

FINAL

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

**January 4, 2008**

The regular meeting of the Harris Chain of Lakes Restoration Council (Council) was held at 9:00 AM on January 4, 2008 at the Lake County Board of County Commissioners' Chambers, 315 West Main Street, Tavares, Florida.

**Members Present**

Skip Goerner, Chairman  
Hugh (Dave) Davis II, Vice Chairman  
Rick Powers, P.G., Secretary  
Keith Farner  
Robert Kaiser, P.E.  
Richard Royal  
Edward M. Schlein, M.D.  
Jon VanderLey

**Members Absent**

Don Nicholson

**1. CALL TO ORDER**

Chairman Skip Goerner called the meeting to order at 9:00 AM.

**2. INVOCATION AND PLEDGE OF ALLEGIANCE**

An Invocation was given by Councilman Bob Kaiser, followed by the Pledge of Allegiance.

**3. ROLL CALL**

Chairman Goerner called roll. Councilman Don Nicholson was absent.

**4. APPROVAL OF MINUTES**

Chairman Goerner called for a discussion of the November Meeting Minutes. No edits were suggested and the minutes were approved by unanimous vote.

Chairman Goerner called for a discussion of the Lake Griffin Haul Seine Observation Tour Summary, attended by the Council on November 15, 2007. Chairman Goerner suggested that Lake County Water Authority (LCWA) Chairman Larry Everly be included as one of the tour attendees. No other edits were suggested and the Tour Summary was approved by unanimous vote.

## **5. DISCUSSION ITEMS**

### **Election of Officers**

Chairman Goerner explained that according to the Enacting Legislation, Council Officers are to be elected every two years and that no officer can serve two consecutive terms. Chairman Goerner opened the floor to nominations for Council Chairman. Councilman Richard Royal nominated Dave Davis to serve as Chairman. With no further nominations, the nomination of Mr. Davis to serve as Chairman was approved by acclamation.

Councilman Goerner then opened the floor to nominations for Council Vice Chairman. Councilman Jon VanderLey nominated Skip Goerner to serve as Vice Chairman. With no further nominations, the nomination of Mr. Goerner to serve as Vice (V.) Chairman was approved by acclamation.

A discussion was held as to the position of Council Secretary. V. Chairman Goerner nominated Councilman Rick Powers to serve as Council Secretary. With no objections, Councilman Powers was appointed to serve as Secretary.

## **6. PRESENTATIONS / ACTION ITEMS**

### **Review and Action Regarding the Engineering Report for Red Howley with respect to Conditions at the Burrell Lock and Dam**

V. Chairman Goerner noted that neither Red Howley nor his engineer were present. Chairman Davis postponed the discussion until the Council was contacted by Mr. Howley or his engineer.

### **Alternate Disposal Site for the Lake Beauclair Sediment Removal Project**

V. Chairman Goerner notified the Council that at the last meeting of the LCWA Board of Trustees (Board), an alternate location for disposal of the spoils (dredge material) from Lake Beauclair was proposed and he had requested a presentation about the site.

Lance Lombard, LCWA Water Resources Project Manager presented information regarding disposal sites for dredge material from the Lake Beauclair Sediment Removal Project. Mr. Lombard displayed a series of aerial photographs which showed Lake Beauclair and the surrounding area, including the newly proposed disposal site off the Venetian Village Canal, along the Apopka-Beauclair (A-B) Canal. Copies of the aerial photographs are provided in Attachment 1 of these minutes.

Mr. Lombard indicated the locations of the originally proposed disposal site, currently owned by the St. Johns River Water Management District (SJRWMD) and the newly proposed disposal site, which is owned by private individuals. He explained that the newly proposed site is approximately 70 acres in size, however only 45 acres could be utilized for the storage of dredge material. After review of the potential site it was determined that a rather large/tall berm would need to be constructed at the site in order to hold the material. Mr. Lombard further explained

that the SJRWMD site is 150 acres in size, so there is considerably more area, which would allow for the construction of a much smaller berm and allow the material to dry out much faster.

Secretary Powers asked what the estimated berm height would be [for the smaller site]. Mr. Lombard said it would be 15 to 20 feet in height.

Councilman Kaiser asked if the material needed for the berm could be dug out on the site. Mr. Lombard said yes.

Secretary Powers explained that the construction would actually involve dams not berms, which greatly impact the cost of construction.

Mr. Lombard then discussed the costs involved with the newly proposed site saying the price of the land would be \$2.8 million or about \$40,000 per acre, as opposed to the SJRWMD site which could be donated at no cost. He explained they have determined that although it would be cheaper to move the dredge material to the closer site; the cost of the land, construction costs, and additional engineering studies would ultimately be \$800,000 to \$1 million higher, than utilizing the SJRWMD property which is much further from the lake (2.5 miles versus 8.6 miles).

V. Chairman Goerner asked about the contamination studies and evaluation of the arsenic levels in the dredge material and requested that Dr. Dan Canfield update the Council on that information.

Secretary Powers asked what the arsenic levels are [in the dredge material]. Mr. Lombard said the highest are 13 milligrams per kilogram (mg/kg), which is just above the Soil Cleanup Target Level (SCTL) of 12 mg/kg for commercial land. He went on to say the SJRWMD hired a consultant to study the biological impacts of the contaminants in the sediments, and concluded the risks were acceptable. Mr. Lombard explained that the contaminant levels found in the portion of the Lake Apopka North Shore Restoration Area (NSRA) where the dredge material will be placed are much higher than those in the Lake Beauclair sediments. He reminded the Council that one of the goals of the dredging project is to cap the most contaminated area of the NSRA, with the dredge material.

