

**FINAL**

**MINUTES OF THE MEETING  
of the  
HARRIS CHAIN OF LAKES RESTORATION COUNCIL**

**December 3, 2004**

The regular meeting of the Harris Chain of Lakes Restoration Council (Council) was held at 9:00 AM on December 3, 2004 at the Lake County Board of County Commissioners' Chambers, 315 West Main Street, Tavares, Florida.

**Members Present**

Skip Goerner, Vice Chairman  
Thomas A. Cook, MD, Secretary  
W. Thomas Brooks  
Charles C. Clark  
Keith Farner  
Robert Kaiser, P.E.  
Rick Powers, P.G.

**Members Absent**

Hugh (Dave) Davis II, Chairman  
Don Nicholson

**1. CALL TO ORDER**

Vice (V.) Chairman Skip Goerner called the meeting to order at 9:05 AM.

**2. INVOCATION AND PLEDGE OF ALLEGIANCE**

The Invocation was given by Councilman Robert Kaiser, followed by the Pledge of Allegiance.

**3. ROLL CALL**

V. Chairman Goerner called roll. Chairman Dave Davis and Councilmen Don Nicholson were absent.

**4. APPROVAL OF MINUTES**

A call for discussion of the minutes from the 11/12/04 meeting was made. Councilman Charles Clark suggested a couple of minor edits which were agreed upon by the Council. A vote to approve the minutes with the edits suggested by Councilman Clark passed unanimously.

## **5. GUEST SPEAKER**

### **Dr. JoAnn Burkholder, North Carolina State University**

Dr. JoAnn Burkholder, a professor of Aquatic Botany and Marine Sciences at North Carolina State University began her presentation by saying that she was going to explain the differences among populations within the same species of harmful algae. Her studies indicate that different strains (populations within the same species) display different responses to environmental conditions that include the nutrients in the water column (e.g. ammonia, nitrates, and urea), water temperature and other factors. She said that due to genetic variations within the same strain, it is impossible to predict how they will react in different environmental conditions. Dr. Burkholder also said the concept of genetic variability within the same species is one that the scientific is slow to accept. She explained some of the different traits within these strains including; toxin production, toxicity, morphology, DNA, life history, growth rates, and nutrient metabolism or how the organism uses nutrients such as nitrogen (N) and phosphorus (P).

She presented the Council with reproduction data of crossed strains which demonstrated the reproductive variability in crossing of three different strains of a toxic dinoflagellate in four combinations of pairs. The variability of the offspring production rates and the viability of the offspring varied greatly. Her point was that if only one or two strains of the same species were crossed, a firm understanding of the species could not be gained. She said that many strains must be studied to understand the species.

Dr. Burkholder's data included response to N depletion / replenishment which demonstrated that different strains in the same species respond dramatically different in both the numbers of individuals and their growth rates. She explained that in order to understand the cyanobacteria (blue-green algae) in the area lakes, it must first be determined what the dominant strain is during algal blooms; how they respond to nutrient pollution and how they produce toxins. The data provided by Dr. Burkholder also demonstrated that two strains of *Pfiesteria* that responded differently to fish excreta (i.e. waste). The non-inductible (non-toxic) strain had a very weak chemosensory attraction to the excreta while the toxic strain had a strong attraction.

Dr. Burkholder's presentation moved towards toxic dinoflagellates which can have chronic and sub-lethal impacts on mammals. These impacts include severe headaches, joint pain, muscle spasms, changes in blood pressure, nausea, vomiting, diarrhea; central peripheral autonomic nervous system dysfunction; reversible short-term memory loss, learning disabilities; malignant tumors, comprised immune systems; and dysfunction of the endocrine system. She went on to describe a series of tests that were conducted using 17 clones of a toxic dinoflagellate from an identical strain that produced toxins with various levels potency. A single clone of the original 17 was used to produce 15 sub-clones of the same strain. The sub-clones also produced toxins with a wide variability of potency.

Councilman Thomas Cook asked if the different populations produced the same toxin. Dr. Burkholder said yes, although they varied in the amount of toxin produced.

