

EXECUTIVE SUMMARY

Lake Seminole, located in west central Pinellas County, Florida, was created in the late 1940s by the impoundment of an arm of Long Bayou, a brackish water segment of Boca Ciega Bay. In the late 1970s, in response to flood concerns, drainage from approximately 11 square miles of the Lake Seminole watershed was diverted around the lake and directly into Long Bayou by the construction of the Seminole Bypass Canal. With a surface area of 684 acres, Lake Seminole is the second largest lake in Pinellas County. With the exception of the County-owned Lake Seminole Park located along the southeast shore, virtually the entire remaining 3,480 acre watershed is urbanized, composed of both old and new residential and commercial development. The lake has historically supported heavy recreational use including boating, skiing, and fishing. Over the past decade, however, water clarity and sport fish stocks (primarily largemouth bass and bluegill) have declined significantly, and nuisance aquatic vegetation has proliferated. The available data indicate a trend of rapidly increasing eutrophication in Lake Seminole.

In response to public concerns over declining water clarity and the proliferation of nuisance aquatic vegetation, including cattails and hydrilla, the Pinellas County Board of County Commissioners passed a resolution in January 1989 (Resolution 89-13) urging the joint development of an effective long term lake management program through the cooperative efforts of the public, lake users, and state and local agencies with responsibilities on the lake. These agencies included Pinellas County, the Southwest Florida Water Management District, the Florida Department of Natural Resources, the Florida Department of Environmental Regulation, the Florida Game and Fresh Water Fish Commission, and the Cities of Largo and Seminole. Representatives from these agencies, as well as from affected homeowner and business interests, were subsequently assembled as the Lake Seminole Advisory Committee (LSAC).

Policy 1.4.5 of the Surface Water Management Element of the Pinellas County Comprehensive Plan states:

In the development of specific watershed/waterbody management plans, Pinellas County shall give priority to those water bodies whose water is known, or suspected, to be impaired, and to those high quality waterbodies whose quality may be in danger of impairment, as identified by the Departments of Public Works and Environmental Management through such means as the watershed ranking process.

As part of the County's on-going work to develop comprehensive watershed management plans for priority basins within their jurisdiction, and to provide a focus to the activities of the LSAC, the County selected PBS&J in late 1996 to assist in the preparation of the Lake Seminole Watershed Management Plan (Plan). This document - *The Lake Seminole Watershed Management Plan* - represents the culmination of a decade of diagnostic feasibility and resource planning activities undertaken by numerous governmental agencies and consulting scientists and engineers.

The purpose of the Plan is to provide implementation guidance for the Pinellas County Growth Management Plan with respect to lake, wetland, and upland management issues in the Lake Seminole watershed. The Plan presents a comprehensive yet specific framework for action aimed at both improving and maintaining the natural resource functions and levels-of-service. As such, the Plan includes recommended management actions including structural and/or capital projects, non-structural best management practices (BMPs), and regulatory and policy guidelines, addressing the following objectives:

- reduce pollutant and nutrient loadings from both external and internal sources;
- improve lake water quality (e.g., reduce TSI and meet state water quality standards);
- increase watershed and in-lake habitat quality and diversity;
- control nuisance and exotic aquatic vegetation;
- sustain or enhance a balanced assemblage of endemic sport fisheries and wildlife;
- provide for public flood protection;
- maintain or enhance the aesthetic and recreational attributes of the lake; and
- maximize and balance recreational opportunities for all user groups.

In addressing the above listed management objectives, the Plan presents the development and prioritization of a set of recommended management actions in an integrated manner. In addition to the evaluation of structural BMPs in the watershed, and in-lake remediative measures, the Plan further addresses the project objectives through a variety of legal, regulatory, and policy guidelines that will serve to control future growth and redevelopment in the watershed.

Seven priority management issues have been identified for Lake Seminole and its watershed, and specific goals have been adopted by the LSAC to address each. The seven management issues and their corresponding goals are listed below.

