

ALAFIA RIVER STATE PARK

UNIT MANAGEMENT PLAN

APPROVED

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Recreation and Parks

October 15, 2004



Jeb Bush
Governor

Department of Environmental Protection

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Colleen Castille
Secretary

December 7, 2004

Ms. BryAnne White
Office of Park Planning
Division of Recreation and Parks
3900 Commonwealth Blvd.; M.S. 525
Tallahassee, Florida 32399

Re: Alafia River State Park Lease #4168

Ms. White:

On **October 15, 2004**, the Acquisition and Restoration Council recommended approval of the **Alafia River State Park** management plan.

On **December 7, 2004**, the Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, approved the management plan for the **Alafia River State Park**. Pursuant to Section 253.034, Florida Statutes, and Chapter 18-2, Florida Administrative Code this plan's ten-year update will be due on **December 7, 2014**.

Approval of this land management plan does not waive the authority or jurisdiction of any governmental entity that may have an interest in this project. Implementation of any upland activities proposed by this management plan may require a permit or other authorization from federal and state agencies having regulatory jurisdiction over those particular activities. Pursuant to the conditions of your lease, please forward copies of all permits to this office upon issuance.

Sincerely,

A handwritten signature in black ink that reads "Paula L. Allen". The signature is written in a cursive style with a large loop at the end.

Paula L. Allen
Office of Environmental Services
Division of State Lands
Department of Environmental Protection

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INTRODUCTION

Alafia River State Park is located in southeastern Hillsborough County (see Vicinity Map) about 30 miles southeast of Tampa. Access to the park is gained from County Road 39, between County Road 640 and 672. The vicinity map also reflects significant land and water resources existing near the park.

The park was acquired on December 18, 1996 as a donation from Cytex Brewster Phosphates Incorporated. Currently the park contains approximately 6,312 acres. For this plan, park acreage has been calculated based on the composition of natural communities, in addition to ruderal and developed areas.

At Alafia River State Park, public outdoor recreation and conservation is the designated single use of the property. There are no legislative or executive directives that constrain the use of this property (see Addendum 1).

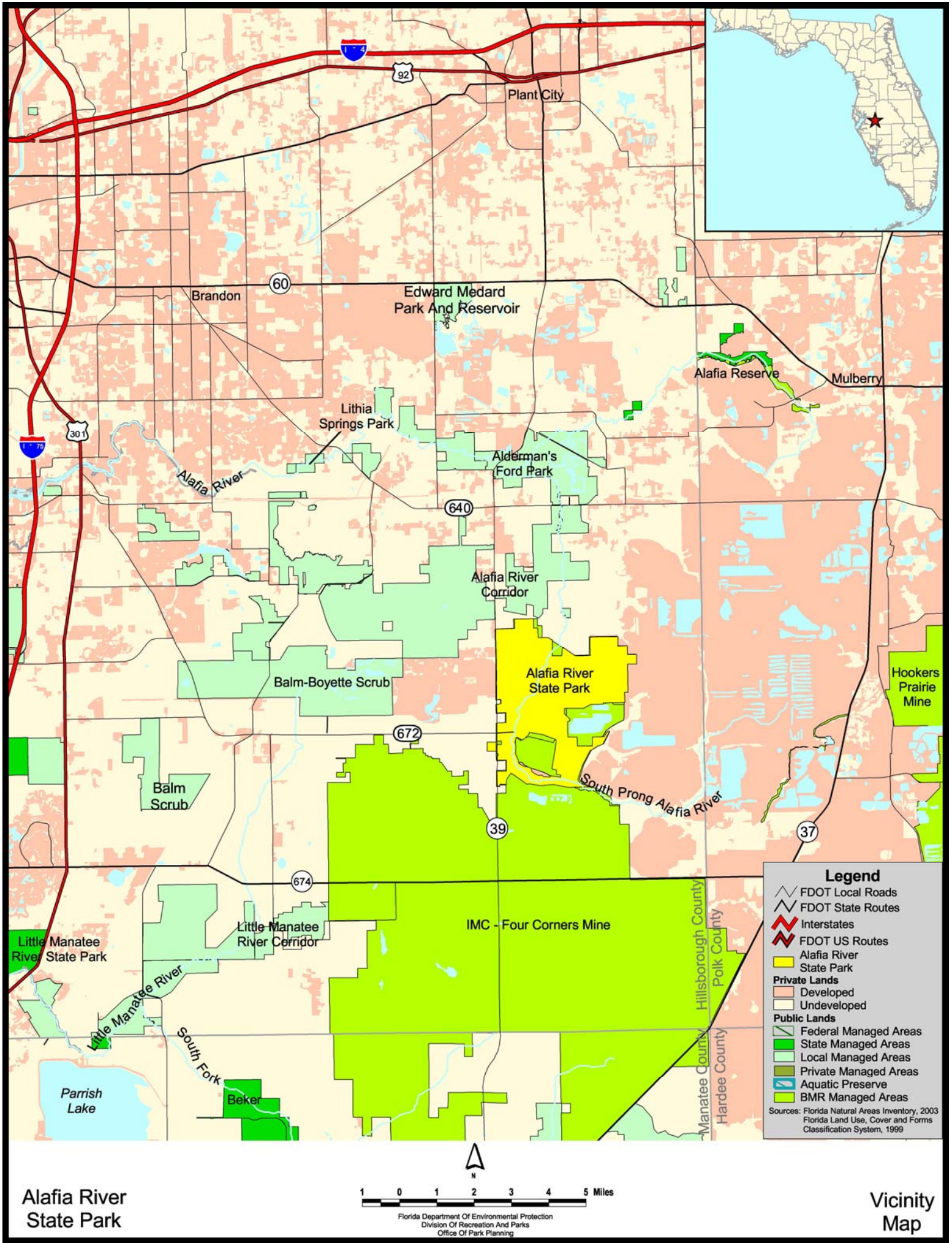
PURPOSE AND SCOPE OF THE PLAN

This plan serves as the basic statement of policy and direction for the management of Alafia River State Park as a unit of Florida's state park system. It identifies the objectives, criteria and standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the March 20, 1998, approved plan. All development and resource alteration encompassed in this plan is subject to the granting of appropriate permits; easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with the appropriate local, state or federal agencies. This plan is also intended to meet the requirements for beach and shore preservation, as defined in Chapter 161, Florida Statutes and Chapters 62B-33, 62B-36 and 62R-49, Florida Administrative Code.

The plan consists of two interrelated components. Each component corresponds to a particular aspect of the administration of the park. The resource management component provides a detailed inventory and assessment of the natural and cultural resources of the park. Resource management problems and needs are identified, and specific management objectives are established for each resource type. This component provides guidance on the application of such measures as prescribed burning, exotic species removal and restoration of natural conditions.

The land use component is the recreational resource allocation plan for the unit. Based on considerations such as access, population and adjacent land uses, an optimum allocation of the physical space of the park is made, locating use areas and proposing types of facilities and volume of use to be provided.

In the development of this plan, the potential of the park to accommodate secondary management purposes ("multiple uses") was analyzed. These secondary purposes were considered within the context of the Division's statutory responsibilities and an analysis of the resource needs and values of the park. This analysis considered the park natural and cultural resources, management needs, aesthetic values, visitation and visitor experiences. For this park, it was determined that no secondary purposes could be accommodated in a manner that would not interfere with the primary purpose of resource-based outdoor recreation and



conservation. Uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park and should be discouraged.

The potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the park. It was determined that multiple-use management activities would not be appropriate as a means of generating revenues for land management. Instead, techniques such as entrance fees, concessions and similar measures will be employed on a case-by-case basis as a means of supplementing park management funding. In the interim, before restoration can be accomplished in certain areas of the park, revenue is also generated from the harvest of citrus, from cattle grazing and from haying proceeds.

The use of private land managers to facilitate restoration and management of this unit was also analyzed. Decisions regarding this type of management (such as outsourcing, contracting with the private sector, use of volunteers, etc.) will be made on a case-by-case basis as necessity dictates.

MANAGEMENT PROGRAM OVERVIEW

Management Authority and Responsibility

In accordance with Chapter 258, Florida Statutes and Chapter 62D-2, Florida Administrative Code, the Division of Recreation and Parks (Division) is charged with the responsibility of developing and operating Florida's recreation and parks system. These are administered in accordance with the following policy:

It shall be the policy of the Division of Recreation and Parks to promote the state park system for the use, enjoyment, and benefit of the people of Florida and visitors; to acquire typical portions of the original domain of the state which will be accessible to all of the people, and of such character as to emblemize the state's natural values; conserve these natural values for all time; administer the development, use and maintenance of these lands and render such public service in so doing, in such a manner as to enable the people of Florida and visitors to enjoy these values without depleting them; to contribute materially to the development of a strong mental, moral, and physical fiber in the people; to provide for perpetual preservation of historic sites and memorials of statewide significance and interpretation of their history to the people; to contribute to the tourist appeal of Florida.

The Trustees have also granted management authority of certain sovereign submerged lands to the Division under Management Agreement MA 68-086 (as amended January 19, 1988). The management area includes a 400-foot zone from the edge of mean high water where a park boundary borders sovereign submerged lands fronting beaches, bays, estuarine areas, rivers or streams. Where emergent wetland vegetation exists, the zone extends waterward 400 feet beyond the vegetation. The agreement is intended to provide additional protection to resources of the park and nearshore areas and to provide authority to manage activities that could adversely impact public recreational uses.

Many operating procedures are standard system wide and are set by policy. These procedures are outlined in the Division Operations Procedures Manual (OPM) and cover such areas as personnel management, uniforms and personal appearance, training, signs, communications,

fiscal procedures, interpretation, concessions, camping regulations, resource management, law enforcement, protection, safety and maintenance.

In the management of Alafia River State Park, major emphasis is placed on maximizing recreational potential; however, preservation of resources remains important. Depletion of a resource by any recreational activity is not permitted. In order to realize the unit's recreational potential, development in the park is aimed at providing facilities that are accessible, convenient and safe, as needed, to support recreational use or the unit's natural, aesthetic, and educational attributes.

Park Goals and Objectives

The following park goals and objectives express the Division long-term intent in managing the state park. At the beginning of the process to update this management plan, the Division reviewed the goals and objectives of the previous plan to determine if they remain meaningful and practical and should be included in the updated plan. This process ensures that the goals and objectives for the park remain relevant over time.

Estimates are developed for the funding and staff resources needed to implement the management plan based on these goals, objectives and priority management activities. Funding priorities for all state park management and development activities are reviewed each year as part of the Division legislative budget process. The Division prepares an annual legislative budget request based on the priorities established for the entire state park system. The Division also aggressively pursues a wide range of other funds and staffing resources, such as grants, volunteers and partnerships with agencies, local governments and the private sector, for supplementing normal legislative appropriations to address unmet needs. The ability of the Division to implement the specific goals, objectives and priority actions identified in this plan will be determined by the availability of funding resources for these purposes.

Natural and Cultural Resources

1. Revegetate reclaimed uplands with local native plants to provide a quasi- natural setting for outdoor recreation and to establish the highest feasible degree of native biodiversity.
 - A. Eliminate cogongrass (and bahiagrass where appropriate).
 - B. Identify and map sites where native forests will be established and sites where upland grassland vegetation will be established.
 - C. Estimate acreages to be re-established as native grassland and forest vegetation, and identify the number of trees needed and approximate costs.
 - D. Identify where and what kind of site preparation will be needed for native plant introduction and estimate the cost.
 - E. Add a biologist to the park staff.
 - F. Identify interior fencing, steel cable and other residue from the mining operation that must be removed.
2. Manage remaining small, isolated upland natural communities.
 - A. Inventory and map these communities.
 - B. Determine which of these communities might be expanded.
 - C. Identify pyrogenic communities.
3. Manage the lakes on reclaimed uplands for wildlife and recreation.
 - A. Prevent the introduction of invasive exotic plants.
 - B. Conduct a biophysical inventory and characterize all lakes.
 - C. Plan the re-establishment of native aquatic and wetland plant species in the littoral zone.

- D. Consult the Florida Game and Freshwater Fish Commission as to the best management practices for the lakes to maximize their potential for fishing.
- 4. Consider how the reconstituted communities of the park can be made part of a regional integrated habitat for native plants and animals.
 - A. Consult the Integrated Habitat Network, developed by the Bureau of Mine Reclamation, to identify existing wildlife corridors and establish connectors.
- 5. To identify and protect cultural resources.
 - A. To conduct a level 1 survey to determine the extent and location of prehistoric and historic sites
 - B. To protect existing archaeological sites and their associated artifactual assemblage from vandalism, erosion, and other forms of encroachment.
 - C. To interpret cultural resources in their context to educate visitors about Florida's earlier inhabitants.

Recreational Goals

- 6. Continue to provide quality resource based outdoor recreational and interpretive programs and facilities at the state park.
 - A. Design park facilities to facilitate and appropriately manage visitor use of the park.
 - B. Continue to provide opportunities for picnicking, fishing, canoeing/kayaking, camping, horse camping, hiking, single-track bicycling and horseback riding.
 - C. Maintain the trail system of the park, including routine maintenance of trail markers and interpretive materials.
- 7. Seek funding to expand recreational and interpretive opportunities through the improvement of programs and the development of new use areas and facilities, as outlined in this management plan.
 - A. Expand the existing network of hiking, bicycling, and horse trails including signage, maps, kiosks and brochures.
 - B. Implement interpretive and recreational skills programs such as fishing, off-road bicycling clinics, equestrian events, guided equestrian trail rides, and birding programs.
 - C. Develop a standard state park camping area containing 60 sites.
 - D. Construct up to 12 lakeside cabins.
 - E. Provide a natural swimming area near the camping and cabin area.
 - F. Construct equestrian facilities near the horse camp, which will serve as a staging area for trail rides and include stables and a fenced pasture for grazing.
 - G. Provide primitive youth camps and additional primitive campsites.
 - H. Construct boat/canoe launches to provide access to several lakes and the Alafia River.
 - I. Build an Open-air Interpretation Facility that will interpret the park's natural resources and inform visitors of the issues surrounding mined lands and their subsequent reclamation and restoration.
 - J. Provide wildlife-viewing opportunities through the construction of viewing platforms, screened pavilions and screened observation points along the trails at appropriate locations.
 - K. Collaborate with Hillsborough County to provide a greenway connection to link a trail system between the state park and the county parks.
 - L. Establish a concessionaire that rents bicycles, canoes and kayaks and sells camper and day use supplies.

Park Administration/Operations

8. Seek funding, staffing and partnerships to meet park operation and resource management needs.
 - A. Improve staffing at the park by creating a restoration biologist position.
 - B. Enhance ecotourism programs through partnerships and park concession operations.
 - C. Acquire additional equipment necessary to meet the management needs of the property.
 - D. Recruit and maintain volunteers to assist with management and interpretation of the park.
 - E. Conduct routine safety and maintenance inspections of facilities and public areas and correct deficiencies as needed. Assure compliance with state and federal safety guidelines.
 - F. Continue to improve universal access to park facilities in compliance with the Americans with Disabilities Act.
 - G. Provide staff with appropriate training opportunities in visitor services, resource management, park operations and interpretation.
9. Increase public awareness of the recreation opportunities and resource management needs of the park.
 - A. Monitor land and water use activities outside the park that may impact park resources or the visitor experience.
 - B. Stay informed regarding regional resource protection initiatives and regulatory changes.
 - C. Network with other land and water managing agencies to coordinate resource protection efforts.
 - D. Participate as guest speakers at civic association and other special interest group meetings.
 - E. Develop programs and partnerships with local schools and community organizations.
 - F. Collaborate with tourism development organizations to promote visitation at the park.

Management Coordination

The park is managed in accordance with all applicable Florida Statutes and administrative rules. Agencies having a major or direct role in the management of the park are discussed in this plan.

The Department of Agriculture and Consumer Services, Division of Forestry (DOF), assists Division staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FFWCC), assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within park boundaries. In addition, the FFWCC aids the Division with wildlife management programs, including the development and management of Watchable Wildlife programs. The Department of State, Division of Historical Resources (DHR) assists staff to assure protection of archaeological and historical sites. The Department of Environmental Protection (DEP), Office of Coastal and Aquatic Managed Areas (CAMA) aids staff in aquatic preserves management programs. The DEP, Bureau of Beaches and Wetland Resources aids staff in planning and construction activities seaward of the Coastal Construction Line. In addition, the Bureau of Beaches and Wetland Resources aid the staff in the development of erosion control projects. Emphasis is placed on protection of existing resources as well as the promotion of compatible outdoor recreational uses.

The Division of Recreation and Parks will work with the Bureau of Mine Reclamation (BMR)

and the Environmental Protection Commission of Hillsborough County to coordinate restoration efforts for the state owned mining land within the park boundary. The park also coordinates with BMR to seek funding for exotic plant removal.

Public Participation

The Division provided an opportunity for public input by conducting a public workshop and an advisory group meeting. A public workshop was held on January 7, 2004, and a DEP Advisory Group meeting was on January 8, 2004. The purpose of these meetings was to present the plan to the public and to provide the Advisory Group members the opportunity to discuss this draft management plan.

Other Designations

Alafia River State Park is not within an Area of Critical State Concern as defined in section 380.05, Florida Statutes. Currently, the park is not under study for such designation. The Park is a component of the Florida Greenways and Trails System.

All waters within the unit have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302 Florida Administrative Code. Surface waters in this unit are also classified as Class III waters by DEP. This unit is not within or adjacent to an aquatic preserve as designated under the Florida Aquatic Preserve Act of 1975 (section 258.35, Florida Statutes).

RESOURCE MANAGEMENT COMPONENT

INTRODUCTION

The Division of Recreation and Parks has implemented resource management programs for preserving for all time the representative examples of natural and cultural resources of statewide significance under its administration. This component of the unit plan describes the natural and cultural resources of the park and identifies the methods that will be used to manage them. The stated management measures in this plan are consistent with the Department's overall mission in ecosystem management. Cited references are contained in Addendum 2.

The Division's philosophy of resource management is natural systems management. Primary emphasis is on restoring and maintaining, to the degree practicable, the natural processes that shape the structure, function and species composition of Florida's diverse natural communities as they occurred in the original domain. Single species management may be implemented when the recovery or persistence of a species is problematic provided it is compatible with natural systems management.

The management goal of cultural resources is to preserve sites and objects that represent all of Florida's cultural periods as well as significant historic events or persons. This goal may entail active measures to stabilize, reconstruct or restore resources, or to rehabilitate them for appropriate public use.

Because park units are often components of larger ecosystems, their proper management is often affected by conditions and occurrences beyond park boundaries. Ecosystem management is implemented through a resource management evaluation program (to assess resource conditions, evaluate management activities, and refine management actions), review of local comprehensive plans, and review of permit applications for park/ecosystem impacts.

RESOURCE DESCRIPTION AND ASSESSMENT

Natural Resources

Topography

The park lies on the western part of the Polk Upland (White, 1970). Except for the higher ridges which border it, elevations within the Polk Upland range from 100 to 130 feet above mean sea level with river bottoms around 50 feet above mean sea level. The rivers of the Polk Upland are somewhat incised which results in more topographic relief than is typical in surrounding physiographic units (Clewell *et al.*, 1982). The South Prong of the Alafia River, within the park, is especially well incised. The topography within the park was greatly altered by mining activities, but with the exception of an area known as the "old Agrico Pits" it was restored during the reclamation activities.

Geology

As a physiographic unit, the Polk Upland consists of deep, loose quartz sands that overlie mostly impermeable clastics. Beneath these lies the limestone bedrock of the Hawthorn (Miocene) Formation. The impermeable clastics consists of iron-cemented sands, clay-containing sands, and phosphate nodules, the latter being the major incentive of extensive surface mining in the region (Clewell *et al.*, 1982). The subsurface clays intercept groundwater before it can percolate to bedrock. As a result, solution activity in the Polk

Upland is less pronounced than in most other provinces of peninsula Florida. In poorly drained sites, the iron-cemented sands are 1-2 feet beneath the soil surface and comprise an illuvial (subsurface) spodic horizon within the soil profile (Clewell *et al.*, 1982).

Drilling logs on file at Brewster Phosphates reveal that the limestone bedrock was 40-60 feet deep in the uplands, with loose, coarse sands being mostly 10-25 feet deep. These sands store substantial quantities of groundwater that moves by gravity over the impermeable strata. The groundwater ultimately seeps into the South Prong of the Alafia and its tributaries (Clewell *et al.*, 1982).

Soils

Except for the riverine soils, which were not mined, most of the soil units in the park reflect the accumulation of materials from phosphate mining operations. Reclaimed soils are known as Arents. This type of soil unit consists of nearly level to steep, heterogenous soil material that has been excavated, reworked, and reshaped by earthmoving equipment. Arents soil units are not associated with or confined to any particular type of soil. They are not in an orderly sequence of layers. They are variable and contain discontinuous lenses, pockets, or streaks of black, gray, grayish brown, brown, or yellowish brown sandy or loamy excavated material. The depth to the seasonal water table will vary with the amount of excavated material and the artificial drainage. The permeability and the available water capacity vary widely from one area to another. Surface layers tend to become encrusted upon drying, preventing root penetration by young trees in the spring and fall dry seasons. Compaction further hinders root penetration. Overburden soils tend to be compacted from the heavy machinery used in land reclamation.

Clay tailings consist predominately of silt-clay with very little sand. Most clay tailings are found in clay settling ponds, which are normally capped with several feet of overburden after the ponds are retired. Sand tailings contain very little silt-clay. They are loose when dry (sugar sand). Sand and clay tailings are generally rich in phosphorous and contain low amounts of potassium and organic matter.

Nearly all reclaimed land has become vegetated and is no longer threatened by sheet erosion and gullyng. The primary exceptions are unpaved mine roads, which will require regular grading during wet seasons. Grading will have to be accomplished in a manner that prevents the direct discharge of surface runoff from roads into streams and wetlands. When sites are cleared prior to reforestation, they may become subject to erosion temporarily (6 to 18 months), especially on sloping land. Erosion can be checked by one or a combination of the following methods: an annual cover crop (ryegrass, browntop millet), direct seeding of native grasses (broomsedge, etc.), the installation of hay bales or silt cloth, or the use of a geotextile.

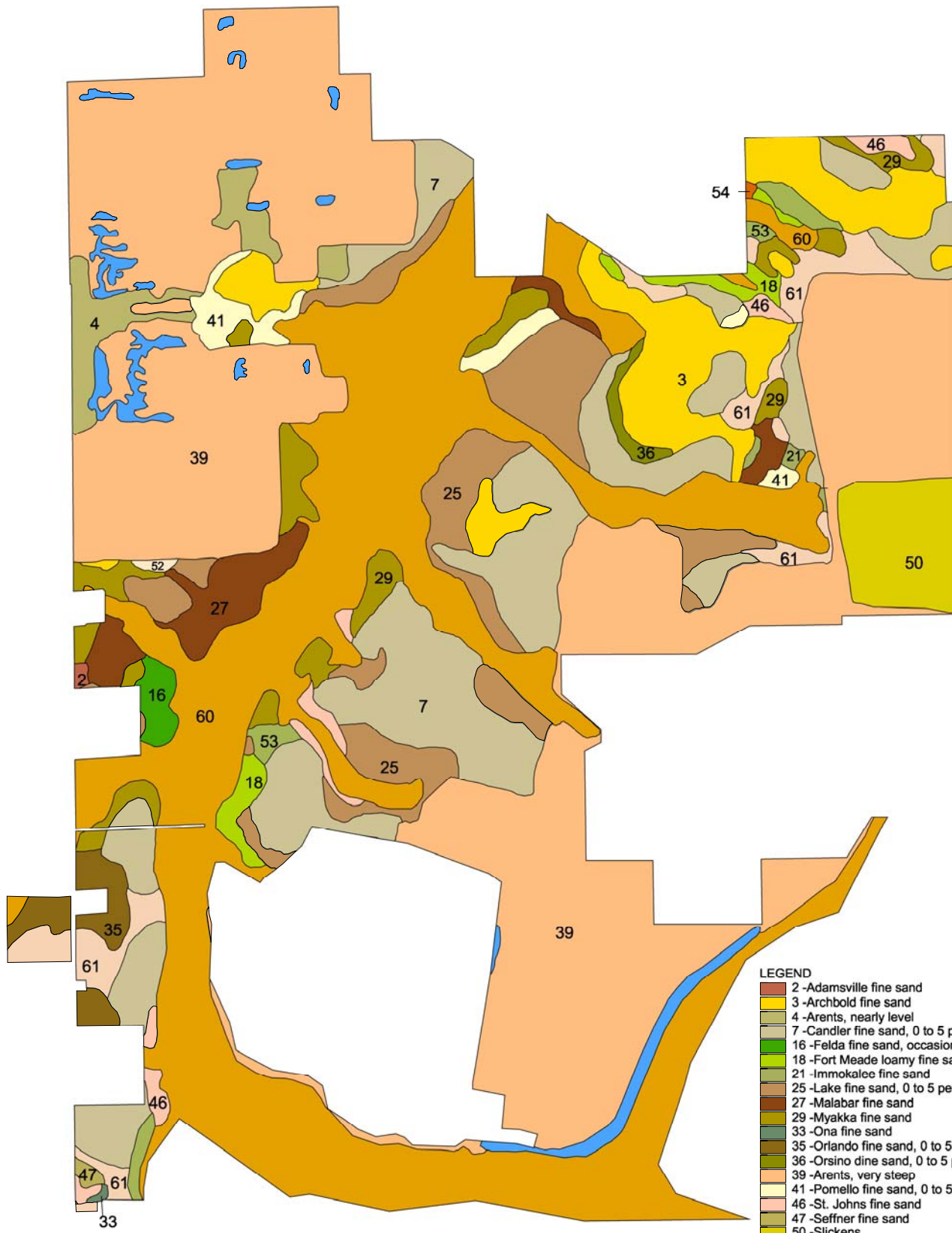
Addendum 3 contains detailed soil descriptions for this park. See the Soils Map for the distribution of these soils.

Minerals

Obviously, lands within the park have undergone extensive surface mining for phosphate.

Hydrology

There are at least two opinions regarding the degree to which hydrology of mined and reclaimed lands varies when compared to that of pre-mined land. One idea holds that the hydrology of mined lands does not differ substantially from pre-mining conditions. Another opinion is that with respect to timing and flow, they do differ. Rainfall largely infiltrates into



- LEGEND**
- 2 -Adamsville fine sand
 - 3 -Archbold fine sand
 - 4 -Arents, nearly level
 - 7 -Candler fine sand, 0 to 5 p
 - 16 -Felda fine sand, occasior
 - 18 -Fort Meade loamy fine se
 - 21 -Immokalce fine sand
 - 25 -Lake fine sand, 0 to 5 pe
 - 27 -Malabar fine sand
 - 29 -Myakka fine sand
 - 33 -Ona fine sand
 - 35 -Orlando fine sand, 0 to 5
 - 36 -Orsino dine sand, 0 to 5 j
 - 39 -Arents, very steep
 - 41 -Pomello fine sand, 0 to 5
 - 46 -St. Johns fine sand
 - 47 -Seffner fine sand
 - 50 -Slickens
 - 52 -Smyrna fine sand
 - 53 -Tavares - Millhopper fine
 - 54 -Tavares - Millhopper fine
 - 60 -Winder fine sand, freque
 - 61 -Zolfo fine sand
 - Water



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the soil and contributes to baseflow. Relatively little rainfall flows as surface runoff. The aquaclude that previously supported the groundwater aquifer was not breached by mining and continues to function. Prior to mining, clay lenses and ironstone in the overburden, and hardpans in the soil, retarded the percolation of rainwater. It is commonly assumed that these features contributed to supporting high water tables in wetlands. Post-reclamation water tables, however, do not appear to be any lower than they were prior to mining. The reason is that clay lenses, ironstone, and hardpans were all discontinuous prior to mining and therefore were relatively ineffective in perching the water table. Clay tailings are the only significant exception. Consolidated clay tailings do perch water tables above them in clay settlings ponds.

Permeable characteristics of reclaimed soils may be impacted. Park road construction will insure that adequate water retention areas are provided during road construction. More than a half-dozen such retention areas have been created for hard-surface roads built in the park thus far.

Natural Communities

The system of classifying natural communities employed in this plan was developed by the Florida Natural Areas Inventory (FNAI) FNAI Descriptions. The premise of this system is that physical factors, such as climate, geology, soil, hydrology and fire frequency generally determine the species composition of an area, and that areas which are similar with respect to these factors will tend to have natural communities with similar species compositions. Obvious differences in species composition can occur, despite similar physical conditions. In other instances, physical factors are substantially different, yet the species compositions are quite similar. For example, coastal strand and scrub--two communities with similar species compositions--generally have quite different climatic environments, and these necessitate different management programs.

The park contains eight distinct natural communities (see Natural Communities Map) in addition to ruderal and developed areas. Park specific assessments of the existing natural communities are provided in the narrative below. A list of plants and animals occurring in the unit is contained in Addendum 4.

Portions of the park were not disturbed by mining activities. The largest non-mined features are riverine forests associated with the South Prong of the Alafia River and its headwater tributaries. They are good examples (in Florida) of bottomland forests and associated, but more mesic, upland mixed forests. These forests grade into baygalls (includes the bay swamps of some authors) in headwater tributaries. These riverine and associated communities have been thoroughly described in the literature (Clewell *et al.*, 1982). However, the names in that publication ascribed to the riverine communities do not exactly fit those used in FNAI's *Guide to the Natural Communities of Florida*. Therefore, synonyms are provided as necessary in the community descriptions below.

Prior to clearing for mining and agriculture, the uplands were covered by natural communities consisting primarily of mesic flatwoods. Drier areas were vegetated by sandhills, scrub, xeric oak forests (sometimes called xeric hammocks), and scrubby flatwoods. An unusual, well-drained hammock-like upland community separated the pinelands from mesic riverine forest in places and was characterized by laurel oak, red cedar, and dogwood. This variant of a mesic hammock is classified below with FNAI's Upland Mixed Forest. Several upland parcels were not mined and yet contain remnants of mature scrub forests and other upland communities. Some contain bluejack oaks and turkey oaks, and in the absence of fire, are



- LEGEND**
- 14 - Scrub-11.1
 - 21 - Upland Mix
 - 23 - Xeric Hamr
 - 26 - Baygall-132
 - 28 - Bottomland
 - 33 - Floodplain
 - 35 - Hydric Hamr
 - 53 - Blackwater
 - 81 - Ruderal-45
 - 82 - Developed



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reminiscent of a xeric hammock.

Clewell and his associates (Clewell *et al.*, 1982), from examination of 1948 aerial photographs, were able to determine that pine flatwoods were a part of the premined vegetation, but fire suppression was the “obvious agency that allowed fire-intolerant hardwoods to colonize the open pine flatwoods.” They concluded, “The change from pineland to riverine forest was not a reversible and repeatable event in a broad ecotone but, instead, represented a permanent displacement of one community by another (Clewell *et al.*, 1982).

Some forested wetlands that were mined or otherwise disturbed by mining operations were required to be restored to their pre-disturbance condition by the state or by Hillsborough County. Approximately 140 acres were restored. Some restored sites contain the best examples anywhere of restored forested wetlands. These include the following: Hall Branch, Dogleg Branch, South Fork McMullen Branch, TECO Crossing, and the Plant Drainage Pond Surge Site. Some restored forests have canopies upwards to 40-feet tall, a full compliment of subcanopy and ground cover species, and clear evidence of well-developed ecological functioning. Other restored sites are younger but will develop these characteristics with the passing of time.

A portion of the park called the Old Agrico pits, which will be described later, were mined and abandoned prior to the enactment of Florida’s mandatory reclamation law in 1975. These water-filled pits are surrounded by steep ridges of cast spoils of overburden. The spoils have become forested through natural seed dispersal, and the pits contain game fish. Some of these old pits were shaped into small lakes during reclamation by Brewster Phosphates under the state’s Old Lands Program, funded by severance taxes dedicated for the reclamation of pre-1975 abandoned mines. This program, administered by DEP, funds retroactive reclamation of lands disturbed by mining prior to the enactment of reclamation laws.

