

# Alafia River State Park Unit Management Plan Approved—August 2019







# FLORIDA DEPARTMENT OF Environmental Protection

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, FL 32399

**Ron DeSantis**  
Governor

**Jeanette Nuñez**  
Lt. Governor

**Noah Valenstein**  
Secretary

August 23, 2019

Mr. Steven Cutshaw  
Division of Recreation and Parks  
Department of Environmental Protection  
3900 Commonwealth Boulevard, MS 525  
Tallahassee, Florida 32399-3000

**RE: Alafia River State Park – Lease No. 4168**

Dear Mr. Cutshaw:

On **August 16, 2019**, the Acquisition and Restoration Council (ARC) recommended approval of the **Alafia River State Park** management plan. Therefore, Division of State Lands, Office of Environmental Services (OES), acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, hereby approves the **Alafia River State Park** management plan. The next management plan update is due August 16, 2029.

Pursuant to s. 253.034(5)(a), F.S., each management plan is required to “describe both short-term and long-term management goals, and include measurable objectives to achieve those goals. Short-term goals shall be achievable within a 2-year planning period, and long-term goals shall be achievable within a 10-year planning period.” Upon completion of short-term goals, please submit a signed letter identifying categories, goals, and results with attached methodology to the Division of State Lands, Office of Environmental Services.

Pursuant to s. 259.032(8)(g), F.S., by July 1 of each year, each governmental agency and each private entity designated to manage lands shall report to the Secretary of Environmental Protection, via the Division of State Lands, on the progress of funding, staffing, and resource management of every project for which the agency or entity is responsible.

Pursuant to s. 259.036(2), F.S., management areas that exceed 1,000 acres in size, shall be scheduled for a land management review at least every 5 years.

Pursuant to s. 259.032, F.S., and Chapter 18-2.021, F.A.C., management plans for areas less than 160 acres may be handled in accordance with the negative response process. This process requires small management plans and management plan amendments be submitted to the Division of State Lands for review, and the Acquisition and Restoration

Council (ARC) for public notification. The Division of State Lands will approve these plans or plan amendments submitted for review through delegated authority unless three or more ARC members request the division place the item on a future council meeting agenda for review. To create better efficiency, improve customer service, and assist members of the ARC, the Division of State Lands will notice negative response items on Thursdays except for weeks that have State or Federal holidays that fall on Thursday or Friday. The Division of State Lands will contact you on the appropriate Friday to inform you if the item is approved via delegated authority or if it will be placed on a future ARC agenda by request of the ARC members.

Conditional 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 cursive script that reads "Callie DeHaven".

Callie DeHaven  
Director, Division of State Lands  
Department of Environmental Protection

# **Alafia River State Park**

## **Approved Unit Management Plan**

**STATE OF FLORIDA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**Division of Recreation and Parks  
August 2019**





# Table of Contents

## INTRODUCTION

|   |   |
|---|---|
| Purpose and Significance of the Park .....    | 1 |
| Purpose and Scope of the Plan.....            | 1 |
| Resource Management Component .....           | 1 |
| Land Use Component .....                      | 2 |
| Secondary Uses Consideration.....             | 7 |
| Contract Services.....                        | 7 |
| Management Program Overview .....             | 7 |
| Management Authority and Responsibility ..... | 7 |
| General Park Management Goals .....           | 8 |
| Management Coordination .....                 | 8 |
| Public Participation.....                     | 8 |
| Other Designations .....                      | 8 |

## PAST ACOMPLISHMENTS AND FUTURE OBJECTIVES

|  |    |
|--|----|
| Past Accomplishments .....               | 9  |
| Park Administration and Operations ..... | 9  |
| Resource Management .....                | 9  |
| Recreation and Visitor Services .....    | 9  |
| Park Facilities .....                    | 9  |
| Future Objectives.....                   | 10 |
| Administration and Support.....          | 10 |
| Hydrological Management .....            | 11 |
| Natural Communities Management.....      | 12 |
| Imperiled Species Management .....       | 14 |
| Exotic Species Management .....          | 15 |
| Cultural Resources Management .....      | 16 |
| Recreation Management .....              | 17 |
| Summary of Ten-Year Cost Estimates.....  | 18 |

## RESOURCE MANAGEMENT COMPONENT

|                                     |    |
|-------------------------------------|----|
| Natural Resources.....              | 19 |
| Topography.....                     | 19 |
| Geology .....                       | 19 |
| Soils.....                          | 20 |
| Minerals.....                       | 20 |
| Hydrology .....                     | 25 |
| Hydrological Management .....       | 26 |
| Natural Communities.....            | 27 |
| Natural Communities Management..... | 49 |
| Imperiled Species .....             | 53 |
| Imperiled Species Management .....  | 58 |
| Exotic Species .....                | 59 |
| Exotic Species Management .....     | 64 |

## RESOURCE MANAGEMENT COMPONENT CONT.

|  |    |
|--|----|
| Cultural Resources .....                       | 65 |
| Condition Assessment .....                     | 65 |
| Level of Significance.....                     | 65 |
| Prehistoric and Archaeological Resources ..... | 66 |
| Cultural Resources Management .....            | 69 |
| Special Management Conditions.....             | 69 |
| Timber Management Analysis .....               | 69 |
| Arthropod Control Plan .....                   | 70 |
| Land Management Review.....                    | 70 |

## LAND USE COMPONENT

|  |    |
|--|----|
| Demographics .....                                   | 71 |
| Hillsborough County .....                            | 71 |
| Regional Population Growth.....                      | 72 |
| Land Use and Zoning.....                             | 72 |
| Existing Use of Adjacent Lands .....                 | 73 |
| Planned Use of Adjacent Lands .....                  | 73 |
| Future Land Use Designation of the Park.....         | 73 |
| Regional Conservation, Recreation, Trails.....       | 73 |
| Florida Greenways and Trails System .....            | 73 |
| Statewide Comprehensive Outdoor Recreation Plan..... | 73 |
| Past and Current Uses of the Park.....               | 77 |
| Past Uses.....                                       | 77 |
| Other Uses.....                                      | 77 |
| Current Uses .....                                   | 77 |
| Recreation Facilities .....                          | 77 |
| Support Facilities .....                             | 78 |
| Attendance Analysis .....                            | 78 |
| Recreational Carrying Capacity .....                 | 81 |
| Conceptual Land Use Plan .....                       | 82 |
| Vision for Future Land Use and Recreation .....      | 82 |
| Visitor Experience Zones.....                        | 82 |
| Recreation Management .....                          | 85 |
| Optimum Boundary .....                               | 90 |



## TABLES

|  |    |
|--|----|
| TABLE 1—Natural Communities and Altered Landcovers.....      | 28 |
| TABLE 2—Prescribed Fire Management .....                     | 49 |
| TABLE 3—Imperiled Species .....                              | 55 |
| TABLE 4—Cultural Sites in the Florida Master Site File ..... | 67 |
| TABLE 5—Current Populations .....                            | 71 |
| TABLE 6—Regional Recreational Opportunities .....            | 73 |
| TABLE 7—Recreational Carrying Capacity.....                  | 81 |

## MAPS

|   |    |
|---|----|
| Vicinity Map .....                                      | 3  |
| Reference Map.....                                      | 5  |
| Topography Map .....                                    | 21 |
| Soils Map.....  | 23 |
| Management Zones Map .....                              | 29 |
| Natural Communities Map .....                           | 45 |
| Natural Communities Desired Future Conditions Map ..... | 47 |
| Invasive Plants Distribution Map .....                  | 61 |
| Conservation and Recreation Lands Map .....             | 75 |
| Base Maps .....   | 79 |
| Visitor Experience Zones Map .....                      | 83 |
| Conceptual Land Use Plan Map .....                      | 87 |
| Optimum Boundary Map .....                              | 91 |

## ADDENDA

|  |      |
|--|------|
| ADDENDUM 1—Acquisition History .....                           | A—1  |
| ADDENDUM 2—References Cited.....                               | A—2  |
| ADDENDUM 3—Soil Descriptions .....                             | A—3  |
| ADDENDUM 4—Plant and Animal List.....                          | A—4  |
| ADDENDUM 5—Imperiled Species Ranking Definitions .....         | A—5  |
| ADDENDUM 6—Cultural Information.....                           | A—6  |
| ADDENDUM 7—Timber Management Analysis .....                    | A—7  |
| ADDENDUM 8—Land Management Review (LMR) .....                  | A—8  |
| ADDENDUM 9—Advisory Group Summary and Public Comments .....    | A—9  |
| ADDENDUM 10—Local Government Comprehensive Plan Compliance.... | A—10 |





**Introduction**

**Past Accomplishments**

**Future Objectives**



## **Introduction**

Alafia River State Park is located in southeastern Hillsborough County (see Vicinity Map). Access to the park is from County Road 39 (see Reference Map). The Vicinity Map also reflects significant land and water resources existing near the park.

Alafia River State Park was initially acquired on December 18, 1996. Currently, the park comprises 7,717.81 acres. The Board of Trustees of the Internal Improvement Trust Fund (Trustees) hold fee simple title to the park and on January 23, 1998, the Trustees leased (Lease Number 4168) the property to DRP under a 50-year lease. The current lease will expire on January 22, 2048.

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

### **Purpose and Significance of the Park**

The purpose of Alafia River State Park is to provide outstanding public outdoor recreational opportunities to Florida residents and visitors within a unique and distinctive landscape while facilitating the restoration and protection of the park's natural resources.

- The park is located on what was once a large phosphate mining operation. The modified topography offers opportunities for reclamation of impacted natural areas and for recreational activities not normally found in this part of Florida.
- The park is renowned for its exceptional mountain biking trails, which accommodate all skill levels, from beginner to expert.
- The park provides a diversity of other recreational opportunities within a short drive of the densely populated Tampa Bay area. These include horseback riding, camping, hiking, paddling, fishing, and wildlife viewing within a distinctive landscape.

- The park serves as an important buffer that contributes to the protection of the Alafia River.

### **Purpose and Scope of the Plan**

Alafia River is classified as a State Recreation Area in the DRP's unit classification system. In the management of a state recreation area, major emphasis is placed on maximizing the recreational potential of the unit. However, preservation of the park's natural and cultural resources remains important. Depletion of a resource by any recreational activity is not permitted. In order to realize the park's recreational potential, the development of appropriate park facilities is undertaken with the goal to provide facilities that are accessible, convenient and safe, to support public recreational use or appreciation of the park's natural, aesthetic and educational attributes.

This plan serves as the basic statement of goals and objectives for the management of Alafia River State Park as a unit of Florida's state park system. It identifies the goals, objectives, actions and criteria or standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives and provide balanced public utilization. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and is intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the 2004 approved plan.

### **Resource Management Component**

The Resource Management Component provides a detailed inventory and assessment of the natural and cultural resources of the park. Resource management needs and issues are identified, and measurable management objectives are established for each of the park's management goals and resource types. This component provides guidance on the application of such measures as prescribed burning, exotic species removal,

imperiled species management, cultural resource management and restoration of natural conditions.

The DRP's philosophy of resource management is natural systems management. Primary emphasis is placed on restoring and maintaining, to the degree possible, the natural processes that shaped the structure, function and species composition of Florida's diverse natural communities as they occurred in the original domain. Single species management for imperiled species is appropriate in state parks when the maintenance, recovery or restoration of a species or population is complicated due to constraints associated with long-term restoration efforts, unnaturally high mortality or insufficient habitat. Single species management should be compatible with the maintenance and restoration of natural processes and should not imperil other native species or seriously compromise the park values.

The DRP's management goal for cultural resources is to preserve sites and objects that represent Florida's cultural periods, significant historic events or persons. This goal often entails 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 can be affected by conditions and events that occur beyond park boundaries. Ecosystem management is implemented through a resource management evaluation program that assesses resource conditions, evaluates management activities and refines management actions, and reviews local comprehensive plans and development permit applications for park/ecosystem impacts.

### **Land Use Component**

The Land Use Component is the recreational resource allocation plan for the park. Based on considerations such as access, population, adjacent land uses, park resources, current public uses, and existing development, measurable objectives are set to achieve the desired allocation of the physical space of the

park. These objectives identify use areas and propose the types of facilities and programs as well as the volume of public use to be provided.







Land use planning and park development decisions for the state park system are based on the dual responsibilities of the Florida Department of Environmental Protection, 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.

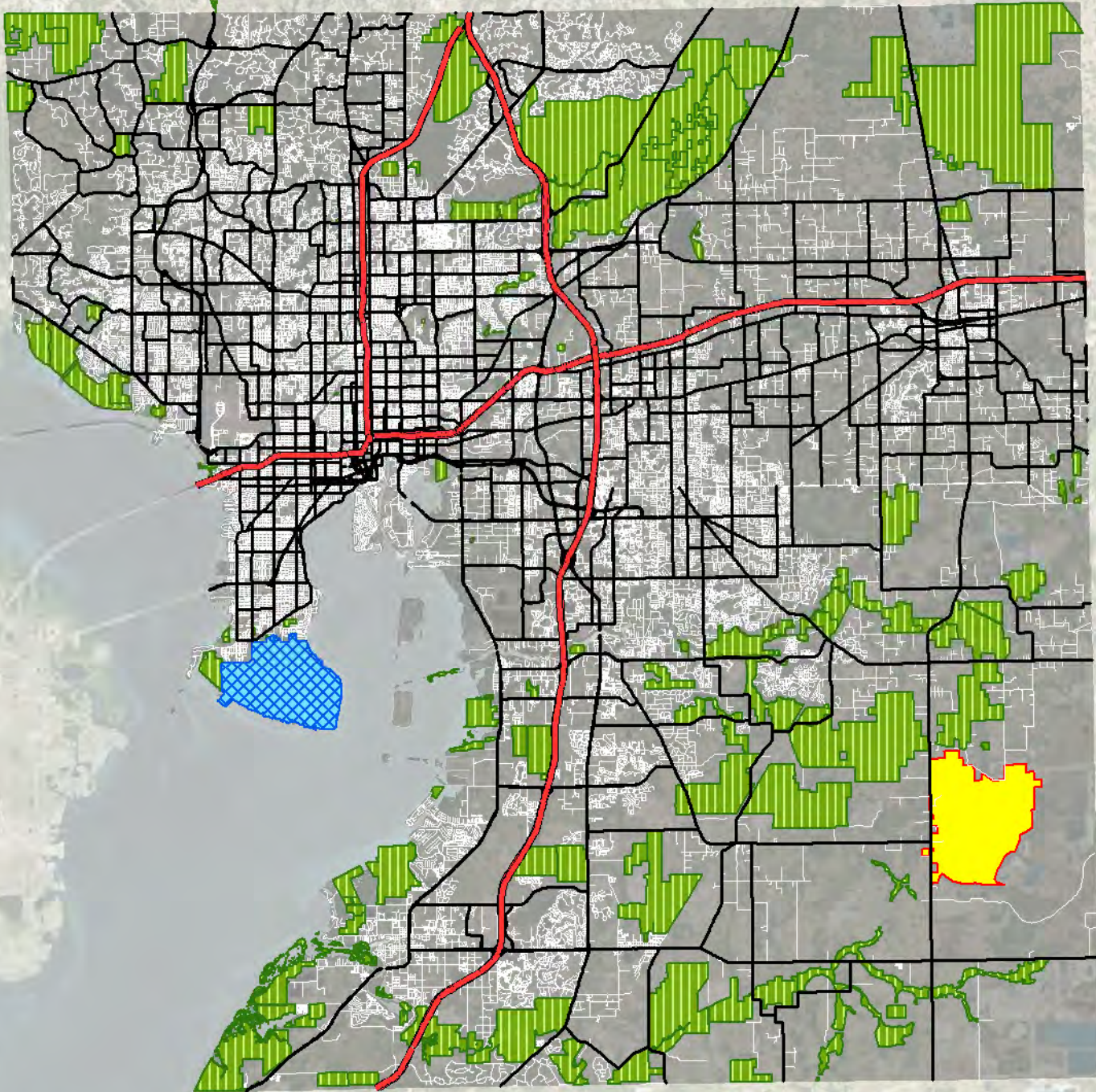
The general planning and design process begins with an analysis of the natural and cultural resources of the unit, and then proceeds through the creation of a conceptual land use plan that culminates in the actual design and construction of park facilities. Input to the plan is provided by experts in environmental sciences, cultural resources, park operation and management. Additional input is received through public workshops, and through environmental and recreational-user groups. With this approach, the DRP 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 expressed in general terms.

All development and resource alteration proposed 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.

**Legend**

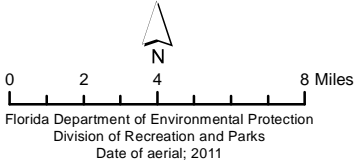
|   |                         |  |               |
|---|-------------------------|--|---------------|
|  | Alafia River State Park |  | Interstates   |
|  | Conservation Lands      |  | Major Roads   |
|  | MacDill Air Force Base  |  | Local Streets |



bing™

© 2019 Microsoft Corporation Earthstar Geographics SIO

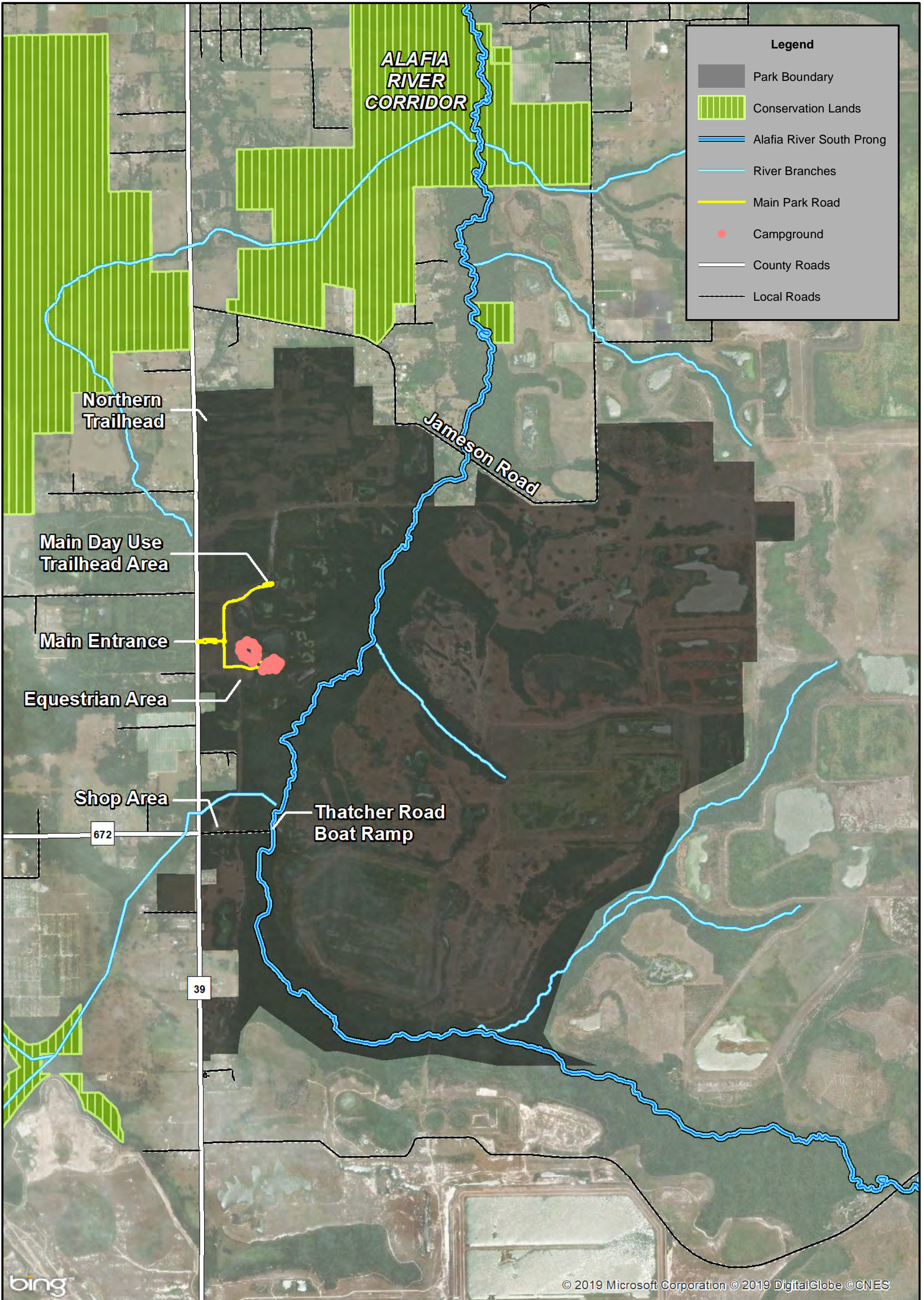
**ALAFIA RIVER  
STATE PARK**



**HILLSBOROUGH COUNTY  
VICINITY MAP**









## Secondary Uses Consideration

In accordance with 253.034(5) F.S., the potential of the park to accommodate secondary management purposes was analyzed. These secondary purposes were considered within the context of DRP's statutory responsibilities and the resource needs and values of the park. This analysis considered the park's natural and cultural resources, management needs, aesthetic values, visitation and visitor experiences. For this park, it was determined that timber management as part of the park's natural community management activities could be accommodated in a manner that would be compatible and not interfere with the primary purpose of resource-based outdoor recreation and conservation.

DRP has determined that 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) would not be consistent with this plan or the management purposes of the park.

In accordance with 253.034(5) F.S., 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 timber management and cattle grazing would be appropriate at this park as additional sources of revenue for land management since they are compatible with the park's primary purpose of resource-based outdoor recreation and conservation.

## Contract Services

DRP may provide the services and facilities outlined in this plan either with its own funds and staff or through an outsourcing contract. Private contractors may provide assistance with natural resource management and restoration activities or a concessionaire may provide services to park visitors in order to enhance the visitor experience. For example, a concessionaire could be authorized to sell merchandise and food and to rent

recreational equipment for use in the park. A concessionaire may also be authorized to provide specialized services, such as interpretive tours, or overnight accommodations when the required capital investment exceeds that which DRP can elect to incur. Decisions regarding outsourcing, contracting with the private sector, the use of concessionaires, etc. are made on a case-by-case basis in accordance with the policies set forth in DRP's Operations Manual (OM).

## Management Authority & Responsibility

In accordance with Chapter 258, Florida Statutes and Chapter 62D-2, Florida Administrative Code, the Division of Recreation and Parks (DRP) 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 Board of Trustees of the Internal Improvement Trust Fund (Trustees) has granted management authority of certain sovereign submerged lands to the DRP 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 affect public recreational uses.

Many operating procedures are standardized system-wide and are set by internal direction. These procedures are outlined in the OM that covers such areas as personnel management, uniforms and personal appearance, training, signs, communications, fiscal procedures, interpretation, concessions, public use regulations, resource management, law enforcement, protection, safety and maintenance.

### **General Park Management Goals**

The following park goals express DRP's long-term intent in managing the state park:

- Provide administrative support for all park functions.
- Protect water quality and quantity in the park, restore hydrology to the extent feasible and maintain the restored condition.
- Restore and maintain the natural communities/habitats of the park.
- Maintain, improve or restore imperiled species populations and habitats in the park.
- Remove exotic and invasive plants and animals from the park and conduct needed maintenance-control.
- Protect, preserve and maintain the cultural resources of the park.
- Provide public access, recreational, and interpretive opportunities in the park.
- Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.

### **Management Coordination**

The Florida Department of Agriculture and Consumer Services (FDACS), Florida Forest Service (FFS), assists DRP staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FWC) assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish, and other aquatic life existing within the park. In addition, the FWC aids DRP with wildlife management programs, including imperiled species management. The Florida Department of State (FDOS), Division of Historical Resources (DHR) assists staff to ensure protection of archaeological and historical sites.

### **Public Participation**

DRP provided an opportunity for public input by conducting a public workshop and an advisory group meeting to present the draft management plan to the public. These meetings were held on March 27, 2019 and March 28, 2019, respectively. Meeting notices were published in the Florida Administrative Register (Vol. 45/53: March 18, 2019), included on the DEP Calendar, posted in clear view at the park, and promoted locally.

### **Other Designations**

Alafia River State Park is not within an Area of Critical State Concern as defined in Section 380.05, Florida Statutes, and it is not presently under study for such designation. The park is a component of the Florida Greenways and Trails System, administered by the Department's Office of Greenways and Trails.

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

## **Past Accomplishments**

The resource management and land use components of this management plan provide a thorough inventory of the park's natural, cultural and recreational resources. They outline the park's management needs and problems and recommend both short and long-term objectives and actions to meet those needs. The past accomplishments and future objectives section address the administrative goals for the park and reports on DRP progress toward achieving resource management, operational, and capital improvement goals and objectives since approval of the previous management plan for this park.

Since the approval of the last management plan for Alafia River State Park in 2004, significant work has been accomplished and progress made towards meeting the DRP's management objectives for the park. These accomplishments fall within four general categories: park administration and operations, resource management, recreation and visitor services, and park facilities.

### **Park Administration and Operations**

- CSO (Friends of Alafia) established.
- Volunteers recruited to assist with park operations.
- In the process of adding a concession operation.

### **Resource Management**

#### **Natural Resources**

- Partnered with Suncoast Working Group to assist with management of exotic invasive plants through FWC contracts.
- Over 380 acres of invasive exotic are treated annually by staff, volunteers, and FWC Uplands Invasive Plant Management Service. In 2015, the FWC program provided control on an additional 400 acres.
- Implemented cattle grazing as a tool to help manage the more than 1,600 acres of invasive exotic plants, particularly cogon grass.

- Over two-thirds of the park were re-assessed for natural community designations and health, resulting in a more detailed understanding of the reclamation potential for the park and the steps needed to achieve that potential.

#### **Cultural Resources**

- Completed archaeological modeling and on-site studies for the entire park.

### **Recreation and Visitor Services**

- The CSO provided wayfinding signs on equestrian trails.
- Worked with the CSO to promote ecotourism opportunities in the surrounding communities.
- Expanded interpretation programming to include moonlight hikes and rides.

### **Park Facilities**

- Stabilized bike trails in coordination with the SWAMP mountain bike club.
- Friends of Alafia assumed trail maintenance duties in 2018.
- Constructed stables and paddocks near the campground in coordination with the CSO.
- Developed a primitive group camping area.

## Future Objectives

This section also compiles the management goals, objectives, and actions expressed in the separate parts of this management plan for easy review. Estimated costs for the ten-year period of this plan are provided for each action and objective, and the costs are summarized under standard categories of land management activities. The Ten-Year Implementation Schedule and Cost Estimates summarizes the management goals, objectives, and actions that are recommended for implementation over this period. Measures are identified for assessing progress toward completing each objective and action. The timeframes for completing each objective and action are Continuous (C), Short-Term (ST), Long-Term (LT), and Unfunded Need (UFN). Preliminary cost estimates for each action are provided and the estimated total costs to complete each objective are computed. Finally, all costs are consolidated under the following three standard land management categories: administration and support, resource management, and recreation and visitor services.

Many of the actions identified in the plan can be implemented using existing staff and funding. However, a number of continuing activities and new activities with measurable quantity targets and projected completion dates are identified that cannot be completed during the life of this plan unless additional resources for these purposes are provided.

The plan's recommended actions, time frames, and cost estimates will guide the DRP's planning and budgeting activities over the period of this plan. It must be noted that these recommendations are based on the information that exists at the time the plan was prepared. A high degree of adaptability and flexibility must be built into this process to ensure that the DRP can adjust to changes in the availability of funds, improved understanding of the park's natural and cultural resources, and changes in statewide land management issues, priorities, and policies.

