Lakes Burkett/Martha MSBU
Report for Fiscal Year 2011-2012
October 1, 2011 through September 30, 2012
Annual Meeting Held: July 13, 2012

County Staff: Gloria Eby, Thomas Calhoun, Carol Watral

Lake Liaisons: David Diggs (unable to attend), Dr. Todd Husty (unable to attend)

Others Attendees: Lisa Wilk – President Trinity Bay HOA (unable to attend), Craig Maughan – Headmaster from Trinity Preparatory School

Purpose: To review status of waterbody management and to discuss with the liaison group the recommendations and plans for the next fiscal year.

Routine updates of inspections/results are provided to the community liaison members via email. To be included in these updates, please notify Gloria Eby, Lake Management Program (LMP) Manager, at geby@seminolecountyfl.gov.

Meeting Synopsis:

The meeting was conducted according to the agenda distributed. Meeting discussion points covered a variety of topics including hydrilla management strategies (both biological and chemical), contracted services scope, performance and cost, watershed/community education, watershed nutrient study, planting the shoreline with desirable native plants, and liaison communication.

1. The non-ad valorem assessment for FY12/13 remains at $725.00.
2. There is potential that large-scale herbicide treatments for hydrilla may be required every two to three years.
3. Property owners are encouraged to communicate comments/concerns through the liaison group, who will provide consolidated request/comments to the MSBU Project Manager (Carol Watral).
4. LMP recommends the liaisons/owners select locations on the lake to serve as shoreline demonstration sites. The goal of these sites is for the lake community to have reference locations serving as a demonstration of the benefits of a native plant shoreline. March 16, 2013, is the tentative date selected for a restoration/planting event. Joint planning/educational efforts with Orange County will be pursued. More details will be provided in upcoming inspection reports.
5. LMP will supply and install "hitchhiker" signs at the boat ramp at Trinity Bay HOA and Trinity Prep to remind everyone how critical it is to inspect their boat and trailer to remove pieces of vegetation that may be "hitchhiking". This will help to prevent the spread of invasive and aggressive vegetation such as hydrilla in/out of the lakes.
6. On October 1, LMP will be working along the unincorporated shoreline area of Lake Burkett targeting emergent invasives such as cattails and torpedo grass; activities based upon available funding.

County Funding:

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. Lakes Burkett/Martha MSBU 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.

2011 - 2012 Lake Management Activities:

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.*

Water quality and biological monitoring sampling (such as vegetation assessments) are conducted by Seminole County based on cost/benefit considerations as well as available funding. Orange County is conducting quarterly sampling for wet chemistry and the students of Trinity Prep are collecting monthly LAKWATCH samples (KUDOS to them). This data, and much more, can be found on the Water Atlas at: **http://www.seminole.wateratlas.usf.edu/lake/?wbodyatlas=lake&wbodyid=7521.**

At this time, Seminole County Lake Management Program (LMP) services are focused primarily on the immediate need and appropriate techniques (biological or chemical) for managing hydrilla.

Lake Management Recommendations

LMP recommendations for the upcoming fiscal year [FY12/13] are as follows:

1) **Shoreline re-vegetation with native emergent plants (by the lakefront community and potentially volunteers),**
2) **Continued aquatic herbicide maintenance for non-native vegetation along with hydrilla treatments as required,**
3) **Continued monitoring of hydrilla, other submersed aquatic plants, and grass carp fish,**
6) **Establishing a formal Lake Association, and holding at least one annual meeting with topics relevant to Lakes Burkett/Martha,**
7) **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,**
8) **Provide content (such as photos and relative articles) for the Seminole County Water Atlas Webpage for Lake Burkett which can be found at: http://www.seminole.wateratlas.usf.edu/ResourceProgram.aspx?aid=15&wbodyid=7521**

LMP continues to recommend/encourage residents to become involved in establishing native plantings along the shoreline. The first event is tentatively scheduled for March 16, 2013. The intention of such an event is to plant beneficial native aquatic plants to key areas in need along the bank. Residents should organize planting

days creating a beneficial shoreline. 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 Lakes Burkett/Martha community.

As more property owners become aware and responsive to appropriate care of their lakes, the greater the reward in terms of healthy lakes! The County offers a variety of educational materials and opportunities that are readily available to anyone interested in initiating or promoting lakefront stewardship.