Much of the reclaimed land subsequently used as pasture has been invaded by cogongrass, an aggressive exotic species which forms, dense, highly flammable swards resistant to eradication. Bahiagrass is also an exotic species appropriate in state park lands only in high-use areas such as playgrounds. Clearly, the quality of the Alafia River State Park would be improved by the conversion of bahiagrass and cogongrass lands to native species.

Scrub. The scrub communities are typical of those of other nearby scrub communities in southern Hillsborough County, e.g. Balm-Boyette Scrub. They are primarily oak and sand pine dominated. Compared to those of the Lake Wales Ridge, they are floristically poor. The patchy occurrence of this community in the landscape of the park closely reflects its original distribution rather than being a result of mining activity.

Upland mixed forest. Clewell *et al.*, (1982) referred to this community as “dry-mesic” forest. They indicate that most of these forests represent riverine forest expansion. Nevertheless, they cite five species as indicators of forests that were not a result of riverine expansion. These are live oak, pignut hickory, southern magnolia, dogwood and red cedar. They also point out that the laurel oak-red cedar-dogwood hammock (described below as an unusual ecotonal upland community) “is a distinctive expression of dry-mesic forest” and therefore not a product of riverine expansion.

For the most part, the “dry-mesic” forest described by Clewell and his associates is typical of the mixed hardwood forests of peninsula Florida. Segments of this forest with slash pine and

sand-live oak (*Quercus geminata*) probably represent remnants of the former upland communities into which riverine forest expanded (Clewell *et al.*, 1982).

In addition to the typical FNAI concept of a mixed hardwood forest or “dry-mesic” forest of Clewll *et al.*, (1982), the authors also describe an unusual upland variant community. Clewll (personal communication) referred to it as a “high hammock” and in the 1982 article described it as an ecotonal community between riverine forest and scrub or longleaf pine-xeric oak. These authors suggested that this community might have represented an original vegetation type that developed where topographic irregularities prevented frequent fires. They attribute the unusual topographic relief and the resulting effect on vegetation to a marked incisement in the rivers of the Polk Upland.

Xeric hammock. The xeric hammock community is present at sites that were formerly occupied by sandhill. Xeric Hammock is an advanced successional stage of Scrub or Sandhill (FNAI, 1990). At Alafia River State Park, the presence of turkey oak in these communities suggests that they are an artifact of fire suppression in sandhill vegetation rather than in scrub, and that scrub species have invaded subsequent to fire suppression, and that scrub species have invaded subsequent to fire suppression.

Baygall. The baygall community is largely restricted to tributary creeks or branches (e.g. Jamerson and Dogleg Branches) which lack well-defined channels and thus are actually seepage wetlands. Clewll *et al.* (1982) referred to them as bay swamps and appropriately called the bay swamps that occur at the heads of streams, bayheads (both bay swamp and baygall are FNAI-recognized synonyms). The dominant tree is *Magnolia virginiana* (sweetbay) with *Gordonia lasianthus* (loblolly bay) being the second most important tree. *Persea palustris* (swamp bay) is also present.

Bottomland forest. The bottomland forest community is present along much of the river, but is best represented between Jamerson Branch (named by Clewll *et al.*, 1982) and McMullen Branch. Most publications that describe bottomland forests, including the *Guide to the Natural Communities of Florida* (FNAI, 1990), emphasize the tree canopy and minimize or ignore the undergrowth. Clewll (1991) refers to the community as a bottomland hardwood forest, but based on his description of it and the species listed, it would also include FNAI’s Floodplain Forest natural community type. Regardless of what this community is called, the undergrowth is especially diverse, at both Alafia River State Park and elsewhere. The herbaceous diversity of the understory is diverse. Examples of herbs include: *Asclepias perennis* (aquatic milkweed), *Boehmeria cylindrica* (bog hemp), *Carex bromoides* (brome-like sedge), *Dicanthelium commutatum* (variable witchgrass), *Hypoxis leptocarpa* (stargrass), *Osmunda cinnamomea* (cinnamon fern), *Panicum rigidulum* (redtop panicum), *Rhynchospora miliacea* (millet beakrush sedge), *Rumex verticillatus* (swamp dock), *Saururus cernuus* (lizard’s tail), *Viola affinis* (violet), *Woodwardia areolata* (netted chain fern), and *W. virginica* (Virginia chain fern) to mention a few.

Floodplain swamp. The floodplain swamp community is present immediately adjacent to the South Prong of the Alafia River. As noted by Clewll *et al.* (1982) who called this community a river swamp, cypress was notably absent from the original vegetation, despite its presence in forested wetlands in most of Florida. As typical of swamp trees, many of the dominants have buttressed bases. *Nyssa biflora* (swamp tupelo) and *Acer rubrum* (red maple) dominate the swamps. Examples of other woody dominants in the canopy and understory include *Carya aquatica* (water hickory), *Cephalanthus occidentalis* (buttonbush), *Fraxinus caroliniana*

(Carolina ash), *Fraxinus profunda* (pumpkin ash; lumped with *Fraxinus pennsylvanica* by Wunderlin *et al.*, 1996), *Gleditsia aquatica* (water locust), *Salix caroliniana* (Carolina willow), and *Sambucus canadensis* (elderberry). All are deciduous hardwoods. The presence of hydric evergreen hardwood species such as *Magnolia virginiana* (sweetbay), *Gordonia lasianthus* (loblolly bay), and *Persea palustris* (swamp bay) along the tributaries (the various named branches, e.g. Dogleg) of the river suggest transition to bay swamps or baygall.

Hydric hammock. There is a small region in the northwest part of the park that qualifies for this designation. It has cabbage palms in the understory and in the canopy. Limestone appears to be near the surface and when water is present, much of it seems to come from ground water seepage rather than the riverine system itself. The bay composition was not strong enough to designate the community as a baygall.

Blackwater stream. The South Prong of the Alafia River is a blackwater stream community. Although a small stream, the quality of its water is important to the health of the palustrine communities occupying its floodplain. The *Florida Rivers Assessment*, (Florida DNR , pg. 35, 1989) states, “The South Prong (segment 5.0) has good quality, but only partially meets its designated use as a Class III water body intended for recreation, propagation and maintenance of a healthy, well-balanced population of fish and wildlife.” Problems with water quality are caused by phosphate mining and processing in the region that contains some of the world’s richest phosphate deposits. At the time of the DNR assessment (1989), there was “stress to floodplain vegetation and to macroinvertebrates due to low oxygen levels” (DER, 1988). The 1989 report also indicates that the South Prong of the Alafia River is in better health than the nearby North Prong. The North Prong has suffered from the impact of phosphate processing which generally causes more water pollution problems than phosphate mining.

Ruderal. Because most of the park is a reclaimed phosphate mine, most of the uplands are ruderal in nature. During the reclamation, hardwood and pine trees were planted at various locations, but these plantings were minimal. Most of the ruderal land is carpeted with cogon grass. An exception is a 53-acre citrus grove.

Developed. The developed areas of the park include the north trailhead area, the camping area, the new day use area/trailhead, and the shop area off Thatcher Road. These areas are described further in the Land Use Component.

Designated Species

Designated species are those that are listed by the Florida Natural Areas Inventory (FNAI), U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FFWCC), and the Florida Department of Agriculture and Consumer Services (FDA) as endangered, threatened or of special concern. Addendum 5 contains a list of the designated species and their designated status for this park. Management measures will be addressed later in this plan.

Most of the designated species documented at Alafia River State Park are animals, primarily wading birds. Addendum 5 contains a list of these designated species and their status. Management measures will be addressed later in the plan. The initial list of species will undoubtedly lengthen as time allows for more data gathering.

Special Natural Features

There are nine restored forested wetlands in this park that should be considered special natural features. Wetlands destroyed in the course of mining operations must by state law (and by

county ordinance in Hillsborough County) be restored.

The restoration work was done by A. F. Clewell Inc. An early project – Hall Branch – was completed in 1983. These communities had been destroyed, even to removal of the organic soil that had to be physically replaced before replanting native plant species. After 15 years, the canopy has reached 40 feet; the ten species of the trees planted from nursery stock have produced seeds. Some have germinated and grown into saplings. Most interesting is the soil, which has developed far more rapidly than conventional wisdom would have dictated. There is a mature A horizon overlying a developing B horizon with an incipient hardpan also in evidence. A full compliment of vertebrates appears to have reoccupied the community, and 239 plant species are present. Structurally and functionally, the community resembles others like it that has never been disturbed. The more recently restored sites are in earlier stages of regrowth. These are pioneering sites in the draft of ecological restoration. They will be mapped to be available for continued monitoring.

Cultural Resources

Evaluating the condition of cultural resources is accomplished using a three part evaluative scale, expressed as good, fair, and poor. These terms describe the present state of affairs, rather than comparing what exists against the ideal, a newly constructed component. Good describes a condition of structural stability and physical wholeness, where no obvious deterioration other than normal occurs. Fair describes a condition in which there is a discernible decline in condition between inspections, and the wholeness or physical integrity is and continues to be threatened by factors other than normal wear. A fair judgment is cause for concern. Poor describe an unstable condition where there is palpable, accelerating decline, and physical integrity is being compromised quickly. A resource in poor condition suffers obvious declines in physical integrity from year to year. A poor condition suggests immediate action to reestablish physical stability.

The Florida Master Site File (FMSF) recognizes at least 13 sites in sections that are within the park. Some are in mined areas and others are near unmined riverine systems or tributaries of the South Prong of the Alafia River. Division and park management conducted a field survey that revealed that most of the listed sites had been disturbed or mined and presumably destroyed by the past phosphate mining activities. Fort Lonesome, a frontier outpost of the Third Seminole War (1855-58) was located a few miles to southwest. It was one of a chain of wooden forts that extended across the peninsula from which military expeditions searched for elusive bands of Indians inhabiting lands to the south. Today Fort Lonesome designates a crossroads community at the site where the fort once stood. Phosphate mining is a prominent land use activity in this region, about which historians have written and will continue to do so in the future. At this park, therefore, it can be regarded as a cultural resource.

RESOURCE MANAGEMENT PROGRAM

Special Management Considerations

Timber Management Analysis

Chapters 253 and 259, Florida Statutes, require an assessment of the feasibility of managing timber in land management plans for parcels greater than 1,000 acres if the lead agency determines that timber management is not in conflict with the primary management objectives of the land. The feasibility of harvesting timber at this park during the period covered by this plan was considered in context of the Division's statutory responsibilities, and an analysis of the park's resource needs and values. The long-term management goal for forest communities

in the state park system is to maintain or re-establish old-growth characteristics to the degree practicable, with the exception of early successional communities such as sand pine scrub and coastal strand.

During the development of this plan, an analysis was made regarding the feasibility of timber management activities for this park. It was then determined that the primary management objectives of the unit could be met without conducting timber management activities for this management plan cycle. Timber management will be reevaluated during the next revision of this management plan.

Additional Considerations

The dominating special management consideration is how to revegetate a highly disturbed and biologically depauperate landscape using native plants. The twin goal of this labor will be to provide a quasi-natural setting as a pleasing backdrop for outdoor recreation while at the same time bringing in local native plants as a base to establish the highest feasible degree of biodiversity.

Revegetation on mined and unmined land has been accomplished by using hardwood sack trees. This technique has proven to give the best results in growth and survival for forest establishment. Sack trees are grown in plastic bags about the size & shape of a quart milk carton. They have healthy roots, whereas other containerized tree stock is generally root-coiled. Sack trees should be planted with a portable gas-powered soil auger. The hole exactly fits the rootball. The cost of properly planted sack trees is about equal to manually planted container stock. Planting densities and sequences will be worked out later.

The management of Alafia River State Park will represent a departure from tradition in the Florida Park Service, wherein the preservation of land for public recreation has for the past 25 years focused on tracts that retain much of the original vegetation, which are minimally disturbed by human activity, and which feature preservation of the natural assets as an important component of the rationale for acquisition. Unfortunately, the pressures of population growth are leaving fewer such tracts available. Consequently, lands with a greater degree of disturbance -- like this one -- become more attractive candidates for public acquisition. However, the value of the natural scene as a setting for outdoor recreation remains, and the need to preserve natural habitat in a rapidly urbanizing state is more, not less, important. Thus the challenge represented by this non-traditional type, in which the natural systems have been severely damaged but may be recreated in some form. This may herald a trend of the future.

In such sites, non-traditional approaches may be required to marshal the capital and labor required to meet the daunting management challenge. Reconstituting the resource in a more natural form will require decades. Costly projects will be required to remove cogongrass, bahiagrass, and other exotics. Herbicidal application by helicopter may be needed. Earth moving may be needed to prepare some sites for planting. Subsoil ripping and other manipulations by heavy equipment will be required to prepare planting beds. Subsoil ripping is the technique used prior to planting trees on overburden backfill. As mentioned above, overburden fill contains more silt-clay than native soils and tends to be compacted by machinery used in land reclamation. Ripping to a depth of about 18 inches is becoming standard practice for the reforestation of reclaimed land. A large, powerful tractor is used to operate a subsoil ripper.

Grading may be required along the edge of forested wetlands. Land reclamation techniques

raised a berm of overburden between the edge of a mining unit and adjacent natural land along streams. (This berm represents a concern of the mining companies, which were loathe to let any suspended solids reach waters of the state.) In some places, this berm should be graded down or entirely removed in order to reconstitute a more natural landform. Huge numbers of native tree seedlings, as well as seeds of understory plants, will be required. A voluntary stewardship program, a specialized staff position, and a plant nursery will be essential if this program is to succeed.

In another departure from tradition, more manipulative techniques of wildlife management can be evaluated. It may be desirable to make some wildlife species more visible to visitors, waterbirds for example. These might include highly appealing birds like roseate spoonbills and white pelicans which are known to use waterbodies on reclaimed phosphate mines, and which have both been seen at this site.

It may be desirable to increase numbers of some common species (like white-tailed deer and bobcats) to compensate for their local depletion through habitat loss. Similarly, on a broader scale, it may be of value to regard the park as one link in a strategic design of an Integrated Habitat Network (IHN), one purpose of which will be to maintain such species throughout the region (King and Cates, 1994). The Bureau of Mine Reclamation (BMR) developed the concept of IHN in the early 1990's as a guide for the reclamation of mined lands and the enhancement of unmined lands within the southern phosphate district. The IHN serves to improve wildlife habitat, benefit water quality and quantity, and to act as a connection between river systems in the mining region and significant environmental features outside the mining district (BMR, 2002). This is an important concept for the park as a portion of the IHN is within Alafia River State Park, namely the river corridor. Given that restoration to original natural conditions is virtually impossible at this park, the above wildlife aims are special management considerations that would not compromise traditional policies.

Non-traditional revenue-producing activities, such as cattle leases, citrus groves and hay bailing, can be considered at some sites on the extensively disturbed lands at this park, most of which are east of the river. These must not bar recreational activities or projects, but rather would provide financial support for park operations and resource management on an interim basis.

Since this area was formerly a phosphate mine, another management consideration is testing the water quality to ensure that the surface and drinking waters are not a threat to the health of park staff or recreational users. All of the residence and public water wells at Alafia River State Park have been tested for Gross Alpha, which includes Radium 226, Radium 228, and Radon 222. All of the wells tested below the legal requirements. Water softeners and chlorinating units have been installed on the residence wells, and all of the wells throughout the park have chlorinating units installed. The park currently tests the wells quarterly for bacteria, and an annual nitrate/nitrite test. An annual Gross Alpha test is also conducted.

Volunteer Stewardship. Perhaps the best-kept secrets of the environmental movement recently have been the growing number of volunteer stewardship projects across Florida, the nation, and the enthusiastic public participation in them. The Nature Conservancy and many other organizations have obtained title to damaged lands and have initiated ecological restoration work that is conducted almost entirely by volunteer labor. For example, Chicago is surrounded by a suburban greenbelt of approximately 25 restored tallgrass prairies and oak savannas. Literally thousands of local citizens have spent their weekends and vacations over

the past 20 years grubbing out exotic plants, collecting and planting native seeds, and nurturing a resurgent prairie ecosystem. County agencies responsible for public land management help plan, coordinate this massive effort, and conduct maintenance functions such as prescribed burning.

The most active volunteer stewardship program in Florida is located in Miami, where hundreds of citizens are restoring coastal strand vegetation on Key Biscayne and in tropical hardwood hammocks damaged by hurricane Andrew. These citizens include groups of employees from companies who have assumed long-term responsibility for restoring particular segments of coastal vegetation under the guidance of the American Littoral Society. The Nature conservancy oversees several stewardship programs, from South Florida to the panhandle, such as the Alum Bluff project west of Tallahassee. These citizen contributions are less well known than large public works projects such as the Kissimmee restoration and the Everglades restoration.

The numerous volunteer stewardship programs carry the message that the environmentally concerned public is no longer satisfied with the confrontational politics that typified the era of Silent Spring. Thirty years ago, environmentalists depended on heated battles with incursive elements in the private sector and with permissive elements in the public sector in order to alert the public to environmental ills. That wake-up call was heard. Now the environmental public is shying away from the negativity and polarization of the silent Spring era and is searching for a way to make positive contributions to the environment. Ecological restoration is an activity whereby citizens can make direct contributions to the improvement of natural areas. This explains the attraction of volunteers to stewardship programs.

Specialized Staff Position. At Alafia River State Park, a biologist will be needed. The person should be an experienced restoration practitioner, preferably already familiar with the phosphate industry and with reclamation practices.

The biologist will be instrumental in assembling an advisory committee to help develop restoration programs and to evaluate their effectiveness. Such a committee should include, among others, representatives from FIPR, the Bureau of Mine Reclamation, the phosphate mining industry, and non-government organization (NGOs) involved in stewardship programs, such as the Society for Ecological Restoration.

The Biologist shall have the following responsibilities, among others:

1. Develop and coordinate all replanting programs.
2. Oversee the operation of the native plant nursery.
3. Serve as a liaison with outside organizations, including NGOs, Bureau of Mine Reclamation, FIPR, mining companies, universities, the Society for Ecological Restoration, the new media, etc.
4. Coordinate the retirement of clay settling ponds and the details of reclamation for which Cytec Industries, Inc. provided the park with funds.
5. Assure that projects comply with the project policies of the Society for Ecological Restoration, which are published in the journal, *Restoration Ecology*.

The Biologist will assign volunteer stewardship programs and to supervise them, taking into consideration recommendations by the advisory committee. The biologist will provide stewardship groups with plant materials, labor, and equipment as needed to aid ecological restoration and furthermore the biologist will schedule and train volunteer personnel. If

possible, this leader should be encouraged to take appropriate workshops or classes from the Society for Ecological Restoration's New Academy that was recently established for precisely this purpose.

Mention has been made of the small lakes that were created on reclaimed uplands. In addition, on the west side of the Alafia River, there are steep-sided, water-filled pits (the old Agrico pits) which pre-date the passage of mine-reclamation laws. Both lakes and pits represent the voids left after the extraction of phosphate ore. The pits with their steep slopes are scenically interesting but nearly inaccessible on foot and perhaps dangerous to climb. However, there is a recreational potential if they were connected by canal to nearby lakes from which access could be gained by canoe. Florida DEP administers an Old Lands Program through which funds can be had for latter day reclamation of lands mined prior to 1975. Such funds might be requested for reshaping landforms of this pre-reclamation site if that were thought desirable.

Management Needs and Problems

1. A principal need is to eliminate exotic vegetation from reclaimed uplands and replant with native vegetation. The problem is the huge size of the project that will be time consuming and costly to a degree not commonly experienced in park management. An associated need therefore is for creative thinking on how to tap external sources of manpower and money. Feral hog control is a principal problem, and cats and armadillos to a lesser extent.
2. Secondary to the need to establish vegetation is the need to maintain and expand the remaining small patches of upland natural communities. These will have to be kept free of invasive exotic plants, and in some cases, prescribed fire must be used. No unusual problems are anticipated here.
3. Another need is to keep the small lakes, which were created on reclaimed uplands, free of exotic plants so they will support native plants and wildlife while providing a quality outdoor recreation experience. Native wetland plants will need to be introduced to increase the diversity of natural vegetation and to support native wildlife.
4. Another problem is the easements, both existing and proposed, for the Tampa Electric Company (TECO) transmission lines. Some are 200KV lines. These are an undesirable intrusion in a park setting.

Management Objectives

The resources administered by the Division are divided into two principal categories: natural resources and cultural resources. The Division primary objective in natural resource management is to maintain and restore, to the extent possible, to the conditions that existed before the ecological disruptions caused by man. The objective for managing cultural resources is to protect these resources from human-related and natural threats. This will arrest deterioration and help preserve the cultural resources for future generations to enjoy.

Resource management objectives are as follows:

1. To produce a detailed resource map which will show: mined vs. unmined lands; remnant native vegetation as to extent and type; the extent of cogongrass infestation and other exotic plants if needed; lakes; restored natural communities; and finally a scheme of administrative units that will guide restoration planning.
2. To control feral hogs, and other nuisance/feral animals.
3. To identify supplemental sources of money and manpower.
4. To assess the potential impact of existing and proposed TECO transmission lines and to take measures that would alleviate those impacts.

5. To remove the vast network of interior fences.

Management Measures for Natural Resources

Hydrology

The Alafia and its tributaries receive much of their natural allotment of water indirectly from percolation of rainfall through the surrounding uplands. Studies by the Florida Institute of Phosphate Research (FIPR) suggest that seepage characteristics on some reclaimed land are similar to pre-mining conditions, but may be altered on other sites. One reclaimed watershed may show more retention of groundwater than prior to mining, while another watershed may show less.

At Alafia River State Park, problems with surface and groundwater hydrology are not apparent. The channel of the South Prong of the Alafia River, its tributaries within the park boundary, and the riparian vegetation bordering the river and tributaries, were protected from mining by state regulation. In the relatively few instances where tributary wetland communities were displaced by mining activities, the mine owner was required to restore the structure and function of the natural community.

The numerous created lakes are a recreational and a biological asset to the park. It is important to insure they do not suffer the fate of other lakes in the southwest Florida Water Management District (SWFWMD) that have been reduced in size and volume, or dried up completely (check minimum flow program).

Disturbed upland management units. The disturbed uplands of the park have been administratively divided into 44 units for preliminary management planning. The initial planning considerations are enumerated in broad terms below. A more detailed treatment of proposed projects in each unit must await closer study. A staff position specialized for such work will be essential if it is to be carried out effectively.

Unit #1. This is the site where temporary public facilities have been established. The lake shorelines should be planted with native emergent species (e.g. pickerelweed, sagittaria) and aquatic trees (e.g. bald cypress, pop ash, and tupelo) to increase diversity. This measure will be needed along the other lake margins in the park, so where it is identified as a needed measure in other units, it will be called simply: shoreline enhancement.

Uplands in this unit should be reforested with a mixture of hardwood trees, cedars and cabbage palms native to the region. This will be the most common recommendation in many other units; when subsequently mentioned in this narrative, this recommendation would be shortened to mixed hardwood reforestation. Although pine trees are not specifically mentioned in the following narrative, they may be included in later plans if studies warrant their inclusion.

Where shade trees are desired in open areas where facilities for visitors are placed, the hardwood trees can be spaced well apart to create what is conventionally known as a park-like appearance. This modification can be applied to any unit in which facilities are placed.

Unit #2. Shoreline enhancement and mixed hardwood reforestation.

Unit #3. Shoreline enhancement and mixed hardwood reforestation. Remnant scrub and xeric hammock communities remain in the southern portion of this unit. Both communities should

be expanded where soils are suitable. Plantings may be needed for this expansion, but open areas around these remnant communities will be monitored to learn if wildlife might facilitate this expansion by means of burying acorns (other mast crops).

Unit #4. This unit has been referenced previously as the Old Agrico Pits. It is unreclaimed land characterized by small, deep lakes and numerous old spoil, characteristics offering possible recreational opportunities like fishing, hiking, or biking. However, the same characteristics may raise questions of visitor safety, particularly where steep slopes border the lakes. Recontouring, if thought desirable, might be financed through DEP's (Bureau of Mine Reclamation) Old Lands Program.

Unit #5. Shoreline enhancement and mixed hardwood reforestation.

Unit # 6, 7, and 8. This land was "highgraded" in the argot of mining, that meaning only the best phosphate ore was removed. Reclamation was poorly done with the result that the lake in unit #7 is precariously perched and poorly diked. During heavy rains in 1992, it decanted its water into unit #6, an event that might recur if the lake environment remains unstable. An engineer should investigate and make recommendations with a view to visitor safety, cost of stabilization, and other appropriate considerations.

Unit #9. The northern linear strip of this unit is a powerline right-of-way. Mixed hardwood reforestation should be the measure in the lower part.

Unit #10. Mixed hardwood reforestation.

Unit #11. Shoreline enhancement and mixed hardwood reforestation.

Unit #12. Shoreline enhancement and mixed hardwood reforestation.

The units above are to the west side of the South Prong of the Alafia River. The following units are east of the river.

Unit #13. This unit is the site of the Hall Branch Restoration, a restored swamp, and the best example of its type, at least before recent extensive damage by feral hogs. The uplands should be revegetated with mixed hardwoods vegetation.

Unit #14. This is a small unit unusual in that it is surrounded by unit #13. It was singled out for special note because it contains a recreated scrub community within which 6-8 ridge endemic plant species have been successfully established. This scrub vegetation should be expanded to the extent possible perhaps to a total of 130 acres.

Unit #15. This is the Jameson Branch unit. Mixed hardwood reforestation.

Unit #16. This unit is immediately south of a wetland restoration site called Jamerson Junior which is a restored baygall community in a deep ravine. The unit itself has a xeric hammock that was preserved as a reference site. It should be expanded to practical limits that will probably be determined by soil drainage characteristics.

Unit #17. This is an expanse of well-drained sand. It should be revegetated with sandhill vegetation.

Unit #18. Within unit 18 is an elongated east-west feature dubbed by mining engineers as a “blivett”. It was a clay-settling basin, partially filled with clay tailings. Into the blivett from its western end, sand tailings were pumped onto the unsolidified clay. The weight of the sand then began displacing the clay rather than covering it as intended. Eventually enough sand was pumped in to cover the accumulated clay, but the sand covering at one end is thinner, over a thicker substrate of clay, with these conditions being reversed at the other end. The blivett still holds water whose depth varies with the seasonal volume of rain. The blivett pools are now an interesting water bird habitat, supporting white pelicans and a variety of wading birds including wood storks and roseate spoonbills.

Unit #19. Shoreline enhancement and mixed hardwood reforestation.

Unit #20. Shoreline enhancement and mixed hardwood reforestation.

Units #21 and #22. These units have a xeric hammock that should be expanded. Elsewhere employ shoreline enhancement and mixed hardwood reforestation.

Unit #23. This is a narrow strip bordering McMullen Branch and sloping downward very steeply to it. These slopes could be planted with such species as live oak, cabbage palms and magnolias.

Unit #24. This was a settling pond (designated EL). Sufficient time has passed for its clays to solidify. The dike is still in place and could be removed. This is a large site of clays soils in a region that does not have clays soils. Experimental introductions of aquatic trees might be attempted.

Unit #25. This is a small unit with characteristics like #23. Because of its small size, it might appeal to a group wanting to adopt a revegetation project.

Unit #26. This is a moist site, but the hydrology may soon shift to a drier state because a large area to the south will soon be remined, drawing groundwater away. Revegetation planning should await completion of mining on the adjacent property.

Unit #27. This unit occupies a steep slope. Mixed hardwood reforestation with plantings being more mesic on the lower slopes and more xeric on the upper slopes with perhaps sandhill vegetation planted on the highest elevations.

Unit #28. This unit contains a reference scrub community that should be expanded as far as the surrounding soils will allow.

Unit #29. This unit is identical to unit #27, except that the slope is in the opposite direction.

Unit #30. This contains a berm bordering the forest near the river. It should be removed and the gradient restored.

Unit #31. This is forest vegetation stressed by runoff from mining which killed the canopy vegetation. Replant with the same species that were killed.

Unit #32. The same hydrological uncertainties here as in unit #26.

Unit #33. This is a unit of sloping land. It should be treated like #27 and #29.

Units #34 and #35. Treat these like Unit #30.

Unit #36. This is a former cut through the 20-acre Dogleg Branch restoration project. It was used to move a mining dragline. It is a “grandfathered” disturbance and not properly restored, thereby diverting surface flow through the branch out of its natural channel. It should be recontoured and replanted with appropriate vegetation.

Unit #37. This unit is like #32 with the notable exceptions of being associated with Dogleg Branch to the north and the berm of the DL settling pond to the south that contributes moisture from seepage.

Unit #38. This unit is low and wet having many cattails. It could be managed for bird species like black-necked stilts and least terns. Pickerelweed and bulrush might be planted to suppress cattails.

Unit #39. Natural vegetation was left here as a reference site. It is a live oak hammock, unfortunately much degraded by various impacts associated with mining. It could however be restored.

Unit #40. This is the settling pond designated DL. Some nearby areas east of the river are to be re-mined. If the mining company could be persuaded to pump a compatible mixture of sand and clay tailings into the DL area, this could form the basis for an artificial lake suitable for waterbirds. Specific reclamation protocols would have to be followed, but the intent is to replicate a landscape similar to that already achieved in the reclamation of Morrow Swamp. If it is reclaimed properly, with the west side of the artificial lake deeper than the gradually sloping east side, the west bank might accommodate a viewing structure.

Unit #41. This is low-lying land near Lake Hurrah. Mixed hardwood reforestation is the primary focus here.

Unit #42. This strip, elongated north to south, could be made into a forested tributary to the Alafia River. It is fed by seepage from the berm of the DL settling pond. The berm has two water control structures that are permitted discharge points (safety valves in case heavy rains put stress on the water storage system at the mine).

Unit #43. This site was reclaimed by an innovative sand spray technique in which a mixture of sand and clay was piped from the benefaction plant south of the river to be sprayed through a specially designed nozzle. In this way, the experience at the blivett (see #18) was avoided and a uniform mix of sand and clay was laid down in reclaiming the land. Many pine trees were then planted (about 1980).

Unit #44. In this small unit, a ravine has developed. Native trees have volunteered in the ravine. There are eight to ten species. Some have grown to 25-30 feet tall. These could be supplemented by plantings. This is another site that might appeal to a group wanting to adopt a work area.

Prescribed Burning

The objectives of prescribed burning are to create those conditions that are most natural for a particular community, and to maintain ecological diversity within the unit's natural

communities. To meet these objectives, the park is partitioned into burn zones, and burn prescriptions are implemented for each zone. The park burn plan is updated annually to meet current conditions. All prescribed burns are conducted with authorization from the Department of Agriculture and Consumer Services, Division of Forestry (DOF). Wildfire suppression activities will be coordinated between the Division and the DOF.

There are natural communities such as scrubby flatwoods and others, which remain in small patches. Prescribed fire will be applied at these sites. The total acreage is small. No unusual problem is anticipated with this action.

Designated Species Protection

The welfare of designated species is an important concern of the Division. In many cases, these species will benefit most from proper management of their natural communities. At times, however, additional management measures are needed because of the poor condition of some communities, or because of unusual circumstances that aggravate the particular problems of a species. The Division will consult and coordinate with appropriate federal, state, and local agencies for management of designated species.

There is no apparent need at this time to take any special protective measures for designated species. As indicated earlier most of the designated species are wading birds. Part of the restorative efforts will be directed towards enhancement of some of the lake habitats. Thorough biophysical surveys have not been carried out because the park has so recently been acquired. When more data become available, this assessment may need to be revised.

Exotic Species Control

Exotic species are those plants or animals that are not native to Florida, but were introduced because of human-related activities. Exotics have fewer natural enemies and may have a higher survival rate than do native species, as well. They may also harbor diseases or parasites that significantly affect non-resistant native species. Consequently, it is the strategy of the Division to remove exotic species from native natural communities.

