LAKE WINTERSET. DASHED LINES REPRESENT MEDIAN VALUES. 278
FIGURE 3-283. CHART DEPICTING A COMPARISON OF LAKE WINTERSET'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 279
FIGURE 3-284. HYPSOGRAPH OF LITTLE LAKE HAMILTON DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED.....280
FIGURE 3-285. MAP OF LITTLE LAKE HAMILTON'S DRAINAGE BASIN AND NEARBY SEPTIC SYSTEMS. 280
FIGURE 3-286. HYDROGRAPH OF LITTLE LAKE HAMILTON DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. .281
FIGURE 3-287. LITTLE LAKE HAMILTON AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 282
FIGURE 3-288. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF LITTLE LAKE HAMILTON; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 283
FIGURE 3-289. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF LITTLE LAKE HAMILTON DURING 2024. 284
FIGURE 3-290. CHART DEPICTING 2024 DIVERSITY INDICES FOR LITTLE LAKE HAMILTON. DASHED LINES REPRESENT MEDIAN VALUES...284
FIGURE 3-291. CHART DEPICTING A COMPARISON OF LITTLE LAKE HAMILTON'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. ...285
FIGURE 3-292. HYPSOGRAPH OF MIDDLE LAKE HAMILTON DEPICTING THE DEPTH PROFILE AND MORPHOLOGY OF THE LAKE BED. 286
FIGURE 3-293. MAP OF MIDDLE LAKE HAMILTON'S DRAINAGE BASIN AND NEARBY SEPTIC SYSTEMS. 286
FIGURE 3-294. HYDROGRAPH OF MIDDLE LAKE HAMILTON DEPICTING MONTHLY SURFACE LEVEL READINGS FROM 2000 TO 2024. A BOX AND WHISKER PLOT DETAILS TOTAL RANGE, MEDIAN, AND NORMAL RANGE OF SURFACE LEVEL DURING THE PERIOD OF RECORD. .287
FIGURE 3-295. MIDDLE LAKE HAMILTON AGM CHL-A, TN, TP, AND SECCHI DEPTH VALUES FROM 2004 TO 2024. DATA POINTS COLORED IN RED DEPICT NNC EXCEEDANCES. ALSO DETAILED ARE TREND LINES AND BOX & WHISKER PLOTS THAT SHOW RELATIVE VARIANCE. 288
FIGURE 3-296. GRAPH DEPICTING 2024 PAC/BV AND BIOVOLUME HEATMAP OF MIDDLE LAKE HAMILTON; BIOVOLUME VALUES RANGE FROM GREEN (LOWEST) TO RED (HIGHEST). 289
FIGURE 3-297. CHART DEPICTING SPECIES FREQUENCY AND INVASIVE SPECIES PERCENTAGE OF MIDDLE LAKE HAMILTON DURING 2024. 290
FIGURE 3-298. CHART DEPICTING 2022 DIVERSITY INDICES FOR MIDDLE LAKE HAMILTON. DASHED LINES REPRESENT MEDIAN VALUES. 290
FIGURE 3-299. CHART DEPICTING A COMPARISON OF MIDDLE LAKE HAMILTON'S LAKE HEALTH INDEX SCORES FROM 2018 TO 2024. 291

4.4 List of Tables

TABLE 1-1. CONTROL STRUCTURE ELEVATIONS (IN FEET ABOVE SEA LEVEL), CONTRIBUTING WATERBODIES, AND MANAGING AGENCIES OF STUDY AREA LAKES.....15
TABLE 2-1. ANNUAL TN & TP MASS LOADING & AREAL LOADING VALUES FOR LAKES MAY, SHIPP, AND LULU DETERMINED THROUGH THE SEDIMENT ANALYSIS PERFORMED BY ERD. 52
TABLE 3-1. 2024 LAKE HEALTH INDEX SCORES RANKING THE WINTER HAVEN STUDY AREA LAKES FROM HIGHEST TO LOWEST PRIORITY.292
TABLE 3-2. MEAN LAKE HEALTH INDEX SCORES FOR ALL WINTER HAVEN AREA LAKES FROM 2018 TO 2024. 294
TABLE 4-1. ANNUAL GEOMETRIC MEAN CORRECTED CHLOROPHYLL-A CONCENTRATIONS FROM 2004 – 2024 FOR ALL STUDY AREA LAKES. 301
TABLE 4-2. ANNUAL GEOMETRIC MEAN TOTAL NITROGEN CONCENTRATIONS FROM 2004 - 2024 FOR ALL STUDY AREA LAKES.....302
TABLE 4-3. ANNUAL GEOMETRIC MEAN TOTAL PHOSPHORUS CONCENTRATIONS FROM 2004 – 2024 FOR ALL STUDY AREA LAKES.....303
TABLE 4-4. ANNUAL GEOMETRIC MEAN SECCHI DEPTH FROM 2004 – 2024 FOR ALL STUDY AREA LAKES.....304
TABLE 4-5. TRENDLINE STATISTICS FOR LINEAR REGRESSIONS OF CHL-A, TN, TP, AND SECCHI DEPTH FROM 2004 - 2024. STATS INCLUDE REGRESSION DIRECTION (+/-), R-SQUARED VALUE, AND P-VALUE.....305
TABLE 4-6. TREND STATISTICS FOR LINEAR REGRESSIONS OF LAKE SURFACE LEVELS AGAINST CHL-A, TN, TP, AND SECCHI DEPTH FROM 2000 - 2021. STATS INCLUDE REGRESSION DIRECTION (+/-), R-SQUARED VALUE, AND P-VALUE. 306
TABLE 4-7. STORMWATER POLLUTANT LOADING RATES FOR ALL STUDY AREA LAKES. 307
TABLE 4-8. COUNT AND DENSITY OF KNOWN OSTD SYSTEMS WITHIN EACH LAKE DRAINAGE BASIN.....308
TABLE 4-9. LIST OF AQUATIC PLANT SPECIES DETECTED IN WINTER HAVEN AREA LAKES. 309
TABLE 4-10. PERCENT AREA COVERAGE VALUES FROM 2018 – 2024 FOR ALL STUDY AREA LAKES.....310
TABLE 4-11. INVASIVE SPECIES PERCENTAGE VALUES FROM 2018 TO 2024 FOR ALL STUDY AREA LAKES.....311

WINTER HAVEN
THE CHAIN OF LAKES CITY



IN BRIEF

Winter Haven ANNUAL LAKES REPORT

2024

PUBLISHED JULY 2025





DUSTIN EVERITT
Natural Resources
Division Manager

Manager's Note:

As someone who has spent a career working on freshwater ecosystems, few things are more meaningful to me than the opportunity to care for the Winter Haven Chain of Lakes. These waters aren't just part of our landscape—they're central to our identity as a community.

Our team in the Natural Resources Division works every day to protect, restore, and understand this unique system. Whether it's removing invasive vegetation, restoring City-owned shorelines, improving water quality, or helping residents better connect with the lakes they love, our work is grounded in a simple goal: to leave these lakes better than we found them.

This report reflects just a small piece of what we do, but I hope it gives you a sense of the passion and purpose behind our efforts. The progress we've made is the result of countless hours in the field, strong community partnerships, and a belief that science and stewardship go hand in hand.

Thank you for taking the time to learn more about the Chain of Lakes and the work we're doing to protect it. We're proud to serve this community and grateful for the trust you've placed in us. Please do not hesitate to reach out to me or the rest of the Natural Resources team for more information or questions about our lakes.

Dustin W. Everitt

Office: 863-291-5881
Email: deveritt@mywinterhaven.com

CONTENTS:

pg. 4 **REPORT AT A GLANCE**
Gives high-level notable stats from this year's report

pg. 5 **ABOUT OUR LAKES**
Summary of water quality metrics and background on our lakes' watershed

pg. 8 **2024 LAKE HEALTH**
Presentation of 2024 Lake Health Index and highlights from the data

pg. 10 **2024 PROJECT UPDATES**
Brief updates on ongoing projects and project spotlight for 2024





SCAN FOR ONLINE PRESENTATION

SCAN FOR FULL REPORT DOC.

NOTE ON THE REPORT:

The **Annual Lakes Report** is an effort of the City of Winter Haven's **Natural Resources Division** to provide a comprehensive yet accessible overview of the **status of our lakes' health** and provide transparency on **management updates.** This effort is guided and supported by the citizen-led **Lakes Advisory Committee** and connects to the **Goal 4.3** of the City's Strategic Plan FY 25 - FY 29

This **"Report in Brief"** is intended to give a high level overview of the Annual Lakes Report - a comprehensive document as well as an online presentation is available at the QR codes to the left.

Have specific questions on your lake?

Check out the Full Report or Online presentation to get updated information on vegetation, water quality, and management strategies?



REPORT AT A GLANCE

BY THE NUMBERS:

37 Lakes **included in this report.** Criteria for inclusion were: has public access via ramp or canal, are within or adjacent to City limits, lie in the Peace River Watershed, and have at least 20 years of water quality and hydrologic data.

54% **of our lakes meet or exceed State water quality standards** (NNC). **This is up 17%** from 2018, when the Report was first published.

73% **of lakes show improving trends** in at least 2 water quality parameters

46.5 in. **of rainfall received in 2024.** This is below our annual average of **52 inches.** However, lake levels remain high overall. Higher lake levels can help improve water quality.

25 lakes had either no invasive plants present or had invasive populations managed at **low levels (<2.5%)** in 2024

1,800 **people reached** through educational programs.

& 37 individual outreach **programs hosted in 2024 (a new record)**

LAKE TRIVIA

Are there manatees in Winter Haven's lakes?

While the Fish and Wildlife Commission has **not** put manatees in the Chain, grass carp have been stocked in a few lakes to eat invasive aquatic weeds and help reduce the need for herbicides.



ABOUT OUR LAKES

Winter Haven's lakes are its most emblematic natural resources - being known as the **"Chain of Lakes City"** due to the chain of 18 lakes connected by navigable canals - made up of the South & North Chain.

Outside of the Chain - there are also several other lakes across the City that are not navigably connected - but which have smaller hydrologic connections through ditches, pipes, and in some cases wetlands that make them a part of our watershed. A full list of the lakes included in this report is provided below.

While the Chain of Lakes share a common water level - **each of our lakes has its own unique character determined by a wide variety of factors** - namely by their morphology - or shape and depth, stormwater inputs, and biological community (flora and fauna).



Above: Hand digging of canals began in 1915, later they were mechanically dredged with the same machine used in the Panama Canal!

Southern Chain:

- Hartridge
- Howard
- Idylwild
- Jessie
- Lulu
- Mirror
- Roy
- Shipp
- Summit
- Winterset

Northern Chain:

- Conine
- Fannie
- Haines
- Hamilton
- Little Hamilton
- Middle Hamilton
- Rochelle
- Smart

Other Lakes:

- Blue
- Buckeye
- Daisy
- Deer
- Elbert
- Idyl
- Link
- Mariam
- Mariana
- Martha
- Maude
- Ned
- Otis
- Pansy
- Silver

LAKE TRIVIA

True or False: The City can alter lake levels?

False - the City doesn't control lake levels. The Water Management District sets guidance levels for most of our lakes, however, most structures are gravity-based overflows that slowly release water at high levels - with limited ability to adjust water height.

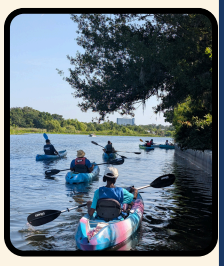
SIGNIFICANCE OF OUR LAKES

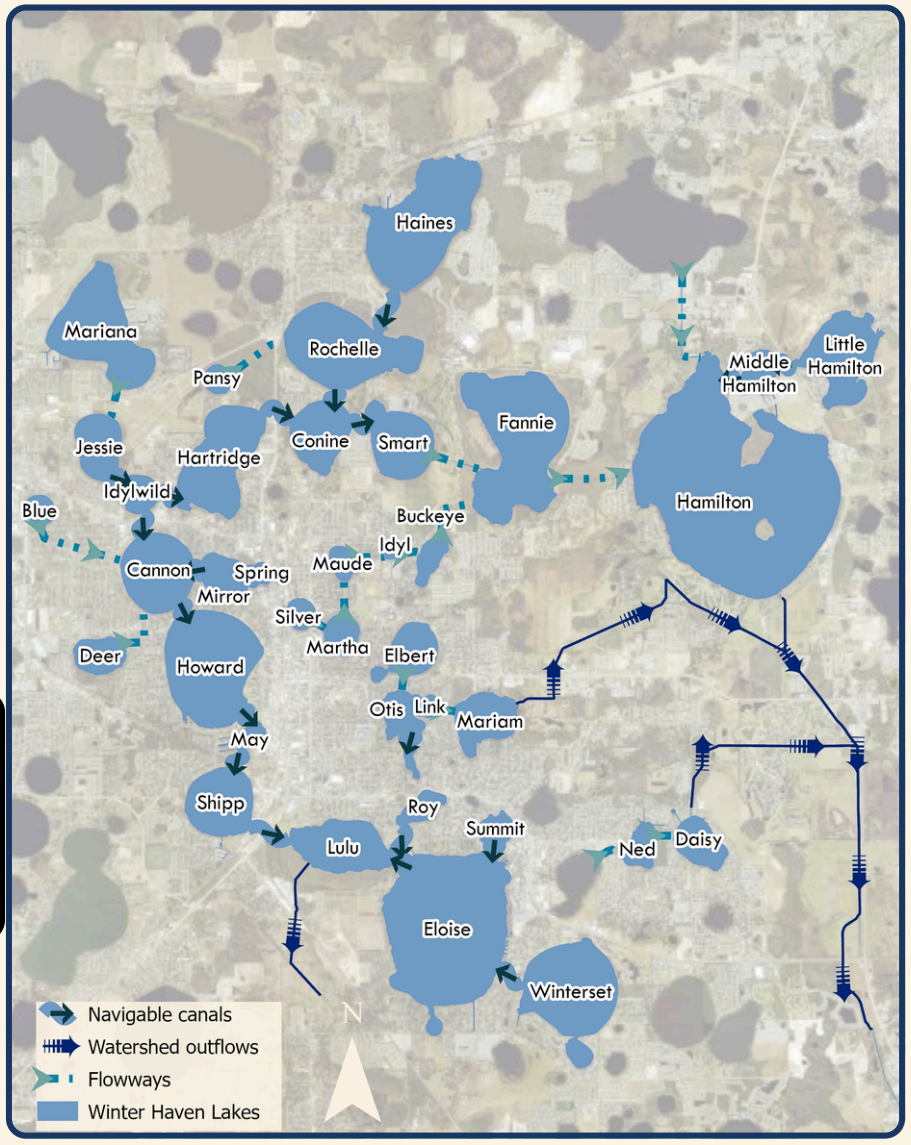
Winter Haven is home to one of the highest concentrations of natural lakes in Florida . These waterbodies are central to our lifestyle, economy, and ecology — from **fishing, boating and seaplane training to wildlife habitat and water supply.**

In addition, **Winter Haven sits at the headwaters for the Peace River Watershed** - carrying water supply and water quality implications all the way through the watershed into Charlotte Harbor.









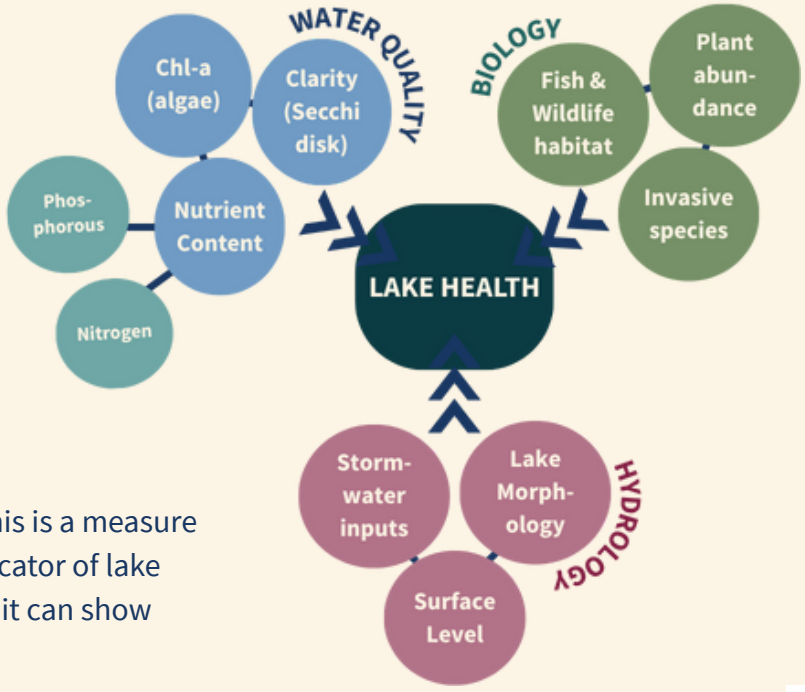
Above: Map of Winter Haven lakes' flow-ways, navigable canals, and watershed outflows. While Smart, Fannie and Hamilton on the North Chain are connected by canals - they are not navigable due to Southwest Florida Water Management District control structures.

WHAT MAKES A HEALTHY LAKE?

This report looks at Lake Health through three major lenses - Water quality, biology (vegetation and fish and wildlife abundance), and hydrologic factors.

Water Quality:

- **Chlorophyll-a (Chl-a)** measures algae abundance in the water. While some levels are normal, there is a threshold where too much algae is problematic for a lake.
- **Nutrients:** In our lakes, the primary nutrients of concern are **phosphorous (TP) and nitrogen (TN)** - again while some levels are normal, above a certain level lakes can produce too much algae and become unhealthy.
- **Water Clarity:** Measured as **"Secchi"** depth - this is a measure of how clear the water is. While not a direct indicator of lake health, in conjunction with the other indicators it can show good water quality.



Biology:

- **Plant abundance:** Measured by diversity, lake coverage, and plant volume. Underwater plants improve water quality and provide essential fish habitat. Shoreline plants prevent erosion and support wildlife.
- **Invasive species:** Non-native plants harm ecosystems and outcompete natives and can cause harm to fish populations and unbalance an ecosystem. Controlling invasives helps protect lake health and biodiversity.
- **Fish & wildlife habitat:** While not yet explicitly quantified in this report - thriving fish and wildlife — like river otters — signal a healthy lake. These animals rely on robust food chains and clean water to survive.









Top left: *City staff do routine vegetation sampling to measure the quantity of plants on our lakes.* ***Top right:*** *Pickerelweed is a common shoreline plant on our lakes great at providing a buffer for erosion.* ***Bottom left:*** *Eel-grass is a common native underwater plant in our lakes.* ***Bottom right:*** *River otter populations can be a great indicator that a lake is doing well.*

Hydrology:

- **Lake Morphology:** A lake's size, depth, and shape affect water quality. Deeper lakes often connect to cleaner groundwater, while shallow, flat lakes can stir up more sediment, reducing clarity.
- **Stormwater Inputs:** All Winter Haven lakes rely entirely on rainfall runoff, which can carry pollutants from lawns, roads, and businesses. Both the amount and cleanliness of this runoff impact lake health.
- **Surface Level:** Higher lake levels from steady rainfall are often linked to better water quality, as deeper water dilutes pollutants and reduces sediment disturbance.

LAKE TRIVIA

Are there "spring fed" lakes in Winter Haven?

While some of deeper lakes, such as Winterset and Silver benefit from a small amount of Upper Floridan aquifer seepage - they are not technically at the magnitude to be considered "spring fed".

Regulatory Status:

As Waters of the State, Winter Haven's lakes are subject to state-level water quality standards established by the Florida Department of Environmental Protection (FDEP). These standards are based on the designated use of each waterbody. Winter Haven's lakes are classified as **Class III Waterbodies**, which means they are intended for **recreation, and the propagation and maintenance of a healthy, well-balanced population of fish and wildlife**.

To support this designated use, our lakes must meet **Numeric Nutrient Criteria** for **chlorophyll, total phosphorus, and total nitrogen**. If a lake exceeds these nutrient criteria more than once within a three-year period, it is considered **impaired**.

Once a waterbody is classified as impaired, FDEP develops pollutant reduction targets for entities contributing surface water or groundwater to that lake. These targets are called **Total Maximum Daily Loads (TMDLs)**, which represent the maximum amount of a given pollutant that can enter the waterbody each day while still supporting its intended use.



LAKE HEALTH 2024

This report summarizes the condition of our lakes using a **Lake Health Index**, which provides a simple score ranging from 0 to 3—with **0 indicating extremely poor health** and **3 reflecting exceptional quality**. The index brings together all available water quality and biological data we collect to offer a comprehensive assessment of each lake's overall health. A summary of how this score is calculated is provided below.

LAKE HEALTH INDEX SCORING BREAKDOWN:

Water Quality

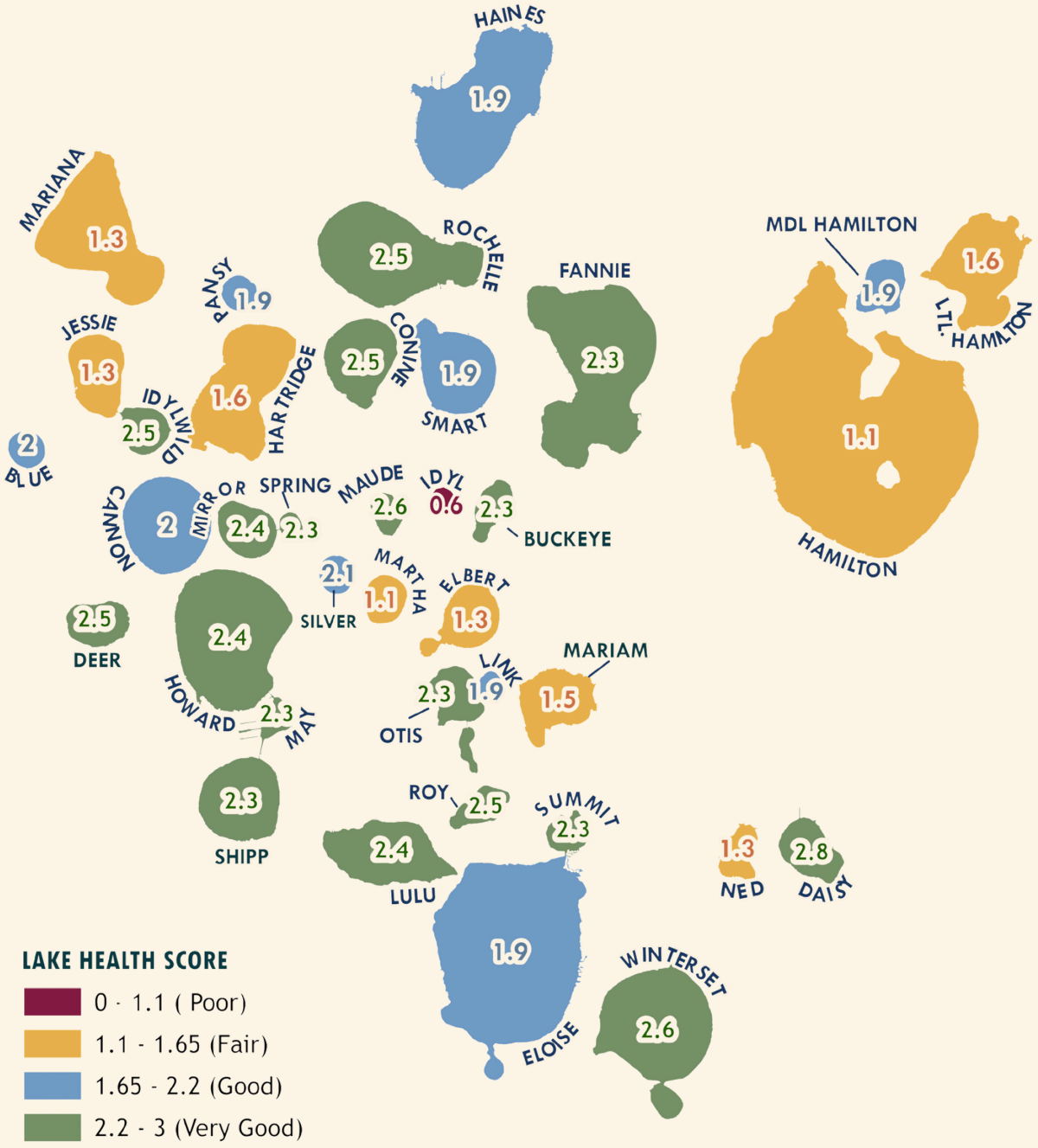
- **NNC Impairment Score:** 0-3 points.
  - + 1 point for each **unimpaired** metric- Chlorophyll-a, Total Phosphorous (TP) & Total Nitrogen (TN)
- **Water Quality Trend Scores:** 0-3 points for each parameter (Chl-a, TP, and TN).
  - 3 pts: Significantly improving trend
  - 2 pts: Improving trend
  - 1 pt: deteriorating trend
  - 0 pt: Significantly deteriorating trend

Each category score is then averaged to get the overall **Lake Health Index score**

Biology

- **Abundance Score:** 0-3 points
  - 3 pts: Percent area coverage (PAC) at or above 30%
  - 2 pts: PAC at or above 15%
  - 1 pt: PAC at or above 2.5%
  - 0 pts: PAC below 2.5%
- **Invasive Score:** 0-3 points
  - 3 pts: 0% invasive population
  - 2 pts: Invasive pop. below 2.5%
  - 1 pt: Invasive pop. at or above 2.5%
  - 0 pts: Invasive pop at or above 10%
- **Diversity Score:** 0-3 points
  - Each increasing diversity index gets plus 1 point. 0 given for decreasing index.

2024 OVERALL LAKE HEALTH INDEX SCORES



PROGRESS SNAPSHOT

- **Conine, Shipp, Lulu, and Howard show consistent improvements** in water quality trends over the past 3 years.
- **Over 50% of impaired lakes are improving** in at least one metric (Chl-a, TP, TN)
- Aquatic plant coverage saw an overall boost in many lakes, combined with a historic low in invasive species - **showing City staff detection & response efforts are paying off.**

NEXT STEPS

- **Lakes Martha, Hartridge, Elbert, and Idyl are showing declining water quality,** each with unique challenges. The City has targeted strategies in place to address them. (See full report for details.)
- **Untreated stormwater runoff remains a concern in downtown lakes.** Ongoing public education and green infrastructure projects are key to improving conditions.



2024 PROJECT UPDATES

ONGOING PROJECTS OVERVIEW:

Environmental Monitoring: The City regularly tracks lake health by scanning for **plant species** and **density** with **SONAR and field surveys**. We also collect **water level** and **quality data** for analysis.

Green Stormwater Infrastructure: The City has **four "Nature Parks"** that help clean stormwater and provide wildlife habitat and recreation. Also, **60 raingardens** soak up runoff, reduce flooding, and beautify the city.

NPDES Reporting: Each year, the City submits a comprehensive report to the State as part of its National Pollutant Discharge Elimination System (NPDES) permit requirements under the **Clean Water Act**. This report details stormwater infrastructure inventory, maintenance activities, street sweeping efforts, and public education and outreach initiatives.

Public Outreach & Education: In 2024, staff hosted **37 outreach events** aimed at increasing community engagement and environmental awareness. These events included informational booths at festivals, neighborhood workshops, classroom lessons, and our free guided kayaking ecotours. For many participants, these activities provided their first meaningful experience on one of Winter Haven's lakes. A major highlight in 2024 was the City's inaugural **Fishing Derby**, which drew more than 200 attendees and focused on teaching children how to fish and connect with local natural resources.







Top to bottom: Winter Haven Water raingarden; Roseate spoonbills move in to the new Lake Conine Nature Park; 1ST Annual Kids Fishing Derby event.

Stormwater Assessment & Improvement Program: The City has developed a full inventory of its stormwater infrastructure and constantly monitors the condition of these assets. Priority areas have been highlighted, and proposed improvements have been developed. **Priority areas are addressed as funding becomes available - through budgetary planning and the awarding of grants geared toward stormwater improvements.**

Street Sweeping: The City owns and operates a street sweeper machine along most City roads. The downtown areas get swept weekly, and residential areas are swept monthly. **This not only keeps streets clean, but also keeps litter and plant debris from going into the stormwater system and into our lakes .**

Vegetation & Habitat Management: City staff actively maintains aquatic vegetation at our nature parks, boat ramps and City-owned shorelines. **Work focuses on the removal of exotic species that harm the ecosystem, and also the planting of native plant species that improve fisheries and wildlife habitat in our lakes.**





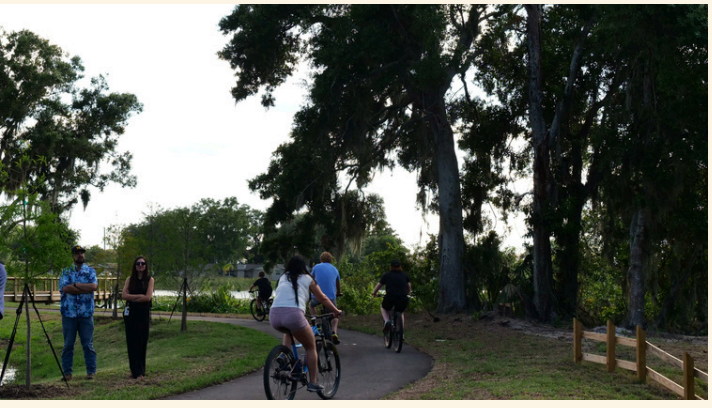


Top to bottom: Stormwater pipe inspection at Lake Conine; Street Sweeper in operation; Floating island (tussock) removal for habitat improvement on Lake Idyl.

PROJECT SPOTLIGHT

LAKE CONINE NATURE PARK





Like many major Natural Resources projects, Lake Conine Nature Park represents the result of nearly **20 years of planning** and collaboration among state, county, and regional partners. This shared effort has created a unique community space that also serves as a vital natural resource for the City.

The wetland treatment system within the park filters stormwater from a **350-acre watershed**, removing more than 30,800 pounds of nutrients annually before the water reaches Lake Conine. Following the initial stormwater improvements completed in 2021, native bird species—including wood storks and roseate spoonbills—were observed returning to the area and have since made the park their home.

Now, with the **addition of recreational amenities in 2025**, the park is open for the public to explore and enjoy—a true blend of environmental restoration and community benefit.



Produced By:

CITY OF WINTER HAVEN
NATURAL RESOURCES DIVISION

WINTER HAVEN

THE CHAIN OF LAKES CITY

We'd Love to Hear from You!

naturalresources@mywinterhaven.com

863-291-5881

Check out more resources on our site!

https://www.mywinterhaven.com/195/Natural-Resources

667

DATE: June 20, 2025

TO: Honorable Mayor and City Commissioners

VIA: T. Michael Stavres, City Manager
Michael Carnevale, Deputy City Manager
Eric Labbe, Economic Opportunity & Community Investment Director
Sean Byers, Planning Manager

FROM: Heather Reuter, Senior Planner

SUBJECT: **Ordinance O-25-19:** Request by Timothy F. Campbell to amend a portion of Planned Unit Development Ordinance O-22-23. **General Location:** The northern portion of a parcel generally located at the southwest corner of the intersection of Cypress Gardens Boulevard and US Highway 27. The area covered by this request is 50.94± acres.

BACKGROUND

Timothy F. Campbell, petitioner, requests the City amend a portion of Planned Unit Development (PUD) Ordinance O-22-23. The property subject to this request is the northern portion of a parcel generally located at the southwest corner of the intersection of Cypress Gardens Boulevard and US Highway 27. The undeveloped property contains approximately 50.94± acres and consists of uplands and the Peace Creek. The 2035 Future Land Use Map designates the upland area of the subject parcel as Regional Mixed Use Hub and designates Conservation along the Peace Creek Canal. Current PUD Ordinance O-22-23 permits up to 300,000 square feet of commercial space on the subject property. The southern portion of this parcel would remain under PUD Ordinance O-22-23 and continue to allow for 313 multi-family residential units.

The petitioner proposes to develop the subject property with up to 550,000 square feet of commercial, which is an increase of 250,000 square feet from the current PUD. Other requested changes address lot area minimum size, on-site parking locations for outparcels, and sign regulations.

SURROUNDING USES

Surrounding uses include Cypress Gardens Boulevard, wetlands, and pasture land to the north; US Highway 27, outdoor commercial uses, and vacant lands to the east; vacant land zoned for multi-family residential to the south; and the Peace Creek Canal, vacant uplands, and wetlands to the west. The

subject property is located at the far eastern end of the highly urbanized Cypress Gardens Boulevard corridor, and represents one of the last large undeveloped parcels on the corridor.

INFRASTRUCTURE

The table below outlines the expected potential demands on the supporting infrastructure for the petitioner's proposed 550,000 square feet of commercial.

Potable Water and Wastewater Utilities (as of April 30, 2025) ***Measured in gallons per day (gpd)***					
Type of Infrastructure	**24-month Average Capacity**	**Projected Demands from This Request**	**Remaining Capacity (If Request was Permitted Today)**	**Projected Future Demands for Prior Approved Projects***	**Potential Remaining Capacity *if* All Approved Projects are Constructed**
Potable Water	2,330,000	121,000	2,209,000	2,165,100	43,900
Wastewater Plant 3	2,968,000	106,480	2,861,520	1,093,200	1,768,320
Transportation (Background Data from Polk TPO) ***Measured in PM Peak-Hour Trips***					
Roadway	**3-year Average Capacity**	**Projected Demands from this Request**	**Remaining Capacity (If Request was Permitted Today)**	**Projected Future Demands for Prior Approved Projects***	**Potential Remaining Capacity *if* All Approved Projects are Constructed**
Cypress Gardens Boulevard WB	1,281	704	577	222	355
Cypress Gardens Boulevard EB	1,243	676	567	228	339
U.S. Highway 27 NB	1,645	704	941	133	808
U.S. Highway 27 SB	1,711	676	1,035	128	907

**Projected Future Demands includes platted residential subdivisions, approved multi-family residential site plans, and approved commercial site plans. Approved multi-family or commercial site plans are approved for up to a maximum of 30 months. If a permit is not issued within this time period, the approved site plan becomes null and void and any reserved capacity assigned to that project is returned to the available capacity.*

The above evaluation of water, wastewater, and transportation concurrency for a specific property or project at the Future Land Use or zoning stage should simply be viewed as a "snapshot in time" with regards to available capacity. Between the time when a particular Future Land Use designation and/or

zoning district is assigned to a property, and the point in time when an actual development project is submitted for approval, there are many factors which may affect the amount of available water, wastewater, or transportation capacity required for issuing final concurrency approval. These factors may include increased or decreased allocations in available capacities; approved projects not being constructed; unforeseen projects being constructed; constructed projects using more or less than their projected demands; and in the case of transportation, even approvals made by surrounding jurisdictions.

COMPREHENSIVE PLAN

The subject property is designated as a combination of Regional Mixed Use Hub and Conservation Future Land Uses. The proposed PUD is consistent with these designations.

NOTIFICATION

All notification requirements for this requests were met.

FINANCIAL IMPACT

There is no direct financial impact to the City with this request.

This is a request initiated by an application by a private party. In accordance with Chapter 2024-145, Laws of Fla. (CS/CS/SB 1628 (2024)), ordinances initiated by an application by a private party are exempt from providing Business Impact Estimates.

STRATEGIC PLAN ALIGNMENT

This is a routine Planned Unit Development amendment associated with normal operations of the City not specifically defined as a goal or strategy within the Strategic Plan. However, it is aligned with the Responsible Government and Economic Sustainability Strategic Pillars.

PLANNING COMMISSION RECOMMENDATION

The Planning Commission, at its June 3, 2025 regular meeting, voted to recommend approval of this request. No members of the public spoke.

CONCLUSION

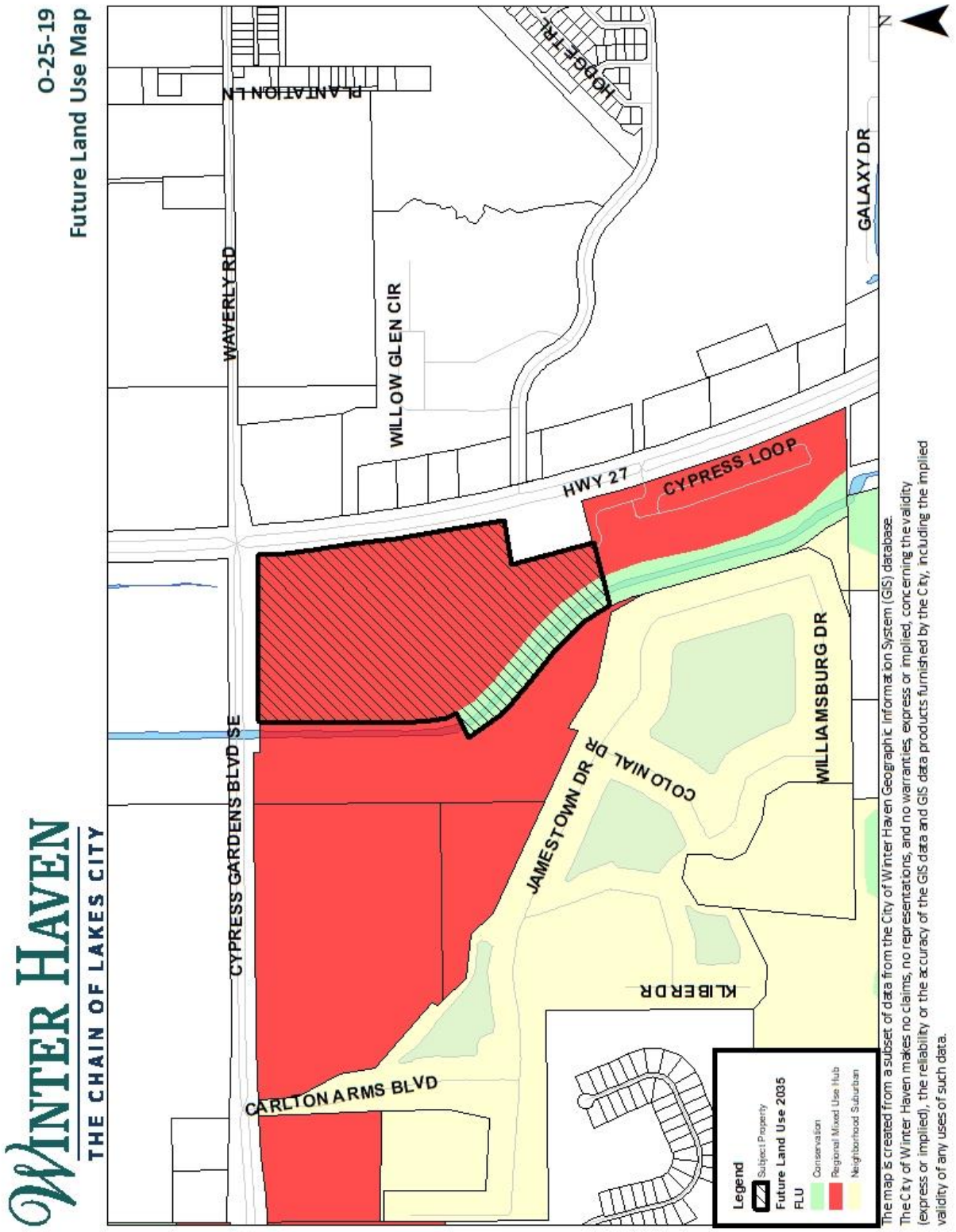
The increase in commercial square footage along with the minor changes to development standards does not create a significant amendment to the PUD. The proposed changes are consistent with the development pattern in the area and of that contemplated by the Regional Mixed Use Hub Future Land Use designation.

