Draft

Upper Ocklawaha River Basin
State Funding Initiative
(including Lake Apopka)

Fiscal Year 2006–2007

St. Johns River Water Management District

Palatka, Florida

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Contents

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Introduction—The District

Water is Florida's most important natural resource and is central to our quality of life. The mission of the St. Johns River Water Management District is to ensure the sustainable use and protection of water resources for the benefit of the people of the District and the state of Florida.

Within the District boundaries are the longest river in the state, the St. Johns; more than one-third of the state's 7,700 lakes, including the second largest lake, Lake George; and the Indian River Lagoon, one of four Florida estuaries in the National Estuary Program.

The rapid growth of Florida's population has increased efforts on water resource development and restoration. Partnerships with other government agencies, organizations, and the public are a key element to successful implementation of projects aimed at protecting and restoring our water resources. The District recognizes the benefits of working cooperatively with others and that many projects require input and resources from numerous organizations.

The District has established partnerships with many federal agencies over the years. The U.S. Environmental Protection Agency has provided funds for the National Estuary Program and the Nonpoint Source Management Program. The U.S. Army Corps of Engineers has provided technical expertise and funding through several different programs. Hydrologic data collection and scientific analysis have progressed in cooperation with the U.S. Geological Survey.

The District has formed a partnership with the U.S. Department of Agriculture under the Wetlands Reserve Program, the Farmland Protection Program, the Rural Utilities Service, and the Environmental Quality Incentives Program. In addition, the U.S. Department of Commerce has provided funding for economically disadvantaged communities in the District for public works projects, including water and sewer infrastructure related to designated Surface Water Improvement and Management areas.

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Introduction—The Upper Ocklawaha River Basin

The Upper Ocklawaha River Basin initiative combines two Surface Water Improvement and Management (SWIM) projects—the Upper Ocklawaha River Basin (UORB) and Lake Apopka—located in Orange, Lake, and Marion counties. This initiative includes seven major lakes (including Lake Apopka, the fourth largest lake in the state) covering more than 75 square miles and includes portions of the Ocklawaha River in central Florida. The upper Ocklawaha River, from Lake Griffin to the Silver River, occupies the northern third of the project area. The state has designated the Silver River as an Outstanding Florida Water.

Historical Overview

The river and lakes in the upper Ocklawaha River project have undergone drastic declines in water quality and have lost river and marsh habitat over the last century. In the late 1800s, the Ocklawaha River was dredged to improve navigation for steamboats. Construction of the Apopka-Beauclair Canal in 1888 lowered Lake Apopka water levels. In the 1920s, 15 miles of the upper Ocklawaha River were abandoned when a parallel canal was dug to drain 5,800 acres of sawgrass marsh for farming. Beginning in the 1940s, 26,500 acres of sawgrass marsh and lake bottom were drained for farming on the north shore of Lake Apopka and at Emeralda Marsh along Lake Griffin. Three dams were constructed in the Harris Chain of Lakes to stabilize water levels for flood protection of farms and lakeside homes and businesses.

For 70 years, farms established on former marshes pumped water loaded with nutrients into the lakes and the river of the UORB. Untreated sewage and industrial effluents were discharged into the lakes. The water bodies were unable to absorb excessive nutrients naturally because vegetable fields had mostly replaced filtering marshes. Nutrient-fed algae flourished, turning the water pea-green. Submersed plants, important for fish habitat, died because sunlight could not penetrate the murky waters. Deep organic sediments rich in nutrients accumulated on the lake bottoms as dead algae settled. Stabilized water levels further degraded water quality.

The St. Johns River Water Management District (SJRWMD) developed a 5-year restoration plan for the upper Ocklawaha River project that calls for SJRWMD resources to be combined with federal and state funding to complete subprojects outlined in the SWIM plans for the UORB and Lake Apopka.

The water quality in the lakes in the UORB and Lake Apopka has significantly improved. This improvement is the result of SJRWMD efforts to reduce the recycling of nutrients already within the lakes by harvesting gizzard shad and operating flow-way filter marshes.

Citizen Involvement

The Friends of Lake Apopka (FOLA), a citizen advocacy group founded in 1991, is dedicated to restoring Lake Apopka. FOLA hosts forums to foster open communication among the lake's stakeholders and is working with the East-Central Florida Regional Planning Council and local governments to develop a regional planning effort for areas surrounding the lake; efforts include establishing appropriate development rules and a regionwide loop trail.