Plants. Cogongrass, an EPPC Category I species (2003 list), is the most widespread invasive exotic plant in the park. In some places, it has formed monotypic stands, completely displacing all other vegetation and covering acres of reclaimed pastureland. Cogongrass is capable of forming highly flammable swards that resist eradication. Herbicidal application by helicopter -- if environmentally acceptable -- could prove to be the most cost effective, at least in the initial stages of control.

At least two dozen specimens of *Leucanea leucocephala*, leadtree or jumbie, have been noted along Thatcher Road on the west side of the river. This plant is an EPPC Category II species (2003 list). At least one population of one of the two invasive species of climbing fern, (*Lygodium*), has been seen in the park. Extensive surveys will probably reveal more occurrences.

Animals. Feral hogs (*Sus scrofa*) are present. In addition to the usual damage they inflict on natural communities, they might prove destructive to restoration projects. Control actions have implemented and feral hogs are not the problem they have been in the past. The park will continue the current hog removal program. Feral cats and armadillos will eventually need attention.

Problem Species

Problem species are defined as native species whose habits create specific management problems or concerns. Occasionally, problem species are also a designated species, such as alligators. The Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species that are considered a threat or problem.

There have been no recent complaints about nuisance species.

Management Measures for Cultural Resources

The management of cultural resources is often complicated because these resources are irreplaceable and extremely vulnerable to disturbances. The advice of historical and archaeological experts is required in this effort. Approval from Department of State, Division of Historical Resources (DHR) must be obtained before taking any actions, such as development or site improvements that could affect or disturb the cultural resources on state lands (see DHR Cultural Management Statement).

Actions that require permits or approval from DHR include development, site excavations or surveys, disturbances of sites or structures, disturbances of the substrate, and any other actions that may affect the integrity of the cultural resources. These actions could damage evidence that would someday be useful to researchers attempting to interpret the past.

Because of known archeological resources in the park, management measures for cultural resources include drafting a proposal for a Level 1 archeological survey. Ground disturbing activities should be conducted in accordance with Division procedures.

Research Needs

Natural Resources

Any research or other activity that involves the collection of plant or animal species on park property requires a collecting permit from the Department of Environmental Protection. Additional permits from the Florida Fish and Wildlife Conservation Commission, the Department of Agriculture and Consumer Services, or the U.S. Fish and Wildlife Service may also be required.

Much research work has already been done on phosphate lands under the auspices of the Florida Institute of Phosphate Research (FIPR). Some of that research addresses reclamation projects in the Alafia River region. Clewell *et al.* (1982) thoroughly inventoried the unmined riverine forests of the South Prong of the Alafia River system that are within the present boundaries of the park. Apparently, additional research is needed to resolve the questions surrounding functional hydrological differences between mined or reclaimed lands and pre-mined lands.

Cultural Resources

The primary research need is a Level 1 archeological survey. Continuing research is needed to improve general understanding of human occupation in the area, in conjunction with other known sites in the area.

Resource Management Schedule

A priority schedule for conducting all management activities that is based on the purposes for which these lands were acquired, and to enhance the resource values, is contained in

Addendum 6. Cost estimates for conducting priority management activities are based on the most cost effective methods and recommendations currently available (see Addendum 6).

Land Management Review

Section 259.036, Florida Statutes, established land management review teams to determine whether conservation, preservation, and recreation lands titled in the name of the Board of Trustees of the Internal Improvement Trust Fund (board) are being managed for the purposes for which they were acquired and in accordance with a land management plan adopted pursuant to s. 259.032, the board of trustees, acting through the Department of Environmental Protection (department). The managing agency shall consider the findings and recommendations of the land management review team in finalizing the required update of its management plan.

Alafia River State Park was subject to a land management review on July 23, 2002. The review team made the following determinations:

1. The land is being managed for the purpose for which it was acquired.
2. The actual management practices, including public access, complied with the management plan for this site.

LAND USE COMPONENT

INTRODUCTION

Land use planning and park development decisions for the state park system are based on the dual responsibilities of the Division of Recreation and Parks. These responsibilities are to preserve representative examples of original natural Florida and its cultural resources, and to provide outdoor recreation opportunities for Florida's citizens and visitors.

The general planning and design process begins with an analysis of the natural and cultural resources of the unit, and then proceeds through the creation of a conceptual land use plan that culminates in the actual design and construction of park facilities. Input to the plan is provided by experts in environmental sciences, cultural resources, park operation and management, through public workshops, and environmental groups. With this approach, the Division objective is to provide quality development for resource-based recreation throughout the state with a high level of sensitivity to the natural and cultural resources at each park.

This component of the unit plan includes a brief inventory of the external conditions and the recreational potential of the unit. Existing uses, facilities, special conditions on use, and specific areas within the park that will be given special protection, are identified. The land use component then summarizes the current conceptual land use plan for the park, identifying the existing or proposed activities suited to the resource base of the park. Any new facilities needed to support the proposed activities are described and located in general terms.

EXTERNAL CONDITIONS

An assessment of the conditions that exist beyond the boundaries of the unit can identify any special development problems or opportunities that exist because of the unit's unique setting or environment. This also provides an opportunity to deal systematically with various planning issues such as location, regional demographics, adjacent land uses and the park's interaction with other facilities.

Alafia River State Park is located within Hillsborough County, about 30 miles southeast of Tampa and about 20 miles southwest of Bartow in the west central part of the state. The populations of Hillsborough County and the adjacent Polk and Manatee Counties have grown 20 percent since 1990, and are projected to grow an additional 13 percent by 2010 (BEER, University of Florida, 2002). As of 2000, 20 percent of residents in these counties were in the 0-14 age group, 42 percent in the 15-44 age group, 22 percent in the 45-64 age group, and 16 percent were aged 65 and over, which is slightly younger than the state average for these groupings (BEER, University of Florida, 2002). Nearly 3.5 million people reside within 50 miles of the park, which includes the cities of Tampa, St. Petersburg, Bradenton, Sarasota, Clearwater, Lakeland, Bartow, Winter Haven, Wauchula, and Sebring (Census, 2000).

Alafia River State Park recorded 24,538 visitors in 2002-2003. This represents a net increase over the last five years. By DRP estimates, these visitors contributed \$1,624,927 in direct economic impact and the equivalent of 32.5 jobs to the local economy (Florida Department of Environmental Protection, 2003).

Existing Use of Adjacent Lands

Alafia River State Park is a site of approximately 6,312 acres in rural, eastern Hillsborough County situated within an hour drive of numerous cities. This location expands its user group and tourist destination potential. County Road 39 runs along the western edge of the park, with the majority of the property lying to its east. Jameson Road runs parallel to the northern boundary, and in some instances, serves as the boundary. Also adjacent to the northern boundary is Alderman's Ford Park satellite CARL unit.

Along County Road 39 and north of Jameson Road the surrounding land uses are low-density residential, agriculture/rural, and agriculture/mining. The low-density residential and agriculture/rural designations allow agricultural uses and residential development up to one unit per 5 acres and one unit per 10 acres, respectively. The agriculture/mining designation combines agricultural uses with mining at a ratio of one mined acre per 20 acres. Mining remains the main land use along the eastern and southern boundaries.

The South Prong of the Alafia River flowing through the park from south to north is affected (to varying degrees) by phosphate mining, a municipal power plant, continuous water drawdowns, and run-off from the cattle pastures and highways located upstream in the local watershed.

Alafia River State Park is located near other significant land and water resources that provide recreational and interpretive opportunities, including state park facilities at Little Manatee River State Park, Ybor City Museum State Park, Hillsborough River State Park, Paynes Creek Historic State Park, Beker, Lake Manatee State Park, and Judah P. Benjamin Confederate Memorial at Gamble Plantation Historic State Park. There are also a few county parks nearby which offer resource-based recreation opportunities. In Hillsborough County, Alderman's Ford Park offers hiking and biking trails, picnicking, and canoeing. Lithia Springs Park provides swimming, picnicking, a playground, and camping. Boyette Park offers 15 miles of single-track and 10 miles of two-track bicycling trails. Wilderness Park consists of six areas in northeast Hillsborough County offering fishing, canoeing, hiking, bicycling, boardwalks, and picnicking.

Planned Use of Adjacent Lands

Given the continued growth of central Florida, lands surrounding Alafia River State Park that are not within the flood plain, and not included in future state or local government acquisitions, will eventually be developed for residential and commercial uses. As more people move to the area, a higher demand for resource-based recreation opportunities is expected.

Hillsborough County is working on a greenway and trail project that may influence the park. The project incorporates most of the forested wetlands along the Alafia and Hillsborough Rivers in the county. The project's primary goals are to conserve and protect environmentally unique lands that contain native and relatively unaltered flora and fauna, protect significant habitat for native and endangered species, and provide recreational trails and other resource-based recreation. Alafia River State Park is ideally suited to be a part of a regional recreational trail network, however, the rising value of nearby rural lands for residential housing threatens to complicate or foreclose options for trail linkages.

Future mixed-use development should be anticipated between the western park boundary (County Road 39) and U.S. Highway 301. Some of the impacts to be expected include

declines in local water quantity and quality, an increase in local traffic, point and non-point pollution sources within the park's watershed and the continued mining activities in the surrounding area.

PROPERTY ANALYSIS

Effective planning requires a thorough understanding of the unit's natural and cultural resources. This section describes the resource characteristics and existing uses of the property. The unit's recreation resource elements are examined to identify the opportunities and constraints they present for recreational development. Past and present uses are assessed for their effects on the property, compatibility with the site, and relation to the unit's classification.

Recreation Resource Elements

This section assesses the unit's recreation resource elements those physical qualities that, either singly or in certain combinations, supports the various resource-based recreation activities. Breaking down the property into such elements provides a means for measuring the property's capability to support individual recreation activities. This process also analyzes the existing spatial factors that either favor or limit the provision of each activity.

Land Area

Alafia River State Park contains approximately 6,312 acres. Most of its landforms are characteristic of the "Land and Lakes" mined lands reclamation process. The resulting wide upland expanses and numerous lakes are at the base of this property's great potential for providing resource-based outdoor recreation. Within this landscape, there remain elements of the original landscape mosaic. Foremost among these is the river corridor, which supports a notable river swamp community. Extensive single-use hiking, biking, and equestrian trails allow park visitors to enjoy all of these landscapes. The upland areas of the property are suitable for camping, picnicking, hiking, bicycling, and horse trails. Wildlife viewing opportunities and the variety of post-reclamation landforms on the property will provide a broad base for interpretation and environmental education programs, nature observation, scenery appreciation, and nature photography.

Water Area

The numerous lakes created during the reclamation process tend to have steep banks on the uphill side while tapering off on the downhill side, thus draining towards the Alafia River. These lakes could be accessible with future development phases; however, some of the lakes are not recommended for recreational use because of steep banks and questionable water quality. Water quality testing is recommended to ensure that the surface and drinking water are not a threat to the health of park staff or recreational users.

Shoreline

The Alafia property contains some 14 miles of shoreline on the Alafia River and an additional six miles of lake shoreline.

Significant Wildlife Habitat

The river swamp corridor along the South Prong of the Alafia River should be considered a significant wildlife habitat. This corridor has the ability to provide extensive wildlife education opportunities through "watchable wildlife" initiatives.

Archaeological and Historical Features

Thirteen known cultural sites have been identified within the park boundary. Most of the

listed sites have been disturbed or mined and presumably destroyed by the past phosphate mining activities. Other sites are near unmined riverine systems or tributaries of the South Prong of the Alafia River. A thorough study is needed to determine which sites are still extant.

The long history and prominence of the area's phosphate mining industry can also be regarded as a cultural resource.

Assessment of Use

All legal boundaries, significant natural features, structures, facilities, roads, trails and easements existing in the unit are delineated on the base map (see Base Map). Specific uses made of the unit are briefly described in the following sections.

Past Uses

Cytec Brewster Phosphates, Inc. (Cytec) donated this site to the State in 1996. Prior to acquisition, the property was a phosphate mine called Lonesome Mine, named after the nearby community of Fort Lonesome which itself was named after a frontier outpost of the US Army during the Third Seminole War. The vast majority of this land has been reclaimed in a "Land and Lakes" formation. Cytec and later IMC-Agrico Company (IMCA) allowed some minor agricultural uses, such as cattle pasture and citrus leases, on the reclaimed areas.

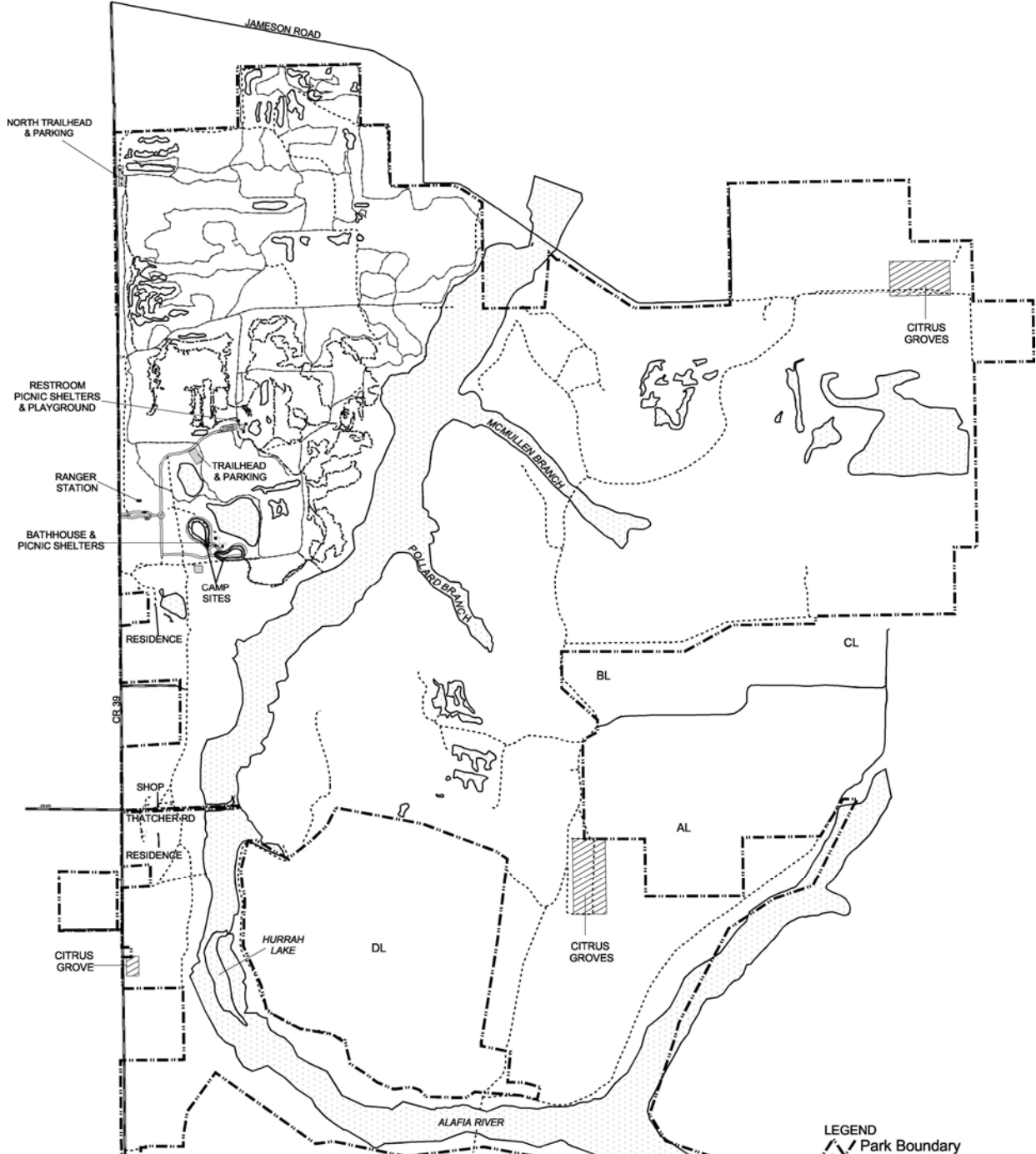
Recreational Uses

The current recreational opportunities available at Alafia River State Park include picnicking, fishing, canoeing/kayaking, RV/tent camping, horse camping, 14 miles of single-track and double-track bicycling for all skill levels, 20 miles of equestrian/hiking trails, and 2 additional miles of nature trail. The bike trails were constructed and are maintained by the hard-working volunteers from the Southwest Association of Mountain Bike Peddlers (SWAMP). Likewise, the equestrian trails would not have been possible without the assistance and dedication of volunteers from the Triple B Riding Club and the Myakka River Riders. There is also an unimproved boat ramp at the bridge on Thatcher Road.

Other Uses

Approximately 1400 acres of the property are encumbered with a 16-year mining lease in favor of IMCA with royalties payable to Cytec. The mining of this property has been completed and reclamation is underway. This acreage includes the four parcels known as AL, BL, CL, and DL. Adjacent parcels AL, BL, and CL collectively account for the large indentation in the park's eastern boundary. Parcel DL comprises the large, circular out parcel located in the southwest corner of the park. This property is owned by the Board of Trustees of the Internal Improvement Trust Fund and leased to the Division of Water Resource Management, Bureau of Mine Reclamation (BOMR) until the mining and reclamation is completed. The Division of Recreation and Parks will work with the mining companies and BOMR to develop reclamation plans for these parcels that consider its future use for recreation opportunities. Upon release of reclamation by BOMR, the state lands lease will revert to Division of Recreation and Parks for incorporation into Alafia River State Park.

Tampa Electric Company (TECO) has three power line easements located within this property. Of these, two are in use and provide electricity to Lonesome Mine (operated by IMCA). Florida Power Corporation (FPC) has three gas lines crossing the northern portion of the park along Jameson Road and one gas line crossing Lake Hurrah.



- LEGEND**
- Park Boundary
 - County Road
 - Park Road Paved
 - Park Road Unpaved
 - Private Road
 - Hiking/Biking Trail
 - Shared-Use Trail
 - Equestrian Trail
 - Walkways.shp
 - Citrus Groves
 - Residence
 - Shop
 - Camp Sites
 - Ranger Station
 - Restroom Picnic Shelters & Playground
 - Bathhouse & Picnic Shelters
 - Trailhead & Parking
 - North Trailhead & Parking

An annual citrus lease encumbers fifty-six acres of the Alafia property. There is also a cattle grazing/haying agreement on 2925 acres of Alafia River State Park. Approximately 2800 acres of the cattle/haying agreement is east of the Alafia River while only 125 acres lies west of the river.

Southwest Florida Water Management District (SWFWMD) has a conservation easement along the banks of the Alafia River. This easement is part of the Alafia River Corridor project (a Save Our Rivers project), and in the Alafia property includes all lands within the 100-year floodplain. The terms of the lease agreement allow recreational activities compatible with the P2000 program guidelines.

Protected Zones

A protected zone is an area of high sensitivity or outstanding character from which most types of development are excluded as a protective measure. Generally, facilities requiring extensive land alteration or resulting in intensive resource use, such as parking lots, camping areas, shops or maintenance areas, are not permitted in protected zones. Facilities with minimal resource impacts, such as trails, interpretive signs and boardwalks are generally allowed. All decisions involving the use of protected zones are made on a case-by-case basis after careful site planning and analysis.

At Alafia River State Park, the river and its 100-year floodplain have been designated as protected zones.

Existing Facilities

Recreation Facilities

North Trailhead Area. This area, located in the northwest corner of the property, served as the original park entrance and trailhead area when the park first opened to the public in 1998. Since the development of the new park entrance, this area still serves as a trailhead and remains popular with equestrian riders. The facilities in this area include:

Picnic Shelters (2)
Picnic Tables and Barbecue Grills
Composting Toilet (1)
Parking (50 cars / 20 trailers)
Overflow Parking Field

Camping Area. This camping area, adjacent to Lake Alafia, was built with the equestrian user in mind. The camping area will revert to an equestrian camping area upon the development of the proposed standard camping area. The facilities in this area include:

30 Campsites (tent, RV, and horse campers)
Bathhouse
Large Pavilions (2)

New Day Use Area/Trailhead. This area, located at the junction of three old Agrico pits, supports picnicking and serves as a trailhead to the vast network of off-road bicycle and equestrian trails. The facilities in this area include:

Large Picnic Shelters (2)

Picnic Tables and Barbecue Grills
Restroom
Playground
Paved Parking (25 cars / 10 trailers)
Overflow Parking Area/Play Field

Support facilities. The ranger station is located at the park entrance off County Road 39. Support facilities located off Thatcher Road include a ranger residence, shop area, volunteer RV sites, and the unimproved boat launch. A manager residence is located between the shop area and the campground with access from County Road 39.

CONCEPTUAL LAND USE PLAN

The following narrative represents the current conceptual land use proposal for this park. As new information is provided regarding the environment of the park, cultural resources, recreational use, and as new land is acquired, the conceptual land use plan may be amended to address the new conditions (see Conceptual Land Use Plan). A detailed development plan for the park and a site plan for specific facilities will be developed based on this conceptual land use plan, as funding becomes available.

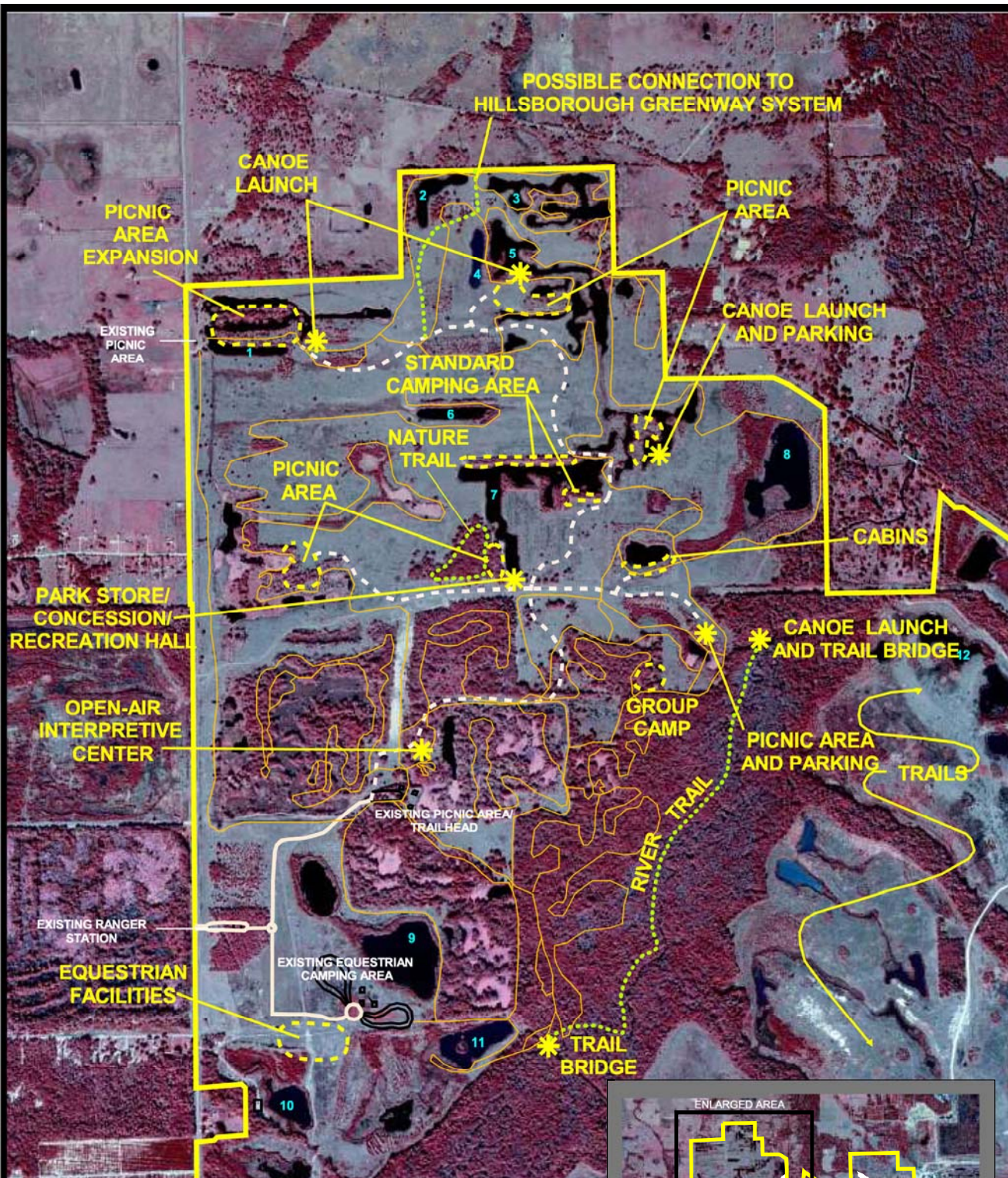
During the development of the unit management plan, the Division assesses potential impacts of proposed uses on the resources of the property. Uses that could result in unacceptable impacts are not included in the conceptual land use plan. Potential impacts are more thoroughly identified and assessed through the site planning process once funding is available for the development project. At that stage, design elements, such as sewage disposal and stormwater management, and design constraints, such as designated species or cultural site locations, are more thoroughly investigated. Advanced wastewater treatment or best available technology systems are applied for on-site sewage disposal. Stormwater management systems are designed to minimize impervious surfaces to the greatest extent feasible, and all facilities are designed and constructed using best management practices to avoid impacts and to mitigate those that cannot be avoided. Federal, state and local permit and regulatory requirements are met by the final design of the projects. This includes the design of all new park facilities consistent with the universal access requirements of the Americans with Disabilities Act (ADA). After new facilities are constructed, the park staff monitors conditions to ensure that impacts remain within acceptable levels.

Potential Uses and Proposed Facilities

Alafia River State Park is a reclaimed phosphate mine. Mining has simplified the landscape structure and created new landforms. To date, the different parcels have been reclaimed (by the mining companies) as stand-alone projects, with minimal foresight for the needs generated by future recreational uses or habitat restoration. Thus, the environmental constraints to the development of recreational opportunities and facilities have been greatly reduced.

Alafia River State Park has the potential to become a leading provider of resource-based recreation in central Florida, an area experiencing rapid population and tourist visitation growth. Integrating the site's tremendous recreational potential with future land reclamation and restoration activities is the starting point for the long-term development of an outstanding recreational resource within the Florida State Park system.

The initial development phases have begun to establish a strong base of day use and overnight recreation facilities, including recreational trails, picnicking, fishing, wildlife



LEGEND

- PROPOSED FACILITIES
- PROPOSED DEVELOPED AREAS

TRAILS

- PROPOSED TRAIL
- EXISTING TRAIL

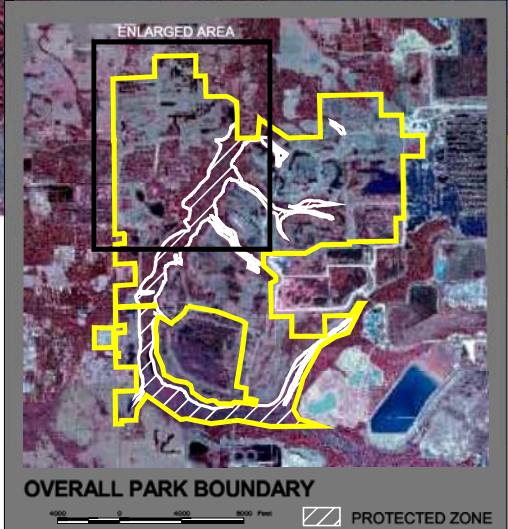
ROADS

- PAVED PARK ROAD
- PROPOSED ROAD

EXISTING FACILITIES AND DEVELOPMENT AREAS

- EXISTING FACILITIES AND DEVELOPMENT AREAS
- PARK BOUNDARY

- LAKE LEGEND**
- 1- Three Finger Lake
 - 2- Okheha Lake
 - 3- Lost City Lake
 - 4- Green Lake
 - 5- Sea Horse Lake
 - 6- Mine Lake
 - 7- Lake Heron
 - 8- Fort Lonesome Lake
 - 9- Lake Alafia
 - 10- Cypress Lake
 - 11- Lonesome Lake
 - 12- Kestrel Lake



ALAFIA RIVER STATE PARK



FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF RECREATION AND PARKS
OFFICE OF PARK PLANNING

CONCEPTUAL LAND USE PLAN

viewing, and camping. These phases have focused on the northwestern portion of the property, between the Alafia River and County Road 39. Future park development is also planned for this portion of the park. At this time, no developed facilities, with the exception of trails, are proposed on the property east of the river.

Additional land-use planning, for future development phases, will occur following further study. In the reclamation plans, a series of shallow wetlands, creating watchable wildlife opportunities, are being considered for the site known as DL. In the northeast portion of the DL area, future development should be patterned to create an outstanding watchable wildlife resource through restoration and the layout of trails with wildlife observation blinds. IMCA is also proposing a large lake or series of small, connected lakes on AL, BL, and CL. The success of the DL mine reclamation program will determine the final land use allocation in the remaining mining parcels.

Expansion of water based recreational activities, to include the use of motor powered boats (on Fish Hook Lake), should be considered. The development of a lodging and conference facility on Fish Hook Lake or another large lake should also be considered.

The site's history, and the landforms generated by the mining process, requires the involvement of additional agencies, such as the Bureau of Mine Reclamation. This bureau reviews all mining and mine reclamation plans, and remains involved in these activities within the boundaries of Alafia River State Park.

Recreation Facilities

Trails. Currently, about 35 miles of recreational trails traverse the west side of the Alafia River. With over 6,000 acres of park land, there is great potential for the further development of the network of hiking, bicycling, and horse trails. These trails should continue to provide separation to allow the highest quality recreational experience for all users. Wildlife observation blinds should be created along the trails in sensitive areas. Additional trailside picnic and rest areas, with composting toilets and rain shelters, are recommended to be located at appropriate sites.

The following specialized trails are recommended:

1. An additional 2-mile river (hiking and biking) trail along the banks of the Alafia River explores the remaining, original natural community on the property.
2. A short nature trail should explore the xeric hammock. It is located west of Lake Heron.
3. An interpretive "mining trail" informing park visitors of the mining and reclamation process. The trailhead will be located at the old Agrico spoil pits, and the trail itself will utilize the variety of pre- and post-mining landscapes as an educational tool.

At least two trail bridges are proposed to connect this extensive network of hiking, bicycling, and equestrian trails across the Alafia River. The most appropriate locations are in currently disturbed areas: 1) in the powerline right-of-way, near the proposed boat/canoe launch at the river; and 2) at the old dragline crossing location.

In addition, the Hillsborough Greenways System has the potential to connect to the Alafia River State Park. A greenway connector trail route, located in the northwestern corner of the property, is recommended. This connection will improve non-motorized access to the park. When the greenway becomes a reality, a trail entrance with an informational kiosk and sign-in station, at the park boundary, is recommended to connect these trail systems (greenway

and canoe) to the state park.

Standard Camping Area. The existing camping area was designed specifically for equestrian users and will revert to an equestrian camping area upon the completion of a new camping area. The proposed standard camping area should contain 60 sites, with each site overlooking Lake Heron. Water and electrical hook-ups at each site, and two centrally located bathhouses are recommended. A trail connecting this area to the trail system is also recommended.

Cabins. Cabins are also recommended as a future recreation facility for overnight guests. Twelve units are proposed along the southern bank of the unnamed lake southeast of the proposed camping area.

Primitive campsites. A primitive group camp, up to 60 visitors, is recommended. Overnight camping for organized groups, public school groups, college classes, and the public should be provided. General public and vehicular access to the group camp will be limited. Composting restrooms, several large picnic shelters, and a large campfire circle are recommended for the group camp.

Six additional primitive campsites, designed for six to eight visitors, are planned. Each of the campsites should provide picnic tables, grills, and access to toilets for overnight excursions. These campsites will be associated with the trails, and located at appropriate locations.

Equestrian facilities. Near the existing equestrian camping area, south of Lake Alafia, additional equestrian facilities are recommended. This area should serve as an equestrian trailhead/staging area with a horse stable with at least 20 stalls, trailer parking, and watering facilities. The establishment of a concession operated horse rental service, should be considered in the future.

