FINAL

MINUTES OF THE MEETING
of the
HARRIS CHAIN OF LAKES RESTORATION COUNCIL
February 10, 2017

The regular meeting of the Harris Chain of Lakes Restoration Council (Council) was held at 9:00 a.m. on February 10, 2017 at the Lake County Board of County Commissioner Chambers, 315 West Main Street, Tavares, Florida.

Council Members Present
Robert Johnson, Chairman
Don Nicholson, Secretary
Sid Grow
Keith Truenow
Stephanie Bishop
John Stump

Council Members Absent
Skip Goerner, Vice-Chairman
Vacant, Attorney
Vacant, Physician

TAG Members Present
Rolland Fulton (St. Johns River Water Management District, SJRWMD)
Dennis Renfro (Florida Fish and Wildlife Conservation Commission, FWC)
Mike Perry (Lake County Water Authority, LCWA)
Mark Hoyer (University of Florida, UF)
Kevin Coyne (Florida Department of Environmental Protection, DEP)

TAG Members Absent

1. **CALL TO ORDER**
   Chairman Johnson called the meeting to order at 9:00 a.m.

2. **INVOCATION AND PLEDGE OF ALLEGIANCE**
   Councilman Nicholson gave the invocation. The Pledge of Allegiance followed.

3. **COUNCIL ROLL CALL; REMINDER FOR OTHERS TO SIGN IN**
   Chairman Johnson called the roll. Council member Goerner was absent.

4. **REMINDER FOR OTHERS TO SIGN IN & FILL OUT SPEAKER CARDS**

5. **APPROVAL OF MINUTES**
   Minutes from November 4, 2016, and January 13, 2017 were approved.

6. **PRESENTATIONS / ACTION ITEMS**

* Action items requested by council members are in bold.

A. Discussion of SJRWMD Response to Harris Council Letter Dated August 29, 2016, Regarding Policy Positions and Programs, Erich Marzolf, Ph.D., SJRWMD

Dr. Erich Marzolf, SJRWMD, presented an overview of his presentation, a discussion of the twelve questions sent to various agencies by the Harris Chain of Lakes Restoration Council. Question #1 pertained to reconnection of the North Shore Restoration Area (NSRA), also called the Lake Apopka North Shore (LANS). Dr. Marzolf reported SJRWMD agreed the LANS should be flooded to reduce soil oxidation and subsequent phosphorus mineralization, and there are important habitat benefits from flooding. Immediate concerns with flooding are that it may threaten Lake fishery recovery due to pesticide exposure, as there may be increases in pesticide bioaccumulation rates due to deeper water. Flooding could also limit the ability to manage phosphorus (P) movement from LANS to Lake Apopka, limit the ability to manage water (including from dredging), especially during flood events, and greatly reduce growing ecotourism opportunities on the LANS.

Chairman Johnson reported he had contacted the Florida Department of Health (FDOH), read into the record information from FDOH about the results of *Gambusia* analyses. FDOH reported they would able to provide more results is fillets data edible fish (bass) could be provided. Chairman Johnson questioned whether the flowway releases fish. Dr. Marzolf explained the SJRWMD biological assessment process and the process of depositing lake sediments in flowway to help reduce exposure pesticides in sediments.

Councilman Grow presented a series of questions noting Dr. Marzolf had reported to the Friends of Lake Apopka about connecting the Lake to the LANS with gates. Dr. Marzolf noted may still not be open after 2021. Dr. Marzolf described the flood gates as short-term in use. Water can be quickly moved into the LANS but not out. Flood control gate are for use only under high flood conditions. There is an opportunity with LANS being isolated, to be used as a pop off for high water. The LANS can also store water to augment lake levels. It provides a variety of options to manage water and levels for lake level augmentation, wetland restoration and aquifer recharge.

Chairman Johnson discussed the $10 million spent on plowing. Dr. Marzolf noted when SJRWMD was looking at remediation around Lust airfield they found the typical remediation too expensive. One option was deep flipping of soils or a grinder. Flipping did better job of placing pesticide contaminated soils 3 feet below surface. The process reduced levels enough to allow remaining pesticides to degrade over time.

