

**HARRIS CHAIN OF LAKES RESTORATION COUNCIL**

**2014 REPORT TO THE FLORIDA LEGISLATURE**

**TEMPORARY COVER PAGE**

(Editors note - Final cover page to be completed at November Council meeting)

**Issued by:**

**Harris Chain of Lakes Restoration Council**

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**November 2014**

Acknowledgements: **Editors note – this section will be completed once a final cover page is developed.**

## **EXECUTIVE SUMMARY**

The Harris Chain of Lakes Restoration Council (Council), in conjunction with state and local agency partners, met regularly during the reporting period of November 2013 through October 2014. The Council received technical presentations throughout this period on studies and initiatives to restore and manage the Harris Chain of Lakes. Based on these technical presentations, the Council has made recommendations on restoration and lake management efforts. These recommendations are summarized below and are detailed in this annual report to the Florida Legislature.

### **Lake Water Level Management**

Editor's note: This section will be completed in November 2014, once the Council finalizes its recommendations. The text will be the exact same as found in the respective section of the annual report.

### **Lake Apopka Restoration**

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### **Dredging Projects and Related Activities**

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### **Fisheries**

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### **Water Quality**

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### **Aquatic Plant Management**

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TABLE OF CONTENTS

**EXECUTIVE SUMMARY** ..... I

**LIST OF ACRONYMS**..... III

**1.0 STATUTORY AUTHORITY** ..... 1

**2.0 2014 MEETINGS AND PRESENTATIONS** ..... 1

**3.0 COUNCIL FINDINGS AND RECOMMENDATIONS** ..... 3

**3.1 Lake Water Level Management**..... 3

**3.2 Lake Apopka Restoration**..... 8

**3.3 Dredging Projects and Related Activities** ..... 10

**3.4 Fisheries**..... 11

        3.4.1 *Sport Fish Stocking* ..... 11

        3.4.2 *Fish Attractor Program* ..... 14

        3.4.3 *Fishery Access* ..... 15

**3.5 Water Quality** ..... 16

**3.6 Aquatic Plant Management**..... 18

APPENDICES (UNDER SEPARATE COVER)

- Appendix 1: November 1, 2013, Meeting Information
- Appendix 2: February 7, 2014, Meeting Information
- Appendix 3: March 7, 2014, Meeting Information
- Appendix 4: May 2, 2014, Meeting Information
- Appendix 5: June 6, 2014, Meeting Information
- Appendix 6: July 24, 2014, Technical Advisory Group Meeting Information
- Appendix 7: August 1, 2014, Meeting Information
- Appendix 8: September 5, 2014, Meeting Information
- Appendix 9: October 3, 2014, Meeting Information

**LIST OF TABLES**

Table 1: Technical Presentations from November 2013 to October 2014..... 3  
Table 2: 2014 Technical Advisory Group (TAG) Members ..... 3

**LIST OF FIGURES**

Figure 1: Map of the Harris Chain of Lakes ..... 2

**LIST OF ACRONYMS**

<b>B.A.S.S.</b>	Bass Anglers Sportsman Society
<b>BMAP</b>	Basin Management Action Plan
<b>BMP</b>	Best Management Practice
<b>DEP</b>	Florida Department of Environmental Protection
<b>EPA</b>	Environmental Protection Agency
<b>FDOT</b>	Florida Department of Transportation
<b>FWC</b>	Florida Fish and Wildlife Conservation Commission
<b>HCOL</b>	Harris Chain of Lakes
<b>LANS</b>	Lake Apopka North Shore
<b>LCWA</b>	Lake County Water Authority
<b>MFLs</b>	Minimum Flows and Levels
<b>NuRF</b>	Nutrient Reduction Facility
<b>RFQ</b>	Request for Proposals
<b>SAV</b>	Submerged Aquatic Vegetation
<b>SJRWMD</b>	St. Johns River Water Management District
<b>SWIM</b>	Surface Water Improvement and Management
<b>TAG</b>	Technical Advisory Group
<b>TMDL</b>	Total Maximum Daily Load
<b>TP</b>	Total Phosphorus
<b>UF</b>	University of Florida

## **1.0 STATUTORY AUTHORITY**

The Harris Chain of Lakes Restoration Council (Council) was established by the Florida Legislature in 2001 (Chapter 373.467 *Florida Statutes* [F.S.]) with the powers and duties to: (a) review audits and all data specifically related to lake restoration techniques and sport fish population recovery strategies, (b) evaluate whether additional studies are needed, and (c) explore all possible sources of funding to conduct restoration activities. The Legislature also established the Harris Chain of Lakes Restoration Program (Chapter 373.468 F.S.), which directed the Florida Fish and Wildlife Conservation Commission (FWC) and St. Johns River Water Management District (SJRWMD), in conjunction with the Florida Department of Environmental Protection (DEP), pertinent local governments, and the Council to review existing restoration proposals to determine which are the most environmentally sound and economically feasible methods of improving the fish and wildlife habitat and natural systems of the Harris Chain of Lakes.

## **2.0 2014 MEETINGS AND PRESENTATIONS**

The Council conducted eight meetings during the 2014 reporting period (i.e., November 2013 to October 2014). During this period, the Council received scientific information on restorative measures for the Harris Chain of Lakes (see Figure 1) and data concerning water quality and aquatic ecological conditions. Several state and local agencies, including FWC, Lake County Water Authority (LCWA), SJRWMD and the University of Florida (UF), provided technical presentations and information to the Council. The technical presentations given to the Council during the reporting period are listed in Table 1.

Members of the Council's Technical Advisory Group (TAG) also provided periodic updates to the Council on various topics related to lake water quality and restoration issues. The members of the TAG are listed in Table 2. The TAG held a meeting on July 24, 2014, to review a draft overarching (action) goal for the Harris Chain of Lakes and to develop related recommendations for consideration by the Council.

All Council meetings were appropriately noticed and open to the public. Members of the public regularly attended Council meetings and provided information and feedback to the Council. Information from the technical presentations, TAG member updates, and public was reviewed and discussed in detail by the Council. This information was used by the Council as the basis for developing recommendations for future restorative measures and management practices for the Harris Chain of Lakes.

Copies of the Council and TAG meeting minutes and technical presentations for the reporting period are provided as appendices to this report. The appendices are provided in digital format on the enclosed compact disc and may be downloaded from the Council's website at [harrischainoflakescouncil.com](http://harrischainoflakescouncil.com).