Statewide priorities for all aspects of land management are evaluated each year as part of the process for developing the DRP's annual legislative budget requests. When preparing these annual requests, the DRP considers the needs and priorities of the entire state park system and the projected availability of funding from all sources during the upcoming fiscal year. In addition to annual legislative appropriations, the DRP pursues supplemental sources of funds and staff resources wherever possible, including grants, volunteers and partnerships with other entities. The DRP's ability to accomplish the specific actions identified in the plan will be determined largely by the availability of funds and staff for these purposes, which may vary from year to year. Consequently, the target schedules and estimated costs may need to be adjusted during the ten-year management planning cycle.

| <b>Goal I: Provide administrative support for all park functions.</b> |  | <b>Measure</b>                  | <b>Planning Period</b> | <b>Estimated Manpower and Expense Cost* (10-years)</b> |
|---|--|---------------------------------|------------------------|--|
| <b>Objective A</b>  | <b>Continue day-to-day administrative support at current levels.</b>   | Administrative support ongoing  | <b>C</b>               | <b>\$366,000</b>                                       |
| <b>Objective B</b>  | <b>Expand administrative support as new lands are acquired, new facilities are developed, or as other needs arise.</b> | Administrative support expanded | <b>UFN</b>             | <b>\$255,000</b>                                       |

C – Continuous; ST – Short Term (within 2 years); LT – Long Term (within 10 years); UFN – Unfunded Need

## **10 – Future Objectives**

| <b>Goal II: Protect water quality and quantity in the park, restore hydrology to the extent feasible, and maintain the restored condition.</b> |   | <b>Measure</b>                                | <b>Planning Period</b> | <b>Estimated Manpower and Expense Cost* (10-years)</b> |
|--|---|---|------------------------|--|
| <b>Objective A</b>   | <b>Conduct/obtain an assessment of the park's hydrological needs.</b>   | Assessment conducted                          | <b>UFN</b>             | <b>\$392,000</b>                                       |
| Action 1   | Seek assistance through SWFWMD's Cooperative Funding Initiative (CFI), or other programs. Submit proposal, including a draft Statement of Work (SOW), to outsource a park-wide assessment of the hydrology situation. | SOW defined; proposal submitted               | ST                     | \$12,000   |
| Action 2   | Implement project   | Project implemented                           | UFN                    | \$380,000  |
| <b>Objective B</b>   | <b>Monitor and address the fecal coliform showing up in Hurrah Creek.</b>   | Qty fecal coliform reduced or removed         | <b>LT</b>              | <b>\$6,500</b>   |
| <b>Objective C</b>   | <b>Restore natural hydrological conditions and functions to approximately 2 acres of impoundment/artificial pond edges.</b>   | # Acres restored or with restoration underway | <b>UFN</b>             | <b>\$12,000</b>  |
| Action 1   | Evaluate the impoundment/artificial pond areas and select optimal areas for re-grading and plantings.   | Project areas selected                        | UFN                    | \$3,000  |
| Action 2   | Re-grade and install plantings as appropriate.  | # Acres restored or with restoration underway | UFN                    | \$9,000  |

C – Continuous; ST – Short Term (within 2 years); LT – Long Term (within 10 years); UFN – Unfunded Need

| <b>Goal III: Restore and maintain the natural communities/habitats of the park.</b> |  | <b>Measure</b>                                   | <b>Planning Period</b> | <b>Estimated Manpower and Expense Cost* (10-years)</b> |
|---|--|--|------------------------|--|
| <b>Objective A</b>  | <b>Within 10 years have at least 2,400 acres of the park maintained within optimal fire return interval.</b>   | # Acres within FRI target                        | <b>LT</b>              | <b>\$1,430,500</b>                                     |
| Action 1  | Develop/update annual burn plan; include grazing contract annual requirements for burning; manage fire-dependent communities by burning 800 -1,800 acres annually.           | Annual plan report; acres burned                 | C                      | \$1,418,500  |
| Action 2  | Engage user groups, stakeholders, volunteers in supporting prescription burning at the park, where feasible.   | # of people engaged                              | C                      | \$12,000   |
| <b>Objective B</b>  | <b>Establish new fire breaks as needed to accommodate new optimal fire return goals.</b>   | # Miles evaluated; firebreaks established        | <b>UFN</b>             | <b>\$42,000</b>  |
| Action 1  | Evaluate firebreaks for ecotone disruption and whether any inadvertently cause fire suppression in any communities   | # Miles evaluated                                | ST                     | \$12,000   |
| Action 2  | Adjust Management Zone boundaries, if necessary  | Management zone map updated                      | ST                     | \$30,000   |
| <b>Objective C</b>  | <b>Maintain contracted, prescribed cattle grazing as needed, using ecological grazing best management practices, to assist in improving 2,400 acres of altered community</b> | Contract in place and signed; condition improved | <b>C</b>               | <b>\$26,600</b>  |
| Action 1  | Define the metrics that determine which acres would benefit from grazing and which acres should be exempt from grazing   | Set of metrics defined                           | ST                     | \$3,000  |
| Action 2  | Provide a grazing contract that includes the metrics and engage a contractor   | Contract in place and signed;                    | ST                     | \$5,600  |
| Action 3  | Supervise contract requirements and maintain communication with the contractor and NRCS  | Surveys or inspections recorded quarterly        | C                      | \$10,000   |
| Action 4  | Evaluate grazed lands for level of improvement; adjust annual plans and contract amendments accordingly  | Evaluation completed annually                    | C                      | \$8,000  |

## 12 – Future Objectives



| <b>Goal III: Restore and maintain the natural communities/habitats of the park.</b> |   | <b>Measure</b>   | <b>Planning Period</b> | <b>Estimated Manpower and Expense Cost* (10-years)</b> |
|---|---|--|------------------------|--|
| <b>Objective D</b>  | <b>Test for the presence and levels of heavy metals in at least two areas of remnant mine tailings.</b>   | Soil analysis report                                       | <b>ST</b>              | <b>\$200</b>   |
| <b>Objective E</b>  | <b>Conduct natural community/habitat improvement activities on 500 acres of natural and altered communities.</b>  | # Acres restored or with restoration underway              | <b>UFN</b>             | <b>\$239,000</b>                                       |
| Action 1  | In all Developed acres, set mowing schedules to allow for optimum recruitment and maintenance of the native plant species that occur or "volunteer;" include only native species for landscaping  | Plan developed; no non-park plants (native) in landscaping | ST                     | \$46,000   |
| Action 2  | For all Utility Corridor acres, approach the utilities to develop a natural communities improvement plan.   | Plan developed;  | ST                     | \$8,000  |
| Action 3  | In at least 200 acres of the flatwoods-type acres (see AR-28, AR-36A, AR38B and AR-39), bring Mesic Flatwoods from Fair to Good condition through fire and exotics control and through wiregrass seeding.   | Condition improved   | UFN                    | \$166,000  |
| Action 4  | Bring at least 8 acres of Hydric Hammock community (see AR-16, north of McMullen Branch) to Good condition by moving the grazing fence line and by grading the existing plow-line so that surface water can flow through the community and fire can move appropriately along its edges. | Condition improved   | UFN                    | \$3,000  |
| Action 5  | Bring at least 14 acres of scrub to Excellent maintenance condition by reducing sand pines and following FRI  | Condition improved   | LT                     | \$12,500   |
| Action 6  | Bring at least 20 acres of Altered: Pine Plantation (see AR-07) to Mesic Hammock/Mesic Flatwoods community in Fair to Good condition by introducing fire.   | # acres burned; condition improved                         | LT                     | \$3,500  |

C – Continuous; ST – Short Term (within 2 years); LT – Long Term (within 10 years); UFN – Unfunded Need

| <b>Goal IV: Maintain, improve or restore imperiled species populations and habitats in the park.</b> |   | <b>Measure</b>                           | <b>Planning Period</b> | <b>Estimated Manpower and Expense Cost* (10-years)</b> |
|--|---|--|------------------------|--|
| <b>Objective A</b>   | <b>Update baseline imperiled species occurrence inventory lists for plants and animals, as needed.</b>  | List updated                             | <b>C</b>               | <b>\$13,000</b>  |
| Action 1   | Continue to send monthly wildlife reports and plant queries or observations to the District Biology office, including suspected imperiled species and their locations. Assessments completed for Objective B, Community Improvements, will add to all species data. | Lists updated                            | C                      | \$6,000  |
| Action 2   | District Biology office continues to confirm species' identification, updates species data lists, including herbarium accession records, and updates FNAI imperiled species data.   | Species reports confirmed; lists updated | C                      | \$7,000  |
| <b>Objective B</b>   | <b>Monitor and document two selected imperiled animal species in the park.</b>  | # Species monitored                      | <b>C</b>               | <b>\$13,500</b>  |
| Action 1   | Develop monitoring protocols for 2 selected imperiled animal species including southeastern American kestrel and gopher tortoise.   | # Protocols developed                    | ST                     | \$3,500  |
| Action 2   | Implement monitoring protocols for 2 imperiled animal species: southeastern American kestrel and gopher tortoise.   | # Species monitored; reports available   | C                      | \$10,000   |
| <b>Objective C</b>   | <b>Monitor and document eight selected imperiled plant species in the park.</b>   | # Species monitored                      | <b>C</b>               | <b>\$24,800</b>  |
| Action 1   | Develop monitoring protocols for 4 selected imperiled plant species: comb polypody, wild pine, spreading airplant, and angularfruit milkvine.   | # Protocols developed                    | ST                     | \$6,800  |
| Action 2   | Implement monitoring for four species in Action 1. Monitoring results report/documentation should include management guidelines, as needed.   | # Species monitored; reports available   | C                      | \$9,000  |
| Action 3   | Implement monitoring for four scrub species: Florida goldenaster, nodding pinweed, scrub plum, and Britton's beargrass.   | # Species monitored; reports available   | C                      | \$9,000  |

| <b>Goal V: Remove exotic and invasive plants and animals from the park and conduct needed maintenance-control.</b> |   | <b>Measure</b>                                   | <b>Planning Period</b> | <b>Estimated Manpower and Expense Cost* (10-years)</b> |
|--|---|--|------------------------|--|
| <b>Objective A</b>   | <b>Annually treat at least 680 gross acres infested with exotic plant species in the park.</b>  | # Acres treated                                  | <b>C</b>               | <b>\$2,014,800</b>                                     |
| Action 1   | Annually develop/update exotic plant management work plan.  | Plan developed/updated                           | C                      | \$16,000   |
| Action 2   | Implement annual work plan and continue maintenance and follow-up treatments, as needed. Seek outside assistance, as appropriate, to meet these goals | Plan implemented                                 | C                      | \$1,976,800  |
| Action 3   | Verify that grazing contract acres are included in this number and are being treated by the rancher.  | Acreage verified                                 | C                      | \$2,000  |
| Action 4   | Develop and implement plan to address exotic aquatic plants.  | Plan developed                                   | C                      | \$20,000   |
| <b>Objective B</b>   | <b>Implement control measures on one nuisance and exotic animal species in the park.</b>  | # Species for which control measures implemented | <b>C</b>               | <b>\$150,000</b>                                       |
| Action 1   | Annually develop, improve and implement exotic animal management work plan for wild hogs; seek outside assistance as needed.                          | # hogs removed                                   | C                      | \$150,000  |

C – Continuous; ST – Short Term (within 2 years); LT – Long Term (within 10 years); UFN – Unfunded Need

| <b>Goal VI: Protect, preserve and maintain the cultural resources of the park.</b> |  | <b>Measure</b>                       | <b>Planning Period</b> | <b>Estimated Manpower and Expense Cost* (10-years)</b> |
|--|--|--------------------------------------|------------------------|--|
| <b>Objective A</b>   | <b>Implement a maintenance program for the Picnic/Thatcher Mound site and submit a formal National Register application.</b>                                   | Documentation complete               | LT                     | <b>\$13,000</b>  |
| Action 1   | Establish a maintenance program for the Picnic/Thatcher Mound (HI00003) to implement restoration, rehabilitation, stabilization, and preservation.             | Assessments complete                 | UFN                    | \$10,000   |
| Action 2   | Work with DHR, AIST and SHPO to implement the application process. If the site qualifies, complete the registration and begin developing an interpretive plan. | Reports and priority lists completed | LT                     | \$3,000  |
| <b>Objective B</b>   | <b>Locate and assess all recorded sites in the park that are still in need of a full evaluation.</b>   | Documentation complete               | LT                     | <b>\$26,000</b>  |

C – Continuous; ST – Short Term (within 2 years); LT – Long Term (within 10 years); UFN – Unfunded Need

| <b>Goal VII: Provide public access and recreational opportunities in the park.</b> |   | <b>Measure</b>             | <b>Planning Period</b> | <b>Estimated Manpower and Expense Cost* (10-years)</b> |
|--|---|----------------------------|------------------------|--|
| <b>Objective A</b>   | <b>Expand the park's recreational carrying capacity by 344 users per day.</b> | # of visitors per day      | <b>UFN</b>             | <b>\$1,294,000</b>                                     |
| <b>Objective B</b>   | <b>Continue, improve, and develop new interpretive programs.</b>              | # of interpretive programs | <b>C</b>               | <b>\$30,000</b>  |

| <b>Goal VIII: Develop and maintain the capital facilities and infrastructure necessary to meet the goals and objectives of this management plan.</b> |  | <b>Measure</b>                    | <b>Planning Period</b> | <b>Estimated Manpower and Expense Cost* (10-years)</b> |
|--|--|-----------------------------------|------------------------|--|
| <b>Objective A</b>   | <b>Maintain all public and support facilities in the park.</b> | Facilities maintained             | <b>C</b>               | <b>\$1,100,000</b>                                     |
| <b>Objective B</b>   | <b>Improve and/or repair 5 existing use areas.</b>             | # of facilities and miles of road | <b>UFN</b>             | <b>\$13,631,000</b>                                    |
| <b>Objective C</b>   | <b>Construct 2 new use areas and 4.5 miles of road.</b>        | # of facilities and miles of road | <b>UFN</b>             | <b>\$1,853,000</b>                                     |

C – Continuous; ST – Short Term (within 2 years); LT – Long Term (within 10 years); UFN – Unfunded Need

## Summary of Ten-Year Cost Estimates

| Management Categories                  | Total Estimated Manpower and Expense Cost (10 years) | Percentage  |
|--|--|-------------|
| <b>Administration and Support</b>      | <b>\$621,000</b>                                     | <b>3%</b>   |
| <b>Resource Management</b>             | <b>\$4,403,900</b>                                   | <b>19%</b>  |
| Hydrology                              | \$410,500  | 2%          |
| Natural Communities                    | \$1,738,300  | 7%          |
| Imperiled Species                      | \$51,300   | 0.5%        |
| Exotic Species                         | \$2,164,800  | 9%          |
| Cultural Resources                     | \$39,000   | 0.5%        |
| <b>Recreation and Visitor Services</b> | <b>\$17,908,000</b>                                  | <b>78%</b>  |
| Public Access                          | \$1,324,000  | 6%          |
| Capital Improvements                   | \$16,584,000   | 72%         |
| <b>Total Ten-Year Cost Estimate</b>    | <b>\$22,932,900</b>                                  | <b>100%</b> |



CAUTION!  
ALLIGATORS  
NO SWIMMING  
BE AWARE OF YOUR SAFETY

# Resource Management Component





## **Natural Resources**

### **Topography**

The 7,718 acres of the park lie on the western part of the Polk Upland (White 1970). Elevations within the Polk Upland range from 100 to 155 feet above mean sea level with river bottoms around 50 feet above mean sea level. The rivers of the Polk Upland are somewhat incised, creating more topographic relief than is typical of the surrounding physiographic units (Clewell *et al.*, 1982). The South Prong of the Alafia, which is within the park, is well incised. The topography of the rest of the park is greatly altered by mining processes, with changes of over 20 feet above and 20 feet below the naturally contours of the property. Many such changes occur over very short distances, as seen in the steep inclines and broad berms.

### **Geology**

The 1918 Geological Survey reports that "Hillsborough County lies in the Coastal Plain province, where the soil-forming material consists of unconsolidated deposits washed from the piedmont plateau laid down on the sea floor in ancient times and subsequently uplifted above the level of the sea. The underlying formations consist of limestone, marl, and phosphatic gravels." The southern part of the county is formed of Pleistocene and recent depositions, consisting of sand, clay, marl, coquina limestone, peat and muck. The greater part of the surface material consists of a siliceous sand of uniformly fine grade that varies in depth from a few inches to many feet. Bordering the Alafia River and principal tributaries, discontinuous strips, rarely more than two or three miles wide, have a clay or sandy clay to marl subsoil.

In the 1989 Geological Survey, what had been delineated as Coastal Plain Province is reframed as part of the Polk Upland, which 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 consist of iron-cemented sands, clay-containing sands, and phosphate nodules, the latter being the major incentive

for extensive surface mining in the region. 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 peninsular Florida. In poorly drained sites, the iron-cemented sands are one to two feet beneath the soil surface and comprise alluvial (subsurface) spodic horizon within the soil profile (Clewell *et al.* 1982).

By the time of the 1989 survey, phosphate mining operations had significantly impacted the lands now part of ARSP, decimating geological patterns across broad areas. Drilling records 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 (Clewell 2000). These sands could store substantial quantities of groundwater, which moved by gravity over the impermeable strata, and eventually seeped into the South Prong of the Alafia and its tributaries. Since phosphate ore is found from 15 to 50 feet below the ground surface, many of the sandy pockets and the iron-cemented sands were overturned or otherwise re-arranged in the mining process.

During the years of mining in the ARSP area, there were few requirements for mining companies to mitigate any damage to the land. Reclamation work generally consisted of tree plantings and the installation of pastures and groves. The tree plantings were done as groupings or as timbering plantations and could include species never found in the area. However, there are two small exemplary restoration efforts, although one used imported topsoil before planting.

With so much of the land redefined by mining, good ecological management going forward must incorporate knowledge of the basic processes of phosphate mining. The desired ore is generally in a matrix of equal parts sand, clay and fluorapatite, a phosphate mineral. In Florida, the phosphate rock is extracted by strip-mining. Dragline cranes remove the top layer of soil (overburden) and scoop up the phosphate matrix. The matrix is put in a pit, where high-pressure water guns create slurry that can be pumped to a processing plant. At the processing plant, the

"beneficiation" process separates the sand and clay from the phosphate rock. After the largest particles are removed, the slurry is run through a hydrocyclone that uses centrifugal force to remove the clay. Waste clay is pumped to a settling pond or clay settling area. Sand and sand-sized phosphate particles, called "flotation feed," are put through a process that uses chemical reagents, water and physical force to separate the sand and phosphate. Remaining sand is pumped back to the mine where it will be used to "reclaim" the site when mining is complete.

Roughly 40 percent of a mine site becomes clay-settling area. Three to five years after the start of "reclamation," a top crust forms that is 50-60 percent solids. Beneath the crust, the clay maintains the consistency of pudding for an unknown number of years. With such an unstable base, land use options are limited. In addition, settling areas are much less permeable than Florida's natural sandy soil, which means rainfall cannot seep through the clay bottom to recharge the aquifer, and surface and underground water flows are altered. (TBS 2002; Our Phosphate Risk 2008; FIPR 2017).

## **Soils**

About 4,000 acres of the park are composed of human-altered soils: Arents Nearly Level, Arents Very Steep, and Slickens. Arents soils are created by disturbances to depths of 40 feet or more and have none of the identifiable structures or horizons that are used to determine natural soil profiles. Slickens is the term used to designate mine tailings, the materials left after the process of separating the valuable fraction from the uneconomic fraction of the ore. Slickens may have concentrations of heavy metals, such as arsenic, cadmium, lead or mercury.

The pre-Arents soils west of the river were predominantly Myakka-Basinger-Holopaw (USDA 1989) or Norfolk Hammock-St. Lucie-Leon (USDA 1918). These are nearly level, poorly to very poorly drained soils that have a sandy subsoil, are sandy throughout or have a loamy subsoil (1989). Such soils tend to be

associated with mesic to scrubby flatwoods with a mosaic of hydric and mesic hammocks.

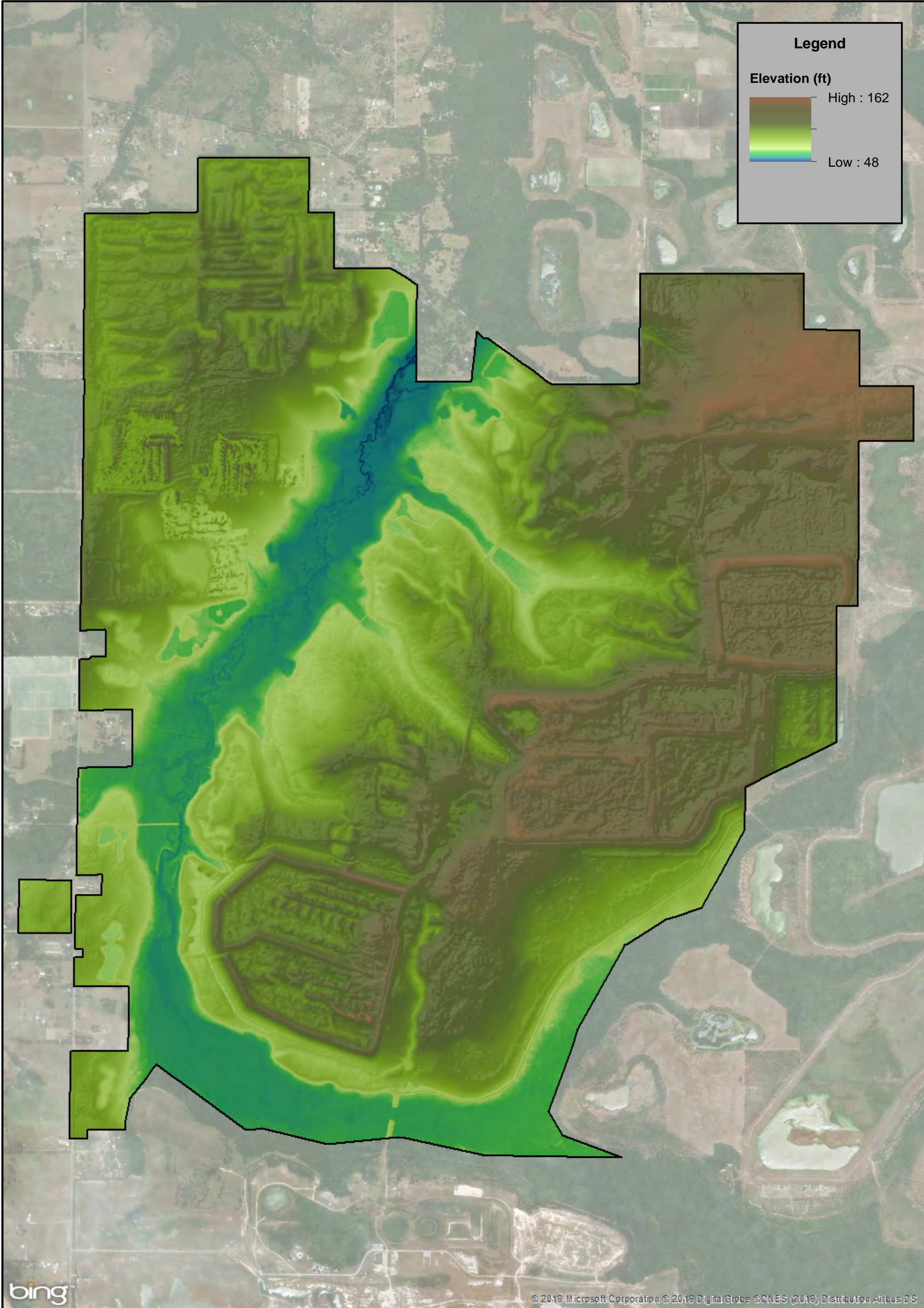
Pre-Arents and pre-slickens soils east of the river included Myakka-Immokalee-Pomello and Candler-Lake (1989) or Norfolk-Norfolk Hammock (USDA 1918). These are nearly level to variously sloping, poorly to well drained soils that have a sandy subsoil or are sandy throughout, and such soils tend to be associated with sandhill and a mosaic of scrub, and xeric to hydric hammocks.

Of the remaining natural soils, roughly half are Winder Fine Sand (USDA 1989), and others include Candler fine sand, Zolfo fine sand and Archbold fine sand.

Winder fine sand is a fine loamy, siliceous soil often associated with broad sloughs on the flatwoods, and in ARSP it is the underlying soil for the floodplain swamp, bottomland forest, and portions of the baygall and hydric hammock communities. Candler and Zolfo fine sands are usually associated with sandhill or upland flatwoods, as are Malabar and Lake fine sand. Archbold fine sand is associated with scrub. Please see the Soils Map. Detailed descriptions for the various soil types are found in Addendum 3.

## **Minerals**

Phosphate has been mined from these lands. (The term Alafia has purportedly been translated from one Native American dialect as "River of Fire," possibly referring to the phosphorus glowing at night along the river bottom.) As areas worked became depleted of commercially-feasible deposits, the mines were closed. At the time of writing this plan, there were no mining activities within the present park boundary.



**Legend**

**Elevation (ft)**

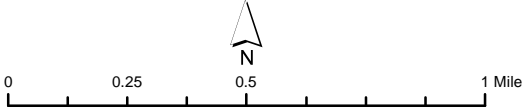
High : 162

Low : 48

bing

© 2019 Microsoft Corporation © 2019 DigitalGlobe © CNES (2018) Distribution Airbus DS

ALAFIA RIVER STATE PARK



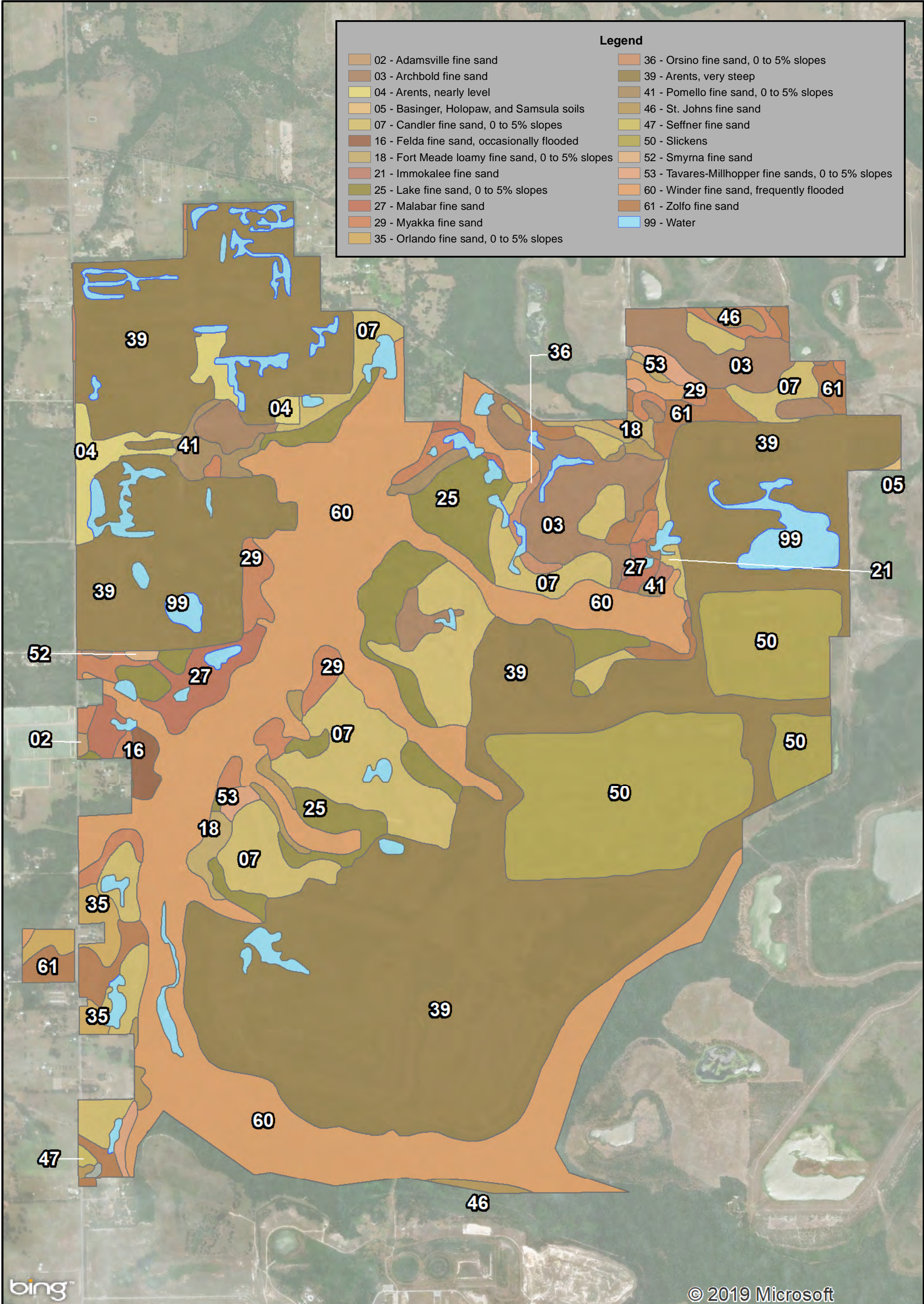
Florida Department of Environmental Protection  
 Division of Recreation and Parks  
 Date of aerial: 2011

TOPOGRAPHIC MAP



**Legend**

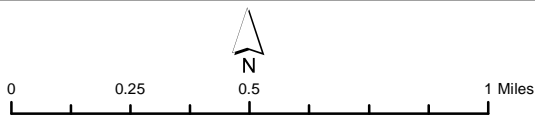
|   |  |
|---|--|
| 02 - Adamsville fine sand                       | 36 - Orsino fine sand, 0 to 5% slopes              |
| 03 - Archbold fine sand                         | 39 - Arents, very steep                            |
| 04 - Arents, nearly level                       | 41 - Pomello fine sand, 0 to 5% slopes             |
| 05 - Basinger, Holopaw, and Samsula soils       | 46 - St. Johns fine sand                           |
| 07 - Candler fine sand, 0 to 5% slopes          | 47 - Seffner fine sand                             |
| 16 - Felda fine sand, occasionally flooded      | 50 - Slickens                                      |
| 18 - Fort Meade loamy fine sand, 0 to 5% slopes | 52 - Smyrna fine sand                              |
| 21 - Immokalee fine sand                        | 53 - Tavares-Millhopper fine sands, 0 to 5% slopes |
| 25 - Lake fine sand, 0 to 5% slopes             | 60 - Winder fine sand, frequently flooded          |
| 27 - Malabar fine sand                          | 61 - Zolfo fine sand                               |
| 29 - Myakka fine sand                           | 99 - Water   |
| 35 - Orlando fine sand, 0 to 5% slopes          |  |



bing™

© 2019 Microsoft

ALAFIA RIVER STATE PARK



Florida Department of Environmental Protection  
Division of Recreation and Parks  
Date of aerial: 2016

SOILS MAP



## Hydrology

The central water feature in the park is a blackwater river, known as the South Prong of the Alafia River. This surface feature has an "L" shape and flows west and then north-northwest, reaching the Alafia River about six miles north of the park boundaries. Tributaries feeding into this river include several streams, creeks or branches within the park boundaries. The most notable of the streams mapped to date (from north to south along east side of river) include Jameson Branch, McMullen Branch, Pollard Branch, Dogleg Branch, and then Boggy Branch; the latter's entry, flowing southwest into the river, gives the impression that the river has a reverse-J shape in the park. Entering the river on the west side, north to south, are Hurrah Creek and Cemetery Branch. Hurrah Lake is essentially a widened area of the South Prong, covering roughly 13 acres. Overall, surface sheet flow would appear to follow the complicated flow patterns of the river and its branches, with some scattered interruptions caused by borrow pits and overburden or bermed areas created for clay slurry dumps. US Geological Survey (USGS), working with Southwest Florida Water Management District (SWFWMD), has a water flow gauge on the South Prong, south of most of the tributaries; flow levels at the gauge are generally lowest in May and highest in September (USGS 2007).

Hillsborough County Environmental Protection Commission (EPC) has two water quality monitoring stations that relate to the section of South Prong Alafia within park boundaries. One is on the minor tributary about 300 feet north of Thatcher Road, on the east side of CR39; the second one is downstream, at the bridge on Jameson Road at the north end of the park (Station Number 548). Measurements are taken quarterly. Broadly speaking, water quality measures at the southern, upstream station (545) tend to be poorer than the northern, downstream station (548), with lower dissolved oxygen, higher fecal coliform, and higher nitrogen readings on Hurrah Creek. The presence of fecal coliform in the tributary needs to be more fully investigated and prevented.

There are many lakes at the park, all of which are man-made remnants from mining processes. Most lack natural littoral profiles or structure or vegetal components. Most are nutrient poor, with dissolved oxygen levels ranging from low to absent; vegetation is predominantly composed of invasive aquatic species. A few of the shallower ponds have littoral profiles that are in good condition, with spotted water hemlock (*Cicuta maculata*), and many other native obligate wetland species growing along the water's edges. The "lakes" immediately south of Thatcher Road leading to the bridge are being used as retention ponds for stormwater feeds from the neighborhoods west of CR 39; these need to be monitored for overflow, quality and erosion. There may be some seepage or flow between the various lakes, and a few connections have been located by park staff, but the overall status of such dynamics is unknown. Investigating and mapping flow connections between the impoundment areas would provide useful information.

Roughly 40 percent of a mine site can be clay settling area, and there are clay settling areas within the park boundaries. The most easily identifiable are those found in AR-10, AR-13, AR-31A, AR-20A, and the berm-enclosed area in AR-19A. But there are others scattered throughout the arents and slickens areas. Culverts placed in clay settling areas are prone to failure, such as the one in AR-31. The consolidation of the clay settling areas typically takes decades.

No records for park-wide hydrological assessments were identified during the research for this management plan. Such an assessment is needed to fully determine current conditions for best management planning. The kind of expertise required to perform water quality assessments or management, beyond erosion control and ecosystem management efforts, is not currently part of the skill sets managed by FPS. Proper water quality and hydrology assessments are accomplished only through partnerships with water management agencies, such as Hillsborough County's EPC, SWFWMD, or the FWC aquatic programs.

## Hydrological Management Program

**Goal: Protect water quality and quantity in the park, restore hydrology to the extent feasible and maintain the restored condition.**

The natural hydrology of most state parks has been impaired prior to acquisition to one degree or another. Florida's native habitats are precisely adapted to natural drainage patterns and seasonal water level fluctuations. Variations in these factors frequently determine the types of natural communities that occur on a particular site. Even minor changes to natural hydrology can result in the loss of plant and animal species from a landscape. Restoring state park lands to original natural conditions often depends on returning natural hydrological processes and conditions to the park. This is done primarily by filling or plugging ditches, removing obstructions to surface water "sheet flow," installing culverts or low-water crossings on roads, and installing water control structures to manage water levels.

***Objective A: Conduct/obtain an assessment of the park's hydrology and models for analyzing best restoration plans.***

- Action 1      Seek assistance through SWFWMD's Cooperative Funding Initiative (CFI), or other programs. Submit proposal, including a draft Statement of Work (SOW), to outsource a park-wide assessment of the hydrology situation, one that includes modeling the data once collected and produces scenarios for best management practices needed at the park.
- Action 2      Implement project; this could take two to five years.

A useful hydrology assessment is likely to need two years of data gathering and establishing the appropriate models for analyses, and another year or two to run various "what if" analyses through the models to provide the park with direction and priorities. The hydrology assessment project

should include, at the least: defining probable watershed boundaries as they relate to the park; mapping all impoundment areas and identifying any flow connections between them; applying historical data and current communities conditions to assess optimal flow patterns throughout the park; identifying clay settling areas and assessing for safety or other related issues; determining need for littoral edges for, and safe access to, impoundment areas. Having the assessment data and modeling in place not only provides an initial basis for determining and prioritizing work at the park but can continue to serve to support adaptive management for best management practices in the future. SWFWMD assists with such projects and their experience is invaluable. Their assistance includes financial match support, knowledge of the how to best frame a project to get the best vendors, experience with the vendors who do this work, and experience with supervising such projects as they are being implemented. Contact the CFI staff to learn the current programs and protocols for obtaining their support.