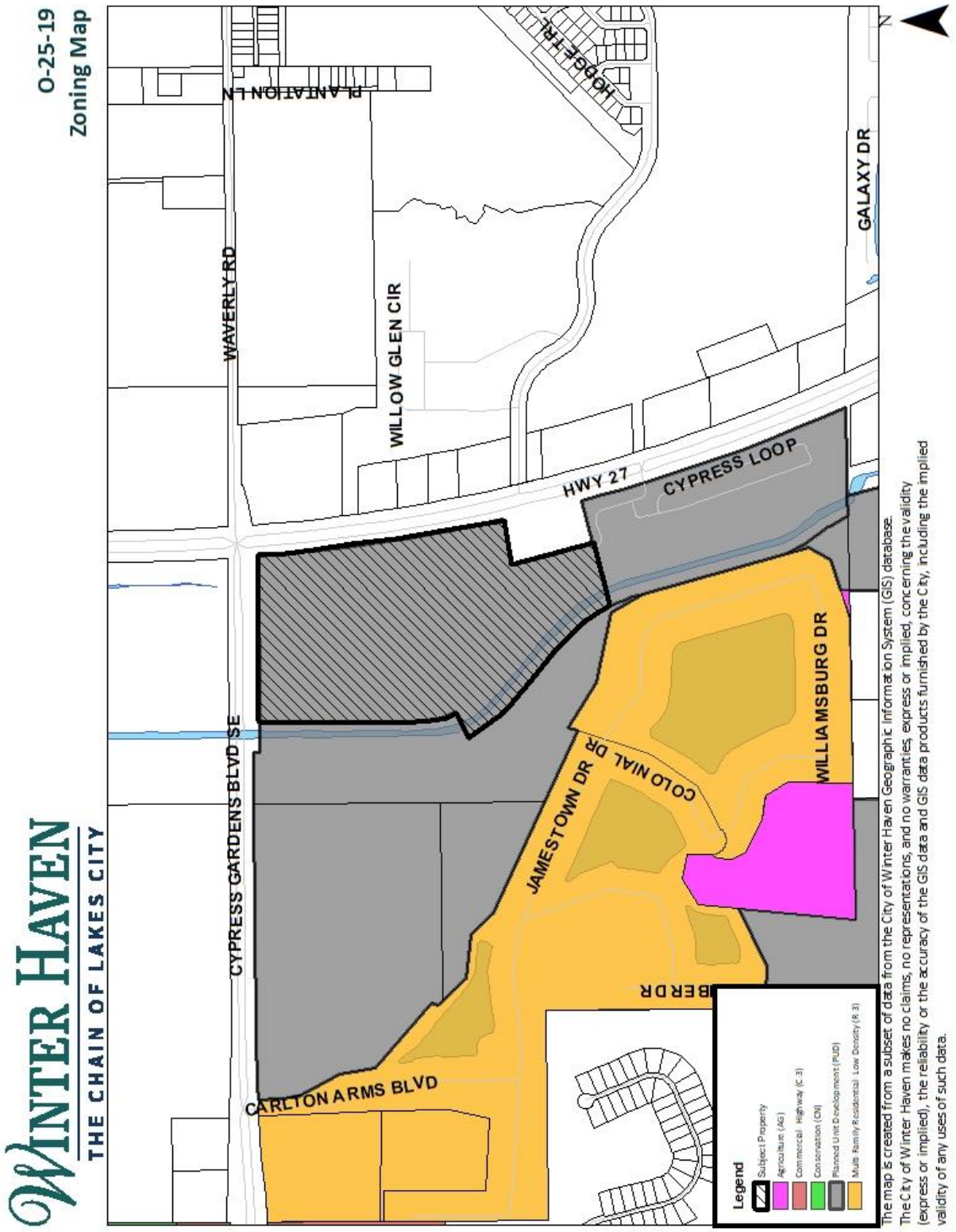
RECOMMENDATION

Staff recommends the City Commission approve Ordinance O-25-19.

ATTACHMENTS

- Future Land Use Map
- Zoning Map
- Aerial Map
- Ordinance O-25-19


O-25-19
Future Land Use Map
WINTER HAVEN
THE CHAIN OF LAKES CITY
PLANTATION LN
HOGE TR
WAVERLY RD
WILLOW GLEN CIR
GALAXY DR
HWY 27
CYPRESS LOOP
CYPRESS GARDENS BLVD SE
JAMESTOWN DR
COLONIAL DR
WILLIAMSBURG DR
KLIBER DR
CARLTON ARMS BLVD
Legend
Subject Property
Future Land Use 2035 FLU
Conservation
Regional Mixed Use Hub
Neighborhood Suburban
The map is created from a subset of data from the City of Winter Haven Geographic Information System (GIS) database.
The City of Winter Haven makes no claims, no representations, and no warranties, express or implied, concerning the validity (express or implied), the reliability or the accuracy of the GIS data and GIS data products furnished by the City, including the implied validity of any uses of such data.


O-25-19
Zoning Map
WINTER HAVEN
THE CHAIN OF LAKES CITY
PLANTATION LN
HOGE TRL
WAVERLY RD
WILLOW GLEN CIR
GALAXY DR
HWY 27
CYPRESS LOOP
WILLIAMSBURG DR
COLONIAL DR
JAMESTOWN DR
CYPRESS GARDENS BLVD SE
CARLTON ARMS BLVD
Legend
Subject Property
Agriculture (AG)
Commercial - Highway (C-3)
Conservation (CN)
Planned Unit Development (PUD)
Multi-Family Residential - Low Density (R-3)
The map is created from a subset of data from the City of Winter Haven Geographic Information System (GIS) database.
The City of Winter Haven makes no claims, no representations, and no warranties, express or implied, concerning the validity (express or implied), the reliability or the accuracy of the GIS data and GIS data products furnished by the City, including the implied validity of any uses of such data.


O-25-19
Aerial Map
WINTER HAVEN
THE CHAIN OF LAKES CITY
N
HWY 27
CYPRESS LOOP
CYPRESS GARDENS BLVD SE
WAVERLY RD
COVE MEADOW DR
WILLOW GLEN CIR
GALAXY DR
JAMESTOWN DR
WILLIAMSBURG DR
CARLTON ARMS BLVD
Legend
Subject Property
The map is created from a subset of data from the City of Winter Haven Geographic Information System (GIS) database.
The City of Winter Haven makes no claims, no representations, and no warranties, express or implied, concerning the validity (express or implied), the reliability or the accuracy of the GIS data and GIS data products furnished by the City, including the implied validity of any uses of such data.

ORDINANCE NO. O-25-19

AN ORDINANCE AMENDING CHAPTER 21 OF THE CODE OF ORDINANCES OF THE CITY OF WINTER HAVEN, FLORIDA, BY AMENDING A PORTION OF PLANNED UNIT DEVELOPMENT ORDINANCE O-22-23; PROVIDING FOR THE ADMINISTRATIVE CORRECTION OF SCRIVENER'S ERRORS; REPEALING ALL ORDINANCES IN CONFLICT HEREWITH; AND PROVIDING AN EFFECTIVE DATE. (General Location: The northern portion of a parcel generally located at the southwest corner of the intersection of Cypress Gardens Boulevard and US Highway 27. The area covered by this request is 50.94± acres.)

WHEREAS, there has been a request to amend an existing Planned Unit Development (PUD), and;

WHEREAS, the action will further the general health, safety, and welfare and be a benefit to the City as a whole, and;

WHEREAS, the requested zoning is consistent with the Future Land Use Element of the 2035 Winter Haven Comprehensive Plan, and;

WHEREAS, the request is initiated by an application by a private party, and therefore is exempt from requiring a Business Impact Estimate as set forth by Chapter 2024-145, Laws of Fla. (CS/CS/SB 1628 (2024)).

NOW THEREFORE, BE IT ENACTED BY THE PEOPLE OF THE CITY OF WINTER HAVEN, FLORIDA, AS FOLLOWS:

1. That Chapter 21 of the Code of Ordinances of the City of Winter Haven, Florida, is hereby amended to amend a portion of Planned Unit Development Ordinance O-22-23 on land as further described in Exhibit "A" attached hereto and made a part of this Ordinance.

2. The property subject to PUD Ordinance O-25-19 shall be subject to the following conditions:

A. Permitted Uses.

1. Permitted uses within the commercial area shall be those uses permitted within the Commercial- Highway (C-3) zoning district, or its successor zoning district, except the following uses: sales of automobiles, boats/watercraft, and/or recreational vehicles; service and/or repair of boats/watercraft and/or recreational vehicles; nursery; cemetery; and stand-alone parking lot.

2. All areas designated as Conservation by the adopted Future Land Use Map shall remain in their natural state and free from all development activities except for the construction of nature trails, boardwalks, or retention. Where nature trails, boardwalks, and/or retention are constructed, no more than 5 percent (5%) of the conservation areas shall be disturbed.

B. Development Standards.

1. Lot and building requirements shall be as follows:

Lot and Building Requirement		**Standard**
Lot Area		Minimum 16,000 square feet
Lot Width		Minimum 80 feet
Setbacks	Cypress Gardens Boulevard	Minimum 10 feet; Maximum 62 feet
	U.S. Highway 27	Minimum 10 feet; Maximum 62 feet
	Side Yard	Minimum 5 feet
	Rear Yard	Minimum 15 feet
	Peace Creek	Minimum 40 feet from the edge of the canal bank
	Wetlands (where not relocated)	Minimum 15 feet from the jurisdictional line
Building Height	Hotel, Office, or Storage	Maximum 5 floors up to 70 feet above grade
	All Other Permitted Uses	Maximum 3 floors up to 42 feet above grade
Building Separation		Minimum 15 feet
Maximum Impervious Surface Area	Waterfront	Maximum 60 percent
	Non-Waterfront	Maximum 80 percent

a. Principal commercial buildings which are constructed to the rear of out-parcels or separated from Cypress Gardens Boulevard by a stormwater management pond may be exempted from the maximum 62-foot setback requirement.

2. Development intensities shall follow the assigned Future Land Use designation allowance as adopted in the City's Comprehensive Plan.

C. Landscaping.

1. A minimum 7.5-foot wide buffer shall be installed along Cypress Gardens Boulevard and U.S. Highway 27. The buffer shall contain, at a minimum, the following plantings:

Frontage	**Planting Type**	**Minimum Requirement**
Cypress Gardens Boulevard	Overstory Trees	1 per 100 linear feet
	Understory Trees	4 per 100 linear feet
	Small/Medium Shrubs	10 per 100 linear feet
U.S. Highway 27	Overstory Trees	None
	Understory Trees	6 per 100 linear feet
	Small/Medium Shrubs	10 per 100 linear feet

a. Notwithstanding the buffer provisions above, the property owner may install a stormwater management pond that is landscaped on the side of the pond opposite the

road frontage, where soil conditions prevent a landscape buffer in satisfaction of the buffer requirement.

2. Tree canopy coverage of parking and driveway areas.

   The developer shall install and maintain tree canopy coverage equal to 40 percent of the impervious driveway and parking areas on site. Tree canopy coverage shall be achieved through the use of a variety of at least 4 different species of trees selected from the table below.

Permitted Tree		**Canopy Credit**
Common Name	**Botanical Name**	
Shumard oak	Quercus shumardii	1,250 square feet
Sand live oak	Quercus geminata	500 square feet
Red maple	Acer rubrum	700 square feet
Sweetgum	Liquidambar styraciflua	700 square feet
Florida elm	Ulmus americana var. floridana	700 square feet
Winged elm	Ulmas alata	700 square feet
Crape myrtle	Lagerstroemia indica	125 square feet
Tabebuia	Tabebuia chrysotricha	500 square feet
	Tabebuia heptaphylla	500 square feet
	Tabebuia impetiginosa	500 square feet
Longleaf pine	Pinus palustris	500 square feet
Slash pine	Pinus elliottii	500 square feet
Sand pine	Pinus clausa	500 square feet
Bald cypress	Taxodium distichum	500 square feet

3. The use of Florida Friendly plantings shall be required.

D. Architectural Standards.

1. The exterior facades of all enclosed buildings shall consist of either: concrete, stucco, split-face masonry, brick, or vinyl/masonry siding mimicking wood siding.

2. On-site parking for commercial outparcels shall be limited to the following locations:

   a. Within the rear portion of the parcel behind the building;

   b. To the side of the building, rearward of the front building elevation; and

   c. A maximum of four rows of parking spaces may be allowed forward of the front building elevation with one row facing the road right-of-way, another facing the front of the building, and two rows in the middle.

3. Fuel islands shall only be placed to the rear of the principal structure of any commercial outparcel. Fuel islands may be placed in front of any principal building that it not located on an outparcel.

E. Signage.

1. Ground Signs.

a. Ground signs shall be in the form of monument style signs and permitted per the following requirements:

Type of Sign	**Maximum Sign Copy per Side**	**Maximum Sign Structure Height**	**Maximum Sign Structure Width**
Cypress Gardens Boulevard: Multiple Businesses Sign	250 square feet	30 feet	10 feet
U.S. Highway 27: Multiple Businesses Sign	250 square feet	30 feet	10 feet
Northeast Corner: Multiple Businesses & Center Sign	500 square feet	40 feet	15 feet
Individual Business Sign	50 square feet	10 feet	8 feet

b. All ground signs located on the same parcel (owned or leased) shall maintain a minimum separation from each other of 200 feet.

2. Building Signs. Exterior building mounted signage shall be permitted on two sides of any business as follows:

a. Building Façade Signage on Primary Facades.

i. Five (5) square feet of sign copy area per lineal foot of a storefront that is 25 feet in lineal length or less of primary façade. The maximum allowable sign copy area is 75 square feet. The storefront dimension shall be measured from lease line of interior/exterior wall to lease line of interior/exterior wall on the main entry side of the building.

ii. Four (4) square feet of sign copy area per lineal foot of a storefront that is greater than 25 feet in lineal length but less than 100 feet of lineal length of primary façade. The maximum allowable sign copy area is 125 square feet. The storefront dimension shall be measured from lease line of interior/exterior wall to lease line of interior/exterior wall on the main entry side of the building.

iii. Three (3) square feet of sign copy area per lineal foot of a storefront that is greater than 100 feet in lineal length of primary façade. The maximum allowable sign copy area is 400 square feet. The storefront dimension shall be measured from lease line of interior/exterior wall to lease line of interior/exterior wall on the main entry side of the building.

b. Building Façade Signage on Secondary Facades.

i. Any business with exterior wall exposure can add additional signs on up to three (3) additional secondary building facades. The maximum sign copy area allowance for each of these secondary building facades is 50 percent (50%) of the permitted maximum primary façade sign copy area.

c. Center Wall Signage.

i. Center Wall Signage may be located on up to two exterior walls as a part of the building aesthetics. The business referenced on the wall signage must be a part of the overall center, but does not have to exist within the building of the sign wall. The maximum number of center wall signage allowed on a wall is limited to ten (10) signs. The total maximum sign copy area of all center wall signage on a wall is 250 square feet.

3. Site Directional Signage. Site directional signage shall be permitted for directional and wayfinding purposes. These signs are to be designed to provide minimal obstruction with purpose of providing vehicular and pedestrian travelers with clarity, visibility, and consistency in guidance through the property. Ground mounted signs are permitted with a maximum height of eight (8) feet and pole mounted signs are permitted with a maximum height of twelve (12) feet. The maximum area for each site directional sign is five (5) square feet. Site directional signage meeting these requirements shall not be included in any maximum sign area limitations.

4. Electronic Message Center Signs. Electronic Message Center (EMC) signs shall only be permitted where it is included as part of a standard static sign. EMC signs shall be limited to a maximum of 33 percent (33%) of the total sign copy area of the sign structure within which it is located. EMC signs shall not be animated and shall not change messages more frequently than once every five (5) seconds.

5. Window signage not exceeding 33 percent (33%) of a storefront's window area shall not be included in any maximum sign area limitations.

6. Measurement of Signage. All sign copy square footages will be calculated by actual letter and copy space and not the perimeter of the signage structure.

F. Transportation.

1. Access to the lands subject to this Ordinance shall be limited to no more than two (2) entrances from each primary frontage; however, this is subject to Florida Department of Transportation (FDOT) approval.

2. All outparcels shall connect to an internal access drive within the development. Cross-access driveways between each parcel is strongly encouraged.

3. A minimum 6-foot sidewalk shall be installed within the right-of-way along the development's frontages with Cypress Gardens Boulevard and U.S. Highway 27. Where soil conditions prevent the placement of a sidewalk along the development frontage, the developer shall pay a fee in lieu of to be used for construction of sidewalks within the City of Winter Haven. The fee shall be the average cost of a 6-foot sidewalk for the linear feet meeting the above exception as determined by the developer and the City at the time of site plan approval.

4. A minimum 5-foot sidewalk shall be installed along the main internal driveway access and connect to the 6-foot sidewalks along Cypress Gardens Boulevard and U.S. Highway 27.

5. The developer shall submit a traffic study of the development's impact on Cypress Gardens Boulevard and U.S. Highway 27 prior to site plan approval. The developer shall be responsible for addressing any improvements identified by the traffic study as necessary from the impacts of this development.

6. The site shall be developed as to not preclude the possibility of future pedestrian connections to the parcels to the west and south.

G. All development shall be consistent with the attached conceptual plan, further described in Exhibit "B" attached hereto and made a part of this Ordinance; however, deviation from the conceptual site plan, including changes which may impact specific interior configuration, to address safety, design, technical, wetland, or permitting issues identified during formal site plan review may be permitted without a PUD amendment. The shown layout is for illustrative purposes.

H. Where not specifically addressed in this Planned Unit Development, standards and regulations for the Commercial- Highway (C-3) zoning district, or its successor zoning district, shall be followed.

I. All other code requirements not specifically addressed by this Planned Unit Development shall apply.

3. This Ordinance shall not be codified, but the City Clerk shall retain this Ordinance as a permanent record of action taken by the City Commission of the City of Winter Haven.

4. The correction of typographical and/or scrivener's errors which do not affect the intent may be authorized by the City Manager or designee, without need of public hearing, by filing a corrected or recodified copy of same with the City Clerk.

5. All ordinances in conflict herewith are hereby repealed.

6. This Ordinance shall be effective immediately; however, that such change shall first be noted on the official zoning map of the City of Winter Haven.

INTRODUCED on first reading this 14th day of July, 2025.

PASSED on second reading this 28th day of July, 2025.

CITY OF WINTER HAVEN, FLORIDA

_____

MAYOR-COMMISSIONER
Nathaniel J. Birdsong, Jr.

ATTEST:

_____

CITY CLERK
Vanessa Castillo, MMC

Approved as to form:

_____

CITY ATTORNEY
Frederick J. Murphy, Jr.

Exhibit "A"

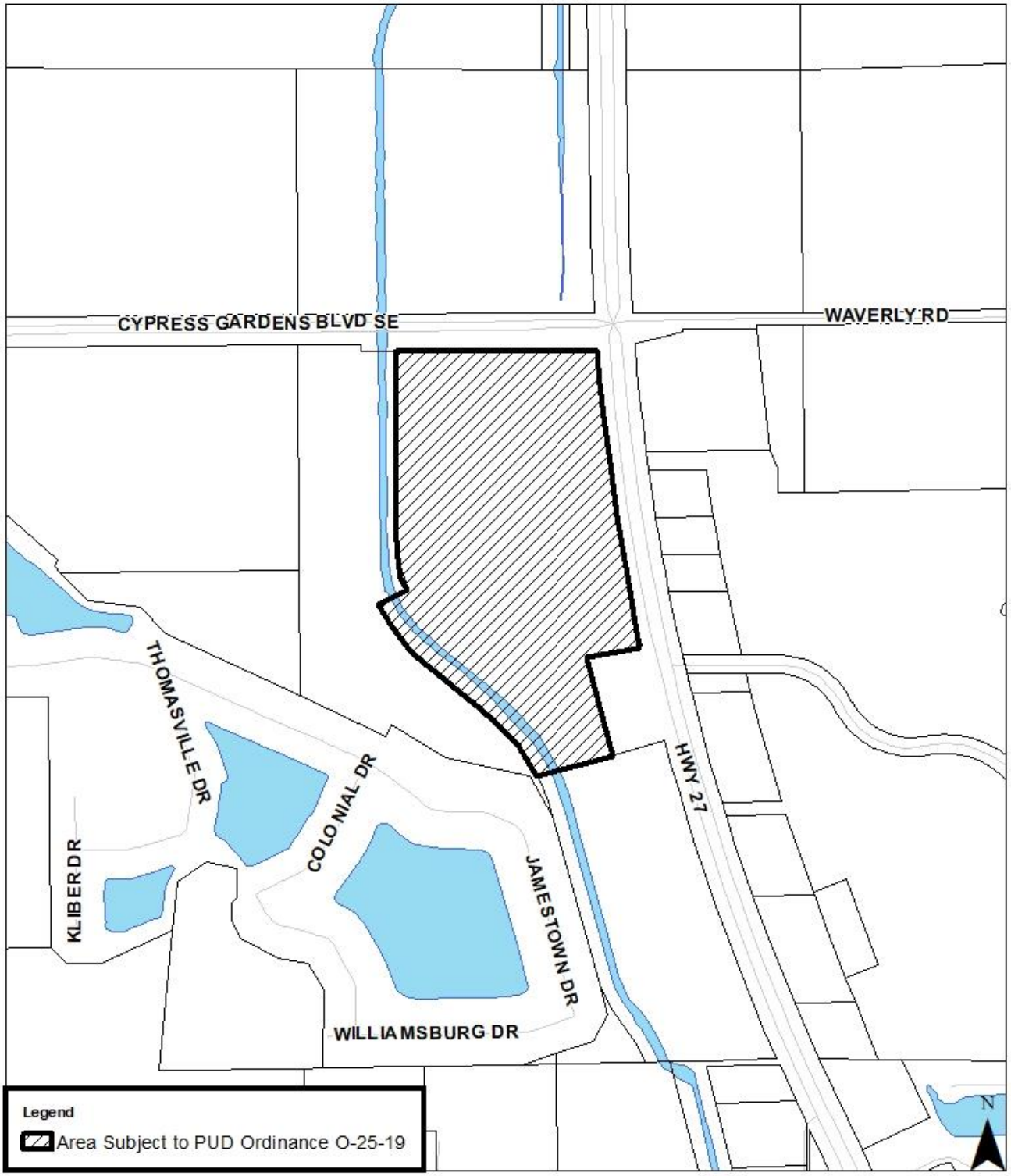

CYPRESS GARDENS BLVD SE
WAVERLY RD
THOMASVILLE DR
COLONIAL DR
KLIBER DR
JAMESTOWN DR
HWY 27
WILLIAMSBURG DR
Legend
Area Subject to PUD Ordinance O-25-19
N

Exhibit "B"
Conceptual Plan



CYPRESS LANDINGS
WINTER HAVEN, FLORIDA

CONCEPTUAL BUBBLE SKETCH

5/27/2025 CONTACT: JENNIFER RODGERS, PE (570) 244 3378

SCALE: 1"=200'

DATE: June 17, 2025

TO: Honorable Mayor and City Commissioners

VIA: T. Michael Stavres, City Manager
Michael Carnevale, Deputy City Manager
Eric Labbe, Economic Opportunity & Community Investment Director
Sean Byers, Planning Manager

FROM: Chris Young, Senior Planner

SUBJECT: **Ordinance O-25-20:** Request by Sharon M. Watson to rezone a parcel from Mixed-Use (MX) zoning district to Commercial - Highway (C-3) zoning district**. General Location:** A parcel generally located 250 feet east of First Street, South and north of Avenue H, SE. The area covered by this request is 0.24± acres.

BACKGROUND

Sharon M. Watson, petitioner, requests the City rezone a parcel from Mixed Use (MX) zoning district to Commercial- Highway (C-3) zoning district. The parcel, containing 0.24± acres, is generally located 250 feet east of First Street, South and north of Avenue H, SE. The western portion of the parcel is currently utilized as a parking lot for the adjacent commercial property located to the west. The petitioner owns the adjacent commercial property and intends to develop the property consistent with the C-3 zoning district.

As the Primary Mixed Use Hub Future Land Use Designation will remain, the maximum development potential is unchanged; therefore, there is no increase in potential infrastructure demands beyond what is currently allowed.

SURROUNDING USES

The subject property is surrounded by commercial uses to the west and north; vacant property to the east; and a mixture of commercial & single family residential to the south.

COMPREHENSIVE PLAN

The current Future Land Use of the subject area is Primary Mixed Use Hub. The requested Commercial–Highway (C-3) zoning district is consistent the Primary Mixed Use Hub Future Land Use.

NOTIFICATION

All notification requirements for this request were met.

FINANCIAL IMPACT

There is no direct financial impact to the City with this request.

This is a request initiated by an application by a private party. In accordance with Chapter 2024-145, Laws of Fla. (CS/CS/SB 1628 (2024)), ordinances initiated by an application by a private party are exempt from providing Business Impact Estimates.

STRATEGIC PLAN ALIGNMENT

This is a routine zoning amendment associated with normal operations of the City not specifically defined as a goal or strategy within the Strategic Plan. However, it is aligned with the Responsible Government Strategic Pillar.

PLANNING COMMISSION RECOMMENDATION

The Planning Commission, at its June 3, 2025 regular meeting, voted to recommend approval of this request. No members of the public spoke.

CONCLUSION

Staff's review of this request yields the following conclusions:

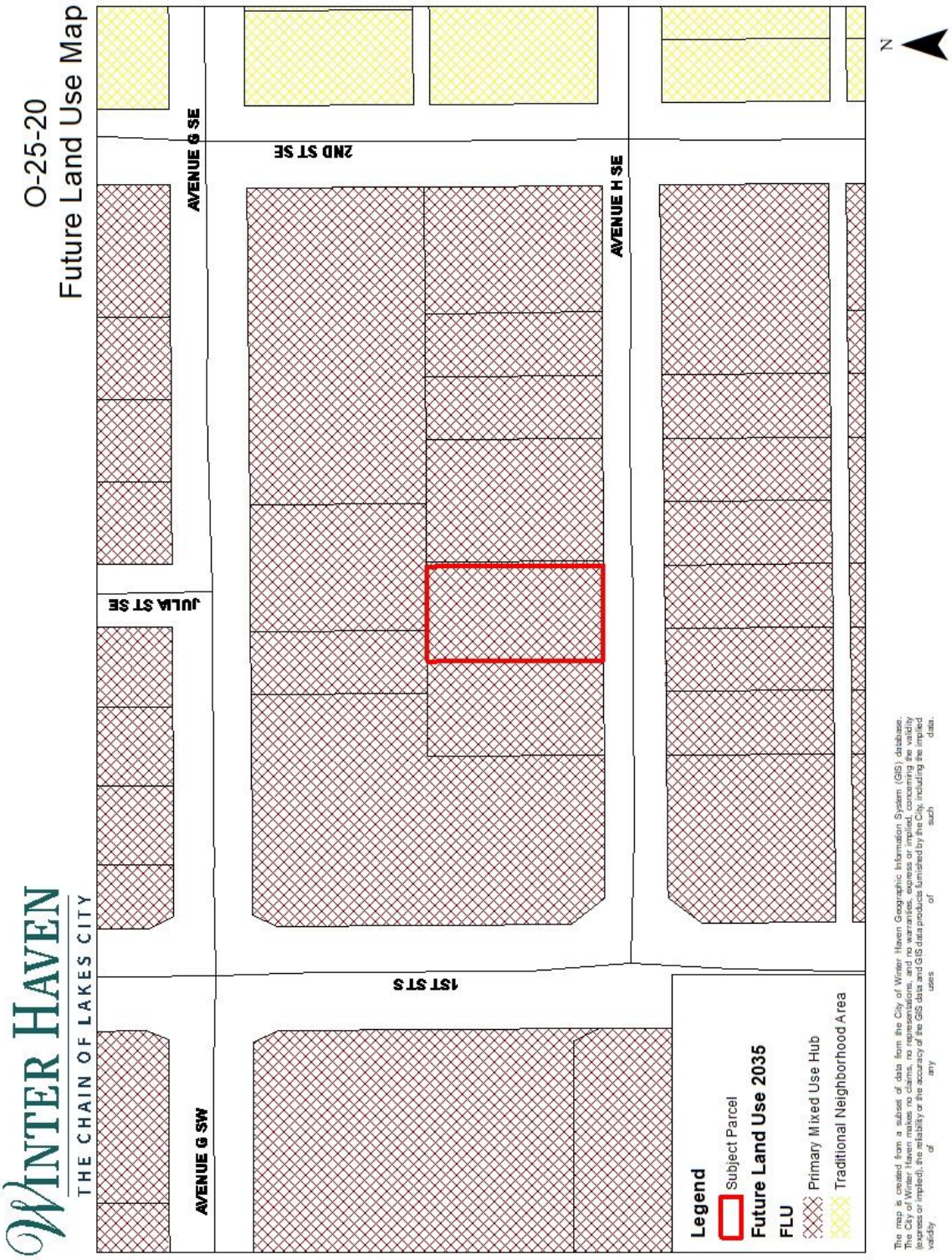
- The rezoning to the C-3 zoning district is consistent with the property's location and with the developed uses and City designations in the area; and
- As the Primary Mized Use Hub Future Land Use designation will remain, the maximum development potential is unchanged; There is no increase in potential infrastructure deands beyond what is currently allowed.

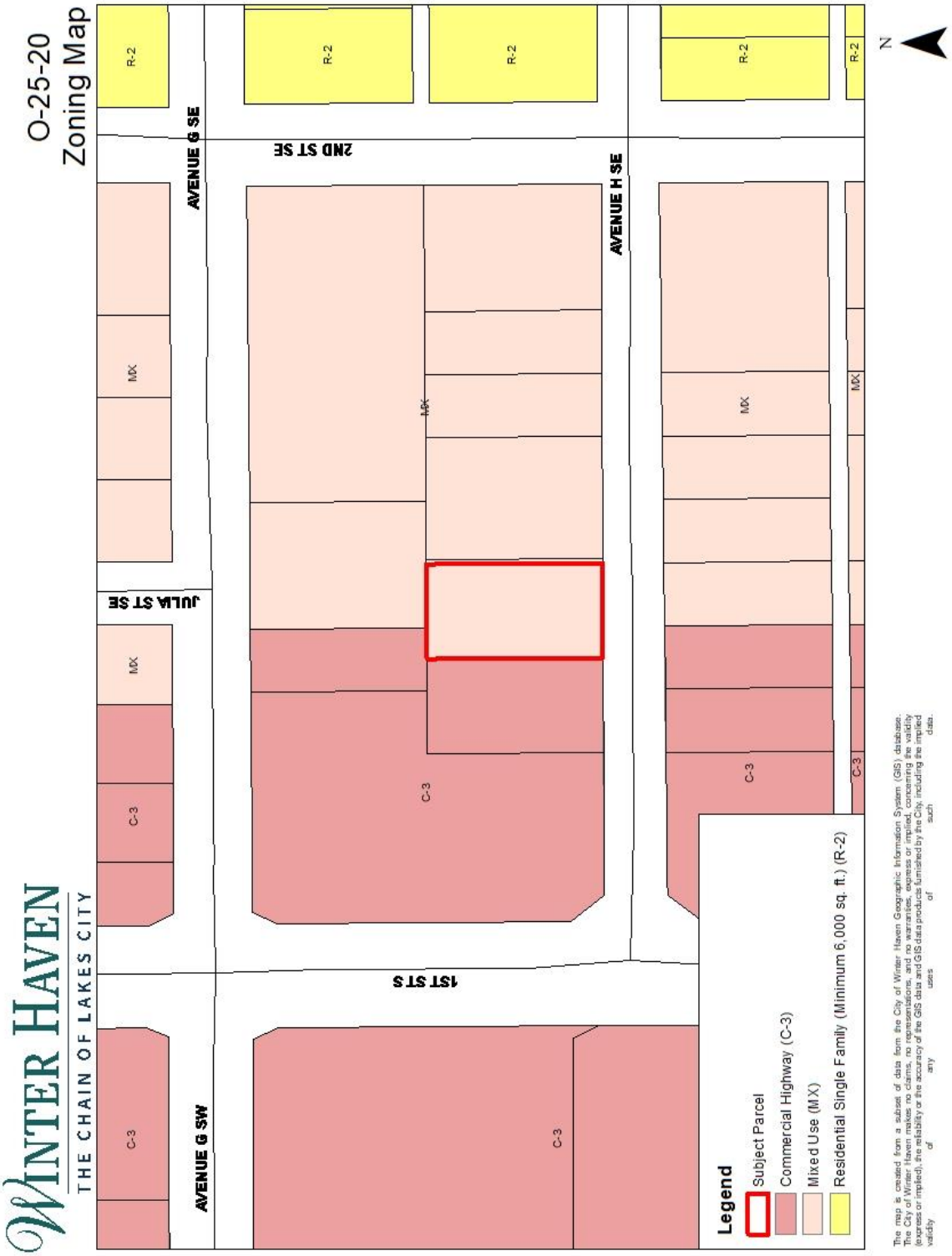
RECOMMENDATION

Staff recommends the City Commission approve Ordinance O-25-20.

ATTACHMENTS

- Future Land Use Map
- Zoning Map
- Aerial Map
- Ordinance O-25-20


O-25-20
Future Land Use Map
WINTER HAVEN
THE CHAIN OF LAKES CITY
AVENUE G SW
AVENUE G SE
AVENUE H SE
1ST ST S
2ND ST SE
JULIA ST SE
N
Legend
Subject Parcel
Future Land Use 2035
FLU
Primary Mixed Use Hub
Traditional Neighborhood Area
The map is created from a subset of data from the City of Winter Haven Geographic Information System (GIS) database. The City of Winter Haven makes no claims, no representations, and no warranties, express or implied, concerning the validity (express or implied), the reliability or the accuracy of the GIS data and GIS data produces furnished by the City, including the implied validity of any such uses of data.


O-25-20
Zoning Map
N
AVENUE G SE
2ND ST SE
AVENUE H SE
JULIA ST SE
1ST ST S
AVENUE G SW
R-2
MX
C-3
Legend
Subject Parcel
Commercial Highway (C-3)
Mixed Use (MX)
Residential Single Family (Minimum 6,000 sq. ft.) (R-2)
WINTER HAVEN
THE CHAIN OF LAKES CITY
The map is created from a subset of data from the City of Winter Haven Geographic Information System (GIS) database. The City of Winter Haven makes no claims, no representations, and no warranties, express or implied, concerning the validity (express or implied), the reliability or the accuracy of the GIS data and GIS data products furnished by the City, including the implied validity of any such data. of uses


O-25-20
Aerial Map
WINTER HAVEN
THE CHAIN OF LAKES CITY
AVENUE G SW
1ST ST S
JULA ST SE
AVENUE G SE
2ND ST SE
AVENUE H SE
N
Legend
Subject Parcel
The map is created from a subset of data from the City of Winter Haven Geographic Information System (GIS) databases. The City of Winter Haven makes no warranties, expressed or implied, concerning the accuracy, completeness, merchantability or fitness for any particular purpose of the GIS data and GIS data products furnished by the City, including the implied (express or implied), the reliability or the accuracy of the GIS data and GIS data products furnished by the City, including the implied validity of such data. Any uses of such data.

ORDINANCE NO. O-25-20

AN ORDINANCE AMENDING CHAPTER 21 OF THE CODE OF ORDINANCES OF THE CITY OF WINTER HAVEN, FLORIDA, BY REZONING ONE (1) PARCEL FROM MIXED USE (MX) ZONING DISTRICT TO COMMERCIAL- HIGHWAY (C-3) ZONING DISTRICT; PROVIDING FOR THE ADMINISTRATIVE CORRECTION OF SCRIVENER'S ERRORS; REPEALING ALL ORDINANCES IN CONFLICT HEREWITH; AND PROVIDING AN EFFECTIVE DATE. (General Location: A parcel generally located 250 feet east of First Street, South and north of Avenue H, SE. The area covered by this request is 0.24± acres.)

WHEREAS, there has been a request to rezone the property described below, and;

WHEREAS, the action will further the general health, safety, and welfare and be a benefit to the City as a whole, and;

WHEREAS, the requested zoning is consistent with the Future Land Use Element of the Winter Haven Comprehensive Plan.

WHEREAS, the request implements requirements contained in Part II, Chapter 163 of Florida Statutes, and therefore is exempt from requiring a Business Impact Estimate as set forth by Chapter 2024-145, Laws of Fla. (CS/CS/SB 1628 (2024)).

NOW THEREFORE, BE IT ENACTED BY THE PEOPLE OF THE CITY OF WINTER HAVEN, FLORIDA, AS FOLLOWS:

1. That Chapter 21 of the Code of Ordinances of the City of Winter Haven, Florida, is hereby amended to rezone that land, described in Exhibit "A" attached hereto and made a part of this Ordinance, from Mixed Use (MX) zoning district to Commercial- Highway (C-3) zoning district.

2. This Ordinance shall not be codified, but the City Clerk shall retain this Ordinance as a permanent record of action taken by the City Commission of the City of Winter Haven.

3. The correction of typographical and/or scrivener's errors which do not affect the intent may be authorized by the City Manager or designee, without need of public hearing, by filing a corrected or recodified copy of same with the City Clerk.

4. All ordinances in conflict herewith are hereby repealed.

5. This Ordinance shall be effective immediately upon the effective date; however, that such change shall first be noted on the official zoning map of the City of Winter Haven.

INTRODUCED on first reading this 14th day of July, 2025.

PASSED on second reading this 28th day of July, 2025.

CITY OF WINTER HAVEN, FLORIDA

_____

MAYOR-COMMISSIONER
Nathaniel J. Birdsong, Jr.

ATTEST:

_____

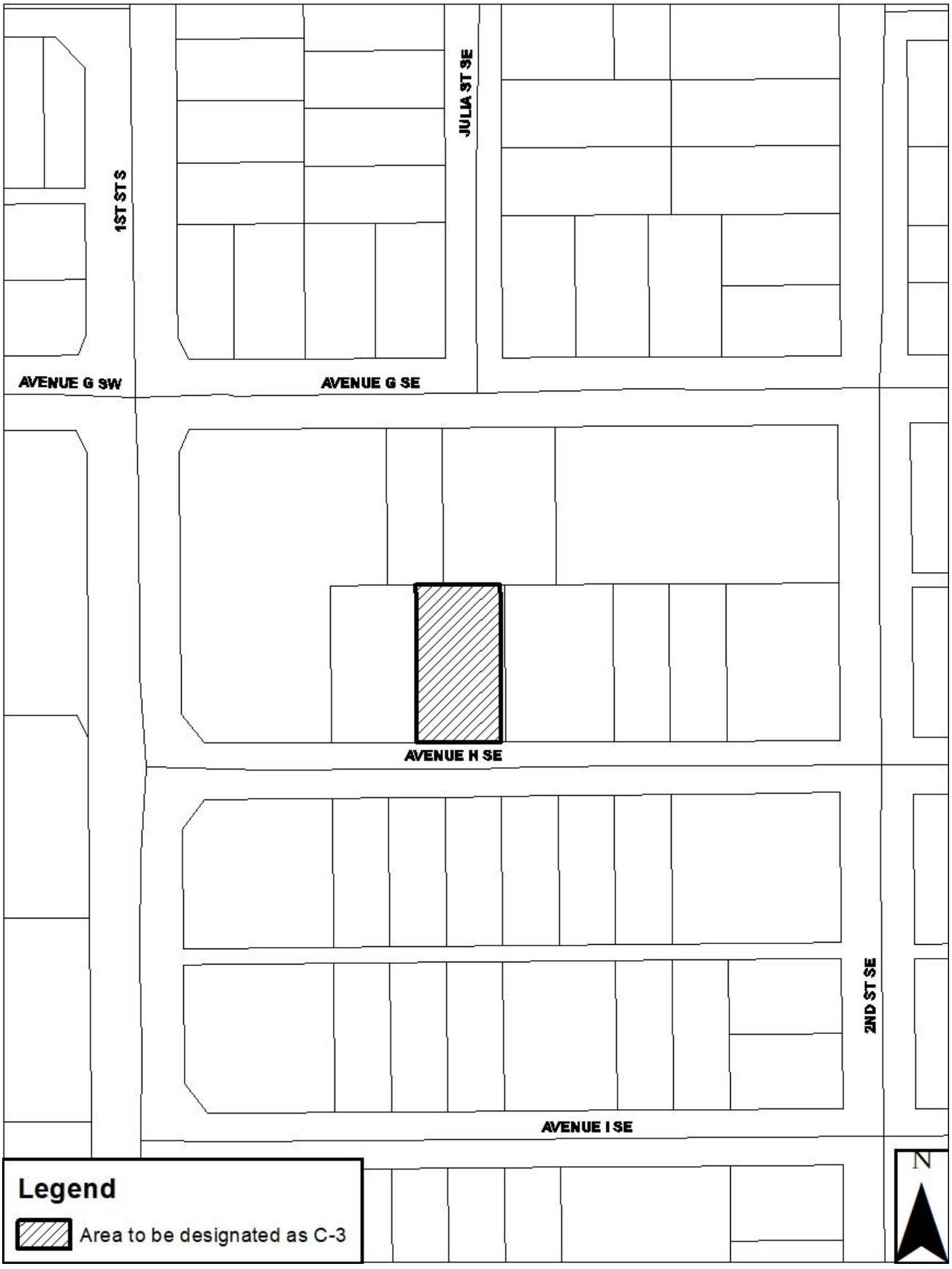
CITY CLERK
Vanessa Castillo, MMC

Approved as to form:

_____

CITY ATTORNEY
Frederick J. Murphy, Jr.