Chairman Johnson presented photographs of Lake Apopka in June 2016 showing clear water coming from the flowway, with more turbid water in the surrounding areas. Dr. Marzolf noted the picture of the Lake shows the job not done. Dr. Marzolf described the flowway as a big particle filter, designed to scrub particles, of which 85% of P in Lake Apopka is particles. Water spends 3-4 days in a cell passing through the flowway. The water is not picking up pesticides or fish. Dr. Marzolf noted other SJRWMD efforts in the Apopka chain are to develop minimum flows and levels (MFLs) then revisit regulation schedules of locks and gates. The current schedule is dated. SJRWMD would like to incorporate ecological benefits into regulation schedules.

Chairman Johnson characterized Lake Apopka as a cesspool with no water flow. Chairman Johnson suggested the Clermont Chain could provide water. Mike Perry, LCWA, reported no connections such as such as a ditch between Clermont and Apopka. There is a ditch to Lake Harris only.

Councilman Nicholson questioned the use of satellite imagery on the Lake. Dr. Marzolf noted SJRWMD uses imagery in IRL, but not much in well-mixed areas like Lake Apopka. Dr. Marzolf reported SJRWMD has budgeted $250,000 for this year for Light Detection and Ranging (LIDAR) mapping.

Councilman Stump noted the need to get more water in the Lake, though topographic maps show the land surface in the LANS is about 5 feet lower than the Lake. There is no way to increase lake levels by pumping back into the lake.

Dr. Marzolf addressed the question regarding LANS Restoration, agreeing that wetland restoration on LANS is important, and the reuse of sediment dredged from the Lake to restore LANS areas is valuable. Dr. Marzolf noted SJRWMD is working with the U. S. Corps of Engineers on thin-layer placement of dredged sediments. It has been used in coastal areas for sea level rise, but not yet used for pesticide exposure reduction. The goals in pesticide management are to let dense plants grow up to exclude large wading birds.

Dr. Marzolf noted many areas of the LANS have pesticide exposure problems which require time for degradation. Current exposure thresholds are established for ecological health, not human health criteria which is why fishing or hunting is prohibited on the LANS. Dr. Marzolf noted SJRWMD remediated via flipping ~4,000 acres at a cost of ~$10 million, so disturbing existing soils in ways that might increase pesticide exposure is not recommended.

If dredge spoil is permitted, soft sediments will be used to cap pesticide-contaminated fields, accelerating recovery. It will be applied as thin layers to avoid harming wetlands to create microtopography and slightly raise land elevations. The intent is to utilize the water and phosphorus management capabilities on the LANS to protect the Lake. The goal is to create a mosaic of topography using spraying of lake sediments.

Question number 3 concerned aquatic vegetation. Dr. Marzolf noted aquatic vegetation is a critical indicator of restoration success due to its habitat value and water quality benefits. Submerged aquatic vegetation (SAV) in the Lake has continued to expand as water quality improves, as shown in a graph of regrowth of SAV over time. Dr. Marzolf suggested now is a good time to investigate what conditions after light availability, limit SAV colonization and growth. SJRWMD is currently planning work to identify additional limits and how to overcome them.

Mr. Mark Hoyer, UF, noted models on light penetration for SAV growth have been used for Lake Apopka, indicating plenty of light for 15% coverage of SAV. Mr. Hoyer suggested light sediments and resuspension may be part of the limiting factors. Mr. Hoyer noted 15-20% SAV coverage is need for good fisheries.

Dr. Marzolf reported SJRWMD had concerns with geotubes as discussed in the letter, as geotubes are not sufficiently permanent nor resistant to damage for long-term sediment disposal. Given the low density of many Lake sediments, geotubes may not be stable and their movement could be harmful.

Geotubes, sheet pile, and other means of confining low density, organic sediments greatly increase costs and would reduce the volume of sediment which could be removed from the Lake.