***Objective B: Monitor and address the fecal coliform detected in Hurrah Creek.***

Coordinate with local water quality authorities for assistance in monitoring coliform levels and to correct the problem.

***Objective C: Restore/create natural hydrological conditions and functions to at least 2 acres of impoundment/artificial pond edges.***

- Action 1      Evaluate the impoundment/artificial pond areas and select optimal areas for re-grading and plantings.
- Action 2      Re-grade and install plantings as appropriate.

This objective is intended to begin the development of better wetland structure and health to the existing water features at the park.



## Natural Communities

This section of the management plan describes and assesses each of the natural communities found in the state park. It also describes the desired future condition (DFC) of each natural community and identifies the actions that will be required to bring the community to its desired future condition. Specific management objectives and actions for natural community management, exotic species management, and imperiled species management are discussed in the Resource Management Program section of this component.

The system of classifying natural communities employed in this plan was developed by the Florida Natural Areas Inventory (FNAI). 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 that are similar with respect to those factors will tend to have natural communities with similar species compositions (FNAI 2010). Obvious differences in species composition can occur, however, 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. Some physical influences, such as fire frequency, may vary from FNAI's descriptions for certain natural communities in this plan.

The determination of appropriate natural communities and the assessments of their health are based on historical growth and largely on soil types and structures. More than half of the acres at ARSP fit neither FNAI's natural nor altered community descriptions. Presently, FNAI has no classifications for the native plant assemblages that find their way back – reclaim the land – after the severe surface, seed bank and soils disruptions caused by phosphate mining. Until there are distinctions for such reclaimed areas, this plan imposes the current FNAI community designations that

most closely approximate what exists at the park. Many will never have the same species assemblies, growth history, topography, ground structure or soils. The study of historical vegetation patterns to assist with this portion of the plan has included vegetation notes found in the 1918 soils survey, 1970s aerials, notes from archaeological studies in the 1970s, notes from the ARSP 2004 Unit Management Plan, notes from a mining company biologist, reports from various revegetation efforts, and the examination of the remnant few “restoration” efforts that have had success at the park. In general, the historical data indicate a predominance of “rolling pinelands,” which were probably mesic flatwoods in the more upland areas, and sandhill and scrubby flatwoods with pockets of scrub and xeric hammock in the drier uplands.

The extent of disturbance on these lands, particularly the extent of invasive plant monocultures, requires that the park consider resource management practices beyond those that might work on less altered lands. To this end, the park has implemented cattle grazing as a management tool. There is already some evidence of its usefulness: roughly 215 acres were recently moved out of the grazing plan because they have improved sufficiently that Desired Future Conditions can be achieved with other management tools. The cost of an equivalent improvement using other techniques would have been prohibitive. More discussion of grazing at ARSP is found in the Restoration Goals section, at the end of the community descriptions.

When a natural community within a park reaches the desired future condition, it is considered in a “maintenance condition” and assessed as Good or Excellent. Required actions for sustaining a community's maintenance condition may include: maintaining optimal fire return intervals for fire-dependent communities; ongoing control of non-native plant and animal species; maintaining natural hydrological functions, including historic water flows and water quality; preserving a community's biodiversity and vegetative structure; protecting viable populations of plant and animal species,

particularly those that are imperiled or endemic; and preserving intact ecotones that link natural communities across the landscape.

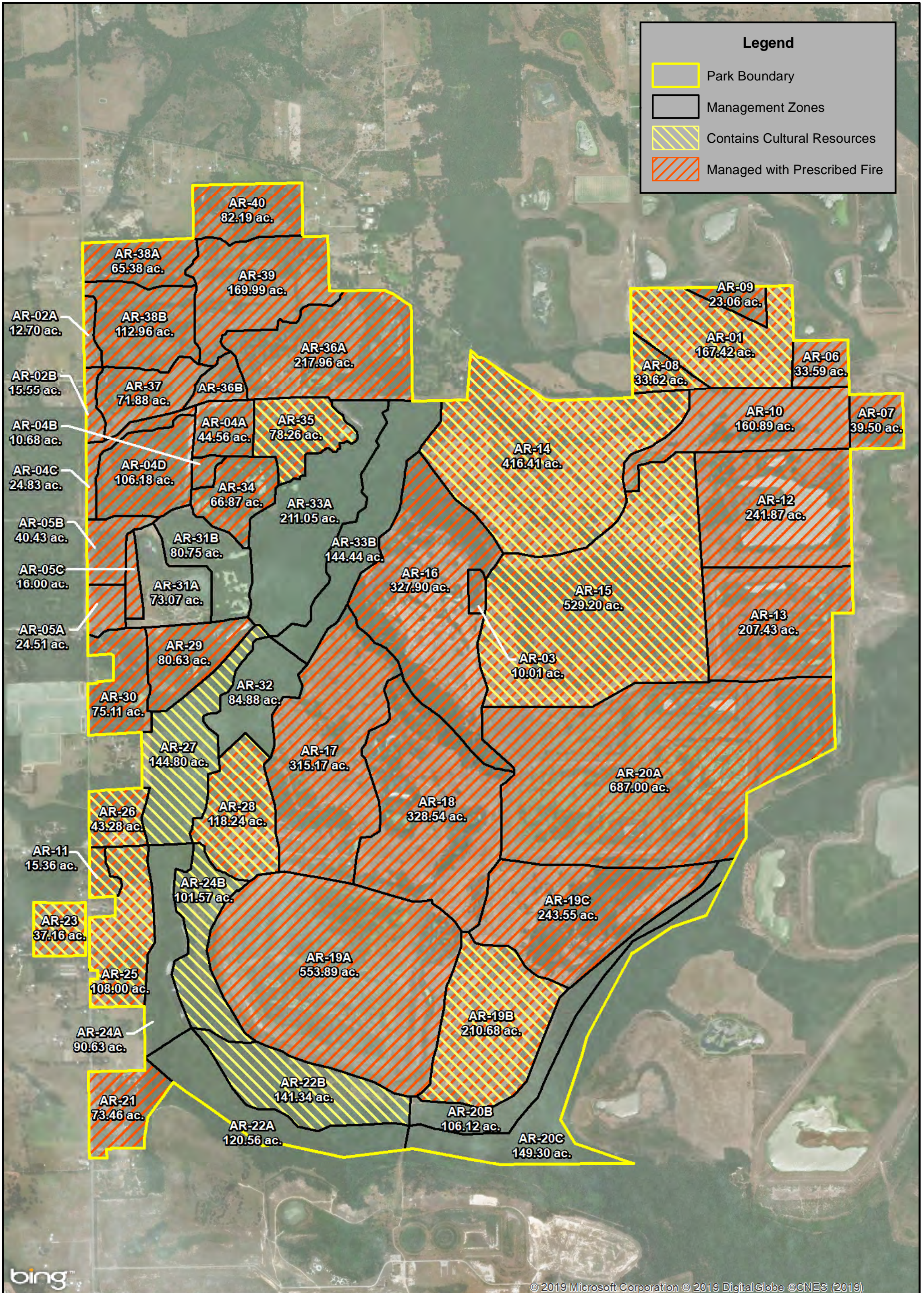
The entire park is divided into management zones to reference management activities (see Management Zones Map). The shape and size of each zone may be based on natural community type, burn zone, and the location of existing roads and natural fire breaks. It is important to note that all burn zones are management zones; however, not all management zones include fire-dependent natural communities. Table 1 reflects the landcover types and acreage found at the park.

The park currently contains eleven distinct natural communities and ten altered landcover types (see Natural Communities Map). Over time, with proper management and restoration efforts, a few of the communities discussed will disappear and at least one new community will emerge (see DFC in Spoil Area discussion). The individual community discussions below are sorted by first grouping them as terrestrial, palustrine, riverine and altered types, respectively, and then alphabetically by name within those groupings. A list of currently known plants and animals occurring in the park is contained in Addendum 4.

| <b>Table 1. Natural Communities and Altered Landcovers Existing Conditions</b> |                 |                   |
|--|-----------------|-------------------|
| <b>Natural Communities</b>   | <b>Acreage*</b> | <b>Percentage</b> |
| Mesic Flatwoods  | 853             | 11.1%             |
| Mesic Hammock  | 436             | 5.7%              |
| Sandhill   | 87              | 1.1%              |
| Scrub  | 14              | 0.2%              |
| Scrubby Flatwoods  | 131             | 1.7%              |
| Xeric Hammock  | 18              | 0.2%              |
| Baygall  | 160             | 2.1%              |
| Bottomland Forest  | 831             | 10.8%             |
| Floodplain Swamp   | 135             | 1.8%              |
| Hydric Hammock   | 31              | 0.4%              |
| Blackwater Stream  | 35              | 0.4%              |
| <b>Altered Landcovers</b>  | <b>Acreage*</b> | <b>Percentage</b> |
| Abandoned Field/Pasture  | 203             | 2.6%              |
| Developed  | 109             | 1.4%              |
| Impoundment/Artificial Pond  | 583             | 7.5%              |
| Invasive Exotic Monoculture  | 1,351           | 17.5%             |
| Pasture Semi-Improved  | 504             | 6.5%              |
| Pine Plantation  | 25              | 0.3%              |
| Restoration Natural Community  | 27              | 0.4%              |
| Spoil Area   | 1,463           | 19.0%             |
| Successional Hardwood Forest   | 513             | 6.6%              |
| Utility Corridor   | 209             | 2.7%              |
| <b>Total Acreage</b>   | <b>7,718</b>    | <b>100%</b>       |

\*Acres rounded to the nearest whole number

| <b>Combined Landcover Types</b> | <b>Acreage*</b> | <b>Percentage</b> |
|---------------------------------|-----------------|-------------------|
| Terrestrial (Upland)            | 1,539           | 19.9%             |
| Palustrine (Wetland)            | 1,157           | 15.0%             |
| Riverine                        | 35              | 0.4%              |
| Altered                         | 4,987           | 64.6%             |



**Legend**

- Park Boundary
- Management Zones
- Contains Cultural Resources
- Managed with Prescribed Fire

AR-40 82.19 ac.

AR-38A 65.38 ac.

AR-39 169.99 ac.

AR-09 23.06 ac.

AR-02A 12.70 ac.

AR-38B 112.96 ac.

AR-01 167.42 ac.

AR-06 33.59 ac.

AR-02B 15.55 ac.

AR-37 71.88 ac.

AR-36A 217.96 ac.

AR-08 33.62 ac.

AR-04B 10.68 ac.

AR-04A 44.56 ac.

AR-35 78.26 ac.

AR-10 160.89 ac.

AR-07 39.50 ac.

AR-04C 24.83 ac.

AR-04D 106.18 ac.

AR-34 66.87 ac.

AR-33A 211.05 ac.

AR-14 416.41 ac.

AR-12 241.87 ac.

AR-05B 40.43 ac.

AR-31B 80.75 ac.

AR-33B 144.44 ac.

AR-16 327.90 ac.

AR-15 529.20 ac.

AR-13 207.43 ac.

AR-05C 16.00 ac.

AR-31A 73.07 ac.

AR-03 10.01 ac.

AR-05A 24.51 ac.

AR-29 80.63 ac.

AR-32 84.88 ac.

AR-17 315.17 ac.

AR-20A 687.00 ac.

AR-30 75.11 ac.

AR-27 144.80 ac.

AR-18 328.54 ac.

AR-11 15.36 ac.

AR-26 43.28 ac.

AR-28 118.24 ac.

AR-19C 243.55 ac.

AR-23 37.16 ac.

AR-25 108.00 ac.

AR-24B 101.57 ac.

AR-19A 553.89 ac.

AR-19B 210.68 ac.

AR-24A 90.63 ac.

AR-21 73.46 ac.

AR-22B 141.34 ac.

AR-20B 106.12 ac.

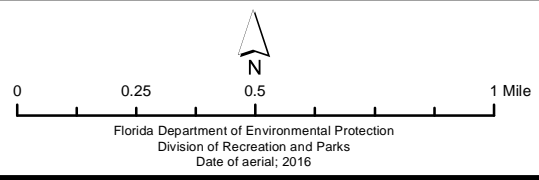
AR-20C 149.30 ac.

AR-22A 120.56 ac.

bing

© 2019 Microsoft Corporation © 2019 DigitalGlobe © CNES (2019)

ALAFIA RIVER STATE PARK



MANAGEMENT ZONES MAP



## Mesic Flatwoods

Desired future condition: Mesic flatwoods is characterized by an open canopy of tall pines, typically longleaf pine (*Pinus palustris*) or South Florida slash pine (*Pinus elliottii*), and a dense ground layer of low shrubs, grasses and forbs. Saw palmetto (*Serenoa repens*) is generally present but not overly dominant. Other shrub species may include gallberry (*Ilex glabra*), fetterbush (*Lyonia lucida*), runner oak (*Quercus pumila*), shiny blueberry (*Vaccinium myrsinites*), and dwarf huckleberry (*Gaylussacia dumosa*). The herbaceous layer is primarily grasses, including wiregrass (*Aristida stricta* var. *beyrichiana*), dropseeds (*Sporobolus* spp.), panicgrasses (*Dicanthelium* spp.), and broomsedge (*Andropogon virginicus*). This community has minimal topographic relief normally, and the soils contain a hardpan layer within a few feet of the surface that impedes percolation. Due to these factors, water saturates the sandy surface soils for extended periods during the wet season, but lengthy droughts commonly occur during the dry season. Invasive exotic plant species cover is five percent or less. The Optimal Fire Return Interval for this community is 1-3 years, with burns implemented during growing season.

*Description and assessment:* There are roughly 853 acres that resemble the vegetative structure and functions of this community type, and, ultimately, over 2,750 acres could become mesic flatwoods by implementing standard resource management strategies and some grazing (see also the DFC discussions in the descriptions for Invasive Exotic Monoculture, Abandoned Field, Restoration Natural Community, and Successional Hardwood Forest). The current condition assessment is generally Poor, with some areas on the west side of the park that are Fair. The topography is too disturbed to match the “flat” in flatwoods, large areas of the hardpan have been disturbed and the cover of bahiagrass (*Paspalum notatum*) is high, but the relevant native species and diversity associated with this community are finding their way into these acres. A few pockets still have the original soil types, though most of the acres are now Arents

soils. On the east side of the park, a number of the acres for this community type are currently included in a grazing contract on the east side of the park; as discussed in other parts of the plan, this is to assist with the early steps of restoration.

Prescribed fire at proper return intervals is needed. In some areas, supplemental tree plantings and understory seeding will be needed to enhance the community. In other areas, a bit of selective timbering will develop and maintain the expected open canopy. Thinning is needed where pines -- mostly slash, but also longleaf and some less-than-desirable loblolly -- were planted in tight patches scattered throughout. These plantings were done to meet reclamation sign-off requirements for the mining company; trees placed in tight clusters developed heights more quickly and were easier to water and count. Many of these patches would benefit from thinning, but there is welcome species recruitment happening outside the plantings. Sherman fox squirrels (*Sciurus niger shermanii*) have been seen near the edges of several of these pine plantings.

For many of these acres, it is useful to note that the last management plan designated Upland Mixed Forest as the community to apply to areas of “well-drained hammock-like upland community” that “separated the pinelands from mesic riverine forest in places” (ARSP 2004; Clewell 1982). Although many of these acres were acknowledged to be, in part, a result of fire suppression, they were considered “a permanent displacement” of pineland and subsequent restoration and planning efforts were geared to encourage continuance and expansion of “Upland Mixed Forest” (ARSP 2004). Thus, most of these acres were considered non-pyric. This Plan makes a significant shift from this. Not only does the Upland Mixed Forest designation not apply this far south, but this land will benefit from prescribed fire, the reduction or removal of successional hardwoods and the replacement of lost pinelands.

In addition to the history of fire suppression, the greatest threats to overcome for the mesic flatwoods are the bahiagrass, which is

exotic, and the invasive exotic plant species. Hundreds of these acres are dominated by exotics, mostly cogongrass (*Imperata cylindrica*), but also found here are rose natalgrass, Caesarweed (*Urena lobata*), Chinese tallow (*Sapium sebiferum*) and chinaberry tree (*Melia azederach*).

*General management measures:* Begin developing prescribed fire intervals to as close to one to three years as the existing vegetation will allow. Continue to control invasive exotic species. Assess and establish a selective timbering plan to thin the scattered dense patches of pines (AR-37, for example). Reduce or remove any grazing contract acres where, and as, the community condition improves.

### Mesic Hammock

*Desired future condition:* Mesic hammock is a well-developed evergreen hardwood or palm forest which can occur, with variation, through much of peninsular Florida. Mesic hammocks generally contain sandy soils with organic materials and may have a thick layer of leaf litter at the surface. They may be inundated on occasion, but this is rare. The canopy is typically dominated by live oak (*Quercus virginiana*) with cabbage palm (*Sabal palmetto*) mixed into the understory. Southern magnolia (*Magnolia grandiflora*) and pignut hickory (*Carya glabra*) can be common components in the subcanopy as well. The shrubby understory may be dense or open, tall or short, and is typically composed of saw palmetto, beautyberry (*Callicarpa americana*), American holly (*Ilex opaca*), gallberry and sparkleberry (*Vaccinium arboreum*). The groundcover may be sparse and patchy but generally contains panicgrasses (*Panicum* spp.), switchgrass (*Panicum virgatum*), sedges, as well as various ferns and forbs. Abundant vines and epiphytes occur on live oaks, cabbage palms, and sub-canopy trees. Invasive exotic plant species cover is five percent or less. Mesic hammocks are not considered to be fire-adapted communities, but they do benefit from adjacent fire being allowed to burn into the edges.

*Description and assessment:* This community occupies a little more than 436 acres at ARSP

currently but will be nearly 630 acres as the DFC is met. As with Mesic Flatwoods, these acres were generally mapped as Upland Mixed Hardwood in the last management plan. Between later FNAI community definition revisions, the fact that the location of this park is too far south for most of the indicative species, and the clear presence of saw palmetto, the classification of Mesic Hammock is now being applied where more appropriate. Several restoration suggestions in the last plan that encouraged further expansion of hammock included mesic hammock species, such as live oak, cabbage palm and magnolia.

The mesic hammock at ARSP is most likely a result of hardwood invasion into historic pine communities due to fire suppression and is thus a relatively young hammock. The frequency of water oak (*Quercus nigra*) and laurel oak (*Q. laurifolia*), as well as the scattered patches of sweetgum (*Liquidambar styraciflua*), slash pine, coastalplain staggerbush (*Lyonia fruticosa*), shiny blueberry, blue huckleberry (*Gaylussacia frondosa*), and even the occasional turkey oak (*Quercus laevis*), indicate this probability. As an emerging mesic hammock, it is in Good to Excellent condition and worth maintaining at this succession level. The diversity of the vegetation provides a good live example of the description for this community in FNAI's Guide, including the blueberries, grasses, partridgeberry (*Mitchella repens*), sugarberry (*Celtis laevigata*) and sweetgum listed therein. There is also an occasional red cedar (*Juniperus virginiana*). The invasive exotic plants tend to be few (at or under five percent cover) except where clustered at edges, in patches near trails, or occasionally recruiting as a few individuals in naturally disturbed areas. Two native "cherries," Carolina laurelcherry (*Prunus caroliniana*) and black cherry (*P. serotina*), threaten to become inappropriately dense in this park due to the ground disturbance and fire suppression history.

*General management measures:* Include control of the Carolina laurelcherry and black cherry trees and shrubs when working on the exotic woody species. Where this community abuts pyric communities, do not place firebreaks in the ecotone between the two

systems; mesic hammock benefits from the occasional fire allowed to burn into it and burn plans should accommodate this feature. Continue to manage for exotic invasive plants. Monitor areas where visitor use might impact hydrology. Manage the grazing contract acres such that Mesic Hammock acres are not included.

### Sandhill

*Desired Future Condition:* The dominant pine of sandhill, depending on region of state, is usually longleaf pine or South Florida slash pine. Herbaceous cover is dense, typically of wiregrass, and low in stature. Most of the plant diversity is contained in the herbaceous layer, including other three-awn grasses (*Aristida* spp.), pineywoods dropseed (*Sporobolus junceus*), lopsided Indian grass (*Sorghastrum secundum*), bluestems (*Andropogon* spp.) and little bluestem (*Schizachyrium scoparium*). In addition to groundcover and pines, there are scattered individual trees, clumps, or ridges of onsite oak species, usually turkey oaks and sand post oak (*Quercus margarettae*). Invasive exotic plant species cover is five percent or less. The Optimal Fire Return Interval for this community is 1-3 years, with burns implemented during growing season.

*Description and assessment:* In this plan, 87 acres are mapped as sandhill, and are in Poor or altered conditions (See also Altered: Abandoned Field/Abandoned Pasture). Some of these acres still have pockets of the proper elevations and soil types, such as Candler, Orlando, and Zolfo soils. Sandhill community is expected to cover about 1,038 acres eventually, with appropriate management, as these areas were historically described as sandhill and do have type native species re-establishing.

*General management measures:* Begin applying prescribed fire at intervals as close to one to three years as the existing vegetation will allow. Continue to control invasive exotic species. See Management Objectives for further reclamation efforts useful for sandhill management. Reduce or remove any grazing contract acres where, and as, the community condition improves.

### Scrub

*Desired future condition:* Within scrub habitats, the dominant species include scrub oak (*Quercus inopina*), sand live oak (*Quercus geminata*), myrtle oak (*Quercus myrtifolia*), Chapman's oak (*Quercus chapmani*), saw palmetto, and rusty staggerbush (*Lyonia ferruginea*). The oak canopy varies height from three to eight feet. There are a variety of oak age classes and heights between different scrub patches. There are scattered openings in the canopy, with bare patches of sand that support many imperiled or endemic plant species; these species are regularly flowering and replenishing their seed banks. Sand pine (*Pinus clausa*), where present, is usually not dominant in abundance, percent cover, or height; however, areas of mature sand pine do occasionally occur. Invasive exotic plant species cover is five percent or less. The Optimal Fire Return Interval for this community varies by region and dominant species' composition; typically, 4-15 year intervals produce the desired mosaic of open sand, reduced sand pine densities, and burned and unburned areas.

*Description and assessment:* The 14 acres of scrub in AR-01 could also be designated Restoration Natural Community. There were restoration experiments in this area in the mid-1980s. Scrub species were planted, including imperiled species such as Florida goldenaster (*Chrysopsis floridana*), Britton's beargrass (*Nolina brittoniana*), scrub pinweed (*Lechea cernua*), and endemics such as silk bay (*Persea borbonia* var. *humilis*), and then monitored for a few years (Segal, 2001; Gilbert, 1987). Since then, the introduced plants have naturalized and spread, along with other native scrub species, across patches of what is mostly Archbold fine sand. In general, the areas fall within scrub oak and sand pine scrub community designations and are in Fair to Good condition.

The larger of the two areas is in the central part of AR-01, historically referred to as the MUR site. This was mined, later scraped clean of re-established vegetation, and then covered with translocated native soil (Archbold fine sand) from a now-mined site

north of Walter Hunter Road (Environmental and Permitting Services, Inc. 2000). The intention of the translocation was to demonstrate reclamation of viable upland habitat. In addition to the rare plants mentioned above, other scrub plants and seeds were introduced. Until mid-2016, Mosaic ecologists coordinated resource management of these plots with Hillsborough County, without burning nor reducing the sand pine. With the naturalizing of the planted species and the establishment of sand live oak, saw palmetto, capillary hairsedge (*Bulbostylis ciliatifolia*), and other xeric shrubs, grasses and forbs, standard maintenance management will keep this area as scrub. The rose natalgrass (*Melinis repens*) and cogongrass are the primary threats.

The smaller patch, located in the northwest corner of AR-01, was scraped of re-established vegetation in the 1980s before it was planted with an experimental suite of scrub species (Gilbert 1982). Many of the introduced scrub species are persisting and spreading well. This area is in Fair to Poor condition, struggling with bahiagrass, rose natalgrass, cogongrass, equipment traffic, and too much oak and sand pine canopy.

Most of zone AR-01 is threatened by human impact, as people often breach the fences to get to the mine property to the east of the park, and occasionally the area is used as a dumping ground. Also, if or when outside agencies are working on this project, it is important that park management monitor all activity, to verify that there is no damage to the rare species or interference with desired ecological development.

There is a 20-acre area in the middle of AR-16 that should be managed as scrub. It is currently designated as scrubby flatwoods. Surrounded by exotic invasive monoculture, mostly cogongrass, it is an island of Archbold fine sand, with gopher tortoises and a scattered ground cover of xeric native plants.

AR-03 (old Unit 28) was described as "reference scrub community" in the last Plan, but it does not meet the FNAI criteria for this designation. It more closely represents scrubby flatwood or sandhill that is

succeeding to xeric hammock and it is discussed under Scrubby flatwoods.

*General management measures:* Continue to address the invasive exotic plant threat. Apply restoration burn intervals in AR-16 as needed to encourage scrub species. Consider collecting scrub species' seed in AR-01 to plant or scatter in the white sands in AR-16.

#### Scrubby Flatwoods

*Desired future condition:* The dominant canopy tree species of the interior of scrubby flatwoods are usually longleaf pine and south Florida slash pine. The trees are widely spaced, creating an open canopy. Mature sand pines are typically not present. There is a diverse shrubby understory, often with patches of bare white sand. Dominant shrubs include sand live oak, myrtle oak, Chapman's oak, saw palmetto, rusty staggerbush, and tarflower (*Bejaria racemosa*). The oak sub-canopy varies in height from three to eight feet. Cover from herbaceous species is often below 40%. Cover from invasive exotic plant species is five percent or less. The Optimal Fire Return Interval is regionally variable; typically, five- to fifteen-year intervals with variable season burns, produce a mosaic of burned and unburned areas.

*Description and assessment:* There are roughly 131 acres that meet the criteria for this community type, most are in and around AR-04A on the west side of the river. There is potential for a little over 400 acres of scrubby flatwoods, most on the east side of the river, as the park progresses with resources management. On the other hand, 20 of the current 122 acres, located in AR-16, are likely to revert to Scrub with only a little restoration management.

The scrubby flatwoods in AR-04A is in Fair to Good condition; it contains a good representation of the plant species typical of this community as listed above, as well as skyblue lupine (*Lupinus diffusus*) and wild pennyroyal (*Piloblephis rigida*).

Evidence suggests that most of AR-03 is scrubby flatwoods succeeding to xeric hammock. Scrubby flatwoods species are



present, such as South Florida slash pine, sand live oak, hogplum (*Ximenia americana*) and grass leaved aster (*Pityopsis graminifolia*). While desirable ground cover species are spreading south from this zone, hardwood is now encroaching, particularly Carolina laurelcherry. Cogongrass and other aggressive exotic plants are a threat.

*General management measures:* For the ten years of this plan or until the shrub subcanopy height and density are reduced, consider implementing fire at Restoration Return intervals. Reduce or remove any grazing contract acres where, and as, the community condition improves. Continue to manage the invasive exotic plants.

### Xeric Hammock

*Desired future condition:* This community is typically considered a late successional stage of scrub, scrubby flatwoods, or sandhill. It usually occurs in small isolated patches on deep sand substrate with excessively well-drained soils. Vegetation consists of low, closed canopy dominated by evergreen species, especially sand live oak, that provide shady conditions. Typical plant species may include Chapman's oak, live oak, and a minor component of sand pine, slash pine, or longleaf pine. Understory species include saw palmetto, fetterbush, myrtle oak, yaupon holly (*Ilex vomitoria*), Hercules' club (*Zanthoxylum clava-herculis*), and possibly Florida rosemary (*Ceratiola ericoides*). A sparse groundcover layer of wiregrass and other herbaceous species may exist but is typically absent. A continuous leaf litter layer may be present. Cover from invasive exotic plant species is five percent or less. Xeric hammock is not generally considered a pyric community.

*Description and assessment:* At ARSP, the currently identified pocket of xeric hammock is in AR-36B, roughly 18 acres. This is probably overgrown scrubby flatwoods. Sand live oak trees dominate with an understory of younger oaks, occasional saw palmetto, sparkleberry, hog plum and remnant forbs such as Feay's palafox (*Palafoxia feayi*) and sandyfield beaksedge (*Rhynchospora megalocarpa*). Wild olive (*Cartrema*

*americana*) is also found here. This area could be left at this successional stage, or park management may choose to help it revert to scrubby flatwoods. While there are problems with invasive exotics, including wild hogs (*Sus scrofa*), the condition of the xeric hammock is Fair to Good.

*General management measures:* Continue to control invasive exotic species. Seek more or improved assistance in reducing wild hog numbers.

### Baygall

*Desired future condition:* Baygall consists of a wet, densely forested, peat-filled depression, typically near the base of a slope. Seepage from adjacent uplands maintains saturated conditions. Medium to tall trees mainly include sweetbay (*Magnolia virginiana*), loblolly bay (*Gordonia lasianthus*), and swamp bay (*Persea palustris*). Occasional sparse pines may also exist. The thick understory typically consists of gallberry, dahoon (*Ilex cassine*), fetterbush, and red maple (*Acer rubrum*), with climbing vines such as greenbriar (*Smilax* spp.) and native grapes (*Vitis* spp.) often abundant. The invasive exotic plants cover is five percent or less. Fire in this community destroys the canopy and may ignite the peat layer; however, an Optimal Fire Return Interval of 25-100 years may be observed, especially along the edges, to manage density of undergrowth and minimize encroachment into other communities.

*Description and assessment:* Baygall communities at the park take up about 160 acres. Most are in very narrow strips or patches adjacent to the various branches feeding the South Prong, with one larger area found along the eastern-most end of McMullen Branch, and in areas that lack well-defined stream channels, which are seepage wetlands. Almost all the baygall areas quickly transition upslope into hydric or mesic hammock. There are very few dense stands of just evergreen bay trees. In a few pockets, such as along Pollard Branch in AR-16, the trees are not very large and these may be more recently developed baygall or possibly second-growth. Generally, the baygall in

areas not disturbed by mining operations retain a good, natural distribution of the native species associated with this community type, such as sweetbay, loblolly bay, and swamp bay, are in Good condition. Grazing must be kept out of these areas. Invasive plants are generally at less than 5% cover, with some dense patches of Caesarweed near the more open edges of the community or along hog trails, and the occasional Japanese climbing fern (*Lygodium japonicum*) or skunkvine (*Paederia foetida*) patches.

A few baygall areas, such as in AR-38A, are impoundment islands and boundaries. These are in Poor condition, primarily due to the impact of clay deposits from mining and the invasive plant infestations.

*General management measures:* Baygall communities are best managed by maintaining quality adjacent natural uplands and upland-wetland ecotones. Fires from adjacent communities are to be allowed to enter the baygall, where they will extinguish naturally at the edge; the grazing contract needs to specify this, as well. Continue to survey for and treat invasive plants to maintain the current low presence of exotics.

### Bottomland Forest

*Desired future condition:* Bottomland forest is a mesic to hydric community prone to periodic flooding. When bordering smaller blackwater streams, the water table is high. Vegetation consists of a mature closed canopy of deciduous and evergreen trees. Overstory species may include sweetgum, sweetbay, loblolly bay, water oak, laurel oak, live oak, loblolly pine (*Pinus taeda*). Red maple and bald cypress (*Taxodium distichum*) may also be present. The understory can be open or dense and usually includes wax myrtle (*Myrica cerifera*), dwarf palmetto (*Sabal minor*), highbush blueberry (*Vaccinium corymbosum*), and swamp dogwood (*Cornus foemina*). Groundcover varies and may consist of witchgrass, woodoats (*Chasmanthium* spp.) and various sedges. Invasive exotic plants cover is five percent or less. Bottomland forest is not pyric, but it benefits from fire allowed to enter its edges.