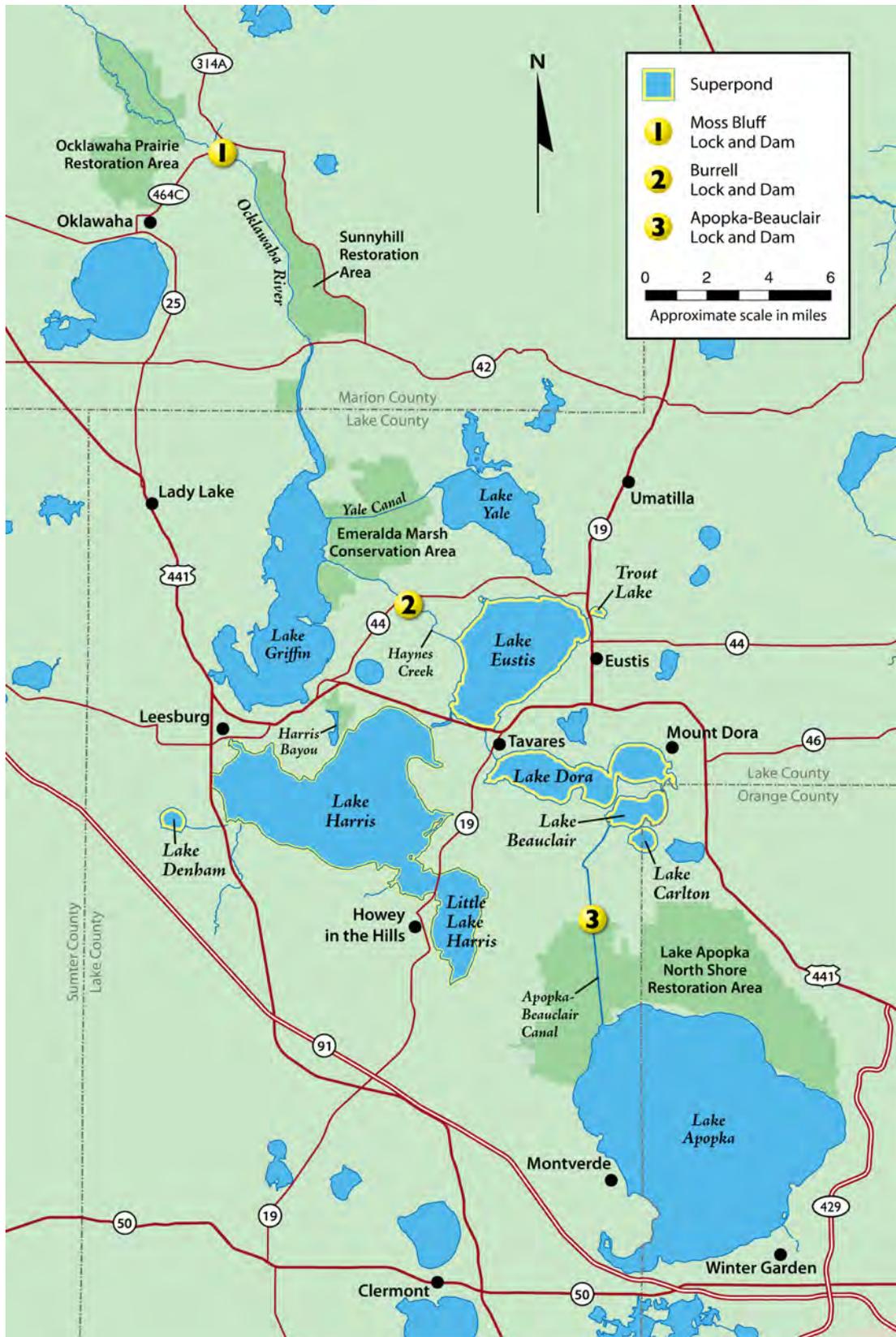


Figure 1: Map of the Harris Chain of Lakes

**Table 1: Technical Presentations from November 2013 to October 2014**

<b>Meeting Date</b>	<b>Presentations</b>
February 7, 2014	<ul style="list-style-type: none"> <li>Estimated Cost of Rearing and Stocking Phase II Largemouth Bass (Dennis Renfro and Rick Stout, FWC)</li> </ul>
May 2, 2014	<ul style="list-style-type: none"> <li>Proposed Statewide Largemouth Bass Regulations (Eric Thomas, FWC)</li> <li>Draft Water Budget for Lake Apopka and Harris Chain of Lakes (Michael Cullum and Shaw Huang, SJRWMD)</li> </ul>
June 6, 2014	<ul style="list-style-type: none"> <li>Ecological Considerations in setting MFLs and Lake Regulation Targets for the Ocklawaha Chain of Lakes (Rolland Fulton, SJRWMD)</li> </ul>
August 1, 2014	<ul style="list-style-type: none"> <li>Lake Apopka Legislative Funding Update (Tom Champeau, FWC)</li> <li>Lake Apopka/Harris Chain of Lakes Minimum Flows and Levels (MFLs) and Lake Level Management (Dale Smith, Rolland Fulton, and Shaw Huang, SJRWMD)</li> <li>Benefits of Some Aquatic Plants (Linda Bystrak, Ocklawaha Valley Audubon Society)</li> </ul>
September 5, 2014	<ul style="list-style-type: none"> <li>Lake Apopka Toxicology (Carlton Layne, retired EPA)</li> <li>Water Lettuce Update (William Haller, UF)</li> </ul>
October 3, 2014	<ul style="list-style-type: none"> <li><b>Editor's note – This section to be completed after the October Council Meeting.</b></li> </ul>

**Table 2: 2014 Technical Advisory Group (TAG) Members**

<b>Agency</b>	<b>Representative</b>
DEP	Christianne Ferraro
FDOT	Stephen Tonjes
FWC	Dennis Renfro
LCWA	Michael Perry (TAG Chairman)
SJRWMD	Roland Fulton
UF	Mike Allen
U.S. Army Corps of Engineers	Vacant

### **3.0 COUNCIL FINDINGS AND RECOMMENDATIONS**

This section outlines the discussions and recommendations by the Council based on information received during the reporting period.

#### **3.1 Lake Water Level Management**

Jay Brawley, SJRWMD, reported to the Council in March 2014 that work was nearing the end of the modeling and analysis phase of the minimum flows and levels (MFL) and lake level management project for Lake Apopka and the Harris Chain of Lakes (HCOL). Additional evaluation of proposed MFL targets is not complete. In addition, the SJRWMD Governing Board in December 2013 approved publishing a notice of rule development for MFLs for Lakes

Apopka, Beauclair, Dora, Eustis, Harris, and Griffin. The lake level management project uses the same model, but use different criteria (regulation schedules) than MFLs. The Council expressed interest in this work and asked for advanced updates, including water budgets.

In February and March 2014, the Council inquired about why the water level in Lake Apopka appears to drop quicker than other lakes and whether the water levels were being impacted by leakage from Lake Apopka North Shore (LANS) levees. Mr. Brawley noted that some seepage through the levees is normal and there is a process in place to stop excess water flow. The Council requested that additional information and estimates of the amount of leakage related to the levees be provided.

Michael Cullum and Shaw Huang, SJRWMD, provided a presentation to the Council in May 2014 on the draft water budget for Lake Apopka and the HCOL. Water conveyance structures near the Harris Bayou area and the role of groundwater in the hydrologic budget were discussed. The movement of groundwater into a lake is referred to as discharge, while the movement of lake water into the ground and groundwater system is referred to as recharge (leaky). Lakes Apopka and Griffin are characterized by both discharge and recharge. Lake Harris is characterized by discharge. Lakes Eustis, Beauclair, Dora and Yale are characterized by recharge. Sediment layers and lake bottom structures (e.g., peat-like) were discussed. The sediment layer between the surficial and Floridan aquifers is known as a leaky, confining layer because water can move from the lower part of the groundwater system (i.e., Floridan aquifer) up through the clay layer into the surficial aquifer. Lakes are parts of the surficial aquifer system.

