

## A Vision for the Harris Chain of Lakes

*This is the second article in a series written by the Lake County Water Authority to inform the public about the current water quality problems in Lake County and the efforts underway to correct them.*

Though it's hard to tell amidst the wildly fluctuating weather patterns of the past ten years, the Harris Chain of Lakes has started to show some signs of improvement. Scientists have observed a significant reduction of key phosphorus-containing compounds which are a primary food source for algae. The St. Johns River Water Management District's ongoing restoration of the muck farms surrounding Lake Apopka has been an important part of this reduction. The lakes are still murky and green, however, and further efforts to reduce these phosphorus compounds are necessary to achieve water quality goals established for the chain.

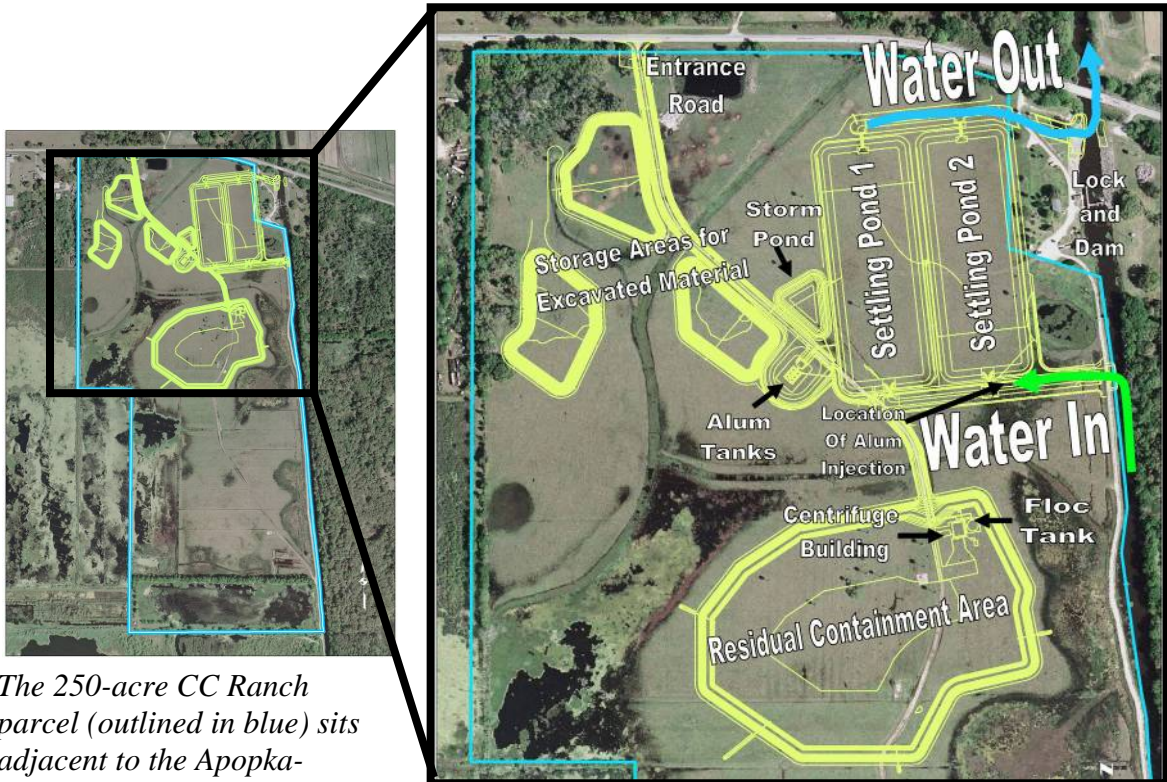


*Algae shades out eelgrass in Lake Beauclair*

The Lake County Water Authority's Nutrient Reduction Facility (NuRF) is a crucial step toward eliminating the majority of algae-feeding compounds exported from Lake Apopka. After five years in development, the project is now ready for construction and, once completed, will be the largest alum-based surface water restoration facility ever built. In total, the project will cost \$7.272 million to construct and approximately \$1 million per year to operate.

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The St. Johns River Water Management District is providing land for the 50-acre project adjacent to its lock and dam facility near Astatula, FL. The Florida Department of Environmental Protection is contributing \$3.7 million toward project construction and first-year monitoring. The LCWA will provide the remaining \$3.6 million and will pay the operational costs.



*When finished, water will flow through the NuRF rather than being released through the existing dam.*

The facility will utilize off-line alum injection technology developed by the stormwater and drinking water industries over the past several decades. Using only the force of gravity, water flowing down the Apopka-Beauclair canal will be diverted through the facility where it will be mixed with the correct proportion of alum dispensed from carefully controlled pumps. Once alum, water and pollutants combine, heavy snowflake-like particles called “floc” form and begin to sink. Two 9-acre ponds, each 20-feet deep, will provide sufficient time and space for these particles to settle so that only clean water will flow out of the facility and back into the Apopka-Beauclair Canal.

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Laboratory tests indicate the alum treatment process effectively removes more than two-thirds of the targeted total phosphorus concentration in water flowing down the Apopka-Beauclair Canal. Combined with the St. Johns River Water Management District's restoration efforts in Lake Apopka, the NuRF is expected to achieve pollutant reduction goals for Lakes Beauclair, Dora, Eustis and Griffin. The cleaner water will not turn the lakes into sterilized "swimming pools" but instead will allow the lakes to regain much of their historic appeal.



*Step 1:  
Alum is added to the water forming floc.*

Once treated water enters Lake Beauclair, a sustainable increase in water clarity will stimulate beneficial submerged plant growth by allowing light to reach at least 20% more of the lake bottom. Beneficial submerged plant growth is crucial to recovery of the lake because it provides habitat for sportfish and prevents resuspension of lake sediment. Control of nuisance plants like hydrilla will still be required to prevent ecological and navigational problems.



*Step 2:  
Floc sinks to the bottom leaving clean water on top.*

The time it takes to see improvements in the Harris Chain will depend on the amount of water flowing out of Lake Apopka. Sufficient rainfall allows the St. Johns River Water Management District to release water from Lake Apopka through control gates located within the NuRF. Under normal circumstances, improvements to Lake Beauclair could be seen in less than a year.

Eventually, the St. Johns River Water Management District's efforts to restore Lake Apopka and the surrounding wetlands will result in the achievement of water quality goals throughout the Harris Chain of Lakes. Until that time comes, the NuRF will provide the means to meet these goals. Continued and cooperative efforts by all agencies will benefit not only the environmental goals for the lake, but the expectations of Lake County's citizens as well.