Boating/Canoeing. Four boat/canoe launches, providing access to Sea Horse Lake, Three Finger Lake and Lake Heron are planned. The boat/canoe launch will serve canoes, kayaks, and boats with non-combustion engines that can be hand carried and launched, and will connect to a well-marked canoe trail.

Paved parking areas will be located between each launch and a nearby picnic area, serving both uses. Each of the parking lots will contain about eight spaces for vehicles. The adjacent picnic area should provide several small picnic shelters, scattered tables and grills.

A fifth boat/canoe launch located along the Alafia River will serve as the starting point for the up-river and down-river canoe trails. The first traverses the Alafia River to Hurrah Lake, creating a loop of almost 7 miles. The second, an adventurer's trail, connects the Alafia River State Park to Alderman's Ford Park when the water level is adequate. A parking area, with 13 spaces and picnic facilities will be located near the launch.

Future plans may consider improvements to the boat ramp off of Thatcher Road for access to the river.

Picnicking sites. Picnic areas are proposed at Sea Horse Lake, Three Finger Lakes, and Lake Heron. These will accompany the boat/canoe launches, with several large and small

picnic shelters, scattered picnic tables and grills. These picnic areas will be located to take advantage of the peninsulas encompassed by the lakes. Pedestrian bridges, where necessary, are recommended.

Additional picnic areas and overlooks are proposed at appropriate sites with several large and small picnic shelters, scattered picnic tables and grills. Also recommended are trailside picnic and rest areas along the trails and in scenic locations. The picnic areas should be designed to accommodate all different types of user groups on the trails.

Fencing and overlook decks, as needed, are safety measures recommended along the “pit” areas and some of the lakefront picnic areas. Some of these areas have steep shorelines and rapidly descending lake bottoms. Visitors should be informed of the reasons for the access restrictions to the lake and pit shorelines through interpretive signs and staff contact. Picnic facilities on these shorelines should be set back a reasonable distance, allowing visitors to appreciate their scenic qualities without endangering themselves.

Open-air interpretive facility. The state parks in central Florida provide numerous educational and recreational opportunities based on the natural resources of the area. Although the existing opportunities are exemplary, there is a need for public awareness regarding issues surrounding mined lands and their subsequent reclamation and restoration. Due to the abundant and diverse post-mining landforms on the Alafia property, there is a wonderful opportunity to extend environmental education programs to include a “mining program.” The incorporation of educational and interpretive facilities and programs to bring the existence and importance of the resources of Alafia to the awareness of the visiting public will be an important measure for achieving balance between resource protection and the demand for public recreational access. Educational programming may be provided by Division staff, program contractors, or educational staff of the institutions using the facility.

The proposed open-air interpretive facility will be located at the junction of three old Agrico pits where the new day use area has been developed. This day use area serves as the trailhead for the various recreational trails. This area also provides a picnic area with two large picnic shelters, a restroom, a playground, scattered picnic tables and grills, and parking.

In addition to the open-air interpretive facility, interpretive stations are recommended at locations throughout the proposed trail system to inform the public regarding resource management and restoration activities occurring in the park, as well as some of the larger preservation, stewardship, land use, and cultural resource themes. Locations for interpretive boardwalks and overlooks on some of the wetlands should be determined following further study for the most appropriate locations.

There is also great potential to implement interpretive and recreational skills programs that can originate at the interpretive facility. Fishing, off-road bicycling clinics, equestrian events, guided equestrian trail rides, and birding programs are a few of the programs that can be offered to guests.

Park Store/Concessionaire/Recreation Hall. The construction of a building to serve as the park store, concessionaire, and recreation hall is recommended for the southern tip of Lake Heron. The park store should sell food, drinks, and camping supplies while the concessionaire should provide bicycle and canoe rentals. The attached recreation hall will

overlook Lake Heron and offer a large gathering space for up to 100 people. This space could be used for meetings, group meals, or interpretive programs.

Fishing. All lakes with the potential for recreational fishing should be actively managed to maximize that potential. The Division should consult with the Florida Fish and Wildlife Conservation Commission as to the best management practices for the lakes. These practices could include stocking, periodic closure, catch and release fishing programs. Enhanced access to popular lakes as well as fishing platforms and short piers should be considered, once specific lakes to be managed for fishing have been identified.

Swimming. The Division recognizes the popularity of swimming areas within park settings. At this time, the Division does not recommend recreational swimming in the lakes due to poor water quality. A focused, intensive remediation study on a particular waterbody adjacent to the camping and picnicking areas is recommended. When the water quality improves, natural swimming areas should be provided.

Watchable Wildlife Initiatives. Watchable wildlife initiatives are part of a cooperative, nationwide effort to help meet a growing national interest in wildlife and the outdoors. These initiatives provide local economic development; promote learning about wildlife and habitat needs; and enhance active public support for resource conservation by involving hundreds of cooperators from state and federal agencies, private organizations, and business and industry. These programs promote the enjoyment of wildlife and provide an understanding of their habitats, their relation to the environment, and their management. The ultimate goal is to help maintain viable populations of all native animal species by building effective, well-informed public support for conservation.

In Alafia River State Park, the presence of many animal species, some of which are endangered, threatened or rare, provides excellent opportunities for wildlife observation. Viewing platforms, screened pavilions (in the wooded areas) and screened observation points along the trails are proposed at the appropriate locations, and an accompanying field guide should be provided.

Screening and buffering. Screening and buffering are important to maximize the recreational potential inherent in the site. The number of internal and external visual intrusions and the scarcity of tree cover in many areas require a comprehensive visual impact assessment to identify the most problematic locations. Following are general guidelines for in depth assessments to be conducted as part of future design projects.

The most obvious external visual intrusion is the Lonesome Mine plant, which is visible even at a great distance. Boundary screening would not suffice here since the size of the plant's structures would render them visible well back from any possible screening. Therefore, it is important to recognize the locations from which the plant is visible and solve this screening issue locally. The plant does not have to be screened at all locations and in some cases can be used as an educational tool.

The screening and buffering of the on-site electrical power lines is of immediate concern. These power lines "criss-cross" the site and are visible from many locations. Three possible solutions are: 1) Obscuring the range of vision through the planting of trees and shrub masses. This shortens the vision range and draws attention to the foreground view. 2) Planting groups of trees on selected points. These points then serve as focal points and

command the viewer's attention. 3) Linear planting. This type of planting creates the illusion of greater and denser cover than exists.

The lack of tree cover combined with the expanse of Alafia River State Park makes tree cover an important recreational issue along some section of trail and in the campground. A combination of mass and linear planting is recommended at appropriate intervals and in a manner compatible with visual effects and resource management.

Overall, internal park planting should aid in the separation of uses. When differing uses are visible from each other, buffer planting should be established. Parking areas in particular need screening. Moderate screening is needed between the primary road, campsites, and the maintenance areas. Heavy to moderate screening should also be designed between the proposed facilities in the park and County Road 39, as well as any off-site commercial or residential areas.

Support Facilities

Circulation. Site circulation will be based on simplifying access. To the extent possible, pedestrian, equestrian, bicycle, and vehicular paths will be individually routed, with the express purpose of taking the best advantage of the site features and proposed facilities.

Public access to Alafia River State Park has already been established through an entrance off County Road 39. The entrance is gated and a ranger station has been constructed. This paved road provides access to the existing camping area and the new day use area. This road should be extended from the new day use area to service the proposed cabins and standard camping area. Secondary roads should be built to serve the more remote picnic areas, the primitive group campsite, and the boat/canoe launch sites.

Controlled use of the Thatcher Road entrance should be allowed for special events or guided activities. This entry is a convenient service and emergency road for park personnel.

Ranger Residence. As more facilities are constructed at Alafia River State Park, additional staff will be needed to maintain the structures and provide visitor services. One new ranger residence is recommended in conjunction with the development of the proposed camping area.

Facilities Development

Preliminary cost estimates for the following list of proposed facilities are provided in Addendum 6. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist the Division in budgeting future park improvements, and may be revised as more information is collected through the planning and design processes.

Recreation Facilities

Boat/Canoe Launches

5 Boat/Canoe Launches

Cabin Area

12 Cabins and Furnishings

Camping Areas

Standard Camping Area (60 sites)

Primitive Group Camp

Primitive Campsites (6)

Day Use Trailhead Area

Open-air Interpretive Facility

Equestrian Area

Horse Stable (20 stalls)
30 Parking Spaces for Horse Trailers

Picnic Areas

Large Picnic Shelters (8)
Small Picnic Shelters (4)
Observation Platforms (3)

Support Facilities**Circulation**

Paved Road Extension (1 mile)
Unpaved Roads (2.5 miles)
Ranger Residence

Trails

Nature Trails (6 miles)
Trail Bridges (2)

Visitor Service Area

Concession Building
Park Store
Recreation Hall

Parking Areas

96 Parking Spaces in 6 Locations

Existing Use and Optimum Carrying Capacity

Carrying capacity is an estimate of the number of users a recreation resource or facility can accommodate and still provide a high quality recreational experience and preserve the natural values of the site. The carrying capacity of a unit is determined by identifying the land and water requirements for each recreation activity at the unit, and then applying these requirements to the unit's land and water base. Next, guidelines are applied which estimate the physical capacity of the unit's natural communities to withstand recreational uses without significant degradation. This analysis identifies a range within which the carrying capacity most appropriate to the specific activity, the activity site and the unit's classification is selected (see Table 1).

The optimum carrying capacity for this park is a preliminary estimate of the number of users the unit could accommodate after the current conceptual development program has been implemented. When developed, the proposed new facilities would approximately increase the unit's carrying capacity as shown in Table 1.

Optimum Boundary

As additional needs are identified through park use, development, research, and as adjacent land uses change on private properties, modification of the unit's optimum boundary may occur for the enhancement of natural and cultural resources, recreational values and management efficiency.

Identification of lands on the optimum boundary map is solely for planning purposes and not for regulatory purposes. A property's identification on the optimum boundary map is not for use by any party or other government body to reduce or restrict the lawful right of private landowners. Identification on the map does not empower or require any government entity to impose additional or more restrictive environmental land use or zoning regulations. Identification is not to be used as the basis for permit denial or the imposition of permit conditions.

The optimum boundary map reflects lands identified for direct management by the Division as part of the park. These parcels may include public as well as privately owned lands that improve the continuity of existing park lands, provide additional natural and cultural resource protection, and/or allow for future expansion of recreational activities.

The areas identified for acquisition include the four land tracts (AL, BL, CL, and DL)

Table 1--Existing Use And Optimum Carrying Capacity

Activity/Facility	Existing Capacity		Proposed Additional Capacity		Estimated Optimum Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
Trails						
Nature Trails			50	200	50	200
Bicycling	210	840			210	840
Equestrian/Hiking	160	320			160	320
Picnicking	124	248	352	704	476	952
Camping						
Standard			240	240	240	240
Equestrian	120	120			120	120
Primitive			168	168	168	168
Cabins			72	72	72	72
Boating			90	180	90	180
Education Facility			30	120	30	120
TOTAL	614	1,528	1,002	1,684	1,616	3,212

Note: The values in the "TOTAL" row may vary since most visitors participate in a combination of recreation opportunities and thus are counted more than once.

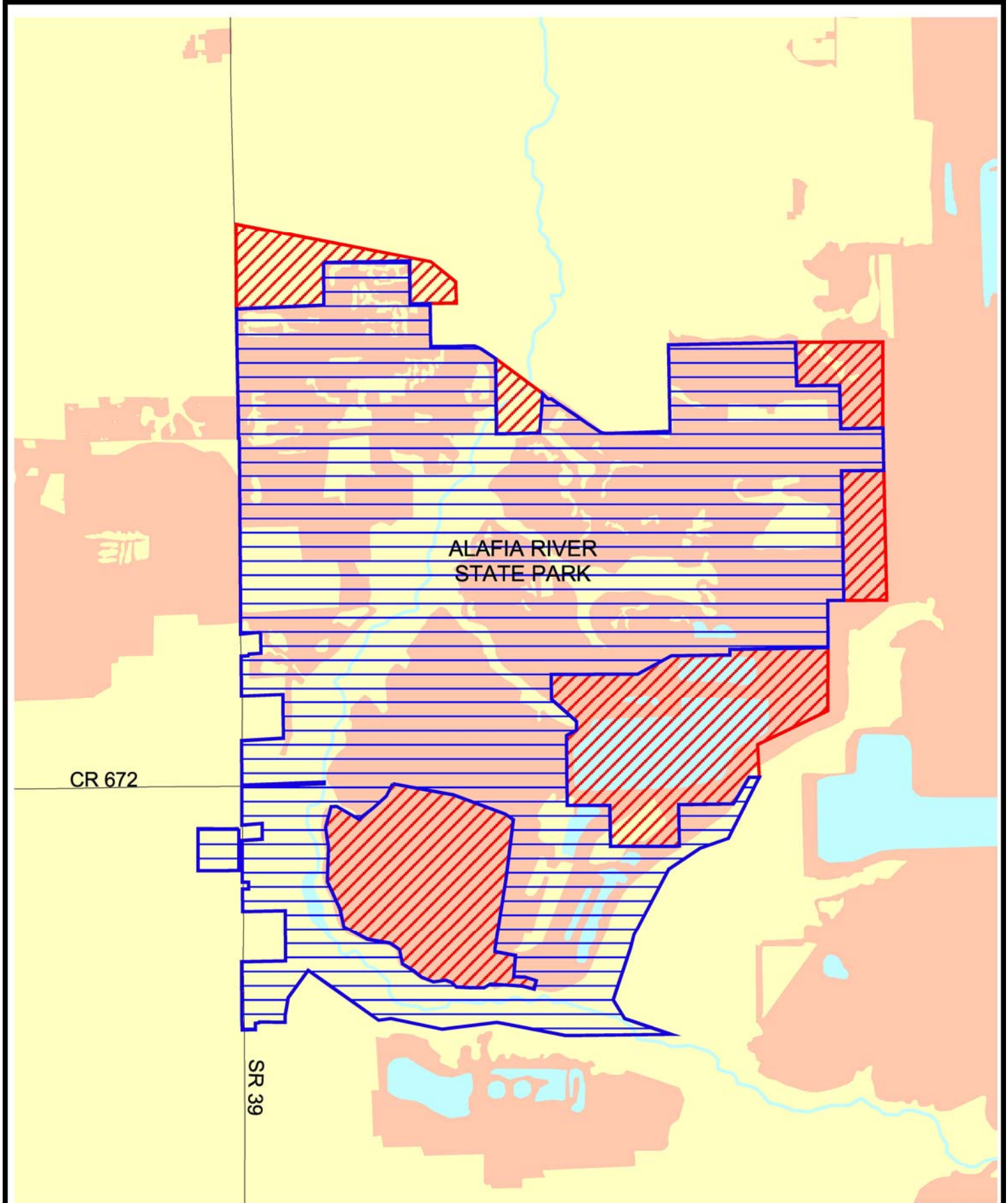
totaling 1400 acres, encumbered by the 16-year mining lease in favor of IMCA. Once reclaimed, this acquisition will work towards squaring off the park's southern boundary and increase green space and wildlife habitat from encroaching development.

Just south of Jameson Road is undeveloped private land that is currently on the market and has been subdivided into five to forty acre tracts for estate home sites. This property runs east along Jameson Road to the first curve, adjacent to the park's northern boundary. This acquisition would not only work towards squaring off the park's northern boundary, but more importantly, it would provide a greenway connection from the Alafia River State Park property to the Hillsborough County Alderman's Ford Park property.

Another parcel just south of Jameson Road contains the adjoining portion of the Alafia River. Acquisition of this property would protect more of the river corridor. The existing house on the property could provide the additional ranger residence that was recommended in this management plan.

Located in the northeast portion of the property and adjacent to the eastern park boundary is Fish Hook Lake, the park's largest lake. Acquisition of two parcels along the border (see Optimum Boundary map) would increase the buffer from any future encroaching development and maintain a natural park setting across from Fish Hook Lake as the lake has great potential for park development in the future.

At this time, no lands are considered surplus to the needs of the park.

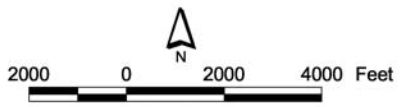


CR 672

SR 39

ALAFIA RIVER
STATE PARK

LEGEND
[Blue Outline] Park Boundary
[Red Hatched] Optimum Boundary



Prepared by:
Florida Department of Environmental Protection
Division of Recreation and Parks
Office of Park Planning

ALAFIA RIVER
STATE PARK

OPTIMUM BOUNDARY MAP

Addendum 1—Acquisition History

Alafia River State Park

Acquisition History

Purpose and Sequence of Acquisition

The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Trustees) has acquired Alafia River State Park to manage the park in such a way as to protect and restore the natural and cultural values of the property and provide the greatest benefit to the citizens of the state.

On December 19, 1996, the Trustees obtained title to the property constituting Alafia River State Park. The State acquired the property from Cytec Brewster Phosphates, Inc. as a donation. Since this donation, the Trustees have not acquired any additional new lands.

On January 23, 1998, the Trustees leased Alafia River State Park to the Division of Recreation and Parks (DRP), under Lease No. 4168, for a period of fifty (50) years, which will expire on January 22, 2048.

According to the Trustees lease, the Division manages Alafia River State Park for the development, conservation and protection of natural and cultural resources, and for resource-based public outdoor recreation that is compatible with the conservation and protection of the property.

Title Interest

The Trustees hold fee simple title to Alafia River State Park.

Special Conditions On Use

Alafia River State Park is designated single-use to provide resource-based public outdoor recreation and other park related uses. Uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park.

Outstanding Reservations

Following is a listing of outstanding rights, reservations, and encumbrances that apply to Alafia River State Park.

Instrument:	Conservation Easement
Instrument Holder:	Trustees
Beginning Date:	December 16, 1997
Ending Date:	Perpetual
Outstanding Rights, Uses, Etc.:	The easement allows the South Florida Water Management District to maintain the ecological and hydrological integrity of the property.
Instrument:	Trustee's Deed
Instrument Holder:	Cytec Brewster Phosphates, Inc.
Beginning Date:	December 18, 1996
Ending Date:	perpetual
Outstanding Rights, Uses, Etc.:	The deed is subject to easements for private access, electric and telephone utility lines, rights-of-way, and drainage; rights reserved in the business of mining; and a certain lease to IMCF recorded in O.R. book 5699, page 886.

Alafia River State Park

Acquisition History

Instrument: Trustee's Deed
Instrument Holder: Cytec Brewster Phosphates, Inc.
Beginning Date: December 18, 1996
Ending Date: perpetual
Outstanding Rights, Uses, Etc.: If said lands are not used for public park and recreational purposes, title will revert back to instrument holder.

Instrument: Agricultural Lease
Instrument Holder: Cytec Industries, Inc.
Beginning Date: July 1, 1995
Ending Date: For a period of 1 year, and shall automatically renew annually.
Outstanding Rights, Uses, Etc.: The lease allows the Bone Valley Groves, Inc. to use 56 acres of land for citrus grove and growing fruit.

Alafia River State Park
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Alafia River State Park
Advisory Group Staff Report

The Advisory Group meeting to review the proposed land management plan for Alafia River State Park was held in the Thatcher Park Community Center on January 8, 2004. Charles Cook and Michelle Sims represented Bud Cates, Luis Gonzalez represented Jeff McGrady, Vicki Lawry and Marylou Sapp represented Jim Watkins, Steve Hayes represented Paul Catoe, Rob Heath represented Karl Stevens, and Lynn McGarvey represented David Roset. The Honorable Thomas Scott, Collen Kruk, Hugh Gramling, and Virginia Edwards did not attend. All other appointed Advisory Group members were present. Attending staff were John Baust, Craig Liney, Robert Wilhelm, Ken Alvarez, Michael Kinnison, and Brian Burket.

Mr. Burket began the meeting by explaining the purpose of the Advisory Group and reviewing the meeting agenda. He also provided a brief overview of the Division's planning process, summarized public comments received during the previous evening's public workshop and in writing by other Advisory Group members unable to attend. He then asked each member of the advisory group to express his or her comments on the plan.

Summary of Advisory Group Comments

Rob Heath identified discrepancies in the listed species mentioned in the plan and those listed in the Addendum. He suggested that the plan describe how the natural areas will be managed for specific species. He requested that the plan elaborate on the exotic species problem within the park. In addition, he does not believe the Alafia River is canoeable between the State Park and Alderman's Ford County Park.

Luis Gonzalez made a few editing suggestions.

Vicki Lawry shared her ideas for a trailhead connection to the Hillsborough County Greenway at the north boundary of the park. She requested that the proposed stable have no less than 20 stalls and recommended the corralled grazing area be removed from the plan. She supports keeping the original trailhead at the northwest corner of the park open to day-use. She requests that the needs of equestrians be identified in the conceptual plans and incorporated into the design of proposed facilities. She then raised concern over liability and insurance costs for an equestrian concessionaire.

MaryLou Sapp voiced appreciation for Assistant Park Manager, Craig Liney. She then asked if cabins were still being proposed. Mr. Burket replied that twelve cabins have been proposed in this plan.

Mark Hebb suggested state agency collaboration to control cogon grass. He asked if motorized dirt bike use would be considered in the future. Mr. Baust replied, no. Mr. Hebb recommended adding language to the plan that clarifies the Division position on this issue. He then stated he is a proponent of an active fire management program and offered to lend help with prescribed burns. He also raised some safety concerns with canoeing portions of the Alafia River.

Mike Kinnison encouraged user groups to communicate their needs to park management to ensure facilities are constructed in a manner that best suites the needs of each group.

Craig Liney recommended improving the Thatcher Road boat ramp and enhancing the shoreline of certain lakes to enhance public access.

Ed McAdam extended thanks to Bob Ballard, Mike Bullock, Albert Gregory, Lew Scruggs, Robert Wilhelm, Craig Liney, Caroline Eckert, and Kathy Peacock for their hard work and dedication to state park user groups. He identified numerous areas in the management plan

Alafia River State Park
Advisory Group Staff Report

that he would like to see expanded or clarified. He recommended more emphasis on the interpretation of the natural resources. He does not support the elimination of all bahia grass. He requested the proposed day-use equestrian facilities be located adjacent to the overnight equestrian facilities. He suggested a south linkage to the Hillsborough County Greenway System in addition to the proposed north linkage. He suggested a map of the Hillsborough County Greenway System be included as an appendix to the plan. He recommended management coordination with Division of Forestry to plant seedlings in the park, particularly in the camping area and along trails. He would like the mining companies to consider a partial release of properties and help with future interpretive enhancements. He asked about the use of helicopters for exotic species control and how hogs are controlled. He recommended the proposed picnic facilities along the trails be designed for multi-user groups, including tie-outs and bike racks, and requests more river crossings where appropriate.

Wes Eubank expressed appreciation to the staff of Alafia River State Park. He stated the bicyclists currently account for 75% of gate fees and this is “only the tip of the iceberg.” This user group is self-sufficient, but they have some suggestions. Mr. Eubank would like to see a trail linkage to the west connecting the state park to Boyette County Park. He is requesting state assistance with this project. He then raised concerns for using the existing bike trails for races. Mr. Eubank explained that the bike trails were designed as non-competitive, single-track use, and that races restrict public access during events and result in increased trail maintenance needs. He recommended the construction of 5-6 mile bike trail designed to handle racing. He requested showers for the new trailhead area and recommended stabilizing the overflow parking entrance. He suggested that the park consider relocating some of the planted trees along Lake Alafia into the camping area. He also stated the roundabouts are too tight and need to be expanded.

Ronald Stevens asked about the cabin amenities. He requested better access to lakes for fishing and asked about the design plans for the canoe launches. Mr. Baust suggests the launches be similar to those at Lake Louisa State Park. Mr. Stevens then asked if ATV use would be allowed in the future. Mr. Baust replied, no. Mr. Kinnison added that the Division does not allow motor vehicle use of state park trails.

Dawn Hart recommended coordinating efforts with IMC to control exotics and suggested asking IMC for the trees in areas to be mined. She requested the citations for the two hydrology theories discussed on page 8 of the plan. She also requested that a map of the disturbed upland management units be included in the plan.

Michelle Sims also requested that a map of the disturbed upland management units be included in the plan.

Charles Cook strongly supports the proposal for a restoration biologist position at the park. He is concerned about the cogon grass, stating that it is very difficult to control. He asked if there is public interest in trail linkages to the east. He said he would discuss the potential of partial releases of mined property with the Bureau of Mine Reclamation. He then asked for clarification about the breached lake that was identified on page 20 of the plan.

Lynn McGarvey is concerned that the proposed conceptual plans will create an urban experience. She wanted assurance that the natural communities will be protected, especially the river corridor. Mr. Alvarez reminded her of the disturbed nature of the park, the plans for continued restoration, and the designation of the river corridor as a protected zone.

Steve Hayes recognized the park’s ability to draw outside visitors due to its uniqueness and

Alafia River State Park
Advisory Group Staff Report

incredible bike trails. He supports the proposal for canoe/kayak rentals and cabins. He suggested that the new facilities incorporate the needs and desires of families, including interpretation and food service. He would like to see the park attract more group travel, especially students. He cautioned the park to build the appropriate parking spaces along with the new facilities. He also recommended that directional signage is needed along the area roads, and suggested the Tampa Bay Convention and Visitors Bureau could help.

Summary of Written Comments

Kevin Claridge of the Bureau of Mine Reclamation (BMR) provided the following suggestions:

Update the Vicinity Map to reflect state lands managed by BMR.

Expand upon the BMR concept of the Integrated Habitat Network, which includes Alafia River State Park.

Address the park's policy on Off Highway Vehicle use within the park.

Include a map of the disturbed upland management units.

Update the list of invasive plants.

Include a map of the internal easements, citrus and cattle leases, and adjacent landowners. BMR is interested in working with the person hired for the proposed restoration biologist position.

Staff Recommendations

Staff recommends approval of the proposed management plan for Alafia River State Park as presented with the following changes:

Potential Greenway Linkages. The Division of Recreation and Parks supports trail connections to local greenways; however, it is the responsibility of the local governments to determine the routes of these proposed trails. Currently, the Hillsborough County Greenway System only indicates a linkage to the northern boundary of Alafia River State Park. If and when Hillsborough County identifies additional connections to the state park, the Division will support their ideas and decide on the most appropriate location for the trail to enter the state park.

Additional Bike Trail for Races. A trail specifically designed for racing is not consistent with the park service mission to provide resource-based recreation. However, in the future, as new bike trails are warranted, trails should be constructed east of the Alafia River, which can be designed to better accommodate the occasional race. The construction of two or more bridges across the river will be necessary to transport visitors to these proposed trails.

Trailhead Shower Facility. Park staff will investigate the possible addition of an outdoor shower with the County Health Department and if approved they will proceed.

Equestrian Facilities and Design. Upon suggestions from experienced equestrians attending the advisory group meeting, the proposal for a fenced grazing pasture will be removed from the plan and language will be added to request "at least 20 stalls" in the proposed horse stable. In addition, the design suggestions for the proposed equestrian facilities, while helpful, are too specific for the scope of this plan. The staff recognizes the importance of these comments and recommends that user groups share their ideas with park staff during the design stage of the proposed facilities.

Shoreline Enhancements for Fishing. The staff agrees that access to some of the lakes that are popular for fishing should be enhanced. In particular, a path should be established from the overflow parking area to Lake Alafia to eliminate fishermen parking in the camping area.

Thatcher Road Boat Ramp Improvements. Future plans may consider boating improvements for access to the river off Thatcher Road. In the meantime, park staff can do some minor maintenance to the existing situation.

Addendum 2—References Cited

Alafia River State Park

References Cited

- Bureau of Economic and Business Research (BEBR), University of Florida. 2002. Florida Statistical Abstract 2001. Gainesville, Florida.
- Bureau of Mine Reclamation (BMR). 2002. Management Plan for the Integrated Habitat Network, Lease Nos. 3963 and 3995. Tallahassee, FL.
- Clewell, A. F. *et al.* 1982. Riverine forests of the South Prong of the Alafia River system, Florida. *Wetlands* 2: 21-72.
- Clewell, A. F. 1991. 4. Florida rivers: the vegetational mosaic. Pp. 47-63 . *In: The Rivers of Florida.* ed. R. J. Livingston.
- Florida Department of Environmental Protection. 2003. Florida State Park System Economic Impact Assessment for Fiscal Year 2002/2003. Tallahassee, Florida.
- Florida Department of Environmental Regulation. 1988. "305b Technical Appendix." DER, Tallahassee.
- Florida Department of Natural Resources. 1989. "Florida Rivers Assessment." Tallahassee.
- Florida Exotic Pest Plant Council. 2003 List of Invasive Species. Available online at: <http://www.fleppc.org/Plantlist/list.htm>
- Florida Natural Areas Inventory. 1990. *Guide to the Natural Communities of Florida.* Florida Natural Areas Inventory, Tallahassee, FL.
- Hillsborough County. 2001. Hillsborough County Comprehensive Plan 2001. Hillsborough County, Florida.
- King, T. and Cates, B. 1994. A three-part regional habitat mitigation plan as the foundation for the southern phosphate district of Florida's integrated habitat network (an unpublished proposal).
- U. S. Department of Commerce, Bureau of the Census. 2000. U. S. Census 2000.
- White, W. A. 1970. The geomorphology of the Florida peninsula. *Fla. Bur. Geol. Bull. No.* 51.
- Wunderlin, R.P. Hansen, B.F. Bridges, E. L. 1996. *Atlas of Florida Vascular Plants.* CD ROM. Florida Dept. of State.

Addendum 3—Soil Descriptions

Alafia River State Park

Soils Descriptions

2 - Adamsville fine sand - This soil is nearly level and somewhat poorly drained. It is on broad ridges on the flatwoods. The slope is 0 to 2 percent.

In 95 percent of the areas mapped as Adamsville fine sand, the Adamsville soil and similar soils make up 82 to 99 percent of these mapped areas. Dissimilar soils make up 1 to 18 percent of the mapped areas.

Typically, this soil has a surface layer of very dark gray fine sand about 6 inches thick. The upper part of the underlying material, to a depth of about 30 inches, is brown fine sand. The lower part to a depth of about 80 inches is pale brown, mottled fine sand. Similar soils included in mapping are very dark grayish brown or dark grayish brown fine sand in the lower part of the underlying material. Other similar soils, in some of the higher parts of the landscape, are moderately well drained.

Dissimilar soils included in mapping are Lochloosa and Pomello soils in small areas.

In most years, a seasonal high water table is at a depth of 20 to 40 inches for 2 to 6 months and recedes to a depth of 60 inches during prolonged dry periods. Permeability is rapid. The available water capacity is low.

In a few areas, this soil is used for cultivated crops, or it is left in natural vegetation, which consists of bluejack oak, turkey oak, longleaf pine, and slash pine. The understory includes broomsedge bluestem, lopsided indiagrass, saw palmetto, and pineland threeawn. In most areas, this soil is used for improved pasture, citrus crops, or homesite or urban development.

3 - Archbold fine sand - This soil is nearly level and moderately well drained. It is on low ridges on the flatwoods. The slope is 0 to 2 percent.

In 95 percent of areas mapped as Archbold fine sand, the Archbold soil and similar soils make up 82 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 18 percent of the mapped areas.

Typically, this soil has a surface layer of light gray fine sand about 2 inches thick. The underlying material to a depth of about 80 inches is white fine sand. In places, similar soils included in mapping have a black or very dark brown subsoil in the lower part of the horizon. Other similar soils, in some of the higher parts of the landscape, are well drained.

Dissimilar soils included in mapping are some unnamed, excessively drained soils in small areas. Also included are some small areas of unnamed, moderately well drained soils that have a black or very dark brown subsoil within 30 inches of the surface.

In most years, a seasonal high water table is at a depth of 42 to 60 inches for about 6 months, and it recedes to a depth of 60 to 80 inches during prolonged dry periods. Permeability is very rapid. The available water capacity is very low.

The natural vegetation consists of sand pines. The understory includes pineland threeawn, pricklypear cactus, and saw palmetto. In most areas, this soil has been left idle in "scrub" forest. A few areas are used for pasture or for homesite or urban development.