Exhibit "A"


1ST ST S
JULIA ST SE
AVENUE G SW
AVENUE G SE
AVENUE H SE
2ND ST SE
AVENUE I SE
Legend
Area to be designated as C-3
N

DATE: June 20, 2025

TO: Honorable Mayor and City Commissioners

VIA: T. Michael Stavres, City Manager
M.J. Carnevale, Deputy City Manager
Eric Labbe, Economic Opportunity and Community Investment Director
Sean Byers, Planning Manager

FROM: Heather Reuter, Senior Planner

SUBJECT: **Ordinance O-25-26:** Voluntary annexation of a parcel located at the southwest corner of the intersection of 8th Street, NW/US Highway 17 and Avenue X, NW. The area covered by this request is 0.34± acres.

BACKGROUND

This is a request by Candace Ducking and Lisson Etienne for the City Commission to annex one (1) parcel, totaling 0.34± acres, located at the southwest corner of the intersection of 8th Street, NW/US Highway 17 and Avenue X, NW. The petitioner is requesting annexation for future development of the property. The property is contiguous to the City to the east across 8th Street, NW/US Highway 17, and the annexation of this property will reduce the size of an existing enclave.

FINANCIAL IMPACT

Current taxable value of the subject parcel is approximately $29,972. Based on the City's current tax millage rate of 6.59 mills, expected annual tax revenue will be approximately $197.52. However, additional revenue is expected upon the development of the property.

The Voluntary Petition for Annexation which is the basis for this Ordinance is being processed and considered in order to comply with the requirements of Section 171.044 of the Florida Statutes. Accordingly, the exemption set forth in Section 166.041(4)(c)1 of the Florida Statutes applies and a business impact estimate is not required as a result of this Ordinance.

STRATEGIC PLAN ALIGNMENT

This is a routine voluntary annexation associated with normal operations of the City not specifically defined as a goal or strategy within the Strategic Plan. However, it is aligned with the Responsible Government Strategic Pillar.

RECOMMENDATION

Staff recommends the City Commission approve Ordinance O-25-26.

ATTACHMENT

- Ordinance O-25-26

ORDINANCE NO. O-25-26

AN ORDINANCE EXTENDING THE CORPORATE LIMITS OF THE CITY OF WINTER HAVEN, FLORIDA, SO AS TO INCLUDE THEREIN ADDITIONAL TERRITORY LYING CONTIGUOUS AND ADJACENT TO THE PRESENT BOUNDARIES OF THE CITY OF WINTER HAVEN, FLORIDA; DESCRIBING SAID ADDITIONAL TERRITORY; REPEALING ALL ORDINANCES IN CONFLICT HEREWITH; PROVIDING FOR THE ADMINISTRATIVE CORRECTION OF SCRIVENER'S ERRORS; AND PROVIDING AN EFFECTIVE DATE. (General Location: A parcel located at the southwest corner of the intersection of 8th Street, NW/US Highway 17 and Avenue X, NW. The area covered by this request is 0.34± acres.)

WHEREAS, a petition to integrate territory into the City of Winter Haven, Florida, has been filed requesting the City of Winter Haven extend its corporate limits to include certain property herein described; and

WHEREAS, the City of Winter Haven deems it expedient and practical to incorporate said territory as the same is in conformity with overall plans for extending the boundaries of the City of Winter Haven into the Greater Winter Haven area; and

WHEREAS, the property herein described is contiguous and adjacent to the corporate limits of the City of Winter Haven, and the property will become a part of the unified corporate area with respect to municipal services and benefits; and

WHEREAS, the Voluntary Petition for Annexation which is the basis for this Ordinance is being processed and considered in order to comply with the requirements of Section 171.044 of the Florida Statutes. Accordingly, the exemption set forth in Section 166.041(4)(c)1 of the Florida Statutes applies and a business impact estimate is not required as a result of this Ordinance.

NOW THEREFORE, BE IT ENACTED BY THE PEOPLE OF THE CITY OF WINTER HAVEN, FLORIDA, AS FOLLOWS:

1. A petition has been filed to integrate territory into the City of Winter Haven, Florida, as attached herein as Exhibit "A."

2. That the City Commission of the City of Winter Haven does hereby annex into the corporate limits of the City of Winter Haven, Florida, the following described property:

See Composite Exhibit "B" attached hereto and made a part hereof consisting of two (2) pages, the first being a legal description, and the second being a location map.

3. All ordinances in conflict herewith are hereby repealed to the extent necessary to give this Ordinance full force and effect.

4. The correction of typographical and/or scrivener's errors which do not affect the intent may be authorized by the City Manager or designee, without need of public hearing, by filing a corrected or recodified copy of same with the City Clerk

5. This Ordinance shall become effective immediately upon passage on second reading.

INTRODUCED on first reading this 14th day of July, 2025.

PASSED on second reading this 28th day of July, 2025.

CITY OF WINTER HAVEN, FLORIDA

_____
MAYOR-COMMISSIONER
Nathaniel J. Birdsong, Jr.

ATTEST:

_____
CITY CLERK
Vanessa Castillo, MMC

Approved as to form:

_____
CITY ATTORNEY
Frederick J. Murphy, Jr.

Exhibit "A"
Page 1 of 3

WINTER HAVEN
THE CHAIN OF LAKES CITY

SPACE FOR RECORDING

PETITION/CONSENT FOR ANNEXATION

The following information is required for submission of an application to annex into the city limits of Winter Haven. **Please print or type the required information below.**

Property Owner(s) Details

Name(s) of Property Owner(s): Candace Ducking + Lisson Etienne
Mailing Address: 302 Lakeview Blvd. Winter Haven, FL. 33880
Phone: (863) 280-4230 Email: candaceducking@gmail.com
Name of Representative (if applicable): _____
Mailing Address: _____
Phone: _____ Email: _____

Property Details

Property Address or General Location: 0 8th St NW
Parcel Identification Number(s): 17-542500-000880 2628
Legal Description of the Property (Preferably Metes & Bounds): Zone for Residential Property
Proof of Property Ownership (copy attached): Yes
Reason for Request: Request zoning to commercial property
Present Use of the Property: N/A - property is vacant
Existing Structures Located on the Site: N/A - property is vacant

FOR OFFICE USE ONLY

Total Acreage: 0.34
Assessed Property Value: $ 29,972 Taxable Value: $ 29,972
Subdivision: Hartridge Manor
Present County Future Land Use Designation: RL-4

Exhibit "A"
Page 2 of 3

OWNER/AGENT SIGNATURE PAGE

I / We, Candace Ducking & Lisson Etienne being duly sworn, depose and say that I / we own the properties involved in this petition/consent and that I / we authorize the City of Winter Haven, in accordance with adopted City policy, rules and regulations (Resolution No. R-87-07), and in conformance with State law, to process this petition/consent and annex said property into the corporate limits of the City of Winter Haven. This Petition and Consent shall be irrevocable. No further consent of Owner shall be required for the City to annex said property immediately, or at some time in the future.

Further I / we or any agent or lessee of the subject property authorized by me / us (see attached proof of authorization) to file this petition/consent, deposes and say that the statements and answers contained in the petition/consent for annexation, and any information attached thereto, present the arguments in behalf of this petition/consent to the best of my / our ability; and that the statements and information referred to above are in all respects true and correct to the best of my / our knowledge and belief.

OWNER(S)/AGENT(S)

Signature of Owner/Agent

Candace Ducking
Printed Name of Owner/Agent

Signature of Owner/Agent

Lisson Etienne SD
Printed Name of Owner/Agent

Signature of Owner/Agent

Printed Name of Owner/Agent

Signature of Owner/Agent

Printed Name of Owner/Agent

STATE OF Florida
COUNTY OF Polk

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization this 24 day of March, 2025, by Candace Ducking & Lisson Etienne, who is ☐ personally known to me or ☑ has produced FL DL as identification and who (did) (did not) take an oath.

SIGNATURE OF NOTARY PUBLIC

Wanda Matias
TYPED, PRINTED or STAMPED NAME OF NOTARY PUBLIC

WANDA I. MATIAS
Notary Public
State of Florida
Comm# HH482084
Expires 2/15/2028

Exhibit "A"
Page 3 of 3

Skip to main content
Home Page » Return To Search Results

Change Browser Language

Parcel Details: 26-28-17-542500-000880

TAX EST | PRT CALC | PRC | HTML PRC | TRIM | HTML TRIM | TAX BILL

Owners *Recently purchased this property? Click here.*

DUCKING CANDACE R	50%
ETIENNE LISSON	50%

Mailing Address *(Address Change form)*

Address Line 1	**302 LAKEVIEW BLVD**
Address Line 2	
Address Line 3	**WINTER HAVEN FL 33880-1124**

Physical Street Address *Looking for site address? Click here.*

Address Line 1	**0 8TH ST NW**
Address Line 2	

Postal City and Zip

City/St/Zip	**WINTER HAVEN FL 33881**

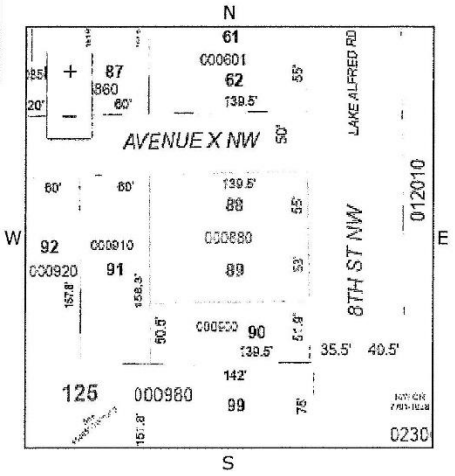
Parcel Information

Municipality / Taxing District	**UNINCORP/SWFWMD/LAKE REGION (Code: 92000)**
Neighborhood	**211640.00** Show Recent Sales in this Neighborhood
Subdivision	**HARTRIDGE MANOR PB 14 PG 9**
Property (DOR) Use Code	**Vac.Res (Code: 0001)**
Acreage	**0.34**
Community Redevelopment Area	**NOT IN CRA**

Property Desc

DISCLAIMER: This property description is a condensed version of the original legal description recorded in the public records of Polk County, FL. It does not include the section, township, range, or the county where the property is located. It is a description of the ownership boundaries only and does not include easements or other interests of record. The property description should not be used when conveying property. The Property Appraiser assumes no responsibility for the consequences of inappropriate uses or interpretations of the property description. No warranties, expressed or implied, are provided for the data herein, its use, or its interpretation.

Area Map



Recorded Plat

Visit the Polk County Clerk of Courts website to view the Recorded Plat for this parcel

Note: Some plats are not yet available on the Clerk's website. The site contains images of plats recorded on 01/05/1973 (beginning with book 058 Page 020) or later. For information on Plats recorded before 01/05/1973 (Book 058 Page 019 or less) please contact the Polk County Clerk's Office.

Mapping Worksheets (plats) for 262817

Mapping Worksheet HTML (opens in new tab) | Mapping Worksheet Printable PDF

Exhibit "B"
Page 1 of 2

Ordinance No. O-25-26
Annexation Boundary Description

R. T. S. Sub. Parcel:
262817 542500 000880

Described As:
Lot 88 and 89 of Hartridge Manor, as shown by map or plat thereof recorded in the office of the Clerk of the Circuit Court in and for Polk County, Florida, in Plat Book 14 Page 9, LESS AND EXCEPT road right of way.

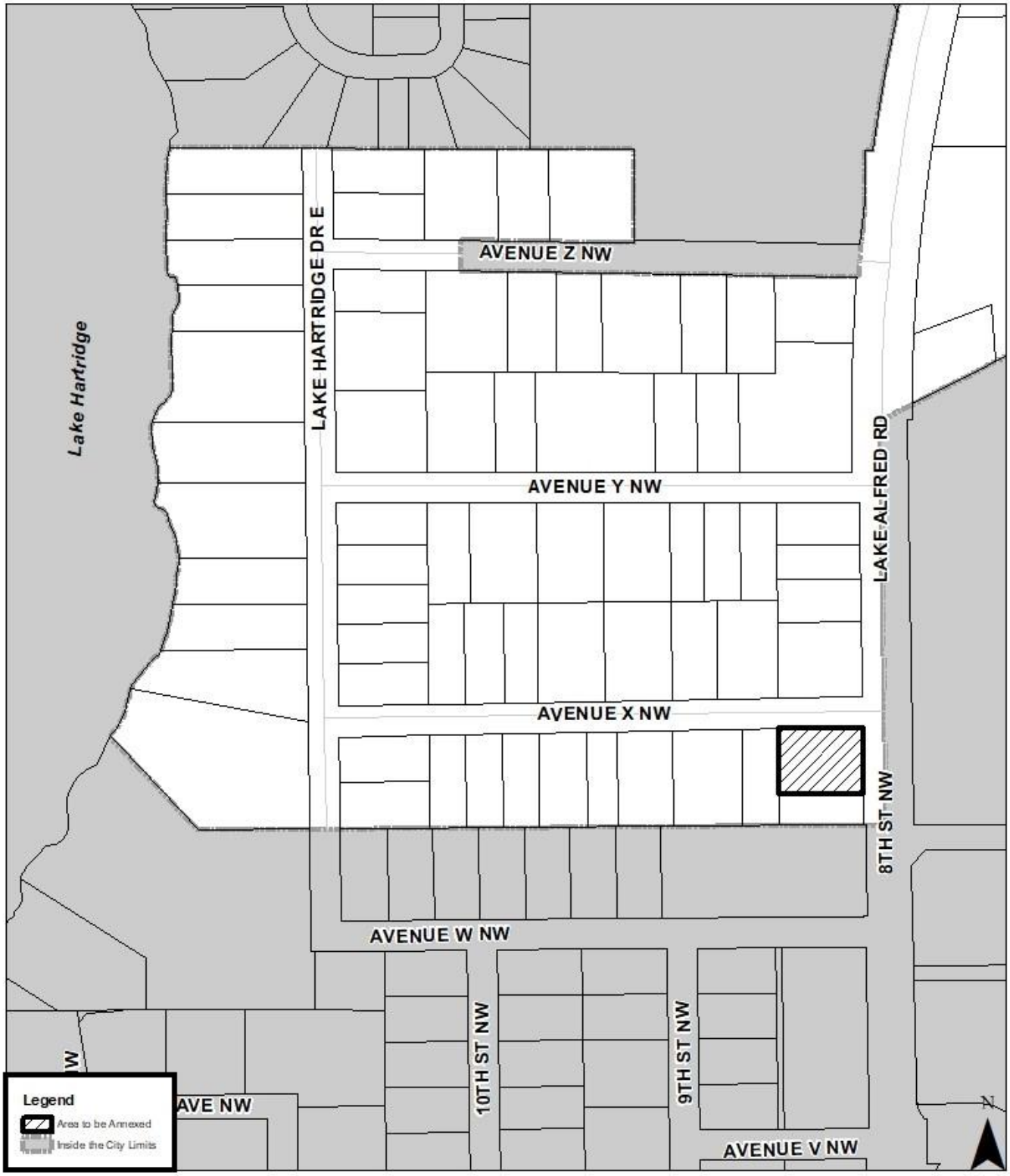
Also Described as:
Commencing at the Southeast corner of the Southeast ¼ of the Northwest ¼ of Section 17, Township 28 South, Range 26 East, also being the center of Section 17, also being the Southeast corner of US Government Lot 3 of said section, thence S89°49'30"W along the South line of the Northwest ¼ a distance of 25 feet to the southeast corner of Lot 90 of Hartridge Manor as shown in Plat Book 14 Page 9 of the Public Records of Polk County Florida, thence continue S89°49'30"W along the south line the said Northwest ¼ a distance of 10.5 feet to the west right of way line of SR 555 (US 17) as shown in FDOT right of way map section 16030-2503, thence N00°47'15"W leaving said south line of the northwest ¼ along the said west right of way line a distance of 51.79 feet to the Point of Beginning, thence continue N00°47'15"W a distance of 108 feet to the southern right of way line of Ave X, NW (Platted Granville Dr.) as shown in said plat of Hartridge Manor , thence S89°15'38"W along said southern right of way of Avenue X, NW a distance of 139.5 feet to the Northwest corner of Lot 88 of said Plat, thence S00°47'15"E along the west line of Lots 88 and 89 of said plat a distance of 108 feet to the southwest corner of Lot 89, thence N89°15'38"E along the south line of said Lot 89 a distance of 139.50 to the Point of Beginning.

An area containing **0.34 acres** more or less.

Based on information obtained from the deed and plat.

Prepared and reviewed by the Engineering Division of the City of Winter Haven, (JL) June 17, 2025.

Exhibit "B"
Page 2 of 2



DATE: June 27, 2025

TO: Honorable Mayor and City Commissioners

VIA: T. Michael Stavres, City Manager
M.J. Carnevale, Deputy City Manager

FROM: Eric Labbe, Director of Economic Opportunity and Community Investment

SUBJECT: Developer's Agreement – LWG Florida Properties, LLC

BACKGROUND

On October 23, 2023 the City Commission of the City of Winter Haven approved Ordinance O-23-39, a PUD zoning ordinance, for the properties subject to this Developer's Agreement. Section 2.E.3 of the Ordinance O-23-39 states, "The developer shall dedicate additional rights-of-way along the development's frontage for Coon Lake Road so as to provide 30 feet of rights-of-way to the centerline. The developer shall pave Coon Lake Road, to current Polk County standards, from Thompson Nursery Road/Eloise Loop Road to the main entrance roadway. A minimum 8-foot, paved multi-use path shall be installed from the main entrance roadway west to County Road 653." (note: Coon Lake Road is now referred to as Lake Ruby Drive West).

The developer, LWG Florida Properties, LLC, has opted to commence construction on Lake Ruby Drive West, as required in Ordinance O-23-39, prior to commencing construction upon any of the property associated with Ordinance O-23-39.

Section 21-152(b) of the City of Winter Haven Code of Ordinances states, "All electric, telephone, cable television, and other communication lines (exclusive for transformers or enclosures containing electrical equipment, including, but not limited to, switches, meters, or capacitors, that may be pad mounted), and gas distribution lines shall be placed underground within easements or dedicated public rights-of-way, installed in accordance with the City's adopted design standards". Therefore, all such utilities associated with the construction of Lake Ruby Drive West are required to be placed underground.

However, placing the existing overhead electric utility lines underground now, prior to development of the parcels associated with Ordinance O-23-39, places a significant financial burden upon the developer which may affect the ability to further develop the parcels subject to Ordinance O-23-39.

This Developer's Agreement provides that the developer may temporarily relocate the existing overhead power lines and associated poles, within the rights-of-way of Lake Ruby Drive West until such time as any of the property subject to Ordinance O-23-39 submits plans for building permits and/or site plan approval. At that time, the developer shall submit plans for the undergrounding of all electric utilities along Lake Ruby Drive West. Should the developer fail to submit said plans and/or underground all electric utilities, no site plan approval or building permits shall be issued for parcel 26-29-13-687552-003310, which is currently owned by the developer, LWG Florida Properties, LLC. This proposed

Developer's Agreement runs with the land and enures to LWG Florida Properties, LLC's heirs, successors, and/or permitted assigns.

FINANCIAL IMPACT

There is no financial impact associated with the Developer's Agreement.

STRATEGIC PLAN ALIGNMENT

This is a Developer's Agreement associated with the timing of certain required infrastructure improvements and not specifically defined as a goal or strategy within the Strategic Plan. However, it is aligned with the Responsible Government and Economic Sustainability Strategic Pillars.

RECOMMENDATION

Staff recommends the City Commission approve the Developer's Agreement with LWG Florida Properties, LLC and authorize the City Manager and/or his designee to take all necessary actions related thereto.

ATTACHMENT

- Developer's Agreement

DEVELOPER'S AGREEMENT

THIS DEVELOPER'S AGREEMENT ("Agreement") is made and entered into as of the _____day of _____, 2025, by and between **THE CITY OF WINTER HAVEN, a Florida municipal corporation** (hereinafter referred to as the "City"), and **LWG FLORIDA PROPERTIES, LLC,** a Florida Limited Liability Company (hereinafter referred to as "LWG"), their successors and/or permitted assigns.

WHEREAS, Latigo Winter Haven, LLC is fee simple owner of lands with a Polk County, Florida Property Appraiser parcel identification number of 26-29-13-687552-003410 located within the municipal limits of Winter Haven, Florida and more particularly depicted and described on Exhibit "A" attached hereto and incorporated herein by reference (hereafter "Latigo Parcel"); and

WHEREAS, LWG is fee simple owner of lands with a Polk County, Florida Property Appraiser parcel identification number of 26-29-13-687552-003310 located within the municipal limits of Winter Haven, Florida and more particularly depicted and described on Exhibit "B" attached hereto and incorporated herein by reference (hereafter "LWG Parcel"); and

WHEREAS, the above referenced parcels are subject to the provisions and requirements set forth in Ordinance O-23-39, a Planned Unit Development, adopted by the City Commission of the City of Winter Haven on October 23, 2023, attached hereto as Exhibit "C" and incorporated herein by reference; and

WHEREAS, Section 2.E.3 of Ordinance O-23-39 states, "The developer shall dedicate additional rights-of-way along the development's frontage for Coon Lake Road so as to provide 30 feet of rights-of-way to the centerline. The developer shall pave Coon Lake Road, to current Polk County standards, from Thompson Nursery Road/Eloise Loop Road to the main entrance roadway. A minimum 8-foot, paved muti-use path shall be installed from the main entrance roadway west to County Road 653." (note: Coon Lake Road is now referred to as Lake Ruby Drive West); and

WHEREAS, LWG is the "developer" of Lake Ruby Drive West, as contemplated in Section 2.E.3 of Ordinance O-23-39; and

WHEREAS, LWG, as developer, has opted to commence construction of Lake Ruby Drive West (formerly Coon Lake Road) prior to development of the parcels noted above which are subject to Ordinance O-23-39; and

WHEREAS, Section 21-152(b) of the City of Winter Haven Code of Ordinances states, "All electric, telephone, cable television, and other communication lines (exclusive for transformers or enclosures containing electrical equipment, including, but not limited to, switches, meters, or capacitors, that may be pad mounted), and gas distribution lines shall be placed underground within easements or dedicated public rights-of-way, installed in accordance with the City's adopted design standards"; and

WHEREAS, overhead electric utility lines currently exist on poles along or within the Lake Ruby Drive West (formerly Coon Lake Road) rights-of-way; and

WHEREAS, placing the existing overhead electric utility lines underground now prior to development of the aforementioned parcels subject to Ordinance O-23-39 places a significant financial burden on LWG, (and their successors, heirs, and permitted assigns) which may affect the ability to further develop the aforementioned parcels subject to Ordinance O-23-39; and

WHEREAS, the electric and transportation impacts of the development of the aforementioned parcels subject to Ordinance O-23-39 will not be borne until such time as the parcels are developed; and

WHEREAS, LWG, as developer, has requested that the City authorize the temporary use of overhead electric utility lines now until such time as any application(s) for development of the aforementioned parcels are requested and/or initiated; and

WHEREAS, it is in the best interest of the citizens and residents of the City of Winter Haven to allow LWG to proceed with the construction of Lake Ruby Drive West (formerly Coon Lake Road) as contemplated in Ordinance O-23-39 without the necessity of under grounding electric utility poles and overhead uses until such time as the aforementioned parcels are developed via the submission of application(s) for development of either one of said aforementioned parcels.

NOW THEREFORE, in consideration of the terms set forth herein which the parties agree is adequate consideration, the parties agree as follows:

1. **Recitals.** The foregoing recitals are true and correct and are hereby incorporated by reference herein and is the factual basis for entry into this Agreement.

2. **Temporary Relocation of Existing Electric Utility Poles and Overhead Lines.** Pursuant to, concurrent with, and in order to facilitate the construction of Lake Ruby Drive West (formerly Coon Lake Road), existing utility poles and affixed electric utility lines may be temporarily relocated within the rights-of-way of Lake Ruby Drive West (formerly Coon Lake Road). Said temporary relocation shall be done in such a way as to continue to facilitate service to any existing customers or users currently served by the existing overhead electric utilities.

3. **Requirement to Underground Utilities.** Prior to the issuance of any City of Winter Haven Building Permits for construction of any structures upon either the Latigo and/or LWG Parcels which are subject to Ordinance O-23-39, or any portion thereof, all electric utilities permitted to be temporarily relocated along and/or within the rights-of-way of Lake Ruby Drive West (formerly Coon Lake Road) by virtue of this Agreement shall be caused to be placed underground, consistent with Section 21-152(b) of the Code of Ordinances of the City of Winter Haven by LWG, as developer, and/or their successors and permitted assigns and to that extent this Agreement is intended to run with the lands subject to Ordinance O-23-39 as attached hereto as Exhibit "C" and incorporated herein by reference.

4. **Site Plan Approval.** Prior to the issuance of site plan approval for development of either of the Latigo and/or LWG Parcels which are subject to Ordinance O-23-39, or any portion thereof, LWG, as the developer, shall cause plans to be submitted to the City of Winter Haven, detailing to the satisfaction of the City Engineer, said undergrounding of any and all electric utilities permitted by this

Agreement to be temporarily relocated along and/or within the Lake Ruby Drive West rights-of-way.

5. **Failure to perform.** LWG agrees that pursuant to Section 3 above, any failure to underground any electric utilities permitted to be temporarily relocated by this Agreement shall allow the City to withhold the issuance of Building Permits for any development on the LWG Parcel. In addition, pursuant to Section 4 above, any failure to submit site plans and/or any related documents, to the satisfaction of the City Engineer, to underground any electric utilities permitted to be temporarily relocated by this Agreement, shall also allow the City to withhold site plan approval for the LWG Parcel. Accordingly LWG, as developer, and their successors and/or permitted assigns agree to release, hold harmless and indemnify the City for and from any claims, damages, and judgments including but limited to all trial, appellate, or bankruptcy attorney's fees and costs in any and all administrative and/or judicial forums arising out of the inability to obtain Building Permits and/or site plan approval for either the Latigo Parcel and/or the LWG Parcel and further agree that this is a material inducement for the City to enter into this Agreement. Provided further however, that the failure to underground any electric utilities as contemplated and required in this Agreement and Ordinance O-23-39 shall not prohibit and/or prevent the issuance of either Building Permit(s) and/or Site Plan Approval(s)(assuming such issuance and/or approvals is otherwise appropriate and authorized by applicable law, ordinance, and/or rule) for the Latigo Parcel.

6. **Miscellaneous.**

6.1 This Agreement sets forth the entire agreement between the parties as to the subject matter hereof, and it supersedes any and all prior oral or written agreements, understandings, representations or warranties between the parties, except as otherwise specified in this Agreement.

6.2 This Agreement may not be amended, modified, altered or changed in any respect, except by a written agreement which is signed by authorized officers of all parties and which makes specific reference to this Agreement and is approved by the governing body of the City which approval may not be unreasonably withheld, but may be reasonably conditioned and/or delayed as determined solely within the discretion of the City. In the event that LWG and/or its successors and/or permitted assigns, requests any amendment, modification, change or assignment, in whole or in part, and/or any supplementary action related to the Agreement, then such request must be in writing and accompanied by payment to the City's Director of Economic Opportunity & Community Investment of cleared funds in the amount of $3,500 to cover the City's costs in evaluating and reviewing such submittal(s).

6.3 In the event of any litigation related to the interpretation or enforcement of this Agreement, the prevailing party shall be entitled to recover its reasonable attorneys' fees and court costs, including, without limitation, any such fees or costs related to trial, appellate or bankruptcy proceedings in any administrative and/or judicial forums.

6.4 In no event, shall the City be liable to LWG and their successors and/or permitted assigns for indirect, incidental, consequential, special, exemplary, or punitive damages of any kind or nature, including loss of profit, whether foreseeable or not, arising out of or resulting from the nonperformance or breach of this agreement by the City whether based in contract, common law, warranty, tort, strict liability, contribution, indemnity or otherwise.

6.5 This Agreement was drafted with the joint participation of the parties hereto and shall be construed neither more strongly against nor in favor of any of them, but, rather, in accordance with the fair meaning hereof.

6.6 Any number of counterparts of this Agreement may be signed and delivered, each of which shall be considered an original and admissible into evidence, and all of which together shall constitute one and the same instrument. Further, any facsimile or electronic signature shall be deemed an original signature for purposes of this Agreement.

6.7 The parties hereto agree to execute and deliver such other documents and instruments as any party may reasonably request to effectuate and carry out the provisions of this Agreement.

6.8 The parties agree that they are not partners or joint venturers, and neither is agent for any other party hereto.

6.9 This Agreement shall not be binding upon any party until it is executed by all parties. Each individual signing this Agreement on behalf of any corporation or other entity represents and warrants that he or she has the requisite authority to execute this Agreement on behalf of such entity, and by doing so, to bind such entity to all the terms and provisions of this Agreement.

6.10 This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective heirs, personal and legal representatives, successors, successors in title, and lawful and permitted assigns. Neither party may assign this Agreement, or delegate its responsibilities hereunder, without the express written consent of the other party and the governing body of the City which approval by the governing body of the City may not be unreasonably withheld, but may be reasonably conditioned or delayed as determined within the sole discretion of the City. The additional fee required in paragraph 6.2 shall also be required in the event that any assignment in whole or in part, or other similar request is made hereunder. Any effort by LWG to attempt to assign, pledge, and/or hypothecate the rights and/or obligations under this Agreement in whole or in part without first obtaining the written approval and/or consent of the governing body of the City shall not be recognized by the City and LWG shall remain obligated under the terms of this Agreement and this Agreement shall remain in full force and effect.

6.11 No member, official or employee of the City shall be personally liable to LWG or to any person with whom LWG shall have entered into any contract, or to any other person in the event of any default or breach by the City, or for any amount which may become due to LWG or any other person under this Agreement.

6.12 Neither LWG nor the City shall be deemed in default hereunder where such a default is based on a delay in performance as a result of war, insurrection, terrorist activity, strikes, lockouts, riots, floods, earthquakes, fires, casualty, acts of God, acts of public enemy, epidemic, pandemic, quarantine restrictions, freight embargo, shortage of labor or materials, interruption of utilities services, lack of transportation, litigation, weather and other acts or occurrences beyond the control or without the control of such party; provided, however, that the extension of time granted for any delay caused by any of the foregoing shall not exceed the actual period of such delay and a reasonable time to resume after such delay. The party invoking this Section 6.11 shall deliver notice to the other party as provided in Section 6.18 setting forth the event of Force Majeure. Upon expiration of the event of Force Majeure, either party may notify the other that the event has expired and that the extension of time granted as a result of such delay has ended.

6.13 To the extent permitted by law, including Section 768.28, Florida Statutes (2025), as amended, each party ("Indemnifying Party") agrees to indemnify and defend the other party (the "Indemnified Party") from and against all suits or actions of any kind including attorney's fees (both trial and appellate in any and all administrative and/or judicial forums) and costs incurred by the Indemnified Party brought against the Indemnified Party based on personal injury, bodily injury, death or property damage, destruction received or reasonably claimed to be received or sustained by any person or persons arising out of or in connection with any negligent act or omission of the Indemnifying Party, its agents, employees, or assigns while performing the duties and obligations required by this Agreement. This indemnification shall survive the termination of this Agreement. It is understood and agreed that no party to this Agreement waives any sovereign immunity it may have as provided by applicable law and agrees that any indemnification by the City is subject to the limits of liability set forth in Section 768.28 of the Florida Statutes regardless of whether such obligations are based in tort, contract, statute, strict liability, and negligence, product liability or otherwise.

6.14 The invalidity, illegality or unenforceability of any one or more of the provisions of this Agreement shall not affect any other provision of this Agreement, but this Agreement will be construed as if such invalid, illegal or unenforceable provision has never been contained herein.

6.15 Neither this Agreement nor the obligations imposed upon the City hereunder shall be or constitute an indebtedness or general obligation of the City or other Governmental Authority within the meaning of any constitutional, statutory or charter provisions requiring the City or other Governmental Authority to levy ad valorem taxes nor a lien upon any properties or funds of the City or other Governmental Authority.

6.16 Nothing contained herein shall be deemed, construed or applied to cause any Governmental Authority, specifically including the City, to waive its right to exercise its governmental power in any manner other than that which is customary for the exercise of such governmental powers.

6.17 The words "herein" and "hereof" when used in this Agreement refer to this Agreement in its entirety and not solely to any specific sentence, paragraph or section.

6.18 All legal actions rising out of or connected with this Agreement must be instituted in the Circuit Court of Polk County, Florida. The laws of the State of Florida shall govern the interpretation and enforcement of this Agreement.

6.19 Any notices required by this Agreement shall be in writing and shall be either delivered in person, sent by overnight courier such as United Parcel Service or Federal Express, or mailed by United States Mail, certified with return receipt requested and all postage charges prepaid. Any notice mailed in accordance with these standards to the proper address as set forth below shall be deemed to be effective three (3) calendar days after the date of postmark; notices delivered in person shall be effective upon delivery; and notices sent by overnight courier shall be effective as of the next business day after being placed into the hands of the courier service, properly addressed; and any time period shall begin running as of that date, whether or not the notice is actually received. Notices shall be given in the following manner, or in such other manner as may be directed by the parties to this Agreement, in writing from time to time, to the following persons as follows:

For the City:	T. Michael Stavres City Manager City of Winter Haven 451 Third Street, N.W. Winter Haven, Florida 33881
With a copy to:	Eric Labbe, Director of Economic Opportunity & Community Investment City of Winter Haven 451 Third Street, NW Winter Haven, Florida 33881
With a copy to: (which shall not constitute notice)	Frederick J. Murphy, Jr., City Attorney Boswell & Dunlap LLP 245 South Central Avenue Bartow, Florida 33831
For LWG:	LWG Florida Properties, LLC Attn:Steve Savoy, Manager 148 Walker Road Hodgdon, ME 04730
With copy to:	Greenspoon Marder, LLP Attn: Michael Candiotti 201 E. Pine Street, Suite 500 Orlando, FL 32801

Each party shall be responsible for notifying the other party of any change in their address.

IN WITNESS WHEREOF, the parties have executed this Agreement as of the date first set forth above.

THE CITY OF WINTER HAVEN, FLORIDA, a Florida municipal corporation

By:_____
Nathanial J. Birdsong, Jr.
As its: Mayor

ATTEST WITH SEAL:

By_____
Vanessa Castillo, MMC, City Clerk

Approved as to correctness and form:

By_____
Frederick J. Murphy, Jr., City Attorney

LWG FLORIDA PROPERTIES, LLC, a Florida Limited Liability Company

By:_____
As:_____
_____, 2025.

_____
Witness
Witness Printed Name: _____
Witness Address: _____
_____

_____
Witness
Witness Printed Name: _____
Witness Address: _____
_____
Two Witnesses

Exhibit “A”

Polk County Parcel ID
26-29-13-687552-003410

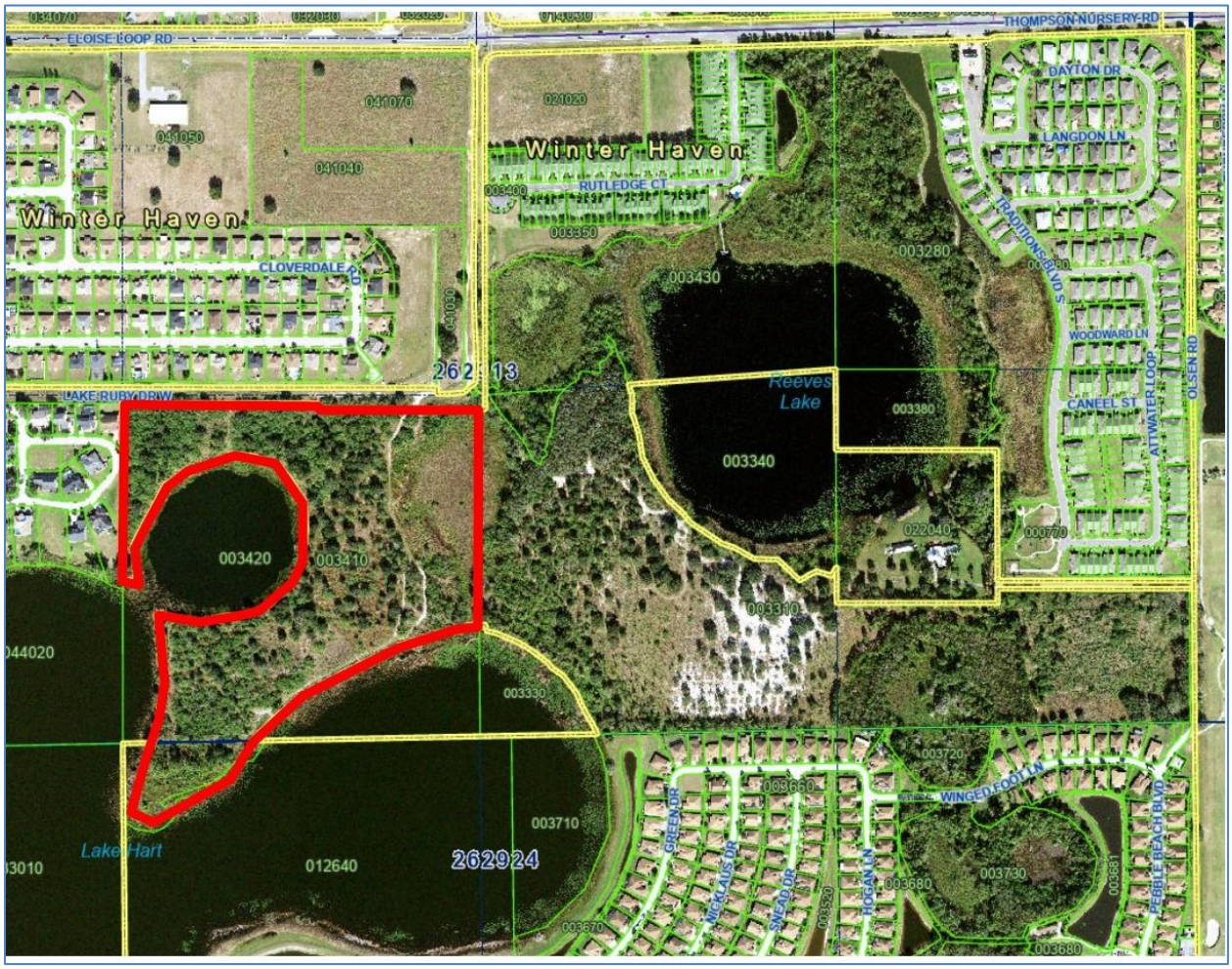
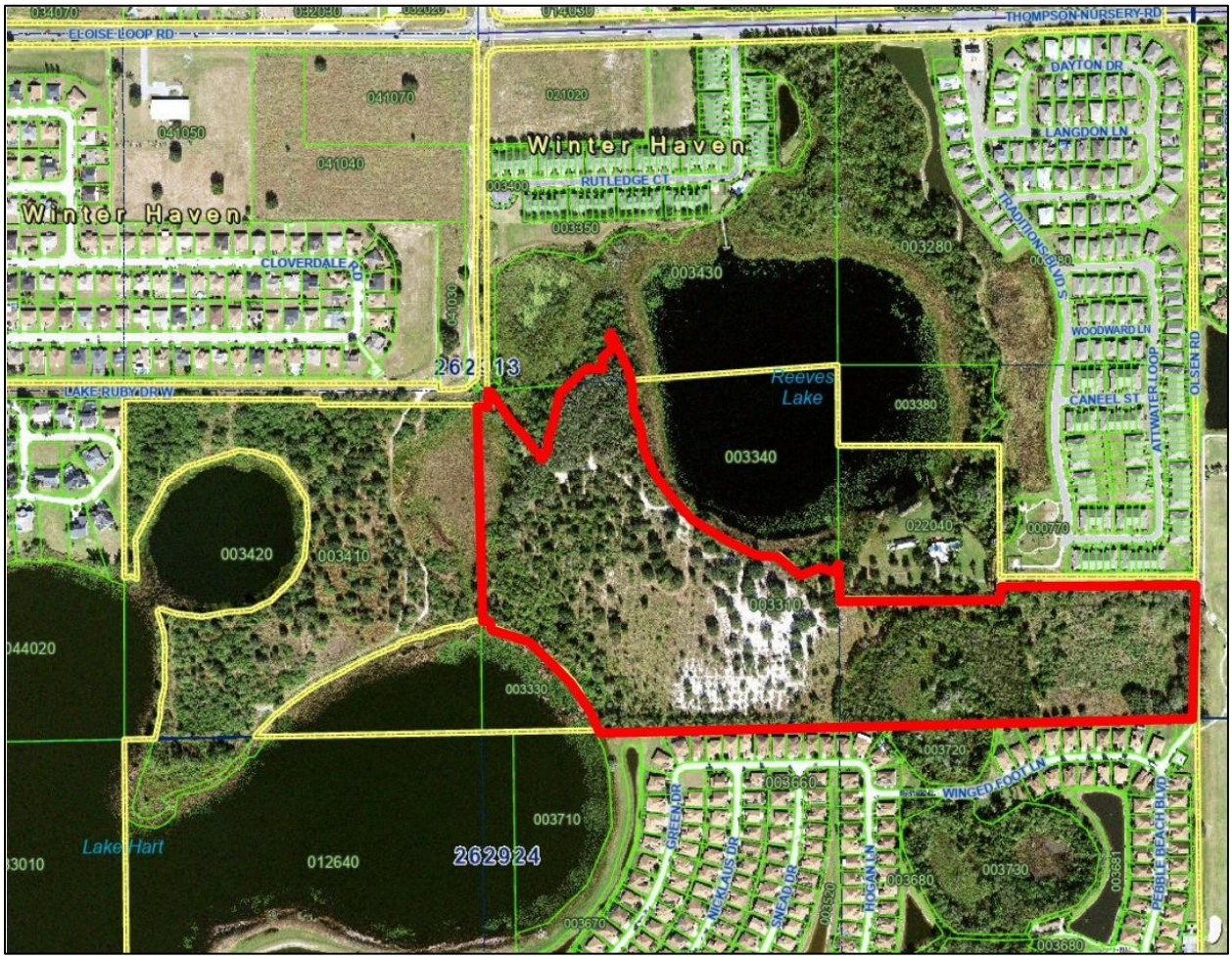


Exhibit “B”

Polk County Parcel ID#
26-29-13-687552-003310



ORDINANCE NO. O-23-39

AN ORDINANCE AMENDING CHAPTER 21 OF THE CODE OF ORDINANCES OF THE CITY OF WINTER HAVEN, FLORIDA, BY AMENDING PLANNED UNIT DEVELOPMENT ORDINANCE O-22-11; PROVIDING FOR ADMINISTRATIVE CORRECTION OF SCRIVENER'S ERRORS; REPEALING ALL ORDINANCES IN CONFLICT HEREWITH; AND PROVIDING AN EFFECTIVE DATE. (General Location: The vacant parcel generally located south of Coon Lake Road and lying between Lake Hart and Lake Reeves. The area covered by this request is 66.8± acres.)