Councilman Richard Royal asked how the material will be moved from Lake Beauclair to the disposal site. Mr. Lombard explained they will use a hydraulic dredge and pipe the material along the bank of the A-B Canal to the disposal site.

V. Chairman Goerner asked if there would be any concerns with the contaminant levels of the dredge material, if the newly proposed disposal site was used. Mr. Lombard said they have not been given any authorization to study the issue.

Secretary Powers explained that regardless of where the dredge material is placed, there will need to be review and permitting by the Florida Department of Environmental Protection (FDEP). He added; the need to construct dams [on the smaller site] versus constructing berms

[on the larger site] would lead to greater expense, and the 150 acre site would provide greater flexibility.

Councilman Keith Farner expressed his concerns of placing contaminated sediments [the dredge material] adjacent to residential property, as opposed to utilizing the former muck farm land.

Chairman Davis expressed concern with the additional costs involved with the purchase [of the smaller site].

Councilman Royal asked why the LCWA would consider the purchase [of the smaller site] if it will cost \$800,000 more. Mr. Lombard said they are not considering the purchase of the smaller site; he is just presenting the information as requested.

Councilman Ed Schlein said that in his opinion, if there are increased costs with the smaller property and it would create a new polluted area, as opposed to covering a more polluted area with something less polluted; then perhaps there should be no further discussion on the matter. Mr. Lombard said the recommendation to the LCWA Board was to not proceed with the alternate site.

Robert Furnas, one of the [smaller] property owners explained; in initial discussions with Mike Perry (LCWA) and others, it appeared the reduced cost of pumping [the dredge material] would more than compensate for the cost of the land. He said the initial figures indicated there would be \$1.5 million in savings and now there appears to be an \$800,000 loss.

Councilman Kaiser noted that the original site is already owned by the government and therefore is not taxed. He explained that if the smaller parcel were purchased for this purpose, there would be a loss of tax [revenue] for the land. Mr. Furnas said that until they had purchased the land, the taxes were minimal.

Mike Perry, Executive Director of the LCWA confirmed that he and Sean Parks (LCWA), had met with Mr. Furnas and at the time; the “back of the envelope estimates” indicated that the purchase was worth considering. He said once they received more information from BCI [Engineers and Scientists] on the costs involved, it became apparent that the site might not work.

Councilman Royal asked how far the NSRA site was from the pumping site at Lake Beauclair. Mr. Perry said it is approximately 8 miles from the lake.

Councilman Royal then asked if there were any closer sites they could use in the NSRA. Mr. Perry explained that there is a beneficial use of the dredge material for capping the contaminated sediments. He added that the contaminated sediments at the disposal site could be addressed by turning or flipping them, but capping appears to be a better alternative. Mr. Perry said they have considered sites a little closer to the lake, but the benefit of capping the contaminated site appears to be the best option. He also noted that the SJRWMD has offered to pay the [additional] cost of pumping to the contaminated site.

Councilman Schlein asked whether the cost of turning the contaminated soil at the disposal site was considered in the value analysis of the project, if the dredge material were not used to cap it. Mr. Perry said the cost of turning the soil is less than the dredging and capping would be a savings to the taxpayers.

Chairman Davis asked if the difference in the costs of pumping from the closer site to the further site had been calculated. Mr. Lombard displayed a cost table and explained that the BCI analysis indicated there is a \$500,000 increase in costs to pump the material to the further site. A copy of the table is provided in Attachment 2.

Councilman Kaiser asked if there would ultimately be any value for the land where the dredge material would be pumped. Secretary Powers said yes; there would be potential agricultural value of the land for grazing or other purposes. Mr. Lombard also explained that they offered the dredge material to various commercial entities after it had been dried using a polymer process, and they had no interest in the material. He said ultimately the SJRWMD expects that emergent wetland vegetation will grow at the site, with the hope of restoring the habitat.

Councilman Farnier asked if the pumped muck would restore the land to its original elevation. Mr. Lombard said no; they estimate that once the material dries and consolidates, it could only add about one foot to the current grade.

Secretary Powers explained that one of the biggest problems with dredging projects is when the disposal area is sized too small. He said that the higher the dredge material is piled, the longer it takes to dry it out. Because of this he said; if the smaller site were used for this project, it would not be suitable for construction in the future and could only be used for agricultural purposes.

Councilman Kaiser said that unless more relative cost savings could be presented, he does not believe the Council could recommend [the purchase of the smaller] site.

Chairman Davis requested a motion that based on the information presented, the Council should not investigate the alternate location any further. Secretary Powers agreed to the motion, which was then passed by unanimous vote.

Chairman Davis asked Mr. Perry if the LCWA Board would need something in writing to convey the Council's recommendation. Mr. Perry said no.

#### COUNCIL AND PUBLIC – QUESTIONS & ANSWERS

Chairman Davis called for public comments.

Roger Gunnelson, a private citizen, expressed his concern with the proposed opening of a canal between Lake Griffin and Lake Harris. He explained that he lives on a canal off of Lake Harris and they have had extremely low water levels since 2004. Mr. Gunnelson was concerned that if a canal were opened between lakes Harris and Griffin, the water level would go down further and make boating access impossible.

Chairman Davis explained it is his understanding, that water would not continually flow from Lake Harris to Lake Griffin and it would only be used to migrate water during high-water conditions.