Use of the East Central Florida Transient (ECFT) groundwater flow model (MODFLOW) allows for a better understanding of how the groundwater system (surficial and Floridan aquifers) interacts with each of the lakes in the HCOL. The ECFT model was used to simulate monthly upper Floridan aquifer levels for the HCOL using data from 1995 to 2006. In addition, data (dating back to 1964) from long-term groundwater monitoring wells in the region was analyzed. A statistical comparison of the model results and monitoring well data showed a correlation. The statistical comparison indicates that Lake Eustis contributes water to the groundwater system and Lake Harris gets water from the groundwater system. Discharge and recharge are both evident for lakes Griffin and Apopka. The Council discussed whether the information addresses why Lake Apopka appears to have a net loss of water at a more rapid rate than some other lakes and reiterated concerns about water leakage from LANS levees and leakage into groundwater.

Mr. Cullum presented a simulated draft water budget for Lake Apopka and the HCOL. The Council expressed concerns about the direction of HCOL management and that there should be more discussion on preserving the quality of Lake Apopka and other lakes by natural means. The Council discussed subsidence of marsh elevations, providing a natural flow to the upper lakes, and planting of drought tolerant sawgrass. The Council also discussed the plant regime to reduce evapotranspiration (ET), different ET rates of plants, and separating ET for the north shore and open water so that it is recognized as a management objective independent of the initial objective of the north shore. The Council noted concern about the use of water in the north area of Lake Griffin to hydrate the marshes.

Rolland Fulton, SJRWMD, provided a presentation to the Council in June 2014 on the ecological considerations in setting MFLs and lake regulation targets. The primary ecological goals in setting targets for water levels in Lake Apopka and the HCOL are healthy lake and plant communities, floodplain wetlands, and for fish and wildlife. The primary economic constraint is flood control. The evaluation of water quality, recreation, navigation, water storage and water supply is also required. There are similarities and differences between MFL and lake level regulation targets. MFL targets are protected (SJRWMD rule) and a recovery strategy is required if the system does not meet the targets. The purpose of MFLs is to prevent significant harm to the resource resulting from permitted water withdrawals. SJRWMD uses lake level regulation targets for modeling of regulation schedules. These targets require both high and low levels, but higher water levels are not always acceptable. The purpose of the targets is fluctuation in lake levels for healthy littoral wetland communities. The goal is to create optimal conditions.

Higher water levels provide sufficient flooding of floodplain habitat, prevent the encroachment of upland plants into the wetland areas, and protect organic soils from oxidation. Low water levels permit seed germination of wetland plants in exposed sediments, provide for consolidation of the exposed sediments, and allow expansion of vegetation into deeper areas. Lake level fluctuation is beneficial to fish, wildlife, and water quality. The primary basis of MFL recommendations is to enhance littoral wetland habitat around the lakes. Lake littoral wetland protect water quality and shorelines from erosion, and provide fish spawning and juvenile nursery areas, aquatic plant production and diversity, and habitats for fish, birds, mammals, reptiles, and prey.

Data from 20 wetland transects were used to develop MFLs. The sites were relatively undisturbed wetlands and habitat for a variety of wetland types. SJRWMD surveyed the vegetation, soils, and vertical and horizontal aspects of the sites. Transects ranged from approximately 100 to 2,485 feet and were varied to reflect the natural systems of most interest (e.g., hardwood swamp, sawgrass marsh). The group of transects included one transect for each lake that had a high quality hardwood swamp (the key habitat involved in MFL recommendations).

Mr. Fulton reported on the development of lake water level targets for the MFLs and the regulation schedules. The three components of lake level targets are magnitude (the elevation), duration (how long water levels are at target elevations) and return interval (how often that target occurs in terms of years). Mr. Fulton noted that the MFL work related to targets was to protect existing habitat and not return to historic unregulated systems for these lakes. SJRWMD developed a high water target to provide sufficient flooding of wetland habitat to protect hardwood swamp and prevent encroachment by upland plant species into wetland areas. The elevation is such that the water level is above the average elevation of hardwood swamp for at least 30-60 days (duration component), and should occur at least once every two years on average (return interval component). The difference between the MFLs and the regulation schedule targets is the 30-day duration for the MFL. This is the minimum duration that is necessary to protect that habitat from degradation. The 60-day duration is the regulation schedule target for more optimal conditions for that habitat. SJRWMD developed an average water level to protect wetlands and organic soils from over-draining. The water level should not drop lower than 0.3 feet below the average elevation of deep organic soils (MFL target) or of upper wetland

habitat (regulation schedule target) for more than 180 days (duration component), no more than once every 1.7 years (MFL return interval) or 2 years (regulation schedule return interval), on average. The elevation was determined based on studies conducted in the Everglades during periods of draw down and the loss of organic soils, which concluded that water level 0.3 feet below the soil surface resulted in zero soil loss. A deeper drawdown would result in soil loss. The third water level target is a low water level target. This design will expose the marsh habitat for seed germination and consolidation of sediments in the marshes. The water level should drop to roughly the lower elevation of shallow marsh, not for more than 120 days, no more than once every five years (MFL target), but at least once every ten years (regulation schedule target), on average. SJRWMD will compare actual or modeled lake levels over a long period with the targets. In setting MFLs for freshwater systems, Florida Statutes require the consideration of fish, wildlife, detrital material transfer, aesthetic and scenic, filtration and absorption of nutrients, sediment loads, water quality, recreation, navigation, and maintenance of freshwater supply.

Water level fluctuations are beneficial to long-term water quality, but water quality tends to deteriorate during low-water periods. SJRWMD evaluated the effects of MFLs on water quality during low-water intervals. Basin restoration has resulted in lower nutrient loading and improved water quality, thus making it more difficult to assess the relationships between water levels and water quality. Mr. Fulton reported on the stability of external loading and water quality, including total phosphorus and Chlorophyll-a from 1984–2011. The hurricanes in 2004 resulted in varying periods of poor water quality due to a large pulse of external loading to the lakes in watershed runoff and due to high winds and waves that disturbed sediments and shallow vegetated habitats. The assessment of water quality impacts of MFLs included the use of water level and water quality data beginning in 2001 (excluding time periods impacted by the 2004 hurricanes), the evaluation of relationships between water level and water quality (TP, TN, chlorophyll, TSS, Secchi transparency), and examination of water elevations at which fish kills were reported. Mr. Fulton reported that the water level, but not the duration of the water level, affected water quality. SJRWMD defined threshold water elevations of concern as the point at which water quality doubles (or Secchi depth transparency is halved), or at which fish kills frequently have been reported. Hydrological modeling will be used to determine whether frequency of occurrence of the water elevations of concern change under MFL conditions.

In addition, the Council discussed the meanings of navigable body of water and waters of the United States, and the relation to the Rivers and Harbors Act and Clean Water Act. The Council also discussed the broadening of the meanings and the applicability to HCOL and MFLs.

Mike Perry, LCWA, provided an update at each Council meeting on the current water levels in Lake Apopka, the Super Pond, and Lake Griffin and reported that there has not been water flow through LCWA's Nutrient Reduction Facility (NuRF) since April 27, 2012. In addition, Mr. Perry noted that there could be no discharges between some lakes, depending on how MFLs are established, and this would affect the intent of the NuRF.