*Description and assessment:* The bottomland forest community comprises about 830 acres at ARSP and is generally found immediately along the blackwater system of the river and its tributary branches. At ARSP, the bottomland forest areas are mostly open, have a fair diversity of native species, and are generally in Good condition. The ground cover includes shiny woodoats (*Chasmanthium nitidum*), a variety of ferns, and even the occasional jack-in-the-pulpit (*Arasaema triphyllum*). Several airplant species (*Tillandsia* spp.) are found in the lower canopy areas. The canopy includes the species listed in "Desired Future Conditions" as well as American elm (*Ulmus americana*), and sugarberry (*Celtis laevigata*). Because of the frequent changes in topology, the bottomland forest community often grades into patches of hydric hammock, mesic hammock and floodplain swamp, most of which are generally too small to map independently but are evident by the presence of American hornbeam (*Carpinus caroliniana*), water hickory (*Carya aquatica*), water locust (*Gleditsia aquatica*), needle palm (*Rhaphidophyllum hystrix*), and the occasional swamp tupelo (*Nyssa sylvatica* var. *biflora*). It is possible that ARSP has the State-endangered broadleaf noddingscaps (*Triphora amazonica*) in its bottomland forests, in association with the needle palms; a vouchered specimen from nearby Picnic is recorded at the New York Herbarium. Exotic species include Caesarweed, skunkvine and occasionally climbing ferns, but the overall cover of exotics is low, around 5-8%. The denser infestations are along the edges, where there has been an opening in the canopy, or along hog trails. Black cherry and Carolina laurelcherry threaten to be weedy in these areas, too.

*General management measures:* Continue to monitor and control the invasive exotic species in those areas where they are encroaching. Include the Carolina laurelcherry and black cherry species in this control effort, although cover of the two species does not need to be as tightly monitored.

## Floodplain Swamp

Desired future condition: Floodplain swamp is a frequently or permanently flooded community in low-lying areas along streams and rivers. Soils consist of a mixture of sand, organics, and alluvial materials. The closed canopy commonly includes tupelo species (at ARSP these would be swamp tupelo), as well as water hickory, and red maple. In mature floodplain swamp, the tree bases are typically buttressed. Understory and groundcover are typically sparse. Invasive exotic plants cover is five percent or less.

*Description and assessment:* Most of the 135 acres of this community type are found just south of Hurrah Lake. The area is mostly in Fair to Good condition, with a representative diversity of the species found in this community, including pop ash (*Fraxinus caroliniana*) and coastalplain willow (*Salix caroliniana*). A few areas with this community designation transition in and out of bottomland forest, but the buttressed tupelo provide a good indicator for the type. In some pockets the wax myrtle is too dense. Exotic invasive plants are a threat, though probably at 5-8% cover overall; cogongrass shows up in patches even here.

*General management measures:* Continue to monitor and control the invasive exotic species in those areas where they are encroaching. Include the Carolina laurelcherry and black cherry species in this control effort.

## Hydric Hammock

*Desired future condition:* Hydric hammock is a closed canopy, evergreen hardwood or palm forest, on soils that are poorly drained and have hydroperiods seldom over 60 days per year. The typical canopy species are laurel oak, cabbage palm, live oak, sweetbay, swamp tupelo, American elm, red maple and other hydrophytic tree species. The understory is variable, but is usually dominated by palms, with sparse to moderate ground cover of grasses and ferns. Invasive exotic plants cover is five percent or less. Hydric hammock benefits from occasional fire but does not have a defined FRI; adjacent fire

occasionally moves across ecotones and into the hammock.

*Description and assessment:* About 31 acres are mapped as Hydric Hammock, but portions of the areas currently mapped as Spoil Area or as Successional Hardwood Forest will become Hydric Hammock with minimal management effort; this community could encompass 70 acres or more. In addition, there are many small islands of hydric hammock scattered throughout the park in areas too small to map, usually falling within, or near, areas mapped as Bottomland Forest, Mesic Hammock, and Baygall. This is especially true where the blackwater streams have cut three-to-five-foot banks in the bottomland forest, such as in AR-22B, or where the rolling topography creates a slight depression in the upland above the mesic hammock, such as along the McMullen Branch at the north end of AR-16. This grading between community types is typical for hydric hammock, as described in the FNAI Guide. Generally, the hydric hammock pockets at ARSP are in Good condition, with the native species diversity and recruitment described for this community type, including swamp dogwood. There is encroachment from invasive exotic species, particularly along edges or in naturally disturbed patches; some of the invasive exotic species include Asian sword fern (*Nephrolepis brownii*) and Japanese climbing fern among the others generally found in the park.

The largest patch of this community type is in AR-25 and it is generally in Good condition, too, based on species type and diversity. There are invasive exotic species such as lantana (*Lantana camara*), and the ubiquitous cogongrass. This area would benefit from the occasional fire allowed to burn into its edges; where this community is not adjacent to a pyric zone, other means of protecting the hammock from hardwood encroachment, such as mechanical or manual removal, should be considered.

The hydric hammock along the north side of the McMullen Branch is in Poor condition. Plantings, old plowlines, and poor grazing management are all serving to disrupt the natural transition that should be happening in

the wetter upslopes of the mesic hammock. There is a near-monoculture of wax myrtle in wetland, sitting between long strips of oaks planted in rows where little natural structure or recruitment is happening.

*General management measures:* Where hydric hammock abuts pyric communities, structure the firelines so that fires may occasionally burn into the edges of the hammock. Where it does not abut pyric communities, manage to minimize the density of hardwood encroachment along the edges of the hammock. Where grazing is causing erosion, move fences; for example, move the grazing fence to the north side of the hammock in AR-16. Continue to manage for invasive species, wild hogs as well as plants.

### Blackwater Stream

*Desired future condition:* Blackwater stream can be characterized as perennial or intermittent watercourses originating in lowlands where extensive wetlands with organic soils collect rainfall and runoff, discharging it slowly to the stream. The stained waters will be laden with tannins, particulates, and dissolved minerals and organic matter derived from drainage through adjacent swamps resulting in sandy bottoms overlain by organic matter. Emergent and floating vegetation such as golden club (*Orontium aquaticum*) or smartweeds (*Polygonum* spp.), and grasses and sedges, may occur, but vegetation is often limited by steep banks and dramatic seasonal fluctuations in water levels. Because of their associated topology, the adjacent wetland communities necessary to assist with filtering the water that enters the streams may be limited. Desired conditions include good water clarity and quality with minimized disturbances and alterations. Invasive exotic plants, aquatic or terrestrial, will have an average cover of five percent or less.

*Description and assessment:* Blackwater stream community is currently mapped to cover about 35 acres at ARSP, but this probably a low count as nearly all the branches, large and small, as well as most of South Prong Alafia, are of this type. Generally, the waters are clear. However,

their overall assessment is Fair to Good based on the water quality reports discussed in the Hydrology section and on the various disturbances. There are culverts installed on Jameson Branch, McMullen Branch, Pollard Branch, and Boggy Branch, where berms or roads had been installed before the park was acquired. Not all culverts are functioning properly and there are a few places where the flow has been disrupted and the water is murky, such as at the eastern end of Pollard Branch. Also, the grazing areas occasionally come too close to the streams with too narrow a band of mesic hammock or bottomland forest to protect the stream from erosion and increased nutrient and bacteria loads, such as in the pasture area immediately north of McMullen Branch in AR-16 and AR-15.

While the portion of the South Prong south of Thatcher Road bridge is open and navigable by non-motorized watercraft, the portion north of the bridge is generally blocked from such use; the blockage is primarily due to hurricane and windstorm treefall.

*General management measures:* Monitor culvert areas for flow quality and erosion management. Remove debris that blocks navigation along the South Prong. Coordinate with relevant agencies to acquire water quality metrics throughout the park, to determine overall condition of the park's blackwater streams and to help with planning more appropriate boundaries for such activities as grazing. Monitor impacts from human use of the rivers and streams. Monitor hydrology and manage as needed to control localized erosion or to keep from impeding the natural flow of water or the flow of water that is most likely to support appropriate community restoration.

## Altered Landcover Types

### Abandoned Field/Abandoned Pasture

*Desired future condition:* See Sandhill and Scrubby Flatwoods.

*Description and assessment:* Abandoned Field/Abandoned Pasture in this plan comprises about 203 acres. Those areas in the northwest corner, in AR-06 and AR-01, could serve well as sandhill or as scrubby flatwoods. The old grove trees in AR-01 have been removed. In addition to the grassy exotics, this area of the park is threatened by traffic from people ignoring the park boundaries to get to the mine nearby. The acres in AR-18 and -19C still show signs of having been groves or pasture, but that have had some restoration work done, specifically removal of dead citrus trees and burning.

Except for the bahia, smutgrass (*Sporobolus indicus*) and cogongrass, most acres are beginning to show enough facsimile characteristics to natural communities to include them in the relevant routine management services. There is a dense cover of cogongrass along the east side of AR-01 and across most of AR-06.

*General management measures:* Active prescribed fire and invasive plant control is needed. Consider including these acres in a Restoration plan. Prescribed fire should be at Restoration intervals.

### Developed

*Desired future condition:* The developed areas within the park will be managed to minimize their effect on adjacent natural areas. Priority invasive plant species (EPPC Category I and II species) will be removed from all developed areas, and overall invasive exotics cover will be less than five percent. Black cherry and Carolina laurelcherry will have less than 10% cover. Landscaping or other plantings in developed areas will use only those species that are native and found to be occurring naturally in the park. Hydrology is monitored and managed as needed to control localized erosion or to keep structures or landscaping from impeding the natural flow of water or

the flow of water that is most likely to support appropriate community restoration.

*Description and assessment:* The 109 acres in this category at the park include the entrance station, shop area, parking lots, picnic areas, equestrian barn, buildings, recreation and residential areas, "lawns" maintained as part of recreational or residential areas, campgrounds and roads. Invasive plant cover is problematic in these areas. As discussed in other parts of the Plan, there will be a few areas of development added over the next 10 years.

*General management measures:* Continue management and control of invasive exotic species. Where mowing is used, establish mowing schedules to allow for best recruitment and maintenance of the native plant species that occur or "volunteer" in these areas, and use such as part of interpretive programs. Monitor and manage the black cherry and Carolina laurelcherry to minimize encroachment. Establish a phytosanitation plan for equipment entering and exiting the area. Other management measures include proper stormwater management and development guidelines that are compatible with prescribed fire management in adjacent natural areas.

### Impoundment/Artificial Pond

*Desired future condition:* The artificial lakes and water-filled borrow pits (impoundments) will have been improved to simulate depression or basin wetlands or flatwoods upland lakes, as appropriate. Proper contouring will have created more naturally sloping littoral shelves, resembling marsh or swamp wetland edges. Although water levels may fluctuate significantly, water will typically be present year-round. Typical vegetation will include emergent and floating aquatic plants, with hydrophytic transitional species along the edges, such as big floatingheart (*Nymphoides aquatica*), alligatorflag (*Thalia geniculata*), pickerelweed (*Pontederia cordata*), arrowheads (*Sagittaria* spp.), bladderworts (*Utricularia* spp.), sawgrass (*Cladium jamaicense*), meadow beauty (*Rhexia* spp.), St. John's wort (*Hypericum fasciculatum*), creeping primrosewillow

(*Ludwigia repens*), coastalplain willow, and buttonbush (*Cephalanthus occidentalis*). Terrestrial and aquatic invasive plants will represent less than five percent cover.

*Description and assessment:* Artificial ponds and impoundment areas are depressions resulting from human activities, which, in this park, are from mining operations. They tend to stay wet, exist as ponds and lakes that can vary in depth, have little soil structure, have water levels that are rain-dependent, and usually lack a littoral shelf or natural wetland edges. There are 95 or more of these scattered throughout nearly all management zones, encompassing at least 583 acres. Although a few of the smaller ponds do have some healthy littoral community developing (such as found in AR-34), most of the lakes and larger ponds are in Poor condition, as they are steep-sided, deep, atrophic, and unable to sustain life other than a variety of aquatic invasive exotic species. These include hydrilla (*Hydrilla verticillata*), water-lettuce (*Pistia stratioides*), and spotted duckweed (*Landoltia punctata*), and some of the hardier fish species. A few impoundment areas are deep enough to have “dead zones,” with no oxygen. Since the area was mined and “reclaimed” by the mining companies before conditions for post-mining requirements were put in place, the access slopes are frequently composed of overburden or even old clay slurry, left so steep as to be unsafe to climb in places. The 2004 management plan discusses the need to have an engineer evaluate the potential instability of the lake in old unit 7 (currently northern AR-30), and this may still need to be monitored. No motorized boats are permitted on any of the lakes or ponds, but visitors use several lakes for canoeing and kayaking.

The lakes in AR-11, AR-30, AR-31 and AR-38A, were stocked with fish, such as largemouth bass (*Micropterus salmoides*) and channel catfish (*Ictalurus punctatus*), donated from Hillsborough County’s C. W. Bill Young Regional Reservoir during the reservoir’s drain-down events between 2009 and 2012 (Helms 2013, phone conversation). The “Old Agrico” pits on the west side of the park (old unit 4, now AR-04A-D, AR-31B, AR-34, AR 36B) are surrounded by steep ridges of cast

spoils, which have since become forested through natural seed dispersal and recruitment, and these pits contain game fish.

In the 2004 management plan, improvements to these areas were discussed as “shorelines” within the various units. At that time, the assumed goal was “mixed hardwood forestation.” This is no longer an assumed goal for these shorelines. Until the associated community type is more clearly defined, or until specific littoral shelf or wetland restoration projects are introduced, there are no plantings recommended for these areas. The lake at the west corner of AR-36A was used for a Tampa Bay Water Authority mitigation project and now has roughly two acres of created wetland (Shea 2013).

*General management considerations:* Include the artificial ponds and borrow area lakes in the parks’ hydrology assessment. Devise a study for methods, and determine the priorities, to begin establishing littoral shelf or other wetland development for the more significant of these ponds and lakes. Continue to control invasive exotic aquatic plants; this includes developing decontamination sites for watercraft, both coming and going, and continuing to work with FWC to determine the feasibility of using sterile triploid grass carp (*Ctenopharyngodon idella*) to assist with this effort.

#### Invasive Exotic Monoculture

*Desired future condition:* Invasive exotics cross multiple natural community types at the park. See Mesic Flatwoods, Mesic Hammock, Sandhill, Scrubby Flatwoods and Successional Hardwood Forest already described, and see also the discussions below for Depression Marsh and Basin Swamp. In all cases, the goal for cover of invasive exotic plants is five percent or less.

*Description and assessment:* Zones AR-13 through AR-19A-C and AR-28 have more than 70% cover of invasive plant species. Cogongrass meadows dominate and any species “diversity” is only from the variety of other invasive plants in the mix. About 1,351 acres are mapped as invasive plant monoculture, but many of the smaller patches

within other communities are not mapped as such. Past restoration and improvement efforts for uplands and lowlands in these communities were not sufficient to outcompete the exotic species. Some early restoration efforts even introduced them.

The resources now required to have any impact on the cogongrass meadows are huge, although the park efforts over the past couple of years is showing some success. The current grazing contract is helping to curtail the cogongrass dominance on many acres and serves to assist as a first step toward natural communities' improvement or restoration. While cattle will not eat mature cogongrass, as it contains too much silica (which is what makes the grass' "clickety" sound in the wind), cattle will eat the younger, green sprouts. They graze the new shoots along the edges of a cogongrass patch and they eat the new shoots that the plant sends up immediately after a fire. Grazing rotations and bringing cattle to a cogongrass area within the first few weeks of a burn are useful and cost-effective tools to help manage this problem.

*General management measures:* Continue to compel rancher's compliance with the terms of the grazing contract regarding exotics removal. Continue to seek additional resources to address this problematic community, such as the local CISMA, FWC Uplands programs and Florida Conservation Corps teams; see Management Objectives. Continue to encourage the rancher to burn the cogongrass and shift rotations as needed when there is a burn. Implement selective timber removal in areas designated Mesic Flatwoods and Sandhill DFC (e.g., AR-13, AR-17)

### Pasture Semi-improved

*Desired future condition:* See the discussions for Sandhill and Mesic Flatwoods.

*Description and assessment:* Roughly 504 acres are Pasture – Semi-improved, and most of those are still being used for grazing, or for haying to support the grazing management at the park. Based on the non-Arents soils still present in those acres, such as Zolfo fine

sands and Orlando fine sands, 0 – 5% slope, these areas are expected to eventually be restored to sandhill or mesic flatwoods, as appropriate.

The west side of zone AR-23, the zone with the most haying activity, has an important archaeological site. The site was severely disturbed years ago through looting and through the planting of a citrus grove. Inspection after recent haying operation shows no further disturbance to the site. Having the haying operation in place helps mitigate uncontrolled fire potential by keeping the grasses low in a wildland urban interface. It also provides hay for the park grazing operations that is unlikely to bring new exotic species to the park. As the need for grazing and hay at the park is reduced over time, this pasture can be managed so that it eventually will have the natural communities used by earlier cultures.

*General management measures:* Verify exotic plants removal requirements are being met in the grazing areas, per the grazing contract. Continue monitoring activities on the cultural site. Continue working with contractor to arrange prescription burns.

### Pine Plantation

*Desired future condition:* See Mesic Flatwoods and Sandhill.

*Description and assessment:* The "Pine Plantation" community designation at ARSP does not strictly follow FNAI definitions, as there is no indication that soils have been negatively altered by silviculture practices, and it's possible that these plantings may turn out to be more beneficial than harmful. This designation is used to help identify a few of the various squares where pines have been planted in tight clusters or rows; whether these were part of a silviculture plan, restoration efforts, or simply a means to meet "sign-off requirements" for number of trees planted, is unclear. Some of the plantings have included loblolly pine, whose natural southern range is two counties north of Hillsborough County. The loblolly has since naturalized in the area, but new recruitment

may be minimized as prescribed fire begins to be re-introduced into these areas.

The plantation in management zone AR-07 appears long abandoned but is still dominated by linear plantings of South Florida slash pine and possibly loblolly pine. Numerous hardwood species such as sweetgum, American elm, Carolina laurelcherry, red maple and loblolly bay have established and there are several low areas where hydrophytic species have recruited, showing a trend toward depression marsh or basin swamp. All ground cover is dominated by cogongrass, Caesarweed and Asian sword fern.

In other areas, such as in AR-20A, AR-28 and AR-39, there are patches of planted pines that provide better habitat for wildlife than would otherwise exist in those locations and that could provide some potential pine starts for areas that should become flatwoods or sandhill. For this reason, and because many of them are too small to map, most of these acres have not been mapped as Pine Plantation, but instead included as part of adjacent community type. Approximately 25 acres are mapped as Pine Plantation.

*General management measures:* A low-temperature burn during the dormant period is recommended as an initial prescription for AR-07. Implement selective timber removal. See management discussion under Altered: Spoil Area.

#### Restoration Natural Community

*Desired future condition:* There are two restoration communities included in this category; the desired future condition for each depends on the restoration goals for the specific area or project worked. As these areas become more clearly matched to more natural communities, the desired future condition would be the same as for the natural community type. In general, all restoration natural community projects will present less than five percent cover of invasive exotic plants species.

*Description and assessment:* According to the summary in the 2004 ARSP Unit Management

Plan, approximately 140 acres were considered restored; however, for this plan only about 27 acres are currently mapped as such. The restoration sites once included Hall's Branch (old unit 13; currently AR-09), Dogleg Branch (old unit 36; currently southern AR-17), South Fork McMullen Branch (AR-15), the scrub experiment in AR-01 and the wetland littoral shelf and bank on the impoundment pond in west AR-36A. For several of these efforts, topsoil was brought in from other areas. In others, trees and herbs were planted, sometimes after first scraping the soil, sometimes not. Occasionally, the plantings included some species that, though native, were not previously found in the park area, such as the cypresses (*Taxodium ascendens* and *T. distichum*), or loblolly pines, but most of the plants that have succeeded from these restoration plantings are of species taken locally as recruits (e.g., cabbage palms, wax myrtle), or as cuttings or seeds (e.g., acorns). Considering the natural success of the planted local native species, and using today's FNAI guidelines, the goal is to maintain what is now healthy scrub, mesic and hydric hammocks, and blackwater stream communities.

The sites for the scrub, Hall's Branch, South Fork McMullen Branch, and the created wetlands projects have habitat in Good condition, with a diversity representative of their natural communities and with recruitment at an appropriate pace. In this plan, the scrub, Hall's Branch and South Fork McMullen Branch sites are now mapped as their respective natural community since they are ready for standard management operations. But, as there are currently no equivalent wetland communities mapped at the park, the littoral zone wetland restoration maintains the designation of Restoration Natural Community.

The Dogleg Branch restoration site is in Poor condition. This project was implemented in 1982 for "stream replacement and forest restoration," as a wetland damage-mitigation project aiming to replace the original stream and seepage hydrology and to set a forest restoration goal of "988 trees at least four feet tall per hectare." The site is potentially



Mesic Hammock. A decade or so ago, the site was reported in Good condition, but it has not been maintained and is currently trending towards cogongrass monoculture.

*General management measures:* Continue invasive exotics management and prescription burns as relevant. Since the Dogleg Branch is on the east side of the river and not part of the current invasive species treatment priorities, the park might seek assistance in managing the exotic invasive plants here, either through FWC's Invasive Plants Management Section or DRP's Park Projects Management Tracking System (PPMTS).

### Spoil Area

*Desired future condition:* See Mesic Flatwoods, Mesic Hammock, Hydric Hammock and Baygall. Also, Depression Marsh and Basin Swamp are likely to emerge in some places; here are the Desired Future Condition descriptions for those two communities:

*DFC Depression Marsh:* This is relatively shallow wetland that is surrounded by pyric communities, where water levels are weather dependent, and the vegetation is frequently removed by fire. There are low, emergent herbaceous and shrub species, open vistas, and the soil surface is often visible through the vegetation during times of low water. Trees, if present, are few and occur primarily in the deeper portions of the wetland. Dominant vegetation can include maidencane (*Panicum hemitomon*), panic grasses, cutgrass (*Leersia* sp.), pickerelweed, arrowheads, buttonbush, St. John's wort, and coastalplain willow. Invasive exotics plant species cover five percent or less. The Optimal Fire Return Interval is 2-10 years depending on fire frequency of adjacent communities, and fires in adjacent communities should be allowed to burn into or through the marsh.

Three acres, or more, of Depression Marsh is expected to develop in AR-20A. There should be no grazing in the depression marsh.

*DFC Basin Swamp:* This is forested basin wetland that varies in size, shape and species composition, and holds water most days of

the year. The dominant canopy trees are pond cypress and swamp tupelo. Other canopy species can include slash pine, red maple, dahoon holly, sweetbay, loblolly bay, and sweetgum. Depending on fire history and hydroperiod, the understory shrub component may be throughout or concentrated around the perimeter. Shrub species include Virginia willow (*Itea virginica*), swamp dogwood, wax myrtle, and titi (*Cyrilla racemiflora*). The herbaceous component is variable and may include maidencane, ferns, arrowheads, lizard's tail (*Saururus cernuus*), false nettle (*Boehmeria cylindrica*), and sphagnum moss (*Sphagnum* spp.). Soils are typically acidic, nutrient-poor peat, often overlying a clay lens or other impervious layer. Fire in adjacent pyric communities that can burn into the edges of this community will minimize succession to baygall.

Basin Swamp is expected to develop over roughly 160 acres in AR-19A and AR-20A, as prescribed fire is implemented at restoration intervals for the surrounding communities.

*Description and assessment:* Spoil Area designation at ARSP is the default assigned to areas of Arents soils, whether from dredge or spoils deposition activities, and where the conditions were simply too poor to assign any other designation for now. This currently includes about 1,462 acres. DFC have been assigned based on current topography, hydrology, the native plants that have introduced themselves, and adjacent known communities.

*General management measures:* Implement prescription burns, where applicable, at restoration interval rates. Continue to remove invasive exotic species and monitor encroaching cherry species.

### Successional Hardwood Forest

Desired future condition: Some areas are already trending to Mesic Hammock and even Mesic Flatwoods, but the desired future condition of other areas is yet to be determined. Further scrutiny is needed to delineate which areas of successional hardwood forest should remain as such and which can ultimately be classified and

managed as a reasonable facsimile of our natural communities.

*Description and assessment:* In Florida, fire suppression is man-made and creates a “false” successional community where oaks and shrubby woody plants encroach. The last management plan discussion considered the results of this dynamic to not only be permanent and unchangeable, but also a desirable climax community. This plan, however, assumes that a more natural fire regime introduced into the park will begin slowing or redirecting the hardwood succession, ultimately returning more area to the natural Florida communities that existed before suppression and mining. With this precept, and the high cover of a diversity of invasive exotic plants, including Japanese climbing fern, skunkvine, and lead tree (*Leucanea leucocephala*), useful resource management evaluation and practices would consider most of the successional hardwood forest to be in Poor condition.

Where successional hardwood forest is already clearly trending toward other, identifiable communities during the writing of this plan, those areas have been reassigned to their new community type, such as Mesic Hammock, Mesic Flatwoods and Scrubby Flatwoods, and included in those descriptions. For this plan, around 513 acres are mapped as Successional Hardwood Forest.

*General management measures:* Begin establishing appropriate fire return intervals. Continue to manage invasive exotic species. Thin the black and Carolina cherry when feasible. Investigate potential for selective timbering, especially in AR-16 and AR-40.

#### Utility Corridor

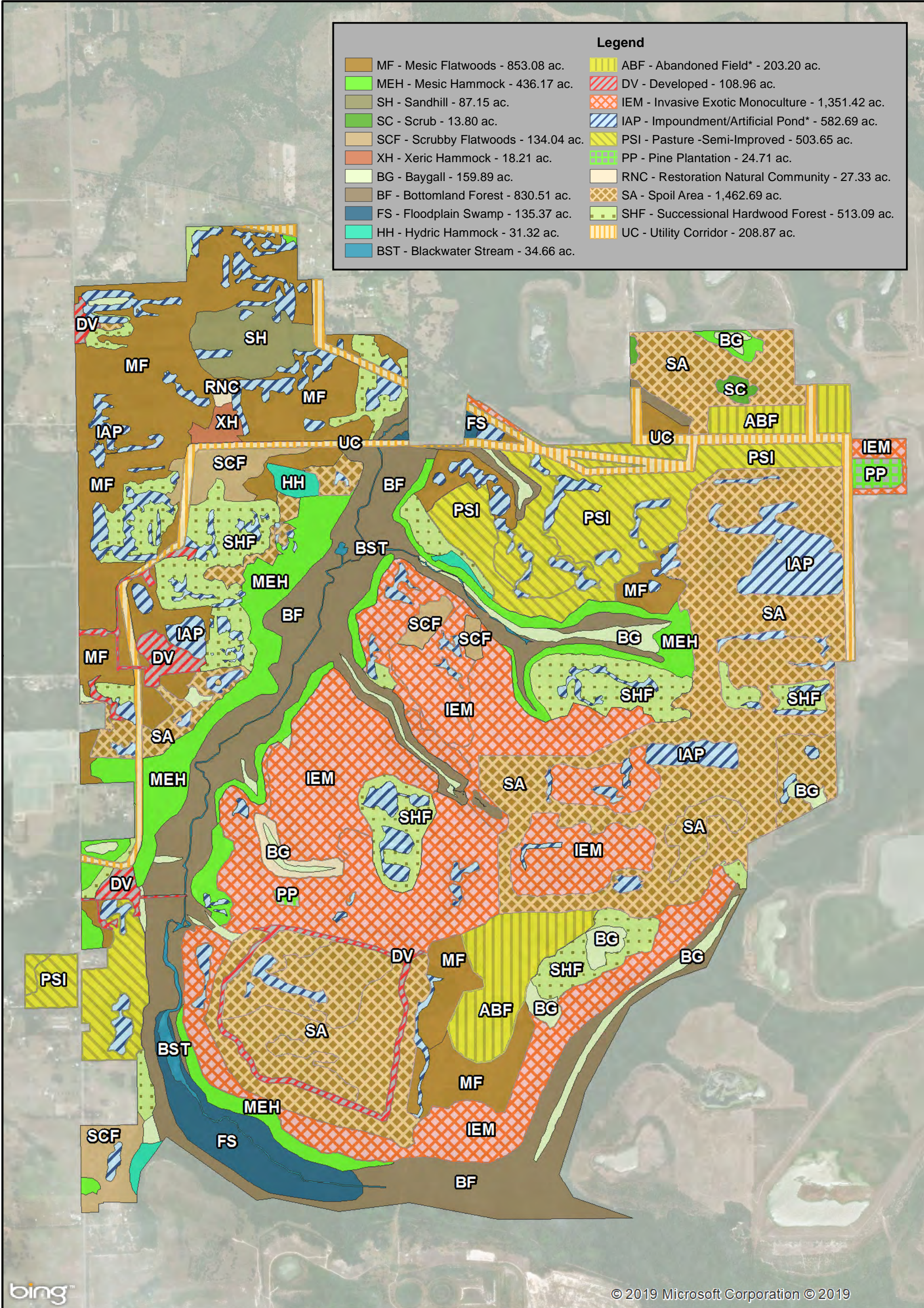
*Desired future condition:* ARSP staff will work with utilities staff to minimize the negative impacts of the utility corridor on underlying and adjacent natural areas. Landscaping or other plantings in these areas will use only those species that are native and found to be occurring naturally in the park. Mowing will follow schedules that encourage and support native plant seeding patterns. Other management measures include proper

stormwater and other related hydrological management, and development of guidelines that are compatible with prescribed fire management in adjacent natural areas. Priority invasive plant species (FLEPPC Category I and II species) will be removed from corridor areas and overall invasive exotic plants cover will be five percent or less.

*Description and assessment:* Around 209 acres are in this category at the park; this includes electric, gas and telephone rights-of-way. Although the last management plan recommended that proposed 200KV electric lines not be added to the park’s utility corridors, these lines do now cross the park, west to east from AR-02B to AR-07. The current contracts allow a 200’ right-of-way (ROW) for utility corridors and the ROW was traditionally mowed at least once each year. The mowing patterns and lack of basic natural resources management in these areas has resulted in large visual and process interruptions in the natural communities that could or should be present. Invasive plants are probably close to 25-30% cover, overall, with some areas much higher. In many areas, fire could be implemented, when appropriate safety measures are taken.

*General management measures:* Continue working with the utility companies to devise improvement and restoration work on the corridors so that the corridors fit in more naturally with each community they transect. Improve hydrology as needed to control localized erosion or to keep structures or landscaping from impeding natural flow of water. Continue control of invasive exotic species.