Dr. Marzolf reported SWFWMD is experimenting with SAV restoration using sod-like materials and FWC is planting floating-leaf and emergent species.

Mr. Dennis Renfro, FWC, noted there are plans for additional planting, but no funding is currently available.

Regarding question #4, water quality, Dr. Marzolf agreed that water quality improvements need to continue to support the recolonization and growth of SAV, water quality improvements are important to the entire Ocklawaha Chain of Lakes, and water quality improvements are now sufficient to support examining next steps to SAV growth. Dr. Marzolf noted a need to maintain the "diet" and "exercise" regime responsible for the water quality improvements, and SJRWMD is always looking for new ideas, approaches, technologies, but they need to be both effective and cost-effective.

A diagram of the Lake's response to SJRWMD P reduction indicated shad harvest was one effort helping to eliminate P from the Lake. Chairman Johnson reported a UF report by Mike Allen suggested shad harvesting did not work; however, Dr. Marzolf noted shad harvesting was the most cost-effective tool to remove P.

In further discussion of the question on gizzard shad, Dr. Marzolf noted water quality improvements need to continue to support the recolonization and growth of SAV, and the Lake's restoration benefits from projects which remove phosphorus. Dr. Marzolf reiterated the SJRWMD position that shad harvest is a cost-effective technique for removing phosphorus from the Lake. Dr. Marzolf noted over the past 10 years where data have been compiled (2005 – 2014), a total of 4.3 million kg of rough fish containing 34,238 kg P were removed at a cost of $4.67 million. The average cost-benefit for this period was $136 per kg P removed or $62 per pound P. This cost per pound is extremely low for phosphorus removal technologies. Dr. Marzolf further noted when sport fish by-catch becomes problematic, harvest will be concluded as occurred on Lake Griffin.

Councilman Stump questioned why only 1,000 tons of fish have been removed. Dr. Marzolf noted accessibility is an issue, and other factors like time of harvest, and available funds contribute to the limits on catch. Harvest is also conducted to minimize impacts to recreational fishes. Harvested fish are processed by Raffield Fisheries, where they are sent to a facility in Pensacola, then on to crayfish farms in Louisiana. Dr. Marzolf noted it is a cost-effective public-private partnership.

Dr. Marzolf reported restoration of a sustainable sport fishery is an important goal supported by SJRWMD. Dr. Marzolf noted SJRWMD and Lake County will open a new public boat ramp on the LANS this month. SJRWMD is also working on a dredging project adjacent to the boat ramp in Winter Garden to improve access and looking at other potential sites. About fish stocking, Dr. Marzolf reported SJRWMD defers to FWC.

Dr. Marzolf noted SJRWMD agrees with creating conditions where SAV will sustainably grow and provide important habitat and water quality benefits is an important restoration goal. SJRWMD also thinks a SAV community of native species offer the best long-term opportunity for success. About hydrilla management specifically, Dr. Marzolf reported SJRWMD defers to FWC.

In addition, SJRWMD thinks both the public process used to develop the current management strategy and the outcome reflect the best available science and cost-effectiveness, and SJRWMD agrees with controlling hydrilla at the lowest feasible level in Lake Apopka.

Councilman Nicholson noted hydrilla challenges are something to avoid if possible, as it is a losing battle. Clear water is needed to attract visitors and generate more revenue. Dr. Marzolf suggested because of the geology of the Lake, Apopka would not be a low nutrient system, but could again be a system dominated by SAV, not algae blooms.

Dr. Marzolf discussed P management in the Lake, especially with SAV as an important restoration goal for Apopka. Dr. Marzolf noted the substantial improvements in water quality create the opportunity to evaluate additional conditions which limit SAV colonization and growth. These include; sediment conditions, grazing, propagule availability, and light. SJRWMD is developing a project to address these limitations. SJRWMD is also examining options to increase the duration of minimum discharges from Ocklawaha River Basin (ORB) structures, which would allow the Nutrient Reduction Facility (NuRF) to operate more often.