Dr. Burkholder's presentation then moved on to fresh water toxic cyanobacteria which may be found in the area lakes. She described some of the chronic and sub-lethal impacts that toxic cyanobacteria can have on mammals with possible symptoms including nausea, vomiting, hemorrhaging, asthma-like symptoms; central nervous system dysfunction; malignant tumors (hepatic, abdominal, uterine and thoracic), and leukemia. She briefly talked about medical issues and deaths in humans associated with ingestion saying there are many recorded cases. Ingestion of toxic algae have produced gastrointestinal and hepatic illnesses through potable water supplies in towns along the Ohio River (1931), a city in Zimbabwe (1966) and certain villages in China (1990s) where there have been cases of hepatic tumors. She explained that one of the best epidemiological studies conducted on toxic exposure was on the Aborigines in Australia (1979) where 140 children and 10 adults suffered diarrhea, severe kidney and liver (hepatic) damage. She explained that 70% of those people exposed to the toxin required intravenous therapy with some who suffered hypovolaemic or acidotic shock. Dr. Burkholder went on to say that South America has also had many cases of toxic exposures including Brazil (late 1980s) where 88 people, most of whom were children, died as a result of drinking water that contained dense blooms of *Microcystis*. Another instance known as Caruaru Syndrome occurred when 117 dialysis patients were given water from the public drinking water supply which contained a *Microcystis aeruginosa* bloom. As a result, 100 of those patients suffered acute liver failure and 49 of them died.

Dr. Burkholder then explained that one of the major difficulties with studying these organisms is that variability within the same strain is often dramatic. In the laboratory some strains produce toxins within a given environment and when that same strain is moved to an environment that has been reproduced to be identical to the first, they produce no toxins. The reasons for these anomalies are poorly understood. She said it is known that environmental factors can influence toxin production but not always consistently. Time is another variable that can affect toxin production where a strain that had previously produced toxin, may stop producing it over time. Dr. Burkholder said that the genetic variations of these organisms may also affect their ability to produce toxins however, only a limited amount of research has been conducted on their genetic makeup.

Councilman Keith Farner asked if it is possible for algae found in the area lakes to be non-toxic, could have offspring that produce toxins? Dr. Burkholder said yes and when he asked if there is any way of predicting whether this would happen, Dr. Burkholder said no. She added that *Microcystis* is an exception saying when that alga is found to produce toxins in lakes and it stops producing toxins, then the toxins it had produced can remain stable in the lakes for months. Because of these changes in toxin production over time, Dr. Burkholder said that frequent sampling is the best way to know if an algae is producing toxin.

Councilman Clark, because of his background as a chemist, described some of the complexities of studying such an organism. He also understood that the various methods of testing could be very expensive because of their complexities. Dr. Burkholder then explained that the World Health Organization (WHO) has recognized toxic cyanobacteria

as a health issue and has recommended a drinking water guideline based on the toxin microcystin-LR. She said this toxin is found in blooms throughout the US and is not removed during most potable water treatment, although carbon filters are effective in removing it. The WHO recommended that a provisional guideline (safe concentration) for microcystin-LR in drinking water is 1 microgram per liter ( $\mu\text{g/L}$ ). She went on to say that the only state with a guideline for cyanotoxin exposure is Oregon.

Dr. Burkholder also discussed *Cylindrospermopsis* that is present in area lakes saying tests have shown that due to genetic variations, 9 out of 24 colonies would be toxic. One of the things that has been discovered about some cultured strains of *Cylindrospermopsis raciborskii* is that they produce toxins outside their optimum conditions of light and temperature which for growth is 35°C (95°F) and for toxin production is 20°C (68°F). She also said that P is not the only nutrient that affects toxin production but that N is also very important. She explained that although cyanobacteria can fixate N from their environment, the organism uses a large amount energy to do so. Therefore, the availability of N in the form of ammonia ( $\text{NH}_4$ ) influences the growth and toxin production of these cyanobacteria. She went on to say the amount of P and N required to stimulate algal blooms is relatively small compared to the amount that is available in most lakes.