Dale Smith, SJRWMD, provided a presentation to the Council in August 2014 on Lake Apopka and HCOL MFLs and lake level management. The Southwest Florida Water Management District previously managed the HCOL. SJRWMD began managing them in 1978. The MFL process consists of data collection, development of science-based environmental water resource

values, predictive hydrologic models for statistical analysis, technical drafts of MFLs and modeling, independent peer review, rule development, public workshops, and public rule hearing and adoption. The technical concept is that watershed ecology defines the minimum hydrologic regime in terms of a magnitude, duration, and frequency so there is no significant harm to the water resources or ecology. Hydrologic models produce the long-term data for use in hydrologic statistics to determine if the MFL is achieved. SJRWMD uses five MFLs regimes within the water management district that range from an infrequent high to an infrequent low. Multiple MFLs protect high, intermediate, and low hydrologic conditions. Mr. Smith discussed the MFLs proposed for Lakes Apopka, Dora, Eustis and Griffin and added that a consultant is performing a peer review of proposed MFL modeling. Peer review of the scientific portion has not started.

Mr. Smith reported that the lake level management portion of this work is the regulation schedule change. A regulation schedule is the “line” that the water control operator uses to make a decision. Water is discharged if the level is above it but no discharge is required if it is below it. The operator determines the amount or duration of discharge to prevent flooding. This information is not in a water manual. SJRWMD will test different regulation schedules to develop an operational plan that meets the MFLs and then rank them to find environmental water level targets other than those established by law in the MFLs. The targets are different from MFLs and better for the environment. SJRWMD will review flood control, water supply, and navigation with regard to the regulation schedules. Mr. Smith explained the comparison of two modeling scenarios and testing of different regulation schedules against the MFL to find a real world solution. The LANS is a restoration project and not useful for flood control because water goes in five to eight times faster than it can pump it out. SJRWMD will investigate the prospect of storing water for the extreme lows and post peak releases during the review of additional regulation scenarios.

The Council expressed concern regarding insufficient surface area and depth in Harris Bayou (in case of peak fluctuation). Mr. Smith noted that Harris Bayou discharges up to 1,000 cubic feet per second (cfs) and that current modeling provides for 700 cfs from the Super Pond through the Burrell structure. The Harris Bayou structure was constructed due to flooding issues downstream in Haines Creek. SJRWMD will present the scenarios to the Council when completed.

The Council noted the potential for significant economic impacts on development and insurance. Changes to the flood zone can lead to increased insurance rates for construction in the respective area. Mr. Smith noted that Federal Emergency Management Agency (FEMA) rules require a participating partner to use their data if that data says the FEMA elevation is low, but an elevation cannot be lowered without going through a map amendment. Mr. Smith stated that the system was set up to provide minimum discharges from Apopka, Burrell, and Moss Bluff. He confirmed no discharge of water from Lake Apopka into the north shore over the past two years.

Mr. Smith explained that the north shore is not stealing water from Lake Apopka via leakage of the levees. According to geotechnical studies, 1,500 acres/year of water leaks into the north shore due to the dikes. Mr. Smith presented a map of well levels and Lake Apopka and Griffin water levels, and noted that Lake Griffin water levels followed the adjacent well level, which are relatively stable. Lake Apopka levels follow downstream well levels, which appear to be declining and that this could possibly explain why Lake Apopka recovery does not match Lake

Griffin. Further investigation will be needed. The Council discussed water withdrawal by private and commercial wells in the Montverde and Gourd Neck area of Lake Apopka. Mr. Smith explained that the model implicitly accounts for this by virtue of how the potentiometric surface reacts.

Mr. Brawley updated the Council in August 2014 and reported examination of higher water levels, flat line MFLs, and consideration of ecologic concerns regarding the setting of the MFLs. Lake levels during the past 27 months have risen. Lake Apopka is up 14.25 inches but 1.33 feet below the regulation schedule. The Super Pond is up 16 inches and 3 inches below the regulation schedule. Lake Griffin is up 16.5 inches and 6.5 inches below the regulation schedule.

*Council recommendation:*

Editor's note: Does the Council have a recommendation(s) for this section? If so, the respective text needs to be inserted here and in the executive summary. Below is the Council's recommendation from last year (2013).

2013 Recommendation: The Council will continue to provide suggestions to SJRWMD on the water level regulation schedule for the Harris Chain of Lakes, understanding the need for minimum flows and levels (MFLs) and revised lake level fluctuations. In addition, the Council recommends implementation of lake level regulation Scenario A1, with the caveat of incorporating a more dynamic process that maintains lake water levels as high as feasible, especially during critical sport fish spawning season, considering flood control, recreational uses, and the treatment capacity of the nutrient reduction facility (NuRF). Also, the Council recommends incorporating a hydrologic component addressing downstream water needs and alternative uses in the NSRA into SJRWMD's future NSRA land management plans.

### **3.2 Lake Apopka Restoration**

In February and March 2014, the Council inquired about why the water level in Lake Apopka appears to drop quicker than other lakes and whether the water levels were being impacted by leakage from LANS levees. Details related to leakage and levees are addressed in Section 3.1 (Lake Water Level Management) of this report.

Mr. Brawley provided an update to the Council in May 2014 and reported that the wildlife drive access road at the LANS will open sometime between November 2014 and March 2015. SJRWMD continues to work with Lake County on a project to develop a park and make the shad-dock ramp (on the north side of Lake Apopka) publicly accessible. Mr. Brawley also noted that Hank Largin, SJRWMD, participated in an interview on the history and status of Lake Apopka for the Orlando Matters television show.

In July 2014, the TAG discussed the Council's draft goal and objective framework document. The TAG discussed Objective 2, part a, of the framework document, which pertained to directly connecting marshlands within the LANS to Lake Apopka in those areas where the SJRWMD is not subject to land or water use restrictions as part of the agreement with the United States Fish and Wildlife Service. The TAG discussed long-term and short-term goals relative to connecting LANS to Lake Apopka and whether some areas could be reconnected within the next 5 years.

The TAG also discussed the effect of opening LANS on the lake, pesticide bioaccumulation, and the type of habitat that would be most desirable (shallow water marsh vs. deeper open water habitats) with respect to ecotourism. The TAG recommended the long-term goal remain for connecting the marshlands within the LANS to Lake Apopka. In addition, the near-term (within 5 years) objective would be to identify and connect those portions of the north shore that exhibit the least concern for pesticide residuals and provide the most desirable habitat value while creating minimum impact on Lake Apopka.

Tom Champeau, FWC, provided an update to the Council in August 2014 and summarized funding activities related to Lake Apopka. FWC became more involved in 2010 and 2011 when interagency Lake Apopka Restoration Team was formed (involving DEP, FWC, LCWA, SJRWMD, UF and Orange and Lake counties) as a result of the 2011 Lake Apopka Summit (organized by Senator Alan Hays). The team was to develop innovative solutions to improve fishing and increase public use. The team met several times and recommended numerous projects. Subsequently, the legislature appropriated \$4.8 million in 2012, \$2 million in 2013, and \$2 million in 2014. In addition, FWC would earmark \$2 million of legislative funding for restoration for Lake Apopka. Since 2012 the total amount of funding equals \$10.8 million. Mr. Champeau indicated that the overall goal recommended by the team was to improve the lake by increasing the amount of desirable habitat for fish and wildlife (particularly fisheries) because, historically, the lake was world-famous as a fishery in the 1950s. Low levels of aquatic vegetation, high levels of algal populations, and accumulations of organic sediments on the lake bottom are habitat limitations. Restoration of Lake Apopka is more challenging and expensive because of its size. Accomplishments include the acquisition of the land around the lake, which took the land out of agricultural production and reduced a significant source of nutrients. Having at least 10 percent of the lake composed of desirable vegetation (minimum of 3,000 acres) was another goal. Currently, less than two percent of the lake is composed of emergent and submerged aquatic vegetation. Increasing the quality and abundance of sport fish and improving access were other goals. Through August 2014, FWC planted native plants and stocked sunshine bass that reportedly provided a fishery.