4 - Arents, nearly level - Arents consist of nearly level, heterogeneous soil material. This material has been excavated, reworked, and reshaped by earthmoving equipment. Arents are near urban centers, phosphate-mining operations, major highways and sanitary landfills.

Alafia River State Park

Soils Descriptions

Arents do not have an orderly sequence of soil layers. This map unit is not associated with or confined to a particular kind of soil. Arents are variable and contain discontinuous lenses, pockets, or streaks of black, gray, grayish brown, brown, or yellowish brown sandy or loamy fill material. The thickness of the fill material ranges from 30 to 80 inches or more.

Included in this map unit are areas used as sanitary landfills. Refuse consists of concrete, glass, metal, plastic, wood, and other materials and ranges in thickness from 2 to 10 feet. It is generally stratified with layers of soil material that were used as daily cover. These areas are identified on soil maps by the words "sanitary landfill." Also included are small areas of soil that has slope that ranges from 0 to 5 percent.

Most soil properties are variable. The depth to the seasonal high water table varies with the amount of fill material and artificial drainage. Permeability and the available water capacity vary widely from one area to another.

7 - Candler fine sand, 0 to 5 percent slopes - This soil is nearly level to gently sloping and excessively drained. It is on the uplands.

In 95 percent of the areas mapped as Candler fine sand, 0 to 5 percent slopes, the Candler soil and similar soils make up 82 to 96 percent of the mapped areas. Dissimilar soils make up 4 to 18 percent of the mapped areas.

Typically, this soil has a surface layer of dark gray fine sand about 6 inches thick. The upper part of the subsurface layer, to a depth of about 35 inches, is light yellowish brown fine sand. The middle part, to a depth of about 72 inches, is very pale brown fine sand. The lower part to a depth of about 80 inches is a mixture of very pale brown fine sand and strong brown loamy sand lamellae that are about one-sixteenth to one-quarter of an inch thick and 2 to 6 inches long. In some places, similar soils included in the mapped areas do not have lamellae in the lower part of the subsurface layer. Other similar soils, in some areas, have a subsurface layer that consists of 5 to 10 percent silt and clay; and some similar soils also included in mapping, in some of the lower parts of the landscape, are well drained.

Dissimilar soils included in mapping are Kendrick and Millhopper soils in small areas. Kendrick soils are well drained, and Millhopper soils are moderately well drained. Also included are areas of unnamed soils on upper side slopes that are well drained and have a sandy clay loam subsoil within 40 to 80 inches of the surface.

A seasonal high water table is at a depth of more than 80 inches. Permeability is rapid. The available water capacity is very low.

The natural vegetation consists of bluejack oak, Chapman oak, scrub live oak, and turkey oak. The understory includes indiangrass, hairy panicum, panicum, and running oak. In most areas, this Candler soil is used for citrus crops. In a few areas, it is used for pasture or for homesite or urban development.

16 - Felda fine sand, occasionally flooded - This soil is nearly level and poorly drained. It is on low terraces of major rivers and streams. It is flooded for very long periods following prolonged intense rains. The slope is 0 to 2 percent.

In 95 percent of the areas mapped as Felda fine sand, occasionally flooded, the Felda soil and similar soils make up 79 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 21

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percent of the mapped areas.

Typically, this soil has a surface layer of dark gray fine sand about 6 inches thick. The upper part of the subsurface layer, to a depth of about 12 inches, is grayish brown fine sand. The lower part, to a depth of about 38 inches, is gray, mottled sandy clay loam. The substratum to a depth of about 80- inches is light brownish gray, mottled loamy sand. Similar soils included in mapping have a subsoil within 20 inches of the surface. Other similar soils have a subsoil at a depth of more than 40 inches.

Dissimilar soils included in mapping are Basinger and Wabasso soils in small areas. Basinger soils are very poorly drained. Wabasso soils have a sandy subsoil above a loamy subsoil.

In most years, a seasonal high water table fluctuates from the soil surface to a depth of about 10 inches for 2 to 6 months. Permeability is rapid in the surface and subsurface layers and is moderate to moderately rapid in the subsoil. The available water capacity is moderate.

The natural vegetation consists of swamp maple, cabbage palm, slash pine, and sweetgum. The understory includes saw palmetto, pineland threeawn, and waxmyrtle. In most areas, this Fleda soil has been left idle in natural vegetation. In a few areas, it is used for pasture.

18 - Fort Meade loamy fine sand, 0 to 5 percent slopes - This soil is nearly level to gently sloping and well drained. It is on the uplands.

In 90 percent of the areas mapped as Fort Meade loamy fine sand, 0 to 5 percent slopes, the Fort Meade soil and similar soils make up 86 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 14 percent of the mapped areas.

Typically, this soil has a surface layer that is about 26 inches thick. The upper 7 inches is very dark gray loamy fine sand. The lower 19 inches is very dark grayish brown loamy sand. The upper part of the underlying material, to a depth of about 58 inches, is yellowish brown loamy sand. The lower part to a depth of about 80 inches is light yellowish brown loamy sand. Similar soils included in mapping are weakly indurated in the lower part of the underlying material. Other similar soils have a surface layer that is less than 10 inches thick.

Dissimilar soils included in mapping are Millhopper soils in small areas. These soils are moderately well drained.

A seasonal high water table is at a depth of more than 72 inches. Permeability is rapid. The available water capacity is low or moderate.

The natural vegetation consist of bluejack oak, live oak, turkey oak, and slash pine. The understory includes lopsided indiagrass, panicum, and pineland threeawn. In most areas, this Fort Meade soil is used for citrus crops, cultivated crops, or pasture. In a few areas, it is used for homesite or urban development.

21 - Immokalee fine sand - This soil is nearly level and poorly drained. It is on broad plains on the flatwoods. The slope is 0 to 2 percent.

In 80 percent of the areas mapped as Immokalee fine sand, the Immokalee soil and similar soils make up 77 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 23 percent of the mapped areas.

Typically, this soil has a surface layer of very dark gray fine sand about 8 inches thick. The

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subsurface layer, to a depth of 36 inches, is light gray fine sand. The upper part of the subsoil, to a depth of about 46 inches, is black fine sand. The middle part, to a depth of about 52 inches, is dark reddish brown fine sand. The lower part to a depth of about 80 inches is dark brown fine sand. Similar soils included in mapping have a subsoil that is at a depth of more than 50 inches. Other similar soils, in some areas, have a subsoil within 30 inches of the surface. Also, some included similar soils, in places, have a subsoil that is brown or dark brown.

Dissimilar soils included in mapping are Ona and Wabasso soils in small areas. Ona soils do not have a subsurface layer. Wabasso soils have a sandy subsoil above a loamy subsoil.

In most years, a seasonal high water table fluctuates from the soil surface to a depth of 10 inches for more than 2 months and recedes to a depth of 10 to 40 inches for 8 months or more. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The available water capacity is low.

The natural vegetation consists of longleaf pine and slash pine. The understory includes creeping bluestem, chalky bluestem, lopsided indiagrass, saw palmetto, pineland threeawn, and waxmyrtle. In most areas, this Immokalee soil is used for native pasture. In a few areas, it is used for cultivated crops, improved pasture, or citrus crops or for homesite or urban development.

25 - Lake fine sand, 0 to 5 percent slopes - This soil is nearly level to gently sloping and excessively drained. It is on the uplands.

In 95 percent of the areas mapped as Lake fine sand, 0 to 5 percent slopes, the Lake soil and similar soils make up 75 to 93 percent of the mapped areas. Dissimilar soils make up 7 to 25 percent of the mapped areas.

Typically, this soil has a surface layer of dark grayish brown fine sand about 4 inches thick. The underlying material extends to a depth of about 80 inches. The upper 24 inches is strong brown fine sand. The next 40 inches is reddish yellow fine sand. The lower 12 inches is strong brown fine sand. Similar soils included in mapping, in some places, are gray or light gray in the lower part of the underlying material. Other similar soils, in some areas, consist of less than 5 percent silt and clay in the underlying material. The included similar soils, in some of the lower parts of the landscape, are well drained.

Dissimilar soils included in mapping are Kendrick, Millhopper, and Tavares soils in small areas. Kendrick soils are well drained. Millhopper and Tavares soils are moderately well drained.

A seasonal high water table is at a depth of more than 80 inches. Permeability is rapid. The available water capacity is very low or low.

The natural vegetation consists of bluejack oak, Chapman oak, scrub oak, live oak, and turkey oak. The understory includes lopsided indiagrass, running oak, and pineland threeawn. In most areas, this Lake soil is used for citrus crops. In a few areas, it is used for pasture or for homesite or urban development.

27 - Malabar fine sand - This soil is nearly level and poorly drained. It is low-lying sloughs and shallow depressions on the flatwoods. The slope is 0 to 2 percent.

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In 80 percent of the areas mapped as Malabar fine sand, the Malabar soil and similar soils make up 79 to 92 percent of the mapped areas. Dissimilar soils make up 8 to 21 percent of the mapped areas.

Typically, this soil has a surface layer of dark gray fine sand about 4 inches thick. The subsurface layer, to a depth of about 12 inches, is light brownish gray fine sand. The upper part of the subsoil, to a depth of about 30 inches, is brownish yellow fine sand. The next layer, to a depth of about 50 inches, is pale brown fine sand. The lower part, to a depth of about 66 inches, is gray, mottled fine sandy loam. The substratum to a depth of about 80 inches is grayish brown fine sand. Similar soils included in mapping, in some areas, have a Btg horizon that is with 40 inches of the surface. Other similar soils, in some areas, do not have a Bw horizon; and in some areas are similar soils that have a subsoil that is brown or dark brown in the upper part.

Dissimilar soils included in mapping are Basinger and Wabasso soils in small areas. Basinger soils are very poorly drained. Wabasso soils have a dark color sandy subsoil below the subsurface layer. Also included are some unnamed soils that have a dark color sandy subsoil at a depth of more than 30 inches and do not have a loamy subsoil below the sandy subsoil.

In most years, a seasonal high water table fluctuates from the soil surface to a depth of about 10 inches for 2 to 6 months. Permeability is rapid in the surface and subsurface layers, slow in the subsoil, and moderately rapid or rapid in the substratum. The available water capacity is very low or low. The depressions are subject to shallow flooding during heavy rains.

The natural vegetation consists of cabbage palm longleaf pine, and slash pine. The understory includes broomsedge, bluestem, inkberry, maidencane, saw palmetto, and waxmyrtle. In most areas, this Malabar soil has been left idle in native vegetation. In some areas, the soil has been drained and is used for cultivated crops or pasture or for homesite or urban development.

29 - Myakka fine sand - This soil is nearly level and poorly drained. It is on broad plains on the flatwoods. The slope is 0 to 2 percent..

In 95 percent of the areas mapped as Myakka fine sand, the Myakka soil and similar soils make up 84 to 93 percent of the mapped areas. Dissimilar soils make up 7 to 16 percent of the mapped areas.

Typically, this soil has a surface layer of very dark gray fine sand about 5 inches thick. The subsurface layer, to a depth of about 20 inches, is gray fine sand. The upper part of the subsoil, to a depth of about 25 inches, is black fine sand. The middle part, to a depth of 30 inches, is dark reddish brown fine sand. The lower part, to a depth of about 38 inches, is brownish yellow fine sand. The upper part of the substratum, to a depth of about 55 inches, is very pale brown fine sand. The lower part to a depth of about 80 inches is dark grayish brown fine sand. Similar soils included in mapping, in some areas, have a surface layer that is more than 8 inches thick. Other similar soils, in some places, have a subsoil within 20 inches of the surface, and some included similar soils have a subsoil at a depth of more than 30 inches or have a brown or dark brown subsoil, or both.

Dissimilar soils included in mapping are Basinger and Wabasso soils in small areas. Basinger soils are very poorly drained. Wabacco soils have a loamy subsoil above a sandy subsoil.

In most years, a seasonal high water table fluctuates from the soil surface to a depth of 10

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inches for 1 to 4 months and recedes to a depth of 40 inches during prolonged dry periods. Permeability is rapid in the surface and subsurface layers, moderate or moderately rapid in the subsoil, and rapid in the substratum. The available water capacity is low.

The natural vegetation consists of longleaf pine and slash pine. The understory includes gallberry, running oak saw palmetto, pineland threeawn, and waxmyrtle. In most area, this Myakka soil is used for native pasture or cultivated crops. In a few areas, it is used for improved pasture or citrus crops, or it is used for homesite or urban development.

35 - Orlando fine sand, 0 to 5 percent slopes - This soil is nearly level to gently sloping and well drained. It is on the uplands.

In 95 percent of the areas mapped as Orlando fine sand, 0 to 5 percent slopes, the Orlando soil and similar soils make up 92 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 8 percent of the mapped areas.

Typically, this soil has a surface layer that is about 20 inches thick. The upper 8 inches is black fine sand. The lower 12 inches is very dark gray fine sand. The next layer, to a depth of about 22 inches, is dark grayish brown fine sand. The upper part of the underlying material, to a depth of about 60 inches, is yellowish brown fine sand. The lower part to a depth of about 80 inches is pale brown fine sand. Similar soils included in mapping, in some areas, have a surface layer that is less than 10 inches thick. Other similar soils, in some places, have a weakly indurated layer at a depth of more than 40 inches. Also, similar soils in some of the lower parts of the landscape are moderately well drained.

Dissimilar soils included in mapping are Seffner and Candler soils in small areas. Seffner soils are somewhat poorly drained. Candler soils are excessively drained.

A seasonal high water table is below a depth or more than 72 inches. Permeability is rapid. The available water capacity is low.

The natural vegetation consists of bluejack oak, live oak, turkey oak, and slash pine. The understory includes panicum, saw palmetto, and pineland threeawn. In most areas, this Orlando soil is used for cultivated crops or citrus crops. In a few areas, it is used for pasture or for homesite or urban development.

36 - Orsino fine sand, 0 to 5 percent slopes - This soil is nearly level to gently sloping and moderately well drained. It is on the uplands and along slope breaks to stream channels.

In 90 percent of the areas mapped as Orsino fine sand, 0 to 5 percent slopes, the Orsino soil and similar soils make up 83 to 99 percent of the mapped areas. Dissimilar soils make up to 17 percent of the mapped areas.

Typically, this soil has a surface layer of gray fine sand about 2 inches thick. The upper part of the subsurface layer, to a depth of about 15 inches, is light gray fine sand. The lower part, to a depth of about 31 inches, is white fine sand. The upper part of the subsoil, to a depth of about 48 inches, is brownish yellow and very dark grayish brown fine sand. The lower part, to a depth of 72 inches, is yellow, mottled fine sand. The substratum to a depth of about 80 inches is pale brown fine sand. Similar soils included in mapping, in some areas, are well drained. Other similar soils, in some of the lower parts of the landscape, have a brown or dark brown subsoil. Also, similar soils, in some areas, have a subsoil at a depth of 80 inches or

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more.

Dissimilar soils included in mapping are Archbold, Immokalee, and Millhopper soils in small areas. Archbold soils do not have a subsoil. Immokalee soils are poorly drained. Millhopper soils have a loamy subsoil.

In most year, a seasonal high water table is at a depth of 40 to 60 inches for more than 6 months and recedes to a depth of more than 60 inches during prolonged dry periods. Permeability is very rapid. The available water capacity is low or very low.

The natural vegetation consists of turkey oak, sand pine, and slash pine. The understory includes sand heath, pineland threeawn, saw palmetto, and pricklypear cactus. In most areas, this Orsino soil is used for pasture. In a few areas, it is used for homesite for urban development or is left in natural vegetation.

39 - Arents, very steep - This map consists of mounds of very steep, heterogenous soil material. These Arents are the accumulation of material from phosphate mining operations.

This map unit is not associated with or confined to a particular kind of soil. Arents do not have an orderly sequence of soil layers. They are variable and contain discontinuous lenses, pockets, or streaks of black, gray, grayish brown, brown, or yellowish brown sandy or loamy excavated material. The thickness of the excavated material ranges from 3 to 15 feet or more. Included in this map unit are small areas of water. Most soil properties of Arents are variable. The depth to the seasonal high water table will vary with the amount of excavated material and artificial drainage. The permeability and the available water capacity vary widely from one area to another.

Phosphate mining operations are inactive in most areas. A few areas have active operations. Present land use and slope precludes the use of this map unit for cultivated crops, pasture, commercial trees, or building site development. An individual assessment of each site is necessary to determine its potential for different uses.

41 - Pomello fine sand, 0 to 5 percent slopes - This soil is nearly level to gently sloping and moderately well drained. It is on low ridges on the flatwoods.

In 95 percent of the areas mapped as Pomello fine sand, 0 to 5 percent slopes, the Pomello soil and similar soils make up 75 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 25 percent of the mapped areas.

Typically, this soil has a surface layer of very dark gray fine sand about 3 inches thick. The subsurface layer, to a depth of about 43 inches, is light gray fine sand. The upper part of the subsoil, to a depth of about 46 inches, is dark brown fine sand. The lower part, to a depth of about 55 inches, is brown fine sand. The substratum to a depth of about 80 inches is grayish brown fine sand. Similar soils included in mapping, in some places, have a subsoil within 30 inches of the surface. Other similar soils, in some areas, have a subsoil at a depth of more than 50 inches, and similar soils, in some of the lower parts of the landscape, are somewhat poorly drained.

Dissimilar soils included in mapping are Immokalee and Smyrna soils in small areas. These soils are poorly drained.

In most years, a seasonal high water table is at a depth of 24 to 40 inches for 1 to 4 months

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and recedes to a depth of 40 to 60 inches during dry periods. Permeability is very rapid in the surface and subsurface layers, moderately rapid in the subsoil, and rapid in the substratum. The available water capacity is very low.

The natural vegetation consists of longleaf pine, sand pine, and slash pine. The understory includes creeping bluestem, lopsided indiagrass, running oak, saw palmetto, and pineland threeawn. In most areas, this Pomello soil is used for native pasture. In a few areas, it is used for citrus crops, cultivated crops, or improved pasture or for homesite or urban development.

46 - St. John's fine sand - This soil is nearly level and poorly drained. It is on low-lying plains on the flatwoods. The slope is 0 to 2 percent.

In 80 percent of the areas mapped as St. Johns fine sand, the St. Johns soil and similar soils make up 76 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 24 percent of the mapped areas.

Typically, the upper part of the surface layer is black fine sand about 6 inches thick. The lower part, to a depth of about 12 inches, is very dark grayish brown fine sand. The subsurface layer, to a depth of about 29 inches, is light brownish gray fine sand. The upper part of the subsoil, to a depth of about 36 inches, is black fine sand. The middle part, to a depth of about 46 inches, is dark reddish brown fine sand. The lower part, to a depth of about 50 inches, is dark yellowish brown fine sand. The substratum to a depth of about 80 inches is light brownish gray fine sand. Similar soils included in mapping, in some areas, have a surface layer that is less than 10 inches thick. Other similar soils, in some places, do not have a subsurface layer; and in some places, these included soils have a subsoil that is brown or dark brown.

Dissimilar soils included in mapping are Basinger soils in small areas. Basinger soils are very poorly drained. Also included are unnamed soils that have a surface layer that is 10 to 24 inches thick and have a loamy layer at a depth of more than 40 inches.

In most years, a seasonal high water table fluctuates from the soil surface to a depth of 15 inches for 2 to 6 months and recedes to a depth of 15 to 30 inches during prolonged dry periods. Permeability is rapid in the surface and subsurface layers, moderately slow or moderate in the subsoil, and rapid in the substratum. The available water capacity is moderate.

The natural vegetation consists of longleaf pine and slash pine. The understory includes gallberry, running oak, saw palmetto, pineland threeawn, and waxmyrtle. In most areas, this St. Johns soil is used for native pasture. In a few areas, it is used for cultivated crops or improved pasture or for homesite or urban development.

47 - Seffner fine sand - This soil is nearly level and somewhat poorly drained. It is on the rims of depressions and on broad, low ridges on the flatwoods. The slope is 0 to 2 percent.

In 95 percent of the areas mapped as Seffner fine sand, the Seffner soil and similar soils make up 84 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 16 percent of the mapped areas.

Typically, this soil has a surface layer that is about 13 inches thick. The upper 9 inches is very dark gray fine sand, and the lower 4 inches is very dark gray, mottled fine sand. A transitional layer, to a depth of about 21 inches, is dark gray, mottled fine sand. The upper part of the

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underlying material, to a depth of about 35 inches, is very pale brown, mottled fine sand. The middle part, to a depth of about 63 inches, is light gray, mottled fine sand. The lower part to a depth of 80 inches is white, mottled fine sand. Similar soils included in mapping, in some areas, have a surface layer that is less than 10 inches thick. Other similar soils, in some places, have a surface layer that is more than 24 inches thick; and in some of the higher parts of the landscape, the included similar soils are moderately well drained.

Dissimilar soils included in mapping are Ona and Smyrna soils in small areas. These soils are poorly drained.

In most years, a seasonal high water table is at a depth of 20 to 40 inches for 2 to 6 months and recedes to a depth of less than 60 inches during prolonged dry periods. Permeability is rapid. The available water capacity is low or moderate.

The natural vegetation consists of longleaf pine, slash pine, and laurel oak. The understory includes creeping bluestem, grassleaf goldaster, lopsided indiagrass, saw palmetto, and pineland threeawn. In most areas, this Seffner soil is used for cultivated crops or pasture or for homesite and urban development. In a few areas, it is used for citrus crops or has been left idle in natural vegetation.

50 - Slickens - This miscellaneous area consists of level, very poorly drained accumulations of fine-textured material from phosphate mining operations. Slickens generally are confined in specially constructed basins or holding ponds. The basins are designed to allow water to flow through a series of holding ponds and allow the slickens to settle out. These areas are ponded for very long periods. The slope is less than 1 percent.

Slickens do not have an orderly sequence of soil layers. Typically, the slickens are gray or light gray and have mottles in various hues, values, and chromas. Slickens are clayey and contain about 88 percent clay, 8 percent silt, and 4 percent sand. The clay mainly is montmorillonite but includes kaolinite, illite, and attapulgite. The clayey material is fluid or very fluid throughout except, in some places, the upper few inches are firm.

Included with this soil in mapping are Quartzipsamments in small areas. Also included are short, steep to very steep slopes of exposed encircling dikes.

In most years, undrained areas are ponded except during extended dry periods. A seasonal high water table fluctuates from the soil surface to a depth of about 10 inches. Permeability is very slow. The available water capacity is high.

Most areas in this map unit have been left idle. Slickens generally do not support vegetation. They also are too soft and boggy to support livestock. Slickens are not suited to cultivated crops, pasture, or commercial trees. An individual assessment of each site is necessary to determine its potential for different uses.

52 - Smyrna fine sand - This soil is nearly level and poorly drained. It is on broad, low-lying, convex swells on the flatwoods. The slope is 0 to 2 percent..

In 95 percent of the areas mapped as Smyrna fine sand, the Smyrna soil and similar soils make up 90 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 10 percent of the mapped areas.

Typically, the soil has a surface layer of very dark gray fine sand about 4 inches thick. The

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subsurface layer, to a depth of about 12 inches, is gray fine sand. The upper part of the subsoil, to a depth of about 15 inches, is dark brown fine sand. The lower part, to a depth of about 20 inches, is very dark grayish brown fine sand. The upper part of the substratum, to a depth of about 45 inches, is light brownish gray, mottled fine sand. The lower part to a depth of about 80 inches is brown fine sand. Similar soils included in mapping, in some areas, have a surface layer that is more than 8 inches thick. Other similar soils, in some areas, do not have a subsurface layer. In some places, the similar soils have subsoil at a depth of more than 20 inches.

Dissimilar soils included in mapping are Pomello and Wabasso soils in small areas. Pomello soils are moderately well drained. Wabasso soils have a loamy subsoil or sandy subsoil.

In most years, a seasonal high water table fluctuates from the soil surface to a depth of 10 inches for more than 2 months and recedes to a depth of 10 to 40 inches for 6 months or more. Permeability is rapid in the surface and subsurface layers, moderate or moderately rapid in the subsoil, and rapid in the substratum. The available water capacity is low.

The natural vegetation consists of longleaf pine and slash pine. The understory includes gallberry, running oak, saw palmetto, pineland threeawn, and waxmyrtle. In most areas, this Smyrna soil is used for native pasture. In a few areas, it is used for cultivated crops, improved pasture, or citrus crops or for homesite or urban development.

53 - Tavares-Millhopper fine sands, 0 to 5 percent slopes - The soils in this map unit are nearly level to gently sloping and moderately well drained. They are in low-lying areas on the uplands and on low ridges on the flatwoods.

In 95 percent of the areas of this map unit, Tavares-Millhopper fine sands, 0 to 5 percent slopes, and similar soils make up 87 to 99 percent of the mapped area, and dissimilar soils make up 1 to 13 percent of the mapped areas. Generally, the mapped areas consist of about 63 percent Tavares soil and similar soils and 26 percent Millhopper soil and similar soils.

Typically, the surface layer of the Tavares soil is dark grayish brown fine sand about 6 inches thick. The upper part of the underlying material, to a depth of about 32 inches, is pale brown fine sand. The middle part, to a depth of about 40 inches, is very pale brown fine sand. The lower part to a depth of about 80 inches is light gray fine sand. Similar soils included in mapping, in some areas, have a brown or dark brown layer in the lower part of the underlying material. Other similar soils, in some of the lower parts of the landscape, are somewhat poorly drained.

Typically, the surface layer of the Millhopper soil is dark gray fine sand about 4 inches thick. The upper part of the subsurface layer, to a depth of about 9 inches, is brown fine sand. The next layer, to a depth of about 25 inches, is light yellowish brown fine sand. The next layer, to a depth of about 48 inches, is light gray, mottled fine sand. The lower part, to a depth of about 57 inches, is light gray fine sand. The upper part of the subsoil, to a depth of about 62 inches, is very pale brown, mottled sandy clay loam. The lower part to a depth of about 80 inches is gray, mottled sandy clay loam. Similar soils included in mapping, in some areas, have a dark surface layer more than 10 inches thick.

Dissimilar soils which are included in this map unit are Candler, Myakka, and Smyrna soils in small areas. Candler soils are excessively drained. Myakka and Smyrna soils are poorly drained.

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Tavares soil has a seasonal high water table at a depth of 40 to 80 inches for more than 6 months, and it recedes to a depth of more than 80 inches during prolonged dry periods. Millhopper soil has a seasonal high water table at a depth of 40 to 60 inches for 1 to 4 months, and it recedes to a depth of 60 to 72 inches for 2 to 4 months. Permeability of Tavares soil is rapid. Permeability of Millhopper soil is rapid in the surface and subsurface layers and moderate in the subsoil. The available water capacity is very low in Tavares soil and low in Millhopper soil.

The natural vegetation consists of bluejack oak, turkey oak, live oak, and longleaf pine. The understory includes creeping bluestem, lopsided indiagrass, panicum, and pineland threeawn. In most areas, the soils in this map unit are used for pasture of homesite and urban development. In a few areas, they are used for cultivated crops or citrus crops or are left in natural vegetation.

54 - Tavares-Milhopper fine sands, 5 to 8 percent slopes - The soils in this map unit are moderately sloping and moderately well drained. They are on the uplands that border ponds, lakes, and streams. Tavares soil is on the summit and lower side slopes. Millhopper soil is on the upper side slopes.

In 80 percent of the areas of this map unit, Tavares-Milhopper fine sands, 5 to 8 percent slopes, and similar soils make up 78 to 99 percent of the mapped areas, and dissimilar soils make up 1 to 22 percent of the mapped areas. Generally, the mapped areas consist of about 70 percent Tavares soil and similar soils and 26 percent Millhopper soil.

Typically, the surface layer of the Tavares soil is very dark gray fine sand about 3 inches thick. The upper part of the underlying material, to a depth of about 21 inches, is light yellowish brown fine sand. The middle part, to a depth of about 40 inches, is pale brown fine sand. The lower part to a depth of about 80 inches is pale brown, mottled fine sand. Similar soils included in mapping, in some areas, have a surface layer more than 9 inches thick.

Typically, the surface layer of the Millhopper soil is dark grayish brown fine sand about 5 inches thick. The upper part of the subsurface layer, to a depth of about 26 inches, is light yellowish brown fine sand. The middle part, to a depth of about 38 inches, is very pale brown, mottled fine sand. The lower part, to a depth of about 54 inches, is white fine sand. The upper part of the subsoil, to a depth of about 64 inches, is light yellowish brown, mottled loamy fine sand. The lower part to a depth of about 80 inches is pale brown, mottled fine sandy loam.

Dissimilar soils included in mapping are Candler soils in small areas. These soils are excessively drained.

Tavares soil has a seasonal high water table at a depth of 40 to 80 inches for more than 6 months, and it recedes to a depth of more than 80 inches during prolonged dry periods. Millhopper soil has a seasonal high water table at a depth of 40 to 60 inches for 1 to 4 months, and it recedes to a depth of 60 to 72 inches for 2 to 4 months. Permeability of Tavares soil is rapid. Permeability of Millhopper soil is rapid in the surface and subsurface layers and moderately rapid or moderate in the subsoil. The available water capacity is very low in Tavares soil and low in Millhopper soil.

The natural vegetation consists of bluejack oak, turkey oak, live oak, and longleaf pine. The understory includes creeping bluestem, lopsided indiagrass, panicum, and pineland

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threeawn. In most areas, the soils in this map unit are used as pasture or for homesites or urban development. In a few areas, they are used for citrus crops or are left in natural vegetation.

60 - Winder fine sand, frequently flooded - This soil is nearly level and poorly drained. It is on the flood plains. This soil is flooded for very long periods following prolonged intense rain. Many areas are isolated by stream channels and steep escarpments. The slope is 0 to 2 percent.

In 80 percent of the areas mapped as Winder fine sand, frequently flooded, the Winder soil and similar soils make up 76 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 24 percent of the mapped areas.

Typically, this soil has a surface layer of black fine sand about 5 inches thick. The subsurface layer, to a depth of about 14 inches, is grayish brown fine sand. The upper part of the subsoil, to a depth of about 18 inches, is gray sandy clay loam and white fine sand. The lower part of the subsoil, to a depth of about 34 inches, is grayish brown, mottled sandy clay loam. The substratum, to a depth of about 80 inches, is light brownish gray fine sand. Similar soils included in mapping, in some areas, have a subsoil at a depth of more than 20 inches. Other similar soils, in some areas, have a surface layer that is more than 8 inches thick or is stratified, or both. In some places are similar soils that have a thin, discontinuous strata of fragmented limestone in the upper part of the subsoil.

Dissimilar soils included in mapping are Samsula, Basinger, and Chobee soils in small areas. These soils are very poorly drained.

In most years, a seasonal high water table fluctuates from the soil surface to a depth of about 10 inches for 2 to 6 months. Permeability is rapid in the surface and subsurface layers, slow or very slow in the subsoil, and rapid in the substratum. The available water capacity is moderate.

The natural vegetation consists of Coastal Plain willow, red maple, cabbage palm, and sweetgum. The understory includes buttonbush, maidencane, sawgrass, smartweed, and sedges. In most areas, this Winder soil has been left idle in natural vegetation. In a few areas, it is used as pasture.

61 - Zolfo fine sand - This soil is nearly level and somewhat poorly drained. It is on broad, low ridges on the flatwoods. The slope is 0 to 2 percent.

In 95 percent of the areas mapped as Zolfo fine sand, the Zolfo soil and similar soils make up 88 to 99 percent of the mapped areas. Dissimilar soils make up 1 to 12 percent of the mapped areas.

Typically, this soil has a surface layer of very dark gray fine sand about 3 inches thick. The upper part of the subsurface layer, to a depth of about 15 inches, is grayish brown, mottled fine sand. The middle part, to a depth of about 51 inches, is light gray, mottled fine sand. The lower part, to a depth of about 60 inches, is grayish brown fine sand. The subsoil to a depth of about 80 inches is dark brown fine sand. Similar soils included in mapping, in some places, have a subsoil that extends to a depth of more than 80 inches. Other similar soils, in some of the higher parts of the landscape, are moderately well drained.