Dr. Burkholder presented a graph that showed when the N:P ratio (the amount of N relative to P) was reduced, so did the occurrences of red tides and algal blooms. She explained that although this appears to be the case, these ratios change very slowly over time. Dr. Burkholder said that even after the sources of nutrient input are controlled and reduced, large quantities of these nutrients are contained within the bottom sediments. Therefore, the larger the volume of nutrient-rich sediments in a lake, the longer it takes for the net N:P ratio to be reduced. Additionally, these nutrients can be resuspended in the water column through the action of wind and waves, which makes them available for algal blooms.

Her presentation then moved onto *Pfiesteria*, a toxic dinoflagellate saying that organism has the ability to attack and “eat” the flesh of fish. She explained that *Pfiesteria* species can cause both surficial nonfocal and deep focal lesions on fish. *Pfiesteria* can cause death in fish due to the effects of the toxin it produces and the physical damage to the fish because of the lesions it can cause. Dr. Burkholder went on to explain that in the laboratory when *Pfiesteria* was allowed to physically attack fish, the mortality rate of the fish was greater than 90%. Additionally, when the water in the experiments was strained or filtered to remove the organisms, the toxin alone had the ability to kill fish 20 to 40% of the time, respectively. Humans exposed to aerosols (airborne particles) of the toxic fish killing cultures or to toxic *Pfiesteria* outbreaks, have suffered impacts to the central nervous system and difficulties with memory.

In summary Dr. Burkholder stressed that not all strains of these algae are toxic and just because *Microcystis* is present, it is not necessarily of a toxic strain because there are also benign strains. She said that researchers face many challenges in the study of these organisms. She added when only one or a few strains are studied, there are different and often opposite interpretations from the data. Within the toxigenic species that have been

examined, significant differences among strains are the norm; where the differences include morphology, life history, reproduction, nutrition, toxicity and others. She said that the underlying reasons for these differences are generally unknown.

Dr. Burkholder's recommendation to the Council was that just because algal blooms occur in the area lakes; don't automatically assume they are toxic. She said the toxic species are only potentially toxic and just because *Cylindrospermopsis* or *Microcystis* is present in a bloom, it could be benign. She also said that if the Council were in a position to educate the public or the press; that they should caution people not to assume a bloom is toxic or dangerous until the proper testing has been done. Dr. Burkholder then opened the floor for questions.

Councilman Cook expressed his opinion that regardless of the occurrences of benign strains, the local medical community should be educated about the potential health concerns associated with toxic algae. Dr. Burkholder agreed.

Councilman Tom Brooks asked what should be done if a bloom is found to be toxic. Dr. Burkholder responded saying if it is a major bloom, people recreating in the lake should avoid any contact with the bloom. She also said that testing should be done to determine the level of toxins present. She cautioned the Council that if the microcystin toxin is present, it can persist after the bloom has subsided and can be found in the scum along the shorelines. So she suggested that the extent and location of the toxins be identified.

Councilman Farner asked about sample collection saying that one of the issues the Council is considering is whether to support the continued sampling of the lakes by the Lake County Water Authority (LCWA) and to request funding from the State Legislature for those efforts. He also asked Dr. Burkholder if she felt the revegetation efforts the Council is supporting would help reduce the recycling of nutrients in the lakes. Dr. Burkholder said that the revegetation efforts will help with water quality and that reducing nutrient loading to the lakes would also be beneficial in the long run. She cautioned that with these measures the occurrences of algal blooms may not be reduced for several years. With respect to the continued collection of samples and data, Dr. Burkholder said that data needs to be collected over many years in order to better understand the trends within the lakes.

Councilman Brooks also asked what can be done to reduce the number of blooms and Dr. Burkholder explained that the best way to reduce cyanobacteria blooms is to reduce nutrient loading to the lakes. However, she said in shallow water systems (e.g. the Harris Chain of Lakes); even after nutrient loading is reduced the sediments continue to hold and release nutrients. She explained that in these cases the reduction in blooms will occur over a long period of time, perhaps 10 – 20 years.

Councilman Clark asked Dr. Burkholder if it is her opinion that the longer this data is collected, the more valuable it becomes. She said yes and strongly recommended that the data collection continues. Dr. Burkholder said that the three years of data that has already

been collected just forms a baseline of conditions; it will take several years of data to help better manage the lakes and area watershed.