Mr. Gunnelson said he is worried that if a canal were opened; the water level in Lake Harris would be lowered to the level in Lake Griffin, which is approximately three feet below the average level in Lake Harris. V. Chairman Goerner explained that the release of water from Lake Harris to Lake Griffin would only occur during major storm events or flood conditions. He added; the water levels will be controlled and it is not an open conveyance where boats could pass through.

Councilman Schlein noted that there is a dike with a weir on the Lake Harris side of the conveyance, which only allows flow during high water conditions. He said that the Council had similar concerns that have been addressed.

Mr. Gunnelson said he was glad that he attended the Council meeting, so he could learn the facts of the issue.

No other Public questions were asked.

#### Agency Updates

Bill Johnson of the Fish and Wildlife Conservation Commission (FWCC) said that creel surveys had begun on lakes Dora and Harris. He then requested that the FWCC be included on the February agenda to give bass stocking presentation and possibly request funding for the stocking of advanced fingerlings in the Harris Chain of Lakes (HCOL), starting in Spring 2009. Mr. Johnson suggested they may like to stock 100,000 fingerlings per year for three years into Lake Griffin. The Council had no objections to the presentation.

V. Chairman Goerner asked if the haul seine data from the observation tour was available. Mr. Johnson said he believes the mortality rate of the black crappie caught was approximately 13%, but had no other data with him. He also said the [haul seine] efforts were not profitable for the fishermen and they had ceased operation. Mr. Johnson said he would present the observation tour data during the February meeting.

Dr. Canfield provided the following updates to the Council:

- The TAG is to meet next Wednesday in Gainesville at 10 AM to discuss various ideas for improving the lakes.
- Councilman Royal and Dr. Canfield had met with the [Lake] County Extension Service and WAV [Watershed Action Volunteer] organization to coordinate volunteers to plant cypress trees, utilizing the \$5,000 approved by the Council. The planting sites are currently being identified.

- Bass stocking in Lake Dora began in late December and they are currently moving fish from the ponds at the [Orlando International] Airport. They are also testing [the genetics of] fish from ponds in Jacksonville to ensure they are of the appropriate brood stock.
- The [Council's mechanical] harvester continues to be used to clean areas around local lakes.

Dr. Canfield then asked Secretary Powers where the arsenic contamination [guidance] levels come from, noting that arsenic is naturally occurring in Florida soils. Secretary Powers said the SCTLs come from the Environmental Protection Agency (EPA) and the FDEP, and that often the [naturally occurring] background levels are higher than the Residential Standard of 5.1 mg/kg. He also explained that even though a background concentration may be 7 mg/kg, it is difficult to get a [FDEP] permit to dispose of any material above the Residential Standard, if the general public can come into contact with it.

Dr. Canfield also notified the Council that they have been offered a demonstration of the Menzi Muck [Excavator] by the City of Winter Haven. He said the Menzi is used to clean their canals.

V. Chairman Goerner reminded the Council that they agreed to review new technologies and suggested they may want to take a look at this piece of equipment. He believes it could be very beneficial in maintaining canals around the HCOL.

Secretary Powers said the Menzi would be very good for maintaining canals but if you wanted to deepen an canal, that would be a different operation.

Councilman Royal asked to what depth the Menzi could be operated. V. Chairman Goerner said it could operate in up to 15 feet of water by using extensions on its legs.

Dr. Canfield explained there are laws which state that you can not deepen a canal but only maintain it to the original depth. He also said that Riparian Law allows property owners the right of access to the lake where they live, therefore an owner can dredge to maintain access. Dr. Canfield further explained that Florida has the Bert Harris Jr. Private Property Law which states if the government does something that devalues a person's property, the government must compensate the person for that devaluation.

Councilman VanderLey asked if the Menzi would be able to handle the canals along the A-B Canal that have been plugged up [by sediments]. Dr. Canfield said yes.

Councilman Royal asked if the LCWA has any interest in looking at this [Menzi]. Mr. Perry said the LCWA Board is considering including muck removal, while dredging Lake Beauclair and the A-B Canal. When asked if the LCWA is considering the dredging of any other canals [on the HCOL]; Mr. Perry said not at this time.

The Council agreed to observe the Menzi when a time can be arranged. Dr. Canfield said he would work on the scheduling.

Secretary Powers said that BCI completed a report for the SJRWMD in October, where they reviewed all current dredging and dewatering technology. V. Chairman Goerner asked Secretary Powers if BCI could give a presentation on these technologies. Secretary Powers agreed.

Mr. Perry then provided an update to the Council:

- Settling pond construction has begun at the Lake Beauclair Nutrient Reduction Facility (NuRF) and although they have run into clay at the site, they are finding it easy to work with.
- Lake Griffin access canal dredging is proceeding and they had run into some issues with Kaolin clay, which they've worked through. The LCWA is pleased with the dredging contractor as they continue to work to the design specifications.
- Lake Beauclair Restoration Project is moving along and the LCWA Board has decided to investigate cleaning the canals along the A-B Canal and the Venetian Canals to improve navigation.
- Mr. Perry also explained that they have determined there is not very much muck in the A-B Canal between the Apopka-Beauclair Lock and Dam structure and Lake Beauclair, there is mostly just sand. Therefore, he said there is not much concern of muck being discharged back into the lake / through the structure.
- He notified the Council that Larry Everly [Sr.] had been re-elected as LCWA Board Chairman for a 6<sup>th</sup> consecutive term.
- The City of Apopka is expected to attend the February meeting of the LCWA Board to discuss the proposed permit for withdrawal of surface water, for reuse from Lake Apopka. Items to be discussed include a review of; the feasibility of building a reservoir, evaluation of withdraw from the NSRA, water conservation programs, and consideration of altering the minimum discharge from the A-B Canal.

