

February 22, 2018

**MIRROR LAKE
LAKE MANAGEMENT PLAN**

Annual Meeting – 2018

- Agenda

Lake Management Plan

- General Provisions & Scope of Services
- Community-Based Activities & Events
- Current Fiscal Year
 - Planned Treatments &, Funding
- Next Fiscal Year
 - Projected Treatments & Funding
- Exhibits
 - Agenda & Notes (Prior Year)
 - Budget & Financial Summary
 - Historic Reports/Data
 - Roles & Responsibilities

MIRROR LAKE: ANNUAL MEETING

Date, Time & Location	: February 22, 2018, 2:00 p.m., 200 W. County Home Rd – LMP Office
Community Liaisons	: John Culmer, Lorene Deviese, Debbie Roberts and Krystin Strong (Barrington Apartments)
Liaisons Present	: John Culmer, Debbie Roberts
Seminole County	: Thomas Calhoun, Joey Cordell, Gloria Eby, and Joe Saucer

General Topics & Updates [Meeting Notes]

Lake Management Program

- Welcome
- Fertilizer Ordinance- Passed on February 27, 2017. www.seminolecountyfl.gov/fertilizer.
 - Fertilizer containing nitrogen or phosphorous cannot be applied to turf during the restricted season from June 1st – September 30th. Fertilizers containing Iron, Manganese and other "micronutrients" also referred to as "summer blends" can be applied during the restricted.
 - Fertilizer containing nitrogen that is used during the **non**-restricted season (October 1st – May 31st) must contain *at least* 50% or more slow release nitrogen. This slow release nitrogen content will increase to 65%, three (3) years after adoption of the Fertilizer Ordinance, to allow time for educational outreach to residents and retailers.
 - Fertilizer containing phosphorus cannot be applied to turf or plants unless a state certified soil or tissue test verifies that there is a phosphorus deficiency.
 - Use of deflector shields is required when applying fertilizer with a broadcast or rotary spreader.
 - No fertilizer may be applied within fifteen (15) feet of any pond, lake, stream, canal, or other waterbody, including wetlands.
- Shoreline Protection Ordinance Status
 - Awaiting FWC Rule changes
- Lake Status Nutrients/Habitat Scores [Bioassessment Indices]
 - Refer to Exhibit C
 - LVI remains in Healthy category
 - LVI/BioBase data on Watershed Atlas website:
<http://www.seminole.wateratlas.usf.edu/shared/ecology.asp?wbodyid=7616&wbodyatlas=lake>
- Treatment Plans - Current & Proposed [Refer to Lake Management Plan]
 - Monitor hydrilla and treat as necessary (early detection-rapid response)
 - Evaluate grass carp fish effects and adjust stocking rate as necessary
 - Monitor access corridors and lily pads and treat as necessary
 - Tussock removal in south and north lobe
 - General recommendations for lake-community [Refer to Lake Management Plan]
 - Increase native aquatic plantings in areas devoid of vegetation
 - Promote "welcome packages" to new lakefront homeowners
 - Lakewatch samples - no data since 2006
- 2018 Shoreline Planting Event- dates available
 - To be coordinated via Thomas Calhoun
- Other
 - TGC Fish Stocking
 - Email Address for routine communications and important announcements
 - Nutrient Abatement
 - Additional liaison interest

MSBU Program

- Budgets – Prior, Current, Proposed and Projected [Refer to Exhibit B]
 - Assessment Update
 - Anticipating Administrative Fee increase FY19-20; tax year 2019
 - New unbudgeted harvesting expense @ \$23K
- Tentative date for next annual meeting: January 31, 2019 2:00PM

MIRROR LAKE LAKE MANAGEMENT PLAN

GENERAL PROVISIONS

Scope of Public Aquatic Weed/Plant Control [AWC] Services

The scope of public aquatic weed control [AWC] services funded by non-ad-valorem assessment includes those services associated with managing aquatic plant communities as deemed beneficial and/or critical to restoring, developing and/or maintaining conditions that enhance the water quality and over-all health of the waterbody; with emphasis on providing public services for public purposes which by definition of public are limited to the waterbody and respective shoreline when/where noxious and/or invasive exotic vegetation could/would threaten or impede the waterbody.