*Council recommendation:*

**Editor's note:** Does the Council have a recommendation(s) for this section? If so, the respective text needs to be inserted here and in the executive summary. Below is the Council's recommendation from last year (2013).

**2013 Recommendation:** The Council recognizes that the NSRA is an essential tool to the restoration of Lake Apopka. The Council stresses the importance of the hydrologic reconnection of healthy marshes to Lake Apopka, which would provide critical habitat for fish and wildlife enhancement. In addition, the Council suggests that continued wet-tolerant tree plantings, such as cypress, could be incorporated into the NSRA land management plan because the tree canopies would provide shade for fish and habitat for birds. Further, the Council does not support the establishment of a federal wildlife refuge in the NSRA because maintaining state and local control is essential for achieving stated objectives for the NSRA.

### 3.3 Dredging Projects and Related Activities

Mr. Champeau provided an update to the Council in August 2014 and reported on some dredging activities, including at the Winter Garden boat ramp to improve access and at the Magnolia boat ramp to evaluate rapid dewatering. An engineering study by SJRWMD for the Winter Garden site showed that the deposit there was more extensive, deeper, and unconsolidated than originally thought. Therefore, the project did not continue. Massive amounts of organics were also found at the Magnolia site during the rapid dewater project by UF and FWC. The Council expressed concern about FWC's plan for wind abatement and the use of geotubes. Mr. Champeau confirmed that the use of geotubes for wind abatement and as a barrier for sediments is an option depending on the cost, ease of use, and stability. The success of major lake restoration in the Kissimmee Chain of Lakes, Lake Istokpoga, and Lake Okeechobee via draw down and the exposure of lake bottoms followed by scraping of mud was also discussed. This approach is not appropriate for Lake Apopka. The lake is a coalescence of sinkholes. Deep areas of muck and organics preclude the use of heavy equipment. The Council discussed how submerged aquatic vegetation in Lake Apopka ends up as sediment following a major storm or hurricane and that the Council supports the use of sumps as a catchall for fluid muck followed by dredging.

Mr. Champeau reported on the scoring of respondents to the request for proposals (RFPs) for Lake Apopka dredging and innovative water quality treatment. FWC will partner with SJRWMD and DEP. The scope provides for testing the use of sumps (deeper areas in the lake that would trap sediments) with the goal of keeping sediments out of the area along the northern end of the lake. FWC plans to review of the use of sumps and SJRWMD's sediment transport study to determine the most cost-effective way to reestablish vegetation. The budget for dredging and innovative water quality treatment is \$3.88 million. SJRWMD has offered the use of LANS cells F and G as disposal sites for dredged material. The work has two phases. It includes dredging and the treatment of the effluent to remove organic matter, total suspended solids, and phosphorus. During the second phase, FWC is interested in the use of three different technologies similar to ones used in advanced wastewater treatment. The Council discussed the use of peat mining to offset project costs, having proactive dialogue with EPA for federal funding, and reiterated their long-term discussion and support of the use of sumps as an alternative for sediment control and removal.

Mr. Brawley noted that the recommendation to go to the negotiation phase of request for quotes (RFQs) goes before the SJRWMD Governing Board in mid-August 2014, after which negotiations would begin on August 14, 2014. SJRWMD plans to have contracts in place by the end of the fiscal year. The transport model will be finished in approximately a year and a half. This model will examine unconsolidated and consolidated sediments in Lake Apopka. The model is for use in Lake Apopka and adaptable for use in other lakes. In regards to the RFQ, the Council suggested land treatment as a potential treatment component.

*Council recommendation:*

**Editor's note: Does the Council have a recommendation(s) for this section? If so, the respective text needs to be inserted here and in the executive summary. Below is the Council's recommendation from last year (2013).**

2013 Recommendation: The Council believes that Lake Apopka would benefit from dredging in select areas because internal nutrient cycling appears to contribute to the lake's impairment. The Council recommends that the TAG continue to look for areas of the lake to dredge, determine the cost of the dredging, estimate the quantity of material that could be removed, and identify locations for sediment disposal. The Council further recommends that the appropriate local, state and federal agencies review the information provided by the TAG to determine project feasibility and report back to the Council. In addition, the Council encourages the implementation of mutually beneficial alternative use projects that improve the natural resource and generate funds for restoration-related projects that can be used instead of legislative appropriations.

## **3.4 Fisheries**

### ***3.4.1 Sport Fish Stocking***

Rick Stout, FWC, provided a presentation to the council in February 2014 titled Estimated Cost of Rearing and Stocking Phase II Largemouth Bass. Information was provided about the Florida Bass Conservation Center hatchery, certified pure Florida Bass, tested genetics of brood stock, providing brood stock from the correct genetic zone, producing and supplying large numbers of fish, and fish health certifications. FWC developed a position statement for special use permits for the relocation of wild bass and hatchery fish. FWC uses a risk-based decision-making process consistency for fishery managers. The fish rearing process includes spawning, pond grow out, fry culture, and raceway grow out. The total cost of rearing and stocking Phase II largemouth bass is \$0.368 (feed cost is \$0.055, facility overhead is \$.0154, and labor, staff, and all costs associated with labor hatchery is \$.0159). Based on production rates in 2012, a Phase II largemouth bass is approximately 80 millimeters (approximately three to four inches) in length. The transportation cost of stocking is \$0.0009 per fish or \$0.88 per 1,000 fish. The use of high capacity oxygenated hauling rigs ensures survival.

Dennis Renfro discussed the cost estimate scenario for stocking Lake Apopka and indicated that the cost would be \$55,200, based on \$0.368 per fish and use 150,000 largemouth bass. The Council questioned the survival rate of stocked fish and inquired whether there has been a positive return on the investment for Lake Apopka and HCOL. Mr. Renfro discussed the positive return related to Lake Talquin. The Council questioned the comparison of Lake Talquin to Lake Apopka, noting differences in depth and bottom structures. Mike Allen, University of Florida (UF), explained that Lake Talquin and Lake Apopka are different systems, but have similar spawning mechanisms. Mr. Allen noted that the stocking mechanism for Lake Apopka was similar to Lake Talquin and he discussed cannibalism when raising hatchery bass, and the pros and cons of pellet-raised fish.

The Council discussed the limited survival rate of Sunshine Bass in Lake Apopka due to the lake conditions. The Council also discussed use of allocated funding to accelerate Lake Apopka restoration for fish stocking prior to habitat restoration or improved accessibility. The Council emphasized that improving the habitat at Lake Apopka is the most important priority.

Dan Canfield, former UF TAG member, addressed the Council in February 2014 and summarized how the Legislature previously appropriated over \$4 million for Lake Apopka

restoration. Mr. Canfield provided information on the interagency Lake Apopka Restoration Team (a “tiger team” involving DEP, FWC, LCWA, SJRWMD, UF and Orange and Lake counties) that resulted from the 2011 Lake Apopka Summit (organized by Senator Alan Hays). Mr. Canfield noted that the tiger team, over time, identified several projects that included access, habitat, and, more recently, bass stocking. Mr. Canfield also discussed the funding associated with the Magnolia Park dredging project, Apopka-Beauclair Canal (A-B Canal) project, and other related activities. Mr. Canfield indicated he believed that bass fishing was big business, hatcheries and stocking were advertisement, and economic vitality was a key factor. He advised the Council to think as a business community, noted the advantage of stocking lakes with big fish, and attributed some of the success of stocking to “angler psychology.”

