Greetings Spring Lake!

Below please find the latest bioassessment for your lake. Our next scheduled bioassessment will be **October 7th 2014**; weather permitting. Key highlights of this update will include:

- LVI results
- Hydrilla observations- few hydrilla in shallow areas
- Eelgrass corridor maintenance
- Increase in water elevation- easier navigation as result
- Recommendations for you and your lake

On **August 7th**, **2014**, Seminole County Lake Management Program (SCLMP) staff, Gloria Eby, Thomas Calhoun, Marianne Pluchino, Beth Stephens and Joey Cordell surveyed the aquatic plants in **Spring Lake** and conducted a Lake Vegetation Index (LVI).

The LVI was created by the Florida Department of Environmental Protection as a rapid screening tool (bioassessment) for ecological condition; it determines how closely a lake's flora (aquatic plants) resembles that of an undisturbed lake.

Spring Lake is 84 surface acres with a mean depth of 6 ft and a maximum depth of 19 ft located in the Little Wekiva watershed. Scores for Spring Lake have ranged from 32 to 62. LVI score for 2014 was 52 in the healthy range.

LVI Range	**Description**
78-100	Exceptional
43-77	Healthy
0-42	Impaired

Hydrilla was sparsely found in shallow areas up to a depth of 5 ft. Native submersed aquatic plants observed during the inspection included; eelgrass to a depth of 7 ft, muskgrass to 3 ft, road grass to 5 ft, stonewort to 1 ft, pondweed to 1 ft and southern naiad to 5 ft. Eelgrass continues to be the dominant SAV. Stonewort has shown an increase in shallow waters from prior inspections.

Photo: Potamogeton

Native SAV play an important role in the ecosystem of the lake by providing habitat, up taking nutrients and competing for space with exotics species such as hydrilla. The eelgrass corridors were found to be open and in good condition, especially with elevated lake levels.

Native emergent vegetation surveyed during the inspection include: water hyssop, canna, yellow cow lily, fragrant water lily, pickerel weed, duck potato, bulrush, jointed flat sedge, cordgrass, and cattail. Invasive emergent vegetation include: umbrella grass, burhead sedge, primrose willow, torpedo grass, and creeping oxeye.

Photo: Fragrant water lily.

The water elevation during the time of the inspection was 63.39 feet above sea level; an increase from the previous survey of 63.23 feet. The secchi reading (measurement for water clarity) was 2.1 feet which is a decrease from the prior survey of 3.3 feet. No grass carp fish were observed during this inspection.

Recommendations for your lake:

1 Work together with other lakefront owners. Have *at least* one annual lake association meeting, invite guest speakers (such as county or state biologists) and discuss lake specific issues, especially nutrients/lake management recommendations. SCLMP staff would be glad to present our findings from this and other surveys. Continue to increase native aquatic plantings along the shoreline (such as pickerelweed, duck potato, and canna).

2 Consider increasing street sweeping services during times of peak leaf fall to ensure that this debris does not enter your waterways. Leaf debris contains phosphorous that can negatively impact your lakes.

3 Increase educational outreach programs i.e. Shoreline Restoration Workshops (planting days), Florida Yards and Neighborhoods (FYN), Lake Management Video mail-outs. Spread the

word about reducing personal pollution through reducing total fertilizer use, **using only phosphorous-free and slow release nitrogen fertilizers**, keeping a functional shoreline with beneficial native aquatic plants, and keeping grass clippings out of your storm drains leading to the lake. All of these activities aid in protecting your waterbody! Contact Seminole County Lake Management Program (407) 665-2439 to find out about the free educational programs available to you.

4 Help spread the word! Obtain email addresses from neighbors not currently on the distribution list so that these reports can be shared with everyone. Valuable information is contained within these assessments.

Greetings Spring Lake Residents!

Please find the latest bioassessment of your lake below. The next scheduled inspection of your lake will be **August 13th**; weather permitting. Key highlights of this update include:

- Status of Submersed Aquatic Vegetation (SAV)
- Eelgrass access corridor update
- Status of shoreline emergent vegetation
- Recommendations for you and your lake

Bioassessment:

On **July 1st, 2014**, Seminole County Lake Management staff, Thomas Calhoun, Gloria Eby and Theresa Cruz surveyed the aquatic plants in **Spring Lake**.

Only one native SAV was observed during this inspection. This species was eelgrass which was found to a water depth of 7 feet. Eelgrass continues to be observed in patches both inshore and offshore. This is an observable decrease in biomass since the previous inspection. The eelgrass access corridors were found in good shape with no chemical maintenance treatment required at this time. Additionally, hydrilla was not found during inspection.

Photo: Sonar image of eelgrass observed in patches.

Native emergent vegetation (including pickerelweed, duck potato, fire flag, and canna lily) continues to thrive in the absence of torpedo grass. Invasive emergent vegetation found during the inspection included alligatorweed, torpedo grass, and elephant ear. Alligatorweed was noted expanding in many areas. These species will be targeted during the next herbicide treatment.

Photo: Beneficial pickerelweed along the shoreline.