Councilman Royal asked who could make a presentation to the Council on the potential for the City of Apopka to build a reservoir for upland irrigation, which receives water from the NSRA that would otherwise be discharged into Lake Apopka. Mr. Perry said that he should be able to update the Council on the matter after the LCWA Board meeting held in late February.

Mr. Perry also explained that the LCWA Board has three concerns with the proposed withdrawal including; the effects withdrawal would have on the operation of the NuRF, whether conservation or other efforts could eliminate the need for withdrawal, and the need to establish minimum flows for Lake Apopka and other lakes in the Harris Chain.

V. Chairman Goerner expressed his concerns of the impacts to downstream lakes that are currently being restored, from a reduction in flow to the lakes.

Councilman VanderLey asked if work was being conducted to establish minimum flows from all surface waters; for example, water that could be withdrawn from the Wekiva River where it flows into the St. Johns River. He said in some instances, this may be preferable to pumping from the Floridan Aquifer.

Mr. Perry explained that law requires the Water Management Districts establish minimum flow levels however, the HCOL are considered as “artificially controlled” lakes and are therefore not on the [near-term] schedule for establishing minimum flows. He said this is a concern of the LCWA.

Dr. Larry Battoe of the SJRWMD then provided an update to the Council. He notified them that the man who operates the shad harvest facility, recently had a heart attack and the company who manages the facility is going to send a replacement. He added that the man is doing well and is in the hospital.

Dr. Battoe then informed the Council that the Environmental Services Division of the SJRWMD is going to conduct a two year study of the environmental effects of withdrawing 262 million gallons per day (mgd) from the St. Johns River, at three different locations. He said they have been working with the local utilities to identify alternative water supply sources, other than groundwater. Dr. Battoe said much of his time and that of his staff will be devoted to this study.

Dr. Battoe explained that part of the study will be to examine long-term models of climate change; saying that several of the models are coalescing on the fact that north and central Florida will receive considerably less rainfall over the next 10 to 20 years. He suggested the Council may want to consider a presentation on the matter because water levels in the area lakes, are determined by the difference between rainfall and evaporation.

Councilman Schlein asked if there have been any studies on the affects to evaporation that may be caused by the numerous retention ponds that have been constructed, which are generally broad and shallow. Dr. Battoe did not know of any studies, but expects the effects to be minimal.

V. Chairman Goerner expressed his concern of the impacts that may be occurring by capturing stormwater runoff in the retention ponds required in developments, which would have flowed to other surface water bodies. Another concern he has is the creation of marshes that are deeper than their original [natural] elevation. V. Chairman Goerner believes if marshes are to be restored, it should be done so to their original elevation.

Councilman Kaiser said it is his understanding that retention ponds are designed to slow or manage stormwater runoff to what it was prior to construction of roofs, driveways, and sidewalks.

An extended discussion was held among the Council members on stormwater retention. Dr. Battoe then continued with his update asking if the Council had any questions regarding the Water Quality graphs he had sent via email. Copies of the graphs are provided in Attachment 3.

V. Chairman Goerner noted that even after the shad harvests, the phosphorus and chlorophyll levels appear to be high. Dr. Battoe explained that flushing rate is very important to the amount of chlorophyll in lakes. He said when there is an extreme drought; chlorophyll [concentrations], especially cylindrospermopsis goes up.

Dr. Battoe also explained the purpose of the SJRWMD study on shad harvests was not for water quality but to study the response of shad populations to the harvest. He said that water quality improvement was not expected from the harvest study.

Councilman Royal said it is his understanding that the ultimate goal of shad harvesting is water quality improvement; regardless of the purpose of the [SJRWMD] study. Dr. Battoe agreed saying if you look at the water quality data from 1990, you would see that phosphorus used to be 250 parts per million (ppm) and it has come down dramatically since they began harvesting shad in Lake Apopka in 1993.

V. Chairman Goerner asked if there were other factors that would have contributed to the improvements in water quality. Dr. Battoe said yes and gave the example that when they began shad harvesting in Lake Dora, the flushing rate was several months in the first year and in the second year it would have taken six years to flush the lake. Therefore, the conditions in the lake changed dramatically and it favored [the growth of] phytoplankton [algae].

Councilman Royal asked if flushing rate was the most beneficial thing to the lakes. Dr. Battoe said yes, but there are a lot of factors that determine what happens in lakes. He went on to say they try [to do] things that are environmentally sound and economically feasible to clean up the lakes.

V. Chairman Goerner thanked Dr. Battoe for the information he provides and his updates.

Barbara Bess of the FDEP provided an update to the Council saying that the Ocklawaha River Basin Management Action Plan (BMAP) was signed and the next meeting [of the Basin Working Group] will be held on February 13<sup>th</sup>, most likely in Leesburg. She said that Dr. Harvey Harper is scheduled to speak and will probably give a presentation on whole-lake alum treatment.

Ms. Bess also notified the Council that a new Impaired Waters List should be available soon.

Ms. Bess then asked if the Council would support any type of educational campaign. She explained that the FDEP budget is very tight and they are trying to gain support from other agencies [to support public education efforts]. Chairman Davis did not believe there were funds available in the Council budget [to support this effort].