Eric Thomas, FWC, provided a presentation to the Council in May 2014 on the proposed statewide largemouth bass regulation plan. Largemouth bass are the primary species of black bass in region. Biologists from the Division of Freshwater Fisheries Management, Habitat and Species Conservation, and the Fish and Wildlife Research Institute formed a bass regulation review committee to review current and past regulations for black bass species. Staff from UF served in an advisory capacity. The goal is optimal sustainable use of Florida’s bass fisheries with an emphasis on production of high quality bass and trophy bass. The objective was to review current bass regulations (biological and stakeholder data) and make recommendations. FWC desires to use the least restrictive regulations possible to protect trophy bass and maintain a statewide bass fishery with a healthy population that provides diverse angling opportunities, controlled harvest, and high angler satisfaction. To get stakeholder involvement, the committee distributed information cards, held open house events, and conducted surveys on bass regulations and stocking. FWC staff had approximately 200 in-person conversations, and received 5,608 surveys. The results indicated the anglers appear to be generally apathetic about bass regulations. There appears to be no significant variation across the state, and some preference for trophy bass. FWC examined the harvest rate (number of fish caught that were harvested), not the catch rate. They wanted stakeholder’s opinions to play an important role in the process. Regulations become less important when the harvest rate is only 10 percent. FWC used exploitation data, but most rates are very low across the state. The rates (approximately 20 percent) for Lake Santa Fe and Lake Panasoffkee are notable exceptions and appear to be artificially high. FWC believes that the fish were harvested for the reward tags.

The Bass Regulation Review Committee considered the biological and stakeholder data concurrently to reach their recommendation. The committee reviewed the data, discussed the biological, social, and economic impacts of regulation changes, and consulted the goal and desired future condition. After reviewing the options, the committee developed recommendations for the FWC Division Leadership Team within the Division of Freshwater Fisheries Management. The current three black bass fishing zones are northwest, central and northeast, and south. The northwest zone includes waters north and west of the Suwannee River, including its tributaries. Current regulations require the immediate release of black bass less than 12 inches total length and a bag limit of five of which only one may be 22 inches in total length or longer. In the central and northeast zone, current regulations require the immediate release of black bass less than 14 inches total length and a bag limit of five, only one of which may be 22 inches in total length or longer. The south zone includes waters in the St. Lucie canal, areas east of Highway 441 and south of State Road 80. The current regulation is that only one bass of the bag

limit of five may be 14 inches or longer. The proposed change to the statewide largemouth bass regulation is a bag limit of five, one of which may be longer than 16 inches. There is no minimum size length limit. The proposed regulation is simplified, less restrictive, and protects fast growing females (potential trophy fish). Keeping the five fish bag limit satisfies most anglers, and changes the culture. The three step plan to protecting trophy bass allows anglers to keep smaller bass, limits the harvest of bass over 16 inches to one, and pays for the release of big fish through the Trophy Catch Program. FWC is reviewing the special regulations, considering the effects on other black bass species (e.g., Shoal, Spotted, and Suwannee) and collecting public input. The Division of Freshwater Fisheries Management will make a final decision in 2014 and the overall agency will make a decision by the end of 2015. If FWC passes the rule, the regulation should go into effect by July 1, 2016.

Mr. Thomas reported that tournament anglers get an exemption to the length limit, but not the bag limit and noted that another committee is working on those issues. In regards to the rationale behind catch and release within productive fishery, Mr. Thomas indicated that the idea is to protect the top end of the fishery because anglers can take the top end off the size structure and significantly affect the number of trophy bass. The rational for designating an area for catch and release only is for a water body that is not stressed, that FWC wants to make a premier water body, and to protect trophy fish.

The Council discussed consideration of a special designation (no harvesting of fish over 16 inches) for HCOL to protect the trophy fish. In addition, the Council discussed how regulations that prohibit the harvest of bass over 16 inches provide the best protection for trophy bass, but that this may be too restrictive. The Council requested more information from FWC on bass anglers, not just general anglers, and data (e.g., creel reports, catch rates) for the ten-inch limit on crappie in Lake Griffin.

Mr. Renfro provided an update at each council meeting. In February 2014, it was reported that an updated FWC press release appeared in the Orlando Sentinel about the rule change to Black Crappie on Lake Griffin and that the collection of carcasses from fish camps for age and growth determinations continues to be a success. In May 2014, Mr. Renfro discussed a meeting with the Director of Lake County Economic Development and Tourism Department regarding plans to submit a bid to have the B.A.S.S. (Bass Anglers Sportsman Society) Classic in the HCOL in 2016 and 2017.

*Council recommendation:*

**Editor's note: Does the Council have a recommendation(s) for this section? If so, the respective text needs to be inserted here and in the executive summary. Below is the Council's recommendation from last year (2013).**

**2013 Recommendation:**

**The Council recognizes that restoration of the Harris Chain of Lakes will most likely take decades to achieve. As stated in the Council's 2012 Annual Report, the transfer of wild adult largemouth bass from other water bodies to the Harris Chain of Lakes is a cost-effective way to maintain the economic vitality of the sport fishing recreation industry in the region until aquatic habitat can be restored and a sustainable, highly productive fishery is achieved. The Council,**

therefore, recommends an annual appropriation of \$225,000 for the continuation of the wild adult bass stocking program for the Harris Chain of Lakes, including Lake Apopka.

The Council is charged with reviewing existing restoration proposals to determine which are the most environmentally sound and economically feasible methods of improving the fish and wildlife habitat and natural systems of the Harris Chain of Lakes. FWC spent more than \$15 million to rebuild a hatchery to produce advanced fingerling bass. FWC has spent over a decade using pellet raised hatchery fish and it has not worked well in any system. FWC is proposing an attempt to stock wild reared advanced fingerlings in Lake Apopka citing a Lake Talquin study. The stocking of wild reared fingerling at Lake Talquin was very successful (see appendices). The cost of the attempt on Lake Apopka has a budget in excess of \$600,000. The Council believes this is a research project in progress and should not be funded with restoration funds. The Council recommends the funds be re-appropriated to support access and habitat restoration in Lake Apopka.

### ***3.4.2 Fish Attractor Program***

Mr. Renfro indicated in a February 2014 update that FWC has been permitted to do research on the use of woody brush versus plastic fish attractors on Lake Griffin to examine deterioration, concentration of fish, and long-term cost-effectiveness. The Council encouraged FWC to pursue long-term leachability studies with the manufacturer on the use of petroleum-based attractors in acidic lake (versus alkaline lakes). Christianne Ferraro, DEP, reported that DEP had issued an environmental resource permit to FWC for the fish attractors and that toxic leaching from the plastic attractors was not a concern.

Mr. Renfro reported in March 2014 that FWC and volunteers had constructed and installed 18 fish attractors on Lake Griffin and places buoys to mark their locations. Positive reports had been in the local news (Orlando Sentinel, Channel 9, and Lakefront TV). Mr. Renfro reported in June 2014 that largemouth bass anglers were targeting the new fish attractors and indicated that FWC has purchased 700 mossback plastic fish attractors.