Cost of Aquatic Weed Control

Funding FY October 2011 – September 2012

1)	$ 9,980	Assessment Revenue (per early pay discount) + Interest
2)	$ 3,000	MSBU Fund Advance (to be repaid in FY 2013-2014 and 2014-2015)
3)	$ 0	Reserve and Contingency (beginning fund balance)
	$12,980	Total Revenue

Expenditures were as follows:

1)	$ 6,645	Contracted Services – Seminole County Portion
2)	$ 483	Triploid Grass Carp
3)	$ 1,075	County Administrative Fee
4)	$ 4,117	Contingency Reserve (carried forward to next FY)
	$12,980	Total Expenditures

*Note: LMP testing provided: FasTest 11 tests @ $85.00/test plus overnight shipping

Budgeted FY October 2012 – September 2013

Budgeted Revenue:

1)	$11,855	Assessment Revenue [per early payment discount]
2)	$ 4,117	Reserve and Contingency (beginning fund balance)
	$15,972	Total Revenue

Budgeted Expenditures:

1)	$ 8,000	Contracted Services – Burkett/Martha - Seminole County Portion
2)	$ 3,180	Contracted Services – Routine (Unincorporated Area)
2)	$ 350	Grass Carp
3)	$ 90	Interest on MSBU Fund Advance
4)	$ 1,075	County Administrative Fee
5)	$ 3,277	Contingency Reserve (to be carried forward to next FY)
	$15,972	Total Expenditures

Note: As applicable, any financial activity from prior years is available upon request.

MSBU Background

The aquatic weed control treatment plans for Lakes Burkett/Martha were identified through a detailed lake analysis following the approval of the Board of County Commissioners to establish an MSBU for aquatic weed control.

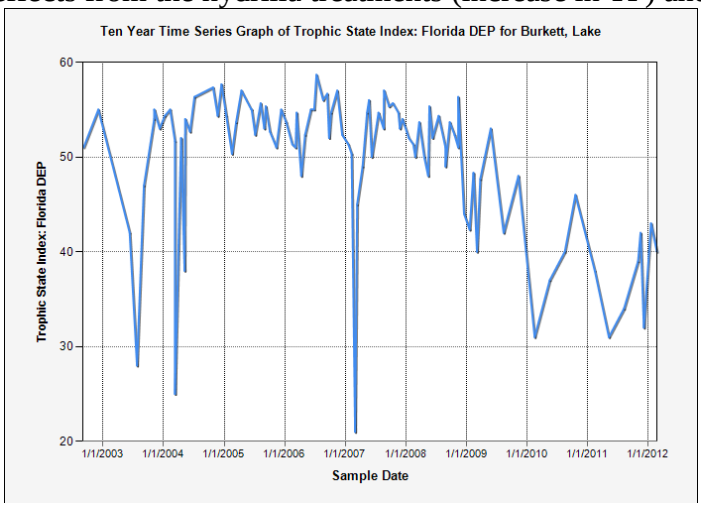
At the request of the community of Lakes Burkett and Martha, the Lakes Burkett/Martha Aquatic Weed Control MSBU was created by Ordinance 2011-21 on August 9, 2011 to provide aquatic weed control for Lakes Burkett and Martha.

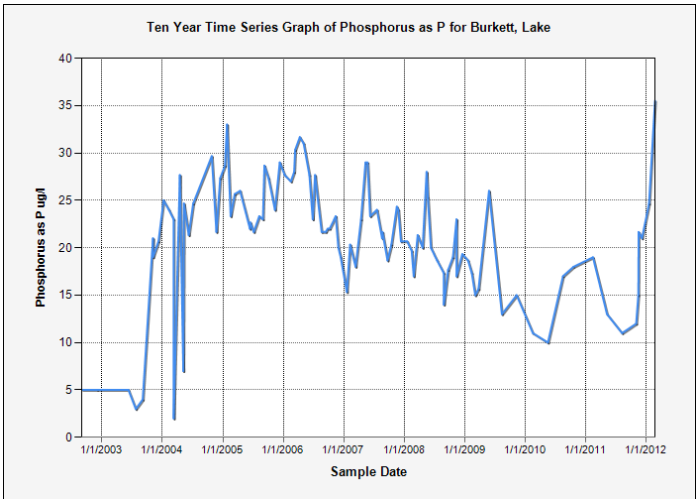
Because there are lakefront properties in unincorporated Seminole County and in unincorporated Orange County bordering Lake Burkett, an Interlocal Agreement between the counties was established to define the roles, responsibilities and financial commitment for each county.