The water elevation during the time of the inspection was 63.25 feet above sea level. The secchi reading (measurement for water clarity) was 2 feet, which was an increase from the prior survey of 1.5 feet. No grass carp fish were observed during this inspection.

Recommendations for your lake:

1 Work together with other lakefront owners. Have *at least* one annual lake association meeting, invite guest speakers (such as county or state biologists) and discuss lake specific issues, especially nutrients/lake management recommendations. SCLMP staff would be glad to present our findings from this and other surveys. Continue to increase native aquatic plantings along the shoreline (such as pickerelweed, duck potato, and canna).

2 Consider increasing street sweeping services during times of peak leaf fall to ensure that this debris does not enter your waterways. Leaf debris contains phosphorous that can negatively impact your lakes.

3 Increase educational outreach programs i.e. Shoreline Restoration Workshops (planting days), Florida Yards and Neighborhoods (FYN), Lake Management Video mail-outs. Spread the word about reducing personal pollution through reducing total fertilizer use, using only phosphorous-free and slow release nitrogen fertilizers, keeping a functional shoreline with beneficial native aquatic plants, and keeping grass clippings out of your

storm drains leading to the lake. All of these activities aid in protecting your waterbody! Contact Seminole County Lake Management Program (407) 665-2439 to find out about the free educational programs available to you.

4 Help spread the word! Obtain email addresses from neighbors not currently on the distribution list so that these reports can be shared with everyone. Valuable information is contained within these assessments.

January 23, 2014

SPRING LAKE
LAKE MANAGEMENT PLAN

Annual Meeting – 2014

- Agenda

Lake Management Plan

- General Provisions & Scope of Services
- Community-Based Activities & Events
- Current Fiscal Year: Planned Treatments, Funding & Recommendations
- Next Fiscal Year: Projected Treatments & Funding
- Exhibits – Notes, Budget & Financial Summary, Historic Reports/Data

SPRING LAKE
ANNUAL MEETING

Date, Time & Location	:	January 23, 2014, 2:30 p.m., 200 W. County Home Rd – LMP Office
Community Liaisons	:	John Bandy, Dan Copeland, Jay and Rhonda Fraxedas, Bill and Bobbi Vogel
Liaisons Present	:	John Bandy, Bill and Bobbi Vogel
Seminole County	:	Thomas Calhoun and Carol Watral
Guests	:	Shirley Bandy

Topics carried forward from prior fiscal year activity

- Contracted aquatic plant control services are scheduled monthly.
- Treatments specific for eelgrass are authorized as needed for control and per State regulations.
- Eelgrass treatments will target keeping the recreational corridor open and in good condition.
- Species permitted for aquatic plant control treatment are: cattails, pennywort, wild taro, filamentous algae, eelgrass, primrose willow, torpedo grass, and hydrilla.
- The lake will be closely monitored by the County for evidence of increasing hydrilla growth.
- As torpedo grass is treated and dies, properties are encouraged to remove the vegetation.
- County recommends continuing to increase native aquatic plantings along shoreline (such as pickerelweed, duck potato and canna).

General Topics & Updates

- Nutrient Study
- Community meeting for Study Presentation
- New pricing available via state contract established with herbicide service provider
- Plans for current fiscal year
- Projections for next fiscal year
- General recommendations for community consideration

Meeting Notes:

- Sharon Rogers has moved and is no longer a liaison.
- Liaisons are pleased with the condition of the eelgrass corridors.
- Liaisons report sightings of large triploid grass carp and forwarded pictures.
- The LMP funded nutrient study is expect to conclude this year with a presentation on the results provided to the community. Liaisons were informed that a suitable location for hosting and advertising the meeting will be greatly appreciated.
- Liaisons asked about possible donations from vendors to encourage attendance at community presentation. Thomas Calhoun volunteered to provide a list to the liaisons.
- Dependent upon result of nutrient study, there is potential for alum treatment. Liaisons requested completion of alum treatment at earliest possible opportunity.
- Although no County initiated shoreline restoration events are scheduled this year, opportunity exists for individual properties to participate in restoration efforts. Lake Management Program can consult individually with properties or assist with plant procurement (community funded).

SPRING 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 07-9
- Interlocal Agreement with Altamonte Springs – Authorizing Assessment Levy [01-27-2007]
- FWC Permit

Methods for Aquatic Weed Control as authorized via County Ordinance

- Chemical (herbicides)
- Biological (sterile triploid grass carp fish [TGC])
- Mechanical (harvesting, cutting, etc.)

Targeted Invasive/Exotic Aquatic Vegetation

- Cattails, pennywort, wild taro, filamentous algae, eelgrass, primrose willow, torpedo grass, and hydrilla

Frequency of AWC Treatment

AWC services are performed at the direction of the Seminole County LMP as per the Spring Lake Management Plan reviewed at the annual planning session with the expectation that the Seminole County LMP may alter anticipated treatments as merited per changing/evolving conditions noted during site inspections. Eelgrass corridor treatments are scheduled for the spring and fall of each year and are based upon merited conditions and favorable water elevation conditions.