Councilman Kaiser asked if Dr. Burkholder was willing to review the data that's been collected, could she make recommendations to include sampling that is not currently being done and also to advise the Council if there are things currently being sampled for that are not necessary. Dr. Burkholder agreed.

V. Chairman Goerner then opened the floor for discussion.

Leel Knowles, a Hydrogeologist with the United States Geological Survey (USGS) asked Dr. Burkholder about possible contamination of the water supply saying that much of the state's drinking water comes from the Floridan Aquifer and that there are areas of high recharge to the aquifer including drainage wells and sink holes. He said that sometimes surface water enters the aquifer through these recharge areas and his concern was whether that would make the aquifer vulnerable to the toxins being discussed. Dr. Burkholder said that she knew of studies on potable water supplies but did not recall any regarding recharge water. She offered to look into that issue and let him know.

Barbara Bess of the Florida Department of Environmental Protection (FDEP) asked if different strains of the same cyanobacteria can be found in the same lake. Dr. Burkholder explained that there can be however, there is normally only one predominant species within a bloom.

Ann Griffin of the Lake County Water Authority (LCWA) expressed her opinion about monitoring saying that she believed it should continue and based on the information presented by Dr. Burkholder, she would recommend that nutrient data also be collected while sampling for cyanobacteria. She also mentioned her observations of Lake Griffin and that the blooms can last for up to six months at a time, as evidenced by the slime on the water. Dr. Burkholder said that it is important to test for toxins collected in the samples, in order to identify if the strain is toxic or benign. She said it was also important to keep dogs and people out of the areas where blooms are occurring. Dr. Burkholder said she had recently read a study where two dogs in Nebraska went swimming in a bloom. Then while people were hosing off one of the dogs, the other began licking itself off. That dog died within 10 minutes. Dr. Burkholder stressed that it is important to test for toxins in blooms because there is so much more to learn about compounds in the toxins. Some studies have found the compounds to have cancer reducing abilities, while others cause a variety of skin ailments.

Dr. Daniel Canfield of the University of Florida and member of the Technical Advisory Group (TAG) to the Council asked Dr. Burkholder's opinion as to the best course of action for Councilman Cook to proceed with his efforts of educating the local medical community on the potential of toxin exposure. She responded saying they could use chlorophyll content as a "trigger" to test samples for toxins. She also pointed out that blooms are often temperature dependent and if the optimum time for blooms is the October to March

timeframe, then that would be the best time to concentrate their sampling efforts. Dr. Burkholder suggested the concentration of 10 µg/L of chlorophyll to warrant testing for toxins. She also said that if *Microcystis* is the dominant species in the lakes, then the testing should focus on the toxin microcystin-LR. She further suggested the data already been collected for the lakes may be utilized to help identify the best concentration of chlorophyll and to initiate the testing when *Microcystis* may be present. The data collected could also be used to assist the local physicians in their efforts.

Michael Perry, Executive Director of the LCWA talked about the monitoring data they are collecting saying that both *Microcystis* and *Cylindrospermopsis* cells are present in the lakes. He also confirmed what Dr. Canfield had said; blooms that contain toxins can occur at any time throughout the year. He explained that the blooms are both sporadic and episodic however; they are usually short in duration. He said that they can go out and sample a bloom and by the time they get the results from the lab, the bloom may have receded. Another issue facing the LCWA is that there appears to be no correlation to bloom events within the various lakes in the Harris Chain; they all behave differently. Elevated levels of chlorophyll cells do not always correlate to a bloom or the presence of toxins. He also said it is extremely rare that they find detectable levels of *Cylindrospermopsis* toxins. Mr. Perry explained that the lakes are sampled biweekly for chlorophyll and much less frequently for toxins because it is cost prohibitive. He said they are analyzing what has been described as a “world class set of data” that they have collected in order to determine the best conditions to perform toxin tests. He also said that the general caution the LCWA currently issues to the general public is that if the water looks green and slimy; don't go in it.