Ms. Bess also said that the rules for stormwater discharge are concerned with the rate of discharge, not the volume. She explained that although the rate of discharge may be the same, the volume of discharge on a developed site would be greater than an undeveloped site.

V. Chairman Goerner asked if there is a schedule in the SWIM [Stormwater Improvement and Management] Plan to set minimum flows from the lakes. Dr. Battoe said no.

## **7. OTHER PUBLIC COMMENTS**

No additional public comments were made.

## **8. COUNCIL MEMBER COMMENTS**

### Council Member Comments

V. Chairman Goerner notified the Council that he had submitted a Community Issue Budget Request (CIBR) in the amount of \$6 million [for the initiatives they had approved in November]. He said he would keep the Council updated.

Patrick Hunter, Recording Secretary to the Council, suggested that the Council may like to hear a presentation on the Lake Trafford Restoration Project. Mr. Hunter explained that he served as the Field Project Manager during the construction of a 600 acre facility to receive three million cubic yards of dredge material from Lake Trafford in the Everglades. Councilman Farner asked the size of Lake Trafford and Mr. Hunter said 1,500 acres.

The Council agree and Mr. Hunter suggested that possibly Mr. Johnson could contact Jon Fury of the FWCC, to present information on the restoration process. Mr. Johnson agreed.

No additional Council member comments were made.

### Discussion of February 1, 2008 Meeting

Mike Adams of the SJRWMD introduced himself saying that he was the replacement for the retired Gene Caputo. He offered his appreciation for the support Council member have given him thus far in his new position.

Mr. Adams outlined the agenda items for the February 1, 2008 meeting of the Council:

- FWCC Bass Stocking Update
- BCI Dewatering and Dredging Technology Presentation
- FWCC Presentation of Haul Seine Netting Data from Observation Tour
- Technical Advisory Group Meeting Report

## **9. ADJOURNMENT**

The meeting was adjourned at 11:10 AM.

Respectfully submitted by:

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Chairman Dave Davis II

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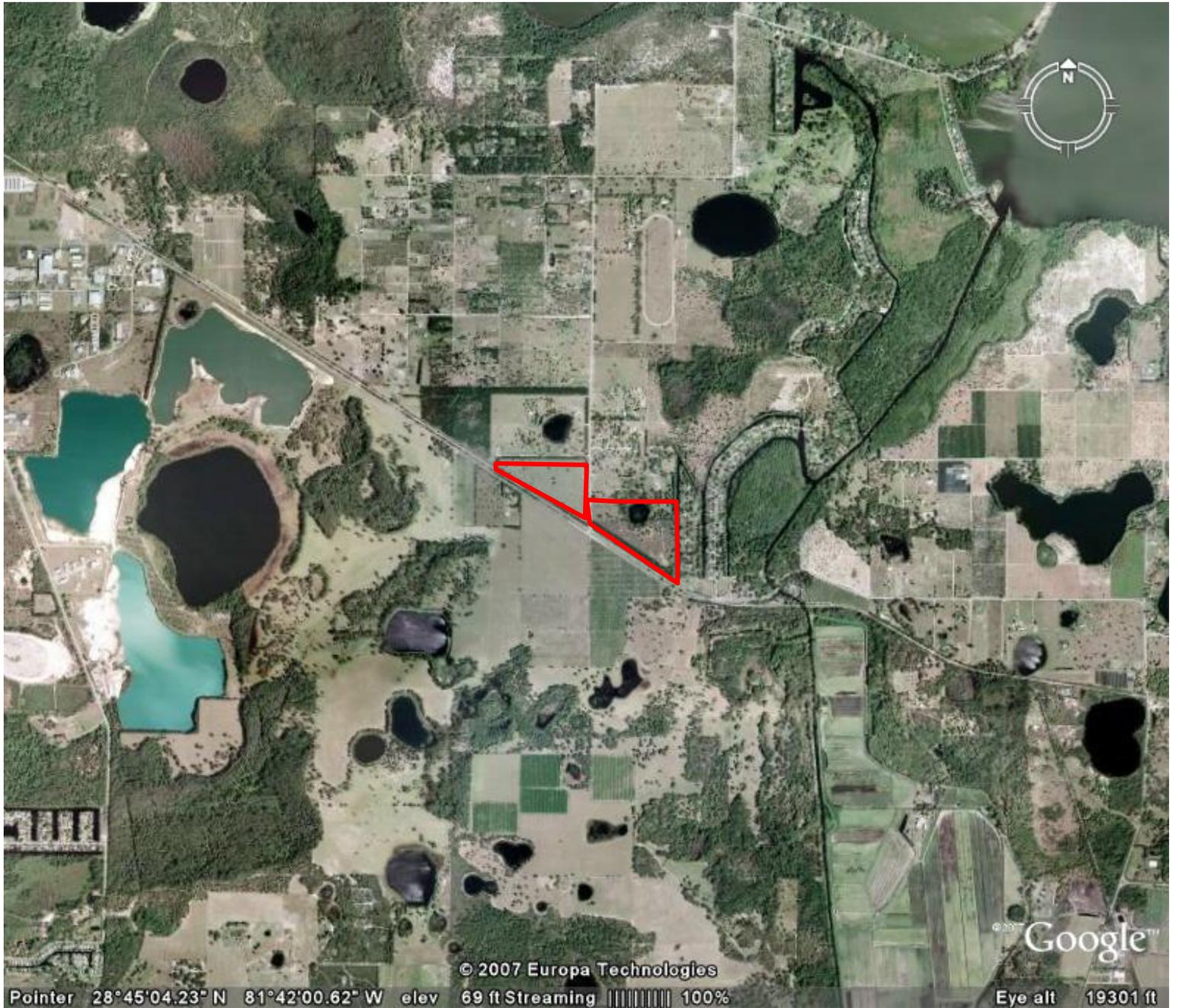
Secretary Rick Powers, P.G.