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 governing ordinance does not include assessment restrictions specific to annual adjustment amounts and/or assessment cap.

Lake Liaisons

Designated 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 Spring Lake are: John Bandy (jibjr@cfl.rr.com), Dan Copeland (dcopeland@ribelin.com), Jay and Rhonda Fraxedas (jjfraxedas@gmail.com), and Bill and Bobbi Vogel (b2vogel@gmail.com).

SPRING LAKE

COMMUNITY-BASED ACTIVITIES & EVENTS

LMP continues to recommend/encourage future resident-based volunteers involving native plantings along the shoreline. The intention of such an event is to transplant existing in-lake plants to various key areas in need along the shoreline. Residents should organize planting days coordinated with LMP aiding the residents in creating a beneficial shoreline for Spring Lake. It is especially important that as aquatic invasive plants (such as torpedo grass) are being treated, native aquatic plants should be established within these areas. This also provides habitat for fish and wildlife, helps impede invasive exotics from re-establishing and reduces sedimentation into the lake due to erosion of the shoreline. All of these best lake management practices are essential to providing a more environmentally stable lake for generations to come. The key to success in lake management projects is dependent on strong participation of the Spring Lake community. Continued recommendations for community initiatives are as follows:

1) Continue to increase shoreline re-vegetation with beneficial native aquatic plants such as duck potato and pickerelweed; hand removal of torpedo grass from around native plants,
2) Consider increasing street sweeping services during times of peak leaf fall to ensure this debris does not wind up in your waterways. Leaf debris contains phosphorous and nitrogen that can impact your lakes,
3) Establishing a Lake Association and having at least one annual meeting with topics relevant to Spring Lake and watershed,
4) Implement educational outreach programs i.e. Shoreline Restoration Workshops (planting days), Florida Yards and Neighborhoods (FYN) presentations, Lake Management Video mail-outs, and reduction of residential pollution by using low fertilizer use; phosphorous free fertilizers; keeping a functional shoreline with beneficial native aquatic plants; keeping grass clippings out of your storm drains leading to the lake. All these activities aid in protecting your lake! Contact Gloria Eby (407) 665-2439 or Marie Lackey (407) 665-2424 for more information and assistance, and
5) Provide content for the Seminole County Water Atlas Lake Management webpage for Spring Lake (such as newsletters and community updates).

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 is advised. If the invasive plants are removed by this method, spraying the area can be eliminated, 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.

SPRING LAKE

COUNTY SERVICES – Lake Management & Supplemental Programs

While the MSBU assessment includes a nominal charge for administering the MSBU, the amount charged does not cover all the expenses incurred by the County on behalf of the waterfront property owners. Spring Lake is monitored by LMP to assess the aquatic plant growth. LMP provides continued evaluation of the aquatic plant species, such as hydrilla, and provides community updates on the status of all treatments and waterbody assessments. 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. 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 Spring Lake has 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 FY. The anticipation of spot treatments for the current fiscal year takes into consideration the historic trend of hydrilla management required at Spring Lake, as well as current conditions observed at lake and dominant presence of eelgrass providing competition. As with any lake with a history of hydrilla infestation, long-term planning to include financial preparation for whole lake treatment is advised.

Funding Expectations

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

Next Fiscal Year [FY14/15] – 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 monitoring of hydrilla (re-growth from tuber production*****),
2) Conduct spot treatments of hydrilla if required,
3) Continued treatment of other invasive aquatic plants – herbicides, and
4) Future grass carp stockings as needed.

*****LMP will continue to closely monitor and gauge hydrilla in Spring Lake. This invasive exotic's re-growth is sparsely present in both shallow and deep water, mostly on the western side of the lake. Even though this re-growth is minimal, it is LMP's objective to keep the re-growth in check.

Funding Expectations

Refer to next fiscal year budget data provided in Exhibit B

Exhibits

A - Notes from Prior Year Planning Session

B - Budget/Financial Overview

C - Historic Reports/Data

Exhibit A - Notes from Prior Year Planning Session

Summary from February 5, 2013 Annual Meeting

County Staff Present: Thomas Calhoun, Gloria Eby, Kathy Moore, and Carol Watral
Liaisons Present: Dan Copeland, Bill and Bobbi Vogel
Liaison Members: John Bandy, Dan Copeland, Jay and Rhonda Fraxedas, Bill and Bobbi Vogel

- Eelgrass was discussed and reminder was made by County that individual properties may request permit for eelgrass at their respective shoreline. Also discussed was level of contingency reserve, hydrilla growth potential, recreational corridor, and 12-month monitoring study.
- Species permitted for aquatic plant control treatment are: cattails, pennywort, wild taro, filamentous algae, eelgrass, primrose willow, torpedo grass, and hydrilla.
- Contracted aquatic plant control services were scheduled monthly. Treatments specific for eelgrass were authorized as needed and per State regulations; the need for eelgrass treatment decreased this year.
- Eelgrass recreational corridor remained open and in good condition throughout the fiscal year.
- Hydrilla remained under control with small fragments found during several of the County inspections.
- A study funded by Seminole County was underway this fiscal year with a 12 month field monitoring program to assist in quantifying water and nutrient inputs into the lake.