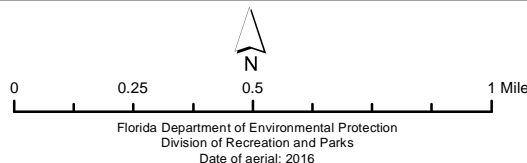
| Legend                               |  |
|--------------------------------------|--|
| MF - Mesic Flatwoods - 853.08 ac.    | ABF - Abandoned Field* - 203.20 ac.              |
| MEH - Mesic Hammock - 436.17 ac.     | DV - Developed - 108.96 ac.                      |
| SH - Sandhill - 87.15 ac.            | IEM - Invasive Exotic Monoculture - 1,351.42 ac. |
| SC - Scrub - 13.80 ac.               | IAP - Impoundment/Artificial Pond* - 582.69 ac.  |
| SCF - Scrubby Flatwoods - 134.04 ac. | PSI - Pasture -Semi-Improved - 503.65 ac.        |
| XH - Xeric Hammock - 18.21 ac.       | PP - Pine Plantation - 24.71 ac.                 |
| BG - Baygall - 159.89 ac.            | RNC - Restoration Natural Community - 27.33 ac.  |
| BF - Bottomland Forest - 830.51 ac.  | SA - Spoil Area - 1,462.69 ac.                   |
| FS - Floodplain Swamp - 135.37 ac.   | SHF - Successional Hardwood Forest - 513.09 ac.  |
| HH - Hydric Hammock - 31.32 ac.      | UC - Utility Corridor - 208.87 ac.               |
| BST - Blackwater Stream - 34.66 ac.  |  |



bing™

© 2019 Microsoft Corporation © 2019

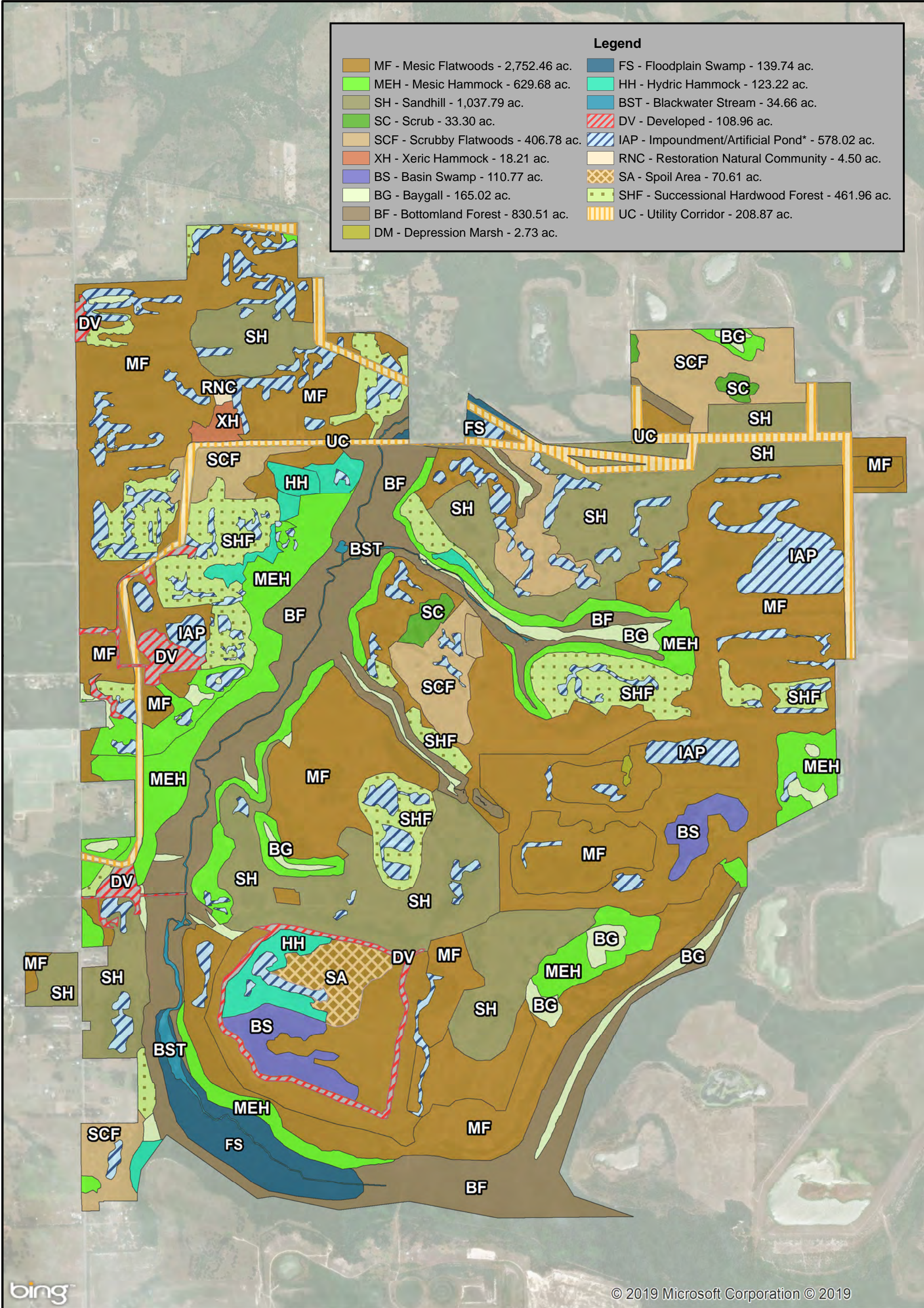
ALAFIA RIVER STATE PARK



NATURAL COMMUNITIES MAP  
EXISTING CONDITIONS



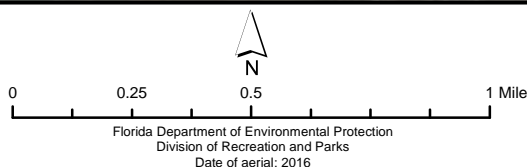
| Legend                               |   |
|--------------------------------------|---|
| MF - Mesic Flatwoods - 2,752.46 ac.  | FS - Floodplain Swamp - 139.74 ac.              |
| MEH - Mesic Hammock - 629.68 ac.     | HH - Hydric Hammock - 123.22 ac.                |
| SH - Sandhill - 1,037.79 ac.         | BST - Blackwater Stream - 34.66 ac.             |
| SC - Scrub - 33.30 ac.               | DV - Developed - 108.96 ac.                     |
| SCF - Scrubby Flatwoods - 406.78 ac. | IAP - Impoundment/Artificial Pond* - 578.02 ac. |
| XH - Xeric Hammock - 18.21 ac.       | RNC - Restoration Natural Community - 4.50 ac.  |
| BS - Basin Swamp - 110.77 ac.        | SA - Spoil Area - 70.61 ac.                     |
| BG - Baygall - 165.02 ac.            | SHF - Successional Hardwood Forest - 461.96 ac. |
| BF - Bottomland Forest - 830.51 ac.  | UC - Utility Corridor - 208.87 ac.              |
| DM - Depression Marsh - 2.73 ac.     |   |



bing™

© 2019 Microsoft Corporation © 2019

ALAFIA RIVER STATE PARK



NATURAL COMMUNITIES MAP  
DESIRED FUTURE CONDITIONS



## Natural Communities Management

### Goal: Restore and maintain the natural communities/habitats of the park.

The DRP practices natural systems management. In most cases, this entails returning fire to its natural role in fire-dependent natural communities. Other methods to implement this goal include large-scale restoration projects as well as smaller scale natural communities' improvements. Following are the natural community management objectives and actions recommended for the state park.

#### Prescribed Fire Management

Prescribed fire is used to mimic natural lightning-set fires, which are one of the primary natural forces that shaped Florida's ecosystem. Prescribed burning increases the abundance and health of many wildlife species. Many of Florida's imperiled species of plants and animals are dependent on periodic fire for their continued existence. Fire-dependent natural communities gradually accumulate flammable vegetation; therefore, prescribed fire reduces wildfire hazards by reducing these wild land fuels.

All prescribed burns in the Florida state park system are conducted with authorization from the FDACS Florida Forest Service (FFS). Wildfire suppression activities in the park are coordinated with the FFS. DRP staff are required to follow the guidelines established by Chapter 590 Forestry Protection, FFS, and Chapter 51-2 Open Burning, FAC.

A *maintenance* Fire Return Interval (FRI) may differ from the *restoration* FRI for the same natural community, so the condition of the community should drive the planning for best burn intervals. This is a critical consideration at ARSP, as so many acres are in poor condition and require restoration FRI as the optimum interval to eventually reach their desired future condition. This also means that many communities not officially considered pyric as they currently exist, such as abandoned pasture and spoil area, have many acres that must be burned, and burned at the restoration interval and season. Also,

ecological success of a burn can be dependent on burn season and local conditions; suggestions for the best season and conditions for many of the zones are included in the discussions of the natural communities.

Table 2 contains a list of all fire-dependent natural communities found within the park, their associated DFC acreage, optimal fire return intervals, and then the annual average targets of acres to be burned if FRI are maintained throughout the 10-year period. Note that the table includes all pyric acres, even those that may be under contract for grazing.

| Table 2. Prescribed Fire Management |                      |                     |
|-------------------------------------|----------------------|---------------------|
| Natural Communities                 | Acres                | Optimal FRI (years) |
| <b>Maintenance</b>                  |                      |                     |
| Mesic Flatwoods                     | 500                  | 1 – 4               |
| Scrub                               | 14                   | 4 – 20              |
| Scrubby Flatwoods                   | 135                  | 3 – 10              |
| <b>Restoration</b>                  |                      |                     |
| Depression Marsh                    | 3                    | 1 – 3               |
| Mesic Flatwoods                     | 2,250                | 1 – 3               |
| Sandhill                            | 1,038                | 1 – 3               |
| Scrub                               | 20                   | 4 – 10              |
| Scrubby Flatwoods                   | 305                  | 1 – 3               |
| <b>Total Pyric Acres</b>            | <b>4,265</b>         |                     |
| <b>Annual Target Acres</b>          | <b>1,355 – 4,265</b> |                     |

### ***Objective A: Within 10 years, have at least 2,400 acres of the park maintained within the optimum fire return interval.***

- Action 1      Develop or update annual burn plan; include grazing contract annual requirements for burning; manage fire-dependent communities by burning 800 – 1,800 acres annually.
- Action 2      Engage user groups, stakeholders, and volunteers in supporting prescription burning at the park, whether by helping with education and outreach, or by active participation where feasible.

This objective is intended to acknowledge resources challenges while still pushing the needle forward on the DFC goals for the park.

The numbers presented allow for establishing a recurring three-year FRI, at minimum, for the 2,400-acres. Park management can work with the District to determine which areas will have priority for this aspect of the Plan. Where there is grazing on the target acres, the contractor is expected to work with park staff to help implement burning and to arrange annual burn goals and prescriptions.

To track fire management activities, the DRP maintains a statewide burn database. The database allows staff to track various aspects of each park's fire management program. For most parks, existing community acreage within each management zone is listed, with acreage and fire type; however, for ARSP, the community acreage in each management zone must be based on DFC community acres, as most existing altered communities, such as spoil areas and abandoned pastures, are normally considered non-pyric. The database also includes individual burn zone histories and fire return intervals, staff training and experience, backlog, and other related data. The database is also used to document fire management goals and objectives on an annual basis. Each quarter, the database is updated, and reports are produced that track progress towards meeting annual burn objectives.

Prescribed fire is planned for each burn zone on the appropriate interval, using data tracked in the database. Again, ARSP zones must use the DFC community designations, or pyric acres will be severely understated. The park's burn plan is updated annually because fire management is a dynamic process. To provide adaptive responses to changing conditions, fire management requires careful planning based on annual and very specific burn objectives. Each annual burn plan is developed to support and implement the broader objectives and actions outlined in this ten-year management plan.

As prescribed fire implementation approaches maintenance stage, the natural communities in the park will more clearly take some typical character and species diversity. All the rare upland plants discussed in the Imperiled Species section will show significant improvement in their health and spread when

fire is included in management. Without fire, shrub and tree density, canopy cover and leaf litter increase, which chokes out the habitat needs of the gopher tortoise, Sherman's fox squirrel, and Southeastern American kestrel.

***Objective B: Establish new fire breaks as needed to bring fire into mesic and hydric community edges and to accommodate new optimal fire return goals.***

- Action 1 Evaluate firebreaks for ecotone disruption and whether any inadvertently cause unwanted fire suppression in any communities.
- Action 2 Correct lines, as needed and adjust Management Zone boundaries accordingly.

Evaluate the firebreaks on the park's west side, restructure as needed so that fire may burn into the edges of the mesic and hydric communities. Communities with longer FRI, such as baygall at 25-100 years, are not specifically included in this burn plan, but good management practices dictate that such communities be allowed to have fire on occasion, especially at the edges. The most appropriate way to do this is to allow fire from adjacent pyric communities to burn into the baygall, mesic hammock or hydric hammocks they border. This requires that firelines not be placed in such transitional areas or ecotones. Most of the healthiest natural communities at ARSP follow the drainage lines of the South Prong and its tributaries and they are well worth protecting and preserving in this manner. Also, with this plan also comes a much larger assignment of pyric communities and the need for a more relevant Management Zones map.

In general, perimeter and internal firebreaks should be maintained and established according to agency policy. While supporting ecological goals, firebreaks should provide for adequate park protection and safe prescribed fire application. The complexity of the burn unit, including the structure and height of the fuel within the zone and the receptiveness of fuels adjacent to the zone, should be taken into account when preparing the firebreaks. A



fire line twice as wide as the fuel heights adjacent to the fireline is a general guideline for fire line preparation. Mechanical treatment of fuels adjacent to the firebreak may be needed to burn the zone safely. Perimeter lines need to be wide enough for defense and to allow a Type 6 fire engine to move safely down the line. When widening the firebreaks, the vegetation along the boundary/fence line should be removed first to allow the perimeter break to function as such; the presence of wetlands, large native trees or protected plant species that pose no line defense threat may be an exception. Any additional widening can then be made on the zone side of the firebreak.

### Natural Community Restoration

In some cases, the reintroduction and maintenance of natural processes is not enough to reach the desired future conditions for natural communities in the park, and active restoration programs are required. Restoration of altered natural communities to healthy, fully functioning natural landscapes often requires substantial efforts that may include mechanical treatment of vegetation or soils and reintroduction or augmentation of native plants and animals. For the purposes of this management plan, restoration is defined as the process of assisting the recovery and natural functioning of degraded natural communities to desired future condition, including the re-establishment of biodiversity, ecological processes, vegetation structure and physical characters.

Examples that would qualify as natural community restoration, requiring annual restoration plans, include large wetland damage mitigation projects, large-scale hardwood removal and timbering activities, roller-chopping and other large-scale vegetative modifications. The key concept is that restoration projects will go beyond management activities routinely done as standard operating procedures such as routine mowing, the reintroduction of fire as a natural process, spot treatments of exotic plants, and small-scale vegetation management.

For ARSP, the concept of “restoration” in the traditional sense does not generally apply. In areas so deeply altered, and so haphazardly “reclaimed,” many restoration and natural community experts apply the term “reconstruction” to more fully represent the work needed to rebuild good, functioning systems of native species (McDonald 2016; Ware 2016). In this park, large-scale restoration or early reconstruction assistance is required for any level of control over the cogon grass meadows on the east side of the park, and for any encouragement of emerging native grasses and forbs. For this, cattle grazing is being implemented as a first-step restoration management tool. Grazing is used only in areas where any other approach for such control and improvement is cost prohibitive, and grazing is stopped in areas that can readily continue to improve using more standard management procedures. The ecological goals of the park have priority over cattle management routines or needs.

### ***Objective C: Maintain contracted, prescribed cattle grazing as needed, using ecological grazing best management practices, to assist in improving 2,400 acres of altered community***

- |          |   |
|----------|---|
| Action 1 | Define the metrics that determine which acres would benefit from grazing and which acres should be exempt from grazing. |
| Action 2 | Provide a grazing contract that include the metrics and engage a contractor.  |

With respect to natural resource management, the contract will have terms for:

1. Hay: Hay may be used when needed to supplement low-growth periods. Months for hay use may be specified. Using hay from within the park reduces the likelihood of introducing new exotic species into new areas. A portion of the grazing contract acres may be dedicated to hay production.
2. Fodder heights. Overgrazing will be defined by minimum grass height,

determined by heights that promote native plant emergence and growth.

3. Seeding or fertilizing. The contractor must never fertilize, lime or add seed. The park is not obligated to provide fodder. A seeding exception may be made if seed is a native grass appropriate for the park's restoration goals, and park and District staff give written approval.
4. Max cow units/acre. Use current FWC standards for conservation areas, then reduce by one fourth to allow for low fodder availability due to cogongrass.
5. Wetland restrictions. Follow NRCS guidelines.
6. Evaluation guide for acreage release.
7. Annual Plan. Update each year:
  - a. Grazing rotation plan. Rotating the cattle placement is required to avoid overgrazing, reduce erosion in water-access areas, and address the cogongrass patches.
  - b. Exotics removal. Contractor is expected to manage invasive exotic species in the contracted area. ARSP provides an annual list of plant species the contractor is expected to address.
  - c. Fire management.
  - d. In-kind services. Determine which will best support annual resource management and other park goals.

- Action 3 Supervise contract requirements and maintain communication with the contractor and NRCS.
- Action 4 Evaluate grazed lands for level of improvement. Before any contract is signed or renewed, all grazed lands are evaluated for level of improvement. Adjust annual plans and contract amendments accordingly. Those acres that meet the improvement goals are no longer put under contract.

Research regarding the use of cattle grazing in severely altered areas, when properly managed, shows that the normal rate of expansion of cogongrass can be limited, even reduced, and that pioneer native plant populations increase (NRCS 2015). Grazing areas at the park are chosen solely by restoration and exotic plant management

need, and all grazing management activities are clearly specified so that compliance is easily verified. A "scoring sheet" is needed to determine which elements are to be assessed, and how to rank the assessments, that will define areas that benefit from prescribed grazing and areas ready to be exempted from grazing.

Provide a contract and engage a contractor. Verify that the grazing contract uses FWC, FDACS and NRCS guidelines as they relate to the park, and that the conditions of and for grazing acreage reduction over time are clear. Meet with County FWC and NRCS agents to evaluate best cattle management practices for ecologic improvement and to review any current agreements NRCS may have with the park's grazing contractor. Update *Prescribed Grazing Plan* as needed (NRCS 2015) and use this information to determine contract terms. The 2014-2019 contract offers a good template for this.

But even a well-planned contract requires supervision. This includes verifying that the grazing contractor knows, understands and follows the contract and reviewing each year's new plan. It also includes implementing annual surveys for exotics species management and collecting data for exotic species treatment activities; collecting data for any burns; and checking for erosion and overgrazing issues or potential. Staying in touch with the NRCS agent and having the agent assist with annual surveys or inspections will help manage the supervision of grazing activities. Some grazing may be needed beyond the 10 years of this plan, but the acres will be reduced over time.

***Objective D: Test for the presence and levels of heavy metals in at least two areas of remnant mine tailings.***

Coordinate with local water quality, soils assessment, and grazing authorities for assistance in testing for heavy metals in areas where there are mine tailings. At a minimum, the areas to be tested are the slickens in zones AR-13, AR-20A, and the settling area in zone AR-19A. Heavy metal testing includes, but is not limited to, arsenic, lead, cadmium and zinc.

## Natural Community Improvement

Improvements are like restoration but on a smaller, less intense scale. This typically includes small-scale vegetative management activities or minor habitat manipulation. Following are the natural community/habitat improvement actions recommended at the park.

### **Objective E: Conduct natural community/habitat improvement activities on 500 acres of natural and altered communities.**

- Action 1 In all Developed acres, set mowing schedules to allow for optimum recruitment and maintenance of the native plant species that occur or “volunteer;” all landscaping planting include only species found in the park.
- Action 2 For all Utility Corridor acres, approach the utilities to develop a natural communities improvement plan.
- Action 3 In at least 200 acres of the flatwoods-type acres (see AR-28, AR-36A, AR38B and AR-39), bring Mesic Flatwoods from Fair to Good condition through fire and exotics control/plantings.
- Action 4 Bring at least 8 acres of Hydric Hammock community (see AR-16, north of McMullen Branch) to Good condition by moving the grazing fence line and by grading the existing plow-line so that surface water can flow through the community and fire can move appropriately along its edges.
- Action 5 Bring at least 14 acres of scrub to Excellent maintenance condition by reducing sand pines and following FRI (note placement of firelines discussion under Imperiled Species, below).
- Action 6 Bring at least 20 acres of Pine Plantation (see AR-07) to Mesic Hammock/Mesic Flatwoods community in Fair to Good condition

## **Imperiled Species**

Imperiled species are those that are (1) tracked by FNAI as critically imperiled (G1, S1) or imperiled (G2, S2); or (2) listed by the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC) or the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened or of special concern.

Despite the extent of disturbance, imperiled plant species have been documented as occurring at the park. Those of the lowland, unmined habitats are naturally occurring and represent an accurate contribution to the known distribution of these species. Comb polypody (*Pecluma ptilota* var. *bourgeauana*), wild pine (*Tillandsia fasciculata*), spreading or giant airplant (*Tillandsia utriculata*) and angularfruit milkvine (*Gonolobus suberosus*) have all been documented in the preserved lowland habitats. Other notable species, though not listed as imperiled, include butterfly orchid (*Encyclia tampensis*), greenfly orchid (*Epidendrum conopseum*), needle palm (*Rhaphidophyllum hystrix*) and the endemic Florida airplant (*Tillandsia simulata*). These plants require no targeted management at this time, aside from preservation of their associated natural communities. When observed, the plant locations should be recorded, and accessible plants should be protected from poaching or other anthropogenic disturbance. Continued removal of wild hogs throughout the park will certainly benefit the terrestrial species.

Except for giant orchid (*Orthochilus ecristatus*), all imperiled plants documented in the upland habitats, classified for purposes of this plan as either Scrub or Restoration Natural Community, have been introduced on site and are not known to occur naturally at the park. In the late 1980's, a study was undertaken in the areas now included in management zone AR-01 to experiment with planting scrub species to determine survivability on reclaimed soil (Segal 2001; Gilbert unpublished). A suite of scrub species, including several now designated as imperiled, were planted or seeded in the park. Two planted areas remain, one area is on

mined soil that closely resembles native soil and one is on native soil, scraped of vegetation but not mined. At present, many of those species are still surviving and some have established well and are continuing to spread. To facilitate post strip-mining upland reclamation, native topsoil from the property just north of Walter Hunter Road slated for mining was translocated to AR-01 adjacent to several of the experimental planting sites in 1999 (Environmental and Permitting Services, Inc. 2000). The translocated topsoil has provided a base of native soil for spread of several of the planted natives.

To date, targeted monitoring has been done for Florida goldenaster, Britton's beargrass and garberia (*Garberia heterophylla*), especially in the old unit 14 area. The last monitoring, in 2009, found Florida goldenaster to be thriving and spreading prolifically. Nodding pinweed (*Lechea cernua*), scrub plum (*Prunus geniculata*) and Ashe's calamint have also been documented from the historical planting sites. Subsequent monitoring efforts should seek to locate these plants and document their status and condition. Scrub plum and Ashe's calamint were planted and recorded for the park but are not documented to occur in Hillsborough County and represent an artificial expansion of their historic range. Regardless of the source of the imperiled plants, the ones now present will be protected and proactively managed.

The upland portions of AR-01 not included in the historical planting study or the 1999 topsoil relocation area are highly disturbed and dominated by bahiagrass, cogongrass, hairy indigo and rose natalgrass. These aggressive dominants and other weedy species are heavily encroaching on the edges of the scrub and should be treated. Several prescribed burns have been conducted in AR-01 but to date no fire has been allowed to carry through the imperiled plant areas. These scrub areas should be included in subsequent burns though care must be taken to avoid imperiled plants during ground disturbing activities such as installation of firebreaks. Vehicular traffic currently passes through the scrub in the northwest corner of AR-01 and should be redirected.

Many imperiled animals have been documented in the park; most documented species are birds. While most of the manmade lakes provide little wading bird habitat due to lack of littoral shelves, some of the shallower impoundments do provide some wading habitat. Also, the South Prong of the Alafia River and its associated tributaries have wading habitat, as do the adjacent lowland communities. Species such as limpkin (*Aramus guarauna*), white ibis (*Eudocimus albus*), woodstork (*Mycteria americana*) and roseate spoonbill (*Platalea ajaja*) are not uncommon.

It is unlikely that there are any listed fish in the impoundments, but it's possible that there may be in the South Prong. To date, there has not been exhaustive research for this possibility.

Though highly disturbed, the uplands of the park also provide excellent habitat for birds preferring more open habitat, such as Florida sandhill crane (*Grus canadensis pratensis*) and Southeastern American kestrel (*Falco sparverius paulus*). Nest boxes for Southeastern American kestrel have been installed in parts of the semi-improved pasture on the east side of the river but no formal monitoring program has been instituted to determine if the boxes are properly placed or if the birds are using them, or what the population is at the park. Park staff should work with partner agencies such as FWC and conservation groups such as Audubon to develop a monitoring protocol that park staff and volunteers will be able to reasonably institute. The existing nest boxes should be evaluated for proper height, spacing and the amount of adjacent kestrel habitat.

No southern bald eagle (*Haliaeetus leucocephalus*) nests have been documented to occur in the park though several are relatively close. The nearest is west of Lake Hurrah, across CR39 (FWC 2012). If an eagle nest is established in the park, all guidelines of the Bald Eagle Management Plan will be followed (FWC 2008).

There has been some gopher tortoise (*Gopherus polyphemus*) monitoring in the

park. In 2006, district biology staff began systematic surveys for gopher tortoise burrows. Survey priority was given to unmined sites of appropriate habitat. The area known as Eagle Scrub, now designated AR-04A - B and AR-36, were surveyed, but no active burrows were found on the interior of these zones. Rather, numerous burrows were found in the open white sand borders of the zones. Subsequent monitoring was done over most of the northwest portion of the park but found no burrows. Although not part of a systematic survey, active burrows have been found in AR-16. Gopher tortoise burrow surveying should continue. All monitoring and management actions will be in keeping with the Gopher Tortoise Management Plan (FWC 2012).

Florida panther (*Puma concolor coryi*) is known to make use of areas of the park. A photo and video of one was captured in March 2018, in the southeast corner of the park. The panther is an important "umbrella" species in Florida, protecting many other plants and animals by helping to keep raccoon and other prey populations balanced and healthy. They can also assist with feral hog management.

Sherman's fox squirrels have been observed at the park. The population number is unknown, but sightings should be documented through District Wildlife Reports.

This information guides efforts needed to foster appropriate habitat. Where necessary, park staff will consult with FWC staff on appropriate resource management actions. American alligators (*Alligator mississippiensis*) are common in the river, especially south of the Thatcher Road bridge and into Lake Hurrah. No targeted management is called for at this time, other than being mindful of nuisance behaviors. Some alligators have learned that people-in-boats means *food* and they will grab fish from rods, no matter how close the fish is to the boat or people. Also, the bridge is a common use area and visitors have periodically been observed feeding alligators.

All element occurrence data of imperiled species should be submitted routinely to FNAI for inclusion in a statewide tracking database.

Table 3 contains a list of all known imperiled species within the park and identifies their status as defined by various entities. It also identifies the types of management actions that are currently being taken by DRP staff or others and identifies the current level of monitoring effort. The codes used under the column headings for management actions and monitoring level are defined following the table. Explanations for federal and state status as well as FNAI global and state rank are provided in Addendum 5.

**Table 3. Imperiled Species Inventory**

| Common Name<br><i>Scientific Name</i>               | Imperiled Species Status |       |       |          | Management Actions | Monitoring Level |
|---|--------------------------|-------|-------|----------|--------------------|------------------|
|   | FWC                      | USFWS | FDACS | FNAI     |                    |                  |
| <b>PLANTS</b>                                       |                          |       |       |          |                    |                  |
| Ashe's calamint<br><i>Calamintha ashei</i>          |                          |       | LT    | G3<br>S3 | 1, 2, 10,<br>13    | Tier 1           |
| Florida goldenaster<br><i>Chrysopsis floridana</i>  |                          | LE    | LE    | G1<br>S1 | 1, 2, 10,<br>13    | Tier 2           |
| Garberia<br><i>Garberia heterophylla</i>            |                          |       | LT    |          | 1, 2, 10,<br>13    | Tier 1           |
| Angularfruit milkvine<br><i>Gonolobus suberosus</i> |                          |       | LT    |          | 2, 4, 8,<br>13     | Tier 1           |
| Nodding pinweed<br><i>Lechea cernua</i>             |                          |       | LT    | G3<br>S3 | 1, 2, 10,<br>13    | Tier 1           |

**Table 3. Imperiled Species Inventory**

| Common Name<br><i>Scientific Name</i>                           | Imperiled Species Status |         |       |                | Management Actions    | Monitoring Level |
|---|--------------------------|---------|-------|----------------|-----------------------|------------------|
|   | FWC                      | USFWS   | FDACS | FNAI           |                       |                  |
| Britton's beargrass<br><i>Nolina brittoniana</i>                |                          | LE      | LE    | G3<br>S3       | 1, 2, 10,<br>13       | Tier 2           |
| Comb polypody<br><i>Pecluma ptilota</i> var. <i>bourgeauana</i> |                          |         | LE    | G5?<br>S2      | 2, 4, 8,<br>13        | Tier 1           |
| Scrub plum<br><i>Prunus geniculata</i>                          |                          | LE      | LE    | G3<br>S3       | 1, 2, 10,<br>13       | Tier 2           |
| Giant orchid<br><i>Orthochilus ecristatus</i>                   |                          |         | LT    |                | 1, 2, 8,<br>10, 13    | Tier 1           |
| Wild pine<br><i>Tillandsia fasciculata</i>                      |                          |         | LE    |                | 2, 4, 13              | Tier 1           |
| Spreading airplant<br><i>Tillandsia utriculata</i>              |                          |         | LE    |                | 2, 4, 13              | Tier 1           |
| <b>AMPHIBIANS</b>   |                          |         |       |                |                       |                  |
| Gopher frog<br><i>Lithobates capito</i>                         |                          | SSC     |       | G3<br>S3       | 1, 2, 10,<br>12, 13   | Tier 1           |
| <b>REPTILES</b>   |                          |         |       |                |                       |                  |
| American alligator<br><i>Alligator mississippiensis</i>         | FT<br>(S/A)              | FT(S/A) |       | G5<br>S4       | 4, 10, 13             | Tier 1           |
| Eastern indigo snake<br><i>Drymarchon couperi</i>               | FT                       | LT      |       | G3<br>S3       | 1, 2, 8,<br>10, 13    | Tier 1           |
| Gopher tortoise<br><i>Gopherus polyphemus</i>                   | ST                       | C       |       | G3<br>S3       | 1, 2, 10,<br>12, 13   | Tier 3           |
| <b>BIRDS</b>  |                          |         |       |                |                       |                  |
| Limpkin<br><i>Aramus guarauna</i>                               |                          |         |       | G5<br>S3       | 2, 4, 9,<br>10, 13    | Tier 1           |
| Little blue heron<br><i>Egretta caerulea</i>                    | ST                       |         |       | G5<br>S4       | 2, 4, 9,<br>10, 13    | Tier 1           |
| Snowy egret<br><i>Egretta thula</i>                             |                          |         |       | G5<br>S3       | 2, 4, 9,<br>10, 13    | Tier 1           |
| Tricolored heron<br><i>Egretta tricolor</i>                     | ST                       |         |       | G5<br>S4       | 2, 4, 9,<br>10, 13    | Tier 1           |
| Swallow-tailed kite<br><i>Elanoides forficatus</i>              |                          |         |       | G5<br>S2       | 1, 2, 10,<br>13       | Tier 1           |
| White ibis<br><i>Eudocimus albus</i>                            |                          |         |       | G5<br>S4       | 2, 4, 9,<br>10, 13    | Tier 1           |
| Southeastern American kestrel<br><i>Falco sparverius paulus</i> | ST                       |         |       | G5T4<br>S3     | 1, 2, 5,<br>8, 10, 13 | Tier 2           |
| Gull-billed tern<br><i>Gelochelidon nilotica</i>                |                          |         |       | G5<br>S2       | 2, 4, 9,<br>10, 13    | Tier 1           |
| Florida sandhill crane<br><i>Grus canadensis pratensis</i>      | ST                       |         |       | G5T2T3<br>S2S3 | 1, 2, 4,<br>8, 10, 13 | Tier 1           |

**Table 3. Imperiled Species Inventory**

| Common Name<br><i>Scientific Name</i>                    | Imperiled Species Status |       |       |            | Management Actions | Monitoring Level |
|--|--------------------------|-------|-------|------------|--------------------|------------------|
|  | FWC                      | USFWS | FDACS | FNAI       |                    |                  |
| Caspian tern<br><i>Hydroprogne caspia</i>                |                          |       |       | G5<br>S2   | 2, 4, 9,<br>10, 13 | Tier 1           |
| Wood stork<br><i>Mycteria americana</i>                  | FT                       | LT    |       | G4<br>S2   | 2, 4, 9,<br>10, 13 | Tier 1           |
| Brown pelican<br><i>Pelecanus occidentalis</i>           |                          |       |       | G4<br>S3   | 2, 4, 9,<br>10, 13 | Tier 1           |
| Roseate spoonbill<br><i>Platalea ajaja</i>               | ST                       |       |       | G5<br>S2   | 2, 4, 9,<br>10, 13 | Tier 1           |
| Black skimmer<br><i>Rynchops niger</i>                   | ST                       |       |       | G5<br>S2   | 2, 4, 9,<br>10, 13 | Tier 1           |
| Sandwich tern<br><i>Thalasseus sandvicensis</i>          |                          |       |       | G5<br>S2   | 2, 4, 9,<br>10, 13 | Tier 1           |
| <b>MAMMALS</b>   |                          |       |       |            |                    |                  |
| Florida mouse<br><i>Podomys floridanus</i>               |                          |       |       | G3<br>S3   | 1, 2, 8,<br>10, 13 | Tier 1           |
| Florida panther<br><i>Puma concolor coryi</i>            | FE                       | LE    |       | G5T1<br>S1 | 1, 2               | Tier 1           |
| Sherman's fox squirrel<br><i>Sciurus niger shermanii</i> |                          |       |       | G5T3<br>S3 | 1, 2, 8,<br>10, 13 | Tier1            |

**Management Actions:**

1. Prescribed Fire
2. Exotic Plant Removal
3. Population Translocation/Augmentation/Restocking
4. Hydrological Maintenance/Restoration
5. Nest Boxes/Artificial Cavities
6. Hardwood Removal
7. Mechanical Treatment
8. Predator Control
9. Erosion Control
10. Protection from visitor impacts (establish buffers)/law enforcement
11. Decoys (shorebirds)
12. Vegetation planting
13. Outreach and Education
14. Other

**Monitoring Level:**

- Tier 1. Non-Targeted Observation/Documentation: includes documentation of species presence through casual/passive observation during routine park activities (i.e. not conducting species-specific searches). Documentation may be in the form of Wildlife Observation Forms, or other district specific methods used to communicate observations.
- Tier 2. Targeted Presence/Absence: includes monitoring methods/activities that are specifically intended to document presence/absence of a particular species or suite of species.
- Tier 3. Population Estimate/Index: an approximation of the true population size or population index based on a widely accepted method of sampling.
- Tier 4. Population Census: A complete count of an entire population with demographic analysis, including mortality, reproduction, emigration, and immigration.
- Tier 5. Other: may include habitat assessments for a particular species or suite of species or any other specific methods used as indicators to gather information about a particular species.