**Attachment 1**

**Aerial Photographs of the  
Proposed Lake Beauclair Dredge Project  
Disposal Sites**

**Lance Lombard – FWCC**

**January 2008**

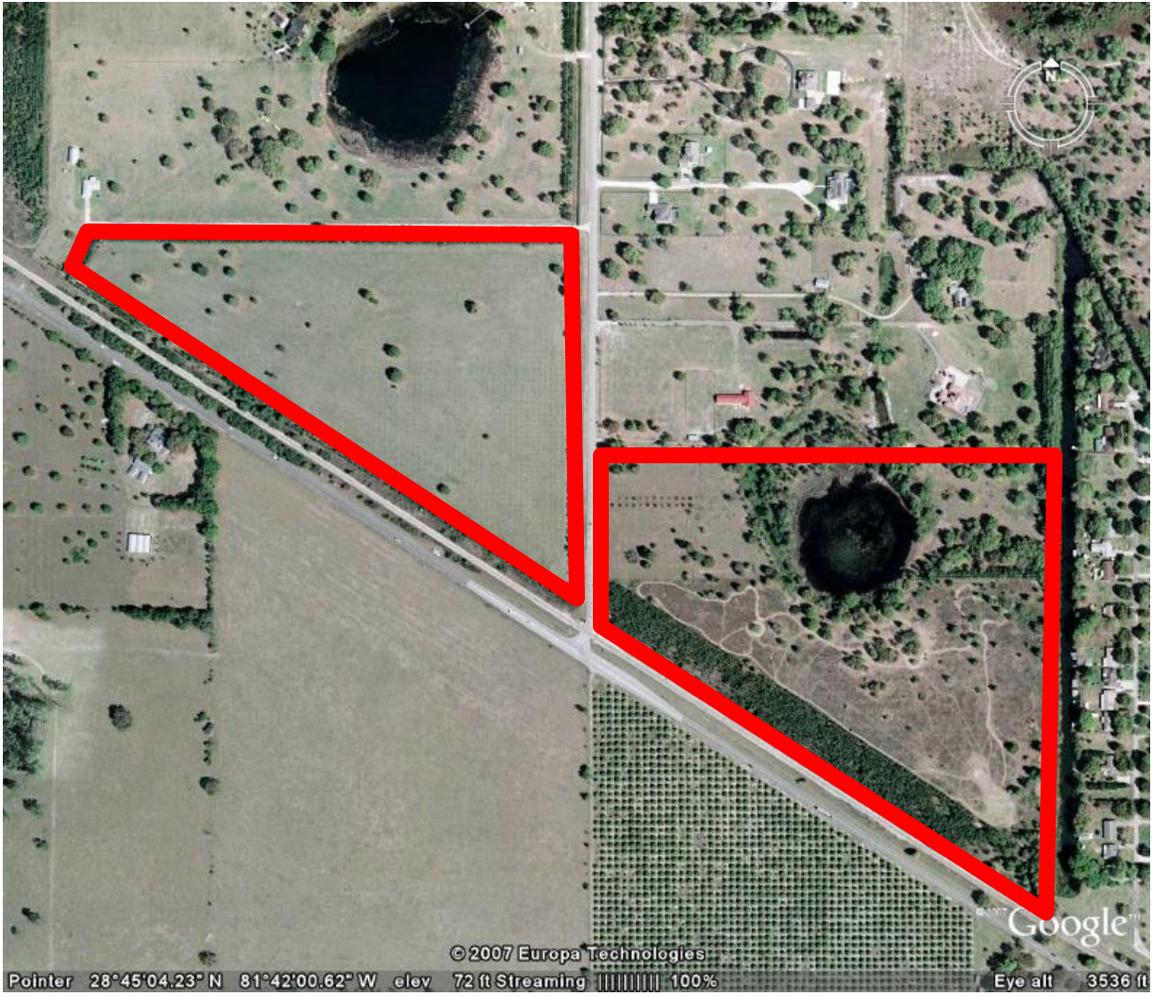


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Pointer 28°45'04.23" N 81°42'00.62" W elev 69 ft Streaming ||||| 100%