WHEREAS, there has been a request to amend an existing Planned Unit Development (PUD), and;

WHEREAS, the action will further the general health, safety, and welfare and be a benefit to the City as a whole, and;

WHEREAS, the requested zoning is consistent with the Future Land Use Element of the 2025 Winter Haven Comprehensive Plan, and;

WHEREAS, the request implements requirements contained in Part II, Chapter 163 of Florida Statutes, and therefore is exempt from requiring a Business Impact Estimate as set forth by Chapter 2023-309, Laws of Fla. (CS/CS/SB 170 (2023)).

NOW THEREFORE, BE IT ENACTED BY THE PEOPLE OF THE CITY OF WINTER HAVEN, FLORIDA, AS FOLLOWS:

1. That Chapter 21 of the Code of Ordinances of the City of Winter Haven, Florida, is hereby amended to amend Planned Unit Development Ordinance O-22-11 as further described in Exhibit "A" attached hereto and made a part of this ordinance.

2. The amendment to Planned Unit Development Ordinance O-22-11 shall be subject to the following conditions:

New language is underlined and deleted language is ~~stricken through~~.

A. Permitted uses shall be limited to the following:

- Up to ~~270~~ 324 multi-family units;
- Up to ~~180~~ 168 townhouse/villa units;
- ~~Up to 33 single-family lots~~
- Detached carports or garages; and
- Ancillary recreational amenities including clubhouses, swimming pools, recreational trails, public squares, and sports courts.

B. Lot and building requirements. Lot and building requirements shall be as indicated in the table below.

Lot and Building Requirement			Standard
Lot Width	~~Single-family Lot~~		~~Minimum 40 feet~~
	Townhouse/Villa Lot		Minimum 20 feet
Lot Area	~~Single-family Lot~~		~~Minimum 4,000 square feet~~
	Townhouse/Villa Lot		Minimum 1,800 square feet
Setbacks	~~Single-family~~	~~Front~~	~~Minimum 20 feet~~
		~~Side~~	~~Minimum 5 feet~~
		~~Street Side~~	~~Minimum 15 feet~~
		~~Rear~~	~~Minimum 5 feet~~
	Townhouse/ Villas	Front	Minimum 25 feet
		Side	Minimum 0 feet
		Street Side	Minimum 15 feet
		Rear	Minimum 0 feet
		Project Perimeter	Minimum 15 feet
		Building Separation	Minimum 15 feet
		Lake Hart	Minimum 40 feet from highwater elevation of 124.50 feet
	Multi-family Buildings	Lake Hart	Minimum 40 feet from highwater elevation of 124.50 feet
		Building Separation	Minimum 25 feet
		Hart Lake Hills Subdivision	Minimum 260 feet
		Savanna Pointe Subdivision	Minimum 200 feet

C. Villa/townhouse units located on the south property line, adjacent to the Lake Ashton subdivision, shall be limited to single-story units. Villa/townhouse units not located on the south property line, adjacent to the Lake Ashton subdivision shall have a maximum building height of 35 feet. Maximum building height at the ridgeline for up to six (6), 4-story multi-family buildings (total of ~~210~~ 252 units), as depicted on the attached concept plan, shall be 50 feet and, for up to three (3), 3-story multi-family buildings (total ~~60~~ 72 units), as depicted on the attached concept plan shall be a maximum of 40-feet at the ridgeline.

D. Multi-family buildings shall meet the following architectural design standards:

- All buildings shall utilize a pitched roof design.
- Individual buildings shall utilize projections on the front and rear elevations to give a varied appearance. The front and rear elevations shall be similar in appearance.
- The use of unscreened porches/balconies is required.

- All external lighting on the buildings shall be designed to direct light away from Hart Lake and towards the buildings. Complete illumination of the building's exterior shall not be permitted.

- Parking areas shall be screened with an opaque fence, wall, or landscape hedge to prevent headlights from glaring onto adjoining properties or Hart Lake.

E. Transportation

1. All internal rights-of-way shall be a minimum of 40 feet in width. Pavement of all roadways shall be a minimum of 20 feet in width and shall have curbs and gutters. All internal streets shall be privately owned and maintained by the development's homeowners' association or similar entity.

2. The main entrance road, off of Coon Lake Road, into the development shall contain a minimum 12-foot wide median from Coon Lake Road to the first internal roadway/driveway. Within the median a minimum of two (2) rain gardens shall be created with a minimum width of 4 feet and length of 15 feet. The median shall utilize a Type "F" curb and gutter; however, the design shall include openings diverting stormwater runoff into the required rain gardens. Additionally, within the median, one (1) overstory or two (2) understory tree(s) shall be planted every 100 linear feet. A minimum of fifty percent (50%) of the medians' groundcover must be of a living groundcover other than grass.

3. The developer shall dedicate additional rights-of-way along the development's frontage for Coon Lake Road so as to provide 30 feet of rights-of-way to the centerline. The developer shall pave Coon Lake Road, to current Polk County standards, from Thompson Nursery Road/Eloise Loop Road to the main entrance roadway. A minimum 8-foot, paved multi-use path shall be installed from the main entrance roadway west to County Road 653.

4. Sidewalks measuring a minimum of five (5) feet in width shall be installed on both sides of internal streets/driveways. The developer shall install, prior to platting, sidewalks measuring a minimum of six (6) feet in width on both sides of Coon Lake Road from Thompson Nursery Road/Eloise Loop Road to the main entrance roadway.

5. Street lighting designed to focus light downward shall be installed along all streets, including Coon Lake Road, at a ratio of no less than one (1) light per 300 linear feet of roadway. A street lighting plan shall be submitted to the City for review prior to submittal of the final subdivision plat. Street lighting shall be maintained at the expense of the developer, homeowners' association or similar entity, except for Coon Lake Road.

6. An updated traffic study, following methodology established by the Polk Transportation Planning Organization (TPO), shall be submitted at the time of site plan review. The traffic study shall be reviewed and approved by the Polk TPO. Should

this traffic study identify roadway or capacity deficiencies, the developer shall work with Polk County on developing mitigation strategies.

7. To facilitate installation of future electric vehicle charging infrastructure, electrical conduit shall be installed within the multi-family areas. At a minimum, conduit shall be installed to 10 percent of the required vehicle parking spaces, and a minimum of two Level 2 electric vehicle charging connections shall be installed.

F. Landscaping and buffering.

1. Yard trees. Yard trees shall be planted in the front and rear yard of each townhouse or multi-family building group at a ratio of one (1) tree per 25 linear feet of building frontage. Maintenance of the trees shall be the responsibility of the homeowners' association or similar entity.

   a. Trees shall measure a minimum of 1 ¼ inches in caliper (DBH) at planting and no one species shall be used for more than 33 percent of the required trees.

   b. Front yard trees shall be planted no further than 18 feet from the curb line; however, in no case shall a tree be planted closer than 3 feet from the sidewalk.

   c. Rear yard trees within townhouse areas may be planted within a common lot.

   d. Trees shall be selected from the table below.

Permitted Tree		Permitted Yard (Residential Lots Only)
Common Name	**Botanical Name**	
Live oak	Quercus virginiana	Rear yard only
Shumard oak	Quercus shumardii	Front or rear yard
Sand live oak	Quercus geminata	Front or rear yard
Red maple	Acer rubrum	Front or rear yard
Sycamore	Plantanus occidentalis	Rear yard only
Sweetgum	Liquidambar styraciflua	Rear yard only
Pignut hickory	Carya glabra	Rear yard only
Scrub hickory	Carya floridana	Rear yard only
Florida elm	Ulmus americana var. floridana	Front or rear yard
Winged elm	Ulmas alata	Front or rear yard
Chinese elm	Ulmas parvifolia	Front or rear yard
Crape myrtle	Lagerstroemia indica	Front yard only
Tabebuia	Tabebuia chrysotricha Tabebuia heptaphylla Tabebuia impetiginosa	Front or rear yard
Sand pine	Pinus clausa	Front or rear yard
East Palatka holly	Ilex attenuate	Front or rear yard
Chichasaw plum	Prunus angustifolia	Front or rear yard
Ligustrum tree	Ligustrum recurvifolium	Front yard only

e. Trees shall be installed by the homebuilder prior to issuance of a Certificate of Occupancy.

2. Parking lot canopy trees. The developer shall install and maintain tree canopy coverage equal to 40 percent of impervious driveway and parking areas on site. Tree canopy coverage shall be achieved through the use of a variety of at least 4 different species of trees selected from the table below.

Permitted Tree		Canopy Credit
Common Name	**Botanical Name**	
Shumard oak	Quercus shumardii	1,250 square feet
Sand live oak	Quercus geminata	500 square feet
Red maple	Acer rubrum	700 square feet
Sweetgum	Liquidambar styraciflua	700 square feet
Florida elm	Ulmus americana var. floridana	700 square feet
Winged elm	Ulmas alata	700 square feet
Crape myrtle	Lagerstroemia indica	125 square feet
Tabebuia	Tabebuia chrysotricha Tabebuia heptaphylla Tabebuia impetiginosa	500 square feet
Longleaf pine	Pinus palustris	500 square feet
Slash pine	Pinus elliottii	500 square feet
Sand pine	Pinus clausa	500 square feet
Bald cypress	Taxodium distichum	500 square feet

3. Landscape buffers shall be as provided in the table below.

Buffer	Buffer Width	Required Overstory Trees	Required Understory Trees	Required Large Shrubs	Fence/Wall Requirement
Coon Lake Road	Minimum 15 feet	2	3	7	Optional 6-foot opaque
Hart Lake Hills Subdivision	Minimum 20 feet	4	5	18	Optional 6-foot Opaque

4. A buffer shall be installed along that portion of Coon Lake Road abutting the improved portion of the Verandahs neighborhood in Traditions as depicted by Exhibit "C", attached hereto and made a part hereof. At a minimum, this buffer shall consist of four (4) understory trees per 100 linear feet and a minimum 6-foot opaque fence.

G. No clearing or burning of the development site shall occur until the Southwest Florida Water Management District permits have been received. No burning of vegetation shall occur without a permit from the City. When permitted, burning shall occur during weather conditions that allow for the vertical evacuation of smoke from the site.

H. All development activities shall remain outside of all designated wetland areas unless authorized by a State or Federal agency.

I. Marine structures. All marine structures shall follow the requirements contained in Section 21-103(b) of the Winter Haven Code of Ordinances with the exception of the following requirements:

1. The total number of docks/piers permitted on Hart Lake shall not exceed three (3).

2. A maximum of one (1) dock shall be permitted on Lake Reeves.

3. Docks/piers shall be limited to a length not to exceed 100 feet from the highwater elevation of 124.50 feet.
4. The surface area for each individual dock shall not exceed 1,000 square feet including the main access walkway, platforms, and roof area as measured along a horizontal plane. Further, total roof area for each dock shall not exceed 500 square feet.

5. Individual villa/townhouse lots shall not be permitted docks.

J. Public school concurrency shall be reviewed at the time of site plan submittal. Should school capacity at any level (elementary, middle, or high) not be available at the time of site plan review, the site plan shall not be approved unless the developer reaches a mitigation agreement with the Polk County School Board. Mitigation strategies shall be geared towards providing sufficient student stations to accommodate the number of students generated by the development within three (3) years of a signed agreement.

K. All development shall be consistent with the attached conceptual plan as depicted in Exhibit "B"; however, deviation from the conceptual site plan, including changes which may impact specific interior lot configuration, to address safety, design, technical, wetland, or permitting issues identified during formal site plan review may be permitted. The shown layout of residential lots and infrastructure is for illustrative purposes.

L. Where not specifically addressed in this Planning Unit Development, standards and regulations for the R-3 zoning district shall be followed

M. All other code requirements not mentioned herein shall apply.

3. This ordinance shall not be codified, but the City Clerk shall retain this ordinance as a permanent record of action taken by the City Commission of the City of Winter Haven.

4. The correction of typographical and/or scrivener's errors which do not affect the intent may be authorized by the City Manager or designee, without need of public hearing, by filing a corrected or recodified copy of same with the City Clerk.

5. All ordinances in conflict herewith are hereby repealed.

6. This Ordinance shall be effective immediately upon passage at second reading; however, that such change shall first be noted on the official zoning map of the City of Winter Haven.

INTRODUCED on first reading this 23rd day of October, 2023.

PASSED on second reading this 13th day of November, 2023.

CITY OF WINTER HAVEN, FLORIDA

MAYOR-COMMISSIONER

ATTEST:

CITY CLERK - Deputy

Approved as to form:

CITY ATTORNEY

Exhibit "A"

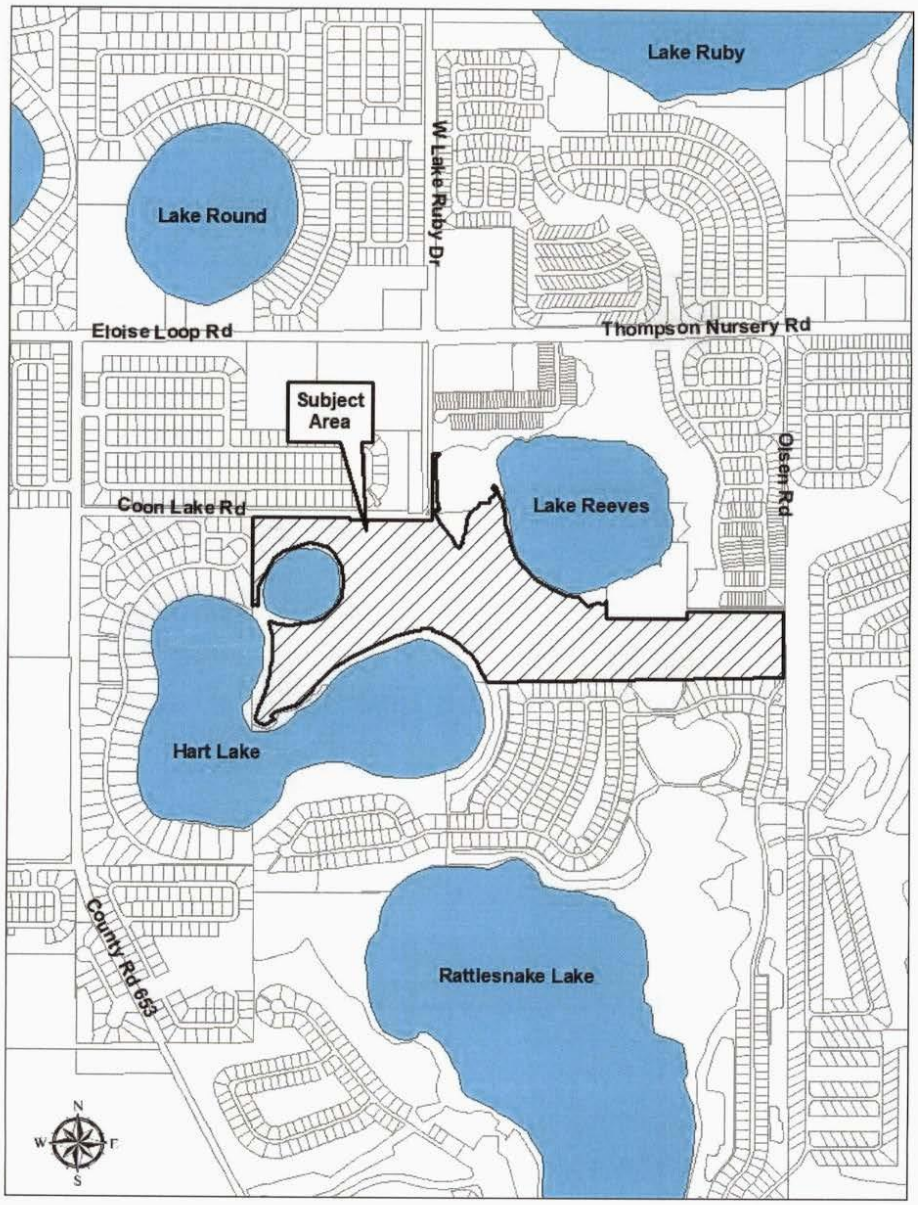

Lake Ruby
Lake Round
W. Lake Ruby Dr.
Eloise Loop Rd
Thompson Nursery Rd
Subject Area
Olsen Rd
Coon Lake Rd
Lake Reeves
Hart Lake
County Rd 653
Rattlesnake Lake
N
W
E
S

Exhibit "B"
Conceptual Site Plan



Exhibit "C"
Coon Lake Road Buffer Adjacent to Verandahs Neighborhood



PROJECT: **ASTUTE FINANCIAL CORPORATION**
LOCATION: **U.S. HWY 17 / U.S. HWY 92**
CITY/STATE: **WINTER HAVEN, FLORIDA 33801**
OUR FILE: **24-026**

AS OF
AUGUST 9, 2024

AT THE REQUEST OF
MS. BROOKE MOHEREK
ENVIRONMENTAL SPECIALIST – BIOLOGIST II
POLK COUNTY PARKS & NATURAL RESOURCES
4177 BEN DURRANCE ROAD
BARTOW, FLORIDA 33830-8433

PREPARED BY
JOSEPH S. STRING, MAI
CERT GEN RZ#96
STRING APPRAISAL SERVICES, INC.
6039 CYPRESS GARDENS BOULEVARD, SUITE #420
WINTER HAVEN, FLORIDA 33884

STRING APPRAISAL SERVICES, INC.

September 13, 2024

Ms. Brooke Moherek
Environmental Specialist – Biologist II
Polk County Parks & Natural Resources
4177 Ben Durrance Road
Bartow, Florida 33830-8433

Re: Project Number – 24-539
Project Name – Astute Financial Corporation
Location – U.S. Hwy 17 and U.S. Hwy 92
County/State – Polk County, Florida

Dear Ms. Moherek:

In compliance with Purchase Order 24104733 dated July 12, 2024, a copy of which has been attached in the addenda of this appraisal report, I wish to inform you that I have completed an appraisal of three non-contiguous tracts of vacant land totaling 162.03-acres located on both sides of U.S. Hwy 17 and both sides of U.S. 92, southwest of Lake Alfred, on the north side of Winter Haven, Florida. There is no physical address for the subject property. The property is currently vested to Astute Financial Corporation and identified by the Polk County Property Appraiser as PID Numbers 26-28-05-000000-024010, 26-28-05-000000-024030, 26-28-05-000000-042010, 26-28-08-000000-013030, and 26-28-08-000000-032050. The subject property will be fully identified and legally described within the body of the attached appraisal report.

The purpose of this assignment is to establish market value, including opinions for exposure period and marketing time, as of the date of the field inspection – August 9, 2024. The appraisal report was written between September 1, 2024 and September 9, 2024. The property has been appraised in "fee simple interest," subject to those exceptions identified American Government Services Corporation "Property Information Report" File Number 33165-R dated August 16, 2024. The client for this assignment is Polk County Parks & Natural Resources. The intended users include the client, Polk County, a political subdivision of the State of Florida, the City of Winter Haven, and the Trustees of the Internal Improvement Trust Fund for the State of Florida. The intended users will rely upon the analysis, opinions, and conclusions to make internal decisions regarding the potential acquisition of the fee simple interest in the subject property.

The attached report, plus exhibits, provides a description of the subject property and the approaches, techniques, and methods used to estimate market value. In my opinion, the market value of the subject property in "fee simple interest" subject to those exceptions identified in American Government Services Corporation "Property Information Report" File Number 33165-R as of August 9, 2024 was:

TWO MILLION TWO HUNDRED FORTY-FIVE THOUSAND DOLLARS ($2,245,000)

The appraiser-client relationship is with Polk County Parks & Natural Resources Division. This confidential report is prepared for the sole use and benefit of the client and Polk County, a political subdivision of the State of Florida. This report is provided for informational purposes only to third parties authorized to receive it. The appraiser assumes no responsibility if the report is used in any manner, other than as described.

The values reported in this appraisal report are subject to the "Assumptions and Limiting Conditions" found on Page 5 and the Extraordinary Assumption found on Page 6 of the attached appraisal report. This appraisal report represents an "Appraisal Report," that has been prepared in compliance with the guidelines of:

- *The 2024 Uniform Standards of Professional Appraisal Practice,*
- *The March 2, 2016 Supplemental Appraisal Standards for the Board of Trustees of the State of Florida, and*
- *The Code of Professional Ethics and Standards of Professional Practice of the Appraisal Institute.*

This letter of transmittal needs to accompany the attached "Appraisal Report." I appreciate being considered for this appraisal assignment. Please feel free to call on me should you or any users of this appraisal report need further clarification and/or assistance.

Respectfully submitted,

STRING APPRAISAL SERVICES, INC.

Joseph S. String

Digitally signed by Joseph S. String
DN: cn=Joseph S. String, o=String Appraisal Services, ou, email=sservic2@tampabay.rr.com, c=US
Date: 2024.09.13 07:21:36 -04'00'

Joseph S. String, MAI
Cert Gen RZ96

Attachments

PART ONE – INTRODUCTION

TABLE OF CONTENTS

PART ONE – INTRODUCTION 1

TABLE OF CONTENTS 2
QUALIFICATIONS OF THE APPRAISER 3
ASSUMPTIONS AND LIMITING CONDITIONS 5
HYPOTHETICAL CONDITIONS 6
EXTRAORDINARY ASSUMPTION 6
CERTIFICATE OF APPRAISER 8
EXECUTIVE SUMMARY 10
LOCATION MAP 13

PART TWO - PREMISES OF THE APPRAISAL 14

SCOPE OF APPRAISAL 15
INTENDED USER/INTENDED USE 16
PURPOSE OF APPRAISAL 16
PROPERTY RIGHTS APPRAISED 17
EFFECTIVE DATE OF APPRAISAL 18
EXPOSURE PERIOD 18
MARKETING TIME 18

PART THREE – PRESENTATION OF DATA 19

PROPERTY IDENTIFICATION 20
WINTER HAVEN DEMOGRAPHICS 21
NEIGHBORHOOD 23
AREA MAP 24
NEIGHBORHOOD MAP 25
TOPOGRAPHIC MAP 26
FEMA FLOOD MAP 27
SOIL MAP 28
WINTER HAVEN ZONING MAP 30
WINTER HAVEN FUTURE LAND USE MAP 31
AERIAL MAP 32
SUBJECT DESCRIPTION 40

PART FOUR – ANALYSIS 46

HIGHEST AND BEST USE 47
METHOD OF VALUATION 49
SALES COMPARISON APPROACH 50
FINAL RECONCILATION 74

PART FIVE- ADDENDA 75

PROPERTY INFORMATION REPORT 76
WETLAND DEEDS 83
DEP CHECKLIST 87

QUALIFICATIONS OF THE APPRAISER

JOSEPH S. STRING, MAI
String Appraisal Services, Inc.
6039 Cypress Gardens Blvd., Suite 420
Winter Haven, Florida, 33884
Phone 863-292-0657
e-mail: sservic2@tampabay.rr.com

Biographic: Born September 28, 1949 in St. Johnsbury, Vermont
Polk County resident since 1972
Real estate appraiser since 1969

Education: Graduate of Brevard Junior College, Cocoa, Florida
Graduated in 1969 with an Associate of Science degree

Graduate of University of Central Florida, Orlando, Florida
Graduated in 1972 with a Bachelor of Science degree, Finance

Attended/successfully completed courses offered by the Appraisal Institute, former American Institute of Real Estate Appraisers

Course 1A-1:	Real Estate Appraisal Principles	- 1988
Course 1A-2:	Basic Valuation Procedures	- 1988
Course SPP:	Standards of Professional Practice	- 2022
Course 2-2:	Valuation Analysis and Report Writing	- 1988
Course 2-1:	Case Studies in Real Estate Valuation	- 1985
Course 1:	Income Capitalization	- 2013
Course 1B-B:	Capitalization Theories and Techniques (B)	- 1984
Course 797:	Valuation of Conservation Easements	- 2008

In January 2008, I took and passed the week-long IRS "Valuation of Conservation Easement" course. I also attended the Uniform Appraisal Standards for Federal Land Acquisitions Seminar in March 2004, January 2007, March 2016, September 2017 and May 2024. In June 2020, I took the "Valuation of Donated Real Estate, Including Conservation Easements that dealt with non-cash charitable donations. In January 2024, I took the 3-hour Florida Law Seminar and the 2024 Uniform Standards of Professional Appraisal Practice Update Seminar.

Experience: Wheeler & Klusza, Inc., Lakeland, Florida
1973 to 1976 - appraiser of residential properties
Bill Wheeler, MAI and Dick Klusza, MAI

Chain-O-Lakes Realty, Inc., Winter Haven, Florida
1977 to 1981 - Appraiser of residential and commercial properties
George Cuddeback, MAI

Dale Hayes & Associates, Lakeland, Florida
1981 to 1986 - Appraiser of commercial properties
Dale Hayes, MAI

Reed Appraisal Company, Lakeland, Florida
1986 to 1993 - Appraiser of all property types
Stan Reed, MAI

Mancuso Appraisal Services, Winter Haven, Florida
1993 to 1998 - Appraiser of all property types
Nicholas Mancuso, MAI

String Appraisal Services, Winter Haven, Florida
1998 to present – Appraiser of all property types

Associations: MAI member of the Appraisal Institute - #7993
State-Certified General Real Estate Appraiser - #RZ96

Clients: US Department of Navy, US Air Force, US Office of Valuation Services, US Department of Fish & Wildlife, US Department of Agriculture -Natural Resource Conservation Service, Florida Department of Environmental Protection, Florida Department of Agriculture & Consumer Services - Florida Forest Service, South Florida Water Management District, Southwest Florida Water Management District, St. Johns River Water Management District, The Nature Conservancy, Conservation Florida, Sarasota Conservation Foundation, Conservation Foundation of the Gulf Coast, Farm Credit, AgAmerica, Brevard County, Charlotte County, Highlands County, Pasco County, Polk County, Sarasota County, City of Winter Haven, Truist Bank, Regions Bank, Wells Fargo, TD Bank, SouthState Bank, Citizens Bank & Trust, Citizens First Bank, Bank of Central Florida, and numerous attorneys and accountants.

Properties: Environmentally sensitive land, cattle ranches, farm land, sod farms, citrus groves, landscape nurseries, wetlands, 400± properties to be or encumbered by conservation easements, submerged land, residential subdivisions, mobile home parks, fish camps, shopping centers, retail strip plazas, medical offices, professional offices, retail stores, industrial properties, restaurants, apartment complexes, condominium developments, churches, funeral homes, veterinarian clinics, dental offices, and more than 12,000 single family residences.

ASSUMPTIONS AND LIMITING CONDITIONS

In accepting this appraisal report, the client agrees that the legal description set forth herein correctly describes the property being appraised.

The appraiser, by reason of this report, is not required to give court testimony unless prior arrangements have been made.

Certain information used in compiling this report was furnished to the appraiser by outside sources which is considered reliable. The appraiser, however, does not warrant the accuracy of such data, although so far as possible it has been checked and is believed to be correct.

The value reported herein is subject to those exceptions reported in American Government Services Corporation "Property Information Report File 33165-R dated August 16, 2024 – a copy of which can be found in the addenda of this report.

The appraiser did not receive a survey of the subject property and no responsibility is assumed for such. Sketches, drawings, maps, and exhibits provided in this appraisal report have been included only as an aid to assist the reader in visualizing the subject property.

It is assumed that the subject property is in full compliance with all federal, state, and local environmental laws and regulations, unless non-compliance is stated, defined, and considered in the report.

Unless otherwise stated in this report, hazardous materials or environmental contamination, which may or may not be present, has not been observed by this appraiser. The appraiser has no knowledge of hazardous materials or environmental contamination on this property and is not qualified to detect either hazardous materials or environmental contamination. The existence of hazardous materials or environmental contamination may affect the value of the property being appraised. The reported value estimate is predicated on the assumption that there are no such materials or conditions on, in, or near this property that would cause a loss in value. No responsibility is assumed for such conditions, or for the expertise required to detect or identify hazardous materials or environmental contamination.

It is assumed that all applicable zoning and land use regulations have been complied with, unless nonconformity has been stated, defined and considered in this report.

Acceptance of and/or use of this report constitutes acceptance of the foregoing General Assumptions and General Limiting Conditions.

HYPOTHETICAL CONDITIONS

A "Hypothetical Condition" is:

> "A condition that is presumed to be true when it is known to be false. It is also "a condition, directly related to a specific assignment, which is contrary to what is known by the appraiser to exist on the effective date of the assignment results, but is used for the purpose of analysis."
>
> Source: Appraisal Institute "The Dictionary of Real Estate Appraisal, 6th Edition.

Hypothetical conditions may be used in an assignment, only if:

- The use of the hypothetical condition is clearly required for legal purposes, for purposes of reasonable analysis, or for purposes of comparison;
- The use of the hypothetical condition results in a credible analysis, and;
- The appraiser complies with the disclosure requirements set forth in USPAP for hypothetical conditions.

1. There are no Hypothetical Conditions.

EXTRAORDINARY ASSUMPTION

An "Extraordinary Assumption" is:

> "An Assumption, directly related to a specific assignment, as of the effective date of the assignment results, which, if found to be false, could alter the appraiser's opinions or conclusions. Extraordinary Assumptions presume as fact otherwise uncertain information about physical, legal, or economic characteristics of the subject property; or about conditions external to the property such as market conditions or trends; or about the integrity of data used in an analysis."
>
> Source: Appraisal Institute "The Dictionary of Real Estate Appraisal, 6th Edition.

Extraordinary assumptions may be used in an assignment, only if:

- It is required to properly develop a credible opinion and conclusion;
- The appraiser has a reasonable basis for the extraordinary assumption;
- The use of the extraordinary assumption results in a credible analysis, and;
- The appraiser complies with the disclosure requirement set forth in USPAP for extraordinary assumption.

1. C-4 zoning does not allow multifamily development; however, according to Winter Haven Senior Planner Heather Reuter, CPM, the C-4 zoning could be down zoned to C-3,

which does allow multifamily development. Townhomes are acceptable but only if they are not individually platted. For appraisal purposes, I am assuming that a zoning from C-4 to C-3 is a reasonable assumption based upon the planner's comment. The use of this Extraordinary Assumption might have affected the assignment results.

Note: The distinction between the two lies in the potential reliability of the assumption. A *hypothetical condition* assumes a condition which is known to be contrary to fact whereas an *extraordinary assumption* assumes a condition or a fact which is merely unknown or uncertain. The results of an analysis involving any *hypothetical conditions* are known to not be reflective of what exists because the assumptions on which they are predicated are contrary to fact. The results of an analysis involving *extraordinary assumptions* are only potentially not reflective of what exists to the extent of the uncertainty underlying the assumptions on which the analysis or opinions are predicated.

CERTIFICATE OF APPRAISER

1. I have performed no services, as an appraiser or in any other capacity, regarding the property that is the subject of this report within the three-year period immediately preceding acceptance of this assignment.

2. To the best of my knowledge and belief, the statements of fact contained in this appraisal report upon which the analyses, opinions and conclusions expressed herein are based, are true and correct.

3. The reported analyses, opinions and conclusions are limited only by the reported assumptions and limiting conditions, and is my personal, impartial, and unbiased professional analyses, opinions and conclusions.

4. I have no present or prospective interest in the property that is the subject of this report, and no personal interest with respect to the parties involved.

5. I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.

6. My engagement in this assignment was not contingent upon developing or reporting predetermined results.

7. My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value opinion, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.

8. The analyses, opinions, and conclusions were developed, and this report has been prepared in conformity with the 2024 Uniform Standards of Professional Appraisal Practice, the March 2, 2016 Supplemental Appraisal Standards for the Board of Trustees of the State of Florida, and the (3) Code of Professional Ethics and Standards of Professional Practice of the Appraisal Institute which includes provisions for peer review.

9. I have made a personal inspection of the appraised property which is the subject of this report.

10. No one provided significant real property appraisal assistance to the person signing this certification.

11. The reported analyses, opinions and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute.

12. The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.

13. As of the date of this report, Joseph S. String has completed the continuing education program for Designated Members of the Appraisal Institute.

14. As of the date of this report, Joseph S. String has completed the continuing education requirements for the State Certified General Real Estate Appraiser's license through the State of Florida.

15. In my opinion, as of August 9, 2024, the market value of the subject property in "fee simple" interest, subject to those exceptions identified in American Government Services Corporation "Property Information Report" File 33165-R was $2,245,000.

Extraordinary Assumptions: C-4 zoning does not allow multifamily development; however, according to Winter Haven Senior Planner Heather Reuter, CPM, the C-4 zoning could be down zoned to C-3, which does allow multifamily development. Townhomes are acceptable but only if they are not individually platted. For appraisal purposes, I am assuming that a zoning from C-4 to C-3 is a reasonable assumption based upon the planner's comment. The use of this Extraordinary Assumption might have affected the assignment results.

STRING APPRAISAL SERVICES, INC.

Joseph S. String

Digitally signed by Joseph S. String
DN: cn=Joseph S. String, o=String Appraisal Services, ou, email=sservic2@tampabay.rr.com, c=US
Date: 2024.09.13 07:21:36 -04'00'

Joseph S. String, MAI
Cert Gen RZ96

September 13, 2024
Date Report Signed

EXECUTIVE SUMMARY

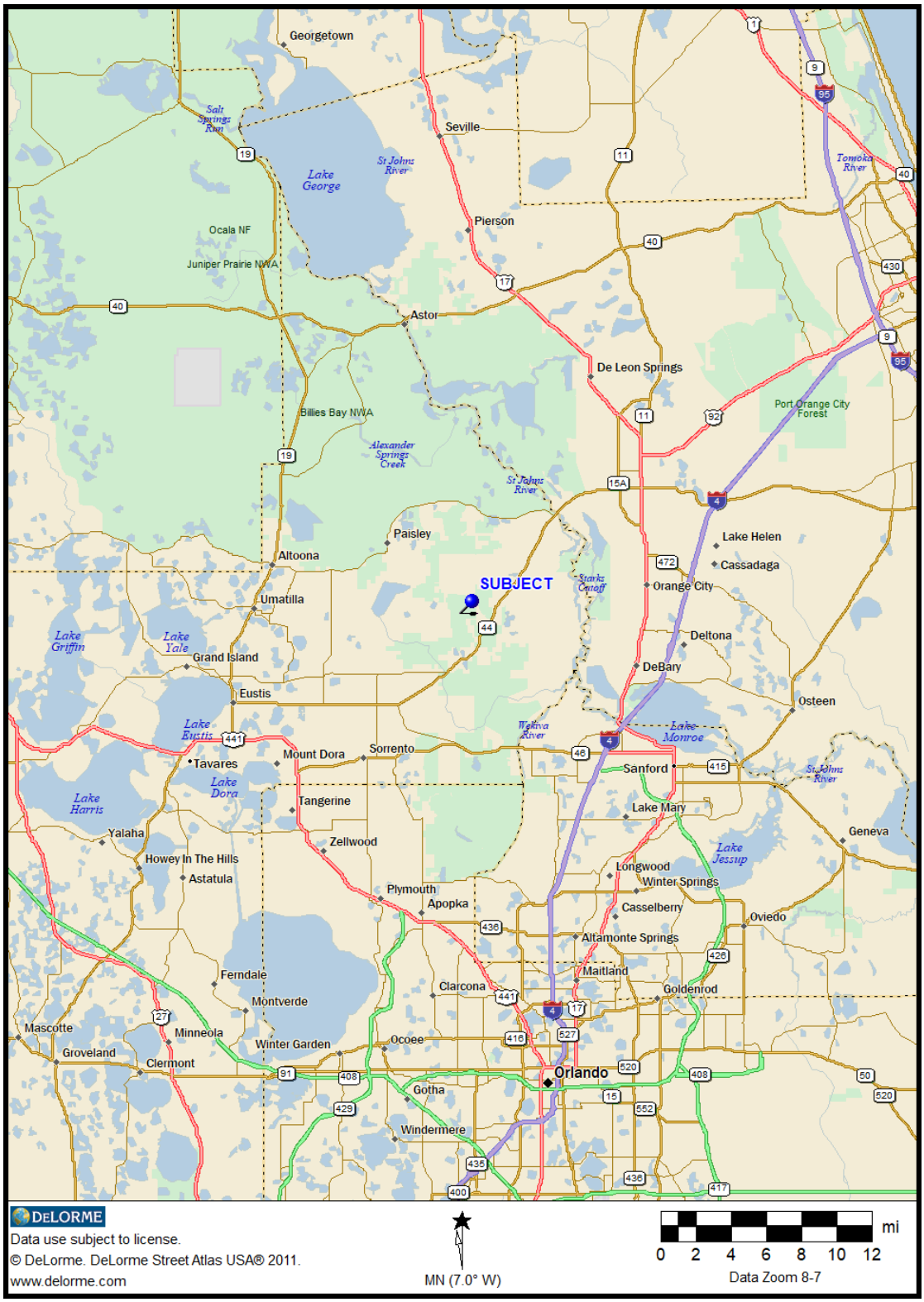
Project Name:	Astute Financial Corporation
File Name:	24-539
PID Number(s):	26-28-05-000000-024010, 26-28-05-000000-024030, 26-28-05-000000-042010, 26-28-08-000000-013030, and 26-28-08-000000-032050 – Polk County, Florida
Owner:	Astute Financial Corporation 3 Strathearn Road Toronto ON M6C 1R2 Canada
Appraiser:	Joseph S. String String Appraisal Services, Inc. 6039 Cypress Gardens Boulevard, #420 Winter Haven, Florida 33884
Dates:	Date of Inspection – August 9, 2024 Date of Value – August 9, 2024 Date of Report – September 13, 2024
Interest Appraised:	Fee Simple Interest – subject to those exceptions identified in American Government Services Corporation "Property Information Report File 33165-R dated August 16, 2024.
Parcel Size:	20.91 Upland Acres (12.9%) 141.12 Wetland Acres (87.1%) 162.03 Total Acres (100.0%)
History and Listing, Sales Contract:	There have been no transactions involving the subject property in the past ten years. Approximately 17 acres of usable uplands on the west side of U.S. Hwy 17 is listed for sale with Realtor Steve Lockhart of Lockhart & Associates, Inc. for $1,150,000 ($67,647/acre). It has been listed for about two-years. Approximately 8.5-acres of useable uplands on Brigham Road is listed with Realtor Steve Lockhart of Lockhart & Associates, Inc. for $850,000($100,000/acre). It has been listed for about two-years. I am not aware of any pending contracts.
Parcel Access:	The three non-contiguous subject property has access from U.S. Hwy 17, U.S. Hwy 92, and Brigham Road.