Annual Assessment: $375.00 (Tax Year 2013)

Exhibit B - Budget/Financial Overview

MSBU: **SPRING LAKE (Aquatic Weed Control)**

Date: **January 23, 2014**

Tax Year	**2012**	**2013**	**2014**
Assessment	$385.00	$375.00	$375.00
Fiscal Year	FY1213	FY1314	FY1415
REVENUE	**Actual**	**Working Budget**	**Projected Budget**
Beginning Fund Balance	$ 62,931	$ 84,703	$ 88,488
Assessment	$ 28,295	$ 27,360	$ 27,360
Other	$ 259	$ 150	
MSBU Program Fund Advance	$ -	$ -	$ -
TOTAL	**$ 91,485**	**$ 112,213**	**$ 115,848**
Cost Sharing			
TOTAL	$ 91,485	$ 112,213	$ 115,848
Lake Management Program			
TOTAL	$ 91,485	$ 112,213	$ 115,848
EXPENDITURE	**Actual**	**Working Budget**	**Projected Budget**
County Administrative Fee	$ 1,075	$ 1,075	$ 1,500
Fund Advance Repayment	$ -	$ -	$ -
Contracted Services	$ 5,707	$ 22,500	$ 57,500
Routine Services	*$ 4,740*	*$ 5,000*	*$ 5,000*
Carp	*$ -*	*$ -*	*$ -*
Cattails	*$ -*	*$ -*	*$ -*
Eelgrass	*$ 967*	*$ 15,000*	*$ 15,000*
Excavation	*$ -*	*$ -*	*$ -*
Hydrilla	*$ -*	*$ 2,000*	*$ 2,000*
Labor	*$ -*	*$ 500*	*$ 500*
Large Lake Tx (Alum)	*$ -*	*$ -*	***$ 35,000***
Other	*$ -*	*$ -*	*$ -*
Contingency Reserve	$ 84,703	$ 88,488	$ 56,848
TOTAL	**$ 91,485**	**$ 112,063**	**$ 115,848**
Cost Sharing	$ -	$ -	$ -
TOTAL	$ 91,485	$ 112,063	$ 115,848
Lake Management Program	$ -	$ -	$ -
TOTAL	$ 91,485	$ 112,063	$ 115,848

Fund Advance BB Payment	$ -	$ -	$ -
Fund Advance EB	$ -	$ -	$ -

Exhibit C - Historic Reports/Data

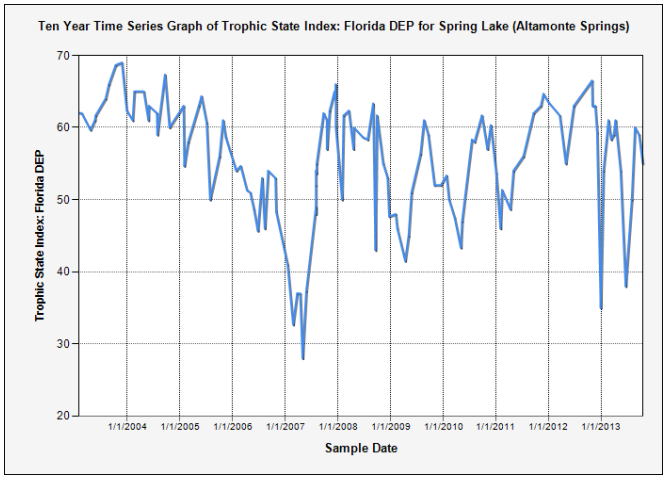
Additional information for Spring Lake can be found on the County's Water Atlas website at:

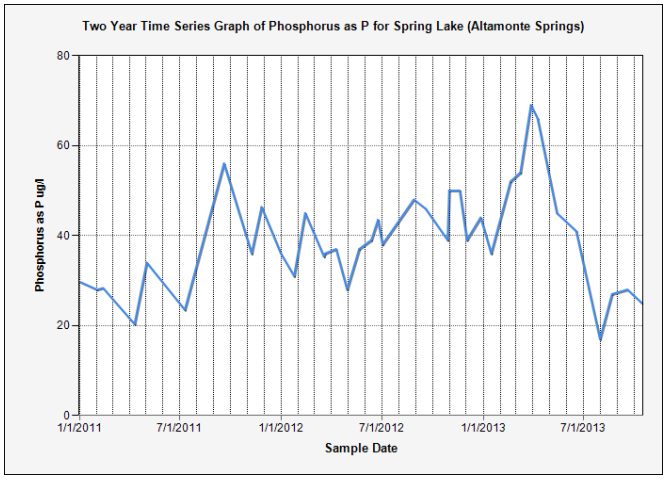
http://www.seminole.wateratlas.usf.edu/lake/?wbodyatlas=lake&wbodyid=7659
http://www.seminole.wateratlas.usf.edu/resourceprogram.aspx?aid=15&wbodyid=7659

Spring Lake 2013 Water Quality Report: How Does My Lake Rank? **TSI SCORE: 55 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 indicate 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? **53 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 recent assessment for Spring Lake (sampled on August 6, 2013) scored a **53 Category 2- Healthy,** which is a significant **increase** from **32 Category 3- Impaired** since inception of our lake management efforts in 2007.