Dr. Burkholder suggested that the LCWA could possibly focus their efforts on areas within the lakes where people are most likely to come into contact with the water, for example at boat ramps and to sample that water more frequently. She said that there are test kits available which are accurate to within 0.50 µg/L for microcystin-LR and are a quick, cost effective method for testing. In that way the water authority could notify the public of the potential dangers more quickly. Dr. Burkholder suggested that the toxin data combined with the chlorophyll concentrations could assist in determining as how to proceed with their efforts. Mr. Perry then explained that although they have measured bloom-like conditions, there have only been a couple instances when toxins were present. He did not want to give the impression that the lakes are hazardous and explained that generally when the toxins are present, they are below the WHO guideline for drinking water.

He then asked Dr. Burkholder what advice she would give with respect to these efforts. She said that if indications of a bloom are present, then it would be important to sample in the vicinity of where people would be recreating in the water to ensure their health and safety.

Dr. Larry Battoe of the St. Johns River Water Management District (SJRWMD) asked what caused the algae in the lakes to be sometimes toxic while other times not and whether it is an intrinsic or external cause. Dr. Burkholder explained that most likely both factors

are involved, but it is not known for certain. She said there has been research that suggests that *Microcystis* has a gene to produce toxin that can be turned on and off, but it is not understood what causes that to happen.

V. Chairman Goerner called for a brief recess. (11:00 AM)

V. Chairman Goerner reconvenes the meeting. (11:10 AM)

## **6. DISCUSSION ITEMS**

### Legislative Funding/Delegation – V. Chairman Goerner

V. Chairman Goerner gave an update on the procedures of requesting of Legislative funding saying that the Florida Delegation meets on 12/8/04 and any funding requests must be presented in public prior to that date. He said that the Council currently supports the Upper Ocklawaha River Basin (UORB) Funding Initiative and has discussed the possible redistribution of the funds within the initiative to provide additional money for specific projects like the rough fish harvest. V. Chairman Goerner also said that the Council is scheduled to present it's requests to the delegation on 12/8/04.

Gene Caputo (SJRWMD) reminded the Council that the funding initiative is still a draft and the Council can provide input until the SJRWMD Governing Board vote on the initiative on 12/7/04. Dr. Battoe suggested that if the Council attended that meeting, they could possibly request that the SJRWMD increase the requested amount of the funding initiative to help with the current funding shortfall for the access canal dredging.

Mr. Perry said that the LCWA Board of Directors fully supports the Lake Griffin access canal dredging project and are considering ways to make up the \$4 million funding deficit it takes to complete that project. Councilman Farnar asked Mr. Perry what the Council could do to help them to secure the necessary funding for that project. Mr. Perry said that any assistance provided by the Council would be appreciated and if the LCWA were to receive \$2 million of the \$4 million deficit for the project, then they wouldn't have to reduce the funding set aside for other important projects.

V. Chairman Goerner suggested that the Council could support a funding request independent of the funding initiative and request that the LCWA be the recipient to assist with the funding for the access canal dredging project. Councilman Brooks expressed his opinion that this is the most significant progress that has been made over the past three years and the Council should offer their fullest support.

After extended discussion on the various projects to help restore the Harris Chain of Lakes, V. Chairman Goerner suggested that the Council submit a request to the Florida Delegation in the [approximate] amount of \$2.2 million for the LCWA to complete the canal dredging. For clarification Councilman Clark asked if it was the intent to request the \$2.2 million in addition to the other funding requests already put forth by the Council. V. Chairman Goerner said yes. Councilman Kaiser presented a motion that the Council puts forth an

initiative that enumerates the items they support along with the amount of those items. Councilman Clark seconds the motion. Dr. Canfield said it was his understanding that all requests must be made through agencies therefore, their request for the canal dredging funds should be made through the SJRWMD. He went on to explain that there is additional funding available as a result of the hurricanes and perhaps the Council could consider a funding request to build new fish habitat by using some of the wood from trees that had been knocked down by the recent hurricanes. Dr. Canfield said that this could be done instead of the funding currently requested by the Council for bass restocking efforts. He also said that this effort would help alleviate the issue the state is currently facing of what to do with all of the fallen trees and the habitat would help with fish population in the lakes. Dr. Canfield further suggested that the Council combine all their individual funding requests as outlined in the 2004 Report to the Florida Legislature, into one Community Budget Request and present it through the Fish and Wildlife Conservation Commission (FWCC) and then a separate request for the access canal dredging be presented through the SJRWMD.