Improvements:	None
Zoning/Land Use:	Winter Haven Zoning – R-1, R-3, C-4, & CON Winter Haven Future Land Use – NS, NSUB, CON
Assessed Value:	2023 Just Value - $59,689 ($368/acre) 2023 Taxable Value - $58,605 ($362/acre) 2023 Taxes - $1,134.40 ($7.00/acre) Based upon 162.03-acres per property appraiser
Utilities:	Electric, telephone, cable, water, and sewer services are available
Flood Zone Information:	FEMA Panel 12105C0355G dated December 22, 2016 – This map clearly shows that 6% of the subject property lies within Flood Zone "X" and 94% lies within Flood Zone "AE."
OGM Rights:	I found no evidence to suggest that there is outstanding oil, gas, and/or mineral reservations. For appraisal purposes, I am assuming that all oil, gas, and mineral rights are retained by the underlying fee owner.
Easements:	The Title Policy revealed potential sources but nothing specific to the subject property – See Page 16. There are also three billboard leases, one month to month and two that terminate in March 2025.
Highest & Best Use:	The highest and best use is (1) multifamily development for 20.91-acres and (2) water storage, water purification, and/or mitigation for the 141.12-acres of wetlands and unusable land.
Present Use:	Vacant and undeveloped
Opinion of Value:	Multifamily Land: $1,955,000 Wetlands/Unusable Land: $ 290,000 * Market Value: $2,245,000 * This represents a 10% discounted net value to account for being sold off to another buyer, so the $2,245,000 Market Value already accounts for any issues involving the sum or the parts.
Hypothetical Conditions:	None
Extraordinary Assumption:	C-4 zoning does not allow multifamily development; however, according to Winter Haven Senior Planner Heather Reuter, CPM, the C-4 zoning could be down zoned to C-3, which does allow multifamily development. Townhomes are acceptable but only if they are not individually platted. For appraisal purposes, I am

assuming that a zoning from C-4 to C-3 is a reasonable assumption based upon the planner's comment. The use of this Extraordinary Assumption might have affected the assignment results.

Sales Index Prices: Multifamily 20.91-acres: $7,083 to $11,713 per unit
Wetlands/Unusable Land 141.12-acres: $1,790 to $2,600 per acre

LOCATION MAP



PART TWO - PREMISES OF THE APPRAISAL

SCOPE OF APPRAISAL

The purpose of this assignment is to establish market value, including opinions for exposure period and marketing time, as of the date of the field inspection – August 9, 2024. The client for this assignment is Polk County Parks & Natural Resources. The intended users include the client, Polk County, a political subdivision of the State of Florida, the City of Winter Haven, and the Trustees of the Internal Improvement Trust Fund of the State of Florida. The intended users will rely upon the analysis, opinions, and conclusions to make internal decisions regarding the potential acquisition of the fee simple interest in the subject property. As such, the appraiser had to inspect, investigate, research, and present information, data, and analysis necessary to produce a credible value and/or result.

This appraisal assignment began with a collection of legal descriptions, public information, and various maps available on the Internet. Factual data was then collected on the subject property from the Polk County Property Appraiser's office, the Polk County Tax Collector, the Polk County Clerk's office, the Polk County Planning Department, and appropriate utility departments. In addition, the appraiser reviewed plat maps, tax maps, topographic maps, flood maps, soil maps, and aerial photographs; including the title, data, maps, and exhibits provided to the appraiser by the client.

I next conducted a field inspection of the subject property. Brooke Moherek with the Polk County Parks and Natural Resources arranged the inspection for August 9, 2024 at 10:00 AM with the owner's representative Relator Steve Lockhart of Lockhart & Associates, Inc. Attendees included Brooke Moherek and Bryan Finders with Polk County Parks and Natural Resources, Realtor Steve Lockhart of Lockhart of Lockhart & Associates, Inc. (owner's representative), Tod Marr, MAI of Tod Marr & Associates (contract appraiser), Joseph S. String, MAI of String Appraisal Services (contract appraisers), and Nick Mancuso, MAI of Mancuso Appraisal Services, Inc. (contract review appraiser). The initial meeting allowed the owner's representative to provide information he deemed important in the appraisal of the property. It also allowed the appraisers to ask question relative to what was to be appraised, location, perimeter boundaries, and information about potential uses, listings, offers, and contracts. The field inspection allowed me to identify the quality and condition of access and note the perimeter boundaries of the subject property, the types of vegetation, and the improvements. It also allowed me to take representative photographs that would later be incorporated into the completed appraisal report. Following the inspection of the subject property, I proceeded to make a cursory inspection of the surrounding neighborhood paying special attention to listings, existing land uses, new development, public work projects, supply/demand factors, trends, and other economic and real estate indicators.

Following the collection of the relevant data and the field inspection, I then began to determine the highest and best use of the property – as vacant. The importance of highest and best use analysis cannot be overemphasized, as it lays the foundation for the valuation process and determines the approaches, techniques, and market data to be considered in estimating market value. If the appraiser determines an incorrect highest and best use, then there is a high probability that the resulting market value will also be incorrect.

The appraiser has three approaches that can be used to estimate market value, i.e., the Cost Approach, the Sales Comparison Approach, and the Income Approach. The Cost Approach and the Income Approach apply only to improved properties, whereas the Sales Comparison Approach applies to both improved and unimproved properties. The value conclusions indicated by each relevant approach are then correlated into one final value conclusion, based upon the appropriateness, the accuracy, the quantity of data, and the quality of data for each approach used in the valuation process. Since the subject property is vacant and undeveloped land, the only relevant approach is the Sales Comparison Approach.

INTENDED USER/INTENDED USE

The client for this assignment is Polk County Parks & Natural Resources. The intended users include the client, Polk County, a political subdivision of the State of Florida, the City of Winter Haven, and the Trustees of the Internal Improvement Trust Fund for the State of Florida. The intended users will rely upon the analysis, opinions, and conclusions to make internal decisions regarding the potential acquisition of the fee simple interest in the subject property.

PURPOSE OF APPRAISAL

The purpose of this assignment is to develop an opinion of market value for the subject property, including opinions of exposure and marketing times, as of the date of the field inspection – August 9, 2024. *Market Value*, as used in this appraisal report, is defined as:

> *"Market Value"* means the most probable price which a property should bring in a competitive and open market under all conditions, requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus. Implicit in this definition are the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:
>
> 1. Buyer and seller are typically motivated;
> 2. Both parties are well informed or well advised, and acting in what they consider their own best interests;
> 3. A reasonable time is allowed for exposure in the open market;
> 4. Payment is made in terms of cash in U.S. dollars or in terms of financial arrangements comparable thereto; and
> 5. The price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.

Source: The March 2, 2016 Supplemental Appraisal Standards for the Board of Trustees guidelines.

PROPERTY RIGHTS APPRAISED

The interest appraised is "fee simple interest." The definition of fee simple interest is provided below:

> "Absolute ownership unencumbered by any other interest or estate, subject only to the limitations imposed by the governmental powers of taxation, eminent domain, police power, and escheat."
>
> Source: Appraisal Institute – The Dictionary of Real Estate, 5th Edition
>
> Under this premise, the owner is assumed to retain all of the individual rights that form the bundle of rights, i.e., the right of ingress/egress, the right to prevent ingress/egress of others, the right of use, the right of occupancy, the right to lease, the right to sell, the right to give it away, the right to do nothing, etc. As long as none of the rights are severed from the bundle of rights, the owner is said to have "fee simple interest" in the property.

Title Insurance Policy – the appraiser was provided American Government Services Corporation "Property Information Report" AGSC File No.: 33165-R, a complete copy of which can be found in the addenda of this report. I have read the report in detail and offer the following comments:

Reservation of right of ingress and egress for the purpose of maintaining, repairing, and/or enlarging any and all canals, sluiceways, dikes and other works in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

Reservation of easement for road right-of-way in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

Reservation of oil, gas and mineral rights in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

This represents a deed from the Trustees of the Internal Improvement Trust Fund of the State of Florida to Henry A. Marks on July 9, 1925 for 131-acres; reserving unto itself the right of entry to construct canals, cuts, sluiceways, dikes or other works; a strip of land 130-feet on either side of a centerline of any canal, cut, sluiceway, or dike, an undivided three-fourths (¾) interest in and to an undivided three fourths interest in all phosphate, minerals, and metals, and an undivided one-half (½) interest in and title to an undivided one-half interest to all the petroleum. The State of Florida will not release the OGM rights; however, for a $300 fee they will release the right of entry which essentially prevents exploration and extraction. This has no negative impact on market value.

EFFECTIVE DATE OF APPRAISAL

The effective date of this appraisal is August 9, 2024, representing the date of the field inspection of the subject property. This appraisal was written between September 1, 2024 and September 9, 2024.

EXPOSURE PERIOD

This is defined as the "estimated length of time the property interest being appraised would have been offered on the market prior to the hypothetical consummation of a sale at market value on the effective date of appraisal; a retrospective opinion based on an analysis of past events assuming a competitive and open market." Based upon discussions with market participants, confirmation of the comparable sales and in a few instances the actual known days on the market of the comparable sales, the exposure period for the subject property is estimated at four months. The table below shows the exposure period for the four sales used in this appraisal assignment.

SALE NO.	SALE DATE	PRICE	TIME ON MARKET
Sale #1	04-25-2023	$3,350,000	Three Months
Sale #2	07-22-2022 08-11-2022	$780,000	Three to Four Months
Sale #3	06-29-2024	$1,650,000	Immediately after contract was withdrawn
Sale #4	02-24-2023	$425,000	Five Months

MARKETING TIME

This is defined as an opinion as to the amount of time it might take to sell the interest in real property at the concluded market value during the period immediately after the effective date of appraisal. Marketing time differs from exposure time, which always precedes the effective date of appraisal. Based upon discussions with market participants, confirmation of comparable sales, and knowledge of the real estate market, coupled with future expectations in the market, a marketing time of six months for the subject property is reasonable given beginning signs of a slowdown.

PART THREE – PRESENTATION OF DATA

PROPERTY IDENTIFICATION

The subject of this appraisal assignment represents three non-contiguous tracts of vacant land totaling 162.03-acres located on both sides of U.S. Hwy 17 and both sides of U.S. 92, southwest of Lake Alfred, on the north side of Winter Haven, Florida. There is no physical address for the subject property. The property is currently vested to Astute Financial Corporation and identified by the Polk County Property Appraiser as PID Numbers 26-28-05-000000-024010, 26-28-05-000000-024030, 26-28-05-000000-042010, 26-28-08-000000-013030, and 26-28-08-000000-032050. Below is the legal description of the subject property:

AGSC File No.: 33165-R

Exhibit "A"

The South ½ of the Southwest ¼ Less right-of-way for State Road 600; All that part of the South ½ of U.S. Government Lot 3 which lies West of the right-of-way for State Road 555, all lying in Section 5, Township 28 South, Range 26 East, Polk County, Florida.

AND

All that part of U. S. Government Lot 2 and U. S. Government Lot 3 lying West of State Road 555 and lying North of Brigham Road (formerly known as Elfenbein Road), lying in Section 8, Township 28 South, Range 26 East, Polk County, Florida.

LESS and EXCEPT the following:

Commence at the Northwest corner of the South one-half of U.S. Government Lot 3 in Section 8, Township 28 South, Range 26 East, Polk County, Florida, run thence South along the West boundary of said Lot 3, 128.70 feet, thence East, 124.74 feet, thence South 09°57'00" West, 25.45 feet to a point on the Southerly right-of way of Brigham Road, thence North 88°06'21" East along said right-of-way, 529.35 feet, to the P.C. of a curve concave to the Southwest having a radius of 255.00 feet, thence continue along said right-of-way and said curve through a central angle of 43°31'39", an arc distance of 193.72 feet, a chord distance of 189.10 feet, a chord bearing of South 69°07'49" East to the P.T. of said curve, thence continue along said right-of-way, South 47°22'00" East, 561.68 feet, thence continue along said right-of way, South 89°34'00" East, 756.44 feet to its intersection with the Westerly right-of-way of U.S. 17, thence North 00°45'46" East, along said right-of-way, 50.00 feet to a point on the Northerly right-of-way of Brigham Road and the Point of Beginning. Run thence North 00°45'46" East, along the Westerly right-of-way of U.S. 17, 425.00 feet, thence North 89°34'00" West, parallel with Brigham Road leaving said right-of-way, 950.00 feet, thence South 00°45'46" West parallel with the Westerly right-of-way of U.S. 17, 233.25 feet to a point on the Northeasterly right-of-way of Brigham Road, thence South 47°22'00" East along said right-of way, 285.46 feet, thence continue along said right-of-way, South 89°34'00" East, 737.43 feet to the Point of Beginning.

The preceding legal description is same one that appears in the "Property Information Report." For appraisal purposes, this legal description is assumed to be correct.

WINTER HAVEN DEMOGRAPHICS

The client, the seller's representative, and the appraiser are well informed as to the location of Winter Haven and its general area demographics, so only a brief summary discussion will be provided. Winter Haven is the second largest city in Polk County, the largest being Lakeland. The growth in Winter Haven has been phenomenal, evidenced by a 2010 Census estimate of 33,874 residents and a 2024 estimate of 59,270 residents. There are a significant number of additional residents in the abutting suburban areas. The Central Florida Development Council estimates that 1.5 million tourists visit Polk County each year. There are more than ten million people living within a 100-mile radius of Winter Haven.

Its economy has been heavily tied to citrus, cattle, and tourism. There have been two major developments that have helped with new job growth:

- CSX affiliate Evansville Western Railway began operations at CSX Intermodal Terminals Inc.'s new Central Florida Intermodal Logistics Center (ILC) in Winter Haven in 2014. Located just off State Road 60, the 318-acre, state-of-the-art facility serves as a centralized hub for transportation, logistics, and distribution for Orlando, Tampa, and South Florida. Surrounded by 930 acres reserved for development of up to 7.9 million square feet of warehouse distribution facilities and light industrial and office facilities.

  The terminal employees 43 CSX employees and can process up to 300,000 containers each year. CSX has forty Intermodal terminals across its network and, CSX representative Kristin Seay stated that the Winter Haven terminal is performing as well as any of the other forty terminals. Winter Haven Growth Management Director Merle Bishop indicated that impact is long term, perhaps as long as five to twenty years, but is eventually expected to create $10 billion in economic impact over ten years.

- Legoland Florida has expanded several times since it opened October 15, 2011 in what had originally been Cypress Gardens. Ever since the grand opening, Merlin Entertainment has continued to expand the number of attractions in the 150-acre theme park. Legoland has expanded several times since opening in October 2-11, its first hotel in 2015, the off-site Legoland Beach Retreat in 2017, and the new Pirate Island Hotel in 2020. Legoland added new improvements in 2021; however, marking their 10th year anniversary.

The City of Winter Haven has been busy with wetland restoration of Lake Conine, re-development of Lake Maude Park, Lake Elbert Trail, Joyce B. Davis Park renovation, Avenue K NE Street re-alignment, outdoor downtown dining, etc. The Department of Transportation has finished the re-alignment of the U.S. 17 / Cypress Gardens Boulevard Intersection and the Cypress Gardens Boulevard / First Street South Intersection. Private development has been busy with several large apartments, new restaurants, and a number of new residential subdivisions. New or proposed developments include 324-unit Annabell Estates, The shoppes at Lake McLeod retail project, 667-lot Willow Brook North and Willow Brook South development, Avenue G

Garden Apartments to be developed using Lego style construction methods, mixed use redevelopment of the Lake Hartridge Church property for 724 apartments and 55,757 square feet of commercial space, Supersize Publix Shopping center on Havendale Boulevard, etc. A large percentage of the downtown business district has been redeveloped into parks, streetscape, parking garage, restaurants, offices, and retail space.

Much of the growth and development is due to the buildout of the areas around Kissimmee to the northeast and the four corners area of Lake, Orange, Osceola, and Polk counties and the Disney Theme Parks. Over the past several years, development continues to move south from the I-4 / U.S. 27 Interchange, with many of the new homeowners electing to commute into the major employment centers around Orlando and the Disney Theme Parks. Haines City, just north of Winter Haven was ranked as one of the fastest growing cities in the nation, with Polk County ranked Number One.

The future for Winter Haven appears solid, supported by expansions of Legoland and the CXS Intermodal Center, redevelopment of the downtown business district, the private ongoing developments and the migration of new residents moving into the area each day. Some slow-down has occurred as the feds began to raise the key interest rates near the end of 2021, from 2.87% on August 12, 2021 to 6.47% on August 8, 2024. Particularly impacted were resales of homes, as the national home builders continued selling by offering incentives like price reductions, free upgrades, mortgage interest rate buydowns, etc. A recent report from a local developer who hired a helicopter to view the area, indicated that while there were a substantial number of new residential units being constructed, the number of concrete slabs were few.

NEIGHBORHOOD

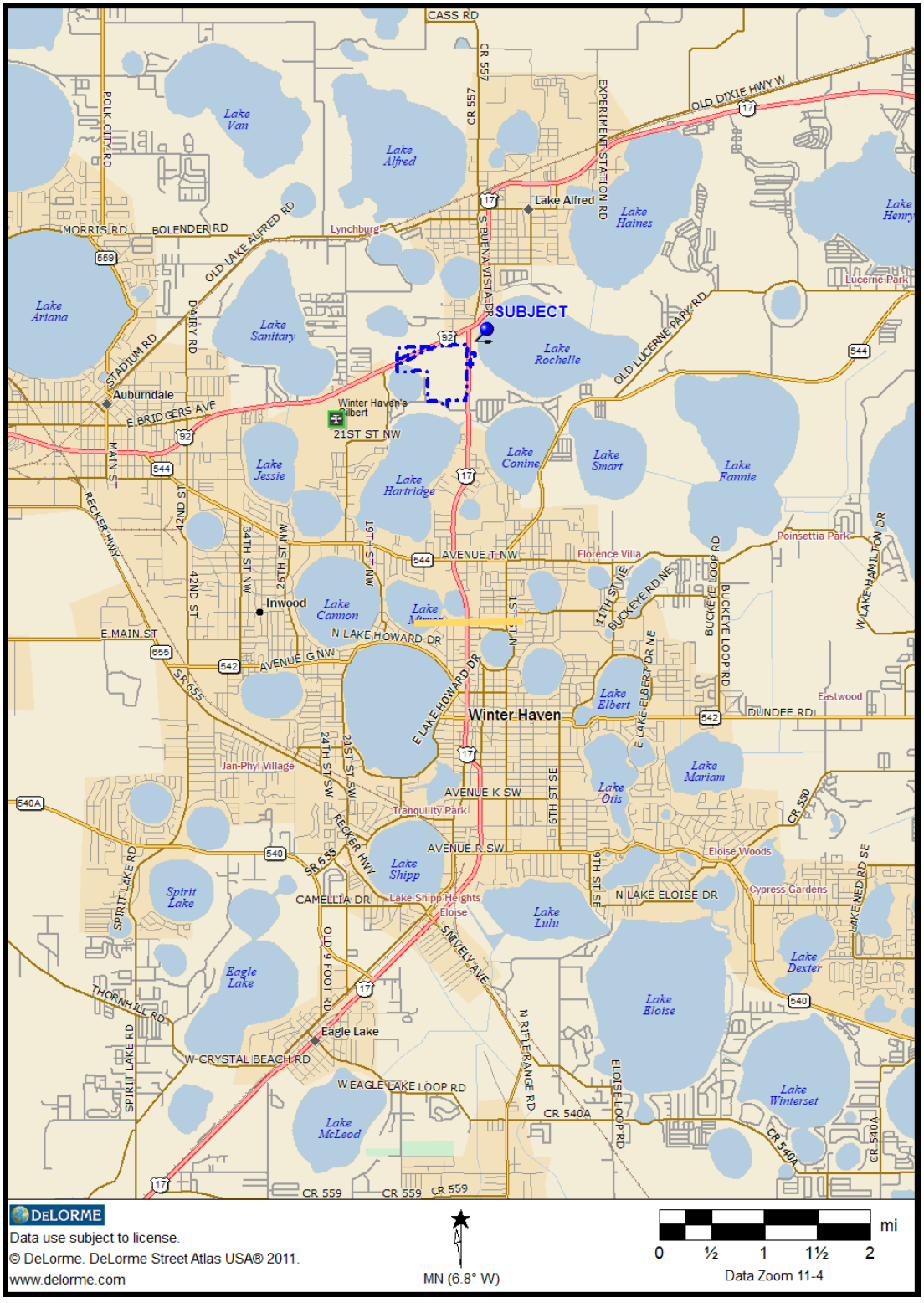
The "Appraisal Institute" defines a neighborhood as a group of complementary land uses that are influenced by similar political, social, economic, and environmental forces. It identifies the area under analysis, and establishes the boundaries from which the appraiser searches for data to be used in the appraisal process. The boundaries for a neighborhood can be based on changes in prevailing land uses, natural features such as lakes, river, and streams, man-made features such as roads, railroads, or canals, or more subtle features such as occupant characteristics. The selection for a neighborhood should be based on political, social, economic, and environmental similarities or differences. Unlike neighborhoods in urban areas, neighborhoods in rural areas tend to be quite large in size due to vast areas of similar property types and uses. Urban neighborhoods tend to be much smaller in size, due to abrupt changes in property types and uses.

The subject property is located on the north side of Winter Haven, southwest of Lake Alfred and east of Auburndale in an older area, where U.S. Hwy 17 and U.S. Hwy 92 converge to form U.S. Hwy 17/92. Both are major arterial roads connecting Winter Haven, Lake Alfred, and Auburndale. Most of the development in this area, whether residential or commercial is older. Numerous lakes and adjacent wetlands have prevented much new development within the area.

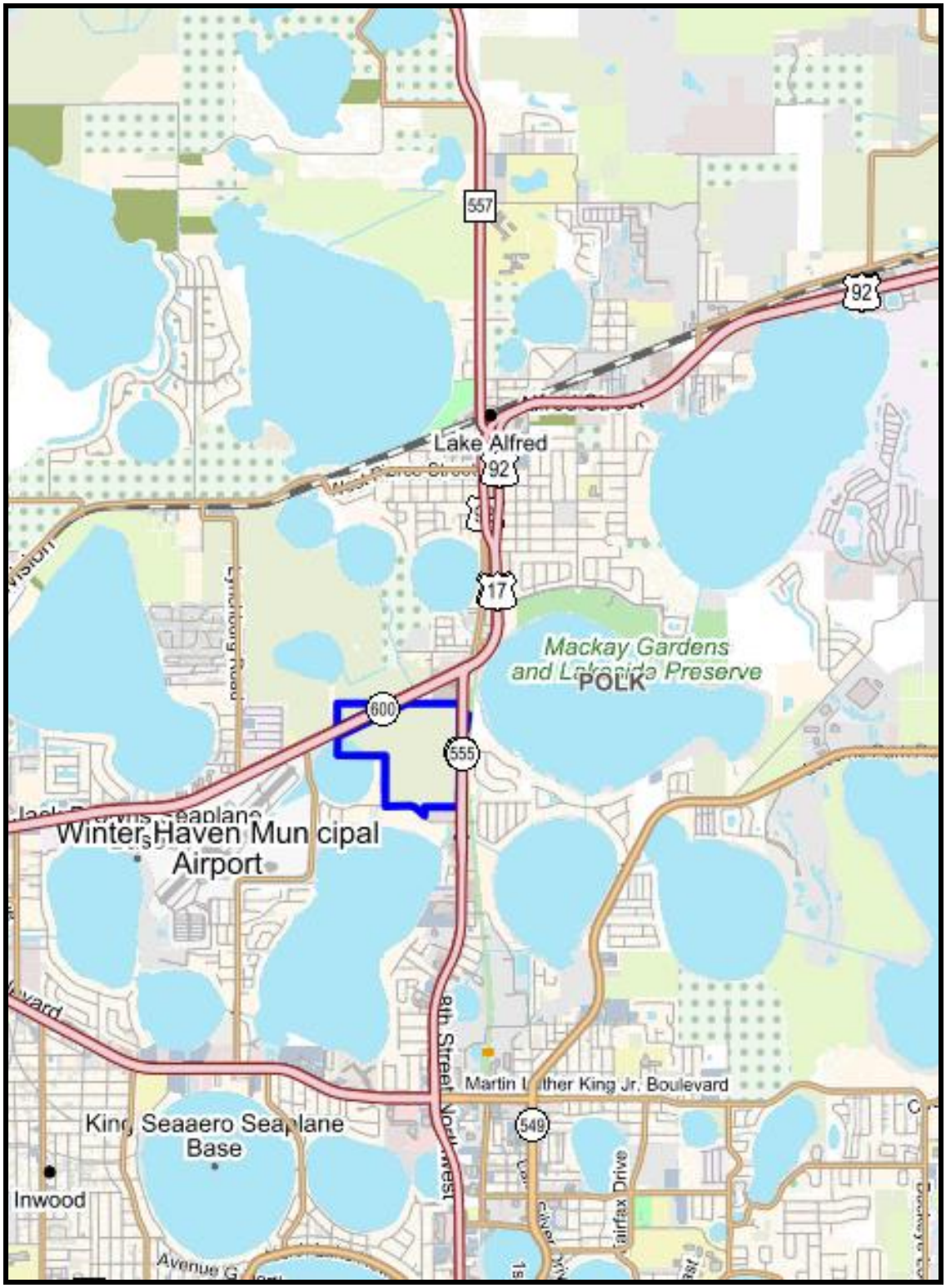
West of the subject property, on the south side of U.S. Hwy 92 is the Winter Haven Regional Airport, a city owned facility that leases industrial space. There is also an older mobile home rental park on the north side of the highway at the corner of Lynchburg Drive. At the southwest intersection of U.S. Hwy 17 and U.S. Hwy 92 is the old Miricle Toyota dealership, now Jarret Gordon Truck and RV repair facility. Nearby are used car lots, a restaurant, a pet grooming facility and an older motor court now rented to tenants on a monthly basis. The Lake Rochell Boat Ramp is just to the northeast in the town of Lake Alfred. There are few older homes north of the intersection but because of Lake Rochelle, Lake Conine, Lake Hartridge, Lake Pansy, Lake George, Lake Echo, Lake Cummings, and Lake Marina as well as the adjacent wetlands that surround some of these lakes, there is not an abundance of land left to develop.

Sanctuary by the Lake is a new residential development located on the east side of U.S. Hwy 17, with frontage on the southwest side of Lake Rochelle that is just about fully developed. An older residential development called Carefree Cove lies just south of Sanctuary by the Lake. Farther south along U.S. Hwy 17 there begins a mix of older commercial development on the northern fringe of Winter Haven. One area I need to mention is the development on Brigham Road. This is a small area of good land sandwiched between Lake Pansy and Lake Hartridge, with several waterfront homesites that have upscale custom built homes. With the exception of a large tract of land located north of U.S. Hwy 92 and east of Lynchburg Road, there is not a lot of good land remaining to be developed. Of the 162.03-acres of the subject property, there is about 20.91-acres of good land that appears developable.

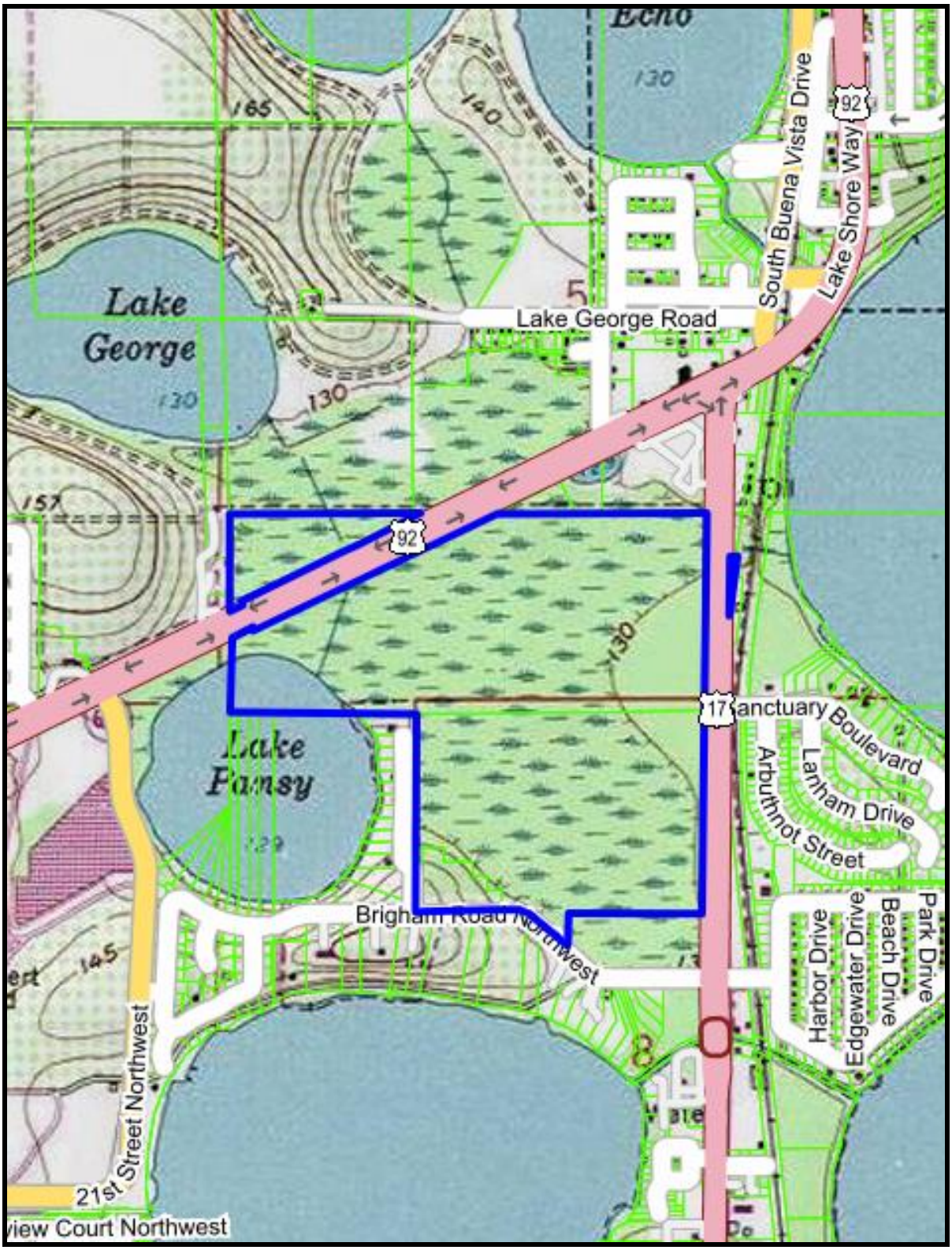
AREA MAP


SUBJECT
CASS RD
CR 557
OLD DIXIE HWY W
EXPERIMENT STATION RD
Lake Van
Lake Alfred
Lake Haines
Lake Henry
Lucerne Park
POLK CITY RD
MORRIS RD
BOLENDER RD
OLD LAKE ALFRED RD
Lynchburg
S BUENA VISTA DR
Lake Ariana
DAIRY RD
Lake Sanitary
Lake Rochelle
OLD LUCERNE PARK RD
STADIUM RD
Auburndale
E BRIDGERS AVE
Winter Haven's Albert
21ST ST NW
MAIN ST
Lake Jessie
Lake Hartridge
Lake Conine
Lake Smart
Lake Fannie
RECKER HWY
2ND ST
34TH ST NW
26TH ST NW
19TH ST NW
AVENUE T NW
Florence Villa
Poinsettia Park
Inwood
Lake Cannon
E MAIN ST
N LAKE HOWARD DR
AVENUE G NW
SR 655
1ST ST N
11TH ST NE
BUCKEYE RD NE
BUCKEYE LOOP RD
W LAKE HAMILTON DR
Winter Haven
E LAKE HOWARD DR
Lake Elbert
E LAKE ELBERT DR NE
DUNDEE RD
Eastwood
Jan-Phyl Village
24TH ST SW
21ST ST SW
AVENUE K SW
Tranquility Park
6TH ST SE
Lake Otis
Lake Mariam
CR 550
AVENUE R SW
RECKER HWY
Lake Shipp
9TH ST SE
Eloise Woods
N LAKE ELOISE DR
Cypress Gardens
SPIRIT LAKE RD
Spirit Lake
CAMELLIA DR
Lake Shipp Heights
Eloise
Lake Lulu
LAKE NED RD SE
OLD 9 FOOT RD
SWIVELY AVE
Eagle Lake
Lake Dexter
THORNHILL RD
Lake Eloise
N RIFLE RANGE RD
Eagle Lake
W CRYSTAL BEACH RD
W EAGLE LAKE LOOP RD
ELOISE LOOP RD
CR 540A
Lake Winterset
Lake McLeod
CR 559
DeLORME
Data use subject to license.
© DeLorme. DeLorme Street Atlas USA® 2011.
www.delorme.com
MN (6.8° W)
mi
0 ½ 1 1½ 2
Data Zoom 11-4