Lakes Burkett and Martha 2012 Water Quality Report: How Does My Lake Rank? 40 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 2 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. Reduction of TP sources (residential pollution, run-off, landscaping practices, shoreline erosion) can help reduce phosphorous in your lake that is abundantly available, potentially creating algae blooms. Please note the most recent water quality data shows effects from the hydrilla treatments (increase in TP) and should normalize as the nutrients settle.





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

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. Lake Burkett (on June 13th, 2012) scored a **46** which is in the "healthy" category. Lake Burkett, in 2011, scored a **38** which is in the "healthy" category however please note that this is only one unit above impaired status.

Hydrilla, being the dominant aquatic plant in 2011, greatly affected the LVI scores that were previously recorded at **56** in 2009 and **55** in 2010.

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.

Lake Burkett Inspections FY 2011-2012

Summary of the August 23, 2012 inspection/report: On August 23, 2012, Seminole County Lake Management Staff Thomas Calhoun and Devin Whitney (joined by OC staff- Ryan Patrick and John Pierce) inspected the aquatic plants within Lakes Martha and Burkett. Minimal hydrilla was noted within both the lakes.

For Lake Burkett, hydrilla biomass was found sparse and non-viable as compared to prior inspections and almost no surface algae. Portions of the shoreline are experiencing some floating eelgrass blades as result of wind/wave action. Much of the lake was observed to be free and clear of hydrilla! Native submersed vegetation found within the lake included; lemon bacopa, baby's tears, road grass, southern naiad and eelgrass. Many small eelgrass runners were present during the inspection. With the absence of hydrilla, it is anticipated for eelgrass to continue to migrate into further areas of the lake.

We will continue to monitor the inshore areas of the lake to enable rapid response to new hydrilla growth as result of tubers (via chemical spot treatments). Tubers are potato-like bulbs that are deposited by the plant into the sediment which can remain viable for up to four years. Tubers are produced in each growing season and are used to perennialize the plant as a means of propagation (re-growth). Since the lakes were previously infested with hydrilla, an abundant amount of tubers (which can sprout new growth at any time) were deposited in the lake bed; one square meter of hydrilla can produce 5,000 tubers.

Beginning in October 2012 Seminole County's herbicide contractor will begin treating shorelines on the Seminole County side of the lake only. The target species of these treatments will be torpedo grass and cattails. If you would like your cattails treated please respond to this email.

Shoreline Restoration Event Scheduled for Saturday March 16th, 2013:

We are looking forward to the **1st Shoreline Restoration Event** scheduled for **Saturday, March 16th, 2013 from 9am-1pm**. On this date, the Seminole County Lake Management and SERV Programs will bring in community volunteers **and beautiful FREE aquatic plants** to plant along designated shorelines to help improve the water quality of your lake. We are currently looking for sites, so if you are interested in becoming a designated site, please contact me for further details. What is required of you? Your attendance from 9-1pm and your stewardship to care for the plants once installed. Headmaster from Trinity Prep, Craig Maughan, has graciously offered student participation and we look forward to Trinity Prep being included as one of the planting sites! Thanks Craig!

For Lake Martha, much of the lake was observed to be free and clear of hydrilla with only small fragments of non-viable hydrilla remaining. Eelgrass was observed reestablishing in many areas within Lake Martha. With the absence of hydrilla, it is anticipated for eelgrass to continue to migrate into further areas of the lake.

Lakes Martha and Burkett were stocked with 360 sterilized grass carp fish on July 26th, 2012. The use of grass carp fish are continued efforts for the hydrilla management plan that utilizes integration of chemical and biological control methods. Thanks to Orange County for being on hand to capture photos of the fish for the lake community!

In efforts to reduce transportation of exotics in/out of your lake, SC-LMP will be installing educational campaign signs at the Trinity Bay and at Trinity Prep ramps. These signs are designed to educate boaters on the potential of transporting nuisance species that can be costly to manage.

The secchi reading (measurement for water clarity) was 3.7 feet in a depth of 7.1 feet compared to 3.1feet during the last (August) inspection. This information can be found online at either County's Water Atlas website at:
http://www.seminole.wateratlas.usf.edu/lake/waterquality.asp?wbodyid=7521&wbodyatlas=lake
http://www.orange.wateratlas.usf.edu/lake/?wbodyatlas=lake&wbodyid=7521

Summary of the June 21, 2012 inspection/report: We continue to closely monitor the decomposition of hydrilla inspecting the lakes on May 17th and 23rd, June 13th and 21st. Based on these inspections, most of the plant material is impacted beyond recovery and is expected to continue to decompose and fall out. We continue to advise to please refrain from raking out hydrilla and/or algae from the lakes at this time.