After additional discussion among the Council to clarify modifications to their previous funding request, Councilman Kaiser withdrew his previous motion and put forth a new motion that; the Council formulates a funding request for \$800,000 for Habitat Improvement and Bass Restocking, and an additional request for \$2.168 million for the access canal dredging, to be used by the LCWA. Councilman Farner seconds the motion. Councilman Powers puts forth an amendment to the motion that V. Chairman Goerner prepares a Community Budget Request for \$2.968 million that includes; \$500,000 for Restoration of Lake Griffin's Largemouth Bass Fishery, \$150,000 to assist Lake County Mosquito and Aquatic Plant Management efforts, \$100,000 for revegetation of the Harris Chain of Lakes, \$50,000 for cypress tree plantings, and \$2.168 million to assist with the Lake Griffin Access Canal Dredging. Councilman Farner asked if the agencies to receive the funding need to be listed on the budget request to the Delegation to which Councilman Powers no; not for presenting the request to the delegation on 12/8/04. Councilman Brooks seconded the amended motion. V. Chairman Goerner explained that how the money will be divided between the projects can be decided at a later date. A vote to approve the motion passed unanimously. Additionally, a motion that V. Chairman Goerner represents the Council with the presentation of their Community Budget Request to the Florida Delegation was seconded, and then approved by a unanimous vote.

#### Dredging Costs – Mike Perry

Mr. Perry briefly explained that the contract to perform the access canal dredging project was approximately \$7.2 million and the current allocated funding is \$3 million, leaving a \$4.2 million shortfall. He said the LCWA are exploring their options to secure the additional funding. He also said that the LCWA Governing Board awarded the contract that includes both the canal dredging and construction management services. He felt that the contracts should be in place and the project ready to move forward sometime in January 2005. Councilman Brooks asked Mr. Perry why the costs of the dredging were \$7.2 million when the estimates were \$3 million. Mr. Perry explained that there were three main reasons; the estimates used are four years old and there had been market changes

since that time; the disposal site is approximately one mile further from the project site, so there are additional costs involved with that; and the original estimates were based on whole lake dredging as opposed to the more “surgical” dredging of just the canals.

FY04-05 Annual Budget and 4<sup>th</sup> Quarter 03-04 Report, Thomas Brooks

Councilman Brooks gave a brief update on the Fiscal Year 2004-2005 budget saying that last years’ budget was \$60,000 where \$25,000 was used by the Council and \$35,000 was returned to the funding agencies. He said this years’ budget is \$50,000 where \$3,000 – \$4,000 is budgeted for miscellaneous items including advertising, and approximately \$20,000 is for the Berryman & Henigar contract to perform duties as Recording Secretary to the Council. Councilman Brooks said the \$26,000 balance is for bringing in guest speakers or other “consulting” fees. He also expressed his opinion that the Council should advertise their efforts to the public so they would know what the Council is doing and the progress they are making.

V. Chairman Goerner expressed his opinion that advertising to the public is not very important saying what is important is the opinion of the Council being well respected in Tallahassee and with the state agencies. V. Chairman Goerner thought it was more important that additional money be spent on advertising for when guest speakers come to give public presentations. He felt there should have been more promotion for Dr. Burkholder’s presentation. Councilman Brooks suggested that the current budget only contains \$1,000 for promotional activities and perhaps a line item could be increased to \$10,000. Councilman Brooks said in order to do that, \$9,000 would be taken form the “consulting” budget and moved to the promotional budget. A motion to make these modifications to the 2004 – 2005 budget was made and seconded. After no further discussion, a vote to approve the motion passed unanimously. Councilman Farner suggested that the Council consider using some of the promotional budget to advertise in local medical journals or publications that information which concerns public health. The Council took that suggestion under advisement and V. Chairman Goerner said it could be discussed at a later meeting.