Issue 1 - Water Quality

- *Goal 1* - The lake and its watershed shall be managed such that good water quality, according to Class-III State standards, is achieved and maintained in the lake

Issue 2 - Aquatic Vegetation

- *Goal 2* - Aquatic vegetation shall be managed such that nuisance and exotic plants are maintained at the lowest feasible levels while encouraging the establishment of a balanced and diverse assemblage of desirable native plants

Issue 3 - Fisheries

- *Goal 3* - The lake and its fish populations shall be managed to provide sustained quality sport fishing opportunities

Issue 4 - Wildlife and Associated Habitat

- *Goal 4* - The lake and its watershed shall be managed to provide adequate habitat abundance, and to enhance habitat quality and diversity
- *Goal 5* - The lake and its watershed shall be managed to attract and maintain populations of endemic fish and wildlife species

Issue 5 - Recreation and Aesthetics

- *Goal 6* - The lake shall be managed in such a manner as to provide for safe recreational boating and skiing
- *Goal 7* - Use of the lake shall be managed such that the needs of the various user groups are balanced and optimized

Issue 6 - Flood Control

- *Goal 8* - The lake and its watershed shall be managed to minimize flood damage

Issue 7 - Public Education

- *Goal 9* - Education in matters related to and affecting the other goals of the Lake Seminole Watershed Management Plan shall be provided

The management actions recommended herein are based on the extensive knowledge gained from the scientific/engineering studies and monitoring programs conducted to date, and represent the most cost-effective means of attaining the adopted lake and watershed management goals. The recommended Lake Seminole Watershed Management Plan contains a total of 22 Plan components which address the seven identified lake management issues. The components of the Plan are listed below.

Structural Components (6)

- *Structural Component 1* - Construct Enhanced Regional Stormwater Treatment Facilities in Priority Sub-Basins
- *Structural Component 2* - Divert Seminole Bypass Canal Flows to Improve Lake Flushing and Dilution
- *Structural Component 3* - Excavate Organic Peat Sediments from Shoreline Areas

- *Structural Component 4* - Dredge Organic Silt Sediments from Submerged Areas
- *Structural Component 5* - Restore Priority Wetland and Upland Habitats
- *Structural Component 6* - Install Stage and Flow Measurement Instrumentation on the Lake Seminole Outfall Control Structure

Management Components (5)

- *Management Component 1* - Implement an Enhanced Lake Level Fluctuation Schedule
- *Management Component 2* - Inactivate Phosphorus through Whole Lake Alum Applications
- *Management Component 3* - Mechanically Harvest Nuisance Aquatic Vegetation
- *Management Component 4* - Biomanipulate Sport Fish Populations
- *Management Component 5* - Improve Treatment Efficiency of Existing Stormwater Facilities

Legal Components (3)

- *Legal Component 1* - Amend the Florida Statutes to Temporarily Exempt Lake Seminole from Aquatic Preserve and Outstanding Florida Water Regulatory Restrictions
- *Legal Component 2* - Adopt a Resolution Designating the Lake Seminole Watershed as a "Nutrient Sensitive Watershed"
- *Legal Component 3* - Strengthen and Standardize Local Ordinances for Regulating Stormwater Treatment for Redevelopment in the Lake Seminole Watershed

Policy Components (1)

- *Policy Component 1* - Establish a Lake Seminole Watershed Management Area (WMA) through Amendments to the Pinellas County, and Cities of Largo and Seminole Comprehensive Plans

Compliance and Enforcement Components (2)

- *Compliance and Enforcement Component 1* - Expand and Enforce Restricted Speed Zones on Lake Seminole

- *Compliance and Enforcement Component 2* - Dedicate a Pinellas County Marine Unit Sheriff to Enforce Laws on Lake Seminole

Social and Recreational Components (2)