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"	38–77	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"	0–37	About 70% of macrophyte taxa are native to Florida. Invasive taxa may represent up to 1/3 of total taxa. Less that 10% of the taxa are sensitive and C of C values of most taxa are <4.

Greetings Spring Lake Residents!

Please find the latest bioassessment of your lake below. The next scheduled inspection of your lake will be July 1st; weather permitting. Key highlights of this update include:

- Status of Submersed Aquatic Vegetation (SAV)
- Eelgrass access corridor update
- Status of shoreline emergent vegetation
- Continued encouragement to plant native aquatic plants along your shoreline
- Recommendations for you and your lake

Bioassessment:

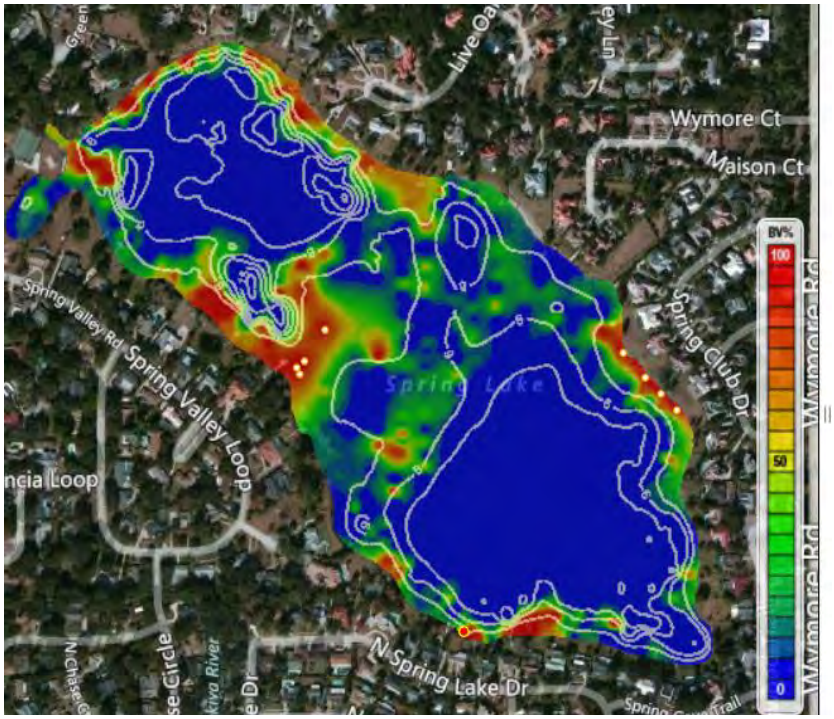
On **April 8th, 2014**, Seminole County Lake Management staff, Thomas Calhoun and Joey Cordell, surveyed the aquatic plants in **Spring Lake**.

Eelgrass was the only SAV observed during this inspection and was found to a depth of 6 feet. This is a decrease in depth from the previous inspection of 7.7 feet. Eelgrass is still found healthy in patches to 4 feet; however, in depths greater than 4 feet the biomass is reducing. The eelgrass access corridors were found in good shape with no chemical maintenance treatment required at this time. Hydrilla was not observed during this inspection.

Photo: Typical sample of eelgrass in depths less than 4 feet.

For Spring Lake, a baseline submersed aquatic vegetation (SAV) map was created utilizing sonar instrumentation mounted to our boat. The purpose of this tool is to establish "baseline" data to monitor changes and respond with recommendations to improve water quality and vegetation habitat over time. Upon completion, a report is generated giving biologists a detailed analysis of vegetation presence in your lake. This survey generated a SAV percent coverage of 42.5% (or 36.55 surface acres).

Photo: Image of SAV map produced for Spring Lake.



Native emergent vegetation (including pickerelweed, duck potato, fire flag, and canna lily) continues to thrive in the absence of torpedo grass. Through herbicide applications and the hard work of homeowners and volunteers, torpedo grass has been removed from most shorelines. The absence of torpedo grass has allowed many beneficial native plants to expand in its place. It is recommended to plant native emergent vegetation along cleared shorelines because it will help filter nutrients from runoff and aid against shoreline erosion.

The water elevation during the time of the inspection was 63.00 feet above sea level. The secchi reading (measurement for water clarity) was 2.3 feet, which was an increase from the prior survey of 2.1 feet. No grass carp fish were observed during this inspection although we are receiving reports of their presence. Thank you for submitting these, we find them very useful.

<u>Bioassessment:</u>

On **May 6th, 2014**, Seminole County Lake Management staff, Thomas Calhoun and Gloria Eby, surveyed the aquatic plants in **Spring Lake**.