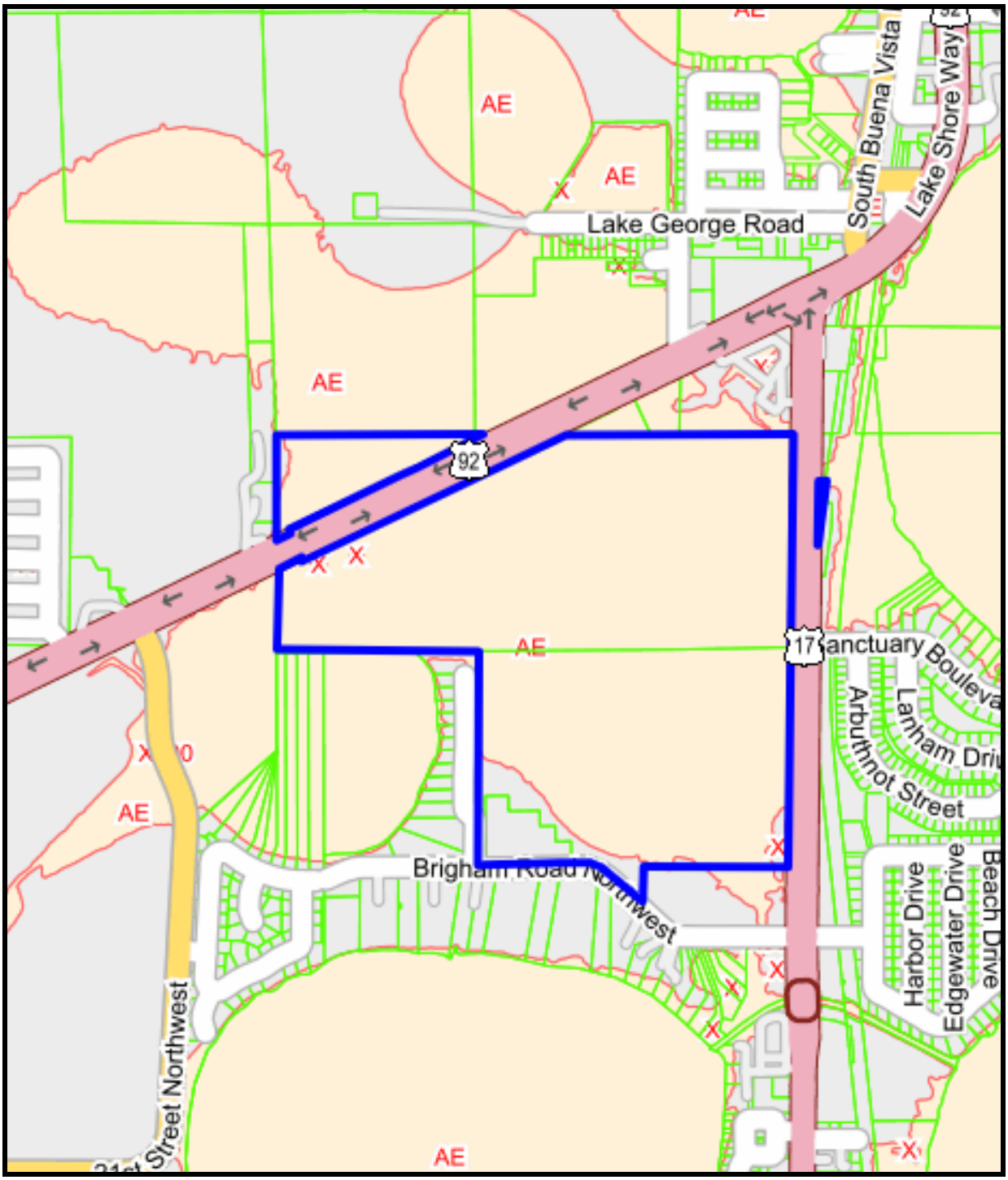
NEIGHBORHOOD MAP



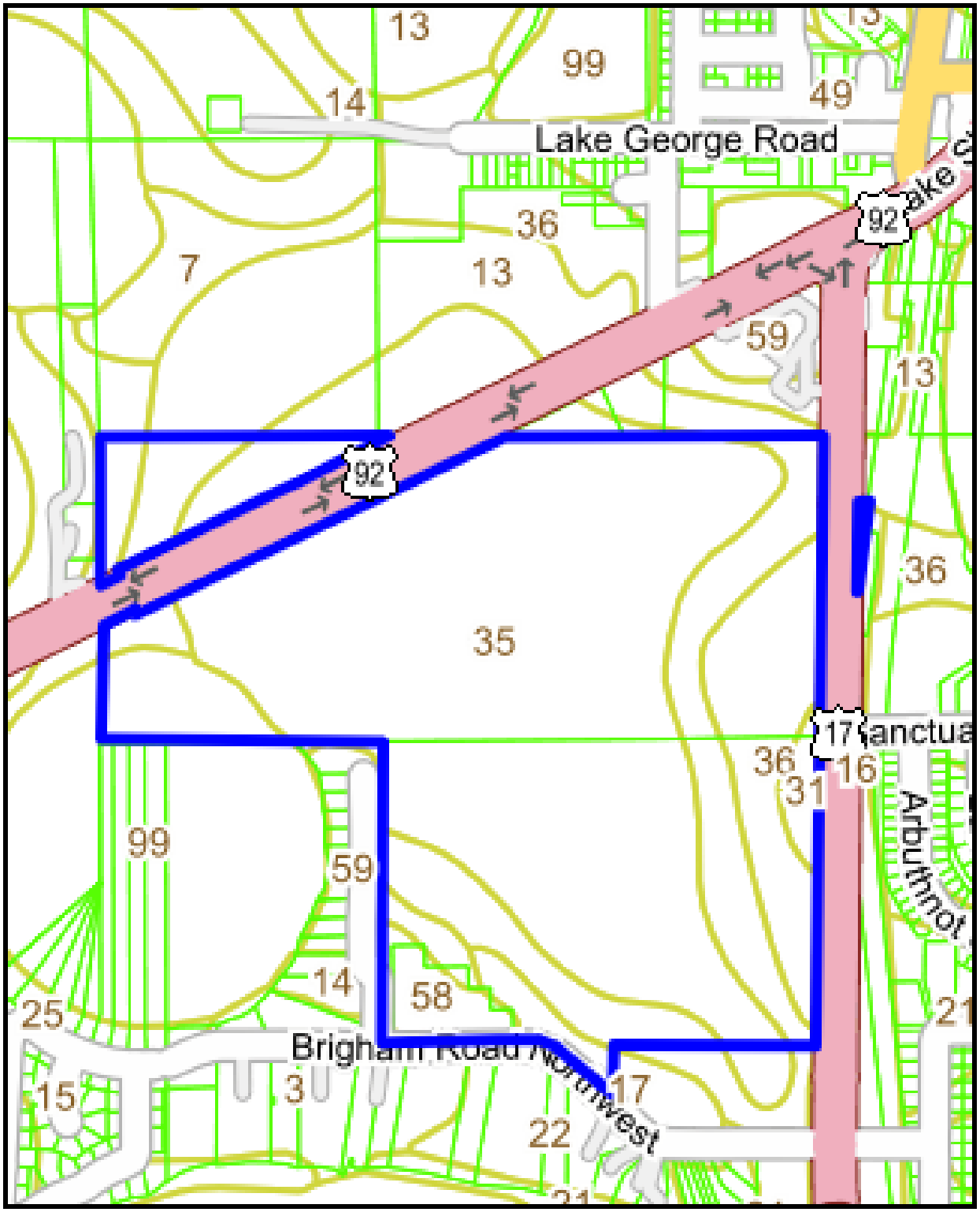
TOPOGRAPHIC MAP



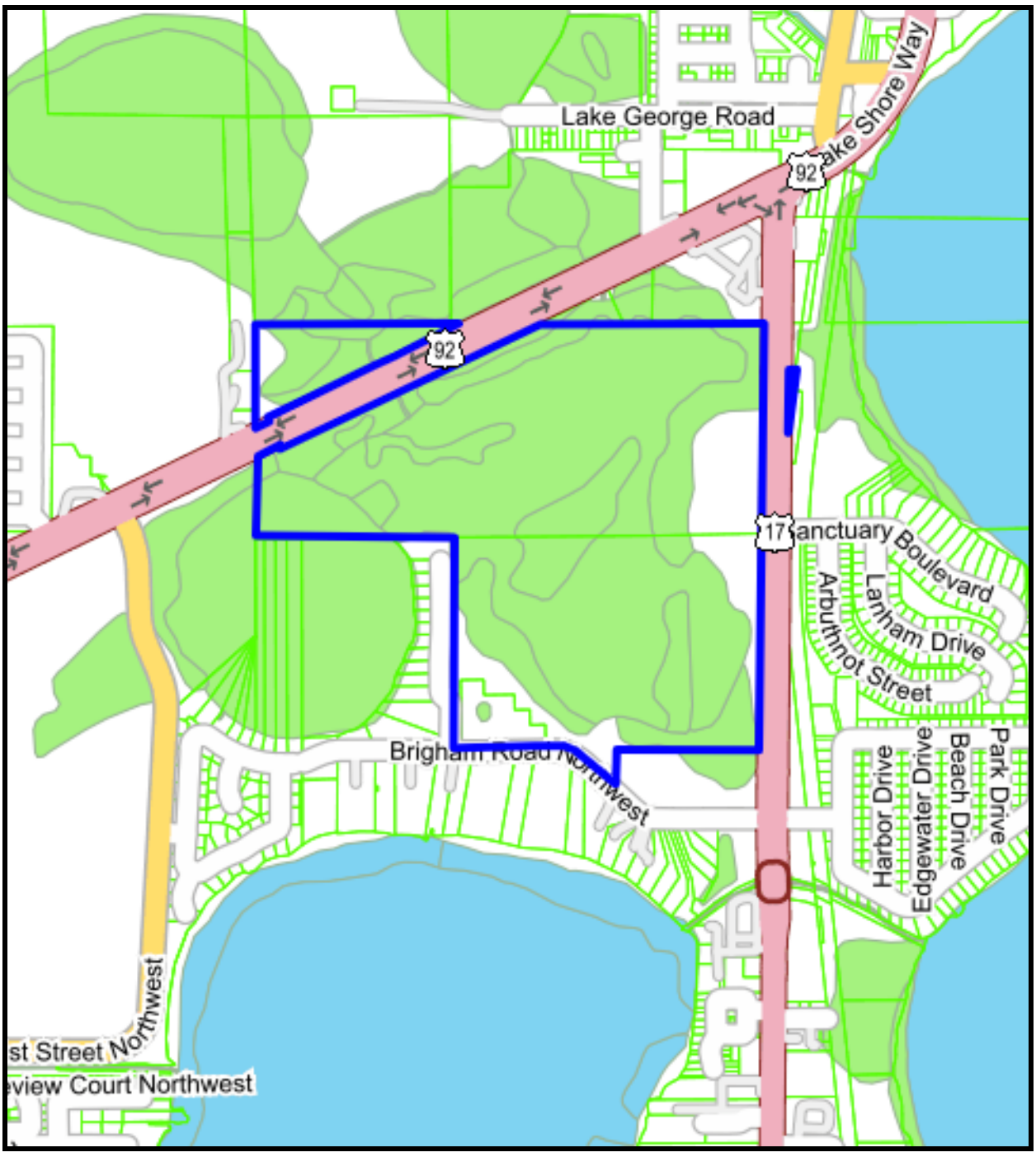
FEMA FLOOD MAP



SOIL MAP


13
99
14
49
Lake George Road
92
36
7
13
59
13
92
36
35
17
36
16
31
99
59
14
58
25
Brigham Road Northwest
15
3
17
22

UPLAND / WETLAND MAP



WINTER HAVEN ZONING MAP



WINTER HAVEN FUTURE LAND USE MAP



AERIAL MAP

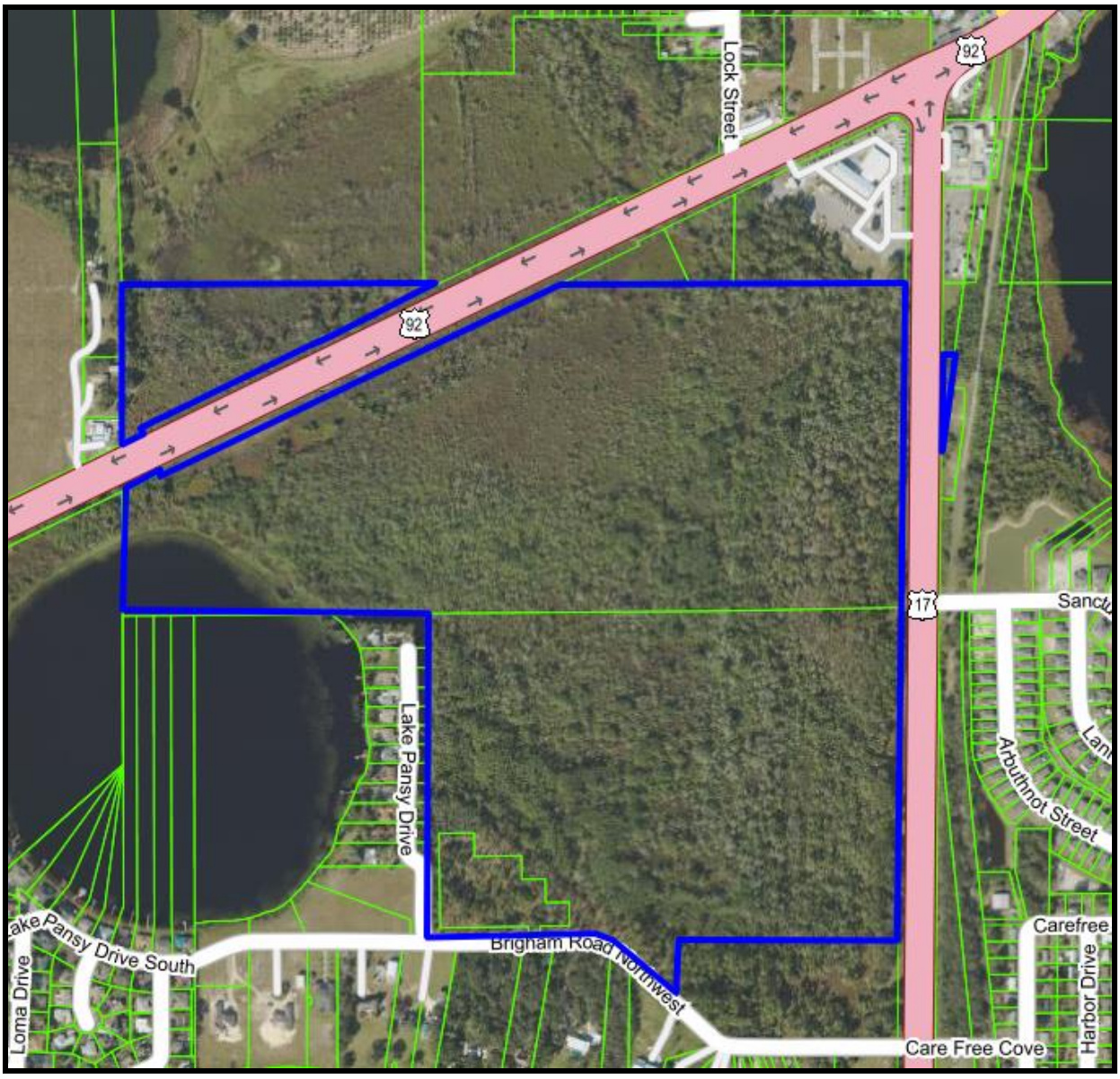

Lock Street
92
92
17
Lake Pansy Drive
Arbuthnot Street
Carefree
Harbor Drive
Brigham Road Northwest
Lake Pansy Drive South
Loma Drive
Care Free Cove



PHOTO #1 (08/11/2024) – U.S. HWY 17 LOOKING SOUTH – SUBJECT OPPOSITE SIDE



PHOTO #2 (08/11/2024) – U.S. HWY 17 LOOKING SOUTH – SUBJECT OPPOSITE SIDE



PHOTO #3 (08/11/2024) – LARGER SUB-PARCEL LOOKING WEST FROM US HWY 17



PHOTO #4 (08/11/2024) – SW CORNER OF LARGER SUB-PARCEL ON BRIGHAM ROAD



PHOTO #5 (08/11/2024) – BRIGHAM ROAD LOOKING EAST – SUBJECT ON LEFT



PHOTO #6 (08/11/2024) – BRIGHAM ROAD LOOKING WEST – SUBJECT ON RIGHT



PHOTO #7 (08/11/2024) – FOR SALE SIGN ON BRIGHAM ROAD



PHOTO #8 (08/11/2024) – SUBJECT LOOKING NORTH FROM BRIGHAM ROAD



PHOTO #9 (08/11/2024) – U.S. HWY 92 LOOKING WEST – SUBJECT ON BOTH SIDES



PHOTO #10 (08/11/2024) – U.S. HWY 92 LOOKING EAST – SUBJECT ON BOTH SIDES



PHOTO #12 (08/11/2024) – VIEW OF SUB-PARCEL NORTH OF U.S. HWY 92



PHOTO #13 (08/11/2024) – VIEW OF SUB-PARCEL NORTH OF U.S. HWY 92



PHOTO #14 (08/11/2024) – VIEW OF SUB-PARCEL SOUTH OF U.S. HWY 92



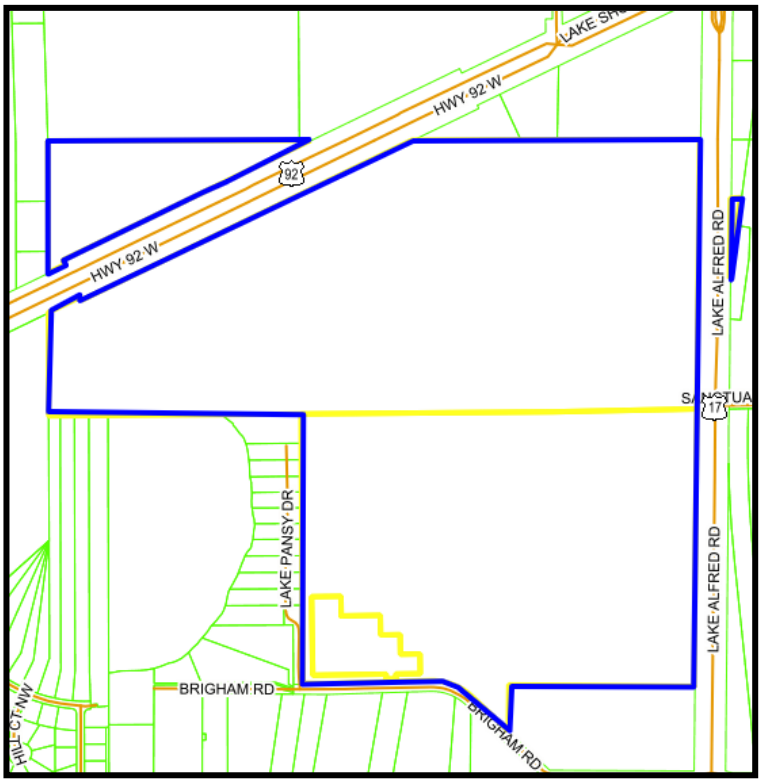
PHOTO #15 (08/11/2024) – VIEW OF SUB-PARCEL SOUTH OF U.S. HWY 92

SUBJECT DESCRIPTION

Location: The property being appraised represents three non-contiguous tracts of vacant land totaling 162.03-acres located on both sides of U.S. Hwy 17 and both sides of U.S. 92, southwest of Lake Alfred, on the north side of Winter Haven, Florida. There is no physical address for the subject property.

Census Tract: The majority of the subject is in Census Tract 0134.00. The small sliver on the east side of U.S. Hwy 17 is in Census Tract 0136.01

Access: The three subject sub-parcels have access via U.S. Hwy 92, U.S. Hwy 17, and/or Brigham Road.



- The largest sub-parcel has 2,000 lineal feet of frontage on the south side of U.S. Hwy 92, 2,775 lineal feet of frontage on the west side of U.S. Hwy 17, and 1,000 lineal feet of frontage on the north side of Brigham Road.
- The second largest sub-parcel and 1,500 lineal feet on the north side of U.S. Hwy 92.
- The smallest sub-parcel has 400 lineal feet of frontage on the east side of U.S. Hwy 17, which is also known as Lake Alfred Road

According to the Florida Department of Transportation, the 2023 traffic counts for U.S. Hwy 17 was 27,000 vehicles and the 2023 traffic county for U.S. Hwy 92 was 25,500 vehicles.

Shape: These are three highly irregular non-contiguous sub-parcels- (1) the largest one on the west side of U.S. Hwy 17, south side of U.S. Hwy 92, and north side of Brigham Road, (2) the second largest one on the north side of U.S. Hwy 92, and a narrow non-economic sliver on the east side of U.S. #17.

Size: A survey of the subject property was not available. The only available source is the 162.03-acres being reported by the records of the Polk County Property Appraiser. For appraisal purposes, I intend to use 162.03-acres, subject to survey.

Topography: Below is a short discussion of each of the three sub-parcels.

Sub-Parcel #1: this represents the largest contiguous sub-parcel that contains 151.80-acres, identified as Tax Parcels 26-28-05-000000-024010, 26-28-08-000000-013030, and 26-28-08-000000-032050. The highest elevation of 145-feet above sea level occurs in the southwest corner. The elevation drops rapidly downward to 130-feet above sea level and is essentially flat over the balance of the sub-parcel. The area between 130 and 145-feet in elevation is (4340) Upland Hardwood. The balance of the sub-parcel is a mix of (6150) Stream & Lake Swamp, (6410) Freshwater Marsh / Graminoid Prairie, and (6440) Emergent Aquatic Vegetation. There is an abundance of invading exotic vegetation such as Brazilian Pepper, Melaleuca, etc.

Sub-Parcel #2: this represents the second largest contiguous sub-parcel that contains 9.99-acres, identified as Tax Parcel 26-28-05-000000-042010. This is a flat sub-parcel with a consistent elevation of 130-feet above sea level. Wetland land uses include (6150) Steam & Lake Swamp and (6410) Freshwater Marsh / Graminoid Prairie, but like the other sub-parcels has invasive exotic vegetation.

Sub-Parcel #3: this represents a narrow uneconomic sliver of land that contains 0.24-acres, identified as Tax Parcel 26-28-05-000000-024010. This is a flat strip with an elevation of 130-feet above sea level with a land use of (1900) Residential Vacant Land.

Flood Zone: All three sub-parcels are found on FEMA Map 12105C0355G, with an effective date of December 22, 2016, a copy of which has been presented as one of the exhibits. This map clearly shows:

Sub-Parcel #1 – two areas, one in the southwest corner and the other fronting U.S. Hwy 17, have 8.50-acres and 0.76-acres zoned "X," respectively. The balance is zoned "AE."

Sub-Parcel #2 – one small area on the west boundary of 0.52-acres is zoned "X," with the balance zoned "AE."

Sub-Parcel #3 – this entire sub-parcel is zoned "X."

Zone "X" – Flood Zone X is a designation on a flood map that indicates an area with moderate-to-low risk for floods. FEMA actually has two distinct flood zones with this designation: one shaded and one unshaded. Flood Zone X (shaded) indicates an area where the annual flood risk is between 1% and 0.2%. This is considered a moderate risk. When Zone X is unshaded, the risk for flood is less than 0.2 % and may be protected from 100-year flood by a levee.

Zone "AE" - Flood Zone AE is an area designated as **a high-risk flood zone** by FEMA because of its proximity to floodplains, rivers, lakes, and other bodies of water. AE flood zone areas

have a 1% risk of flooding annually with a 26% risk of flooding over the course of a 30-year mortgage. Homes in Flood Zone AE may be close to floodplains, rivers, and lakes or in a low-lying region. Zone AE is one of the many Special Flood Hazard Areas defined by the FEMA.

Soils: According to the NRCS Soil Map, there are twelve different soils found on the three sub-parcels, as summarized below:

Map Unit #	Map Name	Acres	Percentage
3	Candler sand	0.40	0.2
13	Samsula muck	28.70	17.2
16	Urban land	0.90	0.5
17	Smyrna and Myakka fine sands	3.0	1.8
22	Pomello fine sand	0.10	0.0
25	Placid and Myakka fine sands, depressional	1.60	1.0
31	Adamsville fine sand	2.60	1.6
35	Hontoon muck	101.60	60.8
36	Basinger mucky fine sand	16.10	9.6
58	Udorthents, excavated	4.30	2.6
59	Arents-Urban land complex	1.70	1.0
99	Sanibel muck, requently ponded	6.10	3.7
Total		167.1	100.0

The upland non-hydric soils include (3) Candler sand, (17) Smyrna and Myakka fine sands, (22) Pomello fine sand, (31) Adamsville fine sand, (58) Udorthents, excavated, and (59) Arents-Urban land complex accounting for 7.3% of the total land area. These soils are suitable for some agriculture, silviculture, recreation, and urban development.

The wetland hydric soils include (13) Samsula muck, (25) Placid and Myakka fine sands, depressional, (35) Hontoon muck, and (36) Basinger mucky fine sand accounting for 88.6% of the total land area. Many of the hydric soils are organic soils as opposed to mineral soils. These soils are conducive to water storage, limited recreation, and as wildlife habitat.

A copy of the soils map has been presented as one of the exhibits.

Uplands/Wetlands: An upland/wetland breakdown was not available for this assignment. Based upon the National Wetland Inventory Maps, the following is the breakdown as to the number of probable uplands and potential jurisdictional wetlands.

Probable Uplands:	20.91-acres (12.9%)
Potential Jurisdictional Wetlands:	141.12-acres (87.1%)
Total Acres:	162.03 acres (100.0%)

Zoning/Future Lane Use: Zoning and Future Land Use maps of the property being appraised are presented as two of the exhibits. These maps showed:

- Sub-Parcel #1- a narrow strip along U.S. Hwy 92 with an "R-1" (Single Family Residential – Large Lot) and a "C-4" (Commercial Heavy) zoning classification; however, this is wetlands and undevelopable. It also shows the majority of the interior of the tract with a "Con" (Conservation) zoning classification, all of which are wetlands and undevelopable. The two developable areas are 8.5-acres in the southwest corner zoned "R-3" (Multi Family Residential – Low Density) with a "Neighborhood Suburban" future land use and 17-acres along U.S. Hwy 17 with a "C-4" (Commercial Heavy) zoning classification with a "Neighborhood Support" future land use that also allows multi-family development.

- Sub-Parcel #2 -this entire sub-parcel has a "C-4" "Commercial Heavy) zoning classification and while there is a small area of uplands, they are inaccessible because they are surrounded by wetlands. This tract has a "Conservation" and "Neighborhood Support" future land use.

- Sub-Parcel #3 – this is Zone "C-4" (Commercial Heavy) with a "Neighborhood Support" future land use; however, this sub-parcel represents an uneconomic sliver that is undevelopable.

Owner of Record: according to the Public Records, the subject property is vested to:

Astute Financial Corporation
3 Strathearn Road
Toronto ON M6C 1RC
Canada

Utilities: Public electric, telephone, and cable services are available. There are municipal water and sewer services along U.S. Hwy 17 and along Brigham Road, with capacity for multi-family development according to the City of Winter Haven. There are sections of U.S. Hwy 92 that also have municipal water and sewer services.

Assessment/Taxes: The subject property is assessed as five tax parcels. Information obtained from the Polk County Property Appraiser for 2023 is summarized below:

4PARCEL NUMBER	ACRES	JUST VALUE	TAXABLE VALUE	MILLAGE	2023 TAXES
26-28-05-000000-024010	87.07	$25,462	$24,378	19.2566	$475.30
26-28-05-000000-024030	0.24	$1,063	$1,063	19.2566	$20.48
26-28-05-000000-042010	9.99	$799	$799	19.2566	$15.38
26-28-08-000000-013030	61.26	$30,630	$30,630	19.2566	$589.84
26-28-08-000000-032050	3.47	$1,735	$1,735	19.2566	$33.40
Total	162.03	$59,689	$58,605		$1134.40

There is no correlation between Just Value & Taxable Value as determined by the Polk County Property Appraiser and Market Value as determined by the market. The Polk County Property Appraiser is responsible for assessing several hundred thousand tax parcels each year and simply does not have the time to spend valuing any single parcel. His performance is based upon

consistency among similar property types, measured by statistical calculations that include average, mean, median, standard deviation, and coefficient of dispersion. By law, assessed values exclude certain components of market value such as sales commissions, closing costs, recording fees, and legal fees. This is the reason that there is no direct correlation between Polk County Property Appraiser's Just Value and Taxable Value and market value as determined by the real estate markets.

The Polk County Tax Collector offers discounts for early payment, with full taxes due by March 31st 2024. The discounts are one percent per month, up to a maximum of four percent, beginning in November 1, 2023. The 2023 taxes were pre-paid in the full discounted amount of $1,089.02 on November 17, 2023. There are no delinquent taxes.

Sales History: There have been no transfers or conveyances of ownership of this property since December 1994.

- Approximately 17± acres of usable uplands on the west side of U.S. Hwy 17 is listed for sale with Realtor Steve Lockhart of Lockhart & Associates, Inc. for $1,150,000 ($67,647/acre). It has been listed for about two-years.
    - In February 2024, the seller entered into a signed contract for $1,100,000 with a developer from South Florida. The buyer requested that the seller pay for some of the due diligence items, the seller declined, and the buyer withdrew from the contract.
    - In June 2024, the Realtor received a cash offer of $1,100,00 from a local developer for multi-family development. The Realtor indicated that the seller withdrew from negotiations and temporarily removed the listing in order to give Polk County time submit an offer for their entire ownership.

- Approximately 8.5-acres of useable uplands on Brigham Road is listed with Realtor Steve Lockhart of Lockhart & Associates, Inc. for $850,000 ($100,000/acre). It has been listed for about two-years.
    - In June 2024, the Realtor received a cash offer of $825,000 from a local developer for multi-family development. The Realtor indicated that the seller withdrew from negotiations and temporary removed the listing in order to give Polk County time submit an offer for their entire ownership.

According to the Realtor, the property has been temporarily taken off the market and there are no pending contracts.

Oil, Gas, and Mineral Rights: The title policy was silent on oil, gas, and mineral rights. For appraisal purposes, I am assuming that the underlying fee owner retains all the oil, gas and mineral right.

Easements/Encumbrances: The "Property Information Report" essentially inferred that that the State of Florida could have access, drainage, and OGM rights – See Page Property Rights Appraised on Page 16 for a full discussion.

Leases: There are billboards on U.S. Hwy 17 and one on U.S. Hwy 92 that are leased by Lakeland Outdoor Advertising. Two billboard leases for $5,545.44 each per year, but the leases terminates in March 2025. The other billboard is lease on a month to month bases for $100 per month. The total collect annual billboard income is $11,190.88. Since one billboard is leased month to month and the leases of the other two billboards terminate in March 2025, these leases have no further impact on value. Additionally, I am not sure if one or both of the billboards on U.S. Hwy 17 are within the 12.5-acres of developable land.

Nuisances and Hazards: None observed

Improvements: None

PART FOUR – ANALYSIS

HIGHEST AND BEST USE

Fundamental to appraising real estate is the concept of "Highest and Best Use." The current definition of "Highest and Best Use" as defined in The Appraisal of Real Estate, 13^{h} Edition is:

> "The reasonably probable and legal use of vacant land or an improved property that is physically possible, appropriately supported, and financially feasible and that results in the highest value."

In order for any intended use to represent the highest and best use, the intended use must be (1) physically possible, (2) legally permissible, (3) financially feasible, and (4) maximally productive.

HIGHEST AND BEST USE – AS VACANT

Physically Possible – The subject property consists of three non-contiguous sub-parcels, each described physically below"

- Sub-Parcel #1: this represents the largest contiguous sub-parcel that contains 151.80-acres, identified as Tax Parcels 26-28-05-000000-024010, 26-28-08-000000-013030, and 26-28-08-000000-032050. The highest elevation of 145-feet above sea level occurs in the southwest corner. The elevation drops rapidly downward to 130-feet above sea level and is essentially flat over the balance of the sub-parcel. The area between 130 and 145-feet in elevation is (4340) Upland Hardwood. The balance of the sub-parcel is a mix of (6150) Stream & Lake Swamp, (6410) Freshwater Marsh / Graminoid Prairie, and (6440) Emergent Aquatic Vegetation. There is an abundance of invading exotic vegetation such as Brazilian Pepper, Melaleuca, etc.

- Sub-Parcel #2: this represents the second largest contiguous sub-parcel that contains 9.99-acres, identified as Tax Parcel 26-28-05-000000-042010. This is a flat sub-parcel with a consistent elevation of 130-feet above sea level. Wetland land uses include (6150) Steam & Lake Swamp and (6410) Freshwater Marsh / Graminoid Prairie, but like the other sub-parcels has invasive exotic vegetation.

- Sub-Parcel #3: this represents a narrow uneconomic sliver of land that contains 0.24-acres, identified as Tax Parcel 26-28-05-000000-024010. This is a flat strip with an elevation of 130-feet above sea level with a land use of (1900) Residential Vacant Land.

Legally Permissible – The only two developable areas for the entire 162.03-acre ownership are the 8.45-acres in the southwest corner of Sub-Parcel #1 zoned "R-3" (Multi Family Residential – Low Density) with a "Neighborhood Suburban" future land use and the 12.46-acres on the west side of U.S. Hwy 17 zoned "C-4" (Commercial Heavy) with a "Neighborhood Support" future land use. According to the listing Realtor Steve Lockhart, there has been no interest in commercial development of either sub-parcel; however, there has been interest in multi-family

development including the recent offer that was put on hold to give Polk County time to submit an offer for the purchase of the entire ownership.

However, multifamily development is not one of the allowed uses in the "C-4" zoning classification. Winter Haven Senior Planner Heather Reuter, CPM, indicated that the "C-4" zoned area could be down zoned to "C-3," which allows multifamily development. Townhomes are acceptable, but only if they are not individually platted. The density of 2.01 to 12.00-units per acre are allowed in the "Neighborhood Suburban" future land use and 5.00 to 15.00-units per acre are allowed in the "Neighborhood Support" future land use with a density bonus of five (5) additional densities if it is within proximity to a transit route which is. However, the likelihood of achieving the maximum density is not only unlikely but rare.

Even though the balance of 141.12-acres has several different zoning classifications such as C-4, R-1, and Con, because most of these areas have underlying muck soils and all are classified as wetlands, precludes any future development this area. Essentially, the zoning classifications and the future land use designations are unimportant. These areas can be used for water storage, water purification, and/or mitigation but probably not recreation for these wetland areas.

Financially Feasible – Polk County recently was recognized as being the fastest growing county in the country, and Haines City just northeast of Winter Haven as one of the fifteen fastest growing cities in the country. The buildout around Orlando, the four corners area that includes Orange, Lake, Osceola, and Polk counties, and the Disney Theme Parks is forcing development south along the U.S. Hwy 27 Corridor to cities like Davenport, Haines City, Dundee, Winter Haven, and Lake Wales. Traditionally, Hillsborough County issued the most residential building permits in West Central Florida, but in 2023 for the first time Polk County issued the most building permits. As described in the Winter Haven Demographic Section, there have been a number of new residential and commercial developments and a number of city and state infrastructure improvements, with more in the planning process. The hike in interest rates to 6.47% has slowed resales down and is now starting to affect new home construction. With more than 1,283-people moving into the State of Florida each day and indications that the feds are considering a reduction in interest rate at their next meeting, would most likely spur pent up demand. The rental market is even hotter because potential buyers are not able to purchase homes because of the high mortgage rates, so they rent until mortgage rates decrease and/or the save enough for the down payment.

Maximally Productive – Even though there is the potential for 12.00 to 15.00 units per acre for the two developable parcels, rarely have I seen the developments able to achieve the maximum number of units. For instance, the four comparable sales had densities of 12.50-units per acre, 9.63-units per acre, 9.12-units per acre, and 8.11-units per acre respectively. This equates to 9.83-units per acre; however, the two that are most similar in unit numbers is Sale #1 at 12.5-units per acre and Sale #3 at 9.12-units per acre, the average of which is 10.80-units per acre. The 20.91-acres of developable land has a highest and best use of multifamily development at a density of 11.00 units per acre, which is more reflective of similar multifamily projects. The 141.12-acres of wetlands has a highest and best use for water storage, water purification, and/or mitigation but probably not recreation for these wetland areas.

METHOD OF VALUATION

Appraisers have three approaches that can be used to estimate market value, i.e., the Cost Approach, the Sales Comparison Approach, and the Income Approach. The Cost Approach and the Income Approach generally only applies to improved properties, whereas the Sales Comparison Approach applies to both improved and unimproved properties.

- The Cost Approach is not relevant because the subject is vacant undeveloped land with no improvements .
- In certain situations, the application of the Income Approach is useful in appraising raw undeveloped land but not in this case. The Income Approach is not relevant simply because investors would not purchase this vacant land to lease out.

For this analysis, only the Sales Comparison Approach is relevant. A generic description is provided below.

The *Sales Comparison Approach* is based on the proposition that an informed purchaser would pay no more for a tract of land than it would cost him to acquire an equally desirable substitute tract of land offering the same or similar utility. The basic steps in the Sales Comparison Approach include:

1. Research the market to obtain information about transactions, listings, and offerings of properties similar to the subject property.

2. Verify the information by considering whether the data obtained is factually accurate and whether the sale was reflective of an arm's length market consideration.

3. Determine the appropriate unit of comparison, which in this case is the price per acre, and develop a comparative analysis.

4. Compare the comparable sales to the subject property based upon the elements of comparison and adjust each sale's index price appropriately by a qualitative or quantitative method or eliminate the sale as a comparable.

5. Reconcile the value conclusions resulting from the analysis and choose one single index price to value the subject property.

The Sales Comparison Approach is applicable to all property types for which there are a sufficient number of recent, reliable transactions to forecast value patterns in the market. For property types that are regularly bought and sold in the market place, the Sales Comparison Approach is considered a good reliable approach. When there are an insufficient number of recent transactions, necessary to forecast value patterns in the market place, then the application of the Sales Comparison Approach may be inappropriate. For special purpose properties, the Sales Comparison Approach may not be applicable due to the lack of good comparable sales.

SALES COMPARISON APPROACH

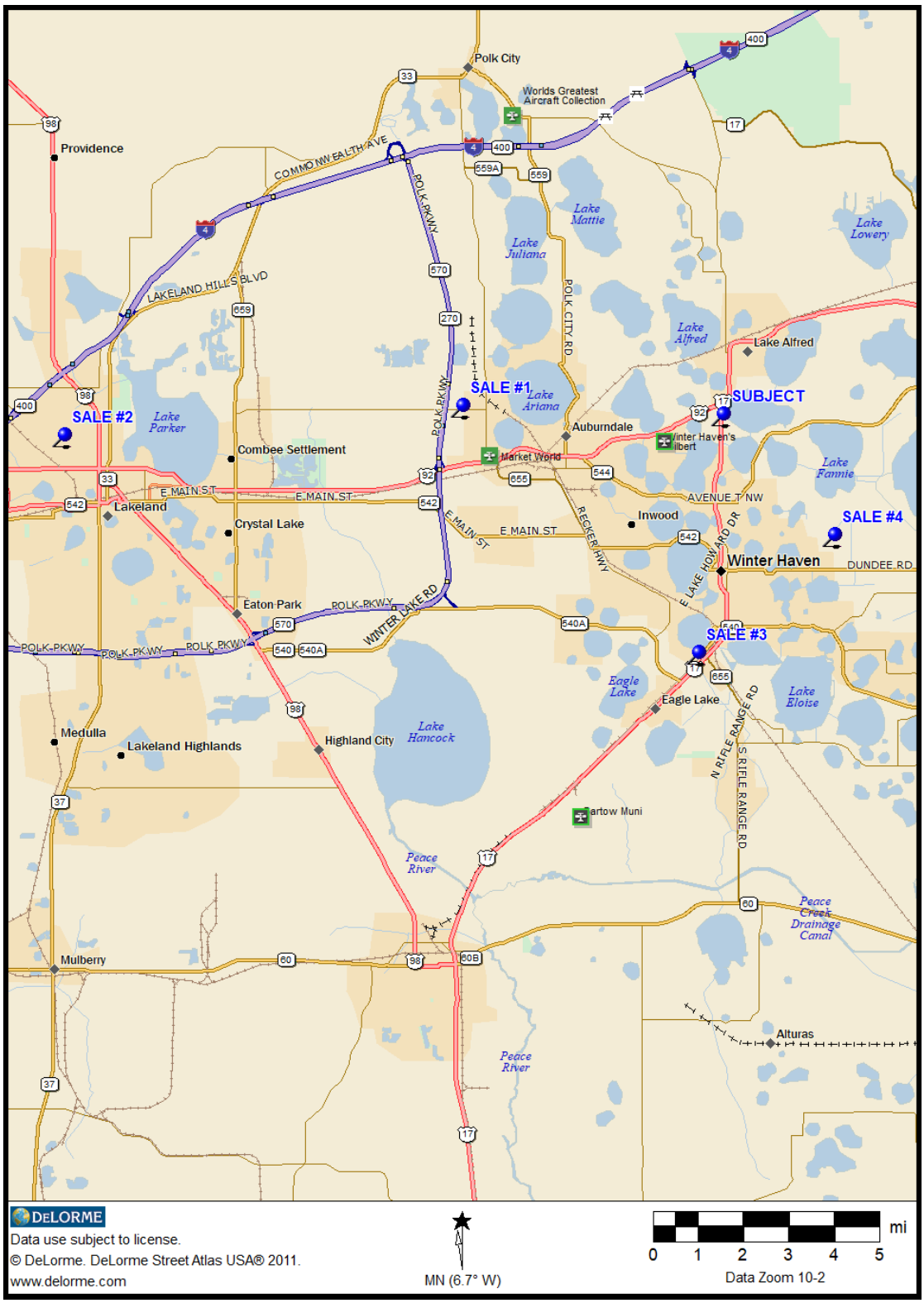
The subject property represents two developable areas of 8.45-acres and 12.46-acres that total 20.91-acres with a highest and best use for development to multifamily townhomes at a density of approximately 11-units per acre and the 141.12-acres of wetlands and uneconomic land that have limited use and/or possibly for mitigation. This requires the appraiser to provide separate valuation analysis for the 20.91-acres of developable area and the undevelopable 141.12-acres of wetlands and uneconomic land, then decide if a discount is appropriate for the sum of the parts.

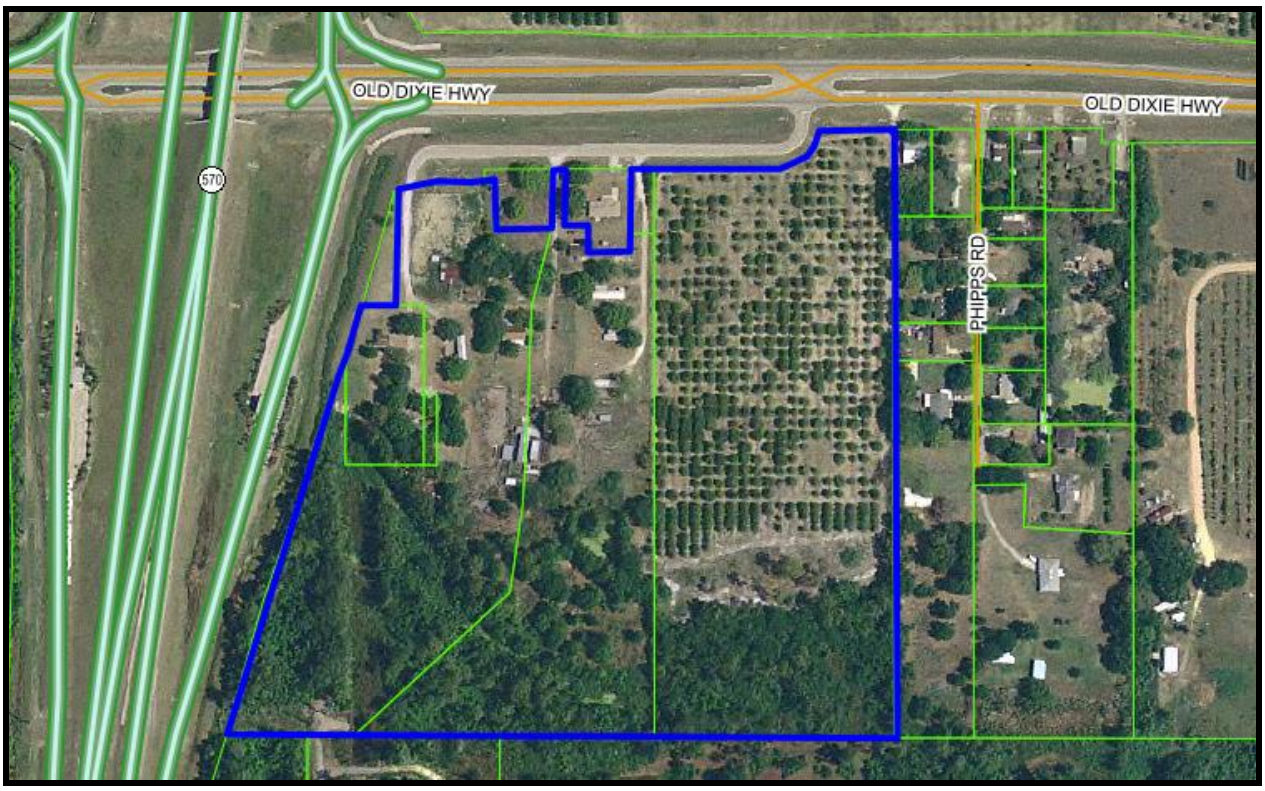
20.91-acres of Multifamily Land: Below is summary chart showing the subject 20.91-acres of multifamily land and four comparable multifamily sales that were considered in the valuation process. The following sales are what I believe to be the best and most recent available.