SJRWMD thinks one of the three proximal problems facing Lake Apopka is excess phosphorus. The linkage between poor water quality and overall habitat condition is well established. The role of water levels and water quality is also well established, and SJRWMD is working towards the use of the LANS to support Lake water levels as well as overall water availability. This functionality is greatest with the Lake and LANS separated and independently managed.

Dr. Marzolf reported SJRWMD is evaluating interim minimum discharge goals for the three ORB structures. These would be used until MFLs are adopted. These MFLs would provide the basis for changes to the structures' regulation schedules which incorporate ecological benefits, in addition to flood protection.

In addressing question #9, toxicology, Dr. Marzolf noted restoration of ecological conditions which sustain safe fisheries and hunting opportunities is important. However, the interim focus must be on creating safe ecological conditions, even though they restrict fishing and hunting opportunities. In addition, Dr. Marzolf reported SJRWMD, the US Army Corps of Engineers (Corps), and the US Fish and Wildlife Service (USFWS) are meeting to evaluate how Lake sediments can be reused as capping material on LANS fields to further isolate pesticides and further reduce pesticide exposure.

Chairman Johnson suggested FDOH should make decisions on toxicology and Dr. Marzolf noted FDOH sets the guidelines for evaluation. Councilman Stump inquired as to how success is monitored for pesticide reduction. Dr. Marzolf noted it is accomplished by monitoring fish after placing soils in test areas. If measurements of pesticides in fish are low, the process is working. Dr. Marzolf also remarked about a tour of the LANS last December with the Corps to help them understand the scale of what SJRWMD is trying to do. Dr. Marzolf also noted a workshop on thin-layer placement of dredge spoil is scheduled for April in the Jacksonville area.

To summarize the SJRWMD position on toxicology, Dr. Marzolf stated the USFWS determined that organochlorine pesticide toxicosis was the primary cause of death in the avian mortality event in 1998-1999. SJRWMD concurs with that determination. SJRWMD will continue to work closely with the USFWS to create conditions where wildlife exposure to pesticides is acceptable and overall ecological benefits are created. Finally, Dr. Marzolf reported SJRWMD defers to FDOH in assessing

organochlorine pesticide (OCP) threshold levels for human health, health advisories and bans on the human ingestion of fish and wildlife captured or killed on the LANS. Current pesticide management activities include a revised Duda biological assessment (BA) in 2014, and revised BAs for Phase 1 and Phase 2, completed in 2016. OCPs in fish were sampled in Phase 6 and 7 in 2016 and the revised BA will be completed in 2017. OCPs in fish will be sampled in the remaining phases would completed in the year noted on the map presented by Dr. Marzolf.

Chairman Johnson observed that if dredge spoils can be placed directly on the NSRA then cavitation and dewatering, etc., is not needed. Dr. Marzolf agreed and noted two other projects, sediment vacuuming of flocculent, and digging sumps to trap sediments are ready to go upon successful permitting. Dr. Marzolf noted the material would be placed on LANS cells F and G.

Chairman inquired as to the efficacy of aerators and why more money is being spent on such projects. Dr. Marzolf reported the aerators are being tested to temporarily move sediments to hopefully allow SAV to establish in cleared areas. Dr. Marzolf noted the aerators are not providing a water quality benefit. Mark Hoyer reported the aerators may work for the intended purpose but no studies have been completed. An assessment of the project will be completed by UF scientists.

Question #10 dealt with aquatic vegetation in downstream lakes. Here again Dr. Marzolf noted SJRWMD recognizes continued reductions in phosphorus loading to lakes in the ORB are essential for healthy aquatic vegetation. SJRWMD programs for nutrient management in wetland restoration areas at Lake Apopka and Lake Griffin work toward that goal. SJRWMD plans to continue to collaborate with FWC and Lake County Mosquito & Aquatic Plant Management Division to manage hydrilla at the lowest feasible level in lakes in the ORB. As water transparency increases, hydrilla infestation is increasingly likely. Control of hydrilla lessens competition with native and non-invasive submersed plants. SJRWMD recognizes that FWC is the lead on this issue, and SJRWMD is eager to collaborate where this is feasible.