Two native SAV were observed during this inspection. These species included eelgrass to a depth of 7.5 feet and southern naiad to a depth of 3 feet. Eelgrass continues to be observed in patches both inshore and offshore. This is an observable decrease in biomass since the previous inspection. The eelgrass access corridors were found in good shape with no chemical maintenance treatment required at this time.

The flowering portion (seeds) of eelgrass could be seen floating on the water's surface lake wide appearing like an algae bloom. One small sprig of hydrilla was found floating during this inspection.

Photo: Sonar image of eelgrass (highlighted) observed in patches.

Native emergent vegetation (including pickerelweed, duck potato, fire flag, and canna lily) continues to thrive in the absence of torpedo grass. Invasive emergent vegetation to be targeted during herbicide treatments includes: alligator weed, torpedo grass, and elephant ear.

Photo: Beneficial pickerelweed along the shoreline.

The water elevation during the time of the inspection was 63.08 feet above sea level. The secchi reading (measurement for water clarity) was 1.5 feet, which was an increase from the prior survey of 2.3 feet. No grass carp fish were observed during this inspection.

Recommendations for your lake:

1 Work together with other lakefront owners. Have *at least* one annual lake association meeting, invite guest speakers (such as county or state biologists) and discuss lake specific issues, especially nutrients/lake management recommendations. SCLMP staff would be glad to present our findings from this and other surveys. Continue to increase native aquatic plantings along the shoreline (such as pickerelweed, duck potato, and canna).

2 Consider increasing street sweeping services during times of peak leaf fall to ensure that this debris does not enter your waterways. Leaf debris contains phosphorous that can negatively impact your lakes.

3 Increase educational outreach programs i.e. Shoreline Restoration Workshops (planting days), Florida Yards and Neighborhoods (FYN), Lake Management Video mail-outs. Spread the word about reducing personal pollution through reducing total fertilizer use, using only phosphorous-free fertilizers, keeping a functional shoreline with beneficial native aquatic plants, and keeping grass clippings out of your storm drains leading to the lake. All of these activities aid in protecting your waterbody! Contact Seminole County Lake Management Program (407) 665-2439 to find out about the free educational programs available to you.

4 Help spread the word! Obtain email addresses from neighbors not currently on the distribution list so that these reports can be shared with everyone. Valuable information is contained within these assessments.

Greetings Spring Lake Residents!

Please find the latest bioassessment of your lake below. Key highlights of this update include:

- Lake Condition Index Information
- Hydrilla status
- Status of Submersed Aquatic Vegetation (SAV)
- Eelgrass corridor update
- Status of shoreline emergent vegetation
- Continued encouragement to plant native aquatic plants along your shoreline
- Recommendations for you and your lake

On **December 4th, 2013**, Seminole County Lake Management and Water Quality Program staff (Thomas Calhoun, Marie Lackey, and Michelle Shelton) surveyed the aquatic plants and conducted a Lake Condition Index (LCI) in **Spring Lake**.

The Lake Condition Index (LCI) was developed by the Florida Department of Environmental Protection to monitor and assess the biological condition of Florida lakes. The LCI assesses the biological condition of a lake by using benthic macroinvertebrate communities as biological indicators to identify trends within similar lake systems. Samples taken by Seminole County Water Quality Program from 2006 to 2013 have ranged from the very good to the poor categories. More info on macroinvertebrate data and sampling can be found on our Water Atlas website at: http://www.seminole.wateratlas.usf.edu/shared/ecology.asp?wbodyid=7659&wbodyatlas=lake.

Photo: Ekman grab (on left) is a benthic invertebrate sampling device used to sample the bottom of the lake.

Hydrilla was not observed during this inspection. The very low level of this invasive plant in 2013 (only a few sprigs found this year) was likely due to the combined effects of consumption by grass carp and competition from native SAV.

Photo: Hydrilla sprig found during July's bioassessment.

A healthy diversity of native SAV (4 species) was observed during the inspection including: eelgrass to a depth of 6 feet, water hyssop to 1 foot, baby's tears to 1 foot, and southern naiad to 4 feet. Eelgrass was still the dominant species of SAV; however, the amount of eelgrass was reduced compared to the previous inspection.

Native SAV plays an important role in the ecosystem of the lake by providing habitat for wildlife, taking-up nutrients, and competing for space with exotics species such as hydrilla. The eelgrass corridors were found to be in good condition, especially with elevated lake levels. Eelgrass corridor treatments were executed in December.

Photo: Eelgrass at the outfall canal.

Native emergent vegetation, including pickerelweed, duck potato, fire flag, and canna lily, continues to thrive in the absence of torpedo grass. Through herbicide applications and the hard work of homeowners and volunteers, torpedo grass has been removed from most shorelines. The absence of torpedo grass has allowed many beneficial native plants to expand in its place. It is recommended to plant native emergent vegetation along cleared shorelines because it will help filter nutrients from runoff and aid against shoreline erosion.

Photo: Shoreline with native emergent vegetation pickerelweed.

The water elevation during the time of the inspection was 62.93 feet above sea level. The secchi reading (measurement for water clarity) was 1.9 feet, which was a decrease from the prior survey of 2.8 feet. No grass carp fish were observed during this inspection.