Eye alt 19301 ft



Pointer 28°45'04.23" N 81°42'00.62" W elev 72 ft Streaming 100% Eye all 3536 ft

**Attachment 2**

**BCI Cost Estimates**

**Proposed Lake Beauclair Dredge Project**

**Presented by**

**Lance Lombard – FWCC**

**January 2008**

**Table 5  
 Dredging Cost Calculations**

High Dredging Estimate		Cost Differential Estimate Between Cell G and FB13			
<b>Total Dredging Cost Estimate</b>		<b>Addition Pipeline Cost</b>		<b>Power Cost Different. to FB13</b>	
Total Hourly Cost	\$2,000	Dist. Increase (mi)	3.5	Lift Pumps	3
Mob/Demobilization	\$450,000	Pipe cost (\$/lb)	\$1.10	Fuel Use (gal)	20
Dredging Cost	\$3,710,000	Pipe Wt. (lb/ft)	21.2	Fuel Cost (\$/gal)	\$2.00
Cubic Yards	1,200,000	Total Cost (\$)	\$430,953.60	Hours	10
\$/cy	\$3.09	Recovery Value	60%	Days	208
<b>Total Cost</b>	<b>\$4,160,000</b>	Net Cost (\$)	\$172,381.44	Pump Mtc. (\$)	\$40,000
<b>Chemical Treatment</b>		Install. Cost (\$/ft)	\$1.31	<b>Fuel Total</b>	<b>\$289,600</b>
Polymer Delivery System	\$38,000	Total Install. Cost (\$)	\$24,208.80		
Alum Delivery System	\$22,000	<b>Incremental \$</b>	<b>\$196,590</b>		
Polymer 7888	\$998,400				
Polymer 83400	\$49,920				
Alum	\$41,818				
<b>Total Treatment</b>	<b>\$1,150,138</b>				
<b>Contingency (15%)</b>	<b>\$796,521</b>				
Superanant Pump Cost	\$50,225				
<b>Project Total</b>	<b>\$6,156,883</b>			<b>Total Cost Difference</b>	<b>\$486,190</b>

Low Dredging Estimate		Cost Differential Estimate Between Cell G and FB13			
<b>Total Dredging Cost Estimate</b>		<b>Addition Pipeline Cost</b>		<b>Power Cost Different. to FB13</b>	
Total Hourly Cost	\$1,500	Dist. Increase (mi)	3.5	Lift Pumps	3
Mob/Demobilization	\$337,500	Pipe cost (\$/lb)	\$1.10	Fuel Use (gal)	20
Dredging Cost	\$2,782,500	Pipe Wt. (lb/ft)	21.2	Fuel Cost (\$/gal)	\$2.00
Cubic Yards	1,200,000	Total Cost (\$)	\$430,953.60	Hours	10
\$/cy	\$2.32	Recovery Value	60%	Days	208
<b>Total Cost</b>	<b>\$3,120,000</b>	Net Cost (\$)	\$172,381.44	Pump Mtc. (\$)	\$40,000
<b>Chemical Treatment</b>		Install. Cost (\$/ft)	\$1.31	<b>Fuel Total</b>	<b>\$289,600</b>
Polymer Delivery System	\$38,000	Total Install. Cost (\$)	\$24,208.80		
Alum Delivery System	\$22,000	<b>Incremental \$</b>	<b>\$196,590</b>		
Polymer 7888	\$998,400				
Polymer 83400	\$49,920				
Alum	\$41,818				
<b>Total Treatment</b>	<b>\$1,150,138</b>				
<b>Contingency (15%)</b>	<b>\$640,521</b>				
Superanant Pump Cost	\$50,225				
<b>Project Total</b>	<b>\$4,960,883</b>			<b>Total Cost Difference</b>	<b>\$486,190</b>