About fisheries in downstream lakes, Dr. Marzolf noted SJRWMD agrees that sustainable sport fish populations and the fisheries that thrive on such populations are an important restoration goal. Again, SJRWMD defers to FWC on this issue but is eager to collaborate where this is feasible.

The final question (#12) requested agency plans, if any, on downstream dredging. SJRWMD agrees that there are benefits associated with sediment removal from basin lakes, though SJRWMD has no dredging plans except for Lake Apopka. SJRWMD has ongoing contractual work for dredging projects including McDonald and Apopka-Beauclair canals for a new boat ramp at the LANS, dredging near the Winter Garden boat ramp, creation of deeper sumps in the Lake followed by periodic sediment removal, and soft sediment removal without dredging aka vacuuming, as previously described. SJRWMD recognizes the LCWA will take the lead with dredging projects in other lakes in the Upper Ocklawaha River Basin. **Councilman Stump requested copies of the slides provided by Dr. Marzolf.**

In summary, Dr. Marzolf identified threats to Lake Apopka, including eutrophication due to excess phosphorus (P) loading to the Lake, periods of prolonged low water elevations, ad residual OCP concentrations in soils, sediments and biota. SJRWMD's restoration efforts are attempting to address all three threats.

Dr. Marzolf reported SJRWMD's budget for this year includes $4 million for pilot restoration projects at Lake Apopka with FWC, $625,000 for reconnecting Emeralda Marsh, $675,000 for gizzard shad removal, $400,000 for native marsh grass planting, $100,000 for shrub control, and $74,000 for various monitoring and analyses activities. In addition, 2016 legislation provides $5 million per year for the next decade for efforts "dedicated to the restoration of Lake Apopka". Other funding opportunities include SJRWMD cost-share programs, collaborations with the Council, and partnerships with other entities to enhance restoration and ecotourism. **Dr. Marzolf agreed to provide a summary document of funding to Denis Frazel for dissemination to Council.**

Councilwoman Bishop noted this would be a perfect time to begin to develop the Council project list, and review projects, permitting, completion dates, and project success. **Councilwoman Bishop requested Denis Frazel to develop a spreadsheet of projects. Councilwoman Bishop requested** more information on the thin-layer sediment deposition project, the Winter Garden project and the vacuuming project, including timeline, etc.

Chairman Johnson inquired if SJRWMD personnel read the annual report or minutes. Dr. Marzolf reported he reads the documents, though Dr. Fulton is the SJRWMD lead for discussions.

COUNCIL & AGENCY QUESTIONS & ANSWERS

A. Agency Updates

Mike Perry, LCWA, noted very positive relationships within agencies dealing with Lake Apopka and hopefully gives some confidence in SJRWMD as an agency. Mr. Perry noted a high degree of confidence with both SJRWMD and FWC efforts.

Mr. Perry discussed lake water levels, noting a Lake Yale plot shows water levels diminishing over time, with data showing rainfall deficits of 14 inches from average. Mr. Perry proposed in the next month or so, bringing in results to determine water levels and water quality issues, and whether internally or externally driven.

Councilwoman Bishop noted in the FY 15/16 LCWA budget, $10,000 for Harris Council that was different from previous budgets. Mr. Perry noted funding $15,000 is currently available for Council use.

Chairman Johnson suggested Mr. Perry provide a presentation on funding and on the LCWA response to the Harris letter at the March meeting.

Kevin Coyne, FDEP, reported he would review funding sources within his agency and bring a list of funded projects to Council.

Dennis Renfro, FWC, was asked by Chairman Johnson to discuss projects and is agency's response to the Council in April. Mr. Renfro updated Council on Area 3 activities, noting work was still being done on tussock removal before opening the levees. Mr. Renfro also participated in a tour on Lake Apopka put on by FWC and SJRWMD. Mr. Renfro noted several anglers fishing at the flowway exit during the tour.