Governing documents

- Seminole County Ordinance 06-74
- FWC permit

Methods for Aquatic Weed Control as authorized via County Ordinance/Resolution

- Chemical (herbicides)
- Biological (sterile triploid grass carp fish [TGC])
- Mechanical (harvester)

Targeted Invasive/Exotic Aquatic Vegetation

- Hydrilla, water hyacinth, torpedo grass, primrose willow, water lily (greater than 4ft water depth), wild taro, cattail, Cuban bulrush, bladderwort, and salvinia. Keeping south lobe access corridors open as per FWC permit.

Frequency of AWC Treatment

AWC services are performed at the direction of the Seminole County LMP as per the Mirror Lake Management Plan reviewed at the annual planning session with the expectation that the Seminole County LMP may alter anticipated treatments as merited basis per changing/evolving conditions noted during site inspections.

Herbicide Treatments - Service Provider

- As determined by Seminole County

Funding

Assessment rate may vary annually based on financial demands of changing conditions, such as cost of herbicide treatments, frequency of treatments, and other factors impacting assessment calculations. The annual assessment is capped at \$250.00.

Lake Liaisons

Property owners (or their designated representatives) provide community representation at annual planning sessions with the County and serve voluntarily as the key point of contact for community inquiries and concerns. The liaisons for Mirror Lake are: John Culmer (goodlyf@gmail.com), Lorene Deviese (lfdeviese@hotmail.com), Krystin Strong (krystin.strong@cortlandpartners.com), and Debbie Roberts (troberts3296@cfl.rr.com).

COMMUNITY-BASED ACTIVITIES & EVENTS

LMP recommends/encourages homeowners to coordinate a resident-based volunteer event involving native plantings along the shoreline of Mirror Lake. The intention of such an event is to plant beneficial native aquatic plants to key areas in need along the bank. It is especially important that as the aquatic invasive plants (such as torpedo grass) are being treated, native aquatic plants should be established within these areas. The presence of the recommended native plant species along the shoreline provides habitat for fish and wildlife, helps impede invasive exotics from re-establishing, and reduces erosion of the shoreline. All of these best management practices are essential to providing the conditions that promote an environmentally stable habitat to be enjoyed by generations to come. The key to success is dependent on strong participation of the Mirror Lake community. Continued recommendations for community initiatives are as follows:

- 1) Work together or establish a lake association, with other lakefront owners to increase native aquatic plantings along shoreline (such as pickerelweed, canna, and duck potato). Have at least one annual lake association meeting to discuss lake specific issues.
- 2) Consider funding street sweeping services during peak leaf fall to ensure this debris does not wind up in your waterways. Leaf debris contains phosphorous and nitrogen that can impact your lake.
- 3) Take advantage of free educational outreach programs i.e. Shoreline Restoration Workshops (planting days), Florida Yards and Neighborhoods (FYN), Lake Management Video mail-outs, and presentations on decreasing “pointless personal pollution” by reducing fertilizer use and only using phosphorous-free and slow-releasing nitrogen based fertilizers. Contact Seminole County Lake Management Program (407) 665-2439 to inquire about the availability of these programs. You can also visit the Water Atlas online to read interesting information about your specific waterbody, and the LMP website to watch educational videos and download lake management pamphlets:

Water Atlas: <http://www.seminole.wateratlas.usf.edu/>

LMP: <http://www.seminolecountyfl.gov/pw/roadstorm/wqlakemgt.aspx>

- 4) Share what YOU know with your neighbors! Encourage fellow residents to keep a functional shoreline with beneficial native aquatic plants, and to keep grass clippings out of the storm drains that lead to the lake. All of these activities aid in protecting your waterbody! Please share newsletter with any new residents or those not currently on our email list.

***Important to Note:** When herbicides are applied along the shoreline to invasive plants (such as torpedo grass), overspray onto adjacent desirable vegetation may occur. In order to avoid damage to desired vegetation, manual (by hand) removal (by property owner) of the undesirable species from among the desirable species along the shoreline is advised. If the invasive plants are removed by this method, spraying the area can be reduced, thereby offering greater protection to the desirable species. The physical removal of dead/decaying aquatic plant material will reduce the volume of decomposing vegetation on the lake bottom (muck layer) and will increase the success of the efforts to limit the re-growth of the invasive plants. The presence of submerged aquatic vegetation (“SAV” such as hydrilla) should be communicated to your lake liaison for their reporting to the County so appropriate treatment of SAV can be provided.*

COUNTY SERVICES – Lake Management & Supplemental Programs

Mirror Lake is monitored by LMP to assess aquatic plant growth. LMP provides continued evaluation of the aquatic plant species, such as hydrilla, and provides community updates on the status of treatments and waterbody bioassessment. In addition, LMP offers free aquatic plant material (as available) for sponsored restoration events and local community volunteers coordinated through the county’s Seminole Education and Restoration Volunteer (SERV) Program. While the MSBU assessment includes a nominal charge for administering the MSBU, the amount charged does not cover all expenses incurred by the County on behalf of waterfront property owners. Many of the services provided by the LMP are made available to support community riparian stewardship without additional charges being assigned to the MSBU budget.