Technical Advisory Group / Sunshine Laws

Councilman Clark gave an update as to his efforts to obtain clarification on the requirements under the Sunshine Laws for the Technical Advisory Group (TAG) saying that he had written a letter to the Florida Attorney General’s office [Charlie Crist] requesting a clarification on the matter. He explained that the Attorney General responded saying that for his office to provide a written clarification on the matter, the request would have to be presented as a majority of the Council is seeking the opinion and not just one member of the Council. The other Council members agreed that they would endorse the efforts of Councilman Clark and be party to the request. A vote to approve a motion presented that the Council agrees to seek the clarification from the Attorney General passed unanimously

## **7. PRESENTATIONS**

Other than the presentation given by Dr. Burkholder, no other formal presentations were scheduled to be given during the December 2004 Council meeting.

### Agency Updates

Dr. Battoe provided an update of P levels in the lakes as a result of the recent hurricanes saying that the storms caused a doubling of the P levels. He said since that time the P levels in the lakes have come down to approximately one-half of the increase. In Lake Griffin for example, before the storms P concentrations averaged 58 parts per billion (ppb), then after the storms it increased to 104 ppb. He said that the concentration has since come down to 86 ppb. Councilman Clark asked if Dr. Battoe thought the increase in P was due to resuspension of the lake sediments or due to runoff from the storms. Dr. Battoe explained that it was a combination of both; because Lake Apopka experienced 90 mph winds and a large volume of runoff from the rains.

Dr. Battoe also gave a brief update on the Lake Apopka Marsh Flow-way (LAMF) operation saying the SJRWMD is calculating the total volume of water that has been discharged from the flow-way, but they have had difficulties because at times water discharging from the system overtopped an interior culvert draining one of the four interior cells of the flow-way. He explained that the normal formula used for those calculations does not compensate for this flow condition and the values generated for the discharge by the formula were erroneously high. This resulted in the total outflow from the LAMF being higher than the capacity of the pumps, which cannot be true. He said a different calculation is now being used when there is high water. He also said they have determined that since the flow-way began operation, it has removed approximately 1.74 metric tons (1.92 tons) of phosphorus, 99 metric tons (109 tons) of nitrogen and 3,345 metric tons (3,687 tons) of total suspended solids.

Councilman Clark asked at what level of P in the water coming from Lake Apopka would the SJRWMD stop operating the LAMF. Councilman Clark expressed his opinion that if Lake Apopka were to reach the Total Maximum Daily Load (TMDL) Target Concentration of 55 ppb and the SJRWMD stopped operating the flow-way, then the money used to operate it could be used to operate the Lake Beauclair Nutrient Reduction Facility (NuRF), located further down the Apopka-Beauclair Canal. He said the \$150,000 in operating costs may be better used for operation of the NuRF which is more effective in removing phosphorus. Dr. Battoe explained that if Lake Apopka were to meet the target concentration there would still be benefit for the NuRF from the volume of TSS that are removed by the flow-way. He said his thought would be to keep operating the flow-way however, if Lake Beauclair were to reach its TMDL Target Concentration of 32 ppb, the SJRWMD would consider stopping operation of the flow-way.

Dr. Battoe provided an additional update on the LAMF operation saying that it is currently discharging at 140 cubic feet per second (cfs) and approximately 23 cfs of that flow was going to Lake Beauclair while the balance was being returned to Lake Apopka.

Dr. Battoe also provided an update on the shad harvesting activities saying that harvesting would begin in Lake Apopka the following week and a total of 19 permits were issued to fishermen for this purpose. He also said that Dr. Mike Allen (UF) is still collecting pre-harvest data for Lake Dora and once that is completed, some of the fishermen will move their shad harvesting operations to that lake. Dr. Battoe said they will continue to collect post-harvest data from Lake Dora for a couple of years.

Ms. Bess updated the Council notifying them of a public meeting on 2/10/05 from 5 – 10 PM at the Leesburg Community Arts Center. She said the FDEP is going to present an update on the progress of the TMDL Program. Ms Bess also informed the Council that the FDEP was providing oversight to a contract that has approximately \$1 million in funds that are not being used. She said they are considering options of how to use the money and perhaps it will be made available for projects in the UORB. Councilman Farner asked is some of the money could be used to support the invasive plant management efforts in the lakes and Ms. Bess said that it could be a consideration.