Alafia River State Park

Soils Descriptions

Dissimilar soils included in mapping are Malabar, Millhopper, Myakka, and Smyrna soils in small areas. Malabar, Myakka, and Smyrna soils are poorly drained. Millhopper soils are moderately well drained.

In most years, a seasonal high water table is at a depth of 24 to 40 inches for more than 2 to 6 months and recedes to a depth of 60 inches during prolonged dry periods. Permeability is rapid in the surface and subsurface layers and moderate in the subsoil. The available water capacity is low.

The natural vegetation consists of live oak, turkey oak, longleaf pine, and slash pine. The understory includes broomsedge, bluestem, lopsided indiagrass, saw palmetto, and pineland threeawn. In most areas, this Zolfo soil is used for citrus crops or pasture or for homesite or urban development. In a few areas, it is used for cultivated crops or is left in natural vegetation.

Addendum 4—Plant And Animal List

Alafia River State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
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PTERIDOPHYTES

Ebony spleenwort	<i>Asplenium platyneuron</i>	
Carolina mosquito fern	<i>Azolla caroliniana</i>	
Swamp fern	<i>Blechnum serrulatum</i>	
Southern grape-fern	<i>Botrychium biternatum</i>	
Florida shield fern	<i>Dryopteris ludoviciana</i>	
Flakelet fern; Bramble fern	<i>Hypolepis repens</i>	
Japanese climbing fern *	<i>Lygodium japonicum</i>	
Mariana maiden fern *	<i>Macrothelypteris torresiana</i>	
Boston fern; Sword Boston fern	<i>Nephrolepis exaltata</i>	
Adder's tongue fern	<i>Ophioglossum petiolatum</i>	
Golden club	<i>Orontium aquaticum</i>	
Cinnamon fern	<i>Osmunda cinnamomea</i>	25
Royal fern	<i>Osmunda regalis</i>	25
Comb polypoidy	<i>Pecluma ptilodon</i> var. <i>caespitosa</i>	
Golden polypody	<i>Phlebodium aureum</i>	
Resurrection fern	<i>Pleopeltis polypodioides</i> var. <i>michauxianum</i>	
Whisk-fern	<i>Psilotum nudum</i>	
Bracken fern	<i>Pteridium aquilinum</i>	
Meadow spike-moss	<i>Selaginella apoda</i>	
Downy shield fern	<i>Thelypteris dentata</i>	
Willdenow's maiden fern	<i>Thelypteris interrupta</i>	
Widespread maiden fern	<i>Thelypteris kunthii</i>	
Marsh fern	<i>Thelypteris palustris</i>	
Shoestring fern	<i>Vittaria lineata</i>	
Netted chain fern	<i>Woodwardia areolata</i>	
Virginia chain fern	<i>Woodwardia virginica</i>	

GYMNOSPERMS

Red cedar	<i>Juniperus virginiana</i>	
Slash pine	<i>Pinus elliottii</i>	
Bald-cypress **	<i>Taxodium distichum</i>	

MONOCOTS

Bluestems; Broomsedges	<i>Andropogon</i> sp.	
Green silkyscale	<i>Anthaenantia villosa</i>	
Nodding nixie	<i>Aptera aphylla</i>	
Jack-in-the pulpit	<i>Arisaema triphyllum</i>	
Bottlebrush threeawn	<i>Aristida spiciformis</i>	
Common carpetgrass	<i>Axonopus affinis</i>	
Big carpetgrass	<i>Axonopus fissifolius</i>	
Golden canna	<i>Canna flaccida</i>	
Sedge	<i>Carex albolutescens</i>	
Sedge	<i>Carex godfreyi</i>	
Brome-like sedge	<i>Carex bromoides</i>	
Hop sedge	<i>Carex lupulina</i>	

* Non-native Species

Alafia River State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
Mohr's sedge	<i>Carex atlantica</i> subsp. <i>capillacea</i>	
Shiny chasmanthium	<i>Chasmanthium nitidum</i>	
Day-flower	<i>Commelina diffusa</i>	
Seven-sisters	<i>Crinum americanum</i>	
Bermudagrass *	<i>Cynodon dactylon</i>	
Poorland flatsedge	<i>Cyperus compressus</i>	
Baldwin's flatsedge	<i>Cyperus croceus</i>	
Marshland flatsedge	<i>Cyperus distinctus</i>	
Sheathed flatsedge	<i>Cyperus haspan</i>	
Epiphytic flatsedge	<i>Cyperus lanceolatus</i>	
Rusty flatsedge	<i>Cyperus odoratus</i>	
Many-spike flatsedge	<i>Cyperus polystachyos</i>	
Pine barren flatsedge	<i>Cyperus retrorsus</i>	
Straw-color flatsedge	<i>Cyperus strigosus</i>	
Tropica flatsedge	<i>Cyperus surinamensis</i>	
Four-angle flatsedge	<i>Cyperus tetragonus</i>	
Needle-leaf witchgrass	<i>Dichantherium aciculare</i>	
Variable witchgrass	<i>Dichantherium commutatum</i>	
Cypress witchgrass	<i>Dichantherium dichotomum</i>	
Lax-flower witchgrass	<i>Dichantherium laxiflorum</i>	
Hemlock witchgrass	<i>Dichantherium portoricense</i>	
Southern crab grass	<i>Digitaria ciliaris</i>	
Reclining crabgrass	<i>Digitaria pentzii</i>	
Blanket crabgrass	<i>Digitaria serotina</i>	
Florida yam	<i>Dioscorea floridana</i>	
Water hyacinth *	<i>Eichhornia crassipes</i>	
Road grass	<i>Eleocharis baldwinii</i>	
Yellow spikerush	<i>Eleocharis flavescens</i>	
Indian goosegrass *	<i>Eleusine indica</i>	
Butterfly orchid	<i>Encyclia tampensis</i>	21, 28
Greenfly orchid	<i>Epidendrum conopseum</i>	21, 28
Purple lovegrass	<i>Eragrostis spectabilis</i>	
Slendy fimbry	<i>Fimbristylis autumnalis</i>	
Dwarf umbrellasedge	<i>Fuirena pumila</i>	
Green-cross orchid	<i>Habenaria floribunda</i>	
Needleroot airplant orchid	<i>Harrisella porrecta</i>	
Georgia spider-lily	<i>Hymenocallis crassifolia</i>	
Alligator-lily	<i>Hymenocallis palmeri</i>	
Yellow star-grass	<i>Hypoxis curtissii</i>	
Dixie iris; Prairie iris	<i>Iris hexagona</i>	
Leathery rush	<i>Juncus coriaceus</i>	
Forked rush	<i>Juncus dichotomus</i>	
Soft rush	<i>Juncus effusus</i> subsp. <i>solutus</i>	
Grass-leaf rush	<i>Juncus marginatus</i>	
Many-head rush	<i>Juncus polycephalus</i>	

* Non-native Species

Alafia River State Park

Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for designated species)
Needle-pod rush	<i>Juncus scirpoides</i>	
Short-leaf flatsedge	<i>Kyllinga brevifolia</i>	
Slender-leaved flatsedge	<i>Kyllinga pumila</i>	
Bloodroot	<i>Lachnanthes caroliana</i>	
Whitehead bogbutton	<i>Lachnocaulon anceps</i>	
Southern cutgrass	<i>Leersia hexandra</i>	
Lesser duckweed	<i>Lemna aequinoctialis</i>	
Little duckweed	<i>Lemna obscura</i>	
Valdivia duckweed	<i>Lemna valdiviana</i>	
Southern Watergrass	<i>Luziola fluitans</i>	
Parrot's-feather *	<i>Myriophyllum aquaticum</i>	
Britton's beargrass **	<i>Nolina brittoniana</i>	14
Woodsgrass	<i>Oplismenus hirtellus</i>	
Beaked panicum	<i>Panicum anceps</i>	
Maidencane	<i>Panicum hemitomom</i>	
Torpedograss	<i>Panicum repens</i>	
Redtop panicum	<i>Panicum rigidulum</i>	
Warty panicum	<i>Panicum verrucosum</i>	
Switchgrass	<i>Panicum virgatum</i>	
Sour paspalum; Sour crowngrass	<i>Paspalum conjugatum</i>	
Seashore paspalum	<i>Paspalum distichum</i>	
Bahia grass *	<i>Paspalum notatum</i>	
Thin paspalum	<i>Paspalum setaceum</i>	
Vasey grass *	<i>Paspalum urvillei</i>	
Spoonflower	<i>Peltandra sagittifolia</i>	
Green arum	<i>Peltandra virginica</i>	
Savannah panicum	<i>Phanopyrum gymnocarpon</i>	
Pickerelweed	<i>Pontederia cordata</i>	
Needle palm	<i>Rhapidophyllum hystrix</i>	
Falling beak sedge	<i>Rhynchospora caduca</i>	
Bunched beak sedge	<i>Rhynchospora cephalantha</i>	
Beaksedge	<i>Rhynchospora chalarocephala</i>	
Fringed beaksedge	<i>Rhynchospora ciliaris</i>	
Short bristle horned beaksedge	<i>Rhynchospora corniculata</i>	
Fasciculate beak sedge	<i>Rhynchospora fascicularis</i>	
Millet beaksedge	<i>Rhynchospora miliacea</i>	
Cabbage palm	<i>Sabal palmetto</i>	
Silver plumegrass	<i>Saccharum alopecuroides</i>	
India cupscale *	<i>Sacciolepis indica</i>	
American cupscale	<i>Sacciolepis striata</i>	
Little bluestem	<i>Schizachyrium scoparium</i>	
Few-flower nutrush	<i>Scleria ciliata</i>	
Netted nutrush	<i>Scleria reticularis</i>	
Tall nutgrass	<i>Scleria triglomerata</i>	
Saw palmetto	<i>Serenoa repens</i>	

* Non-native Species

Alafia River State Park

Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for designated species)
Coastal bristlegrass	<i>Setaria corrugata</i>	
Yellow bristlegrass	<i>Setaria parviflora</i>	
Earleaf greenbrier	<i>Smilax auriculata</i>	
Saw greenbrier	<i>Smilax bona-nox</i>	
Saw-brier	<i>Smilax glauca</i>	
Laurel greenbrier	<i>Smilax laurifolia</i>	
Wild sarsaparilla	<i>Smilax pumila</i>	
Coral greenbrier	<i>Smilax walteri</i>	
Indian grass	<i>Sorghastrum</i> sp.	
American burr-reed	<i>Sparganium americanum</i>	
Nodding ladies' tresses	<i>Spiranthes cernua</i>	
Smutgrass *	<i>Sporobolus indicus</i>	
Bantam-buttons	<i>Syngonanthus flavidulus</i>	
Wild pine; Air plant	<i>Tillandsia fasciculata</i>	26, 28, 33
Ball-moss	<i>Tillandsia recurvata</i>	
Wild plant; Air plant	<i>Tillandsia setacea</i>	
Wild plant; Air plant	<i>Tillandsia simulata</i>	
Spanish moss	<i>Tillandsia usneoides</i>	
Spreading air plant	<i>Tillandsia utriculata</i>	26, 28, 33
Purpletop tridens	<i>Tridens flavus</i> var. <i>flavus</i>	
Narrow-leaved cattail	<i>Typha latifolia</i>	
Paragrass *	<i>Urochloa mutica</i>	
Short-leaf yellow-eyed grass	<i>Xyris brevifolia</i>	
Carolina yellow-eyed grass	<i>Xyris caroliniana</i>	
Elliott's yellow-eyed grass	<i>Xyris elliotii</i>	
Richard's yellow-eyed grass	<i>Xyris jupicai</i>	
Tall yellow-eyed grass	<i>Xyris platylepis</i>	
DICOTS		
Three-seeded mercury	<i>Acalypha gracilens</i>	
Red maple	<i>Acer rubrum</i>	
Creeping spotflower	<i>Acmella oppositifolia</i> var. <i>repens</i>	
Shy-leaf	<i>Aeschynomene americana</i>	
Small-leaf thoroughwort	<i>Ageratina jucunda</i>	
Alyce-clover	<i>Alysicarpus vaginalis</i>	
Common ragweed	<i>Ambrosia artemisiifolia</i>	
Bastard indigo	<i>Amorpha fruticosa</i>	
Pepper vine	<i>Ampelopsis arborea</i>	
Groundnut	<i>Apios americana</i>	
Devil's walking stick	<i>Aralia spinosa</i>	
Snake root	<i>Aristolochia serpentaria</i>	
Aquatic milkweed	<i>Asclepias perennis</i>	
Flag pawpaw	<i>Asimina obovata</i>	
Small-fruited pawpas	<i>Asimina parviflora</i>	
Pawpaw	<i>Asimina reticulata</i>	
Silverling	<i>Baccharis glomeruliflora</i>	

* Non-native Species

Alafia River State Park

Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for designated species)
Saltbush	<i>Baccharis halimifolia</i>	
Rattan vine; Supplejack	<i>Berchemia scandens</i>	
Spanish needles	<i>Bidens bipinnata</i>	
Begger-ticks	<i>Bidens mitis</i>	
False nettle	<i>Boehmeria cylindrica</i>	
Blueheart	<i>Buchnera americana</i>	
American beautyberry	<i>Callicarpa americana</i>	
Trumpet creeper	<i>Campsis radicans</i>	
Hairy bittergrass *	<i>Cardamine hirsuta</i>	
Bluebeech; American hornbeam	<i>Carpinus caroliniana</i>	
Water hickory	<i>Carya aquatica</i>	
Pignut hickory	<i>Carya glabra</i>	
Hackberry; Sugarberry	<i>Celtis laevigata</i>	
Coinwort	<i>Centella asiatica</i>	
Butterfly pea	<i>Centrosema virginianum</i>	
Buttonbush	<i>Cephalanthus occidentalis</i>	
Hornwort	<i>Ceratophyllum sp.</i>	
Partridge pea	<i>Chamaecrista fasciculata</i>	
Chapman's pea	<i>Chapmannia floridana</i>	
Mexican tea*	<i>Chenopodium ambrosioides</i>	
Fringe tree	<i>Chionanthus virginicus</i>	
Florida golden-aster **	<i>Chrysopsis floridana</i>	14
Water hemlock	<i>Cicuta maculata</i>	
Camphor tree *	<i>Cinnamomum camphora</i>	
Purple thistle	<i>Cirsium horridulum</i>	
Tangerine *	<i>Citrus reticulata</i>	
Grapefruit, sweet orange *	<i>Citrus xaurantium</i>	
Swamp leatherflower	<i>Clematis crispa</i>	
Virgin's bower	<i>Clematis virginiana</i>	
Blue mistflower	<i>Conoclinium coelestinum</i>	
Short-leaved rosemary **	<i>Conradina brevifolia</i>	14
Sneezeweed	<i>Conyza canadensis var. pusilla</i>	
Stiff cornel; swamp dogwood	<i>Cornus foemina</i>	
Florida coreopsis	<i>Coreopsis floridana</i>	
Dogwood	<i>Cornus florida</i>	
Rabbit-bells; Rattlebox	<i>Crotalaria purshii</i>	
Rabbit-bells	<i>Crotalaria rotundifolia</i>	
Wooly croton	<i>Croton glandulosus</i>	
Love vine; dodder	<i>Cuscuta sp.</i>	
Zarabacoa comun	<i>Desmodium incanum</i>	
Panicled tick-trefoil	<i>Desmodium paniculatum</i>	
Beggar's ticks *	<i>Desmodium triflorum</i>	
Carolina ponysfoot	<i>Dichondra caroliniensis</i>	
Poor joe	<i>Diodia virginiana</i>	
Persimmon	<i>Diospyros virginiana</i>	

* Non-native Species

Alafia River State Park

Plants

Common Name	Scientific Name	Primary Habitat Codes (for designated species)
West Indian chickweed	<i>Drymaria cordata</i>	
Swamp twinflower	<i>Dyschoriste humistrata</i>	
Yerba de-tago	<i>Eclipta alba</i>	
Tall elephantsfoot	<i>Elephantopus elatus</i>	
Carolina scalystem	<i>Elytraria caroliniensis</i> var. <i>caroliniensis</i>	
American burnweed	<i>Erechtites hieracifolia</i>	
Southern fleabane	<i>Erigeron quercifolius</i>	
Snakeroot	<i>Eryngium prostratum</i>	
Southeastern coral bean	<i>Erythrina herbacea</i>	
Hearts-a-busting	<i>Euonymus americana</i>	
Dog fennel	<i>Eupatorium capillifolium</i>	
Mohr's thoroughwort	<i>Eupatorium mohrii</i>	
False hoarhound	<i>Eupatorium rotundifolium</i>	
Slender grassleaf goldenrod	<i>Euthamia caroliniana</i>	
Water ash; pop ash	<i>Fraxinus caroliniana</i>	
Pumpkin ash	<i>Fraxinus pensylvanica</i>	
Elliott's milk pea	<i>Galactia elliottii</i>	
Milkpea	<i>Galactia volubilis</i>	
Milk pea	<i>Galactia volubilis</i>	
Hairy bedstraw	<i>Galium pilosum</i>	
Stiff marsh bedstraw	<i>Galium tinctorium</i>	
Garberia **	<i>Garberia heterophylla</i>	14
Dwarf huckleberry	<i>Gaylussacia dumosa</i>	
Yellow jessamine	<i>Gelsemium sempervirens</i>	
Cranesbill	<i>Geranium carolinianum</i>	
Water locust	<i>Gleditsia aquatica</i>	
Sweet everlasting	<i>Pseudognaphalium obtusifolium</i>	
Loblolly bay	<i>Gordonia lasianthus</i>	
Scrub hedge-hyssop	<i>Gratiola virginiana</i>	
Witch hazel	<i>Hamamelis virginiana</i>	
Innocence	<i>Hedyotis procumbens</i>	
Hedyotis	<i>Hedyotis uniflora</i>	
Camphor weed	<i>Heterotheca subaxillaris</i>	
Hawkweed	<i>Hieracium gronovii</i>	
Manyflower Marshpennywort	<i>Hydrocotyle umbellata</i>	
Whorled marsh pennywort	<i>Hydrocotyle verticillata</i>	
Sky flower	<i>Hydrolea corymbosum</i>	
Indian swampweed	<i>Hygrophila polysperma</i>	
St. John's-wort	<i>Hypericum cistifolium</i>	
St. Andrew's-cross	<i>Hypericum hypericoides</i>	
Dwarf St. John's-wort	<i>Hypericum mutilum</i>	
St. John's-wort	<i>Hypericum myrtifolium</i>	
St. Andrew's-cross	<i>Hypericum tetrapetalum</i>	
Musky mint; Cluster bushmint	<i>Hyptis alata</i>	
Tropical bittermint *	<i>Hyptis mutabilis</i>	

* Non-native Species

Alafia River State Park

Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for designated species)
John Charles bittermint *	<i>Hyptis verticillata</i>	
Carolina holly	<i>Ilex ambigua</i>	
Dahoon holly	<i>Ilex cassine</i>	
Possum haw; Deciduous holly	<i>Ilex decidua</i>	
Inkberry; Gallberry	<i>Ilex glabra</i>	
Hairy indigo *	<i>Indigofera hirsuta</i>	
Morning glory	<i>Ipomoea cordatotriloba</i>	
Virginia willow	<i>Itea virginica</i>	
Looseflower waterwillow	<i>Justicia ovata</i>	
Japanese clover *	<i>Kummerowia striata</i>	
Wild lettuce	<i>Lactuca floridana</i>	
Grass-leaf lettuce	<i>Lactuca graminifolia</i>	
Piedmont pinweed	<i>Lechea torreyi</i>	
Poorman's pepper	<i>Lepidium virginicum</i>	
Florida blazing star **	<i>Liatris ohlingerae</i>	14
Gopher apple	<i>Licania michauxii</i>	
Blue toadflax	<i>Linaria canadensis</i>	
Malaysian false pimpernel *	<i>Lindernia crustacea</i>	
Round-leaved false pimpernel	<i>Lindernia grandiflora</i>	
Sweetgum	<i>Liquidambar styraciflua</i>	
Cardinal flower	<i>Lobelia cardinalis</i>	
Coral honeysuckle	<i>Lonicera sempervirens</i>	
Upright primrose-willow	<i>Ludwigia decurrens</i>	
River primrose-willow	<i>Ludwigia leptocarpa</i>	
Seaside primrose-willow	<i>Ludwigia maritima</i>	
Mexican primrose-willow	<i>Ludwigia octovalvis</i>	
Marsh primrose-willow	<i>Ludwigia palustris</i>	
Primrose-willow	<i>Ludwigia peruviana</i>	
Hairy primrose-willow	<i>Ludwigia pilosa</i>	
Creeping primrose-willow	<i>Ludwigia repens</i>	
Shrubby primrose-willow	<i>Ludwigia suffruticosa</i>	
Water hoarhound	<i>Lycopus rubellus</i>	
Staggerbush	<i>Lyonia fruticosa</i>	
Maleberry	<i>Lyonia ligustrina</i> var. <i>foliosiflora</i>	
Fetterbush	<i>Lyonia lucida</i>	
Southern magnolia	<i>Magnolia grandiflora</i>	
Sweet bay	<i>Magnolia virginiana</i>	
Angular fruit milkvine	<i>Matelea gonocarpa</i>	
Snow squarestem	<i>Melanthera nivea</i>	
Creeping cucumber	<i>Melothria pendula</i>	
Shade mulflower	<i>Micranthemum glomeratum</i>	
Hemp vine	<i>Mikania cordifolia</i>	
Climbing hempvine	<i>Mikania scandens</i>	
American partridge berry	<i>Mitchella repens</i>	
Miterwort	<i>Mitreola petiolata</i>	

* Non-native Species

Alafia River State Park

Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for designated species)
Spotted beebalm	<i>Monarda punctata</i>	
Red mulberry	<i>Morus rubra</i>	
Naked-stem dewflower *	<i>Murdannia nudiflora</i>	
Wax-myrtle; bayberry	<i>Myrica cerifera</i>	
Lotus lily; American lotus	<i>Nuphar lutea</i> subsp. <i>advena</i>	
Swamp tupelo	<i>Nyssa sylvatica</i> var. <i>biflora</i>	
Pine-barren white-top aster	<i>Oclemena reticulata</i>	
Cut-leaf evening primrose	<i>Oenothera laciniata</i>	
Pricklypear	<i>Opuntia humifusa</i>	
Wild olive	<i>Osmanthus americanus</i>	
Common yellow woodsorrel	<i>Oxalis corniculata</i>	
Butterweed	<i>Packera glabella</i>	
Florida pellitory-of-the-wall	<i>Parietaria floridana</i>	
Virginia creeper	<i>Parthenocissus quinquefolia</i>	
Purple passionflower	<i>Passiflora incarnata</i>	
Redbay	<i>Persea borbonia</i>	
Swamp bay	<i>Persea palustris</i>	
Mistletoe	<i>Phoradendron serotinum</i>	
Red chokeberry	<i>Photinia pyrifolia</i>	
Chamber-bitter *	<i>Phyllanthus urinaria</i>	
Cut-leaf ground cherry	<i>Physalis angulata</i>	
Slender-leaf false dragonhead	<i>Physostegia leptophylla</i>	
Pokeberry; pokeweed	<i>Phytolacca americana</i>	
Grass-leaved golden aster	<i>Pityopsis graminifolia</i>	
Stinking camphorweed	<i>Pluchea foetida</i>	
Rosy camphorweed	<i>Pluchea longifolia</i>	
Scrubby camphorweed	<i>Pluchea odorata</i>	
Milkwort	<i>Polygala grandiflora</i>	
Sandhill wireweed **	<i>Polygonella robusta</i>	
Jointweed **	<i>Polygonella polygama</i>	
Mild water-pepper	<i>Polygonum hydropiperoides</i>	
Dotted smartweed	<i>Polygonum punctatum</i>	
Smartweed	<i>Polygonum setaceum</i>	
Rustweed	<i>Polypremum procumbens</i>	
Marsh mermaidweed	<i>Proserpinaca palustris</i>	
Carolina laurelcherry	<i>Prunus caroliniana</i>	
Black cherry	<i>Prunus serotina</i>	
Flatwoods plum	<i>Prunus umbellata</i>	
Rabbit tobacco; black root	<i>Pterocaulon pycnostachyum</i>	
Mock bishop's weed	<i>Ptilimnium capillaceum</i>	
Chapman's oak	<i>Quercus chapmanii</i>	
Sand live oak	<i>Quercus geminata</i>	
Laurel oak	<i>Quercus laurifolia</i>	
Water oak	<i>Quercus nigra</i>	
Live oak	<i>Quercus virginiana</i>	

* Non-native Species

Alafia River State Park

Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for designated species)
Pale meadow beauty	<i>Rhexia mariana</i>	
Meadow beauty	<i>Rhexia petiolata</i>	
Swamp honeysuckle	<i>Rhododendron viscosum</i>	
Winged sumac	<i>Rhus copallina</i>	
One-leaf rhynchosia	<i>Rhynchosia michauxii</i>	
Tropical Mexican-clover*	<i>Richardia brasiliensis</i>	
Rouge plant	<i>Rivina humilis</i>	
Blackberry	<i>Rubus argutus</i>	
Carolina wild petunia	<i>Ruellia caroliniensis</i>	
Swamp dock	<i>Rumex verticillatus</i>	
Coastal rosegentian	<i>Sabatia calycina</i>	
Carolina willow	<i>Salix caroliniana</i>	
Lyre-leaf sage	<i>Salvia lyrata</i>	
Florida key sedge	<i>Salvia riparia</i>	
Elderberry	<i>Sambucus nigra</i> subsp. <i>canadensis</i>	
Pineland pimpernel	<i>Samolus verlanderi</i> var. <i>parviflorus</i>	
Snakeroot	<i>Sanicula canadensis</i>	
Lizard's-tail	<i>Saururus cernuus</i>	
Sweet broom	<i>Scoparia dulcis</i>	
Florid scrub skullcap	<i>Scutellaria arenicola</i>	
Rough skullcap	<i>Scutellaria integrifolia</i>	
Sicklepod *	<i>Senna obtusifolia</i>	
Coffee senna	<i>Senna occidentalis</i>	
White-topped aster	<i>Seriocarpus tortifolius</i>	
Bladderpod	<i>Sesbania vesicaria</i>	
Florida bully	<i>Sideroxylon reclinatum</i>	
Tough bully	<i>Sideroxylon tenax</i>	
Common wireweed	<i>Sida acuta</i>	
Common nightshade	<i>Solanum americanum</i>	
Soda-apple; Cockroach-berry	<i>Solanum capsicoides</i>	
Hollow goldenrod	<i>Solidago fistulosa</i>	
Wand goldenrod	<i>Solidago stricta</i>	
Spiny-leaf sow-thistle *	<i>Sonchus asper</i>	
Common chickweed	<i>Stellaria media</i>	
Queen's delight	<i>Stillingia sylvatica</i>	
American snowbell	<i>Styrax americana</i>	
Climbing aster	<i>Symphyotrichum carolinianum</i>	
Rice-button aster	<i>Symphyotrichum dumosum</i>	
Saltmarsh aster	<i>Symphyotrichum subulatum</i>	
Aster	<i>Symphyotrichu undulatum</i>	
Poison ivy	<i>Toxicodendron radicans</i>	
Marsh St. John's wort	<i>Triadenum virginicum</i>	
White clover	<i>Trifolium repens</i>	
Five-stamen burrbark	<i>Triumfetta pentandra</i>	
American elm	<i>Ulmus americana</i>	

* Non-native Species

Alafia River State Park

Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for designated species)
Caesar-weed *	<i>Urena lobata</i>	
Tree sparkleberry	<i>Vaccinium arboreum</i>	
Highbush blueberry	<i>Vaccinium corymbosum</i>	
Shiny blueberry	<i>Vaccinium myrsinites</i>	
Deerberry	<i>Vaccinium stamineum</i>	
Florida valerian	<i>Valeriana scandens</i>	
Frostweed	<i>Verbesina virginica</i>	
Possum haw	<i>Viburnum nudum</i>	
Walter's viburnum	<i>Viburnum obovatum</i>	
Long-leaf violet	<i>Viola lanceolata</i>	
Swamp white violet	<i>Viola primulifolia</i>	
Florida violet	<i>Viola sororia</i>	
Summer grape	<i>Vitis aestivalis</i>	
Southern fox grape	<i>Vitis rotundifolia</i>	
Tallowwood; hog plum	<i>Ximenia americana</i>	
Oriental false hawksbeard *	<i>Youngia japonica</i>	
Hercules'-club	<i>Zanthoxylum clava-herculis</i>	

Alafia River State Park

Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
FISH		
Threadfin shad	<i>Dorosoma petense</i>	81
Blue tilapia	<i>Tilapia aurea</i>	81
Bluegill	<i>Lepomis macrochirus</i>	35,81
Largemouth bass	<i>Micropterus salmoides</i>	35,81
REPTILES		
American alligator	<i>Alligator mississippiensis</i>	35, 81
Florida softshell turtle	<i>Trionyx ferox</i>	35, 81
Gopher tortoise	<i>Gopherus polyphemus</i>	14, 23
Southern black racer	<i>Coluber constrictor priapus</i>	21, 23, 81
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>	14, 21, 81
Eastern indigo snake	<i>Drymarchon corais couperi</i>	14
Yellow rat snake	<i>Elaphe obsoleta quadrivittata</i>	21, 23, 81
Eastern coral snake	<i>Micrurus fulvius fulvius</i>	21, 81
BIRDS		
American white pelican	<i>Pelecanus erythrorhynchos</i>	81
Anhinga	<i>Anhinga anhinga</i>	81
Great blue heron	<i>Ardea herodias</i>	81
Little blue heron	<i>Egretta caerulea</i>	81
Great egret	<i>Ardea alba</i>	81
Snowy egret	<i>Egretta thula</i>	81
White ibis	<i>Eudocimus albus</i>	28, 33, 53
Wood stork	<i>Mycteria americana</i>	28, 33, 53, 81
Roseate spoonbill	<i>Ajaia ajaja</i>	81
Turkey vulture	<i>Cathartes aura</i>	OF
Black vulture	<i>Coragyps atratus</i>	OF
Red-tailed hawk	<i>Buteo jamaicensis</i>	OF
Red shouldered hawk	<i>Buteo lineatus</i>	26
Swallow-tailed kite	<i>Elanoides forficatus</i>	OF
Southern bald eagle	<i>Haliaeetus leucocephalus</i>	33, 81
Osprey	<i>Pandion haliaetus</i>	81
Northern bobwhite	<i>Colinus virginianus</i>	21
Wild turkey	<i>Meleagris gallopavo</i>	21, 28
Sandhill crane	<i>Grus canadensis</i>	81
Common moorhen	<i>Gallinula chloropus</i>	81
Common tern	<i>Sterna hirundo</i>	OF
Barn owl	<i>Tyto alba</i>	81
Eastern screech owl	<i>Otus asio</i>	81, 28
Great horned owl	<i>Bubo virginianus</i>	21, 26, 28, 35
Downy woodpecker	<i>Picoides pubescens</i>	21
American crow	<i>Corvus brachyrhynchos</i>	MTC
White-eyed Vireo	<i>Vireo griseus</i>	26, 28

* Non-native Species

Alafia River State Park

Animals

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for all species)
Carolina Wren	<i>Thryothorus ludovicianus</i>	26, 28
Common Yellowthroat	<i>Geothlypis trichas</i>	26
Eastern Meadowlark	<i>Sturnella magna</i>	81
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	81
Common Grackle	<i>Quiscalus quiscula</i>	81, 82
Northern Cardinal	<i>Cardinalis cardinalis</i>	26, 28, 81
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	21, 81
MAMMALS		
Virginia Opossum	<i>Didelphis virginiana</i>	MTC
Nine-banded armadillo *	<i>Dasyopus novemcinctus</i>	14, 26, 28
Eastern cottontail	<i>Sylvilagus floridanus</i>	14, 21, 23
Marsh rabbit	<i>Sylvilagus palustris</i>	33
Sherman's Fox squirrel	<i>Sciurus niger shermani</i>	21
Coyote *	<i>Canis latrans</i>	81
Gray fox	<i>Urocyon cinereoargenteus</i>	MTC
Red fox *	<i>Vulpes vulpes</i>	MTC
Raccoon	<i>Procyon lotor</i>	MTC
River otter	<i>Lutra canadensis</i>	53
Striped skunk	<i>Mephitis mephitis</i>	21, 81
Bobcat	<i>Felis rufus</i>	21
Wild pig *	<i>Sus scrofa</i>	MTC
White-tailed deer	<i>Odocoileus virginianus</i>	MTC

* Non-native Species

Habitat Codes

TERRESTRIAL

1. Beach Dune
2. Bluff
3. Coastal Berm
4. Coastal Rock Barren
5. Coastal Strand
6. Dry Prairie
7. Maritime Hammock
8. Mesic Flatwoods
9. Coastal Grasslands
10. Pine Rockland
11. Prairie Hammock
12. Rockland Hammock
13. Sandhill
14. Scrub
15. Scrubby Flatwoods
16. Shell Mound
17. Sinkhole
18. Slope Forest
19. Upland Glade
20. Upland Hardwood Forest
21. Upland Mixed Forest
22. Upland Pine Forest
23. Xeric Hammock

PALUSTRINE

24. Basin Marsh
25. Basin Swamp
26. Baygall
27. Bog
28. Bottomland Forest
29. Depression Marsh
30. Dome
31. Floodplain Forest
32. Floodplain Marsh
33. Floodplain Swamp
34. Freshwater Tidal Swamp
35. Hydric Hammock
36. Marl Prairie
37. Seepage Slope
38. Slough
39. Strand Swamp
40. Swale
41. Wet Flatwoods
42. Wet Prairie

LACUSTRINE

43. Clastic Upland Lake
44. Coastal Dune Lake
45. Coastal Rockland Lake
46. Flatwood/Prairie Lake
47. Marsh Lake

LACUSTRINE—Continued

48. River Floodplain Lake
49. Sandhill Upland Lake
50. Sinkhole Lake
51. Swamp Lake

RIVERINE

52. Alluvial Stream
53. Blackwater Stream
54. Seepage Stream
55. Spring-Run Stream

ESTUARINE

56. Estuarine Composite Substrate
57. Estuarine Consolidated Substrate
58. Estuarine Coral Reef
59. Estuarine Grass Bed
60. Estuarine Mollusk Reef
61. Estuarine Octocoral Bed
62. Estuarine Sponge Bed
63. Estuarine Tidal Marsh
64. Estuarine Tidal Swamp
65. Estuarine Unconsolidated Substrate
66. Estuarine Worm Reef

MARINE

67. Marine Algal Bed
68. Marine Composite Substrate
69. Marine Consolidated Substrate
70. Marine Coral Reef
71. Marine Grass Bed
72. Marine Mollusk Reef
73. Marine Octocoral Bed
74. Marine Sponge Bed
75. Marine Tidal Marsh
76. Marine Tidal Swamp
77. Marine Unconsolidated Substrate
78. Marine Worm Reef

SUBTERRANEAN

79. Aquatic Cave
80. Terrestrial Cave

MISCELLANEOUS

81. Ruderal
82. Developed

MTC Many Types Of Communities

OF Overflying

Addendum 5—Designated Species List

**Rank Explanations For FNAI Global Rank, FNAI State Rank,
Federal Status And State Status**

The Nature Conservancy and the Natural Heritage Program Network (of which FNAI is a part) define an element as any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, spring, sinkhole, cave, or other ecological feature. An element occurrence (EO) is a single extant habitat that sustains or otherwise contributes to the survival of a population or a distinct, self-sustaining example of a particular element.