CURRENT FISCAL YEAR – Planned Treatment & Funding

Primary Aquatic Plant Management Expectations

Hydrilla growth in Mirror Lake has the likelihood to continue, however, the timing and extent of hydrilla re-growth is affected by multiple natural and environmental factors that cannot be controlled or predicted with certainty. While extensive growth of hydrilla is possible at any point in time; it is anticipated that routine spot treatments of hydrilla with herbicides and continuous biological control pressures from the triploid grass carp fish will be sufficient to manage hydrilla re-growth during the current fiscal year. The anticipation of spot treatments for the current fiscal year takes into consideration the historic trend of hydrilla management required at Mirror Lake, as well as current conditions observed at the lake. As with any lake with a history of hydrilla infestation, long-term planning to include financial preparation for whole lake treatment is advised.

Primary expectations are as follows:

- 1) Aquatic herbicide maintenance for non-native vegetation and conducting hydrilla treatments (as needed)
- 2) Aquatic vegetation maintenance for corridors in south lobe
- 3) Reduce biomass of lilies in depths greater than 4ft
- 4) Monitor hydrilla, other submersed aquatic plants, and grass carp fish effects
- 5) Future grass carp stockings if deemed necessary, pending permit amendment

Funding Expectations

Refer to current fiscal year budget data provided in Exhibit B.

NEXT FISCAL YEAR – Projected Treatment & Funding

Primary Aquatic Plant Management Expectations

The projected treatment plans for the next fiscal year remain consistent with the plans and expectations noted for the current fiscal year. Primary expectations are as follows:

- 1) Continued aquatic herbicide maintenance for non-native vegetation and conducting hydrilla treatments (as needed),
- 2) Aquatic vegetation maintenance for two 20ft corridors,
- 3) Reduce biomass of lilies in depths greater than 4ft,
- 4) Continued monitoring of hydrilla, other submersed aquatic plants, and grass carp fish effects,
- 5) Future grass carp stockings if deemed necessary, pending permit amendment.

Funding Expectations

Refer to next fiscal year budget data provided in Exhibit B.

Exhibits

- A** – Agenda & Notes (Prior Year Planning Session)
- B** – Budget/Financial Summaries
- C** – Historic Reports/Data
- D** – Roles & Responsibilities

Exhibit A – Agenda & Notes (Prior Year Planning Session)

Date, Time & Location	:	January 17, 2017, 11:00 a.m., 200 W. County Home Rd – LMP Office
Community Liaisons	:	John Culmer, Lorene Deviese, and Debbie Roberts Krystin Strong - Barrington Apartments
Liaisons Present	:	John Culmer and Debbie Roberts
Seminole County	:	Thomas Calhoun, Joey Cordell, Gloria Eby, and Joe Saucer

Topics carried forward from prior fiscal year activity [Meeting Notes]

- Fertilizer Ordinance & Shoreline Protection Ordinance
 - Both ordinances contain commitments and directives that will contribute to environmental improvement and protection long-term for lakes and other waterbodies. The Fertilizer Ordinance focuses primarily on fertilizer selection (phosphate free, slow release nitrogen) and application (location, volume, and timing). The Shoreline Protection Ordinance mirrors the State’s guidelines for shoreline vegetation and development as historically communicated by the LMP and demonstrated by the best lake management practices followed by MSBU funded services. The Fertilizer Ordinance is tentatively scheduled for BCC review/approval consideration on February 28; while the Shoreline Protection Ordinance development continues with final presentation anticipated later in 2017. [Note: The Shoreline Protection Ordinance approval process involves several levels of approval as the directives need to be included in the County’s Land Development Code.] Educational materials are readily available to further promote awareness, understanding and compliance.
 - FWC is proposing a change to their permitting responsibilities respective to aquatic plant management. The proposed (and likely to be adopted rule changes) will have impact on the permits associated with lakes less than 160 acres in size. The importance of Seminole County enacting the Shoreline Protection Ordinance is heightened by this change. In association with the ordinance, the County will be confirming delegated enforcement authority from FWC to provide ongoing compliance efforts respective to adopted protective measures. When presentation dates are confirmed, LMP will provide email updates so interested property owners and residents are aware of these activities. Supportive participation is encouraged.