#### *Council recommendation:*

Editor's note: Does the Council have a recommendation(s) for this section? If so, the respective text needs to be inserted here and in the executive summary. Below is the Council's recommendation from last year (2013).

#### 2013 Recommendation:

The Council recommends that funding be restored to broaden monitoring to all lakes in the Harris Chain of Lakes in order to accurately document trends in fish populations and the success of fish stocking efforts. The Council further recommends that canals and marshes be included in fishery resource sampling efforts. The Council supports FWC's fish attractor habitat enhancement program and encourages local citizens and civic organizations to support and participate in the program.

### ***3.4.3 Fishery Access***

The Council in February 2014 discussed the observation of an increase in the number of anglers at local boat ramps. Mr. Renfro indicated that the FWC had met with officials from the Town of Montverde and discussed deep-water access and widening the boat ramp. The Town's benefits would include additional funds from boats that launch in that area and a west entrance to Lake Apopka. In May 2014, it was reported that the Town had submitted a grant proposal to the Florida Boating Improvement Program to build a boat ramp, dock, and parking facilities.

In March 2014, Mr. Renfro reported that FWC has met with Representative Bryan Nelson, Orange County Commissioner Fred Brummer, SJRWMD, and others to discuss plans to provide kayak access in the area near the pump house on the north shore of Lake Apopka. In addition, Lake County plans to create some access for small boats, canoes, or kayaks on the west side of Lake Apopka. Mr. Brawley indicated that SJRWMD was working with Lake County on a project to develop a park and make the shad-dock ramp (on the north side of Lake Apopka) publicly accessible. Mr. Perry discussed the work at the Apopka-Beauclair Canal to ensure navigation between the lake and vegetation removal from the Dora Canal. LCWA continues to coordinate with Lake County Sheriff Marine Unit and FWC on the management of navigation aids and speed zones.

In July 2014, the TAG discussed the Council's draft goal and objective framework document. The TAG discussed Objective 3, part a, of the framework document, which pertained to gaining the support of FWC for designating HCOL as a "trophy bass resource" by implementing a catch-and-release only regulation for largemouth bass of 16 inches or greater in length. The TAG discussed the new statewide regulation change that FWC is working on to support the population of larger bass. The new regulation would allow an angler to keep one bass over 16 inches in a five fish bag limit. There also was discussion regarding the value of smaller sized fish and if there should only be a catch-and-release regulation for bass of any size. Mr. Allen noted that the modeling supported the effort to have larger bass by allowing the removal of smaller sized fish and that most anglers are currently releasing bass. The TAG recommended support of FWC's proposed (new) statewide regulation and the public review process that is now under way.

In addition, the TAG also discussed Objective 3, part b, of the framework document, which pertained to improving public access to Lake Apopka, particularly in the deeper sections of the lake along the western shore. The TAG discussed the City of Montverde's FWC grant application for a two-lane boat ramp with a 40-foot dock on the west side of Lake Apopka. FWC is researching installation of a boat ramp in the Oakland area and SJRWMD is considering opening the McDonald boat ramp to the public, in cooperation with Lake County. The TAG recommended reporting the status of the boat ramp proposals to the Council.

*Council recommendation:*

**Editor's note: This section is a new topic for 2014. Does the Council have a recommendation(s) for this section? If so, the respective text needs to be inserted here and in the executive summary.**

### 3.5 Water Quality

The Council discussed Harris Bayou water quality, the Harris Bayou project, and total maximum daily loads (TMDLs) in February and March 2014. The Council expressed concern about the amount of nutrients being discharged during the operation of the project, water quality, and importance of water quality monitoring.

Ms. Ferraro reported that DEP does not have water quality monitoring data for the Harris Bayou because the project's permit did not require monitoring. Mr. Fulton provided information to the council about Harris Bayou. SJRWMD has monitored water quality and estimated loading to Lake Griffin from Harris Bayou since the project's connection in 2008. Water quality problems within the Bayou were discussed, and how two alum treatments (during 2008 and 2010) had not been effective in the long-term control of phosphorus. Current phosphorus concentrations in the Bayou are approximately 250 micrograms/liter. Most of the nutrient loading occurred in 2008 and 2010. Estimated phosphorus loads range from a low of approximately 4 percent of the total load for Lake Griffin in 2008 to almost 13% of the total load for Lake Griffin in 2010. During two test periods in 2010, water flowed in from Lake Harris. Each test period lasted four to five days and the monitoring was intense. Phosphorus level appeared to be higher in the initial flow from Harris Bayou. The Council discussed off-stream storage to divert some of the initial flush or use of water from the Bayou in an existing reclaimed water system that would utilize the nutrient load and the water. Ms. Ferraro noted that Leesburg has a public access reuse system and the ability to augment the system with other water as long as the water is filtered and disinfected.

Mr. Brawley reported that there was a 935,000-pound shad-harvest from Lake Apopka in 2013 and the associated removal of an estimated three metric tons of phosphorus in the fish mass. The Council discussed concerns about the shad harvest and referenced a 2007 report by Mr. Allen, which indicated the shad harvest would not work and may be detrimental. The Council also discussed whether the shad harvest work should be funded with only SJRWMD resources.

The Council and Mr. Canfield discussed how the current TMDLs (listings of water quality impairment) for HCOL would compare to the recent water quality criteria for lakes approved by the Environmental Protection Agency (EPA). Mr. Canfield indicated that the HCOL would be in violation, EPA does not want any lakes to be eutrophic (naturally enriched), and that he believes the issue to be the amount and placement of allowable aquatic plants in the HCOL system. In addition, The Council discussed why DEP was not using FWC's vegetative information (shared protocols) in the development of the TMDLs and encouraged the use of shared protocols. Ms. Ferraro noted that DEP uses the Lake Vegetation Index (LVI) to assess if a water body is impaired, not in the development of the TMDL. The council also discussed encouraging the use of shared protocols and sufficient multiple sources of information in determinations of impairment.

In addition, the Council discussed the Lake Apopka marsh flow-way, whose annual nutrient reductions included removal of approximately 5 metric tons of phosphorus, 100 metric tons of nitrogen, and 5,000 metric tons of total suspended solids. The Council also discussed how the re-

suspension of bottom sediments in Lake Apopka is remobilizing legacy phosphorus and use of a “natural native” system of saw grass and pilot projects.

Mr. Brawley reported in May 2014 that work is under way to development the final plan for reconnection of area three in Emerald Marsh. The reconnection is planned to occur in approximately two years.

In July 2014, the TAG discussed the Council’s draft goal and objective framework document. The TAG discussed Objective 1, part a, of the framework document, which pertained to the continued long-term support for the LCWA NuRF for treating non-flood discharges from Lake Apopka to the lakes downstream. The TAG discussion was generally supportive of the NuRF. When the NuRF was operating, there was significant improvement to water clarity and nutrient reduction downstream of Lake Apopka. The TAG recommended continuing long-term support for the LCWA NuRF.