MULTFAMILY SALES SUMMARY CHART

SALE NO.	SUBJECT	SALE #1	SALE #2	SALE #3	SALE #4
Location	U.S. Hwy 17 and Brigham Road	Old Dixie Highway and Polk Parkway	Providence Road and West 8th Street	Old Eagle Lake Road	Buckeye Road
City	Winter Haven	Auburndale	Lakeland	Winter Haven	Winter Haven
Sale Date	N/A	04-25-2023	08-11-2022 07-22-2022	06-29-2024	02-24-2023
Sale Price	N/A	$3,350,000	$780,000	$1,650,000	$425,000
Financing	N/A	Cash to Seller	Cash to Seller	Cash to Seller	Cash to Seller
Access	Four and two lane paved roads	Frontage road off four lane road	Two lane roads	Two lane road	Two land road
Acres	20.91	32.69	9.03	21.69	16.13
Percent Uplands	100%	70%	100%	84%	46%
Water/Sewer	Nearby	Water	Nearby	Nearby	Nearby
Highest & Best Use	Multifamily	Multifamily	Multifamily	Multifamily	Multifamily
# of Units	230	286	87	187	60
Density per Acre	11 Per Acre	12.5 Per Acre	9.63 per Acre	9.12 Per Acre	8.10 Per Acre
Improvements	None	No Contributory Value	None	None	None
INDEX PRICE					
Price - Gross Acre	N/A	$102,478	$86,379	$76,072	$26,348
Price - Useable Acre	N/A	$146,397	$86,379	$84,488	$57,423
Price - Unit	N/A	$11,713	$8,966	$8,824	$7,083

SALES LOCATION MAP





SALE NUMBER: #1

PROPERTY TYPE: Development Land

LOCATION: This property is located at the southeast intersection of Old Dixie Highway and the Polk Parkway (570) in West Auburndale, Florida. One of the two address is 1129 Old Dixie Highway, Auburndale, Florida 33823

BRIEF LEGAL: Abridged – a portion of Section 5, Township 28 South, Range 25 East, Polk County, Florida.

PARCEL NUMBERS: 25-28-05-319500-006201, 25-28-05-319500-006309, 25-28-05-319500-006310, 25-28-05-319500-006312, 25-28-05-319500-006408, and 25-28-05-319500-006500 (Polk County)

RECORDING: OR Book 12667, Page 0238, OR Book 12668, Page 1859, and OR Book 12669, Page 1545 (Polk County)

GRANTOR: Knapp Family Holdings, LLC, Diane Richey and Douglas Richey, and Old Dixie 1129, LLC

GRANTEE: Doherty Holdings Fortieth, LLC

LAND SIZE: 32.69 acres per property appraiser

ZONING: RG-2 medium to high density residential between 11 and 14 units per acre. Community Activity Center, Medium Density Residential, and a small area of Conservation/Wetlands future land use.

PROPERTY DESCRIPTION: This property is located at the southeast intersection of Old Dixie Highway and the Polk Parkway, with access to the Polk Parkway. Access to the property is via a frontage road. The property contains 32.69-acres, 70% probable uplands and 30% potential jurisdictional wetlands. The wetlands primarily located in the southwest corner; however, there is a very small area in the southeast corner. The land slopes downward from the northeast corner toward the southwest corner with elevations ranging from 150-feet to 125-feet above sea level. The upland soils are Pomona and Tavares. The lone wetland soil is Hontoon muck. There is public water in the immediate area; however, sewer is about three-quarters mile away.

SALES PRICE: $1,750,000 plus $250,000 plus $1,350,000 = $3,350,000

DATE OF SALE: April 25, 2023

TERMS: Cash to seller

VERIFICATION: Verified with Realtor Keith Rasmus of Century 21 Myers Realty at mobile 407-301-3182 on September 4, 2024.

CONDITIONS OF SALE: An arms-length transaction indicative of market value.

PRESENT USE: Essentially vacant land with a house, mobile home and some outbuildings that no longer provide any contributory value.

HIGHEST AND BEST USE: Multiple Family Residential Development

COMMENTS: Only 17.13-acres of the property was listed for sale with a Realtor, at $1,500,000 for about three months. The buyer approached the two adjacent landowners and acquire those parcels as well.

INDEX: $102,478 per gross acre
$146,397 per net acre
$11,713 per unit based upon the average number of 286 units

INSTR # 2023096520
BK 12667 Pgs 238-240 PG(s)3
RECORDED 04/26/2023 11:42:52 AM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
DEED DOC $12,250.00
RECORDING FEES $27.00
RECORDED BY melijohn

This instrument prepared by:
John L. Mann
Attorney at Law
Post Office Box 2435
Lakeland, Florida 33806

WARRANTY DEED

THIS INDENTURE, made this 25TH day of APRIL 2023, between **Knapp Family Holding, LLC,** a Florida limited liability company authorized to do business in Florida, whose post office address is 361 Denton Avenue, Auburndale, Florida 33823 ("Grantor"); and **DOHERTY HOLDINGS FORTIETH, LLC,** a Florida limited liability company, whose post office address is 2925 Mall Hill Drive, Lakeland, Florida 33810, ("Grantee").

WITNESSETH:

That said Grantor, for and in consideration of the sum of Ten Dollars and other good and valuable considerations to said Grantor in hand paid by said Grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said Grantee, and Grantee's heirs, successors, and assigns forever, the following described land, situate, lying and being in Polk County, Florida, and more particularly described on the attached Exhibit "A" (the "Property") reserving unto Grantor, its successors and assigns, any Polk County Impact Fee credits derived from or based upon Impact Fees paid prior to the date of this deed.

As part of the consideration: No portion of the Property may be used as a stand-alone public self-storage facility or as a storage facility for the members of the general public who are not tenants, employees or otherwise involved in the operations of the property without the express written consent of the Grantor or its assigns.

Property Identification No. 25-28-05-319500-006500

Subject to:

1. Conditions, restrictions, limitations and easements of record, if any, but this provision shall not operate to re-impose the same.
2. Zoning and other governmental regulations.
3. Taxes and assessments for 2023 and subsequent years.

Grantor does hereby fully warrant the title to said land, and will defend the same against the lawful claims of all persons whomsoever whose claim is based upon action or inaction of Grantor.

"Grantor" and "Grantee" are used for singular or plural, as context requires.

INSTR # 2023097760
BK 12668 Pgs 1859-1861 PG(s)3
04/27/2023 12:29:15 PM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 27.00
DEED DOC 1,750.00

Prepared by and return to:
DAVID D. HALLOCK, JR.
Attorney at Law
GrayRobinson, P.A.
One Lake Morton Drive
Lakeland, FL 33801
863-284-2200
File Number: **12904.14 - DH**
Will Call No.:

Parcel Identification Nos.: 25-28-05-319500-006312
and 25-28-05-319500-006309

Warranty Deed

This Warranty Deed made this 25th day of April, **2023** between **DIANE RITCHEY,** also known as **JANICE DIANNE RITCHEY,** formerly known as **DIANE GLENN,** joined by her husband, **DOUGLAS RITCHEY,** whose post office address is **1205 Old Dixie Highway, Auburndale, FL 33823**, grantor, and **DOHERTY HOLDINGS FORTIETH, LLC,** a Florida limited liability company whose post office address is **2925 Mall Hill Drive, Lakeland, FL 33810**, grantee:

(Whenever used herein the terms "grantor" and "grantee" include all the parties to this instrument and the heirs, legal representatives, and assigns of individuals, and the successors and assigns of corporations, trusts and trustees)

Witnesseth, that said grantor, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Polk County, Florida** to-wit:

A PORTION OF LOT 63 OF AUBURNDALE LAKESIDE PARK AS RECORDED IN PLAT BOOK 3, PAGE 20 OF THE PUBLIC RECORDS OF POLK COUNTY FLORIDA, BEING DESCRIBED AS FOLLOWS: AS A POINT OF REFERENCE COMMENCE AT THE NW CORNER OF LOT 61 OF SAID AUBURNDALE LAKESIDE PARK, ALSO BEING THE NW CORNER OF THE SW 1/4 OF THE SE 1/4 OF SECTION 5, TOWNSHIP 28 SOUTH, RANGE 25 EAST, POLK COUNTY FLORIDA; THENCE PROCEED S89°51'20"E ALONG THE NORTH BOUNDARY OF THE SW 1/4 OF THE SE 1/4 OF SAID SECTION 5, A DISTANCE OF 690.00 FEET; THENCE DEPARTING SAID NORTH BOUNDARY S00°19'56"E, A DISTANCE OF 423.00 FEET; THENCE S89°51'20"E, A DISTANCE OF 35.44 FEET TO A POINT ON THE EASTERLY RIGHT OF WAY LINE OF THE "POLK PARKWAY" STATE ROAD NUMBER 570; THENCE S15°11'49"W ALONG SAID RIGHT OF WAY LINE, A DISTANCE OF 103.90 FEET TO AN EXISTING 5/8" IRON ROD WITH DEFACED MARKINGS; THENCE S22°07'55"W, A DISTANCE OF 19.95 FEET TO AN EXISTING 5/8" IRON ROD WITH DEFACED MARKINGS; THENCE DEPARTING SAID EASTERLY RIGHT OF WAY LINE S00°19'56"E, A DISTANCE OF 221.16 FEET; THENCE S89°51'20"E, A DISTANCE OF 163.23 FEET TO AN EXISTING 1/2" IRON ROD MARKED LB 7623 AND TO THE POINT OF BEGINNING; THENCE CONTINUE S89°51'20"E, A DISTANCE OF 27.40 FEET; THENCE N00°11'50"W, A DISTANCE OF 150.00 FEET; THENCE N89°51'20"W, A DISTANCE OF 27.40 FEET; THENCE S00°21'50"E A DISTANCE OF 150.00 FEET TO THE POINT OF BEGINNING.

and

DoubleTime®

Prepared by and return to:
William T. Link, Jr.
Reed Mawhinney & Link
53 Lake Morton Drive, Suite 100
Lakeland, FL 33801
(863) 687-1771
File Number: **04591**

INSTR # 2023098378
BK 12669 Pgs 1545-1546 PG(s)2
04/28/2023 08:44:26 AM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 18.50
DEED DOC 9,450.00

[Space Above This Line For Recording Data]

Special Warranty Deed

This Special Warranty Deed made this **25th day of April 2023** between **Old Dixie 1129, LLC, a Florida limited liability company** whose post office address is **5885 Transit Road East, Amherst, New York 14051**, grantor, and **Doherty Holdings Fortieth, LLC, a Florida limited liability company** whose post office address is **2925 Mall Hill Drive, Lakeland, FL 33813**, grantee:

(Whenever used herein the terms grantor and grantee include all the parties to this instrument and the heirs, legal representatives, and assigns of individuals, and the successors and assigns of corporations, trusts and trustees)

Witnesseth, that said grantor, for and in consideration of the sum TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Polk County, Florida**, to-wit:

That part of Lots 62, 63 and 64, Auburndale Lakeside Park, as recorded in Plat Book 3, Page 20, of the Public Records of Polk County, Florida, being described as follows:

BEGIN at the Southeast corner of said Lot 64 thence North 89°53'54" West, along the South line of said Lots 62, 63 and 64, a distance of 890.10 feet to a point of intersection with the Easterly limited access Right-of-Way line of State Road 570 (Polk County Parkway) per Florida Department of Transportation Right-of-Way Map (Section 97160-2311), said point being on a non-tangent curve concave to the southeast and having a radius of 11,365.16 feet; thence along said curve to the right through a delta angle of 1°03'05", an arc distance of 208.56 feet (chord bearing = North 14°47'07" East, chord distance = 208.55 feet); thence continuing along said limited access Right-of-Way the following four (4) courses: (1) North 15°18'40" East, 89.38 feet; (2) North 19°00'27" East, 293.23 feet; (3) North 15°10'50" East, 154.57 feet; (4) North 22°07'13" East, 92.28 feet to a point of intersection with the west line of that parcel as described in Official Records Book 5900, Page 1110; thence South 00°21'24" East along said west line, a distance of 221.87 feet to the south line of said parcel; thence South 89°57'22" East, a distance of 190.52 feet; thence North 00°21'24" West, a distance of 150.00 feet; thence North 89°57'22" West, a distance of 27.40 feet to the east line of said parcel as described in Official Records Book 5900, Page 1110; thence North 00°21'24" West along said east line, a distance of 190.06 feet to the north line of said parcel; thence North 89°58'07" West, a distance of 60.01 feet; thence North 00°12'49" West, a distance of 245.87 feet to the southerly Right-of-Way of County Road 546 (Old Dixie Highway) per Official Records Book 6512, Page 997; thence along said southerly Right-of-Way the following two (2) courses: (1) North 74°33'48" East, 63.46 feet; (2) South 89°57'00" East, 144.63 feet to a point of intersection with the west line of that parcel as described in Official Records Book 8722, Page 1665; thence South 00°13'26" East along the west line of said parcel, a distance of 100.96 feet to the south line of said parcel; thence South 89°48'37" East along said south line, a distance of 119.97 feet to the east line of said parcel; thence North 00°11'51" West along said east line, a distance of 129.37 feet to the aforementioned southerly Right-of-Way of County Road 546 (Old Dixie Highway); thence North 89°34'39" East along said southerly Right-of-Way, a distance of 26.20 feet to the west line of that parcel as described in Official Records Book 8727, Page 1973; thence along the westerly, southerly and easterly lines of said parcel the following five (5) courses: (1) South 00°06'11" East, 123.00 feet; (2) North 89°34'39" East, 49.50 feet; (3) South 00°06'11" East. 51.50 feet; (4) North 89°34'39" East, 87.50 feet; (5) North 00°06'11" West, 174.50 feet returning to the aforementioned southerly Right-of-Way of said County Road 546 (Old Dixie Highway); thence North 89°34'39" East along said southerly Right-of-Way; a distance of 50.00 feet to the east line of aforementioned Lot 64, Auburndale



SALE NUMBER: #2

PROPERTY TYPE: Development Land

LOCATION: This property is located on the west side of Providence Road and the south side of West 8th Street, just west of Kathleene Road in Lakeland. The property has two address : 1250 Providence Road, Lakeland, Florida 33805 and 1175 West 5th Street, Lakeland, Florida 33805.

BRIEF LEGAL: Abridged – portions of Section 11, Township 28 South, Range 23 East, Polk County, Florida.

PARCEL NUMBERS: 23-28-11-000000-021030, 23-28-11-000000-021040, 23-28-11-000000-021190, 23-28-11-000000-021220, and 23-28-12-047000-008003, (Polk County)

RECORDING: OR Book 12379, Page 01555 and OR Book 12379, Page 01542 (Polk County)

GRANTOR: Millan Investments US, LLC and Ohm Prakash Rajasekaran

GRANTEE: Providence Townhomes, LLC

LAND SIZE: 9.03 acres per property appraiser

ZONING: PUD 6035 Medium Density Residential zoning. RM Residential Medium future land use. This property was approved for a mini-warehouse and zoned industrial; however, the

zoning was changed and the future land use amended to allow 87 two-story townhomes of 1,280 square feet. The density is 9.64 units per acre.

PROPERTY DESCRIPTION: This property is located on the west side of Providence, end of W 5th Street, and south side of W 8th Street in Lakeland, Florida. The property contains 9.03-acres, 100% probable uplands and 0% potential jurisdictional wetlands. The land slopes slight downward from the northeast toward the southwest. Elevations range from 120 to 130-feet above sea level. The underlying soils are Sparr sand. There is public water and sewer services nearby. There are no improvements.

SALES PRICE: $400,000 plus $380,000 = $780,000

DATE OF SALE: August 11, 2022 and July 22, 2022

TERMS: Cash to seller

VERIFICATION: Verified with Realtor Charmagne Chappell with Friendly Realty, Inc. at 863-299-8011 on September 4, 2024.

CONDITIONS OF SALE: An arms-length transactions indicative of market value.

PRESENT USE: Vacant undeveloped land.

HIGHEST AND BEST USE: Multiple Family Residential Development

COMMENTS: There were two listings, side by side, by the same Relator, a 4.24-acre parcel that was listed for $400,000 and sold three months later for $380,000 and 4.79-acres that was listed for $400,000 and sold for $400,000 one month later.

INDEX: $86,379 per gross acre
$86,379 per net acre
$8,966 per unit based upon the average number of 87 units

Prepared by and return to:

Rosenthal Meyer, PLLC
3801 Avalon Park E Blvd, Suite 360
Orlando, FL 32828
(407) 504-9725
File Number: **2022-12-A**
Will Call No.:

INSTR # 2022221512
BK 12379 Pgs 1555-1558 PG(s)4
08/15/2022 01:09:05 PM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 35.50
DEED DOC 2,800.00

[Space Above This Line For Recording Data]

Warranty Deed

This Warranty Deed made this **11th day of August, 2022** between **Millan Investments US LLC, a Florida Limited Liability Company** whose post office address is **1010 W Beacon Road, Lakeland, FL 33803**, grantor, and **Providence Townhomes, LLC, a Limited Liability Company** whose post office address is **15155 W Colonial Drive #783233, Winter Garden, FL 34787**, grantee:

(Whenever used herein the terms "grantor" and "grantee" include all the parties to this instrument and the heirs, legal representatives, and assigns of individuals, and the successors and assigns of corporations, trusts and trustees)

Witnesseth, that said grantor, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Polk County, Florida** to-wit:

See Exhibit A

Together with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

To Have and to Hold, the same in fee simple forever.

This property is not the homestead of the Grantor.

And the grantor hereby covenants with said grantee that the grantor is lawfully seized of said land in fee simple; that the grantor has good right and lawful authority to sell and convey said land; that the grantor hereby fully warrants the title to said land and will defend the same against the lawful claims of all persons whomsoever; and that said land is free of all encumbrances, except taxes accruing subsequent to **12/31/2021**.

In Witness Whereof, grantor has hereunto set grantor's hand and seal the day and year first above written.

Prepared by and return to:

Rosenthal Meyer, PLLC
3801 Avalon Park E Blvd, Suite 360
Orlando, FL 32828
(407) 504-9725
File Number: **2022-12**
Will Call No.:

INSTR # 2022221501
BK 12379 Pgs 1542-1543 PG(s)2
08/15/2022 01:08:11 PM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 18.50
DEED DOC 2,660.00

[Space Above This Line For Recording Data]

Warranty Deed

This Warranty Deed made this **22nd day of July, 2022** between **Ohm Prakash Rajasekaran** whose post office address is **4532 Ashburn Square Drive, Tampa, FL 33610**, grantor, and **Providence Townhomes LLC, a Limited Liability Company** whose post office address is , grantee:

(Whenever used herein the terms "grantor" and "grantee" include all the parties to this instrument and the heirs, legal representatives, and assigns of individuals, and the successors and assigns of corporations, trusts and trustees)

Witnesseth, that said grantor, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Polk County**, **Florida** to-wit:

Begin at the Northwest corner of the Southeast 1/4 of the Northeast 1/4 of the Southeast 1/4 of Section 11, Township 28 South, Range 23 East, thence run East 56.38 feet, thence run South 147 feet, thence run East 609 feet, thence run South 522.65 feet, thence run West 78.1 feet, thence run North 49 degrees West 777.77 feet, thence run North to Point of Beginning, LESS AND EXCEPT the South 120 feet of the North 497 feet of the West 130 feet of the East 145 feet and LESS AND EXCEPT the East 15 feet for Street right of way and LESS AND EXCEPT the North 14 feet for Lantzey Street right-of-way.

Parcel Identification Number: 23-28-11-000000-021030

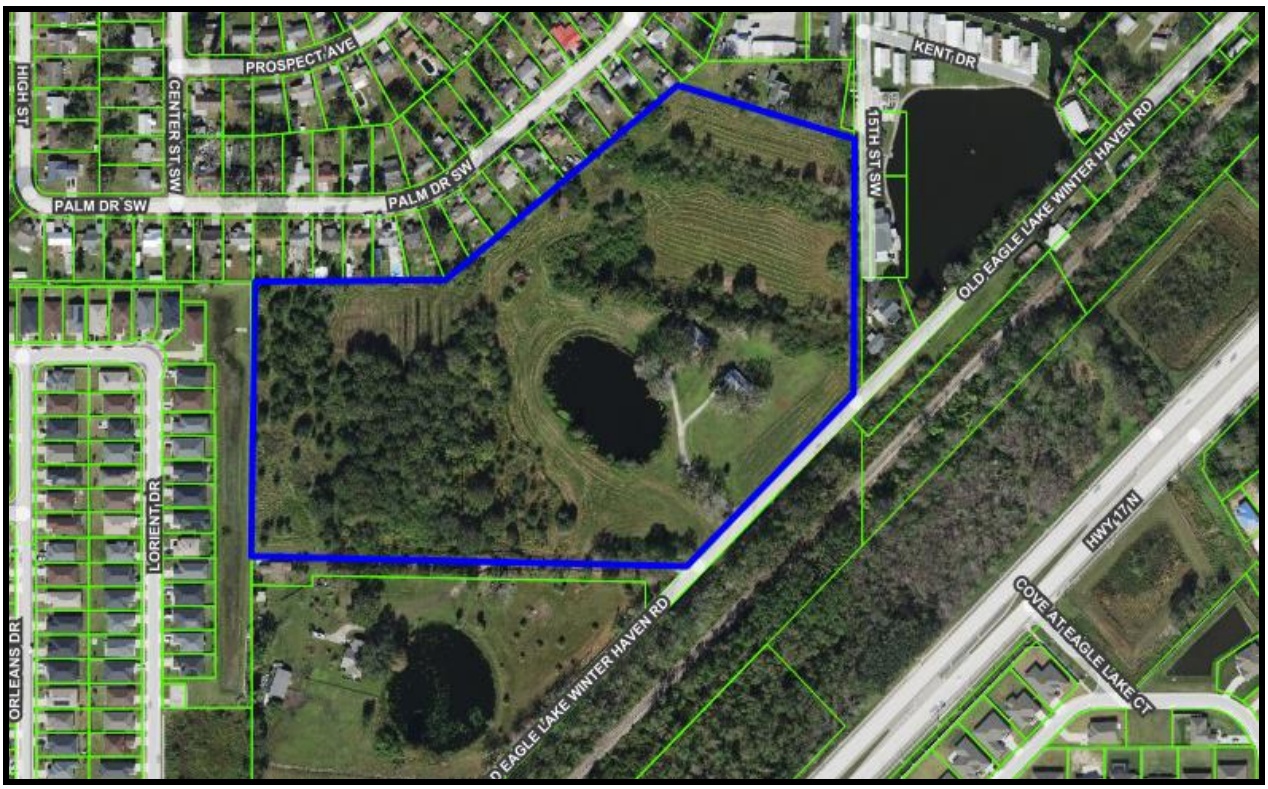
Together with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

To Have and to Hold, the same in fee simple forever.

And the grantor hereby covenants with said grantee that the grantor is lawfully seized of said land in fee simple; that the grantor has good right and lawful authority to sell and convey said land; that the grantor hereby fully warrants the title to said land and will defend the same against the lawful claims of all persons whomsoever; and that said land is free of all encumbrances, except taxes accruing subsequent to **12/31/2021**.

In Witness Whereof, grantor has hereunto set grantor's hand and seal the day and year first above written.

File Number: 2022-12



SALE NUMBER: #3

PROPERTY TYPE: Development Land

LOCATION: This property is located northwest side of Old Eagle Lake Road, on the southwest side of Winter Haven, Florida. The property has a physical address of 3257 Old Eagle Lake Road, Winter Haven, Florida 33880

BRIEF LEGAL: Abridged – a portion of Section 06, Township 29 South, Range 26 East, Polk County, Florida.

PARCEL NUMBERS: 26-29-06-000000-012080, (Polk County)

RECORDING: OR Book 13192, Page 00726 (Polk County)

GRANTOR: Carlton Properties, LLC

GRANTEE: Capital Investments, LLC

LAND SIZE: 21.69 acres per property appraiser

ZONING: R-3 Multi-family low density zoning classification up to 12 units per acre and NSUB (Neighborhood Suburban) future land use Winter Haven.

PROPERTY DESCRIPTION: This property has substantial frontage on two-lane Old Eagle Lake Road. The property contains 21.69-acres, 84% probable uplands and 16% potential jurisdictional wetlands. There is a small pond of about 1.50-acres in the center of this property . The land is relatively flat with little topographic relief at 140-feet above sea level. the northeast toward the southwest. Elevations range from 120 to 130-feet above sea level. The underlying soils are Sparr, Pompano, Smyrna, and Placid. There is public water and sewer services nearby. There are no improvements.

SALES PRICE: $1,650,000

DATE OF SALE: June 29,2024

TERMS: Cash to seller

VERIFICATION: Verified with Realtor Todd Dantzler of SVN / Saunders Ralston Dantzler at 863-287-3586 on September 4, 2024.

CONDITIONS OF SALE: An arms-length transactions indicative of market value.

PRESENT USE: Improved with a house, mobile home, and a couple of outbuildings, none of which offer any contributory value.

HIGHEST AND BEST USE: Multiple Family Residential Development

COMMENTS: This property was contracted by KB Homes, who spent one and one-half years annexing the property into the City of Winter Haven and having the property rezoned for multifamily development. Before closing, KB Homes withdrew from the contract price of $1,500,000 and a bidding war ensued where the final selling price was $1,650,000.

INDEX: $76,072 per gross acre
$84,488 per net acre
$8,824 per unit based upon the average number of 187 units

INSTR # 2024163559
BK 13192 Pgs 0726-0731 PG(s)6
07/16/2024 01:13:14 PM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 52.50
DEED DOC 11,550.00

Prepared by and return to:
Angela J. Stanley, Esq.
Interval Title Services, LLC
604 Courtland Street, Suite 330
Orlando, FL 32804
File No. 23-0727

WARRANTY DEED

THIS INDENTURE made on this 28th day of June, 2024, by **CARLTON PROPERTIES, LLC, a Florida limited liability company,** whose address is 565 North Ridge Avenue, Lake Alfred, Florida 33850, hereinafter called the "grantor", to **RIDGE CAPITAL INVESTMENTS, LLC, a Florida limited liability company,** whose address is 209 Frenchmans Creek Way, Winter Haven, Florida 33884, hereinafter called the "grantee":

(Which terms "Grantor" and "Grantee" shall include singular or plural, limited liability company or individual, and either sex, and shall include heirs, legal representatives, successors and assigns of the same)

Witnesseth, that the grantor, for and in consideration of the sum of Ten Dollars, ($10.00) and other valuable considerations, receipt whereof is hereby acknowledged, hereby grants, bargains, sells, aliens, remises, releases, conveys and confirms unto the grantee, all that certain land situate in **Polk** County, **Florida**, to-wit:

SEE EXHIBIT A
FOR LEGAL DESCRIPTION

Property Address: 3257 Old Eagle Road, Bartow, Florida 33830
Property Tax ID No. 26-29-06-000000-012080

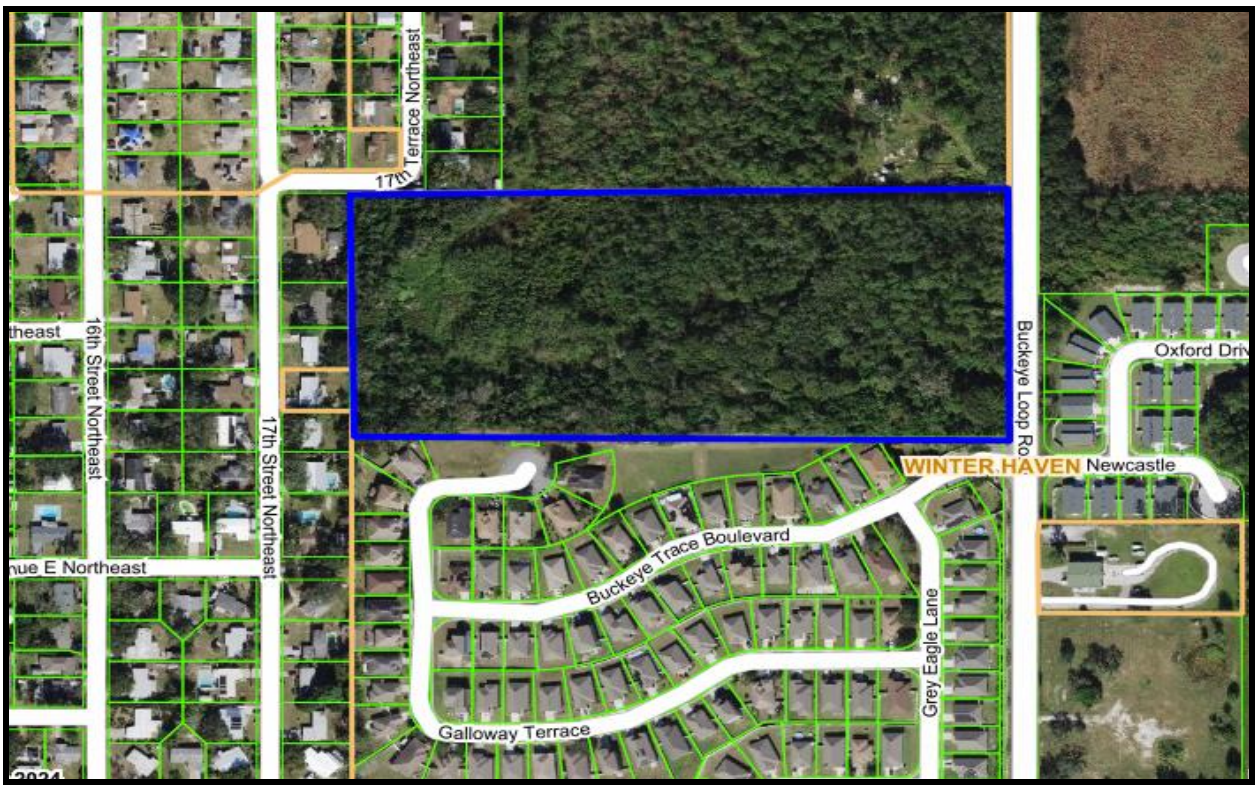
THIS PROPERTY IS NOT HOMESTEAD OF ANY MANAGER OR MEMBER OF GRANTOR OR OF ANY THEIR FAMILY AND/OR DEPENDENTS; NOR IS IT APPURTENANT TO ANY OF HOMESTEAD PROPERTY OF THE SAME.

Subject to all reservations, covenants, conditions, restrictions, limitations, easements, and agreements of record and to all applicable zoning ordinances and/or restrictions and prohibitions imposed by governmental authorities, if any, including, but not limited, to the items set forth in **Exhibit B** hereto, and to taxes for the year 2024 and thereafter.

Together with all the tenements, hereditaments and appurtenances thereto belonging or in any way appertaining.

To Have and to Hold, the same in fee simple forever.

And the grantor hereby covenants with said grantee that the grantor is lawfully seized of said land in fee simple; that the grantor has good right and lawful authority to sell and convey said land; that the grantor hereby fully warrants the title to said land and will defend the same against



SALE NUMBER: #4

PROPERTY TYPE: Development Land

LOCATION: This property is located on the west side of Buckeye Loop Road, north of Dundee Road and south of Buckeye Road Northeast in Winter Haven, Florida.

BRIEF LEGAL: Abridged – a portion of Section 22, Township 28 South, Range 26 East, Polk County, Florida.

PARCEL NUMBERS: 26-28-22-000000-022010 (Polk County)

RECORDING: OR Book 12606, Page 00505 (Polk County)

GRANTOR: Central Asset Management Corporation

GRANTEE: Bradco, Inc. & Rober W. Bradshaw Trustee

LAND SIZE: 16.13 acres per property appraiser

ZONING: R-3 Multi-family low density zoning classification up to 12 units per acre and Conservation for about 8.77-acres of muck soil wetlands. NSUB (Neighborhood Suburban) and CON (Conservation) future land use Winter Haven.

PROPERTY DESCRIPTION: This property has frontage on two-lane Buckeye Loop Road. The property contains 16.13-acres, 46% probable uplands and 54% potential jurisdictional wetlands. The land is relatively flat with little topographic relief at 135-feet above sea level. the northeast toward the southwest. The underlying soils are Adamsville sand, Samsula muck, and Hontoon muck. There is public water and sewer services nearby. There are no improvements.

SALES PRICE: $425,000

DATE OF SALE: February 24, 2023

TERMS: Cash to seller

VERIFICATION: Verified with Realtor David Hitchcock of SVN / Saunders Ralston Dantzler at 863-557-0082 on September 4, 2024.

CONDITIONS OF SALE: An arms-length transactions indicative of market value.

PRESENT USE: Vacant undeveloped land.

HIGHEST AND BEST USE: Multiple Family Residential Development

COMMENTS: This property was listed for $799,0000 for 147-days. Due diligence showed a large percentage of muck soil wetlands, some areas in difficult locations to plan around. The price was re-negotiated several times to adjust for the large number of jurisdictional wetlands.

INDEX: $26,348 per gross acre
$57,423 per net acre
$7,083 per unit based upon the average number of 60 units

INSTR # 2023053051
BK 12606 Pgs 0505-0508 PG(s)4
03/07/2023 11:27:30 AM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 35.50
DEED DOC 2,975.00

THIS INSTRUMENT PREPARED BY AND SHOULD BE RETURNED TO:
Michael G. Candiotti, Esq.
GREENSPOON MARDER, LLP
201 E. Pine Street, Suite 500
Orlando, FL 32801

Parcel ID #: 26-28-22-000000-022010

SPECIAL WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS that as of this 24th day of February 2023 that **CENTRAL ASSET MANAGEMENT CORPORATION, a Georgia corporation (formerly known as BRADCO, INC., a Georgia corporation) & ROBERT W. BRADSHAW AS TRUSTEE OF SHARE A Q-TIP TRUST**, whose mailing address is 2900 Peachtree Road. N.W., Suite 201 Atlanta, GA 30305 (together, the "**Grantor**"), for and in consideration of the sum of Ten and 00/100 Dollars ($10.00) and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, has GRANTED, BARGAINED, SOLD and CONVEYED, and by these presents does GRANT, BARGAIN, SELL and CONVEY unto **BUCKEYE PARTNERS, LLC** a Florida limited liability company, whose mailing address is 711 N. Orlando Ave., Suite 302, Orlando, Florida 32751 (the "**Grantee**"), that certain real property lying and being situate in **Polk County, Florida**, being more particularly described in **EXHIBIT "A"** attached hereto and made a part hereof by this reference.

TOGETHER WITH all improvements, tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining (the "**Property**").

SUBJECT TO real property taxes and other assessments for the year 2023, which are not yet due and payable and all matters set forth on **EXHIBIT "B"** attached hereto without the intent to reimpose the same.

TO HAVE AND TO HOLD the Property unto Grantee, and its successors and assigns, and Grantor does hereby covenant with said Grantee that the Grantor is lawfully seized of the Property in fee simple; that Grantor has good right and lawful authority to sell and convey the Property; Grantor does hereby specially warrant the title to the Property subject to the matters referred to above and will defend the same against the lawful claims of all persons claiming by, through or under the Grantor, but not otherwise.

[SIGNATURE AND NOTARY ON FOLLOWING PAGE]

CORRELATION

For this analysis, four sales were considered with index prices as summarized below:

Price Per Gross Acre:	$26,348 to $102,478 per acre
Price Per Usable Acre:	$57,424 to $146,397 per acre
Price Per Unit:	$7,083 to $11,713 per unit

Of the three indexes, the price per unit has the narrowest spread and typically the way multifamily land is acquired. For these reasons, the analysis will be solely based upon the price per unit index. Because of differences that existed between the sales and the subject, the index price for each sale/listing required some adjusting. The price per unit index ranged from a low of $7,083 to $11,713 per unit with an average unadjusted index price of $9,147 per unit. Appraisers have two methods by which they can adjust sales:

- Quantitative adjustments, adjustments in dollar or percent amounts based upon paired sales or statistical data.
- Qualitative adjustments when there is insufficient data available to use quantitative adjustments.

Due to the absence of a sufficient number of comparable sales to apply quantitative adjustments, qualitative adjustments will be used. Since the value is being determined by the number of units and the densities and zoning are all consistent with each other, consideration of only the date of sale, location, number of units, and utilities need to be given consideration. Below is a discussion of how each sale compared to the subject property.

Sale #1 had an index price of $11,713 per unit. This property is located approximately six miles west of the subject, at the southeast corner of the Polk Parkway and Old Dixie Highway in Auburndale. This sale is similar to the subject in all respect, except for:

- Date of Sale – this sale occurred approximately seventeen months ago, and demand for multifamily land remained strong up until recently necessitating a slight upward adjustment.

- Location – this sale was located at the intersection of Old Dixie Highway and the Polk Parkway, the Polk Parkway linking to I-4 with convenient access to either the large employment centers around Orlando to the east or Tampa to the west. Many new residents in Polk County are commuting to these larger employment centers and commuting times are important. The subject property does not have that benefit, necessitating a significant downward adjustment.

The slight upward adjustment for date of sale was more than offset by the significant downward adjustment. Overall, this sale's index price of $11,713 per unit is felt to be slightly higher than what the subject should anticipate.

Sale #2 had an index price of $8,966 per unit. This property is located approximately fifteen miles west of the subject, on the west side of Providence Road and the south side of West 8th Street in Lakeland. This sale is similar to the subject in every aspect, except for:

- Size - this property had a much lower number of units than the subject property, 87 units versus 230 units, and based upon the economies of scale that suggests small number of units would have a higher index price than a larger number of units necessitating slight downward adjustment.

The only difference required a slight downward adjustment. Overall, this sale's index price of $8,966 per acre is felt to be slightly higher than what the subject should expect.

Sale #3 had an index price of $8,824 per unit. This property is located approximately five miles south of the subject, on the northwest side of Old Eagle Lake Road in Winter Haven. This sale is similar to the subject in all respects. There were no major differences. Overall, this sale's index price of $8,824 per unit was felt to be similar to what the subject should expect.

Sale #4 had an index price of $7,083 per unit. This property is located approximately four miles southeast of the subject, on the west side of Buckeye Loop Road in Winter Haven. This sale is similar to the subject in all factors. There were no major differences. Overall, this sale's index price of

- Date of Sale – this sale occurred approximately nineteen months ago, and demand for multifamily land remained strong up until recently necessitating a slight upward adjustment.

- Size - this property had a much lower number of units than the subject property, 60 units versus 230 units, and based upon the economies of scale that suggests small number of units would have a higher index price than a larger number of units necessitating slight downward adjustment.

The two differences were offsetting. Overall, this sale's index price of $7,083 per unit was felt to be similar to what the subject should expect.

The preceding represents an analysis based upon a narrative type format. On the next page is the same exact analysis, but this time in chart form.