General Topics & Updates [Meeting Notes]

- 2017 Shoreline Planting Event- dates available in Spring
 - To be coordinated via Thomas Calhoun; Liaisons unsure about participation this year
- Nutrients/Habitat Scores: Improvements in bioassessment indices - refer to Exhibit C
 - Continued water quality improvements observed; Healthy categories
 - Liaisons expressed concerns about the outfall and growth around the outfall, small sprigs of hydrilla in small portions of the lake
 - Grass carp observed & SAV available for their consumption
- Plans for current fiscal year - refer to Page 6
 - Bladderwort and hydrilla will be monitored and treated accordingly. Liaisons note that prior year treatments were significant to the SAV
 - Pondweed, a native species, will be monitored by LMP
- Projections for next fiscal year - refer to Page 6
- Budget – Prior, Current & Proposed
 - Refer to Exhibit B – Assessment rate held at \$200.00 with liaison agreement; opportunity for future projects
- General recommendations for community consideration
 - Refer to Page 5 - Increase native aquatic plantings in areas devoid of vegetation
 - Joe Saucer to confer with Liaison Krystin Strong about the current regulations for fishing
 - Thomas Calhoun to provide information regarding Alum treatment and getting a new email list.
 - Trash in the lake is an on-going concern for the liaisons.

Exhibit B - Budget/Financial Overview

MSBU: MIRROR LAKE

Date: January 1, 2018

Tax Year	2016	2017	2018
Assessment	\$ 200	\$ 200	\$ 200
Fiscal Year	FY16-17	FY17-18	FY18-19
REVENUE			
	Actual	Working Budget	Proposed Budget
Beginning Fund Balance	\$ 44,812	\$ 53,665	\$ 34,358
Assessments	\$ 10,391	\$ 10,368	\$ 10,368
Other	\$ 431	\$ 400	\$ 250
MSBU Program Fund Advance	\$ -	\$ -	\$ -
TOTAL	\$ 55,634	\$ 64,433	\$ 44,976
Cost Sharing Lake Management Program			
TOTAL	\$ 55,634	\$ 64,433	\$ 44,976
EXPENDITURE			
	Actual	Working Budget	Projected Budget
County Administrative Fee	\$ 1,075	\$ 1,075	\$ 1,075
Fund Advance Repayment	\$ -	\$ -	\$ -
Contracted Services	\$ 894	\$ 6,000	\$ 6,000
<i>Routine Services</i>	\$ 894	\$ 2,000	\$ 2,000
<i>Hydrilla/Other SAV</i>	\$ -	\$ 4,000	\$ 4,000
<i>Carp</i>	\$ -	\$ -	\$ -
<i>Barrier Maintenance NA</i>	\$ -	\$ -	\$ -
<i>Barrier Replacement - NA</i>	\$ -	\$ -	\$ -
<i>Nutrient Abatement (Alum)</i>	\$ -	\$ -	\$ -
<i>Harvesting</i>	\$ -	\$ 23,000 New	\$ -
<i>Other</i>	\$ -	\$ -	\$ -
Contingency Reserve	\$ 53,665	\$ 34,358	\$ 37,901
TOTAL	\$ 55,634	\$ 64,433	\$ 44,976
Cost Sharing Lake Management Program			
TOTAL	\$ 55,634	\$ 64,433	\$ 67,976
Fund Advance BB Payment (Principal)			
Fund Advance EB	\$ -	\$ -	\$ -

Exhibit C - Historic Reports/Data

Additional information for Mirror Lake can be found on the Seminole County Water Atlas website at:

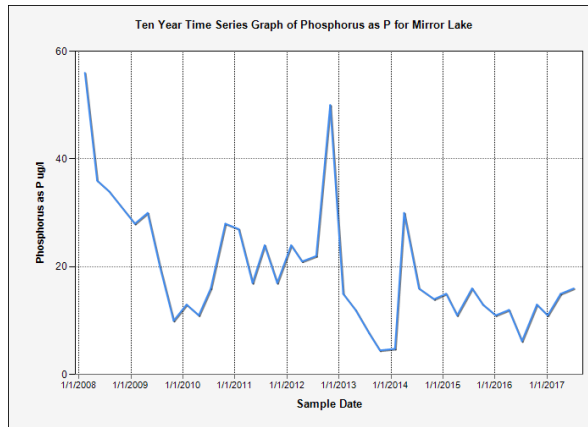
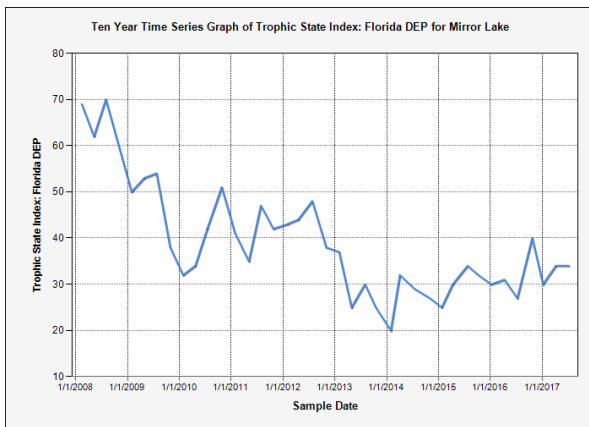
<http://www.seminole.wateratlas.usf.edu/lake/waterquality.asp?wbodyid=7616&wbodyatlas=lake>

<http://www.seminole.wateratlas.usf.edu/resourceprogram.aspx?aid=15&wbodyid=7616>

Mirror Lake Water Quality Report: How Does My Lake Rank? TSI SCORE: 34 GOOD

The Trophic State Index (TSI) is a classification system designed to "rate" individual lakes, ponds and reservoirs based on the amount of biological productivity occurring in the water. Using the index, one can gain a quick idea about how productive a lake is by its assigned TSI number. A "Good" quality lake is one that meets all lake use criteria (swimmable, fishable, and supports healthy habitat).

The two graphs below indicates nutrient levels (measured by TSI and/or Total Phosphorous [TP]) for your lake. A TSI score of 60 or above is considered impaired (or polluted) lake. Continued reduction of TP sources (personal pollution, run-off, landscaping practices, shoreline erosion) can help reduce phosphorous in your lake that is abundantly available, potentially creating algae blooms.



Lake Vegetation Index Bioassessment (LVI): How Does My Lake Rank? 49 Healthy

The Lake Vegetation Index is a rapid bioassessment tool created by the Florida Department of Environmental Protection (FDEP) to assess the biological condition of aquatic plant communities in Florida lakes. The most recent LVI bioassessment for Mirror Lake (sampled on August 15, 2017) scored a **49** which is in the **Healthy** category.

Aquatic Life Use Category	LVI Range	Description
Category 1 "exceptional"	78–100	Nearly every macrophyte present is a species native to Florida, invasive taxa typically not found. About 30% of taxa present are identified as sensitive to disturbance and most taxa have C of C values >5.
Category 2 "healthy"	43–77	About 85% of macrophyte taxa are native to Florida; invasive taxa present. Sensitive taxa have declined to about 15% and C of C values average about 5.
Category 3 "impaired"	0–42	About 70% of macrophyte taxa are native to Florida. Invasive taxa may represent up to 1/3 of total taxa. Less than 10% of the taxa are sensitive and C of C values of most taxa are <4.

Exhibit D – Roles & Responsibilities

ROLES & RESPONSIBILITY

General Outline

COUNTY

Seminole County will

- ✓ Govern the MSBU
- ✓ Provide financial management of MSBU fund
- ✓ Ensure activities conducted with assessment funding align with the scope of services documented in the governing ordinance
- ✓ Ensure the lake is monitored and services are appropriately rendered
- ✓ Maintain decision-making authority relative to lake management activities and aquatic vegetation management and will defer to best lake management practices when making such decisions
- ✓ Provide an ongoing lake management plan based on the defined service scope, permitting, conditions at the lake, funding parameters, and best lake management practices. The Lake Management Plan will be developed and maintained by the Lake Management Program with liaison participation
- ✓ Initiate and manage service contracts, monitor results, and communicate updates on a routine basis
- ✓ Conduct annual meetings that offer opportunity for liaison discussion as to prior, current, and future action plans
- ✓ Encourage liaisons and assist with educational outreach efforts to protect the health and water quality of the waterbody

LIAISONS

Liaisons will

- ✓ Encourage communitywide awareness and participation relative to environmental stewardship recommendations and opportunities
- ✓ Provide communitywide communication and assist the County in the distribution of relevant lake information
- ✓ Attend annual lake management and budget planning sessions conducted by the County
- ✓ Serve as representatives of the community on lake issues; representing the respective lake community as a whole
- ✓ Monitor lake conditions and provide feedback to the County as to observations