**Attachment 3**

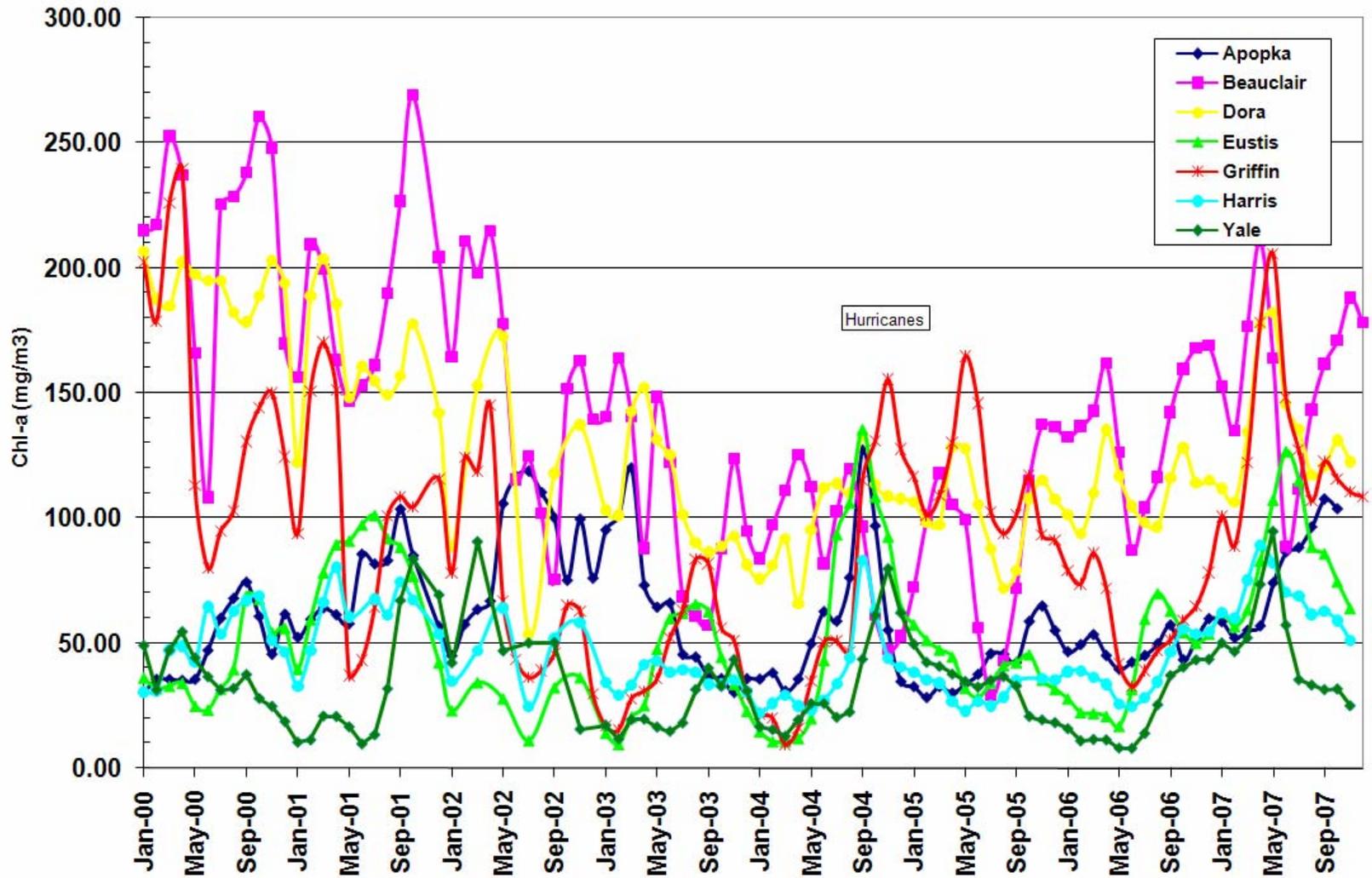
**Harris Chain of Lakes**

**Water Quality Graphs**

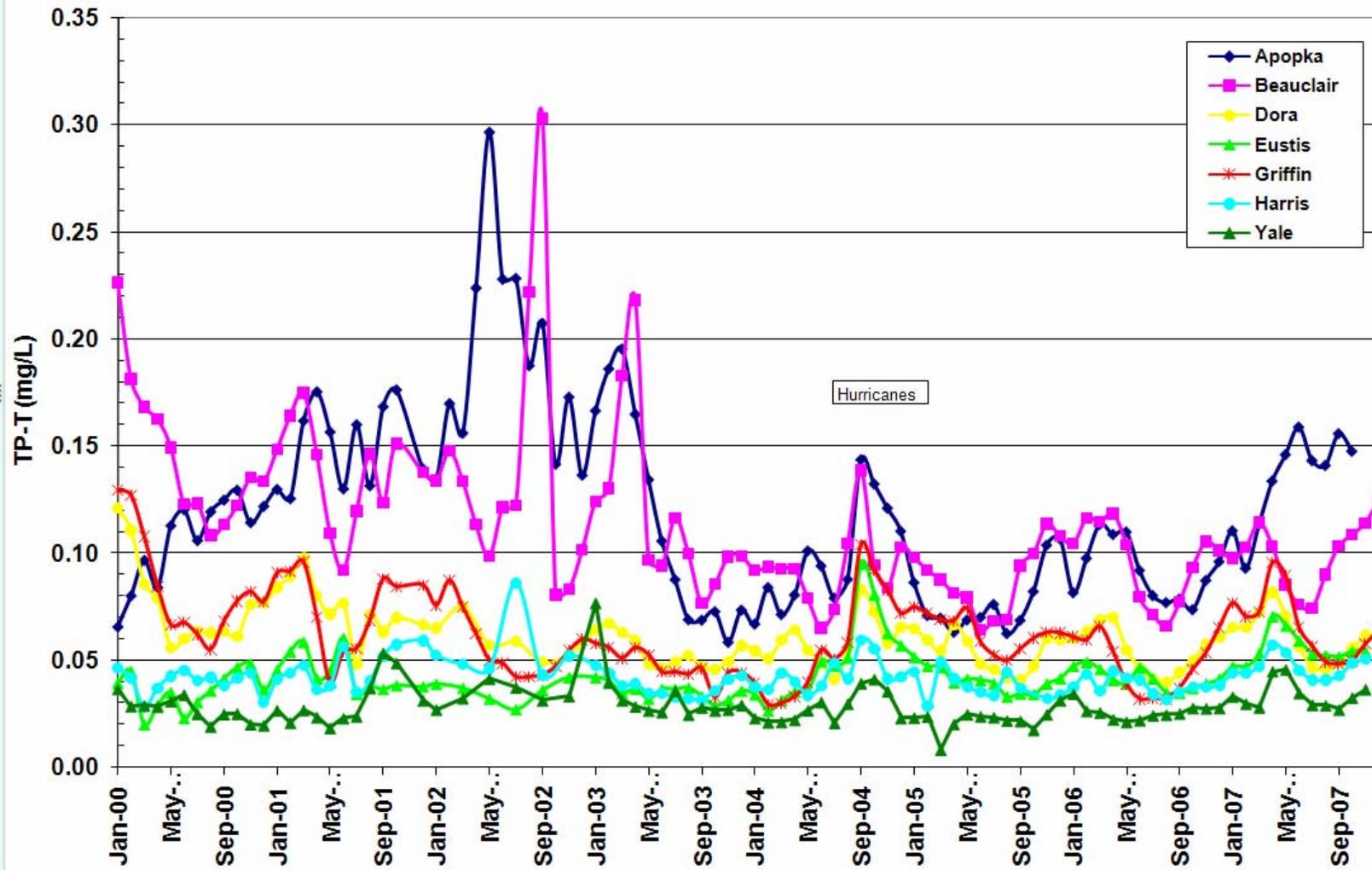
**Dr. Larry Battoe - SJRWMD**

**January 2008**

### Harris Chain of Lakes Chlorophyll



Harris Chain of Lakes Total Phosphorus



Harris Chain of Lakes Secchi Depth