## Imperiled Species Management

### **Goal: Maintain, improve or restore imperiled species populations and habitats in the park.**

The DRP strives to maintain and restore viable populations of imperiled plant and animal species primarily by implementing effective management of natural systems. Single species management is appropriate in state parks when the maintenance, recovery or restoration of a species or population is complicated due to constraints associated with long-term restoration efforts, unnaturally high mortality or insufficient habitat. Single species management should be compatible with the maintenance and restoration of natural processes and should not imperil other native species or seriously compromise park values.

In the preparation of this management plan, DRP staff consulted with staff of the FWC's Imperiled Species Management or that agency's Regional Biologist and other appropriate federal, state and local agencies for assistance in developing imperiled animal species management objectives and actions. Likewise, for imperiled plant species, DRP staff consulted with FDACS. Data collected by the USFWS, FWC, FDACS and FNAI as part of their ongoing research and monitoring programs will be reviewed by park staff periodically to inform management of decisions that may have an impact on imperiled species at the park.

Ongoing inventory and monitoring of imperiled species in the state park system is necessary to meet the DRP's mission. Long-term monitoring is also essential to ensure the effectiveness of resource management programs. Monitoring efforts must be prioritized so that the data collected provides information that can be used to improve or confirm the effectiveness of management actions on conservation priorities. Monitoring intensity must at least be at a level that provides the minimum data needed to make informed decisions to meet conservation goals. Not all imperiled species require intensive monitoring efforts on a regular interval. Priority must be given to those

species that can provide valuable data to guide adaptive management practices. Those species selected for specific management action and those that will provide management guidance through regular monitoring are addressed in the objectives below.

### ***Objective A: Develop/Update baseline imperiled species occurrence inventory lists for plants and animals.***

- Action 1 Continue to send monthly wildlife reports, plant queries or observations to the District Biology office, including suspected imperiled species and their locations. Assessments completed for Objective B, Community Improvements, will add to all species data.
- Action 2 District Biology office continues to confirm species' identification, updates species data lists, including herbarium accession records, and updates FNAI imperiled species data.

### ***Objective B: Monitor and document two imperiled animal species in the park.***

- Action 1 Adopt FWC monitoring protocols for the southeastern American kestrel and the gopher tortoise.
- Action 2 Implement monitoring protocols. Once for baseline, and then subsequently repeat as recommended by FWC protocols. Monitoring results documentation should include management guidelines, as needed.

Work with FWC and Audubon to develop and maintain protocols for monitoring, documenting, and preserving southeastern American kestrel and gopher tortoise populations.



**Objective C: Monitor and document eight imperiled plant species in the park.**

- Action 1      Develop monitoring protocols for four imperiled lowland plant species: comb polypody, wild pine, spreading airplant, and angularfruit milkvine.
- Action 2      Implement monitoring for four species in Action 1. Monitoring results report/documentation should include management guidelines, as needed.
- Action 3      Implement monitoring for four scrub species, Florida goldenaster, nodding pinweed, scrub plum and Britton's beargrass. Monitoring results report/documentation should include management guidelines, as needed.

There are no protocols in place for monitoring and documenting the comb polypody, wild pine, spreading airplant, angularfruit milkvine. The protocols do not need to be complex and could simply consist of two-year surveys for the species, with locations and counts recorded; consult with FNAI for help with this. These four species tend to be in the areas that were not severely altered by mining, generally land adjacent to, and rising from, river and tributaries. Note that access to such areas is difficult on the west side of the park, as there are grazing fences with no gates or other entry points.

There are existing protocols for surveying and monitoring the scrub imperiled species, Florida goldenaster, nodding pinweed, and Britton's beargrass (Bok 2010; Rowe 2018). Staff from Bok Tower Gardens, Hillsborough County, or members of the local chapter of the Florida Native Plant Society could be invited to participate (and help train) in these activities.

**Exotic and Nuisance Species**

Exotic species are plants or animals not native to Florida. Invasive exotic species are those that out-compete, displace or destroy native species and their habitats, often because they are free of the natural controls

of their native range, such as diseases or predatory insects. If left unchecked, invasive exotic plants and animals alter the character, productivity and conservation values of the natural areas they invade.

Exotic animal species include non-native wildlife species, free-ranging domesticated pets or livestock, and feral animals. Because of the negative impacts to natural systems attributed to exotic animals, the DRP actively removes exotic animals from state parks, with priority being given to those species causing the greatest ecological damage. ARSP has a problem with wild hog and the current rate of capture at the park is not enough to manage the problem. Other invasive exotic wildlife includes domestic cats (*Felis catus*), red fox (*Vulpes vulpes*), Cuban treefrog (*Osteopilus septentrionalis*), Cuban brown anole (*Anolis sagrei*) and invasive fish such as brown hoplo (*Hoplosternum littorale*), and walking catfish (*Clarias batrachus*).

In some cases, native wildlife may also pose management problems or nuisances within state parks. A nuisance animal is an individual native animal whose presence or activities create special management problems. Examples of animal species from which nuisance cases may arise include venomous snakes or raccoons and the alligators that are in public areas such as the bridge. Nuisance animals are dealt with on a case-by-case basis in accordance with the DRP's Nuisance and Exotic Animal Removal Standard. At ARSP, the migration of the coyote (*Canis latrans*) throughout Florida certainly includes ARSP. Recent observations of tracks, scat and animals confirm an increase in coyote populations; these will need to be monitored and an action plan developed to control numbers or impact, should the need arise.

Also, native plants pose management problems or nuisances within state parks. A nuisance plant is a native species that acts as an invasive and requires treatment to control; usually, this only happens in altered or fire-suppressed communities. At ARSP, two native cherry species, laurelcherry and black cherry, are pioneers in the more severely altered areas and have the potential to negatively impact prescribed burns and to outcompete

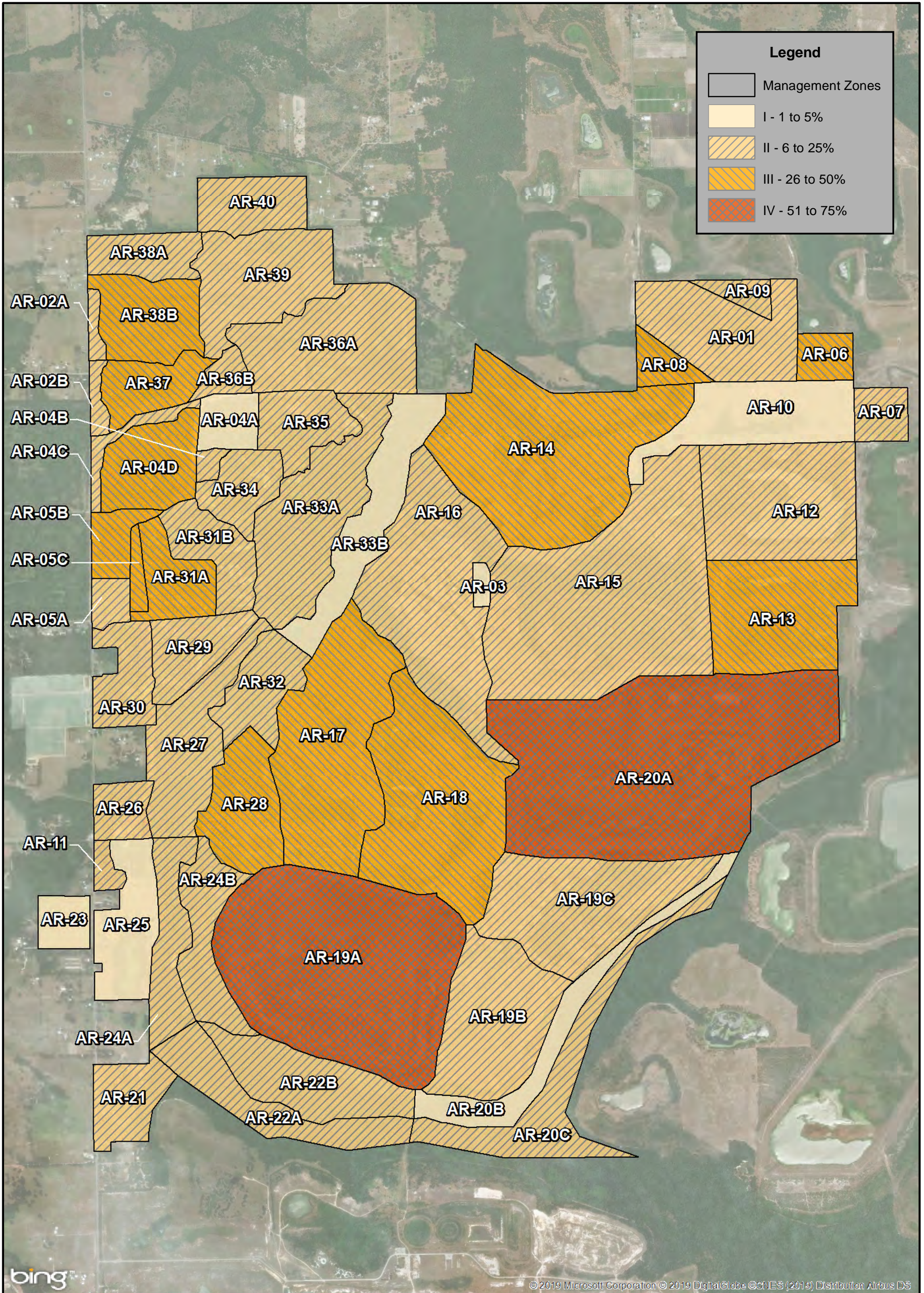
other, desired native plants. As the natural communities improve at the park, these two species will need to be thinned or completely removed.

The invasion of exotic plant species is the greatest resource management threat at ARSP. Every one of its 56 management zones has one or more invasive exotic plant species. In April 2013, per the state database, the overall cover of FLEPPC-listed invasive plants was over 40% of the park. Since 2013, park staff has actively engaged in this battle. Using special resource management project funds in 2016 and the annual contracted work provided through the FWC Uplands Invasive Plant Management program, the entire park uplands areas have been treated once and many areas have had repeated treatments. Aquatic plant species are also addressed; in addition to staff efforts, a program with the South Florida Natural History Museum harvests aquatic exotic plants to feed their rescued manatees. The February 2019 Current Conditions Report for Exotics Plant Management, which is based on survey records in the state's Natural Resource Tracking System (NRTS), shows a FLEPPC-listed species cover of closer to 29%. While this is good news, vigilance and constant re-treatments continue to be necessary to maintain this level and continue the reduction. See Invasive Plant Distribution map.

The most commonly seen FLEPPC-listed plants in the park are cogongrass, Japanese climbing fern, rose natalgrass and skunkvine; running a close second in dominance are Brazilian peppertree (*Schinus terebinthifolia*), Caesarweed, lantana, and rosary pea. But most of the central Florida FLEPPC species are here, including air potato (*Dioscorea bulbifera*), balsampear (*Momordica charantia*), camphortree (*Cinnamomum camphora*), catclaw or black mimosa (*Mimosa pigra*), chinaberry, Chinese tallow, coral vine (*Antigonon leptopus*), elephant ear (*Xanthosoma sagittifolium*), lead tree, Marianna maiden fern (*Macrothelypteris torresiana*), Napiergrass (*Cenchrus purpureus*), Old World climbing fern (*Lygodium microphyllum*), peruvian primrosewillow (*Ludwigia peruviana*), tropical

soda apple (*Solanum viarum*), tuberous sword fern (*Nephrolepis cordifolia*), wild bushbean (*Macroptilium lathyroides*) and winged yam (*Dioscorea alata*). Aquatic invasive plants on the current FLEPPC list include hydrilla, spotted duckweed, and water lettuce. Many of the species, including climbing fern and cogongrass, use wind for dispersion. Birds eat seeds and drop them in new places. A few species are coming in through the waterways. Invasive plants showing up on the old mining water holes are being distributed by birds and by the occasional boat. The predominant introduction sites are on and along mining-damaged areas and near vehicle access points.

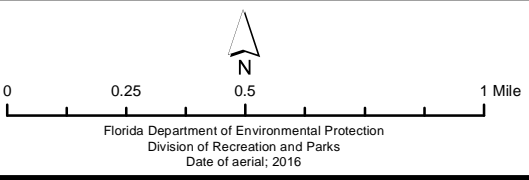
Other than maintaining decontamination protocols on park and contractor equipment, the only exotic plant prevention tool available to staff is known as "Early Detection and Rapid Response." Early detection of *any* non-native plant that does not belong at the park, and a rapid control response, is always the most efficient approach and is more likely to result in eradication of the problem. None of the cover class designations nor the species discussed earlier include the infestations of non-native plants newly emerging as invasive, and yet survey and treatment efforts for these are just as essential. Some examples of the "non-FLEPPC" invasive exotic plants being removed at the park include showy and smooth rattleboxes (*Crotalaria rotundifolia* and *C. pallida*), tropical bushmint (*Hyptis mutabilis*), and Brazilian vervain (*Verbena brasiliensis*). An encroaching aquatic exotic plant is Cuban bulrush (*Oxycaryum cubense*). Also, there are several longstanding non-native plants that obstruct restoration processes and require resources for deliberate removal efforts, but they are not assigned FLEPPC status. These include bahiagrass, bermudagrass (*Cynodon dactylon*), "feral" citrus trees (e.g., *Citrus x aurantium*) and smutgrass. If all invasive exotic species were included in the infestation data, the average cover class for the park would be closer to 50 percent or more.



**Legend**

- Management Zones
- I - 1 to 5%
- II - 6 to 25%
- III - 26 to 50%
- IV - 51 to 75%

ALAFIA RIVER STATE PARK



INVASIVE PLANTS DISTRIBUTION  
INFESTATION PERCENTAGE



To support staff efforts to learn which plants do not belong at the park, there are several state and federal programs that offer identification materials and that are working to develop better Early Detection and Rapid Response (EDRR) information. Exotic species can begin to be identified *before* they are the management problems that make them FLEPPC Category I and II species. The USDA Animal and Plant Health Inspection Service (APHIS) and the University of Florida's Institute of Food and Agricultural Sciences (IFAS) have become increasingly active in using predictive Weed Risk Assessment tools and provide websites with updates on exotic species newly being considered as threats. Also, ARSP is in Florida's Suncoast Cooperative Invasive Species Management Area (CISMA); by working with this group, staff can obtain information on invasive species currently threatening their local area as well as assistance in managing them.

There are many treatment challenges at the park. The unpredictable topology left behind from the mines, the varying degrees of sand, rock and clay surfaces, and the necessity for four-wheel drive vehicles, combine to provide daily access challenges for surveying and for treatment work. The overwhelming cover and the sheer size and ages of the major infestations are treatment challenges, as well. For example, some research shows that patch eradication of cogongrass can be achieved if the patch is treated twice a year for three years (Aulakh 2014). But the age and scale of the cogongrass fields on the east side of the park may be beyond the scope of this approach; more research into effective techniques for large-scale control is needed.

Treatment work to date has been done in-house, by staff and volunteers, and by independent contractors; the latter have mostly been through the FWC Uplands Invasive Plant Management program. More than 3,000 acres have been treated or re-treated, over the past ten years, but the "number of acres treated" across areas too gross to get appropriate re-treatment is an irrelevant number. Staff's decision to focus their efforts along the western side of the park is appropriate and commendable, as their continuous re-treatment efforts there

are beginning to show a visible reduction in cover classes. This strategy for prioritizing treatment work is to be continued.

Treatment techniques follow the current Best Management Practices as published by FWC and IFAS. Park staff is expected to stay current with: the FLEPPC invasive species lists and plant identification; the BMPs for control techniques for the different species (these are usually available through IFAS or through FLEPPC); and the proper training and supervision of volunteers and others on the identification and treatment of invasive plant species. Verify that contractors working in areas with imperiled species can properly ID the invasive plant species they are treating and the imperiled plants. At the time of writing this plan, all known exotic invasive plants at the park can be managed by using herbicides that do not require a special applicator license. Proper protective personal equipment (PPE) required by the product label is to be worn every time herbicide product is being handled. Material Safety Data Sheets are to be kept up to date, readable, and within easy reach of all herbicide handling activities.

Exotic pests and pathogens also pose a threat to natural communities. Laurel wilt is a fatal disease of trees in the Laurel family, which includes redbay, swamp bay, and avocado. This disease is an exotic pathogen (a *Raffaelea* species of fungus) introduced into trees by an exotic pest, the redbay ambrosia beetle (*Xyleborus glabratus*); the redbay ambrosia beetle has been reported for Hillsborough County. Several prickly pear plants, in various zones in the park, display the destructive presence of the Cactus moth (*Cactoblastis cactorum*). North of the northern boundary of the park, cabbage palm trees along the south side of Jameson Road are dying, presenting symptoms of either palm weevil (*Rhynchophorus ferrugineus*) or of palm borer beetle (*Dinapate wrighti*) infestation; USDA or FDACS staff should be contacted to help survey the park for the extent of these invasions and to provide management actions that could minimize their impact.

## Exotic Species Management

**Goal: Remove exotic and invasive plants and animals from the park and conduct needed maintenance control.**

The DRP actively removes invasive exotic species from state parks, with priority being given to those causing ecological damage. Removal techniques may include mechanical treatment, herbicides, or biocontrol agents.

**Objective A: Annually treat at least 680 gross acres infested with exotic plant species in the park.**

- Action 1      Annually evaluate rotation plan status and develop/update exotic plant management work plan.
- Action 2      Implement annual work plan and continue maintenance and follow-up treatments, as needed. Seek outside assistance to meet these goals.
- Action 3      Verify that grazing contract acres are included in this number and are being treated by the rancher.
- Action 4      Develop and implement plan to address exotic aquatic plants.

An overall rotation plan is proposed for the park, based on a three-year cycle. This sets overall Management Zone priorities for treatment planning, although some re-treatment of species not in the same cycle year will still be expected, such as is needed for cogongrass. Gross acres are used for the plan, since these count the area that must be traversed to implement 100% treatment, and generally exclude those acres that are not available for infestations, such as roads or parking lots or the like. The park has roughly 6,800 acres available for infestations. An annual goal to treat at least 680 gross acres should be feasible, given adequate resources. Continue to work with FWC and other agencies for assistance where possible, including ways to address the infested acres with aquatic species. Management of the grazing contract includes verifying that the contractor is treating exotics in the grazing acres within the plan cycles; this requires regular inspections of the contractor's treatment of exotics in the grazing areas, and

regular updates of the contractor's treatment work in the exotics management database.

**Objective B: Implement control measures on one nuisance and exotic animal species in the park.**

- Action 1      Annually develop, improve and implement exotic animal management work plan for wild hogs; seek outside assistance as needed.

There is potential for at least 300 hogs living comfortably at ARSP, and with that number a huge potential for significant destruction, particularly in the wetland communities that are today the main remaining natural communities at the park. Staff is encouraged to continue with hog removal, but outside assistance in the form of contracted services may help keep the numbers from creeping up. Different approaches to removal must be rotated biennially over the next ten years, as hogs quickly learn how to avoid each technique; most parks are already experiencing a decrease in numbers in traps while seeing an increase in damage from increasing populations at large.

It is possible that with further research, the large presence of coyote at the park may need to be directly addressed. There are currently no population impact studies or removal suggestions from FWC, but this could change in the next ten years.

Although not set up as a Plan Objective, it is important to note that there are a number of small-animal pests threatening the health of species at the park, such as palm and cactus borers attacking the sabal palms and the prickly pear cactus. Invite USDA Division of Plant Industry (DPI) and FDACS experts to the park to assess the pest types and extent and provide suggestions for control; they can also train staff on ID and control steps.

## **Cultural Resources**

This section addresses the cultural resources present in the park that may include archaeological sites, historic buildings and structures, cultural landscapes and collections. The Florida Department of State (FDOS) maintains the master inventory of such resources through the Florida Master Site File (FMSF). State law requires that all state agencies locate, inventory and evaluate cultural resources that appear to be eligible for listing in the National Register of Historic Places. Addendum 6 contains the FDOS, Division of Historical Resources (DHR) management procedures for archaeological and historical sites and properties on state-owned or controlled properties; the criteria used for evaluating eligibility for listing in the National Register of Historic Places, and the Secretary of Interior's definitions for the various preservation treatments (restoration, rehabilitation, stabilization and preservation). For the purposes of this plan, significant archaeological site, significant structure and significant landscape means those cultural resources listed or eligible for listing in the National Register of Historic Places. The terms archaeological site, historic structure or historic landscape refer to all resources that will become 50 years old during the term of this plan.

### **Condition Assessment**

Evaluating the condition of cultural resources is accomplished using a three-part evaluation scale, expressed as good, fair and poor. These terms describe the present condition, rather than comparing what exists to the ideal condition. 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 assessment is usually a cause for concern. Poor describes 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 is needed to reestablish physical stability.

### **Level of Significance**

Applying the criteria for listing in the National Register of Historic Places involves the use of contexts as well as an evaluation of integrity of the site. A cultural resource's significance derives from its historical, architectural, ethnographic or archaeological context. Evaluation of cultural resources will result in a designation of NRL (National Register or National Landmark Listed or located in an NR district), NR (National Register eligible), NE (not evaluated) or NS (not significant) as indicated in the table at the end of this section.

There are no criteria for determining the significance of collections or archival material. Usually, significance of a collection is based on what or whom it may represent. For instance, a collection of furniture from a single family and a particular era in connection with a significant historic site would be considered highly significant. In the same way, a high-quality collection of artifacts from a significant archaeological site would be of important significance. A large herbarium collected from a specific park over many decades could be valuable to resource management efforts. Archival records are most significant as a research source. Any records depicting critical events in the park's history, including construction and resource management efforts, would all be significant.

The University of South Florida's Alliance for Integrated Spatial Technologies (AIST) conducted a project to study archaeological resources in Florida State Parks; the project included ARSP, which they surveyed in 2013. The AIST State Parks project comprised of first running an archaeological resource sensitivity model to identify and rate areas likely to have cultural significance, which was then followed by a site visit to the park, where field work included GPS work and prospecting in areas of potential site locales. The AIST report document also provides a summary of all known previous archaeological and historical surveys on the property (AIST

2014). The following is a summary of the FMSF inventory. In addition, this inventory contains the evaluation of significance.

### Prehistoric and Historic Archaeological Sites

*Desired future condition:* All significant archaeological sites within the park that represent Florida's cultural periods or significant historic events or persons are preserved in good condition in perpetuity, protected from physical threats and interpreted to the public.

*Description:* ARSP has 28 archaeological sites, two historical cemeteries and one resource group recorded in the FMSF. From the reports of the 2007 and 2013 surveys, nine sites may be considered destroyed: HI00354, HI00577, HI01043, HI05370, HI05372, HI05373, HI05374, HI05379, and HI09688. Most of the sites have been lost to flooding, agriculture, and phosphate mining. The greatest historic impact on these lands has been that of strip-mining for phosphates (Rollison 2007). There are currently no programs related to the park's historic structures and landscapes.

Of the park's recorded 28 archaeological sites, seventeen of the sites are designated as archaeological sites with fifteen of these resulting from reports of surface-scattered stone, ceramic, and lithic finds. A few were dated some time during 700 B.C. to 700 A.D.; most are undated but considered aboriginal. AIST found three pieces of chert on the ground surface at HI05378.

The one archaeological site that may be eligible for National Register is Picnic ("Picknick") Mound HI00003, sometimes referred to as the Thatcher Mound. Register criteria D might be applicable, as this is for sites having yielded or likely to yield information important in history or prehistory. This mound was heavily excavated in the mid-1930s; the collection from the mound is housed at the Florida State Museum in Gainesville. The excavated items include whole and partial ceramic vessels and exotic materials that are associated with European contact. During the AIST fieldwork, the boundary for the site was corrected to include

the remaining mound material still visible at the park, and also to include boundaries for what is expected to be part of a village. HI00003 is of high cultural sensitivity and is thus still worth protecting from depredation and potentially worth further study.

ARSP has two historic cemeteries recorded in the FMSF, HI6881 and HI09687; AIST lists only one, HI1048, even though their report shows a picture of a cemetery marker, with the caption that it is associated with HI9687 (not mapped and not included in the report list). HI1048 was recorded in the FMSF as an archaeological site in conjunction with a historic settlement. In the FMSF documentation for HI6881, there is mention of a 1903 grave that, when the site was recorded in 1974, needed to be moved or protected, but no reports were found on if this was done; there are no GIS coordinates for this site.

The park contains one recorded resource group, HI12152, Carter Road and Bridge Remains. The resource group was recorded by AIST in 2013 and consists of the remains of two wooden bridges connected by a dirt road. This linear resource is believed to be associated with HI01047, the Carter Road House Site.

*Condition assessment:* Picnic Mound HI3 is in Fair to Poor condition, with some erosion, vegetation intrusion, minor looting, and haying on the village area.

*Level of significance:* Picnic Mound (HI00003) is potentially eligible for the National Register eligibility (under Criteria D) by AIST, but the site has not been formally evaluated by the State Historic Preservation Officer (SHPO). Eleven archaeological sites were not considered National Register eligible by the surveyors who originally recorded them: HI342, HI344, HI348, HI351, HI354, HI1043, HI1047, HI1048, HI4041, HI4042, HI5343. Only three of these (HI4041, HI4042 and HI5343) have been officially evaluated and found ineligible for the National Register by the State Historic Preservation Officer (SHPO).



*General management measures:* Other than the Picnic Mound and the newly recorded Carter Bridge site, the parks' FMSF records are only kept now as a means to maintain the historical data and to help inform any collections records the Florida Museum of Natural History (FMNH) has yet to compile. The Picnic Mound HI00003 warrants preservation and interpretive work, as well as protection from further looting and other damage. The table below identifies which treatments (stabilization or preservation) will be applied in general to significant archaeological sites. These treatments refer specifically to sections of the Secretary of the Interior's Standards. Preservation includes protection from damage from resource

management, natural causes, construction or human damage including looting. Stabilization techniques include the use of protective vegetation, use of filter cloth or other methods to prevent erosion, removal of large trees or burial of the site.

Table 4 contains the name, reference number, culture or period, and brief description of all the cultural sites within the park that are listed in the Florida Master Site File. The table also summarizes each site's level of significance, existing condition and recommended management treatment. An explanation of the codes is provided following the table.