ADJUSTMENT CHART

SALE NUMBER	SALE #1	SALE #2	SALE #3	SALE #4
Price Per Unit	$11,713	$8,966	$8,824	$7,083
Financing	0	0	0	0
Date of Sale	Plus	0	0	Plus
Motivation	0	0	0	0
Location	Minus, Minus	0	0	0
Access	0	0	0	0
Shape	0	0	0	0
Size (units)	0	Minus	0	Minus
Zoning	0	0	0	0
Utilities	0	0	0	0
Overall Rating	Slightly Superior	Slightly Superior	Similar	Similar

Based upon the following, the subject should have an index price:

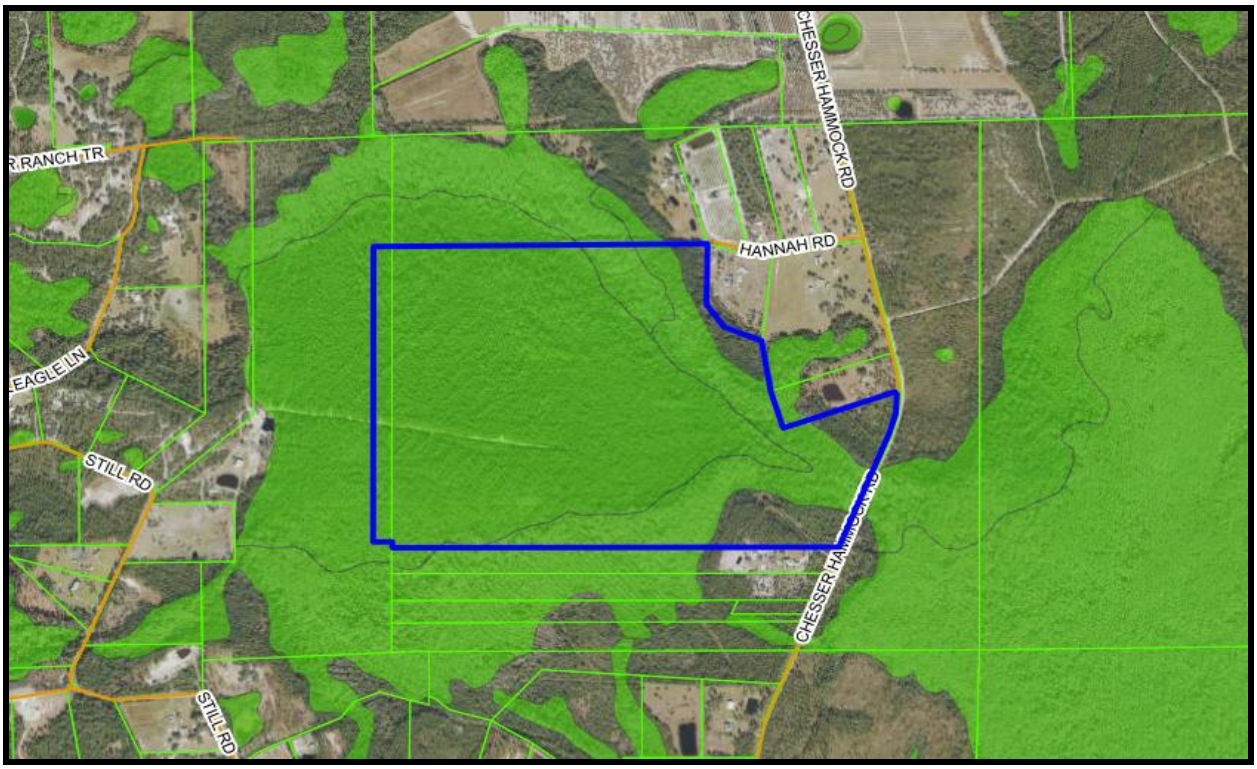
- Slightly lower than Sale #1's index price of $11,713 per unit.
- Slightly lower than Sale #2's index price of $8,966 per unit.
- Similar to Sale #3's index price of $8,824 per unit.
- Similar to Sale #4's index price of $7,083 per unit.

There is consistency in the direction of the adjustments, but some inconsistency in the magnitude of the adjustments. Sale #1 had the superior location and perhaps the downward location adjustment was insufficient. Sale #4 had issues with the location of wetlands interfering with development of the rear upland areas and perhaps an upward adjustment for this issue should have been considered. Decreasing Sale #1's index price lower and increasing Sale #4's index price higher would reduce the spread. The best sale is Sale #3 at $8,824 per acre. Based upon the preceding, an index price of $8,500 per unit is felt to be reasonable. Therefore:

Subject:	230-units	x	$8,500 per unit	=	$1,955,000
Value by the Sales Comparison Approach (Rounded to nearest $5,000)				=	$1,955,000

141.12-acres of Unusable Land: The 141.12-acres represents non-contiguous areas of wetlands and unusable land. Although the wetlands are not formerly listed for sale, Listing agent provided the appraisers with several pages of listing information, i.e. history, prices, etc. And although the 141.12-acres is not formerly listed for sale, the listing agent indicated that his client wanted $5,000 per acre for the 141.12-acres. Urban wetland sales are difficult to locate; however, I recently received several emails from a large appraisal shop in Orlando with forty wetland sales. The ones tabulated below represent the best and most recent sales available.

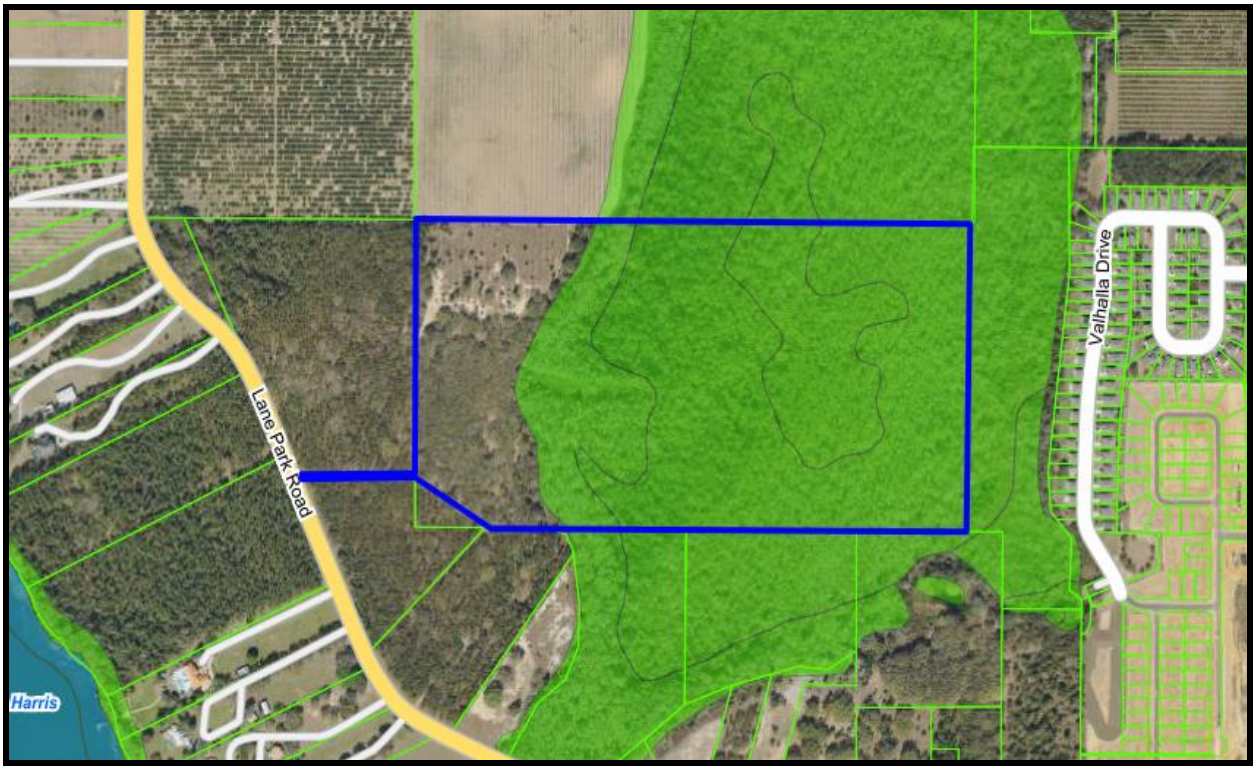
Sale #	Location	County	Book/Page	Sale Date	Sale Price	Acres	Price/Acre
Sale #1	125 Chesser Hammock Road, Pierson	Volusia	8436/2931	07-12-2023	$425,000	237.40	$1,790
Sale #2	Fletcher Camp Road, Haines City	Polk	12970/0560	01-22-2024	$189,200	95.61	$1,979
Sale #3	Lane Park Road, Tavares	Lake	6295/1394	02-29-2024	$185,000	81.05	$2,283
Sale #4	Beauclaire Drive, Tavares	Lake	6327/1386	05-21-2024	$250,000	96.14	$2,600
Average							$2,163



125 CHESSER HAMMOCK, PIERSON



FLETCHER CAMP ROAD, HAINES CITY



LANE PARK ROAD, TAVARES



BEAUCLAIRE DRIVE, TAVARES

CORRELATION

Sale #1: This predominately wetland tract is located on the west side of Chesser Hammock Road, north of State Road 40, east of the small community of Pierson in a rural area of Northwest Volusia County. This 237.40-acre tract sold for $425,000 on July 12, 2023 - $1,790 per acre.

Sale #2: This totally wetland tract is located at the end of Fisher Camp Road (easement) on the shores of Lake Lowery, north of Old Haines City Lake Alfred Road west Haines City in Polk County. This 95.61-acre tract sold for $189,200 on January 22, 2023 - $1,979 per acre.

Sale #3: This predominately wetland tract is located on the east side of Lane Park Road and east of Lake Harris, southwest of Travares in Lake County. This 81.05-acre tract sold for $185,000 on February 29, 2024 - $2,283 per acre.

Sale #4: This totally wetland tract is located on the west side of Beauclaire Drive, north of the Apopka – Beauclaire Canal, south of Tavares and Mount Dora in Lake County. This 96.14-acre tract sold for $250,000 on May 21, 2024 - $2,600 per acre.

The sales ranged from a low of $1,790 per acre to a high of $2,600 per acre with an average unadjusted price of $2,163 per acre. The two best sales are Sale #2 at $1,979 per acre and Sale #4 at $2,600 per acre because they both were total wetlands, the average of which is $2,289 per acre. Based upon this, an index price of $2,300 per acre is reasonable. Therefore:

Wetlands and Unusable Land	
141.12-acres x $2,300 per acre	= $324,576
Less 10% Selling Costs	= $ 32,548
Estimated Contributory Value	= $292,028
Rounded to nearest $5,000	= $290,000

Note: any potential purchaser of the 162.03-acre subject property would most likely be interested only in the 20.91-acres of developable multifamily land and spin off the 141.12-acres of wetlands and unusable land. Selling the 141.12-acres would entail a deduction for a sales commission, title insurance, and closing costs estimated at 10%.

FINAL RECONCILATION

Two values were provided, the second value less the expected cost to sell it off to another buyer, thus addressing any issues involving the sum or the parts.

Value of the 20.91-acres of Multifamily Land	- $1,955,000
Net Value of the 141.21-acres of Wetlands/Unusable Land	- $ 290,000
Market Value of the 162.03-acres	- $2,245,000

Note: Interest so far has solely been for the 20.91-acres of the multifamily land. Any potential buyer of the entire 162.03-acre ownership would sell off the 141.21-acres of wetlands and unusable land. Thus, the $32,576 market value has been discounted to a net value of $290,000, which excludes the anticipated cost to sell off the 141.21-acres.

In my opinion, the current market value of the subject property in "fee simple interest" subject to those exceptions identified in American Government Services Corporation "Property Information Report" AGSC File No.: 33165-R as of August 9, 2024 was:

TWO MILLION TWO HUNDRED FORTY-FIVE THOUSAND DOLLARS ($2,245,000)

The appraiser-client relationship is with Polk County Parks & Natural Resources Division. This confidential report is prepared for the sole use and benefit of the client and Polk County, a political subdivision of the State of Florida. This report is provided for informational purposes only to third parties authorized to receive it. The appraiser assumes no responsibility if the report is used in any manner, other than as described.

Extraordinary Assumptions: C-4 zoning does not allow multifamily development; however, according to Winter Haven Senior Planner Heather Reuter, CPM, the C-4 zoning could be down zoned to C-3, which does allow multifamily development. Townhomes are acceptable but only if they are not individually platted. For appraisal purposes, I am assuming that a zoning from C-4 to C-3 is a reasonable assumption based upon the planner's comment. The use of this Extraordinary Assumption might have affected the assignment results.

PART FIVE- ADDENDA

Scott C. Lowery, CPM
Polk County BOCC
515 E. Boulevard St.
Bartow, FL 33830
863-534-2580 (Office)
Email: ScottLowery@polk-county.net

August 16, 2024

AGSC File No.: 33165-R
Project: Astute Property – EL-102-23

PROPERTY INFORMATION REPORT

Pursuant to your request, we have made a search of the Official Records of Polk County, Florida, through August 9, 2024 at 8:00 a.m., for Polk County BOCC, pertaining to that real property which is more particularly described as follows:

See Exhibit "A", attached.

1. Owner(s) of record: Astute Financial Corporation, an Ontario corporation

By: Trustee's Deed
From: Midlantic National Bank and Trust Company/Florida, successor to Florida Coast Midlantic Trust Company, N.A., as Trustee
To: Astute Financial Corporation, an Ontario corporation, and Bladenboro Corp., N. V., a Netherlands Antilles corporation
Dated: December 31, 1992 Filed and Recorded: July 26, 1994
In Official Records: Book: 3418 Page: 1526
Note: Corrective Deed recorded in Official Records Book 3444, Page 216.
(contains additional property)

By: Warranty Deed
From: Bladenboro Corp., N.V., a Netherlands Antilles corporation To: Astute Financial Corporation, an Ontario corporation
Dated: December 21, 1994 Filed and Recorded: January 11, 1995
In Official Records: Book: 3483 Page: 1629
(contains additional property)

2. **Based on a Thirty-Year ownership search and a Twenty-Year judgment search of the public records, we have found the above-described property to be subject to the following liens, encumbrances, and other matters of public record:**

Easement from Midlantic National Bank and Trust Co./Florida, as Successor Trustee, to the City of Winter Haven, a Florida municipal corporation, dated April 18, 1986 and recorded July 14, 1986 in Official Records Book 2438, Page 1465.

3. **Reservations as may have been issued by the Trustees of the Internal Improvement Trust Fund:**

Reservation of right of ingress and egress for the purpose of maintaining, repairing, and/or enlarging any and all canals, sluiceways, dikes and other works in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

Reservation of easement for road right-of-way in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

Reservation of oil, gas and mineral rights in favor of the State of Florida as set forth in that certain deed dated May 23, 1925 and recorded July 19, 1925 in Deed Book 283, Page 51.

4. **Taxes:**

Tax Parcel ID Number: 262805-000000-024010
Taxes for 2023 are paid in the amount of $456.59
Current assessment: $24,378.00
Homestead exemption: No
Delinquent Taxes: None

Tax Parcel ID Number: 262805-000000-042010
Taxes for 2023 are paid in the amount of $14.76
Current assessment: $799.00
Homestead exemption: No
Delinquent Taxes: None

Tax Parcel ID Number: 262808-000000-013030
Taxes for 2023 are paid in the amount of $566.25
Current assessment: $30,630.00
Homestead exemption: No
Delinquent Taxes: None

Tax Parcel ID Number: 262808-000000-032050
Taxes for 2023 are paid in the amount of $32.06
Current assessment: $1,735.00
Homestead exemption: No
Delinquent Taxes: None

Name and Mailing Address as listed on Tax Roll:
Astute Financial Corporation
3 Strathearn Rd
Toronto ON M6C 1R2
Canada

Certification:

AS TO THE ORIGINAL SEARCH REPORT:

The undersigned hereby certifies that the foregoing PROPERTY INFORMATION REPORT reflects a comprehensive search of the Public Records of Polk County, Florida, showing the apparent ownership of the lands described above, together with outstanding encumbrances affecting the lands.

American Government Services Corporation assumes no responsibility for any defects or omissions in or from the instruments appearing in the chain of title to the property described herein, which defects or omissions would render such instruments void.

This report is not title insurance. Pursuant to s. 627.7843, Florida Statutes, the maximum liability of the issuer of this property information report for errors or missions in this property information report is limited to the amount paid for this property information report and is further limited to the person(s) expressly identified by name in the property information report as the recipients(s) of the property information report.

COUNTERSIGNED: _____

AMERICAN GOVERNMENT SERVICES CORPORATION
3812 W. LINEBAUGH AVENUE
TAMPA, FL 33618
813-933-3322

AGSC File No.: 33165-R

Exhibit "A"

The South ½ of the Southwest ¼ Less right-of-way for State Road 600; All that part of the South ½ of U.S. Government Lot 3 which lies West of the right-of-way for State Road 555, all lying in Section 5, Township 28 South, Range 26 East, Polk County, Florida.

AND

All that part of U. S. Government Lot 2 and U. S. Government Lot 3 lying West of State Road 555 and lying North of Brigham Road (formerly known as Elfenbein Road), lying in Section 8, Township 28 South, Range 26 East, Polk County, Florida.

LESS and EXCEPT the following:

Commence at the Northwest corner of the South one-half of U.S. Government Lot 3 in Section 8, Township 28 South, Range 26 East, Polk County, Florida, run thence South along the West boundary of said Lot 3, 128.70 feet, thence East, 124.74 feet, thence South 09°57'00" West, 25.45 feet to a point on the Southerly right-of way of Brigham Road, thence North 88°06'21" East along said right-of-way, 529.35 feet, to the P.C. of a curve concave to the Southwest having a radius of 255.00 feet, thence continue along said right-of-way and said curve through a central angle of 43°31'39", an arc distance of 193.72 feet, a chord distance of 189.10 feet, a chord bearing of South 69°07'49" East to the P.T. of said curve, thence continue along said right-of-way, South 47°22'00" East, 561.68 feet, thence continue along said right-of way, South 89°34'00" East, 756.44 feet to its intersection with the Westerly right-of-way of U.S. 17, thence North 00°45'46" East, along said right-of-way, 50.00 feet to a point on the Northerly right-of-way of Brigham Road and the Point of Beginning. Run thence North 00°45'46" East, along the Westerly right-of-way of U.S. 17, 425.00 feet, thence North 89°34'00" West, parallel with Brigham Road leaving said right-of-way, 950.00 feet, thence South 00°45'46" West parallel with the Westerly right-of-way of U.S. 17, 233.25 feet to a point on the Northeasterly right-of-way of Brigham Road, thence South 47°22'00" East along said right-of way, 285.46 feet, thence continue along said right-of-way, South 89°34'00" East, 737.43 feet to the Point of Beginning.

WETLAND DEEDS

7/21/2023 1:09:51 PM Instrument #2023149868 #1 Book:8436 Page:2931
Doc Stamps $2,975.00 Transfer Amt $425,000.00

Prepared by and return to:
Jennifer Newsome Bradley
Westside Settlement Associates, LLC
339 West New York Avenue, DeLand, FL 32720
(386) 734-4341
File No WEST23-177

Parcel Identification No 590300000011

[Space Above This Line For Recording Data]

WARRANTY DEED

(STATUTORY FORM – SECTION 689.02, F.S.)

This indenture made the 30th day of July, 2023 between **A Shrugged Investment Corp Inc., a Florida Corporation**, whose post office address is **1241 Produce Alley, DeLand, FL 32724**, of the County of Volusia, State of Florida, Grantor, to **Tony Depta, a married man**, whose post office address is **655 Dylan Trail, Ormond Beach, FL 32174**, of the County of Volusia, State of Florida, Grantee:

Witnesseth, that said Grantor, for and in consideration of the sum of TEN DOLLARS (U.S.$10.00) and other good and valuable considerations to said Grantor in hand paid by said Grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said Grantee, and Grantee's heirs and assigns forever, the following described land, situate, lying and being in Volusia, Florida, to-wit:

A parcel of land situated and being a part of Sections 2 and 3, Township 15 South, Range 29 East, Volusia County, Florida, being further described as follows:

Commencing at the Southwest corner of Section 33, Township 14 South, Range 29 East, Volusia County, Florida, as a POINT OF BEGINNING; thence South 89°59'56" East, a distance of 1645.34 feet; thence South 89°50'46" East, a distance of 4242.01 feet to the centerline of Truck Trail No. 11 (aka Chessar Hammock Road), an existing dirt road; thence along the centerline of said Truck Trail No. 11, the following courses and distances; South 12°39'03" East a distance of 2628.88 feet; thence South 06°41'41" West a distance of 449.99 feet; thence South 24°13'41" West a distance of 2452.97 feet; thence leaving said centerline of Truck Trail No. 11, North 89°52'35" West a distance of 3818.64 feet; thence continue North 89°52'35" West a distance of 1642.00 feet; thence North 00°38'40" East a distance of 5248.88 feet to the POINT OF BEGINNING.

LESS AND EXCEPT the lands described in the following Volusia County Public Records: Official Records Book 5487, Page 3720; Official Records Book 5577, Page 3423; Official Records Book 5290, Page 4155; Official Records Book 5672, Page 836; Official Records Book 5672, Page 876; Official Records Book 4438, Page 198; Official Records Book 4513, Page 4765; Official Records Book 4869, Page 3642; Official Records Book 4681, Page 2384; Official Records Book 4390, Page 405; Official Records Book 4555, Page 2305; Official Records Book 4436, Page 1353; Official Records Book 6840, Page 146; Official Records Book 6944, Page 4775 and Official Records Book 8197, Page 1663.

Together with the following non-exclusive ensement situated in Sections 2 and 11, Township 15 South, Range 29 East, Volusia County, Florida:

A 60 foot easement for the purposes of ingress/egress, drainage and public utilities lying 30 feet on either side of a centerline along the following described courses:

Beginning at the intersection of the North right of way of State Road 40 and the centerline of an existing road known as Chessar Hammock Road; thence North 11°33'29" East along the centerline of Chessar Hammock Road, a distance of 4,152.96 feet; thence North 24°13'41" West, a distance of 3,212.40 feet; thence North 06°41'41" West, a distance of 449.99 feet; thence North 12°39'30" West, a distance of 1,451.45 feet to the Point of Intersection of an existing dirt road known as Hannah Road; thence departing said Chessar Hammock Road and following the centerline of said Hannah Road, South 82°01'13" West, a distance of 1,005.60 feet; thence North 71°57'13" West, a distance of 449.90 feet to a Point of Terminus of this easement; said point also being the center point of a cul-de-sac having a radius of 60.00 feet.

Grantor warrants that at the time of this conveyance, the subject property is not the Grantor's homestead within the meaning set forth in the constitution of the State of Florida, nor is it contiguous to or a part of a homestead property.

Together with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

Subject to taxes for 2023 and subsequent years, not yet due and payable; covenants, restrictions, easements, reservations and limitations of record, if any.

INSTR # 2024008235
BK 12970 Pgs 0560-0562 PG(s)3
01/11/2024 09:22:25 AM
STACY M. BUTTERFIELD,
CLERK OF COURT POLK COUNTY
RECORDING FEES 27.00
DEED DOC 1,324.40

Prepared by and return to:
Mark Mangen
Attorney at Law
STRAUGHN & TURNER, P.A.
255 Magnolia Ave SW
Winter Haven, FL 33880-2902
863-293-1184
File Number: **17881-0001**
Will Call No.:

Parcel Identification No. **262723-000000-021010**

[Space Above This Line For Recording Data]

Warranty Deed

(STATUTORY FORM - SECTION 689.02, F.S.)

This Indenture made this **4th** day of **January**, **2024** between **EKK Venture I, LLC, a Florida limited liability company** whose post office address is **346 E. Central Avenue, Winter Haven, FL 33880** of the County of **Polk**, State of **Florida**, grantor*, and **HBX, Inc., a Florida corporation** whose post office address is **P.O. Box 6052, Lakeland, FL 33807** of the County of **Polk**, State of **Florida**, grantee*,

Witnesseth that said grantor, for and in consideration of the sum of TEN AND NO/100 DOLLARS ($10.00) and other good and valuable considerations to said grantor in hand paid by said grantee, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said grantee, and grantee's heirs and assigns forever, the following described land, situate, lying and being in **Polk County**, **Florida**, to-wit:

See Exhibit "A" attached hereto and made a part hereof as if fully set forth herein.

and said grantor does hereby fully warrant the title to said land, and will defend the same against lawful claims of all persons whomsoever.

* "Grantor" and "Grantee" are used for singular or plural, as context requires.

In Witness Whereof, grantor has hereunto set grantor's hand and seal the day and year first above written.

DoubleTime®

INSTRUMENT#: 2024026440 OR BK 6295 PG 1394 PAGES: 2 3/7/2024 7:53:50 AM
GARY J. COONEY, CLERK OF THE CIRCUIT COURT & COMPTROLLER, LAKE COUNTY, FLORIDA
REC FEES: $18.50 DEED DOC:$1295.00

return to:
Jennifer Larsen, an employee of
Brokers Title of Leesburg, LLC
9800 U.S. Hwy 441, Suite 106,
Leesburg, FL 34788
Prepared incidental to the issuance of
a policy for title insurance
File No.: 24-143

Parcel Identification No.: 01-20-25-0002-000-01400, 01-20-25-0001-000-00100

Consideration: 185,000.00

[Space Above This Line For Recording Data]

WARRANTY DEED

(STATUTORY FORM – SECTION 689.02, F.S.)

This indenture made the **1st day of March, 2024** between **Davida C. Dyke a/k/a Davida C. Morris, a single woman**, whose post office address is **134 Holmes Drive, Fairborn, OH 45324**, hereinafter called the Grantor, to **Michelle Parrish and Shannon Parrish, wife and husband**, whose post office address is 11816 Woodlea Road, Tavares, FL 32778, hereinafter called the Grantees:

Witnesseth, that said Grantor, for and in consideration of the sum of TEN DOLLARS (U.S.$10.00) and other good and valuable considerations to said Grantor in hand paid by said Grantees, the receipt whereof is hereby acknowledged, has granted, bargained, and sold to the said Grantees, and Grantees' heirs and assigns forever, the following described land, situate, lying and being in Lake, Florida, to-wit:

Parcel 1:

That part of Government Lot 4, Section 1, Township 20 South, Range 25 East, Lake County, Florida, described as follows:

Commencing at the Southeast corner of said Government Lot 4 (Southwest corner of Government Lot 3) run North 00°03'07" East along the East line of said Government Lot 4 a distance of 213.95 feet to the Point of Beginning; from said Point of Beginning continue North 00°03'07" East, 14.00 feet; thence South 89°58'13" West, 566.50 feet to a point on the center of Lane Park Road as shown on the plat of Lake Harris Highlands as recorded in Plat Book 29, Page 2, Public Records of Lake County, Florida; thence South 24°03'07" East, 15.33 feet; thence North 89°58'18" East, 560.24 feet to the Point of Beginning. Less the right-of-way of Lane Park Road.

Parcel 2:

South half (S 1/2) of Government Lots Two (2) and Three (3) of Section 1, Township 20 South, Range 25 East, Lake County, Florida.

Less and Except that portion conveyed by Warranty Deed recorded September 6, 1990 in Official Records Book 1074, Page 1451, Public Records of Lake County, Florida.

Said property did not constitute the Grantor(s) homestead, nor was it adjacent to or contiguous with their homestead, the homestead of the spouse of the Grantor(s) nor any member of the household of the Grantor(s) reside thereon, as defined by Article X, Section 4 of the Florida Constitution or laws.

Together with all the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining.

INSTRUMENT#: 2024052418 OR BK 6327 PG 1386 PAGES: 6 5/3/2024 2:23:41 PM
GARY J. COONEY, CLERK OF THE CIRCUIT COURT & COMPTROLLER, LAKE COUNTY, FLORIDA
REC FEES: $52.50 DEED DOC:$1750.00

This Instrument Prepared By
and Should be Returned To:
Donald J. Curotto, Esquire
SHUTTS & BOWEN LLP
300 South Orange Avenue, Suite 1600
Orlando, Florida 32801

Parcel Identification Nos.
0220260004-000-02000 and 1120260001-000-00700

GENERAL WARRANTY DEED

THIS GENERAL WARRANTY DEED is made effective as of the 1st day of May, 2024, by and between **KELLY A. CHAMBERS,** whose address is 314 E Geneva Street, Ocoee, Orange County, Florida 34761; **KERRY L. HERZIG,** whose address is 8367 S 2960 W, West Jordan, UT 84088; **ROBERT M. WALLICK**, whose address is 308 E Geneva Street, Ocoee, Orange County, Florida 34761; and **ROBERT K. WALLICK**, whose address is 1257 Climbing Rose Drive, Orlando, Orange County, Florida 32818 (hereinafter referred to as "**Grantor**"), and **BEAUCLAIRE VENTURES, LLC,** a Florida limited liability company, whose address is 2405 W. Princeton Street, Unit 2, Orlando, Florida 32804 (hereinafter referred to as "**Grantee**").

(Whenever used herein, the terms "Grantor" and "Grantee" shall be deemed to include the parties to this General Warranty Deed and the heirs, personal representatives and assigns of individuals, and the successors and assigns of corporations, limited liability companies or partnerships. The singular shall be deemed to include the plural, and vice versa, where the context so permits.)

W I T N E S S E T H:

WITNESSETH that the Grantor, for and in consideration of the sum of Ten and No/100 Dollars ($10.00) and other good and valuable consideration, receipt of which is hereby acknowledged, hereby grants, bargains, sells, aliens, remises, releases, conveys and confirms, and by these presents does grant, bargain, sell, convey and confirm, unto Grantee, all that certain land situate in Lake County, Florida, more particularly described in **Exhibit "A"** attached hereto (the "**Property**").

TOGETHER with all the tenements, hereditaments and appurtenances with every privilege, right, title, interest and estate, reversion, remainder and easement hereto belonging or in anywise appertaining, and together with all improvements located thereon or therein.

TO HAVE AND TO HOLD the Property, and all the estate, right, title, interest, and equity whatsoever of Grantor either in law or in equity or both, to the proper use, benefit, and behalf of Grantee and Grantee's successors and assigns in fee simple forever.

AND Grantor hereby covenants with said Grantee that Grantor is lawfully seized of the Property in fee simple; that Grantor has good right and lawful authority to sell and convey the Property; that Grantor does hereby fully warrant the title to the Property and will defend the same against the lawful claims of all persons whomsoever; and that the Property is free of all

0XHIBIT F - BUREAU OF APPRAISAL - APPRAISAL CHECKLIST

INSTRUCTIONS: THIS CHECKLIST IS TO BE USED BY APPRAISERS WHEN PREPARING APPRAISAL REPORTS FOR STATE LAND. ALL ITEMS ON THIS CHECKLIST MUST BE MARKED.

ITEMS THAT ARE MARKED "NO" MUST BE NARRATIVELY ADDRESSED WITHIN THE BODY OF THE COMPLETED APPRAISAL REPORT.

THE CHECKLIST IS TO BE INSERTED IN THE ADDENDA OF THE APPRAISAL REPORT.

BUREAU OF APPRAISAL - APPRAISAL CHECKLIST
PART ONE

GENERAL — VACANT LAND

		Yes	Page No.	No	N/A
1	Is a completed "Executive Summary" included for each parcel and/or final opinion of value?	☒	10	☐	☐
2	Does the appraisal follow the recommended general format for narrative appraisal reports (this format should be used by the fee appraiser as a general guide)?	☒		☐	☐

PREMISES OF THE APPRAISAL

3	Is there a description of the extent of the process (scope) of collecting, confirming and reporting data?	☒	15	☐	☐
4	Is the Bureau of Appraisal's definition of market value, or other defined value, used?	☒	17	☐	☐
5	Is the intended use (function) and user of the appraisal identified?	☒	16	☐	☐
6	Are the property interests (rights) appraised identified? (e.g. fee simple, leased fee, easement, fee simple subject to)	☒	17	☐	☐
7	Does the appraisal state any Extraordinary Assumptions and Hypothetical Conditions?	☒	6	☐	☐
8	Does the appraisal report consider whether a fractional interest, physical segment or partial holding contributes pro rata to the value of the whole?	☒	49	☐	☐
9	Are the effective date of value and the date of the appraisal report stated?	☒	18	☐	☐

PRESENTATION OF DATA

10	Is a legal description of the property appraised included in the report?	☒	20	☐	☐
11	Is a five-year subject sales history included?	☒	44	☐	☐
12	Does the appraiser explain why the previous sale of the subject, if within five years, was not used in the valuation?	☐		☐	☒

		Yes	Page No.	No	N/A
13	Is any current agreement of sale, option or listing of the property under appraisal analyzed?	☒	44	☐	☐
14	Was a neighborhood analysis provided including a discussion of market trends, either positive or negative, which affects the subject property?	☒	21 & 23	☐	☐
15	Is a land use analysis provided which discusses existing land use and zoning designations, impending use restrictions or proposed concurrency or land use planning restrictions?	☒	42	☐	☐
16	Does the appraisal report provide the current assessed value of the subject property?	☒	43	☐	☐
DESCRIPTION OF SUBJECT					
17	Are photographs and an aerial included?	☒	24 thru 29	☒	☐
18	Does the appraisal report describe the size, shape and other physical characteristics of the site/land?	☒	40	☐	☐
19	Does the appraisal report describe access to the property?	☒	40	☐	☐
20	If the access is poor, inadequate or substandard, does the appraisal address its affect, with supporting market evidence, on value?	☐		☐	☒
21	Does the appraisal describe the topography of the property?	☒	41	☐	☐
22	Does the appraisal report describe the location of the property?	☒	40	☐	☐
23	Does the appraisal report describe the property's road frontage?	☒	40	☐	☐
24	Does the appraisal report describe the property's water frontage?	☐		☐	☒
25	Does the appraisal report describe utilities available and their proximity to the property?	☒	43	☐	☐
26	Does the appraisal report describe nuisances and hazards, if any, affecting the value of the property?	☒	45	☐	☐

		Yes	Page No.	No	N/A
27	Does the appraisal report describe any existing and/or potential environmental hazards affecting the value of the property?	☒	62	☐	☐
28	Is the tax assessment included?	☒	45	☐	☐
29	Does the appraisal report describe the drainage and the existence of flood plain conditions affecting the value of the property?	☒	41 & 42	☐	☐
30	Does the appraisal report discuss any easements, encroachments and rights-of-way affecting the value of the property and the affect on value?	☒	11,17,44,45	☐	☐
31	Does the appraisal report discuss the affect on the value of the property as a result of outstanding oil, gas and mineral interests?	☒	11,19,44	☐	☐

ANALYSIS OF DATA AND CONCLUSIONS

Highest and Best Use

		Yes	Page No.	No	N/A
32	Is the highest and best use of the property "as vacant" and "as improved," if applicable, analyzed?	☒	47	☐	☐
33	Is the highest and best use based on an "economic use" of the property?	☒	47	☐	☐

Land Valuation

34	Is a minimum of 3 sales included and analyzed?	☒	50	☐	☐
35	Are photographs and an aerial of the sales included?	☐	50	☐	☐
36	Did the appraiser include a sale and listing location map that also shows the subject?	☒	51	☐	☐
37	Is the unit of comparison appropriate for the subject's market?	☒		☐	☐
38	Are the comparable sales similar to the subject in highest and best use?	☒		☐	☐
39	If the comparable sales are not similar in highest and best use, is an adequate discussion included as to why the sales are used?	☐		☐	☒
40	Are the comparable sales adjusted for cash equivalency or otherwise clearly explained?	☒		☐	☐
41	If you included comparable sales to governmental units and/or non-profit groups, were they analyzed separately with appropriate comments explaining differences, if any, compared to private transactions?	☐		☐	☒
42	If the appraisal report includes extraordinary assumptions and hypothetical conditions are their impacts on value adequately supported and reported in the reconciliation and final value estimate?	☒	6	☐	☐
43	If you provide a discounted cash flow model in valuing the subject property, did you also provide a sales comparison, or other, approach to arrive at the present value of the subject property?	☐		☐	☒

		Yes	Page No.	No	N/A
44	Are demolition costs, if any, appropriately considered for the comparable sales and the subject property?	☐		☐	☒

IF THE SUBJECT DOES NOT INCLUDE VALUATION OF IMPROVEMENTS,

PROCEED TO PART THREE – NUMBER 78

BUREAU OF APPRAISAL - APPRAISAL CHECKLIST
PART TWO

GENERAL - IMPROVED PROPERTIES

Cost Approach

		Yes	Page No.	No	N/A
45	Are there photographs of each major improvement?	☐		☐	☐
46	Is a sketch of the building or a copy of the building plans included?	☐		☐	☐
47	Does the appraisal report identify and describe any potential environmental hazards (e.g., asbestos)?	☐		☐	☐
48	Is the source of the reproduction or replacement cost new of the improvements identified and explained?	☐		☐	☐
49	Was entrepreneurial profit, whether included or excluded, identified and supported?	☐		☐	☐
50	Is curable physical deterioration (deferred maintenance) considered?	☐		☐	☐
51	Is incurable physical deterioration considered?	☐		☐	☐
52	Is functional obsolescence considered?	☐		☐	☐
53	Is external obsolescence considered?	☐		☐	☐
54	Is the contributory value of the site improvements supported?	☐		☐	☐

Income Approach

55	Are the comparable rentals adequately documented and considered?	☐		☐	☐
56	Is a general comparable rental location map also showing the location of the subject property included?	☐		☐	☐
57	Are adjustments to the comparable rentals supported?	☐		☐	☐
		Yes	**Page No.**	**No**	**N/A**

58	Is a current rent roll and recent income history for the property provided in the report or lack thereof explained?	☐		☐	☐
59	Were all existing leases considered?	☐		☐	☐
60	Does the report indicate whether the contract rental income is at or near market rental rates?	☐		☐	☐
61	Is the estimate of vacancy and collection loss adequately supported?	☐		☐	☐
62	Is a recent expense history for the subject property provided in the report?	☐		☐	☐
63	Are the projected expenses explained and supported?	☐		☐	☐
64	Are differences between the projected expenses and the property's historical expense trend supported and described?	☐		☐	☐
65	Is each component of the selected capitalization method and technique supported by appropriate market data?	☐		☐	☐
66	Are deductions for rent loss, leasing commissions, tenant improvements, deferred maintenance, etc., accounted for in the discounted cash flow analysis?	☐		☐	☐
67	Is the discount rate supported by appropriate market data?	☐		☐	☐
68	Is the terminal capitalization rate supported considering the future risk and increased age of the improvements?	☐		☐	☐
69	Are reasonable sales costs deducted from the estimated reversion to arrive at the net property reversion?	☐		☐	☐

Sales Comparison Approach

70	Is the unit of comparison appropriate for the subject's market?	☐		☐	☐
71	Are the sales adequately documented and presented?	☐		☐	☐
		Yes	**Page No.**	**No**	**N/A**

72	Are photographs and an aerial of the sales included?	☐	☐	☐
73	Does the report include a sales and listing location map showing the subject property?	☐	☐	☐
74	Are the comparable sales similar to the subject in highest and best use?	☐	☐	☐
75	If the comparable sales are not similar in highest and best use, is a discussion included as to why the sales are used?	☐	☐	☐
76	Are the comparable sales adjusted for cash equivalency or otherwise clearly explained?	☐	☐	☐
77	Are the adjustments that were applied to the sales adequately supported?	☐	☐	☐

BUREAU OF APPRAISAL - APPRAISAL CHECKLIST
PART THREE

Reconciliation

		Yes	Page No.	No	N/A
78	Is the quality and quantity of data considered and reconciled and the applicability or suitability of the approaches considered and reconciled?	☒	74	☐	☐
79	Is the final value estimate consistent with the highest and best use, the data, and analyses presented in the report?	☒	74	☐	☐
80	Does the appraisal report consider and analyze the effect on value, if any, of the assemblage of the various estates or component parts of a property, refraining from estimating the value of the whole property simply by adding together the individual values of the various estates or component parts without explanation?	☒	50 thru 73	☐	☐
81	In arriving at a final value estimate, does the appraisal consider the value impact (cost to cure/stigma) of environmental hazards and/or other contamination (underground storage tanks, toxic waste disposal, etc.) before concluding the "as is" value?	☐		☐	☒

Miscellaneous

82	Does the report provide an estimate of the property's anticipated exposure time, as required by USPAP?	☒	18	☐	☐
83	Does the appraisal explain and support the exclusion of any of the usual valuation approaches?	☐		☐	☒
84	Are Extraordinary Assumptions and Hypothetical Conditions repeated, or referenced with all statements of the final opinion of value?	☒	Several Places	☐	☐

SIGNED: Joseph S. String Digitally signed by Joseph S. String DN: cn=Joseph S. String, o=String Appraisal Services, ou, email=sservic2@tampabay.rr.com, c=US Date: 2024.09.13 07:21:07 -04'00' **DATE:** September 13, 2024