Photo: Grass carp barrier.

Recommendations for your lake:

1 Work together with other lakefront owners. Have *at least* one annual lake association meeting, invite guest speakers (such as county or state biologists) and discuss lake specific issues, especially nutrients/lake management recommendations. SCLMP staff would be glad to present our findings from this and other surveys. Continue to increase native aquatic plantings along the shoreline (such as pickerelweed, duck potato, and canna).

2 Consider increasing street sweeping services during times of peak leaf fall to ensure that this debris does not enter your waterways. Leaf debris contains phosphorous that can negatively impact your lakes.

3 Increase educational outreach programs i.e. Shoreline Restoration Workshops (planting days), Florida Yards and Neighborhoods (FYN), Lake Management Video mail-outs. Spread the word about reducing personal pollution through reducing total fertilizer use, using only phosphorous-free fertilizers, keeping a functional shoreline with beneficial native aquatic plants, and keeping grass clippings out of your storm drains leading to the lake. All of these activities aid in protecting your waterbody! Contact Seminole County Lake Management Program (407) 665-2439 to find out about the free educational programs available to you.

Greetings Spring Lake!

Below please find the latest bioassessment for your lake. Key highlights of this update will include:

- LVI results
- Hydrilla observations- no hydrilla plants found during this inspection
- Eelgrass corridor maintenance- treatments on hold due to higher water elevation
- Increase in water elevation- easier navigation as result
- Recommendations for you and your lake

On **August 6th**, **2013**, Seminole County Lake Management Program (SCLMP) staff, Gloria Eby, Thomas Calhoun, Marianne Pluchino and Joey Cordell surveyed the aquatic plants in **Spring Lake** and conducted a Lake Vegetation Index (LVI).

The LVI was created by the Florida Department of Environmental Protection as a rapid screening tool (bioassessment) for ecological condition; it determines how closely a lake's flora (aquatic plants) resembles that of an undisturbed lake.

Spring Wood Lake is 84 surface acres with a mean depth of 6 ft and a maximum depth of 19 ft located in the Little Wekiva watershed. Scores for Spring Lake have ranged from 32 to 53. LVI score for 2013 was 52 in the healthy range.

LVI Range	**Description**
78-100	Exceptional
38-77	Healthy
0-37	Impaired

Hydrilla was not present during the inspection. Native submersed aquatic plants observed during the inspection included; eelgrass to a depth of 6.5 feet, water hyssop to 1 feet baby's tears to 1 foot, and southern naiad to 3.5 feet. Eelgrass continues to be the dominant SAV with blades reaching the surface from a depth of 6 feet. The eelgrass corridors were found in good condition especially with elevated lake levels. Eelgrass corridor treatment will assessed again during cooler water temperatures.

Photo: Eelgrass topping out near shore.

The water elevation during the time of the inspection was 63.23 feet above sea level; an increase from the previous survey of 63.45 feet. The secchi reading (measurement for water clarity) was 3.3 feet which is a decrease from the prior survey of 3.6 feet. No grass carp fish were observed during this inspection.

On **October 7th**, **2013**, Seminole County Lake Management Program (SCLMP) staff, Thomas Calhoun and Beth Stephens surveyed the aquatic plants in **Spring Lake**.

Hydrilla was not present during the inspection.

A good diversity of 5 native SAV were observed during the inspection including; eelgrass to a depth of 6 feet, water hyssop to 1 feet baby's tears to 1 foot, muskgrass to a depth of 4 feet and southern naiad to 4 feet. Eelgrass continues to be the dominant SAV with blades reaching the surface from a depth of 6 feet however other native SAV are expanding. Native SAV play an important role in the ecosystem of the lake by providing habitat, up taking nutrients and competing for space with exotics species such as hydrilla. The eelgrass corridors were found in good condition especially with elevated lake levels. Eelgrass corridor treatment will assessed again during cooler water temperatures.

Photo: Muskgrass mixed in with eelgrass.

Native emergent vegetation including; pickerelweed, duck potato, fire flag and canna lily continue to thrive in the absence of torpedo grass. Through herbicide applications and the hard work of homeowners and volunteers torpedo grass is clear of most shorelines. This has allowed many beneficial native plants to expand in its place.

Photo: Shoreline with native emergent vegetation pickerelweed.

The water elevation during the time of the inspection was 63.14 feet above sea level; a decrease from the previous survey of 63.23 feet. The secchi reading (measurement for water clarity) was 2.8 feet which is a decrease from the prior survey of 3.3 feet. No grass carp fish were observed during this inspection.

Recommendations for your lake:

1 Work together with other lakefront owners. Have *at least* one annual lake association meeting, invite guest speakers (such as county or state biologists) and discuss lake specific issues, especially nutrients/lake management recommendations. SCLMP staff would be glad to present our findings from this and other surveys. Continue to increase native aquatic plantings along shoreline (such as pickerelweed, duck potato and canna).

2 Consider increasing street sweeping services during times of peak leaf fall to ensure this debris does not wind up in your waterways. Leaf debris contains phosphorous that can impact your lakes.