Dr. Canfield asked Ms. Bess if the FDEP had formulated an opinion on the low dissolved oxygen (D.O.) in the water being discharged from the LAMF. Ms. Bess said that she wasn't certain and she would contact the permitting department then update the Council in the future.

Dr. Canfield provided an update to the Council saying he had received funding from the LCWA to move forward with a bass stocking program in Lake Griffin. He explained that the permit they received from the FWCC requires that the fish to be relocated are to be caught in private [non-public] lakes. In order to achieve this he said they have received permission to catch fish in lakes in both Polk and Orange counties. He also mentioned that in discussions with the Orange County Board of County Commissioners (BOCC), the commissioners have expressed an interest in also having a bass restocking program in Lake Apopka. Additionally, Dr. Canfield said that Dr. Ed Phlits and Mary Cichra are studying toxic algae in Lake Griffin and suggested the Council may want to have them provide a presentation of their work at a meeting.

Bill Johnson (FWCC) gave a brief update to the Council saying that they had recently completed trawl sampling for crappie populations in lakes Beauclair, Dora, Eustis, Griffin and Apopka and that data will be used in conjunction with the shad harvest studies. He did not have the data available and when V. Chairman Goerner asked him to provide it to the Council when it becomes available, Mr. Johnson agreed.

Dr. Battoe then offered his appreciation for the funding provided by the FWCC for the shad study being conducted by the SJRWMD.

No further agency updates were provided.

## **8. COUNCIL MEMBER COMMENTS**

### General Discussion / Comments

Councilman Powers expressed his opinion that the Council should consider sponsoring a public event similar to one held annually in Lakeland by the Lake Education and Action Drive. He said that agencies like FDEP, SJRWMD and FWCC provide representatives who assist in educating the public about various lake management issues. Councilman Powers said that if the Council were to sponsor a similar event, it could serve as a form of advertising as mentioned earlier in the meeting by Councilman Farner.

V. Chairman Goerner agreed that it would be a good idea and said the Council could consider sponsoring a “Fishing for Success” event hosted by Florida Lakewatch (a volunteer citizen lake monitoring organization that facilitates "hands-on" citizen participation in the management of Florida lakes through monthly monitoring activities). Mr. Perry added that the LCWA sponsors “Waterfest” at Hickory Point every two years which is similar in scope to the event held in Lakeland.

Mr. Caputo reminded the Council that there are time commitments for the Council setting up at these events and that Council members would be required to volunteer their time to set up and attend such functions.

Councilman Farner offered his appreciation to the efforts and the presentation of Dr. Burkholder.

Dr. Canfield mentioned to the Council that several experts in the field are conducting a hydrilla meeting in Gainesville on 12/6/04. He offered to ask a couple of those experts to speak at an upcoming Council meeting. The Council generally thought this was a good idea.

Mr. Caputo also offered all of the Council and TAG members copies of the video tape from the December meeting that includes Dr. Burkholder’s presentation. As an additional note, Mr. Caputo said that in the 2005 schedule of meetings, the November meeting had been moved to 11/11/05 so as not to conflict with a water conference. Unfortunately, 11/11 is Veteran’s Day and the BOCC chambers would not be available therefore, the meeting was rescheduled for 11/4/05. Within this conversation several Council members offered their appreciation to Patrick Hunter, the Recording Secretary to the Council, for his efforts in producing the 2004 Report to the Florida Legislature.

There were no additional comments made by the Council.

### Discussion of January 7, 2005 Meeting

Mr. Caputo provided a summary of scheduled agenda items for the January 7<sup>th</sup> meeting including:

- Continuation of the discussion of the TAG / Sunshine Law clarification request.
- Update of Legislative Funding / Delegation Requests by V. Chairman Goerner;
- Discussion of the article for the Lake County Medical Society by Councilman Cook
- Possible presentation on hydrilla management efforts by UF

**9. PUBLIC COMMENTS**

Not public comments were made.

**10. ADJOURNMENT**

The meeting was adjourned at 12:50 PM.

Respectfully submitted by:

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Chairman Dave Davis

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Vice Chairman Skip Goerner