The Lake Griffin Restoration Task Force was convened in 1999 and consisted of state

and local agencies as well as concerned citizens. Its mission was to evaluate information pertinent to the restoration of Lake Griffin, which was comparable to Lake Apopka in water quality. The task force unanimously recommended completion of an array of complementary restoration subprojects implemented by a partnership of state and local agencies. This task force was disbanded in 2001.

The Harris Chain of Lakes Restoration Council was created by the 2001 Florida Legislature to advise the SJRWMD Governing Board and the Legislature on subprojects to restore water quality and fish and wildlife habitats in the Harris Chain of Lakes. Nine citizens appointed to the council by the Lake County legislative delegation began regular meetings in August 2001.

Key Efforts

- Purchased more than 35,000 acres of land and began wetland re-creation in the previously farmed muck soils
- Continued efforts to restore 9.5 miles of the historic upper Ocklawaha River channel at the Sunnyhill Restoration Area in cooperation with the U.S. Army Corps of Engineers (USACE)
- Constructed the Lake Apopka and Lake Griffin flow-ways to filter suspended sediments and associated nutrients from circulated lake water
- Harvested more than 6,700 tons of gizzard shad, removing about 93,000 pounds of phosphorus from Lake Apopka, Lake Beauclair, Lake Dora, and Lake Griffin
- Planted desirable wetland and aquatic vegetation at restoration sites and around lake edges
- Adopted final pollutant load reduction goals for nutrients, which formed the basis of developing total maximum daily loads (TMDLs) by the Florida Department of Environmental Protection (FDEP).
- Adopted final TMDLs by the U.S. Environmental Protection Agency (EPA) for the Harris Chain of Lakes and Lake Apopka
- Adopted a phosphorous load rule for Lake Apopka through the environmental resource permitting process
- Adopted a plan to change the way water levels on Lake Griffin are managed and planned future changes for other lakes to restore more-natural water levels and flows in the basin

Upper Ocklawaha River Basin Partners

SJRWMD has formed cooperative partnerships with federal, state, regional, county, and city governments; citizen support groups; environmental organizations; and other nonprofit institutions. The list of partners includes USACE; EPA; the U.S. Department of Agriculture—Natural Resources Conservation Service; the U.S. Fish and Wildlife Service; FDEP; the Florida Fish and Wildlife Conservation Commission; the Florida Department of Transportation; the Lake County Water Authority; the University of Florida; Lake, Marion, and Orange counties; Astatula; Eustis; Fruitland Park; Groveland; Howey-in-the-Hills; Lady Lake; Leesburg; Mascotte; Montverde; Mount Dora; Oakland; Ocala; Ocoee; Tavares; Umatilla; Winter Garden; the Friends of Lake Apopka; and the Harris Chain of Lakes Restoration Council.

Total for This Basin

Funding package total
(FY 2006–2007): $_____

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Capital Subprojects

Enhanced Lake Level Fluctuations and Lake Management

Priority Ranking: 1
Budget Request: $1,500,000
Partner: Lake County Water Authority (LCWA)
Status: Year 7 of 8
Funding Administration: St. Johns River Water Management District (SJRWMD)
Description: Forty years of artificially stabilized water levels in the Harris Chain of Lakes has contributed to the poor water quality in the chain and the loss of lakeshore habitats for fish and wildlife. SJRWMD is proposing to restore more-natural water level fluctuations in the lakes to help reverse this damage.

Public hearings on increasing lake-level fluctuations revealed significant concern about the loss of boat access from canals to the lakes during low-water periods predicted by the proposed schedules. To address this concern, the LCWA and SJRWMD partnered to evaluate dredging of existing canals on the Harris Chain of Lakes to improve boat access during low-water conditions. A 1999 legislative appropriation funded a feasibility assessment of canal dredging on Lake Griffin, which was completed in 2002. Since 2000, legislative appropriations have partially funded dredging of Lake Griffin canals. Part of the requested funding will be used to complete dredging of canals on Lake Griffin.