3 Increase educational outreach programs i.e. Shoreline Restoration Workshops (planting days), Florida Yards and Neighborhoods (FYN), Lake Management Video mail-outs, and reduction of personal pollution by using low fertilizer use; phosphorous free fertilizers; keeping a

functional shoreline with beneficial native aquatic plants; keeping grass clippings out of your storm drains leading to the lake. All these activities aid in protecting your waterbody! Contact Seminole County Lake Management Program (407) 665-2439 for free educational programs available.

Greetings Spring Lake Residents!

Please find the latest bioassessment of your lake below. The next scheduled inspection of your lake will be April 10th; weather permitting. Key highlights of this update include:

- Annual MSBU Meeting with liaisons conducted in January 2014 with link to Annual Report
- Status of Submersed Aquatic Vegetation (SAV)
- Eelgrass corridor update
- Status of shoreline emergent vegetation
- Continued encouragement to plant native aquatic plants along your shoreline
- Recommendations for you and your lake

Annual Planning Session with Liaisons:

The annual Lake Management meeting (which is conducted for each MSBU waterbody) with your liaisons was held on January 23rd, 2014. The agenda for this meeting included review of: (1) prior year lake management and fiscal activity (FY12-13), (2) current conditions and lake management plan for balance of current fiscal year (FY13-14), and (3) projected plans for the next fiscal year (FY14-15), along with a review of the roles and responsibilities of the County and the liaisons. Summary of the Spring Lake Aquatic Weed Control MSBU can be found on the MSBU Program website at:
http://www.seminolecountyfl.gov/fs/pdf/2014%20Spring%20Lake%20Report.pdf

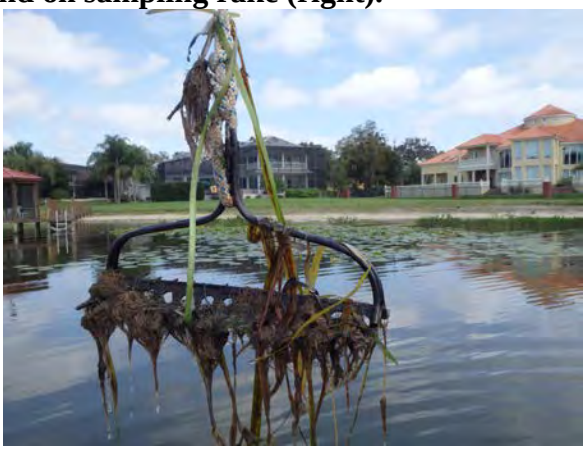
Bioassessment:

On **March 4th, 2014**, Seminole County Lake Management staff (Thomas Calhoun and Gloria Eby) surveyed the aquatic plants in **Spring Lake**.

Hydrilla was not observed during this inspection. The low level of this invasive plant being observed is likely due to the combined effects of consumption by grass carp fish and competition from native submersed aquatic vegetation (SAV).

Eelgrass was the only SAV observed during this inspection and was found to a depth of 7.7 feet; however the biomass was observably reduced compared to the previous 2 inspections. Eelgrass is healthy and robust to a water depth of 3-4 feet. Eelgrass was observed in sporadic patches (rather than a "meadow") at the 4-7 foot depth range. We will continue to closely monitor the density of eelgrass to evaluate if this plant population is being impacted. Some variables that can contribute to changes in eelgrass population are reduced water clarity in the lake (providing less sunlight to the plants in deeper water), seasonal effects/changes, and or grass carp fish effects.

Photo: Images of eelgrass on sonar (left) and on sampling rake (right).



Native SAV plays an important role in the ecosystem of the lake by providing habitat for wildlife, taking-up nutrients, and competing for space with exotics species such as hydrilla. The eelgrass corridors were found to be in good condition, especially with elevated lake levels. Eelgrass corridor treatments were executed in December and will be scheduled in June; weather permitting.

Native emergent vegetation (including pickerelweed, duck potato, fire flag, and canna lily) continues to thrive in the absence of torpedo grass. Through herbicide applications and the hard work of homeowners and volunteers, torpedo grass has been removed from most shorelines. The absence of torpedo grass has allowed many beneficial native plants to expand in its place. It is recommended to plant native emergent vegetation along cleared shorelines because it will help filter nutrients from runoff and aid against shoreline erosion.

The water elevation during the time of the inspection was 63.03 feet above sea level. The secchi reading (measurement for water clarity) was 2.1 feet, which was an increase from the prior survey of 1.9 feet. The apparent color of the water was green to brown with an algae bloom present. No grass carp fish were observed during this inspection although we are receiving reports of their presence. Thank you for submitting these, we find them very useful.

Recommendations for your lake:

1 Work together with other lakefront owners. Have *at least* one annual lake association meeting, invite guest speakers (such as county or state biologists) and discuss lake specific issues, especially nutrients/lake management recommendations. SCLMP staff would be glad to present our findings from this and other surveys. Continue to increase native aquatic plantings along the shoreline (such as pickerelweed, duck potato, and canna).

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