Using a ranking system developed by The Nature Conservancy and the Natural Heritage Program Network, the Florida Natural Areas Inventory assigns two ranks to each element. The global rank is based on an element's worldwide status; the state rank is based on the status of the element in Florida. Element ranks are based on many factors, the most important ones being estimated number of Element occurrences, estimated abundance (number of individuals for species; area for natural communities), range, estimated adequately protected EOs, relative threat of destruction, and ecological fragility.

Federal and State status information is from the U.S. Fish and Wildlife Service; and the Florida Game and Freshwater Fish Commission (animals), and the Florida Department of Agriculture and Consumer Services (plants), respectively.

FNAI GLOBAL RANK DEFINITIONS

- G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
- G2 = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
- G3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
- G4 = apparently secure globally (may be rare in parts of range)
- G5 = demonstrably secure globally
- GH = of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
- GX = believed to be extinct throughout range
- GXC = extirpated from the wild but still known from captivity or cultivation
- G#? = tentative rank (e.g., G2?)
- G#G# = range of rank; insufficient data to assign specific global rank (e.g., G2G3)
- G#T# = rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1)
- G#Q = rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q)
- G#T#Q = same as above, but validity as subspecies or variety is questioned.
- GU = due to lack of information, no rank or range can be assigned (e.g., GUT2).
- G? = not yet ranked (temporary)
- S1 = Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
- S2 = Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
- S3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
- S4 = apparently secure in Florida (may be rare in parts of range)
- S5 = demonstrably secure in Florida
- SH = of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
- SX = believed to be extinct throughout range
- SA = accidental in Florida, i.e., not part of the established biota
- SE = an exotic species established in Florida may be native elsewhere in North America
- SN = regularly occurring, but widely and unreliably distributed; sites for conservation hard to determine
- SU = due to lack of information, no rank or range can be assigned (e.g., SUT2).
- S? = not yet ranked (temporary)

**Rank Explanations For FNAI Global Rank, FNAI State Rank,
Federal Status And State Status**

LEGAL STATUS

N = Not currently listed, nor currently being considered for listing, by state or federal agencies.
FEDERAL (Listed by the U. S. Fish and Wildlife Service - USFWS)

LE = Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species that is in danger of extinction throughout all or a significant portion of its range.

PE = Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.

LT = Listed as Threatened Species. Defined as any species that is likely to become an endangered species within the near future throughout all or a significant portion of its range.

PT = Proposed for listing as Threatened Species.

C = Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants. Defined as those species for which the USFWS currently has on file sufficient information on biological vulnerability and threats to support proposing to list the species as endangered or threatened.

E(S/A) = Endangered due to similarity of appearance.

T(S/A) = Threatened due to similarity of appearance.

STATE

Animals (Listed by the Florida Fish and Wildlife Conservation Commission - FFWCC)

LE = Listed as Endangered Species by the FFWCC. Defined as a species, subspecies, or isolated population which is so rare or depleted in number or so restricted in range of habitat due to any man-made or natural factors that it is in immediate danger of extinction or extirpation from the state, or which may attain such a status within the immediate future.

LT = Listed as Threatened Species by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.

LS = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species.

Plants (Listed by the Florida Department of Agriculture and Consumer Services - FDACS)

LE = Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all species determined to be endangered or threatened pursuant to the Federal Endangered Species Act of 1973, as amended.

LT = Listed as Threatened Plants in the Preservation of Native Flora of Florida Act. Defined as species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in such number as to cause them to be endangered.

Alafia River State Park

Designated Species

Plants

Common Name/ <i>Scientific Name</i>	<u>Designated Species Status</u>		
	FDA	USFWS	FNAI
Butterfly orchid <i>Encyclia tampensis</i>	CE		
Greenfly orchid <i>Epidendrum conopseum</i>	CE		
Cinnamon fern <i>Osmunda cinnamomea</i>	CE		
Royal fern <i>Osmunda regalis</i>	CE		
Needle palm <i>Rhapidophyllum hystrix</i>	CE		
Wild pine, Airplant <i>Tillandsia fasciculata</i>	E		
Giant wild pine, Airplant <i>Tillandsia utriculata</i>	E		

Alafia River State Park

Designated Species

Animals

Common Name/ Scientific Name	Designated Species Status		
	FFWCC	USFWS	FNAI
REPTILES			
American alligator <i>Alligator mississippiensis</i>	LS	LT(S/A)	G5, S4
Eastern indigo snake <i>Drymarchon corais cooperi</i>	LT	LT	G4T3, S3
Gopher tortoise <i>Gopherus polyphemus</i>	LS		G3, S3
BIRDS			
Little blue heron <i>Egretta caerulea</i>	LS		G5, S4
Great egret <i>Ardea alba</i>			G5, S4
Snowy egret <i>Egretta thula</i>	LS		G5, S3
Wood stork <i>Mycteria americana</i>	LE	LE	G4, S2
White ibis <i>Eudocimus albus</i>	LS		G5, S4
Roseate spoonbill <i>Ajaia ajaja</i>	LS		G5, S2
Swallow-tailed kite <i>Elanoides forficatus</i>			G5, S2
Florida sandhill crane <i>Grus canadensis pratensis</i>	LT		G5T2T3, S2S3
Osprey <i>Pandion haliaetus</i>			G5, S3S4
Southern bald eagle <i>Haliaeetus leucocephalus</i>	LT	LT	G4, S3
MAMMALS			
Sherman's fox squirrel <i>Sciurus niger shermani</i>	LS		G5T3, S3

Addendum 6—Priority Schedule And Cost Estimates

Alafia River State Park
Priority Schedule And Cost Estimates

Estimates are developed for the funding and staff resources needed to implement the management plan based on goals, objectives and priority management activities. Funding priorities for all state park management and development activities are reviewed each year as part of the Division's legislative budget process. The Division prepares an annual legislative budget request based on the priorities established for the entire state park system. The Division also aggressively pursues a wide range of other funds and staffing resources, such as grants, volunteers, and partnerships with agencies, local governments and the private sector for supplementing normal legislative appropriations to address unmet needs. The ability of the Division to implement the specific goals, objectives and priority actions identified in this plan will be determined by the availability of funding resources for these purposes.

Resource Management

1. Tropical Soda Apple on 50 acres, using chemical means of eradication costing \$500 in chemicals and \$6,400 in manpower. Six treatments to insure success. **Estimated Cost: \$6,900.**
2. Cogon grass on 1000 acres, using chemical means of eradication costing \$600 in chemicals and \$10,000 in manpower. These man-hours include application and recommended mowing. **Estimated Cost: \$10,600.**
3. Air potato, on 50 acres will be manually pulled more often than herbicided. Cost for removal is estimated at \$15,000 for manual labor and \$250 for herbicides over five years. **Estimated Cost: \$15,250.**
4. Skunk Vine on 50 acres will be manually cut then herbicided. Cost for removal is estimated at \$15,000 for manpower and \$750 for herbicide/acre. **Estimated Cost: \$52,500.**
5. Brazilian Pepper on 200 acres will be treated with herbicides. Cost for removal utilizing herbicides and manpower is \$1,500/acre. **Estimated Cost: \$300,000.**
6. Revegetation/Reforestation of approximately 2,000 upland acres with a planting of approximately 200 trees/acre results in a cost of approximately \$20,000/acre. **Estimated Cost: \$4,000,000.**

Administration

7. Restoration biologist services - \$50,000 per year for 10 years. **Estimated cost: \$500,000.**

Total Estimated Cost: \$4,885,250

*** Categories of the uniform cost accounting system not reflected in this addendum, have no schedule or cost associated with them.**

Alafia River State Park

Capital Improvements

Item	Quantity	Unit	Unit Price	Multiplier	Amount
Boat/Canoe Launch Areas					
Canoe Launch	5.000	ea.	\$20,000.00	1.25	\$125,000.00
Stabilized Parking (10 Car)	10.000	per 10	\$2,500.00	1.25	\$31,250.00
Cabin Area					
Cabins and Furnishings	12.000	ea.	\$120,000.00	1.25	\$1,800,000.00
Camping Areas					
Primitive Group Camp	1.000	ea.	\$150,000.00	1.25	\$187,500.00
Stabilized Tent Sites	6.000	ea.	\$500.00	1.25	\$3,750.00
Standard Camping Area	1.000	ea.	\$500,000.00	1.25	\$625,000.00
Day Use Area					
Open-air Interpretive Center	1.000	ea.	\$75,000.00	1.25	\$93,750.00
Equestrian Area					
Equestrian Stable	1.000	ea.	\$70,000.00	1.25	\$87,500.00
Stabilized Trailer Parking	5.000	per 5 ri	\$2,500.00	1.25	\$18,750.00
New Picnic Areas					
Large Picnic Shelter	8.000	ea.	\$65,000.00	1.25	\$650,000.00
Observation Platform w/ Interpretive Panels at Base	3.000	ea.	\$70,000.00	1.25	\$262,500.00
Small Picnic Shelter	4.000	ea.	\$21,000.00	1.25	\$105,000.00
Support Structures					
Landscaping, Screening and Buffering	1.000	LS	\$200,000.00	1.25	\$250,000.00
Ranger Residence (concrete)	1.000	ea.	\$165,000.00	1.25	\$206,250.00
Stabilized Road	2.500	mile	\$140,000.00	1.25	\$437,500.00
Two Lane Road (paving)	1.000	mile	\$310,000.00	1.25	\$387,500.00
Trail Expansion					
Nature Trail	32000.000	LF	\$2.00	1.25	\$80,000.00
Non-vehicular Trail Bridge	2.000	ea.	\$16,000.00	1.25	\$40,000.00
Visitor Service Area					
Concession Building	1.000	ea.	\$100,000.00	1.25	\$125,000.00
Park Store	1.000	LS	\$90,000.00	1.25	\$112,500.00
Recreation Hall	1.000	ea.	\$250,000.00	1.25	\$312,500.00
					Sub-Total
					\$5,941,250.00
					20 Percent Contingency Fee
					\$1,188,250.00
					Total
					\$7,129,500.00

NOTE: These preliminary cost estimates, based on Divisions standards, do not include costs for site-specific elements not evident at the conceptual level of planning. Additional costs should be investigated before finalizing budget estimates.

Addendum 7—Additional Information
FNAI Descriptions
DHR Cultural Management Statement
And
Land Management Review Report

Descriptions Of Natural Communities Developed By FNAI

This summary presents the hierarchical classification and brief descriptions of 82 Natural Communities developed by Florida Natural Areas Inventory and identified as collectively constituting the original, natural biological associations of Florida.

A Natural Community is defined as a distinct and recurring assemblage of populations of plants, animals, fungi and microorganisms naturally associated with each other and their physical environment. For more complete descriptions, see Guide to the Natural Communities of Florida, available from Florida Department of Natural Resources.

The levels of the hierarchy are:

Natural Community Category - defined by hydrology and vegetation.

Natural Community Groups - defined by landform, substrate, and vegetation.

Natural Community Type - defined by landform and substrate; soil moisture condition; climate; fire; and characteristic vegetation.

TERRESTRIAL COMMUNITIES

XERIC UPLANDS
COASTAL UPLANDS
MESIC UPLANDS
ROCKLANDS
MESIC FLATLANDS

PALUSTRINE COMMUNITIES

WET FLATLANDS
SEEPAGE WETLANDS
FLOODPLAIN WETLANDS
BASIN WETLANDS

LACUSTRINE COMMUNITIES

RIVERINE COMMUNITIES

SUBTERRANEAN COMMUNITIES

MARINE/ESTUARINE COMMUNITIES

Definitions of Terms Used in Natural Community Descriptions

TERRESTRIAL - Upland habitats dominated by plants which are not adapted to anaerobic soil conditions imposed by saturation or inundation for more than 10% of the growing season.

XERIC UPLANDS - very dry, deep, well-drained hills of sand with xeric-adapted vegetation.

Sandhill - upland with deep sand substrate; xeric; temperate; frequent fire (2-5 years); longleaf pine and/or turkey oak with wiregrass understory.

Scrub - old dune with deep fine sand substrate; xeric; temperate or subtropical; occasional or rare fire (20 - 80 years); sand pine and/or scrub oaks and/or rosemary and lichens.

Xeric Hammock - upland with deep sand substrate; xeric-mesic; temperate or subtropical; rare or no fire; live oak and/or sand live oak and/or laurel oak and/or other oaks, sparkleberry, saw palmetto.

COASTAL UPLANDS - substrate and vegetation influenced primarily by such coastal (maritime) processes as erosion, deposition, salt spray, and storms.

Beach Dune - active coastal dune with sand substrate; xeric; temperate or subtropical; occasional or rare fire; sea oats and/or mixed salt-spray tolerant grasses and herbs.

Coastal Berm - old bar or storm debris with sand/shell substrate; xeric-mesic; subtropical or temperate; rare or no fire; buttonwood, mangroves, and/or mixed halophytic herbs and/or shrubs and trees.

Descriptions Of Natural Communities Developed By FNAI

Coastal Grassland - coastal flatland with sand substrate; xeric-mesic; subtropical or temperate; occasional fire; grasses, herbs, and shrubs with or without slash pine and/or cabbage palm.

Coastal Rock Barren - flatland with exposed limestone substrate; xeric; subtropical; no fire; algae, mixed halophytic herbs and grasses, and/or cacti and stunted shrubs and trees.

Coastal Strand - stabilized coastal dune with sand substrate; xeric; subtropical or temperate; occasional or rare fire; dense saw palmetto and/or seagrape and/or mixed stunted shrubs, yucca, and cacti.

Maritime Hammock - stabilized coastal dune with sand substrate; xeric-mesic; subtropical or temperate; rare or no fire; mixed hardwoods and/or live oak.

Shell Mound - Indian midden with shell substrate; xeric-mesic; subtropical or temperate; rare or no fire; mixed hardwoods.

MESIC UPLANDS - dry to moist hills of sand with varying amounts of clay, silt or organic material; diverse mixture of broadleaved and needleleaved temperate woody species.

Bluff - steep slope with rock, sand, and/or clay substrate; hydric-xeric; temperate; sparse grasses, herbs and shrubs.

Slope Forest - steep slope on bluff or in sheltered ravine; sand/clay substrate; mesic-hydric; temperate; rare or no fire; magnolia, beech, spruce pine, Shumard oak, Florida maple, mixed hardwoods.

Upland Glade - upland with calcareous rock and/or clay substrate; hydric-xeric; temperate; sparse mixed grasses and herbs with occasional stunted trees and shrubs, e.g., eastern red cedar.

Upland Hardwood Forest - upland with sand/clay and/or calcareous substrate; mesic; temperate; rare or no fire; spruce pine, magnolia, beech, pignut hickory, white oak, and mixed hardwoods.

Upland Mixed Forest - upland with sand/clay substrate; mesic; temperate; rare or no fire; loblolly pine and/or shortleaf pine and/or laurel oak and/or magnolia and spruce pine and/or mixed hardwoods.

Upland Pine Forest - upland with sand/clay substrate; mesic-xeric; temperate; frequent or occasional fire; longleaf pine and/or loblolly pine and/or shortleaf pine, southern red oak, wiregrass.

ROCKLANDS - low, generally flat limestone outcrops with tropical vegetation; or limestone exposed through karst activities with tropical or temperate vegetation.

Pine Rockland - flatland with exposed limestone substrate; mesic-xeric; subtropical; frequent fire; south Florida slash pine, palms and/or hardwoods, and mixed grasses and herbs.

Rockland Hammock - flatland with limestone substrate; mesic; subtropical; rare or no fire; mixed tropical hardwoods, often with live oak.

Sinkhole - karst feature with steep limestone walls; mesic-hydric; subtropical or temperate; no fire; ferns, herbs, shrubs, and hardwoods.

MESIC FLATLANDS - flat, moderately well-drained sandy substrates with admixture of organic material, often with a hard pan.

Dry Prairie - flatland with sand substrate; mesic-xeric; subtropical or temperate; annual or frequent fire; wiregrass, saw palmetto, and mixed grasses and herbs.

Mesic Flatwoods - flatland with sand substrate; mesic; subtropical or temperate; frequent fire; slash

Descriptions Of Natural Communities Developed By FNAI

pine and/or longleaf pine with saw palmetto, gallberry and/or wiregrass or cutthroat grass understory.

Prairie Hammock - flatland with sand/organic soil over marl or limestone substrate; mesic; subtropical; occasional or rare fire; live oak and/or cabbage palm.

Scrubby Flatwoods - flatland with sand substrate; xeric-mesic; subtropical or temperate; occasional fire; longleaf pine or slash pine with scrub oaks and wiregrass understory.

PALUSTRINE - Wetlands dominated by plants adapted to anaerobic substrate conditions imposed by substrate saturation or inundation during 10% or more of the growing season. Includes non-tidal wetlands; tidal wetlands with ocean derived salinities less than 0.5 ppt and dominance by salt-intolerant species; small (less than 8 ha), shallow (less than 2 m deep at low water) water bodies without wave-formed or bedrock shoreline; and inland brackish or saline wetlands.

WET FLATLANDS - flat, poorly drained sand, marl or limestone substrates.

Hydric Hammock - lowland with sand/clay/organic soil, often over limestone; mesic-hydric; subtropical or temperate; rare or no fire; water oak, cabbage palm, red cedar, red maple, bays, hackberry, hornbeam, blackgum, needle palm, and mixed hardwoods.

Marl Prairie - flatland with marl over limestone substrate; seasonally inundated; tropical; frequent to no fire; sawgrass, spikerush, and/or mixed grasses, sometimes with dwarf cypress.

Wet Flatwoods - flatland with sand substrate; seasonally inundated; subtropical or temperate; frequent fire; vegetation characterized by slash pine or pond pine and/or cabbage palm with mixed grasses and herbs.

Wet Prairie - flatland with sand substrate; seasonally inundated; subtropical or temperate; annual or frequent fire; maidencane, beakrush, spikerush, wiregrass, pitcher plants, St. John's wort, mixed herbs.

SEEPAGE WETLANDS - sloped or flat sands or peat with high moisture levels maintained by downslope seepage; wetland and mesic woody and/or herbaceous vegetation.

Baygall - wetland with peat substrate at base of slope; maintained by downslope seepage, usually saturated and occasionally inundated; subtropical or temperate; rare or no fire; bays and/or dahoon holly and/or red maple and/or mixed hardwoods.

Seepage Slope - wetland on or at base of slope with organic/sand substrate; maintained by downslope seepage, usually saturated but rarely inundated; subtropical or temperate; frequent or occasional fire; sphagnum moss, mixed grasses and herbs or mixed hydrophytic shrubs.

FLOODPLAIN WETLANDS - flat, alluvial sand or peat substrates associated with flowing water courses and subjected to flooding but not permanent inundation; wetland or mesic woody and herbaceous vegetation.

Bottomland Forest - flatland with sand/clay/organic substrate; occasionally inundated; temperate; rare or no fire; water oak, red maple, beech, magnolia, tuliptree, sweetgum, bays, cabbage palm, and mixed hardwoods.

Floodplain Forest - floodplain with alluvial substrate of sand, silt, clay or organic soil; seasonally inundated; temperate; rare or no fire; diamondleaf oak, overcup oak, water oak, swamp chestnut oak, blue palmetto, cane, and mixed hardwoods.

Floodplain Marsh - floodplain with organic/sand/alluvial substrate; seasonally inundated; subtropical; frequent or occasional fire; maidencane, pickerelweed, sagittaria spp., buttonbush, and mixed emergents.

Descriptions Of Natural Communities Developed By FNAI

Floodplain Swamp - floodplain with organic/alluvial substrate; usually inundated; subtropical or temperate; rare or no fire; vegetation characterized by cypress, tupelo, black gum, and/or pop ash.

Freshwater Tidal Swamp - river mouth wetland, organic soil with extensive root mat; inundated with freshwater in response to tidal cycles; rare or no fire; cypress, bays, cabbage palm, gums and/or cedars.

Slough - broad, shallow channel with peat over mineral substrate; seasonally inundated, flowing water; subtropical; occasional or rare fire; pop ash and/or pond apple or water lily.

Strand Swamp - broad, shallow channel with peat over mineral substrate; seasonally inundated, flowing water; subtropical; occasional or rare fire; cypress and/or willow.

Swale - broad, shallow channel with sand/peat substrate; seasonally inundated, flowing water; subtropical or temperate; frequent or occasional fire; sawgrass, maidencane, pickerelweed, and/or mixed emergents.

BASIN WETLANDS - shallow, closed basin with outlet usually only in time of high water; peat or sand substrate, usually inundated; wetland woody and/or herbaceous vegetation.

Basin Marsh - large basin with peat substrate; seasonally inundated; temperate or subtropical; frequent fire; sawgrass and/or cattail and/or buttonbush and/or mixed emergents.

Basin Swamp - large basin with peat substrate; seasonally inundated, still water; subtropical or temperate; occasional or rare fire; vegetation characterized by cypress, blackgum, bays and/or mixed hardwoods.

Bog - wetland on deep peat substrate; moisture held by sphagnum mosses, soil usually saturated, occasionally inundated; subtropical or temperate; rare fire; sphagnum moss and titi and/or bays and/or dahoon holly, and/or mixed hydrophytic shrubs.

Coastal Interdunal Swale - long narrow depression wetlands in sand/peat-sand substrate; seasonally inundated, fresh to brackish, still water; temperate; rare fire; graminoids and mixed wetland forbs.

Depression Marsh - small rounded depression in sand substrate with peat accumulating toward center; seasonally inundated, still water; subtropical or temperate; frequent or occasional fire; maidencane, fire flag, pickerelweed, and mixed emergents, may be in concentric bands.

Dome Swamp - rounded depression in sand/limestone substrate with peat accumulating toward center; seasonally inundated, still water; subtropical or temperate; occasional or rare fire; cypress, blackgum, or bays, often tallest in center.

LACUSTRINE - Non-flowing wetlands of natural depressions lacking persistent emergent vegetation except around the perimeter.

Clastic Upland Lake - generally irregular basin in clay uplands; predominantly with inflows, frequently without surface outflow; clay or organic substrate; colored, acidic, soft water with low mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

Coastal Dune Lake - basin or lagoon influenced by recent coastal processes; predominantly sand substrate with some organic matter; salinity variable among and within lakes, and subject to saltwater intrusion and storm surges; slightly acidic, hard water with high mineral content (sodium, chloride).

Coastal Rockland Lake - shallow basin influence by recent coastal processes; predominantly barren oolitic or Miami limestone substrate; salinity variable among and within lakes, and subject to saltwater intrusion, storm surges and evaporation (because of shallowness); slightly alkaline, hard water with

Descriptions Of Natural Communities Developed By FNAI

high mineral content (sodium, chloride).

Flatwoods/Prairie Lake - generally shallow basin in flatlands with high water table; frequently with a broad littoral zone; still water or flow-through; sand or peat substrate; variable water chemistry, but characteristically colored to clear, acidic to slightly alkaline, soft to moderately hard water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

Marsh lake - generally shallow, open water area within wide expanses of freshwater marsh; still water or flow-through; peat, sand or clay substrate; occurs in most physiographic regions; variable water chemistry, but characteristically highly colored, acidic, soft water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

River Floodplain Lake - meander scar, backwater, or larger flow-through body within major river floodplains; sand, alluvial or organic substrate; colored, alkaline or slightly acidic, hard or moderately hard water with high mineral content (sulfate, sodium, chloride, calcium, magnesium); mesotrophic to eutrophic.

Sandhill Upland Lake - generally rounded solution depression in deep sandy uplands or sandy uplands shallowly underlain by limestone; predominantly without surface inflows/outflows; typically sand substrate with organic accumulations toward middle; clear, acidic moderately soft water with varying mineral content; ultra-oligotrophic to mesotrophic.

Sinkhole Lake - typically deep, funnel-shaped depression in limestone base; occurs in most physiographic regions; predominantly without surface inflows/outflows, but frequently with connection to the aquifer; clear, alkaline, hard water with high mineral content (calcium, bicarbonate, magnesium).

Swamp Lake - generally shallow, open water area within basin swamps; still water or flow-through; peat, sand or clay substrate; occurs in most physiographic regions; variable water chemistry, but characteristically highly colored, acidic, soft water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

RIVERINE - Natural, flowing waters from their source to the downstream limits of tidal influence and bounded by channel banks.

Alluvial Stream - lower perennial or intermittent/seasonal watercourse characterized by turbid water with suspended silt, clay, sand and small gravel; generally with a distinct, sediment-derived (alluvial) floodplain and a sandy, elevated natural levee just inland from the bank.

Blackwater Stream - perennial or intermittent/seasonal watercourse characterized by tea-colored water with a high content of particulate and dissolved organic matter derived from drainage through swamps and marshes; generally lacking an alluvial floodplain.

Seepage Stream - upper perennial or intermittent/seasonal watercourse characterized by clear to lightly colored water derived from shallow groundwater seepage.

Spring-run Stream - perennial watercourse with deep aquifer headwaters and characterized by clear water, circumneutral pH and, frequently, a solid limestone bottom.

SUBTERRANEAN - Twilight, middle and deep zones of natural chambers overlain by the earth's crust and characterized by climatic stability and assemblages of trogloneic, troglophilic, and troglobitic organisms.

Aquatic Cave - cavernicolous area permanently or periodically submerged; often characterized by troglobitic crustaceans and salamanders; includes high energy systems which receive large quantities

Descriptions Of Natural Communities Developed By FNAI

of organic detritus and low energy systems.

Terrestrial Cave - cavernicolous area lacking standing water; often characterized by bats, such as *Myotis* spp., and other terrestrial vertebrates and invertebrates; includes interstitial areas above standing water such as fissures in the ceiling of caves.

MARINE/ESTUARINE (The distinction between the Marine and Estuarine Natural Communities is often subtle, and the natural communities types found under these two community categories have the same descriptions. For these reasons they have been grouped together.) - Subtidal, intertidal and supratidal zones of the sea, landward to the point at which seawater becomes significantly diluted with freshwater inflow from the land.

Consolidated Substrate - expansive subtidal, intertidal and supratidal area composed primarily of nonliving compacted or coherent and relatively hard, naturally formed mass of mineral matter (e.g., coquina limerock and relic reefs); octocorals, sponges, stony corals, nondrift macrophytic algae, blue-green mat-forming algae and seagrasses sparse, if present.

Unconsolidated Substrate - expansive subtidal, intertidal and supratidal area composed primarily of loose mineral matter (e.g., coralgall, gravel, marl, mud, sand and shell); octocorals, sponges, stony corals, nondrift macrophytic algae, blue-green mat-forming algae and seagrasses sparse, if present.

Octocoral Bed - expansive subtidal area occupied primarily by living sessile organisms of the Class Anthozoa, Subclass Octocorallia (e.g., soft corals, horny corals, sea fans, sea whips, and sea pens); sponges, stony corals, nondrift macrophytic algae and seagrasses sparse, if present.

Sponge Bed - expansive subtidal area occupied primarily by living sessile organisms of the Phylum Porifera (e.g., sheepswool sponge, Florida loggerhead sponge and branching candle sponge); octocorals, stony corals, nondrift macrophytic algae and seagrasses sparse, if present.

Coral Reef - expansive subtidal area with elevational gradient or relief and occupied primarily by living sessile organisms of the Class Hydrozoa (e.g., fire corals and hydrocorals) and Class Anthozoa, Subclass Scleractinia (e.g., stony corals and black corals); includes deepwater bank reefs, fringing barrier reefs, outer bank reefs and patch reefs, some of which may contain distinct zones of assorted macrophytes, octocorals, & sponges.

Mollusk Reef - substantial subtidal or intertidal area with relief from concentrations of sessile organisms of the Phylum Mollusca, Class Bivalvia (e.g., molluscs, oysters, & worm shells); octocorals, sponges, stony corals, macrophytic algae and seagrasses sparse, if present.

Worm Reef - substantial subtidal or intertidal area with relief from concentrations of sessile, tubicolous organisms of the Phylum Annelida, Class Polychaeta (e.g., chaetopterids and sabellarids); octocorals, sponges, stony corals, macrophytic algae and seagrasses sparse, if present.

Algal Bed - expansive subtidal, intertidal or supratidal area, occupied primarily by attached thallophytic or mat-forming prokaryotic algae (e.g., halimeda, blue-green algae); octocorals, sponges, stony corals and seagrasses sparse, if present.

Grass Bed - expansive subtidal or intertidal area, occupied primarily by rooted vascular macrophytes, (e.g., shoal grass, halophila, widgeon grass, manatee grass and turtle grass); may include various epiphytes and epifauna; octocorals, sponges, stony corals, and attached macrophytic algae sparse, if present.