In addition, the TAG discussed Objective 1, part b, of the framework document, which pertained to minimizing direct releases from Harris Bayou into Lake Griffin with the construction of by-pass infrastructure. Mr. Fulton presented information to the TAG about chlorophyll levels and the efforts to reduce total phosphorous (TP) concentrations in the Harris Bayou via alum treatments. TP concentrations would need to be further reduced for chlorophyll levels to respond in Harris Bayou. Higher concentrations of TP would occur during the initial flow from Harris Bayou but decrease rapidly as flow continues from Harris Bayou. The TAG discussed TP loading and how the Harris Bayou structure would be operated, in conjunction with the Burrell structure, during flood conditions. Concerns were expressed about creating a by-pass around Harris Bayou (rather than through it) to provide flood relief to Lake Harris and about the significantly large TP concentrations associated with the discharge from Harris Bayou. Mr. Fulton indicated that total TP contributions to the lake since the Harris Bayou structure has been in place have been below the TMDL established for the lake with the exception of one year. Harris Bayou is only operated during flood conditions and the contribution of TP from the Harris Bayou is small compared to the contribution from upstream sources. During flooding conditions most of the loading occurs at the initial discharge and rapidly decreases. Mr. Fulton discussed a geotechnical report and noted that different evaluations found the soils not to be suitable to support a by-pass canal without a substantial physical structure. The TAG made no recommendation regarding Objective 1, part b.

The TAG also discussed Objective 1, part c, of the framework document, which pertained to continuing long-term support for agricultural, urban, and other categories of structural and non-structural best management practices (BMPs) as part of the total maximum daily load (TMDL) program, which is the key implementation strategy under the Upper Ocklawaha Basin Management Action Plan (BMAP). The TAG discussion revolved around the current BMAP. The TAG expressed support for the objectives and recommendations of the BMAP, discussed provision of a presentation regarding the current BMAP, and noted that there is no TMDL established for fecal coliforms. The TAG recommended support of the BMAP objective and for a presentation to be made to the Council regarding the status of the BMAP, including establishing a TMDL for coliforms not already included in the BMAP.

In August 2014, the Council and Mr. Smith discussed drainage wells (stormwater wells). Drainage wells have a positive effect on water quantity and a negative effect on water quality. DEP issues few permits for storm water wells. There are many existing and active wells, and that associated water quality is monitored. The Council discussed unexplained increases in nitrogen levels in the springshed with no change in phosphorus, how the wells are affecting the local springshed, which feeds the lakes, needing a local initiatives to help address drainage wells because of the lack of federal leadership.

In August 2014, Mr. Fulton reported a decrease in the average concentration of TP in Harris Bayou from 320 mg/liter in 2012 and 250 mg/liter in 2013, to 140 mg/liter in 2014. The Council discussed phosphorus measurements by LakeWatch, posting of measurements on the LakeWatch website, and noted decreased phosphorus levels in Lake Beauclair.

**Editor's note: Does the Council have a recommendation(s) for this section? If so, the respective text needs to be inserted here and in the executive summary. Below is the Council's recommendation from last year (2013).**

**2013 Recommendation:**

**The Council recommends that SJRWMD collect water-quality monitoring data at multiple sites in all the lakes in the Harris Chain as has historically been done. The Council also requests that SJRWMD and other agencies provide regular updates to the Council on water-quality conditions and trends, including algal counts, in the Harris Chain of Lakes and progress toward meeting TMDL targets.**

### **3.6 Aquatic Plant Management**

**Editor's note: This section will be updated after Nathalie Visscher's, vegetation presentation in October 2014.**

In February 2014, Mr. Renfro reported on the purchase and transfer of plants from other lakes into Lake Apopka and the use of two plant species (Spatterdock and Bulrush). The locations of plantings are protected from northern winds and there have been no recent wind incidents. The use of mats at Lake Jesup has been successful. The mats deteriorate over time, hold eelgrass, and assist in getting submerged vegetation to the shoreline. FWC is considering a project on the north shore of Lake Apopka that involves the use of mats (eelgrass). The Council discussed comparing the cost of transplanting plants to the use of mats to see if there is any advantage and inquired about the use of sand to provide the proper water depth for eelgrass. Mr. Renfro explained that the use of sand at Lake Apopka has been postponed.

In March 2014, Mr. Renfro reported that FWC evaluates the success of plants transferred from nurseries versus other lakes. FWC uses an adaptive management planting strategy rather than blanket planting in all areas. The type of bed sediments appears to play a significant role. Mr. Brawley indicated the project to update vegetation maps from 2010 had experienced weather delays. SJRWMD plans to report the results of the Lake Apopka 2013 submerged aquatic vegetation surveys to the Council.

In July 2014, the TAG discussed the Council's draft goal and objective framework document. The TAG discussed Objective 2, part b, of the framework document, which pertained to supporting a pilot program to allow hydrilla to grow naturally in selected areas of Lake Apopka in an attempt to stabilize lake bottom sediments, improve water clarity, and provide important fisheries habitat. The TAG discussed whether herbicide resistance is limiting the ability to control hydrilla, management of hydrilla in Lake Istokpoga (to maintain navigation), and consideration of an integrated approach to hydrilla in the HCOL (particularly Lake Apopka). Mr. Fulton noted that SJRWMD supports the current FWC policy related to hydrilla and that if it gets out of control the lakes downstream would be affected. Mr. Renfro indicated that FWC is working to plant native vegetation in the HCOL and would not want those efforts to be impacted. FWC previously held public meetings on this issue and 96% of the stakeholders said no to allowing hydrilla to become established. FWC's current approach is to maintain hydrilla at the minimal amount possible. Mr. Perry noted that LCWA discussed this issue several times and the LCWA Board supports the current FWC position. Additional discussion occurred about planting success and use of alternative plant species. FWC's goal is for 10% of the lakes to be vegetated with desirable native vegetation (currently it is less than 5%). The TAG recommended not supporting a pilot program to allow hydrilla.

Linda Bystrak, Ocklawaha Valley Audubon Society, provided a presentation in August 2014 to the Council on the benefits of some aquatic plants, which includes allelopathy and biocontrol of harmful bluegreen algae. Ms. Bystrak indicated that she is a proponent of reclassifying water lettuce as a native rather than exotic species, recommends it for phytoremediation, and noted that research shows water lettuce has a high nutrient absorption rate and is a manatee food source. The Council discussed how water lettuce can become a downstream navigation nuisance, use in research for biocontrol, and noted that water lettuce was found in Lake Apopka during the 1920s and 1930s. The Council requested that FWC and other TAG members provide a recommendation on water lettuce given the negative effect on navigation and submerged aquatic vegetation. The Council discussed having further conversations about the use water lettuce as a potential method for establishing vegetation, in lieu of hydrilla.

In 2007, the Council purchased a used mechanical harvester utilizing legislative appropriations. The harvester is used to remove near shore, nuisance aquatic vegetation at the request of property owners and homeowner associations throughout Lake County, and is maintained and operated by UF's LAKEWATCH volunteers. In 2013 and 2014, the Council discussed the beneficial impacts of the mechanical harvester and the positive response received from the community about the harvester. This program has been very successful at maintaining waterways and, based on the high demand for its services, has proven to be very popular with the residents of the county. However, the mechanical harvester now requires significant maintenance and repair due to its age, which limits how often it can be used.

**Editor's note: Does the Council have a recommendation(s) for this section? If so, the respective text needs to be inserted here and in the executive summary. Below is the Council's recommendation from last year (2013).**

**2013 Recommendation:**

The Council supports continued funding for invasive aquatic plant management in the Harris Chain of Lakes. In addition, the Council requests \$275,000 for repair of the current mechanical harvester and purchase of an additional mechanical harvester and associated equipment.