Raking now only increases the chances for the raked hydrilla strands/fragments to survive when and if introduced back into the lake (i.e. reintroduced by rain or wind). This is because the removed plant material will no longer be in contact with the herbicide in the water column and could survive if reintroduced to the lake. As product concentrations still remain in the lake, continuing to expose the hydrilla is the best option for long term control and allows the natural process of decomposition to occur. Once the hydrilla fully decomposes, the associated algae will disappear.

Upon each site visit, we are seeing surface algae increase in Lake Burkett. This is a normal, expected occurrence that results from the hydrilla decomposing. We anticipated much worse conditions, like last summer, however this has not taken place thus far. There is still a considerable amount of decaying hydrilla that has the potential to surface in Lake Burkett creating large algae mats. Wind/wave action will facilitate (speed up) the decomposition of the hydrilla, which is the final stage of the plant. Overall we have seen great improvements in Burkett.

Lake Martha has seen dramatic improvements over the series of inspections. At the time of inspection, much of the lake was free and clear of hydrilla, however decomposing plant (none that appear viable) are still prevalent on the south lobe. Wind/rain storms has aided in reducing the plant material/algae off the surface of the lake. We anticipate seeing much less decomposing hydrilla upon our next inspection.

The counties have recently met to discuss sterile grass carp fish stockings and are proceeding with acquiring 3 fish per acre for the lakes. Orange County will be procuring the fish (based

upon availability) within the next 6 weeks. Additional information stemming from our meeting was including the lakes in an educational campaign and sponsoring a shoreline restoration event in 2013. Both counties take interest in educating the lake communities on water quality issues and will seek volunteers from the community to aid us in promoting educational events in 2013!

Summary of the May 23, 2012 inspection/report: We conducted several inspections over the past two weeks (on May 17th and 23rd) monitoring the decomposing hydrilla and associated algae surfacing as a result. Based on these inspections, the three agencies have agreed that a minor amount of product should be administered to the lakes to ensure that the intermittent growth observed will not survive to become new plant material. Even though the lakes were treated on Wednesday, May 23rd, this does NOT require an irrigation advisory as the concentrations are under the precautionary threshold.

Attached is a photo of the minor growth observed. The rest of the plant material, although long and dense, is impacted beyond recovery and is expected to continue to decompose. Once the decomposition phase has completed, the surface algae feeding on the decaying plant material will disappear as well. The decomposition stage is prolonged by the sheer amount of hydrilla biomass that was present in the lake prior to treatment. Additionally, this amount of plant material contains a large food storage supply. This carbohydrate storage is what can supply new growth from the existing plant stem as seen in photo below. Keeping the concentration of product within the water column at the prescribed level will impact the growth observed. Continual close monitoring to observe these events is critical to having a successful hydrilla treatment outcome.

Upon each site visit, we are seeing an increase in the surface algae (more so in Burkett). This is a normal, expected occurrence that results from the hydrilla decomposing. We anticipated much worse conditions, like last summer, however this has not taken place thus far. There is still a considerable amount of decaying hydrilla that has the potential to surface, creating large algae mats. Wind/wave action will facilitate (speed up) the decomposition of the hydrilla, which is the final stage of the plant.

Summary of the March 2, 2012 inspection/report: We sampled the lakes yesterday and shipped the samples to the lab overnight (as usual). We have not received the data results yet to confirm the concentrations for irrigation purposes so the precautionary irrigation advisory is still in effect until further notice.

Overall, we are seeing great indications of product response and further impacts to hydrilla and are pleased with the results thus far. Based upon our observations and coordination between the counties and product specialist, we will be re-treating the lake this Tuesday, March 6. This will leave no irrigation window available between the scheduled treatments.

Some frequently asked questions to share with you that I have received:

- Can we irrigate? Not at this time.
- When will we be able to use the lake? We anticipate by mid-April.
- Can we swim? Yes the product is safe for swimming.

- Will the lake be stocked with grass carp fish and when? Yes. The counties have acquired permit for more fish; however, we are waiting till post treatment to evaluate stocking quantities and date.

Summary of the February 23, 2012 inspection/report: The lab results are in from last week's sampling and inspection event as a follow-up to the February 3 hydrilla treatment. Concentrations of product are still above the precautionary advisory level of 10ppb therefore the precautionary irrigation advisory is still in effect until further notice.

We will be back out on February 28 gathering new water samples and further surveying hydrilla impacts. We will advise if there is an irrigation window available prior to the next treatment.