Composite Substrate - expansive subtidal, intertidal, or supratidal area, occupied primarily by Natural Community elements from more than one Natural Community category (e.g., Grass Bed and Algal Bed species; Octocoral and Algal Bed species); includes both patchy and evenly distributed occurrences.

Descriptions Of Natural Communities Developed By FNAI

Tidal Marsh - expansive intertidal or supratidal area occupied primarily by rooted, emergent vascular macrophytes (e.g., cord grass, needlerush, saw grass, saltwort, saltgrass and glasswort); may include various epiphytes and epifauna.

Tidal Swamp - expansive intertidal and supratidal area occupied primarily by woody vascular macrophytes (e.g., black mangrove, buttonwood, red mangrove, and white mangrove); may include various epiphytes and epifauna.

DEFINITIONS OF TERMS Terrestrial and Palustrine Natural Communities

Physiography

Upland - high area in region with significant topographic relief; generally undulating

Lowland - low area in region with or without significant topographic relief; generally flat to gently sloping

Flatland - generally level area in region without significant topographic relief; flat to gently sloping

Basin - large, relatively level lowland with slopes confined to the perimeter or isolated interior locations

Depression - small depression with sloping sides, deepest in center and progressively shallower towards the perimeter

Floodplain - lowland adjacent to a stream; topography influenced by recent fluvial processes

Bottomland - lowland not on active floodplain; sand/clay/organic substrate

Hydrology

occasionally inundated - surface water present only after heavy rains and/or during flood stages

seasonally inundated - surface water present during wet season and flood periods

usually inundated - surface water present except during droughts

Climatic Affinity of the Flora

tropical - community generally occurs in practically frost-free areas

subtropical - community generally occurs in areas that experience occasional frost, but where freezing temperatures are not frequent enough to cause true winter dormancy

temperate - community generally occurs in areas that freeze often enough that vegetation goes into winter dormancy

Fire

annual fire - burns about every 1-2 years

frequent fire - burns about every 3-7 years

occasional fire - burns about every 8-25 years

rare fire - burns about every 26-100 years

no fire - community develops only when site goes more than 100 years without burning

Descriptions Of Natural Communities Developed By FNAI

LATIN NAMES OF PLANTS MENTIONED IN NATURAL COMMUNITY DESCRIPTIONS

anise - *Illicium floridanum*

bays:

swamp bay - *Persea palustris*

gordonia - *Gordonia lasianthus*

sweetbay - *Magnolia virginiana*

beakrush - *Rhynchospora* spp.

beech - *Fagus grandifolia*

blackgum - *Nyssa biflora*

blue palmetto - *Sabal minor*

bluestem - *Andropogon* spp.

buttonbush - *Cephalanthus occidentalis*

cabbage palm - *Sabal palmetto*

cacti - *Opuntia* and *Harrisia* spp.,

predominantly *stricta* and *pentagonus*

cane - *Arundinaria gigantea* or *A. tecta*

cattail - *Typha* spp.

cedars:

red cedar - *Juniperus silicicola*

white cedar - *Chamaecyparis thyoides* or

C. henryi

cladonia - *Cladonia* spp.

cypress - *Taxodium distichum*

dahoon holly - *Ilex cassine*

diamondleaf oak - *Quercus laurifolia*

fire flag - *Thalia geniculata*

Florida maple - *Acer barbatum*

gallberry - *Ilex glabra*

gums:

tupelo - *Nyssa aquatica*

blackgum - *Nyssa biflora*

Ogeechee gum - *Nyssa ogeche*

hackberry - *Celtis laevigata*

hornbeam - *Carpinus caroliniana*

laurel oak - *Quercus hemisphaerica*

live oak - *Quercus virginiana*

loblolly pine - *Pinus taeda*

longleaf pine - *Pinus palustris*

magnolia - *Magnolia grandiflora*

maidencane - *Panicum hemitomom*

needle palm - *Rhapidophyllum hystrix*

overcup oak - *Quercus lyrata*

pickerel weed - *Pontederia cordata* or *P. lanceolata*

pignut hickory - *Carya glabra*

pop ash - *Fraxinus caroliniana*

pond apple - *Annona glabra*

pond pine - *Pinus serotina*

pyramid magnolia - *Magnolia pyramidata*

railroad vine - *Ipomoea pes-caprae*

red cedar - *Juniperus silicicola*

red maple - *Acer rubrum*

red oak - *Quercus falcata*

rosemary - *Ceratiola ericoides*

sagittaria - *Sagittaria lancifolia*

sand pine - *Pinus clausa*

saw palmetto - *Serenoa repens*

sawgrass - *Cladium jamaicensis*

scrub oaks - *Quercus geminata*, *Q. chapmanii*, *Q.*

myrtifolia, *Q. inopina*

sea oats - *Uniola paniculata*

seagrape - *Coccoloba uvifera*

shortleaf pine - *Pinus echinata*

Shumard oak - *Quercus shumardii*

slash pine - *Pinus elliotii*

sphagnum moss - *Sphagnum* spp.

spikerush - *Eleocharis* spp.

spruce pine - *Pinus glabra*

St. John's wort - *Hypericum* spp.

swamp chestnut oak - *Quercus prinus*

sweetgum - *Liquidambar styraciflua*

titi - *Cyrilla racemiflora*, and *Cliftonia monophylla*

tuliptree - *Liriodendron tulipifera*

tupelo - *Nyssa aquatica*

turkey oak - *Quercus laevis*

water oak - *Quercus nigra*

waterlily - *Nymphaea odorata*

white cedar - *Chamaecyparis thyoides*

white oak - *Quercus alba*

willow - *Salix caroliniana*

yucca - *Yucca aloifolia*

**Management Procedures For
Archaeological And Historical Sites And Properties
On State -- Owned Or Controlled Lands
(Revised August, 1995)**

A. GENERAL DISCUSSION

Archaeological and historic sites are defined collectively in 267.021(3), F.S., as "historic properties" or "historic resources." They have several essential characteristics that must be recognized in a management program.

First of all, they are a finite and non-renewable resource. Once destroyed, presently existing resources, including buildings, other structures, shipwreck remains, archaeological sites and other objects of antiquity, cannot be renewed or revived. Today, sites in the State of Florida are being destroyed by all kinds of land development, inappropriate land management practices, erosion, looting, and to a minor extent even by well-intentioned professional scientific research (e.g., archaeological excavation). Measures must be taken to ensure that some of these resources will be preserved for future study and appreciation.

Secondly, sites are unique because individually they represent the tangible remains of events that occurred at a specific time and place.

Thirdly, while sites uniquely reflect localized events, these events and the origin of particular sites are related to conditions and events in other times and places. Sites can be understood properly only in relation to their natural surroundings and the activities of inhabitants of other sites. Managers must be aware of this "systemic" character of historic and archaeological sites. Also, it should be recognized that archaeological sites are time capsules for more than cultural history; they preserve traces of past biotic communities, climate, and other elements of the environment that may be of interest to other scientific disciplines.

Finally, the significance of sites, particularly archaeological ones, derives not only from the individual artifacts within them, but equally from the spatial arrangement of those artifacts in both horizontal and vertical planes. When archaeologists excavate, they recover, not merely objects, but also a record of the positions of these objects in relation to one another and their containing matrix (e.g., soil strata). Much information is sacrificed if the so-called "context" of archaeological objects is destroyed or not recovered, and this is what archaeologists are most concerned about when a site is threatened with destruction or damage. The artifacts themselves can be recovered even after a site is heavily disturbed, but the context -- the vertical and horizontal relationships -- cannot. Historic structures also contain a wealth of cultural (socio-economic) data that can be lost if historically sensitive maintenance, restoration or rehabilitation procedures are not implemented, or if they are demolished or extensively altered without appropriate documentation. Lastly, it should not be forgotten that historic structures often have associated potentially significant historic archaeological features that must be considered in land management decisions.

B. STATUTORY AUTHORITY

Chapter 253, Florida Statutes ("State Lands") directs the preparation of "single-use" or "multiple-use" land management plans for all state-owned lands and state-owned sovereignty submerged lands. In this document, 253.034(4), F.S., specifically requires that "all management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing agency plans to identify, locate, protect and preserve, or otherwise use fragile non-renewable resources, such as archaeological and historic sites, as well as other fragile resources..."

Chapter 267, Florida Statutes is the primary historic preservation authority of the state. The importance of protecting and interpreting archaeological and historic sites is recognized in 267.061(1)(a), F.S.: The rich and unique heritage of historic properties in this state, representing more than 10,000 years of human presence, is an important legacy to be valued and conserved for present and future generations. The destruction of these nonrenewable historic resources will engender a significant loss to the state's quality of life, economy, and cultural environment. It is therefore declared to be state policy to:

**Management Procedures For
Archaeological And Historical Sites And Properties
On State -- Owned Or Controlled Lands
(Revised August, 1995)**

1. Provide leadership in the preservation of the state's historic resources; [and]
2. Administer state-owned or state-controlled historic resources in a spirit of stewardship and trusteeship;...

Responsibilities of the Division of Historical Resources in the Department of State pursuant to 267.061(3), F.S., include the following:

1. Cooperate with federal and state agencies, local Governments, and private organizations and individuals to direct and conduct a comprehensive statewide survey of historic resources and to maintain an inventory of such responses.
2. Develop a comprehensive statewide historic preservation plan.
3. Identify and nominate eligible properties to the National Register of Historic Places and otherwise administer applications for listing properties in the National Register of Historic Places.
4. Cooperate with federal and state agencies, local governments, and organizations and individuals to ensure that historic resources are taken into consideration at all levels of planning and development.
5. Advise and assist, as appropriate, federal and state agencies and local governments in carrying out their historic preservation responsibilities and programs.
6. Carry out on behalf of the state the programs of the National Historic Preservation Act of 1966, as amended, and to establish, maintain, and administer a state historic preservation program meeting the requirements of an approved program and fulfilling the responsibilities of state historic preservation programs as provided in subsection 101(b) of that act.
7. Take such other actions necessary or appropriate to locate, acquire, protect, preserve, operate, interpret, and promote the location, acquisition, protection, preservation, operation, and interpretation of historic resources to foster an appreciation of Florida history and culture. Prior to the acquisition, preservation, interpretation, or operation of a historic property by a state agency, the Division shall be provided a reasonable opportunity to review and comment on the proposed undertaking and shall determine that there exists historic authenticity and a feasible means of providing for the preservation, interpretation and operation of such property.
8. Establish professional standards for the preservation, exclusive of acquisition, of historic resources in state ownership or control.
9. Establish guidelines for state agency responsibilities under subsection (2).

Responsibilities of other state agencies of the executive branch, pursuant to 267.061(2), F.S., include:

1. Each state agency of the executive branch having direct or indirect jurisdiction over a proposed state or state-assisted undertaking shall, in accordance with state policy and prior to the approval of expenditure of any state funds on the undertaking, consider the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the National Register of Historic Places. Each such agency shall afford the division a reasonable opportunity to comment with regard to such an undertaking.
2. Each state agency of the executive branch shall initiate measures in consultation with the division to assure that where, as a result of state action or assistance carried out by such agency, a historic property is to be demolished or substantially altered in a way that adversely affects the character, form, integrity, or other qualities that contribute to [the] historical, architectural, or archaeological value of the property, timely steps are taken to determine that no feasible and prudent alternative to the proposed demolition or alteration exists, and, where no such alternative is determined to exist, to assure that timely steps are taken either to avoid or mitigate the adverse effects, or to undertake an appropriate archaeological salvage excavation or other recovery action to document the property as it existed prior to demolition or alteration.
3. In consultation with the division [of Historical Resources], each state agency of the executive branch shall establish a program to locate, inventory, and evaluate all historic properties under the agency's ownership or control that appear to qualify for the National Register. Each such agency shall exercise caution to assure that any such historic property is not inadvertently

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- transferred, sold, demolished, substantially altered, or allowed to deteriorate significantly.
4. Each state agency of the executive branch shall assume responsibility for the preservation of historic resources that are owned or controlled by such agency. Prior to acquiring, constructing, or leasing buildings for the purpose of carrying out agency responsibilities, the agency shall use, to the maximum extent feasible, historic properties available to the agency. Each agency shall undertake, consistent with preservation of such properties, the mission of the agency, and the professional standards established pursuant to paragraph (3)(k), any preservation actions necessary to carry out the intent of this paragraph.
 5. Each state agency of the executive branch, in seeking to acquire additional space through new construction or lease, shall give preference to the acquisition or use of historic properties when such acquisition or use is determined to be feasible and prudent compared with available alternatives. The acquisition or use of historic properties is considered feasible and prudent if the cost of purchase or lease, the cost of rehabilitation, remodeling, or altering the building to meet compliance standards and the agency's needs, and the projected costs of maintaining the building and providing utilities and other services is less than or equal to the same costs for available alternatives. The agency shall request the division to assist in determining if the acquisition or use of a historic property is feasible and prudent. Within 60 days after making a determination that additional space is needed, the agency shall request the division to assist in identifying buildings within the appropriate geographic area that are historic properties suitable for acquisition or lease by the agency, whether or not such properties are in need of repair, alteration, or addition.
 6. Consistent with the agency's mission and authority, all state agencies of the executive branch shall carry out agency programs and projects, including those under which any state assistance is provided, in a manner which is generally sensitive to the preservation of historic properties and shall give consideration to programs and projects which will further the purposes of this section.

Section 267.12 authorizes the Division to establish procedures for the granting of research permits for archaeological and historic site survey or excavation on state-owned or controlled lands, while Section 267.13 establishes penalties for the conduct of such work without first obtaining written permission from the Division of Historical Resources. The Rules of the Department of State, Division of Historical Resources, for research permits for archaeological sites of significance are contained in Chapter 1A-32, F.A.C.

Another Florida Statute affecting land management decisions is Chapter 872, F.S. Section 872.02, F.S., pertains to marked grave sites, regardless of age. Many state-owned properties contain old family and other cemeteries with tombstones, crypts, etc. Section 872.05, F.S., pertains to unmarked human burial sites, including prehistoric and historic Indian burial sites. Unauthorized disturbance of both marked and unmarked human burial site is a felony.

C. MANAGEMENT POLICY

The choice of a management policy for archaeological and historic sites within state-owned or controlled land obviously depends upon a detailed evaluation of the characteristics and conditions of the individual sites and groups of sites within those tracts. This includes an interpretation of the significance (or potential significance) of these sites, in terms of social and political factors, as well as environmental factors. Furthermore, for historic structures architectural significance must be considered, as well as any associated historic landscapes.

Sites on privately owned lands are especially vulnerable to destruction, since often times the economic incentives for preservation are low compared to other uses of the land areas involved. Hence, sites in public ownership have a magnified importance, since they are the ones with the best chance of survival over the long run. This is particularly true of sites that are state-owned or controlled, where the basis of management is to provide for land uses that are minimally destructive of resource values.

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It should be noted that while many archaeological and historical sites are already recorded within state--owned or controlled--lands, the majority of the uplands areas and nearly all of the inundated areas have not been surveyed to locate and assess the significance of such resources. The known sites are, thus, only an incomplete sample of the actual resources - i.e., the number, density, distribution, age, character and condition of archaeological and historic sites - on these tracts. Unfortunately, the lack of specific knowledge of the actual resources prevents formulation of any sort of detailed management or use plan involving decisions about the relative historic value of individual sites. For this reason, a generalized policy of conservation is recommended until the resources have been better addressed.

The generalized management policy recommended by the Division of Historical Resources includes the following:

- 1.** State land managers shall coordinate all planned activities involving known archaeological or historic sites or potential site areas closely with the Division of Historical Resources in order to prevent any kind of disturbance to significant archaeological or historic sites that may exist on the tract. Under 267.061(1)(b), F.S., the Division of Historical Resources is vested with title to archaeological and historic resources abandoned on state lands and is responsible for administration and protection of such resources. The Division will cooperate with the land manager in the management of these resources. Furthermore, provisions of 267.061(2) and 267.13, F.S., combined with those in 267.061(3) and 253.034(4), F.S., require that other managing (or permitting) agencies coordinate their plans with the Division of Historical Resources at a sufficiently early stage to preclude inadvertent damage or destruction to known or potentially occurring, presently unknown archaeological and historic sites. The provisions pertaining to human burial sites must also be followed by state land managers when such remains are known or suspected to be present (see 872.02 and 872.05, F.S., and 1A-44, F.A.C.)
- 2.** Since the actual resources are so poorly known, the potential impact of the managing agency's activities on historic archaeological sites may not be immediately apparent. Special field survey for such sites may be required to identify the potential endangerment as a result of particular management or permitting activities. The Division may perform surveys, as its resources permit, to aid the planning of other state agencies in their management activities, but outside archaeological consultants may have to be retained by the managing agency. This would be especially necessary in the cases of activities contemplating ground disturbance over large areas and unexpected occurrences. It should be noted, however, that in most instances Division staff's knowledge of known and expected site distribution is such that actual field surveys may not be necessary, and the project may be reviewed by submitting a project location map (preferably a 7.5 minute U.S.G.S. Quadrangle map or portion thereof) and project descriptive data, including detailed construction plans. To avoid delays, Division staff should be contacted to discuss specific project documentation review needs.
- 3.** In the case of known significant sites, which may be affected by proposed project activities, the managing agency will generally be expected to alter proposed management or development plans, as necessary, or else make special provisions to minimize or mitigate damage to such sites.
- 4.** If in the course of management activities, or as a result of development or the permitting of dredge activities (see 403.918(2)(6)a, F.S.), it is determined that valuable historic or archaeological sites will be damaged or destroyed, the Division reserves the right, pursuant to 267.061(1)(b), F.S., to require salvage measures to mitigate the destructive impact of such activities to such sites. Such salvage measures would be accomplished before the Division would grant permission for destruction of the affected site areas. The funding needed to implement salvage measures would be the responsibility of the managing agency planning the site destructive activity. Mitigation of historic structures at a minimum involves the preparation of measured drawings and documentary photographs. Mitigation of archaeological resources involves the excavation, analysis and reporting of the project findings and must be planned to

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occur sufficiently in advance to avoid project construction delays. If these services are to be contracted by the state agency, the selected consultant will need to obtain an Archaeological Research Permit from the Division of Historical Resources, Bureau of Archaeological Research (see 267.12, F.S. and Rules 1A-32 and 1A-46 F.A.C.).

5. For the near future, excavation of non-endangered (i.e., sites not being lost to erosion or development) archaeological site is discouraged. There are many endangered sites in Florida (on both private and public lands) in need of excavation because of the threat of development or other factors. Those within state-owned or controlled lands should be left undisturbed for the present - with particular attention devoted to preventing site looting by "treasure hunters". On the other hand, the archaeological and historic survey of these tracts is encouraged in order to build an inventory of the resources present, and to assess their scientific research potential and historic or architectural significance.
6. The cooperation of land managers in reporting sites to the Division that their field personnel may discover is encouraged. The Division will help inform field personnel from other resource managing agencies about the characteristics and appearance of sites. The Division has initiated a cultural resource management training program to help accomplish this. Upon request the Division will also provide to other agencies archaeological and historical summaries of the known and potentially occurring resources so that information may be incorporated into management plans and public awareness programs (See Management Implementation).
7. Any discovery of instances of looting or unauthorized destruction of sites must be reported to the agent for the Board of Trustees of the Internal Improvement Trust Fund and the Division so that appropriate action may be initiated. When human burial sites are involved, the provisions of 872.02 and 872.05, F. S. and Rule 1A-44, F.A.C., as applicable, must also be followed. Any state agent with law enforcement authority observing individuals or groups clearly and incontrovertibly vandalizing, looting or destroying archaeological or historic sites within state-owned or controlled lands without demonstrable permission from the Division will make arrests and detain those individuals or groups under the provisions of 267.13, 901.15, and 901.21, F.S., and related statutory authority pertaining to such illegal activities on state-owned or controlled lands. County Sheriffs' officers are urged to assist in efforts to stop and/or prevent site looting and destruction.

In addition to the above management policy for archaeological and historic sites on state-owned land, special attention shall be given to those properties listed in the National Register of Historic Places and other significant buildings. The Division recommends that the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (Revised 1990) be followed for such sites.

The following general standards apply to all treatments undertaken on historically significant properties.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alterations of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of

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- missing features shall be substantiated by documentary, physical, or pictorial evidence.
7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.
 8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
 9. New additions, exterior alterations, or related new construction shall not destroy materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
 10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired. (see Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings [Revised 1990]).

Divisions of Historical Resources staff are available for technical assistance for any of the above listed topics. It is encouraged that such assistance be sought as early as possible in the project planning.

D. MANAGEMENT IMPLEMENTATION

As noted earlier, 253.034(4), F.S., states that "all management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing agency plans to identify, locate, protect and preserve, or otherwise use fragile non-renewable resources, such as archaeological and historic sites..." The following guidelines should help to fulfill that requirement.

1. All land managing agencies should contact the Division and send U.S.G.S. 7.5 minute quadrangle maps outlining the boundaries of their various properties.
2. The Division will in turn identify site locations on those maps and provide descriptions for known archaeological and historical sites to the managing agency.
3. Further, the Division may also identify on the maps areas of high archaeological and historic site location probability within the subject tract. These are only probability zones, and sites may be found outside of these areas. Therefore, actual ground inspections of project areas may still be necessary.
4. The Division will send archaeological field recording forms and historic structure field recording forms to representatives of the agency to facilitate the recording of information on such resources.
5. Land managers will update information on recorded sites and properties.
6. Land managers will supply the Division with new information as it becomes available on previously unrecorded sites that their staff locate. The following details the kind of information the Division wishes to obtain for any new sites or structures that the land managers may report:

A. Historic Sites

- (1) Type of structure (dwelling, church, factory, etc.).
- (2) Known or estimated age or construction date for each structure and addition.
- (3) Location of building (identify location on a map of the property, and building placement, i.e., detached, row, etc.).
- (4) General Characteristics: (include photographs if possible) overall shape of plan (rectangle, "L" "T" "H" "U", etc.); number of stories; number of vertical divisions of bays; construction materials (brick, frame, stone, etc.); wall finish (kind of bond, coursing, shingle, etc.); roof shape.
- (5) Specific features including location, number and appearance of:
 - (a) Important decorative elements;
 - (b) Interior features contributing to the character of the building;

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- (c) Number, type, and location of outbuildings, as well as date(s) of construction;
- (d) Notation if property has been moved;
- (e) Notation of known alterations to building.

B. Archaeological Sites

- (1) Site location (written narrative and mapped location).
 - (2) Cultural affiliation and period.
 - (3) Site type (midden, burial mound, artifact scatter, building rubble, etc.).
 - (4) Threats to site (deterioration, vandalism, etc.).
 - (5) Site size (acreage, square meters, etc.).
 - (6) Artifacts observed on ground surface (pottery, bone, glass, etc.).
 - (7) Description of surrounding environment.
7. No land disturbing activities should be undertaken in areas of known archaeological or historic sites or areas of high site probability without prior review by the Division early in the project planning.
 8. Ground disturbing activities may proceed elsewhere but land managers should stop disturbance in the immediate vicinity of artifact finds and notifies the Division if previously unknown archaeological or historic remains are uncovered. The provisions of Chapter 872, F.S., must be followed when human remains are encountered.
 9. Excavation and collection of archaeological and historic sites on state lands without a permit from the Division are a violation of state law and shall be reported to a law enforcement officer. The use of metal detectors to search for historic artifacts shall be prohibited on state lands except when authorized in a 1A-32, F.A.C., research permit from the Division.
 10. Interpretation and visitation which will increase public understanding and enjoyment of archaeological and historic sites without site destruction or vandalism is strongly encouraged.
 11. Development of interpretive programs including trails, signage, kiosks, and exhibits is encouraged and should be coordinated with the Division.
 12. Artifacts found or collected on state lands are by law the property of the Division. Land managers shall contact the Division whenever such material is found so that arrangements may be made for recording and conservation. This material, if taken to Tallahassee, can be returned for public display on a long term loan.

E. ADMINISTERING AGENCY

Questions relating to the treatment of archaeological and historic resources on state lands may be directed to:

Compliance Review Section
Bureau of Historic Preservation
Division of Historical Resources
R.A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399-0250

Contact Person:

Susan M. Harp
Historic Preservation Planner
Telephone (850) 245-6333
Suncom 205-6333
FAX (850) 245-6437

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**Land Management Review of Alafia River State Park
Hillsborough County (Lease No. 4168): July 23, 2002**

Prepared by Division of State Lands Staff

William Howell, OMC Manager
Ginny Morris, Administrative Assistant

For

Alafia State Park Review Team

Final: September 11, 2002

Land Manager:	DRP
Area:	6,345 Acres
County:	Hillsborough County
Mngt. Plan Revised:	3/20/1998
Mngt. Plan Update Due:	3/20/2003

Management Review Team Members

Agency Represented	Team member Appointed	Team member In attendance
DEP/DRP	Ken Alvarez	Ken Alvarez
DEP	Rose Poynor	Rose Poynor
DACS/DOF	Mike Perry	Mike Perry
FWCC	Victor Echaves	Victor Echaves
Soil and Water Conservation County Commission	Bruce Healy	
	Debby Butts	Debby Butts
Conservation Organization	Terri Wolfe	Terri Wolfe
Private Land Manager	Pat Simms	Pat Simms

Process for Implementing Regional Management Review Teams

Legislative Intent and Guidance:

Chapter 259.036, F. S. was enacted in 1997 to determine whether conservation, preservation, and recreation lands owned by the state Board of Trustees of the Internal Improvement Trust Fund (Board) are being managed properly. It directs the Department of Environmental Protection (DEP) to establish land management review teams to evaluate the extent to which the existing management plan provides sufficient protection to threatened or endangered species, unique or important natural or physical features, geological or hydrological functions, and archaeological features. The teams also evaluate the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices, including public access, are in compliance with the adopted management plan. If a land management plan has not been adopted, the review shall consider the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices are in compliance with the management policy statement and management prospectus for that property. If the land management review team determines that reviewed lands are not being managed for the purposes for which they were acquired or in compliance with the adopted land management plan, management policy statement, or management prospectus, DEP shall provide the review findings to the Board, and the managing agency must report to the Board its reasons for managing the lands as it has. A report of the review findings are given to the managing agency under review, the Acquisition and Restoration Council, and to the Division of State Lands. Also, DEP shall report the annual review findings of its land management review teams to the Board no later than the second board meeting in October of each year.

Review Site

The management review of Alafia River State Park considered approximately 6,345 acres in Hillsborough County that are managed by the Division of Recreation and Parks. The team evaluated the extent to which current management actions are sufficient, whether the land is being managed for the purpose for which it was acquired, and whether actual management practices, including public access, are in compliance with the management plan. The DRP revised the management plan on March 20, 1998, and the management plan update is due on March 20, 2003.

Review Team Determination

1. Is the land being managed for the purpose for which it was acquired? **All team members agreed that Alafia State Park is being managed for the purpose for which it was acquired.**

2. Are actual management practices, including public access, in compliance with the management plan? **All team members agreed that actual management practices, including public access, were in compliance with the management plan for this site.**

Commendations to the Managing Agency

The Team commends the manager and staff for their outstanding efforts with educational outreach and with managing the resources with limited staff and funding.

The Team commends the manager and staff for their expeditious planning and implementation of the extensive recreational opportunities available at this park.

Exceptional Management Actions

The following items received high scores by the review team which indicates that management actions exceeded expectations.

1. Restoration of the baygall and scrub communities, and of Heron Lake.
2. Boundary survey.
3. Cattle grazing as a multiple use.
4. Excellent recreational opportunities.
5. Waste disposal.
6. Environmental education/outreach.

Recommendations and Checklist Findings

Recommendations

The following recommendations resulted from a discussion and vote of review team members.

1. The team is concerned that since this area was a phosphate mine, that the water quality be tested. The Team recommends that the DRP acquire existing ground water quality data and that public and domestic well water be tested extensively for appropriate possible contaminants and radiation.

Manager's Response:

Agree. We are currently investigating this issue and plan to have sufficient water quality testing done to ensure that the surface and drinking waters are not a threat to the health of park staff or recreational users. This matter will be covered in the next updated UMP.

Checklist findings

The following items received low scores by the review team, which indicates that management actions, in the field, were insufficient (f) or that the issue was not sufficiently addressed in the management plan (p). These items need to be addressed in the management plan update.

1. Inadequate discussion of the floodplain swamp and blackwater stream communities in the management plan (p)

Manager's Response:

Disagree. We believe the existing discussion of these two natural communities is appropriate.

2. Survey of cultural resources (p)

Manager's Response:

Agree. The current Unit Management Plan (UMP) states that there are 13 recognized sites in the master site file. William Stanton, Archaeologist (BNCR), and park management conducted a field survey which revealed that most of the listed sites had been disturbed or mined and presumably destroyed by the past phosphate mining activities. We will address these impacts in the next updated UMP.

3. Control of invasive animals (hogs)(p), and invasive plants (f)

Manager's Response:

Invasive animals (p):

Disagree. The existing UMP references feral hogs as a principal problem at the park. Control actions have been implemented and feral hogs are not the problem they have been in the past. The next updated UMP will reflect this fact. We plan to continue the current hog removal program.

Invasive plants (f):

Disagree. The natural communities of this park were significantly impacted by phosphate mining activities. Monocultures of exotic plants are present throughout the property, with the greatest concentrations on the East Side of the river. At this time, due to available funding and staffing, we have not yet initiated control measures on the East Side of the river. Through the use of grants, exotic plant removal efforts have been implemented on the West Side of the river. Since the funding is limited, we are forced to control invasive exotics on a priority basis.

4. Inadequate discussion of the disruption of hydrology by roads (p)

Manager's Response:

Agree. The UMP addresses the disruption of hydrology due to the mining activities but does not address roads that will traverse the property from park development. This matter will be addressed in the next updated UMP.

5. Surface water quality and quantity, and groundwater quality (p)

Manager's Response:

Agree. (See the response to #1 under Recommendations section above.)

6. Discussion of the fence across the river (p)(f)

Manager's Response:

Agree. The fence is on adjacent land and not on park property. There is a possibility that a canoe/ kayak trail might be established on the section of the river between the State park and Alderman Ford County Park. This idea needs further review, as the water level fluctuates with rainfall and canoe passage would be severely restricted at times. Should the canoe trail be pursued, the legality of the fence would need to be investigated by the proper agencies. (We presume that the submerged river bottoms are owned by the State and that the Alafia River is classified as navigable waters by the US Army Corp of Engineers. If this is the case, the private fence is illegal.

7. Inadequate discussion of pollution entering the Alafia river upstream from the park (p)(f)

Manager's Response:

Agree. The South Prong Alafia River originate in Polk County and flows through phosphate mining and agricultural areas before entering the park. This matter will be reviewed in the next updated UMP process.

8. Inholdings and additions (p)(f)

Manager's Response:

Agree. A revised inholdings and additions list is under consideration and any changes will be reflected in the next updated UMP.

9. Listed animals (gopher tortoise) (f)

Manager's Response:

Agree. Although a few gopher tortoise burrows are present, a field survey of this species has not yet been conducted.

10. Survey of cultural resources (f)

Manager's Response:

Agree. (See the response to #2 above.)

11. Surface water quality and quantity, and groundwater quality (p)(f)

Manager's Response:

Agree. (See the response to #5 above and to #1 under the Recommendations.)

12. Inadequate law enforcement presence (poaching) (f)

Manager's Response:

Agree. We will continue to report violations and encourage law enforcement to increase their presence. This type of problem occurs statewide. With a vast amount of public property and natural and cultural resources to protect, there is a definite need for more law enforcement support.

13. Discussion of expanding developments impact on management of the park (f)

Manager's Response:

Agree. This topic will be considered in the next updated UMP.

14. Inadequate buildings, equipment, staff and funding (f)

Manager's Response:

Agree. The park is a new facility just completing phase one development. It is expected that with future funding for development of the park, these inadequacies will improve. Although staffing and funding priorities and needs are developed by the Department, the progress is dependent on legislature action to approved the staff positions and provide the funding necessary for the positions and future park development.