**Table 4. Cultural Sites Listed in the Florida Master Site File**

| <b>Site Name<br/>FMSF Number</b>         | <b>Culture/Period</b>                                     | <b>Description</b>  | <b>Significance</b> | <b>Condition</b> | <b>Treatment</b> |
|--|---|---------------------|---------------------|------------------|------------------|
| Picnic Mound (Thatcher Mound)<br>HI00003 | Prehistoric; Safety Harbor, A.D. 1000-1500, Weeden Island | Archaeological Site | NE                  | P                | ST               |
| Halls Branch 1<br>HI00342                | Prehistoric, ceramic                                      | Archaeological Site | NE                  | NE               | NA               |
| Cabbage Ford<br>HI00344                  | Late Archaic  | Archaeological Site | NE                  | NE               | NA               |
| Hurrah Lake 1<br>HI00347                 | Late Archaic  | Archaeological Site | NE                  | NE               | NA               |
| Hurrah Lake 2<br>HI00348                 | Late Archaic  | Archaeological Site | NE                  | NE               | NA               |
| Hurrah Lake 3<br>HI00351                 | Late Archaic  | Archaeological Site | NE                  | NE               | NA               |
| Boggy Branch<br>HI00354                  | Manasota 700 B.C.–A.D 700                                 | Archaeological Site | NE                  | D                | NA               |
| CAL 1<br>HI00575                         | Unknown   | Archaeological Site | NE                  | NE               | NA               |
| CAL 2<br>HI00576                         | Unknown   | Archaeological Site | NE                  | NE               | NA               |
| CAL 3<br>HI00577                         | Unknown   | Archaeological Site | NE                  | D                | NA               |
| CAL 4<br>HI00582                         | Unknown   | Archaeological Site | NE                  | NE               | NA               |
| Boggy Branch House site<br>HI01043       | 1866 - 1920   | Archaeological Site | NE                  | D                | NA               |
| Bugbee House sites<br>HI01045            | 1866 - 1920   | Archaeological Site | NE                  | NE               | NA               |

**Table 4. Cultural Sites Listed in the Florida Master Site File**

| <b>Site Name<br/>FMSF Number</b>                          | <b>Culture/Period</b>     | <b>Description</b>  | <b>Significance</b> | <b>Condition</b> | <b>Treatment</b> |
|---|---------------------------|---------------------|---------------------|------------------|------------------|
| Carter Road House site<br><i>HI01047</i>                  | Late 1800s – early 1900s  | Archaeological Site | NE                  | NE               | NA               |
| Lillibridge settlement/cemetery<br><i>HI01048</i>         | Prehistoric - Unspecified | Archaeological Site | NE                  | NE               | NA               |
| Carter Road/Bridge Remains<br><i>HI12152</i>              | Late 1800s – early 1900s  | Resource Group      | NE                  | NE               | NA               |
| Picnic<br><i>HI04041</i>                                  | Prehistoric - Aceramic    | Archaeological Site | NI                  | NE               | NA               |
| Lookout Tower<br><i>HI04042</i>                           | Unknown                   | Archaeological Site | NI                  | NE               | NA               |
| East Church<br><i>HI05343</i>                             | Prehistoric               | Archaeological Site | NI                  | NE               | NA               |
| McMullen Branch 1<br><i>HI05370</i>                       | Unknown                   | Archaeological Site | NE                  | D                | NA               |
| McMullen Branch 2<br><i>HI05371</i>                       | Unknown                   | Archaeological Site | NE                  | NE               | NA               |
| McMullen Branch 3<br><i>HI05372</i>                       | Unknown                   | Archaeological Site | NE                  | D                | NA               |
| McMullen Branch 4<br><i>HI05373</i>                       | Unknown                   | Archaeological Site | NE                  | D                | NA               |
| McMullen Branch 5<br><i>HI05374</i>                       | Unknown                   | Archaeological Site | NE                  | D                | NA               |
| DJ-4<br><i>HI05378</i>                                    | Unknown                   | Archaeological Site | NE                  | NE               | NA               |
| DJ-5<br><i>HI05379</i>                                    | Unknown                   | Archaeological Site | NE                  | D                | NA               |
| DJ-6<br><i>HI05380</i>                                    | Unknown                   | Archaeological Site | NE                  | NE               | NA               |
| DJ-7<br><i>HI05381</i>                                    | 1866 - 1920               | Archaeological Site | NE                  | NE               | NA               |
| Bugbee Cemetery<br>John Armwood Grave<br><i>HI06881</i>   | 1898 - 1920               | Historic Cemetery   | NE                  | NE               | NA               |
| Alafia River State Rec Area<br>Cemetery<br><i>HI09687</i> | Historic/Unspecified      | Historic Cemetery   | NE                  | NE               | NA               |
| Alafia River State Rec Area<br><i>HI09688</i>             | 1900s                     | Archaeological Site | NE                  | D                | NA               |

**Significance**

NRL National Register listed  
 NR National Register eligible  
 NI National Register ineligible  
 NE not evaluated  
 NS not significant

**Condition**

G Good  
 F Fair  
 P Poor  
 NA Not accessible  
 D Destroyed

**Recommended Treatment**

RS Restoration  
 RH Rehabilitation  
 ST Stabilization  
 P Preservation  
 R Removal  
 N/A Not applicable

## **Cultural Resource Management**

The DRP will implement the following goals, objectives and actions, as funding becomes available, to preserve the cultural resources found in ARSP.

### **Goal: Protect, preserve and maintain the cultural resources of the park.**

Cultural resources are irreplaceable and extremely vulnerable to disturbances. The advice of historical and archaeological experts is required in this effort. All activities related to land clearing, ground disturbing activities, major repairs or additions to historic structures listed or eligible for listing in the National Register of Historic Places must be submitted to the FDOS, Division of Historical Resources (DHR) for review and comment prior to undertaking the proposed project. Recommendations may include, but are not limited to, concurrence with the project as submitted, pre-testing of the project site by a certified archaeological monitor, cultural resource assessment survey by a qualified professional archaeologist, modifications to the proposed project to avoid or mitigate potential adverse effect. In addition, any demolition or substantial alteration to any historic structure or resource must be submitted to the DHR for consultation and the DRP must demonstrate that there is no feasible alternative to removal and must provide a strategy for documentation or salvage of the resource. Florida law further requires that DRP consider the reuse of historic buildings in the park in lieu of new construction and must undertake a cost comparison of new development versus rehabilitation of a building before electing to construct a new or replacement building. DRP will seek DHR assistance with this analysis.

### ***Objective A: Implement a maintenance program for the Picnic/Thatcher Mound site and submit a formal National Register application.***

Action 1      Establish a maintenance program for the Picnic/Thatcher Mound, (HI00003), to implement restoration, rehabilitation, stabilization and preservation.

Action 2      Work with DHR, AIST and SHPO to implement the application process. If the site qualifies, complete the registration and begin developing an interpretive plan.

### ***Objective B: Locate and assess all recorded sites in the park that are still in need of a full evaluation.***

Use the completed predictive model and notes, as well as DHR, to locate sites and to complete evaluations. Work with BNCR to have assessments/evaluations completed. Development and implementation of an annual monitoring program for all archaeological and historical resources is also required.

## **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 DRP'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, except those communities specifically managed as early successional.

Alafia River State Park is designated as a single-use park. As such, timber management is only permitted as a method of natural community restoration and maintenance rather than as an ongoing extractive activity. The feasibility of managing/harvesting timber at Alafia River during the period covered by the UMP was considered pursuant to the DRP statutory responsibilities to analyze 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 natural characteristics to the degree practicable, except in those natural communities specifically managed for a structure that differs from that described in the timber assessment found at reference sites for those communities established by the Florida Natural Areas Inventory (FNAI). In the case of imperiled species, the management of certain natural communities may differ from standard treatments to provide optimum habitat conditions within the park.

Most natural communities evaluated at Alafia River had overstory pine stocking levels within or slightly below the range identified for corresponding FNAI Reference Sites. Conversely, hardwood overstory stocking levels were above the upper limits identified for corresponding FNAI Reference Sites. The Timber Management Analysis found in Addendum 7 provides additional details. Overstory thinning is a management tool that may be used in areas which have overstocked conditions. However, the specific management goals and objectives related to timber management are noted in the natural community discussions. Activities related to stand improvement, including palmetto and midstory reduction, are ongoing in many areas, as well.

### **Arthropod Control Plan**

All DRP lands are designated as “environmentally sensitive and biologically highly productive” in accordance with Ch. 388 and Ch. 388.4111 Florida Statutes. If a local mosquito control district proposes a treatment plan, the DRP works with the local mosquito control district to achieve consensus. Treatment methods including larviciding and ground adulticiding (truck spraying in public use areas) are typically allowed. Aerial adulticiding can be allowed through an agreed upon control plan. The DRP does not authorize new physical alterations of marshes through ditching or water control structures. Mosquito control plans temporarily may be set aside under declared threats to public or animal health, or during a Governor’s Emergency Proclamation.

### **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 are being managed for the purposes for which they were acquired and in accordance with their approved land management plans. The DRP considered recommendations of the land management review team and updated this plan accordingly (Addendum 8).

ARSP was subject to land management review on August 10, 2015. The review team made the following determinations:

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

For the field reviews, the team generally assigned high marks in the categories evaluated and commended the DRP and the park management for using outside sources to manage and maintain the bicycle and horse trails; the continued use of cattle grazing as an interim land management activity; and the level of work accomplished on restoration and management of the natural communities, considering how many resources are committed to recreation. Items requiring improved actions in the field included the need to increase restoration of altered areas; the need to increase monitoring, prevention and control of the non-native, invasive species; the need to increase management resources, specifically staff and funding.

Recommendations from the team included utilizing an integrated approach to exotic species control and restoration could include silviculture as well as expanding the use of grazing, herbicide, and prescribed fire. Other recommendations included a complete hydrologic assessment; increased resource protection, such as boundary surveys, gates, and fencing; and more documentation and survey guidance with respect to listed species, especially the gopher tortoise, Florida goldenaster and Britton’s beargrass.

# Land Use Component





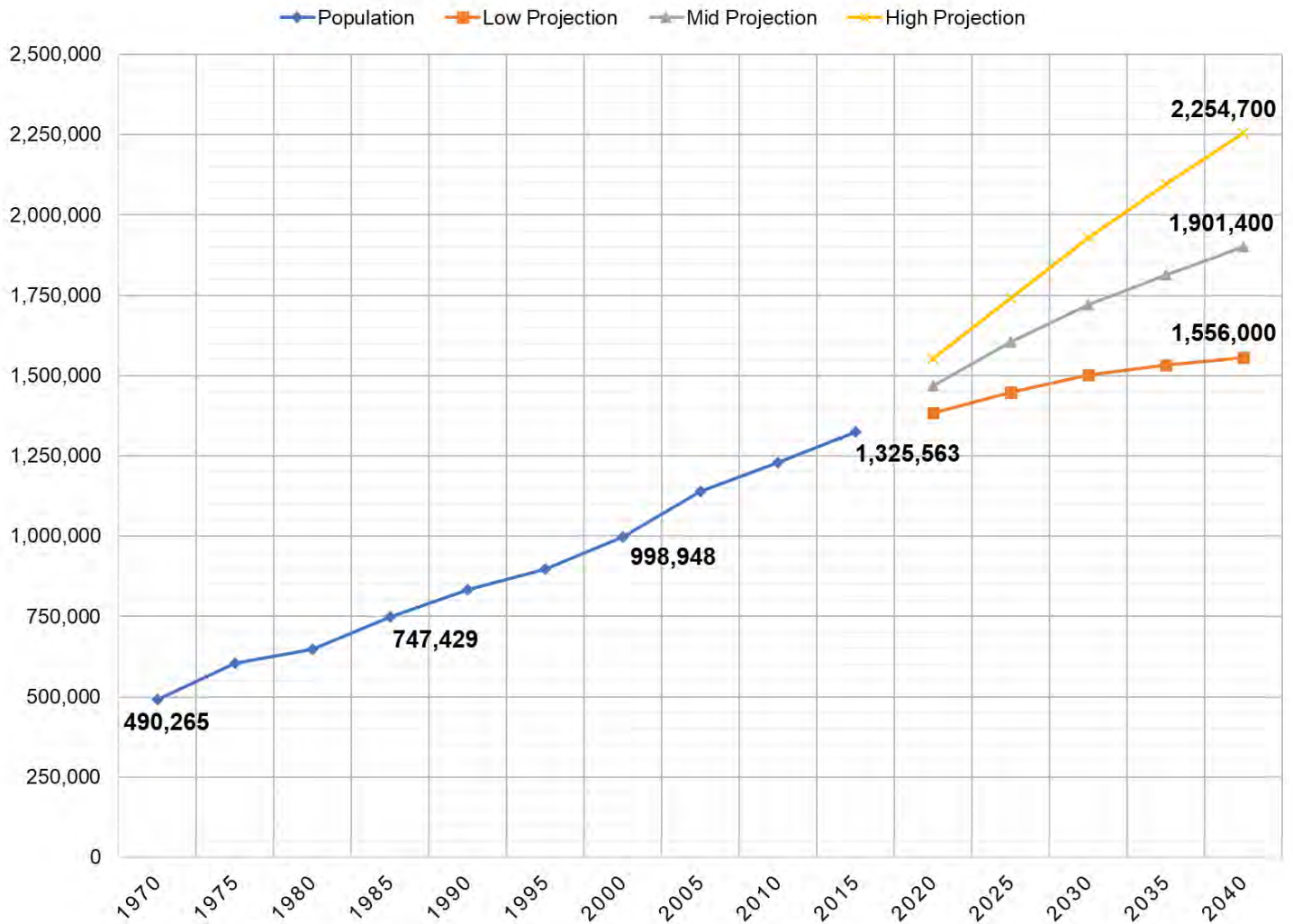
## Demographics

### Hillsborough County

Alafia River State Park is located in southeastern Hillsborough County, about 28 miles southeast of Tampa, 18 miles southeast of Brandon, and 19 miles south of Plant City. According to the U.S. Census Data (2017), approximately 50% of residents in the county identify as black, Hispanic or Latino, or another minority group. About 36% of residents classify as youth or seniors, and about 64% of the population is between 16 and 65 years of age (ACS 2017). Hillsborough County ranked 17<sup>th</sup> statewide in per capita personal income at \$44,709, below the statewide average of \$47,684 (BEA 2017). The following table shows the current population of Hillsborough County, with a comparison of its surrounding counties, urban centers, and unincorporated areas.

| Table 5. Current Populations* |                |           |
|-------------------------------|----------------|-----------|
| Hillsborough County           |                |           |
| Incorporated                  | Unincorporated | Total     |
| 443,981                       | 964,883        | 1,408,864 |
| Urban Centers                 |                |           |
| Plant City                    | Temple Terrace | Tampa     |
| 38,938                        | 26,512         | 378,531   |
| Metropolitan Area Counties    |                |           |
| Hernando                      | Pasco          | Pinellas  |
| 185,604                       | 515,077        | 970,532   |

### Hillsborough County Population Projections



## **Regional Population Growth**

Hillsborough County is one of four counties that comprises the Tampa-St. Petersburg-Clearwater metropolitan statistical area (Tampa MSA or metro area). The other three counties are Hernando, Pasco, and Pinellas. These four counties and their residents are highly connected to the three urban cores of the metro area through commuting and economic ties. The total population of this MSA is 3,080,077, with Hillsborough County accounting for nearly 46% of the total (\*EDR 2018). The Tampa MSA is the second largest metro area behind the Miami-Ft. Lauderdale-Pompano Beach MSA, which has 6.1 million residents.

Over the past 20 years, the Tampa MSA has grown by almost 30% increasing from 2.4 million residents to nearly 3.1 million. Median population projections suggest the total population could potentially grow by 28% to 3.8 million residents by 2040 (BEBR 2018). High growth projections for the metro area estimates the total population closer to 4.6 million. In either scenario, population growth in the Tampa MSA could take place in expanding suburban areas such as Brandon and Riverview. Growth in these communities could have implications for attendance at Alafia River State Park.

## **Land Use and Zoning**

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 park interaction with other facilities.

## **Existing Use of Adjacent Lands**

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. North of County Road 39 is the Alafia River Corridor, managed by Hillsborough County.

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.

## **Planned Use of Adjacent Lands**

Adjacent lands to Alafia River State Park are designated predominantly for agricultural uses. Mining activities continue to the south and east of the park. Rural densities can be found to the north. Estate districts are identified to the west for single-family residential development. To the west, there is a public/quasi-public parcel where the Hillsborough Real Estate Department is located. Alafia River State Park is surrounded primarily by agricultural activities. To the west are low-density rural uses. Hendry Estates, Wendell Wood, and Holland Acres subdivisions all border the park. Agricultural mining can be found to the south, east, and northeast of the park boundary. The mining district diverts agricultural lands from development and allows phosphate mining and other extractive activities.

## **Future Land Use Designation of the Park**

The DRP works with local governments to establish designations that provide both consistency between comprehensive plans and zoning codes and permit typical state park uses and facilities necessary for the provision of resource-based recreation.

The current future land use designation is Natural Preservation (N), which protects lands of significant environmental importance for conservation purposes. The current zoning designation for the entire park is agricultural mining (AM), which allows phosphate mining on site.



**Regional Conservation and Recreation**

Table 6 and its corresponding map shows the resource-based recreational opportunities in the region surrounding Alafia River State Park.

**Florida Greenways and Trails System**

The Florida Greenways and Trails System (FGTS) is made up of existing, planned, and conceptual non-motorized trails and ecological greenways that form a connected, integrated statewide network. The FGTS serves as a green infrastructure plan for Florida, tying together the greenways and trails plans and planning activities of communities, agencies and non-profit organizations throughout Florida. Trails include paddling, hiking, biking, multi-use and equestrian trails. The Office of Greenways and Trails maintains a priority trails map and gap analysis for the FGTS to focus attention and resources on closing key gaps in the system.

The Alafia River is a 10-mile Florida Designated Paddling Trail with publicly designated access points at Alderman’s Ford County Part or Lithia Springs County Park. The Alafia River South Prong runs to the north of the park providing equestrian trails. To the south, the Little Manatee River is designated an Outstanding Florida waterbody with paddling trail opportunities.

**Statewide Comprehensive Outdoor Recreation Plan**

The Statewide Comprehensive Outdoor Recreation Plan (SCORP) analyzes both resource-based and user-based recreation opportunities throughout the state, with the state divided up into eight planning regions. Alafia River State Park falls within the Central West region, which includes Citrus, Hernando, Hillsborough, Pasco, and Pinellas County.

An economic analysis conducted as a part of the SCORP process (2019 draft) found that residents of the Central West region spent approximately \$1.7 billion on outdoor recreation in 2017, compared to \$6.2 billion spent by visitors to the region. The top five recreational activities for residents and visitors are as follows:

Residents

1. Walking/jogging
2. Beach activities
3. Hiking
4. Bicycling
5. Golfing

Visitors

1. Beach activities
2. Walking/jogging
3. Hiking
4. Picnicking
5. Wildlife viewing

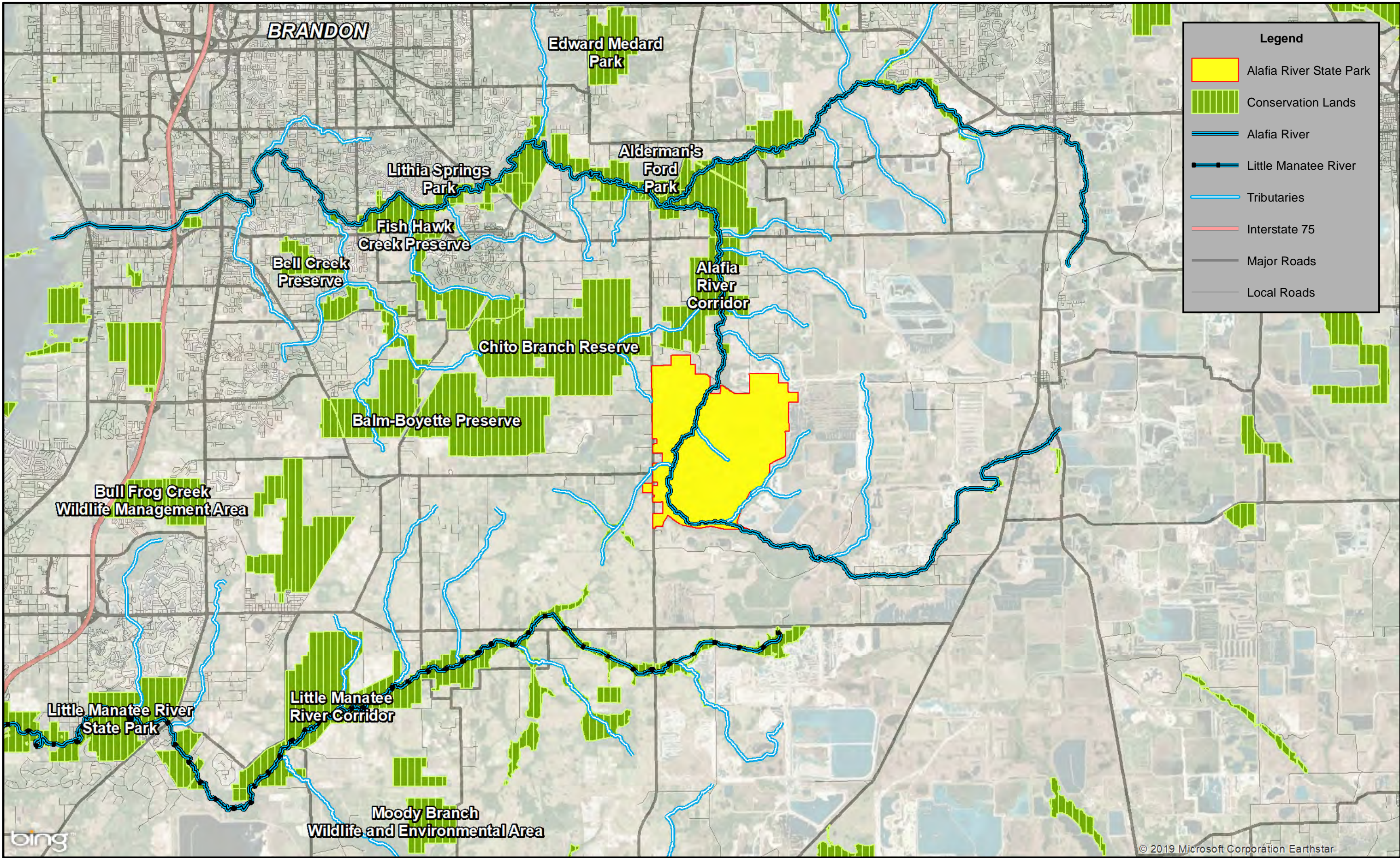
According to the SCORP update, the Central West region is below the statewide median in beach activities, boat ramp amenities, unpaved bike trails, hiking trails, equestrian trails, picnicking facilities, tent camping, and hunting areas.

**Table 6. Regional Resource-Based Recreational Opportunities**

| Name   | Biking | Hiking | Equestrian | Swimming | Beach Access | Boating | Paddling | Picnicking | Interpretation | Fishing | Camping | Hunting |
|--|--------|--------|------------|----------|--------------|---------|----------|------------|----------------|---------|---------|---------|
| <b>Florida Fish and Wildlife Conservation Commission</b> |        |        |            |          |              |         |          |            |                |         |         |         |
| Bull Frog Creek Wildlife Management Area                 | ✓      | ✓      | ✓          |          |              | ✓       | ✓        |            |                | ✓       | ✓       | ✓       |
| Moody Branch Wildlife and Environmental Area             |        | ✓      | ✓          |          |              |         |          |            |                |         |         |         |

**Table 6. Regional Resource-Based Recreational Opportunities**

| Name   | Biking | Hiking | Equestrian | Swimming | Beach Access | Boating | Paddling | Picnicking | Interpretation | Fishing | Camping | Hunting |
|--|--------|--------|------------|----------|--------------|---------|----------|------------|----------------|---------|---------|---------|
| <b>Florida State Parks</b>                         |        |        |            |          |              |         |          |            |                |         |         |         |
| Hillsborough River State Park                      | ✓      | ✓      |            | ✓        |              |         | ✓        | ✓          | ✓              | ✓       | ✓       |         |
| Little Manatee River State Park                    | ✓      | ✓      | ✓          |          |              |         | ✓        | ✓          | ✓              | ✓       | ✓       |         |
| Southfork (Beker) State Park                       |        | ✓      |            |          |              |         |          |            |                |         |         |         |
| <b>Hillsborough County</b>                         |        |        |            |          |              |         |          |            |                |         |         |         |
| Alafia River Corridor                              |        | ✓      | ✓          |          |              |         |          |            |                | ✓       | ✓       |         |
| Alderman’s Ford Park                               | ✓      |        |            |          |              |         | ✓        |            |                | ✓       | ✓       |         |
| Balm-Boyette Preserve                              | ✓      | ✓      |            |          |              |         |          |            |                | ✓       |         |         |
| Bell Creek Preserve                                |        | ✓      |            |          |              |         |          |            |                | ✓       |         |         |
| Edward Medard Park                                 |        | ✓      |            |          |              | ✓       | ✓        |            |                |         | ✓       |         |
| Fish Hawk Creek Preserve                           |        | ✓      |            |          |              |         |          | ✓          |                |         |         |         |
| Lithia Springs Park                                |        | ✓      |            | ✓        |              |         |          |            |                |         | ✓       |         |
| Little Manatee River Corridor                      |        | ✓      |            |          |              |         | ✓        | ✓          |                | ✓       |         |         |
| Rhodine Scrub Preserve                             |        | ✓      |            |          |              |         |          |            |                |         |         |         |
| Triple Creek Nature Preserve                       |        | ✓      |            |          |              |         |          |            |                |         |         |         |
| <b>Manatee County</b>                              |        |        |            |          |              |         |          |            |                |         |         |         |
| Duette Preserve                                    | ✓      | ✓      | ✓          |          |              |         |          |            | ✓              | ✓       | ✓       | ✓       |
| <b>Southwest Florida Water Management District</b> |        |        |            |          |              |         |          |            |                |         |         |         |
| Chito Branch Reserve                               | ✓      | ✓      | ✓          |          |              |         |          |            |                |         |         |         |
| Edward Chance Reserve                              | ✓      | ✓      | ✓          |          |              |         |          |            |                | ✓       |         |         |
| Little Manatee River<br>(Upper/Southfork Tracts)   |        | ✓      |            |          |              |         | ✓        |            |                | ✓       |         |         |
| Lower Hillsborough<br>Wilderness Preserve          | ✓      | ✓      | ✓          |          |              | ✓       | ✓        | ✓          |                | ✓       | ✓       | ✓       |



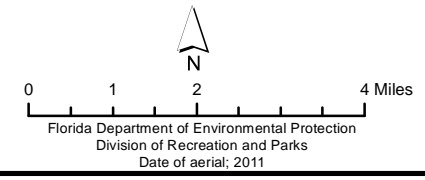
**Legend**

- Alafia River State Park
- Conservation Lands
- Alafia River
- Little Manatee River
- Tributaries
- Interstate 75
- Major Roads
- Local Roads

bing

© 2019 Microsoft Corporation Earthstar

ALAFIA RIVER STATE PARK



CONSERVATION AND RECREATION LANDS MAP



## **Assessment of Use**

All legal boundaries, significant natural features, structures, facilities, roads and trails 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 Mosaic (formerly IMC-Agrico Company) allowed some minor agricultural uses, such as cattle pasture and citrus leases, on the reclaimed areas.

### **Other Uses**

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 Mosaic). Florida Power Corporation (FPC) has three gas lines crossing the northern portion of the park along Jameson Road and one gas line crossing Hurrah Lake.

### **Current Uses**

The current recreational opportunities available at Alafia River State Park include picnicking, fishing, canoeing/kayaking, RV/tent camping, horse camping, 16.5 miles of single-track and double-track bicycling for all skill levels, 22 miles of equestrian/hiking trails, and an additional half-mile of nature trail. There is also an unimproved boat ramp at the bridge on Thatcher Road.

## **Existing Facilities**

The North Trailhead Area is located in the northwest corner of the property. It 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. Facilities include a parking area, picnic shelters, grills, and composting toilet. The camping area, adjacent to Lake Alafia, was built with the equestrian user in mind. The facilities in this area include standard campsites, a bathhouse, picnic pavilions, and a horse stable. A hike-in primitive group camp can accommodate up to 30 campers. The Main Day Use/Trailhead Area is located at the junction of three old Agrico pits and serves as the main trailhead to the extensive network of off-road mountain biking, hiking, and equestrian trails. The facilities in this area include picnic pavilions, a restroom, and a playground. The park's concessionaire operates from this main trailhead and provides bike rentals, as well as other trail related goods. There is an unimproved boat launch at the bridge on Thatcher Road. Support facilities include staff residences, a 3-bay shop, an equipment shelter, and a storage building (see Base Map). The main shop area is located along Thatcher Road, while the staff residence area is situated near the developed campground.

### **Recreation Facilities**

#### Main Day Use Area/Trailheads

Large picnic shelters (2)  
Restroom  
Playground  
Paved parking (40 spaces)  
Trailer parking area (30 spaces)

#### Campground

30 campsites  
Bathhouse  
Large pavilions (2)  
Horse barn/paddocks

#### Trails

Biking (16.5 miles)  
Shared-use (22 miles)  
Nature (0.5 miles)

**Recreation Facilities Cont.**

North Trailhead Area

- Picnic shelters (2)
- Picnic tables and barbecue grills
- Portable toilet (1)
- Unpaved parking area
- Trailer parking