The treatment plan for hydrilla is based on splitting the treatment to maintain product at elevated concentrations within the lake for a longer period of time (there will be a total of 3 treatments). As is, the visible effects are the white tips on the plant. Through a process called chlorosis (a condition where the loss of green pigmentation in plants occurs), the new growth is losing its food storage supply (carbohydrates) and dying off.

During our inspection this was important to observe. Additionally, there is no new growth on the plant that is green observed (this would indicate that the plant was growing in presence of the product). These new growth tips will soon fall off the main stem of the plant in which the main stem plant will then begin to decay. Algae are present in portions of the lake due to the die-back of the plant. This should clear up once the plant biomass (hydrilla) is gone.

Summary of the February 3, 2012 inspection/report: The initial hydrilla treatment was conducted today. As reminder, please refrain from irrigating with lake water until further notice. This precautionary advisory is only for those who pump directly from the lake for irrigation purposes.

Summary of the January 17, 2012 inspection/report: Based upon the lake inspection conducted yesterday, January 17, 2012, we have determined that hydrilla **is** actively growing and the initial treatment will be scheduled for February 3, 2012 (weather permitting). Orange County will be conducting the treatment in cooperation with SePRO's aquatic specialist, FWC, and Seminole County.

Use of Sonar does require a precautionary irrigation advisory above 10 parts per billion (ppb). This is specific to those who use *lake water for irrigation purposes only*. The precautionary advisory is based upon studies demonstrating that Sonar can damage turf grass if using treated lake water for irrigation purposes above concentration levels of 10ppb. A community message will also be distributed via post cards this week to Orange County residents and via reverse 911 calling system for Seminole County residents this Friday, January 20.

The hydrilla treatment can take upward of 90 days for full treatment; there is a potential that the irrigation advisory can be in effect during that duration. We will notify you via these emails (& r911 calls **if** in Seminole County) once the levels are at or under 10ppb. Since dependent on

water chemistry, plant biology, and weather, we will be testing the concentrations at the suggested schedule below and following up accordingly with you.

Here are treatment details:

- Initial Application: February 3rd Sonar applied to whole lake.
- Day 28: Lake survey taking 3 water samples to measure concentration of product in water (called FasTest); plan 2nd treatment according to test results.
- Day 49: Apply 2nd treatment according to test results.
- Day 56 or 21 days following 2nd treatment: Lake survey taking 3 water samples to measure concentration of product in water (called FasTest)
- Day 77: Final lake survey as determined by tests/progress of treatment.

As previously advised, with the extensive biomass of hydrilla present, there may be a significant algal bloom associated with the treatment; much like what was experienced during the summer months if not worse. Some areas are already experiencing this from cold weather effects on the plant. Being cooler temperatures (dissolved oxygen is greater) a fish kill is less likely than in spring or summer temperatures.

Orange County has advised that they are progressing towards the MSBU Resolution to go before their BCC soon and Seminole County is processing the Interlocal Agreement document established between the two counties. The stocking of additional grass carp fish will be evaluated post-treatment in cooperative efforts between the two counties.

Summary of the September 21, 2011 inspection/report: Below you will find our latest lake assessment report detailing the condition and health of your lake and a mechanism to distribute relative information. The petition/ballot process for both Seminole and Orange Counties are complete. Seminole County (SC) has proceeded and acquired County Board approval of the MSBU Resolution on August 9, 2011. Orange County's public hearing for the MSBU Resolution is waiting for a date in October. The two counties are currently working on an Interlocal Agreement for execution of services in January. Orange County (OC) has obtained the necessary permits from the Florida Fish and Wildlife Conservation Commission (FWC) for aquatic plant management and once the Resolution is finalized, requests for amending the FWC permit for additional grass carp fish will commence.

As presented during the community meeting, treatment for hydrilla will not commence until January or when the plant is actively growing again from winter dormancy. We are unable to treat in advance (November-December months), as the plant becomes dormant and ineffectively absorbs the herbicides. This poses the greatest risk of hydrilla surviving this costly treatment. We want to ensure the best conditions for maximum results and treatment is best in January or when the plant is actively growing again. SC has tentatively set a date for testing hydrilla plant material in October which is dependent on OC's approval of their Resolution. There are significant costs associated with these tests ($2,500 per) in which we have to ensure OC's MSBU Resolution is approved prior. This testing (bioassay) will provide important information that determines the susceptibility of plants to aquatic herbicides. Pre-treatment plant samples are gathered from the lakes and processed at a specialized lab. These assay results assist in developing specific treatment prescriptions for the lakes enhancing the success of the treatment.