Part of the requested funding will be used to provide for the continued harvesting of gizzard shad from lakes within the Ocklawaha River Basin and Lake Apopka. The removal of gizzard shad is a cost-effective method of removing phosphorus that can improve water quality and vegetated habitat for game fish and wildlife.

The Harris Bayou subproject will restore historic flow between Lakes Harris and Griffin and provide greater flexibility in managing lake levels in the Burrell subbasin. A portion of the funds will be used to match funds that may be committed to the project from other agencies. This project also will provide additional flood control in the subbasin.

Part of the requested funding will be used for modifications to increase flood conveyance through the Apopka-Beauclair Canal. Dredging the Apopka-Beauclair Canal will create additional water storage and will improve flood conveyance while removing a source of sediments to Lake Beauclair when discharges from Lake Apopka are necessary.

Restoration of the North Shore of Lake Apopka

Priority Ranking: 2
Budget Request: $2,000,000
Partners: USDA—Natural Resources Conservation Service, U.S. Fish and Wildlife Service, and Florida Department of Environmental Protection (FDEP)
Status: Year 9 of ongoing
Funding Administration: SJRWMD
Description: As part of the restoration of the north shore of Lake Apopka, residual pesticide levels in some of the previously farmed soils likely will require remediation prior to reflooding.

Part of the requested funding will be used to remediate fields with high pesticide levels. Remediation techniques have been examined and testing is underway for low cost alternatives. Methods that are finally used may include enhanced *in situ* (on-site) degradation as well as capping with dredged material.

Apopka-Beauclair Canal Nutrient Reduction

Priority Ranking: 3
Budget Request: $500,000
Partner: LCWA
Status: Year 3 of 3
Funding Administration: SJRWMD
Description: This subproject will further improve the water quality discharging through the Apopka-Beauclair Canal to Lake Beauclair by implementing an off-line nutrient reduction treatment alternative that provides the highest treatment efficiency, lowest construction costs, and lowest long-term operation and maintenance costs possible.

SJRWMD is operating the Lake Apopka Marsh Flow-Way. Phase 1 of the flow-way was designed to treat flows up to 150 cubic feet per second (cfs). Flows through the canal can exceed 150 cfs—discharges in the summer of 2003 approached 300 cfs. During these periods of higher flows, high phosphorus loads are released downstream into Lake Beauclair. The discharge from Lake Apopka represents nearly 90% of the phosphorous load to Lake Beauclair.

The LCWA is willing to provide matching funds for this subproject.

Control of Nuisance Aquatic Vegetation

Priority Ranking: 4
Budget Request: $200,000
Partners: Lake County, LCWA, and Florida Fish and Wildlife Conservation Commission (FWC)
Status: Year 2 of 5
Funding Administration: SJRWMD
Description: The requested funding will be used to fund an additional spraying crew for control of nuisance aquatic vegetation in the Harris Chain of Lakes. Recent improvements in water quality in basin lakes have led to improved water clarity. In turn, this has allowed hydrilla to expand in many areas. Efforts by Lake County will not be sufficient to control hydrilla in the Upper Ocklawaha River Basin (UORB). This support is needed to sustain the long-term improvements that are desired for the Harris Chain of Lakes.

Nutrient Loading Reduction

Priority Ranking: 5
Budget Request: $500,000
Partners: Lake County, LCWA, U.S. Department of Agriculture (USDA)—Natural Resources Conservation Service, and U.S. Army Corps of Engineers
Status: Year 5 of 7
Funding Administration: SJRWMD
Description: Part of the requested funding will be applied toward a 50% cost-share subproject with local partners to construct stormwater treatment systems in high-priority existing developments to reduce nutrient loading to these lakes. Storm water is a significant source of nutrients entering the Harris Chain of Lakes.

Part of the requested funding will be used to reduce nutrient loading from the former muck farm properties during the interim restoration process to protect the receiving waters. Alum injection systems at the North Shore Restoration Area on Lake Apopka and at Emeralda Marsh along Lake Griffin provide significant protection to these lakes during the interim restoration period to control phosphorous loading during periods when discharge is necessary. When habitat at Emeralda Marsh is sufficiently restored, the different units will be reconnected to Lake Griffin.