- *Social and Recreational Component 1* - Construct a Public Pedestrian Fishing Pier and Boardwalk in Lake Seminole County Park
- *Social and Recreational Component 2* - Establish and Protect Fishing Enhancement Zones in Lake Seminole

Public Education Components (2)

- *Public Education Component 1* - Develop and Implement a Comprehensive Public Involvement Program for the Lake Seminole Watershed
- *Public Education Component 2* - Develop and Implement a Local Citizens LakeWatch Program for Lake Seminole

Operation and Maintenance Components (1)

- *Operation and Maintenance Component 1* - Operate and Maintain Structural Facilities and Equipment Recommended in the Plan

It should be emphasized that the various components of the Plan are not all independent management actions that can be implemented without regard for the others. That is, among the various Plan components there are certain dependencies that need to be accommodated in the implementation schedule to ensure the most cost-effective results. In recognition of these dependencies, as well as potential financial constraints, it is recommended that the Plan be implemented in three phases.

- **Phase I** - The first phase of the Plan would focus initially on the design and permitting of the major structural components for which land acquisition, engineering design and regulatory permit approvals will be required. In addition, the primary focus of Phase I will be on watershed management activities that result in the reduction of external phosphorus loads to the lake (e.g., construction of enhanced regional stormwater treatment facilities). Land acquisition, engineering design, and environmental permitting activities in support of the major structural components of the Plan may require up to two years to complete and therefore should be initiated immediately. Phase I activities are projected to require a minimum of two years to complete, including construction. Therefore, Phase I would extend from October 2001 through at least September 2003.

- **Phase II** - The second phase of the Plan would focus primarily on in-lake restoration activities that build upon the watershed management projects completed under Phase I. These would include implementation of in-lake habitat restoration projects, as well as the removal of the flocculent deep sediments if monitoring results warrant this major project. Assuming that all land acquisition, design and permitting activities have been completed for the major structural components in Phase I, it is anticipated that the Phase II construction projects, and other non-structural components of the Plan, could be completed in two years. Therefore, Phase II would extend from October 2003 through September 2005.
- **Phase III** - The third phase of the Plan would focus primarily on following-up on in-lake restoration activities that build upon, or are dependent upon, the implementation of Phase I and Phase II projects. For example, assuming that adequate water quality improvement to support the proliferation of aquatic macrophytes in the lake has resulted from the implementation of the Phase I and II components, the aquatic weed harvesting program would be initiated during Phase III. Conversely, if the defined water quality targets have not been attained following implementation of the Phase I and II components, then sediment phosphorus inactivation would be implemented in Phase III. It should be noted that the majority of the Phase III projects are management or maintenance activities that will likely be conducted indefinitely on an ongoing basis. Therefore, Phase III would begin in October 2005 and extend indefinitely into the future.

The total construction cost of implementing the Plan is estimated at \$14,480,000. This cost estimate assumes that all components of the Plan, including the most ambitious optional alternatives, are fully implemented as recommended. Therefore, this cost represents a maximum construction cost estimate. It should, however, be noted that the total estimated construction cost does not include design and permitting fees, or land acquisition costs. The total annual recurring cost of Plan implementation is estimated to be \$537,000. This annual recurring cost estimate includes all ongoing operation and maintenance activities, and program administrative functions, to be conducted following implementation of the Plan. As with the total construction cost estimate, this cost estimate assumes that all components of the Plan, including the most ambitious optional alternatives, are fully implemented as recommended.

The total 10-year cost assumes that the construction of all structural components of the Plan will be completed within five years of initiation (e.g., by September 2006), and is estimated at \$17,165,000. As such, the total 10-year cost includes the construction costs, plus 5-years of accrued annual recurring costs, for all components of the Plan. Therefore, this cost represents an estimate of the maximum total cost of Plan implementation over a 10-year planning and budgeting window (e.g., through September 2011). All cost estimates are figured in FY-2000 dollars and do not account for inflation.