Historic Lake Observations:

On September 21, 2011**,** Seminole County Lake Management Program (LMP) personnel, Gloria Eby and Thomas Calhoun, surveyed the aquatic plants in **Lake Burkett.** During this survey, the key submersed aquatic vegetation (SAV) observed was the following: invasive-exotic hydrilla (*Hydrilla verticillata*) to a depth of 12 feet, native southern naiad (*Najas guadaluppensis*) to 10.5 feet, and native eelgrass (*Vallisneria americana*) to 8 feet. These SAV species covers 85% of the lake bottom. Eelgrass (with its spiral bloom) and southern naiad are most abundant in the inshore waters on the SE corner, from 1-6 feet in depth. It is likely that these natives are in competition with hydrilla and have kept hydrilla from invading in this area thus far.

Hydrilla has significantly increased throughout the lake blocking access for a majority of the boat docks and is impeding navigation through the canal of which is now 100% chocked with hydrilla. Hydrilla plant tips, previously within 6 inches of the water's surface, are now topping out in 60% of the lake and growing laterally along the surface. Plants were found in depths of 10-12 feet, making the plants over 12 feet in length. During the previous survey, eelgrass and southern naiad were much more dominant than hydrilla; however hydrilla is now the dominant aquatic plant within the lakes.

Upon previous inspection, lilies on the northwest shoreline have been impacted by unknown causes. We were informed these were chemically treated. Summertime treatments can cause more of the organic bottom to surface as the root system dislodges creating tussocks. Suggest treating during cooler temperatures to reduce this occurrence.

Torpedo grass (*Panicum repens*) was observed throughout the lake on most waterfronts. Other non-native aquatic plants observed were wild taro (*Colocasia esculenta*) and flat sedge (*Cyperus prolifer*).

The secchi reading (measurement for water clarity) was 12.9 feet in a depth of 25 feet compared to 10.8 feet during the 19 May 2010 survey, 6.7 feet on 22 December 2009 survey, and 3.7 feet in 27 May 2009. As the nutrients within the lake are being absorbed by the overabundance of the aquatic plants (hydrilla), this is increasing the clarity on Lake Burkett. Again, this information can be found online at either County's Water Atlas website at:
http://www.seminole.wateratlas.usf.edu/lake/waterquality.asp?wbodyid=7521&wbodyatlas=lake
http://www.orange.wateratlas.usf.edu/lake/?wbodyatlas=lake&wbodyid=7521

Hydrilla in **Lake Martha** was much more extensive than Lake Burkett, in which 95% of the lake is now topped out. Once the plant surfaces, the plant tips decompose due to high temperatures. Algae feeds upon the plant decay creating a surface algal bloom. This process, previously occurring along the perimeter of the lake, has now expanded lake-wide. With this amount of plant material (biomass), the lake is susceptible to large algal blooms and dissolved oxygen fish kills. Navigation has been significantly impacted lake-wide. For the southern portion of Lake Martha, this area was dominantly eelgrass. It appears, during this inspection, that the dense surface mats of hydrilla have created a canopy greatly shading eelgrass from receiving sunlight; negatively impacting it. This canopy effect can impact other native plants and organisms as

well. The secchi reading (measurement for water clarity) in Lake Martha was 6.5 feet in a depth of 15 feet.

Lake Vegetation Index (LVI):

On 29 June, 2011**,** Gloria Eby (SC Senior Environmental Scientist), Marianne Pluchino (SC Senior Environmental Scientist), and Thomas Calhoun (Seminole County Contracted Scientist) conducted a Lake Vegetation Index (LVI) assessment of **Lake Burkett**.

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. Lake Burkett scored a 38 which is in the "healthy" category however please note that this is one unit above impaired status. Hydrilla, being the current dominant aquatic plant, has greatly affected the LVI scores previously recorded at 56 and 55.

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.

Historical LVI DATA:

5/27/2009 BUR-5272009 Lake Burkett Healthy: 56
5/19/2010 BUR-5192010 Lake Burkett Healthy: 55

6/29/2011 BUR-6292011 Lake Burkett Healthy: 38

Students of Trinity Preparatory

Mr. Gray, AP science teacher, is coordinating with SC's LMP on projects for his students related to the lakes and may be assisting with water quality samples and data analysis as a school project. We look forward to working with the students of Trinity Preparatory in applying classroom lectures to the real world environment.