Successful BASS open tournament was held in Lake County, and on the first day 6 pros weighed in 20 lbs. of bass each. These weights were higher than in previous tournaments. Mr. Renfro noted the tournaments represents about $1.3 million in value to the local economy.

Dr. Rolly Fulton, SJRWMD, provided updates on dredging previously requested by Councilman Stump. The sump dredging at the mouth of the Apopka-Beauclair Canal is still pending a permit for the Corps, as they are addressing archeological questions about the dredge site. SJRWMD expects permit soon after the archeological survey is completed in March.

A project for targeting additional dredging around the lake is in planning, with solicitation for an engineer currently underway. There are currently no specific plans as SJRWMD will be soliciting engineering firms to plan projects.

The Ferthaul project has received additional funding to continue work and provide for 3rd party verification of the cavitation process results in the marsh flowway.

Dr. Fulton discussed the new Allied aeration project that is currently mobilizing. SJRWMD is also working on a contract with UF for planting and monitoring. *Vallisneria* will be planted behind 3 aeration curtains and 3 outside areas. Reports are due June 30 and the end of November, followed by a final report in August 2018, to be submitted after a 2nd growing season is completed.

Dr. Fulton reported water from Lake Griffin was moved to Area 3 from January 4th to January 22nd, and more water may be let in later.

Finally, Dr. Fulton noted repairs to the Moss Bluff dam would require no flow through the dam this summer.

Councilwoman Bishop reiterated that the Council should be having projects for review. Councilwoman Bishop asked Dr. Marzolf if he had any suggestions to get more information on projects before they are started. Dr. Marzolf noted the money from Senator Hays could disappear any time so he received direction to get busy doing something quickly, particularly by moving on big picture projects.

Chairman Johnson submitted selected pages from the 2015 Ocklawaha River Basin Management Plan Annual Report, and an article on pesticide information to Denis Frazel for distribution to Council.

7. PUBLIC COMMENTS

Ms. Elizabeth Kapoor questioned whether bottled water is being taken from Gourd Neck spring. Dr. Marzolf suggested water was probably not coming from the spring but from the aquifer. Ms. Kapoor inquired whether extracting water for bottling was impeding recovery of Lake Apopka. Dr. Marzolf noted water use of all types is an issue, and SJRWMD is working to ensure the best use for all uses, which is the intent of the MFL program.

8. COUNCIL MEMBER COMMENTS

Chairman Johnson discussed the LANS bird deaths from 1998, noting there were no controls, i.e. the sacrifice of live birds to verify pesticide contamination. Chairman Johnson noted bird deaths in Texas at the same time as the Florida deaths. Chairman Johnson suggested SJRWMD ignored the Exponent report which did not conclude either way how the birds died. Dr. Marzolf noted it was the findings of the Exponent report that directed the extensive OCP research SJRWMD undertook. It spawned 3 more phases of testing on the LANS. The information missing was lethality data of breakdown products of pesticides and combinations of pesticides. SJRWMD completed many studies to better understand what happened.

Chairman Johnson also discussed information from the SJRWMD Communications Department concerning the script of a video in which SJRWMD employee Gian Basili discussed the presence/absence of birds on the North Shore farms. Chairman Johnson thought the description provided was erroneous. Dr. Marzolf agreed to review the matter with Communications staff.

9. REQUESTS FOR ACTION

- *Dr. Marzolf agreed to provide a summary document of funding to Denis Frazel for dissemination to Council.*
- *Councilman Stump requested copies of the slides Dr. Marzolf's presentation.*
- *Councilwoman Bishop requested Denis Frazel to develop a spreadsheet of projects.*
- *Chairman Johnson suggested Mr. Perry provide a presentation on funding, and on the LCWA response to the Harris letter.*
- *Chairman Johnson submitted selected pages from the 2015 Ocklawaha River Basin Management Plan Annual Report, and an article on pesticide information to Denis Frazel for distribution to Council.*

10. ADJOURNMENT

The meeting adjourned at 12:23 PM.