Lake Beauclair Aquatic Enhancement

Priority Ranking: 6
Budget Request: $500,000
Partners: LCWA and FWC
Status: Year 3 of 6
Funding Administration: SJRWMD

Description: The requested funding will be used for phase 1 of a 2-phase plan to improve water quality and habitat in Lake Beauclair. In phase 1, fine-grained, organic-bearing sediments will be removed by hydraulic dredge from an estimated 260 acres in the western portion of Lake Beauclair. These sediments are compromising the quality of the aquatic habitat in Lake Beauclair and are impeding navigation. Removing the accumulated sediments near the point where the Apopka-Beauclair Canal enters Lake Beauclair will prevent the resuspension and distribution of this fine-grained organic material into areas where desirable aquatic plants will be established or into downstream lakes.

Phase 2 involves isolation of Lake Beauclair via sheetpile structures and pumping down water levels to oxidize shallow-zone organic sediments and to facilitate revegetation in appropriate areas with native aquatic plants.

The LCWA and FWC developed this subproject and will provide matching funds to complete this effort.

Wetland and Aquatic Habitat Restoration

Priority Ranking: 7
Budget Request: $100,000
Partners: University of Florida, FWC—Florida Cooperative Fish and Wildlife Unit, and LCWA
Status: Year 4 of 5
Funding Administration: SJRWMD
Description: Part of the requested funding will be used to plant a diversity of native aquatic and wetland plants in the Harris Chain of Lakes. Lake vegetation has declined dramatically since the 1960s. Native emergent wetland vegetation will be planted along lake shorelines to achieve desirable plant coverage along the shorelines. Planting will reintroduce long-lived native wetland and aquatic plants to the restoration sites, allowing these species to spread naturally and form more diverse wetland plant communities.

Part of the requested funding will be used to continue aerial photography and geographic information system (GIS) work for spatial data analyses, map preparation and editing, and basic spatial coverage creation. Low-level aerial photography and GIS data are essential to determine the success of wetland restoration efforts at restoration sites in the UORB and in the basin lakes.

Habitat Restoration—Planting of Desirable Vegetation on Lake Apopka

Priority Ranking: 8
Budget Request: $50,000
Partner: FWC
Status: Year 7 of 8
Funding Administration: SJRWMD
Description: This cooperative subproject will build on the small-scale planting work that SJRWMD has had under way since 1992. Restoration of native, desirable vegetation in shallow-water areas is a primary performance measure for the restoration subproject. Plants in shallow near-shore areas will provide habitat for fish and other wildlife.

Silver River/Half Mile Creek Comprehensive Watershed Management Plan

Priority Ranking: 9
Budget Request: $250,000
Partners: City of Ocala, Marion County, and Florida Department of Transportation
Status: Year 3 of 3
Funding Administration: SJRWMD
Description: The requested funding will be applied toward the cost of implementing phase 1 of this plan—State Road (SR) 40/ Half Mile Creek stormwater retrofit. About 269 acres of untreated urban

runoff discharge through five cascading drainage basins directly into Half Mile Creek, which discharges into the Silver River near the spring boil. The goal of this retrofit project is to improve the water quality and the biological integrity of the Silver River by implementing best management practices to reduce stormwater pollution in the SR 40 drainage basin.

The Silver River is designated by the state as an Outstanding Florida Water.

Assessment Subprojects

Support of Pollutant Load Reduction Goals for the Harris Chain of Lakes

Formerly: "Development of Pollutant Load Reduction Goals for the Harris Chain of Lakes"
Priority Ranking: 1
Budget Request: $500,000
Partners: None
Status: Year 5 of 10
Funding Administration: SJRWMD
Description: Part of the requested funding will be used to continue collecting water quality and plankton samples and to analyze plankton samples, while part of the request will fund management of the scientific database. SJRWMD has adopted final pollutant load reduction goals (PLRGs) for the UORB. The PLRGs were used by FDEP to develop total maximum daily loads (TMDLs) for the Harris Chain of Lakes. The TMDLs have been adopted by the U.S. Environmental Protection Agency and will be updated every 5 years. PLRGs and TMDLs require continuing monitoring of water quality conditions in basin lakes and at SJRWMD restoration sites discharging into the lakes. Water quality and plankton data are essential to determine conditions in basin lakes and at restoration sites as well as to determine trends in response to restoration activities.