Thatcher Road Boat Access Area

- Unimproved boat launch

**Support Facilities**

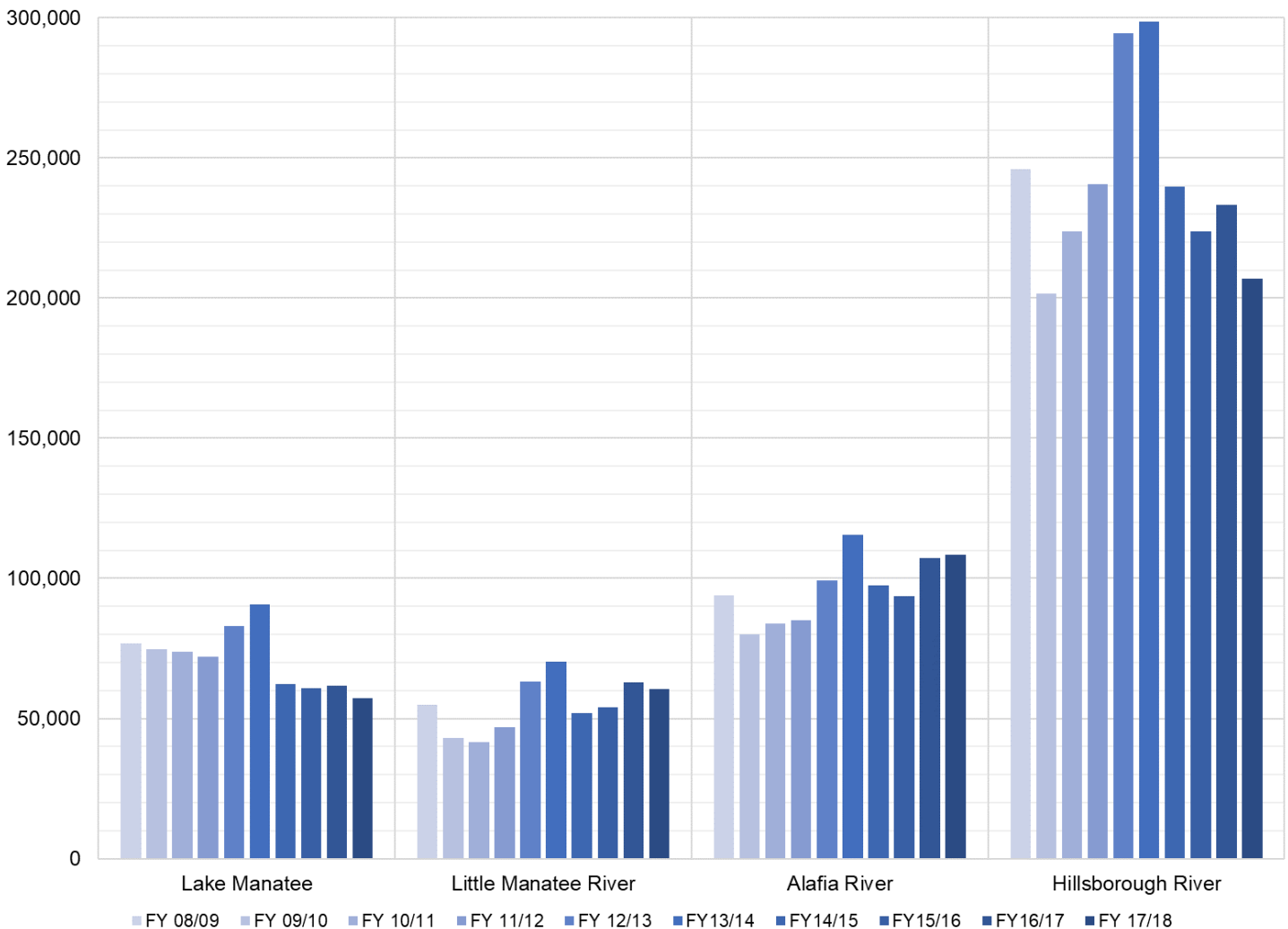
Shop Area

- 3-bay shop
- Equipment shelter
- Barrack-type building
- Staff residences

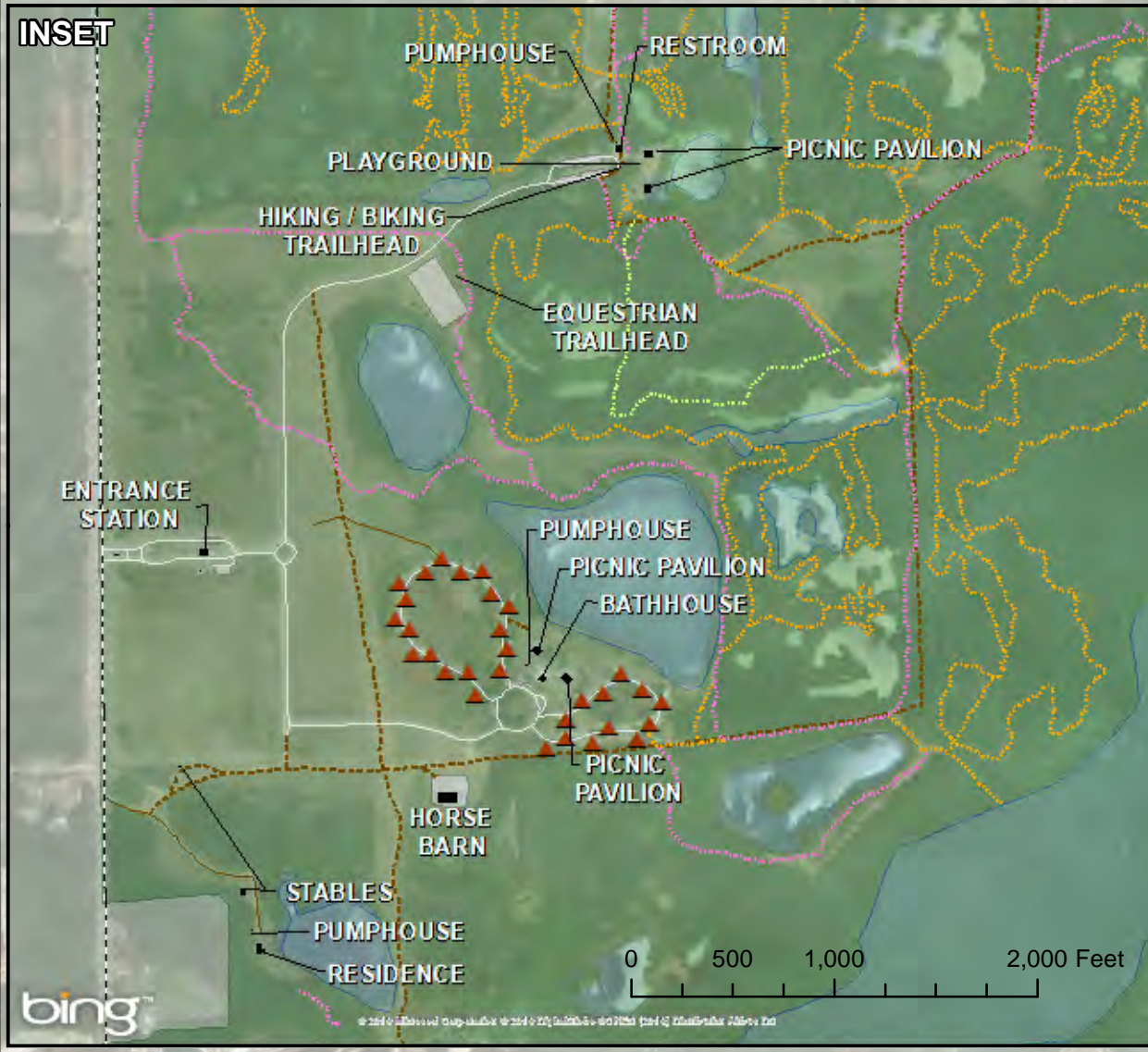
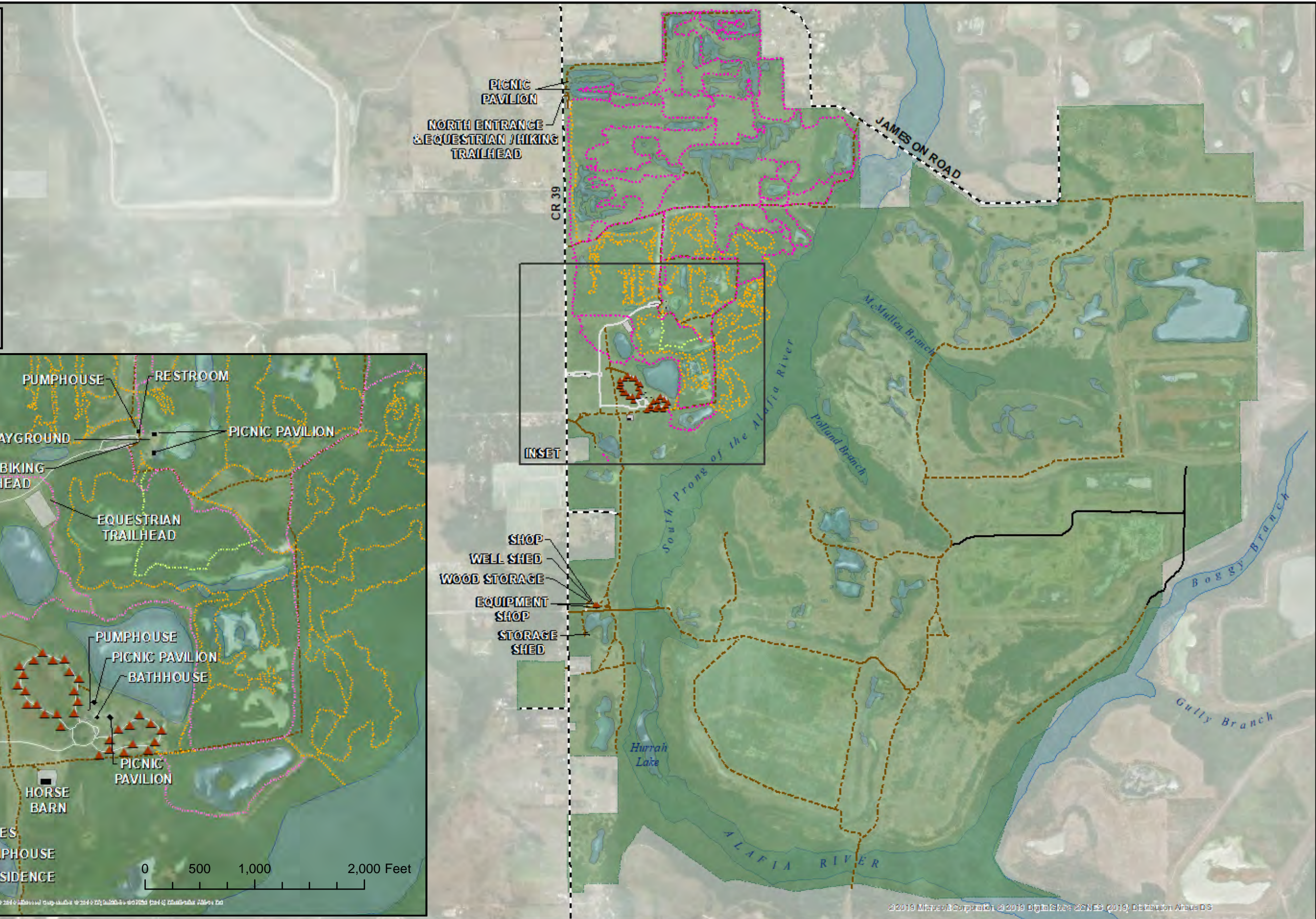
**Attendance Analysis**

The chart below shows annual attendance at Alafia River State Park over the past 10 years, as compared to other state parks in the region. Alafia River State Park recorded 108,425 visitors in FY 2017/2018. By DRP estimates, the FY 2017/2018 visitors contributed \$9.2 million in direct economic impact, the equivalent of adding 129 jobs to the local economy (FDEP 2018). The park's busy season is between November and April, with December and March being the busiest months of the year. During this 6-month period, the park experiences about 62% of its annual visitation. The park's average annual campground occupancy rate has steadily increased from 51% to 66% over the past 10 years. The months of January to March had campground occupancies of 96% to 98% in FY 17/18, compared to 80% to 81% in November, December, and April.

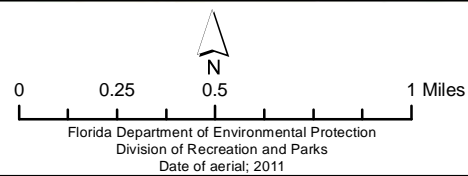
**Regional State Park Attendance**



- Legend**
- Park Boundary
  - County Road
  - Park Road Paved
  - Park Road Stabilized
  - Park Road Unstabilized
  - Private Road
  - Camp Sites
  - Biking Trail
  - Hiking Trail
  - Hiking/Equestrian Trail



ALAFIA RIVER STATE PARK



BASE MAP





## Recreational Carrying Capacity

Recreational carrying capacity is an estimate of the number of visitors each recreational use area can accommodate. The recreational carrying capacity for Alafia River State Park has been determined by identifying the recreational uses and activities available to visitors, approximating the physical constraints associated with accessing those uses, and applying a median number of visitors per unit of measurement. This calculation establishes a “visitors at one time” number for each recreational use area. The one-time number is then multiplied by a daily turnover rate that estimates how often an area will be used by different groups of visitors throughout the day. The totals for each use area are added together to determine total visitors at one time and total daily visitors. These calculations have been conducted for the recreational uses at the park, and the results are shown in Table 7.

Table 7 inventories all of the existing recreational use areas, as well as the use areas that are proposed in this plan. For these categories, the physical or operational constraints of accessing and utilizing the use areas are the constant, non-variable inputs of the recreational carrying capacity equation. Parking spaces are the constants for day use areas and trailheads, while the number of

campsites is considered for overnight uses. These constants are then multiplied by visitors per vehicle/site to determine the visitors at one time estimate, and the one-time estimate is multiplied by the turnover rate to calculate estimated daily visitors. The visitors per vehicle/site and the turnover rate are considered variable inputs that are determined by an established assumption. For the visitors per vehicle/site, the established assumption is each vehicle and campsite contain four visitors. It is known that some vehicles and campsites will have one or two visitors while others contain six to eight. Likewise, it is assumed that day use visitors will spend around three to four hours in the park and non-overnight trail users will hike or ride for two to three hours. It is also acknowledged that these use areas are not mutually exclusive, and, for example, an overnight camper may hike on the trails and picnic in the same day. However, parking spaces are considered physical constraints that only allow a certain number of visitors to access a use area at one time. Those parking spaces cannot be used simultaneously by multiple vehicles. Although vehicles can contain a variable number of visitors, the number of parking spaces physically limits the number of vehicles, and thus visitors, that can access a given use area.

**Table 7. Recreational Carrying Capacity Estimates**

| Existing Use Areas             | Parking/<br>Campsites | Visitors per<br>Vehicle/Site | Visitors at<br>One Time | Turnover<br>Rate | Daily<br>Visitors |
|--------------------------------|-----------------------|------------------------------|-------------------------|------------------|-------------------|
| <i>Main Trailhead</i>          | 40                    | 4                            | 160                     | 4                | 640               |
| <i>Equestrian Trailer Area</i> | 30                    | 4                            | 120                     | 4                | 480               |
| <i>Campground</i>              | 30                    | 4                            | 120                     | 1                | 120               |
| Proposed Use Areas             | Parking/<br>Campsites | Visitors per<br>Vehicle/Site | Visitors at<br>One Time | Turnover<br>Rate | Daily<br>Visitors |
| <i>Three Finger Lake</i>       | 30                    | 4                            | 120                     | 3                | 360               |
| <i>Thatcher Road Day Use</i>   | 20                    | 4                            | 80                      | 3                | 240               |
| <i>Primitive Campground</i>    | 30                    | 4                            | 120                     | 1                | 120               |
| <i>Cabin Area</i>              | 6                     | 4                            | 24                      | 1                | 24                |

| Use Areas                 | Visitors at One Time | Daily Visitors |
|---------------------------|----------------------|----------------|
| <i>Existing Use Areas</i> | 400                  | 1,240          |
| <i>Proposed Use Areas</i> | 344                  | 744            |
| <b>Park Total</b>         | <b>744</b>           | <b>1,984</b>   |

## **Conceptual Land Use Plan**

The following narrative represents the current conceptual land use proposal for this park. The conceptual land use plan is the long-term, optimal development plan for the park, based on current conditions and knowledge of the park's resources, landscape and social setting. The conceptual land use plan is modified or amended, as new information becomes available. The acquisition of new parkland may provide opportunities for alternative or expanded land uses. The DRP develops a detailed development plan for the park and a site plan for specific facilities based on this conceptual land use plan, as funding becomes available.

During the development of the conceptual land use plan, the DRP assessed the potential impact of proposed uses or development on the park resources and applied that analysis to determine the future physical plan of the park as well as the scale and character of proposed development. Potential resource impacts are also identified and assessed as part of the site planning process once funding is available for facility development. At that stage, design elements (such as existing topography and vegetation, sewage disposal and stormwater management) and design constraints (such as imperiled species or cultural site locations) are investigated in greater detail. Municipal sewer connections, advanced wastewater treatment or best available technology systems are applied for on-site sewage disposal.

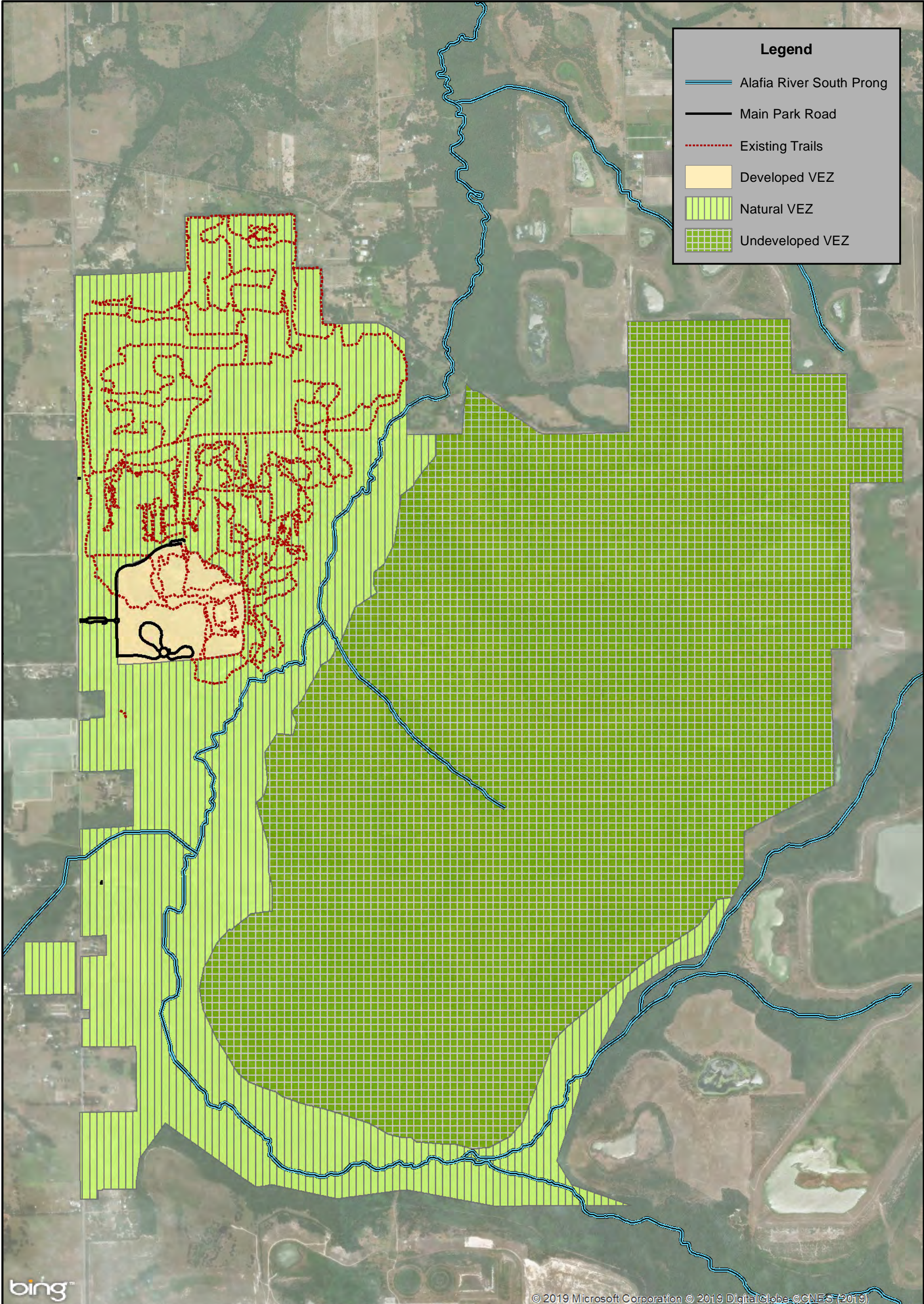
Creation of impervious surfaces is minimized to the greatest extent feasible in order to limit the need for stormwater management systems, and all facilities are designed and constructed using best management practices to limit and avoid resource impacts. Federal, state and local permit and regulatory requirements are addressed during facility development. 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, park staff monitors conditions to ensure that impacts remain within acceptable levels.

## **Vision for Land use and Recreation**







Alafia River State Park is a premier destination for off-road mountain biking and horseback riding, with nearly 40 miles of trail throughout the northwestern portion of the property. The vision for the park is to continue to promote and expand the extensive trail network, while also providing additional day use and overnight facilities. The major infrastructure proposal for this management plan is to create a unified entrance for the park. Currently, there are three access points: the northern trailhead, main entrance/ranger station, and Thatcher Road. In the event that this plan's objectives are achieved, visitors will enter through the main entrance/ranger station where they can then choose to recreate at the existing trailhead and campground, or venture to one of the new recreational use areas that will be developed at Three Fingers Lake, Lake Heron, and Thatcher Road. Access to these new use areas will branch off north and south from the existing paved park road. When resource management objectives are realized in the western portion of the park, this area could provide excellent primitive experiences.

### **Visitor Experience Zones**

The Visitor Experience Zones (VEZ) are a series of geographic designations that will help guide future land use and recreation management decision-making. These designations will shape the types of recreation opportunities offered within an area and help determine the contextual design of recreational facilities in each area. This allows DRP to improve communication with stakeholders by providing facility improvement and development guidelines based on five designations: urban, developed, natural, undeveloped, and wilderness. Only three designations (developed, natural, undeveloped) are used for Alafia River State Park. The VEZ designations established by DRP can help guide management of visitor use patterns, facility design and placement, and recreational carrying capacity, while also working to ensure a diversity of recreational opportunities and experiences. Management zones are used to delineate designations (see VEZ map).



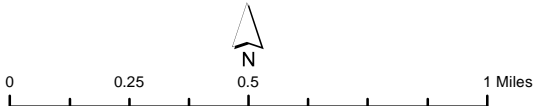
**Legend**

-  Alafia River South Prong
-  Main Park Road
-  Existing Trails
-  Developed VEZ
-  Natural VEZ
-  Undeveloped VEZ

bing™

© 2019 Microsoft Corporation © 2019 DigitalGlobe © CNES (2019)

ALAFIA RIVER STATE PARK



Florida Department of Environmental Protection  
Division of Recreation and Parks  
Date of aerial: 2011

VISITOR EXPERIENCE ZONES MAP



## Developed

This is where the majority of conventional state park recreation activities are focused. The developed areas include the large majority of day-use and support areas within parks. Recreation infrastructure (including parking, roads, picnic areas, campgrounds) are paved and provide a standard level of visitor comfort associated with conventional day-use and overnight activities in a modified natural setting. Socialization within and outside one's group is typical, and the presence of other visitors is expected. The developed area is typically attractive for day-use by weekend visitors from nearby communities, campground users, and groups within a day's drive. This designation typically incorporates a primarily automobile-oriented site layout with substantial parking and meandering roads. There is an obvious and highly visible management presence with signage, restrooms, and trashcans throughout the visitor areas with groupings of support buildings including staff housing, shop buildings, and equipment storage separated from the main visitor use areas.

## Natural

The natural designation is most often associated with a scenic transportation corridor such as a main park drive. It is the area between developed use areas and the more primitive experience associated with the undeveloped designation. The average park user will experience this setting from a vehicle travelling to a use area along a park road. Socialization with others outside one's group is not very important, although the presence of others is expected and tolerated. Most visitor activities are limited to passive day-use recreation opportunities including hiking, biking, paddling, and wildlife viewing. Other than paved park roads, the majority of park facilities under the natural designation, including trailheads and kayak launches, are unpaved in order to minimize impacts to natural resources. Occasional support facilities are found in the natural area. The natural area can enhance the overall visitor experience by facilitating the distinction and natural buffer from adjacent land uses.

## Undeveloped

A sense of independence, freedom, tranquility, relaxation, appreciation of nature, testing of outdoor skills, and responsibility for resource stewardship is typical. The opportunity to experience a natural ecosystem with little human imprint, a sense of challenge, adventure, risk, self-reliance, and a feeling of solitude are all important characteristics of the undeveloped designation. This is where longer distance hiking trails and primitive camping opportunities are located. It is an area of limited development with any development utilizing permeable surfaces and prioritizing the minimization of human impact visually and physically to help create as austere and rustic of a visitor experience as is practical. There is little evidence of management presence with a leave-no-trace policy promoted. Park visitors in this area are likely to stay overnight in the park due to the time and effort needed to experience this level of solitude in a natural environment. With the exception of service roads and firebreaks, support facilities are rare to non-existent.

## Recreation Management Program

**Goal: Provide public access and recreational opportunities in the park.**

The existing recreational activities and programs of this state park are appropriate to the natural and cultural resources contained in the park and should be continued. New and improved activities and programs are also recommended and discussed below.

***Objective A: Expand the park's recreational carrying capacity by 344 users per day.***

The park will continue to provide opportunities for camping, hiking, biking, horseback riding, paddling, and fishing. Interpretive signage and displays will continue to be offered.

At Alafia River State Park camping opportunities will be expanded with the addition of a campground, vacation cabins, and a primitive group camp. Boating will be

enhanced with improvements to the existing boat launch on the Alafia River and the addition of paddling launches on some of the park lakes and ponds. Nature study and wildlife observation will be enhanced with the addition of observation structures at the Campground and Main Day Use/Trailhead Area.

***Objective B: Continue, improve, and develop new interpretive programs.***

Three types of interpretive programs are currently offered to park visitors. These include a semi-regular camper coffee program during which rangers answer questions about the park or give more structured interpretive programs on various topics pertaining to the park. Visitors can also attend after-hours campfire programs with topics ranging from night-active wildlife to proper campfire cooking techniques. The park has also recently begun to offer guided night hikes and guided night rides for both equestrian and bicyclists, allowing visitors to experience the surrounding dark night skies and learn more about fascinating nocturnal wildlife common to the park.

The park is also host to many events ranging from bicycle and foot races and relays to mountain biking skill demonstrations, live music and learning opportunities, and the Fat Tire Festival, which is a multi-day mountain biking oriented festival with vendors, bike demos, skill drills and coordinated trail rides. These events attract clientele that that may not previously have visited the park and give visitors a sense of ownership of public lands, as well as providing learning opportunities.

The park plans to implement more programs in the future to appeal to user groups that are not currently attending interpretive programs and events. Events and programs that target school-aged children are being developed. The park's junior ranger program is currently not very active; plans are in place to develop more interpretive programming focused towards getting kids involved with the junior ranger program. Beginning by meeting with schools to plan field trips, the park will implement a regular schedule of junior ranger interpretive programs that give children the

opportunity to complete junior ranger activities and learn about various aspects of Florida's natural and cultural history.

Another new program that the park will develop is a fishing clinic to get kids and their parents out in the park and teach them the basics of environmentally minded fishing in Florida, including a basic overview of fishing regulations and aquatic animals found in the park. The park will work with other agencies, especially FWC, to get multiple perspectives on fishing in Florida and make these programs informative and successful.

**Goal: Develop and maintain the capital facilities and infrastructure.**

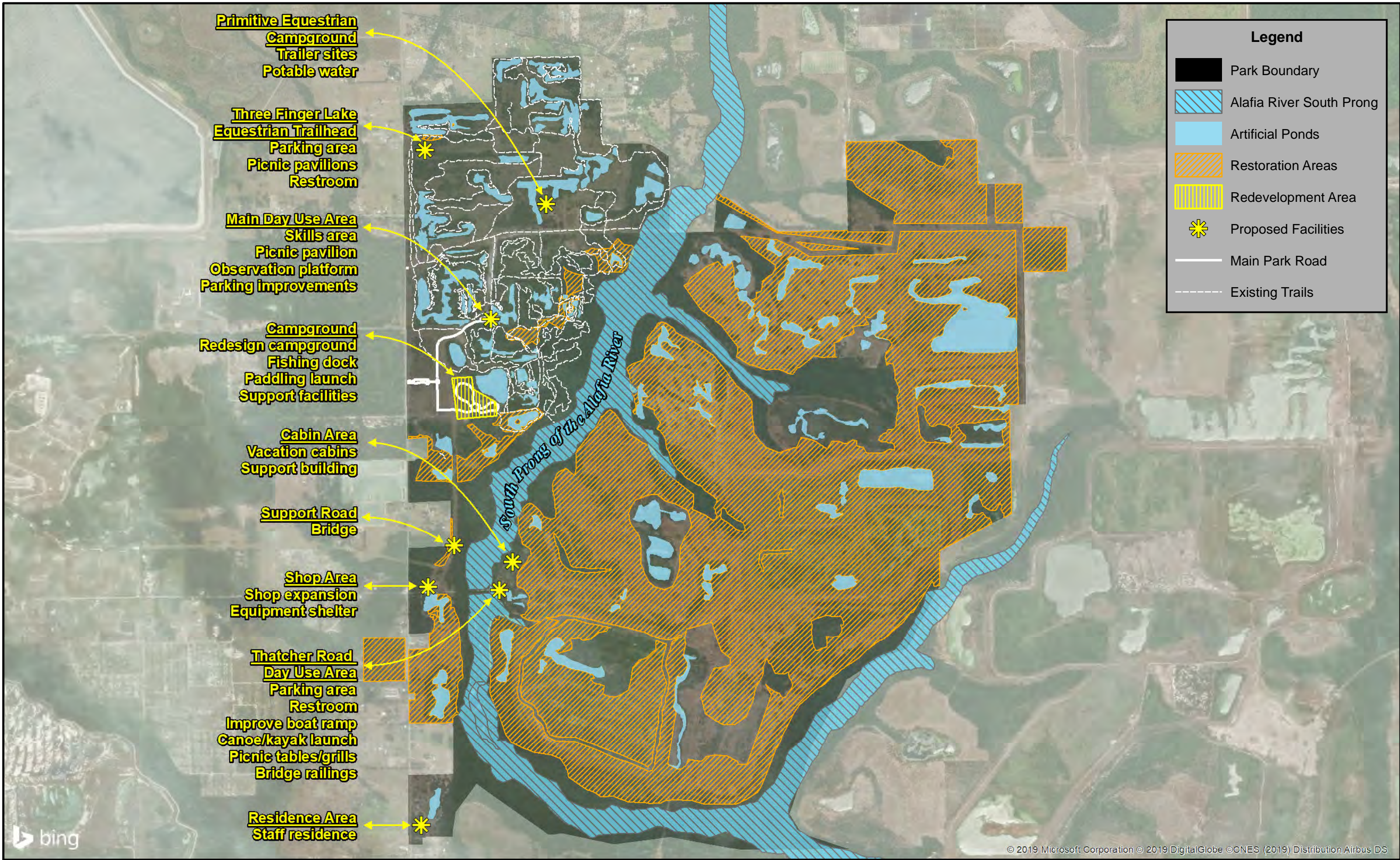
The existing facilities of this state park are appropriate to the natural and cultural resources contained in the park and should be maintained. New construction, as discussed further below, is recommended to improve the quality and safety of the recreational opportunities, to improve the protection of park resources, and to streamline the efficiency of park operations. The following is a summary of improved and new facilities needed to implement the conceptual land use plan for Alafia River State Park:

***Objective A: Maintain all public and support facilities in the park.***

All capital facilities, trails and roads within the park will be kept in proper condition through the daily or regular work of park staff and/or contracted help.

***Objective B: Improve/repair 5 existing use areas.***

Major repair projects for park facilities may be accomplished within the ten-year term of this management plan, if funding is made available. These include the modification of existing park facilities to bring them into compliance with the Americans with Disabilities Act (a top priority for all facilities maintained by DRP). The following discussion of other recommended improvements and repairs are organized by use area within the park.







### Main Day Use/Trailhead Area

Recommended improvements for this area include the addition of two small picnic pavilions to provide more picnicking options. A bike skills area should be considered. The addition of an observation platform on the pond adjacent to the picnic area will enhance wildlife viewing opportunities. The improvement and expansion of the parking area is also recommended.

### Campground Area

The existing campground should be redesigned to improve the configuration of the overnight use area and expand the number of sites. The addition of a fishing dock and paddling launch is proposed for the shoreline of Lake Alafia to enhance fishing and wildlife viewing opportunities for campers. A small equipment storage building is also recommended for this area.

### Three Finger Lake Equestrian Trailhead

Due to highway noise, safety concerns, and operational issues, the current equestrian trailhead at the North Trailhead on County Road 39 area will be moved slightly interior of its current location and a road from the main park road will be developed to provide access from the main park entrance. The paddling, fishing, and picnicking uses currently provided at the North Trailhead Area will be reestablished on Three Finger Lake to enhance and improve the visitor experience. Amenities to be provided at this new picnic area include parking, restroom, small picnic pavilions, and scattered picnic tables.

### Thatcher Road Day Use Area

This area provides the park's primary access to the South Prong of the Alafia River. Given its scenic location on the river, this area has the potential to become a very desirable day use area for fishing, picnicking, boating, and paddling. Proposed improvements include an improved boat ramp, a paddling launch, designated parking for 10-15 vehicles, a restroom, picnic tables and grills, and railing improvements on the old bridge for visitor safety. Due to safety and operational issues,

this area should be improved only with the closure of the Thatcher Road entrance and the establishment of a new stabilized park drive following the existing service road in the transmission line corridor. The intent is to have all park visitors come through the main gate.

### Shop/Residence Area

The existing shop building should be enlarged with the addition of two more bays. A 4-bay pole barn for large equipment is also proposed for this area. An additional staff residence is needed.

### ***Objective C: Construct 2 new use areas and 4.5 miles of road.***

### Primitive Equestrian Campground

A primitive equestrian campground should be developed to the south of Lake Heron in an area that does not disrupt the surrounding equestrian trails. This campground will be reserved for equestrian overnight use and reservations will be made through the park.

### Cabin Area

Cabin camping opportunities will be provided to diversify the overnight experiences at this park. Up to six vacation style cabins are proposed to be constructed to the north of the proposed Thatcher Road Day Use Area on the east side of the South Prong of the Alafia River. A cabin support building should be provided in this area for maintenance purposes.

### Parkwide

A park road will need to be extended from the Main Day Use Area to the proposed primitive equestrian campground. A road is also proposed from the new campground to the Three Finger Lake Equestrian Trailhead. One mile of road is also needed from the existing campground to the Shop Area and the proposed Thatcher Road Day Use Area.

## **Facilities Development**

Preliminary cost estimates for these recommended facilities and improvements are provided in the Ten-Year Cost Estimates section of this plan. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist DRP in budgeting future park improvements and may be revised as more information is collected through the planning and design processes. New facilities and improvements to existing facilities recommended by the plan include:

### **Main Day Use/Trailhead Area**

- Bike skills area
- Small picnic pavilion (2)
- Observation platform
- Parking improvements/expansion

### **Campground Area**

- Redesign campground
- Fishing dock
- Canoe/kayak launch
- Equipment storage building

### **Three Finger Lake Equestrian Trailhead**

- Parking area
- Restroom
- Picnic pavilions (2)

### **Thatcher Road Day Use Area**

- Parking area
- Restroom
- Bridge improvements
- Boat ramp improvements
- Canoe/kayak launch
- Picnic tables and grills

### **Primitive Equestrian Campground**

- Trailer sites
- Potable water

### **Cabin Area**

- Vacation cabins (6)
- Cabin support building

### **Shop/Residence Area**

- Shop building expansion (add 2 bays)
- Equipment shelter (4 bay)
- Staff residence

### **Parkwide**

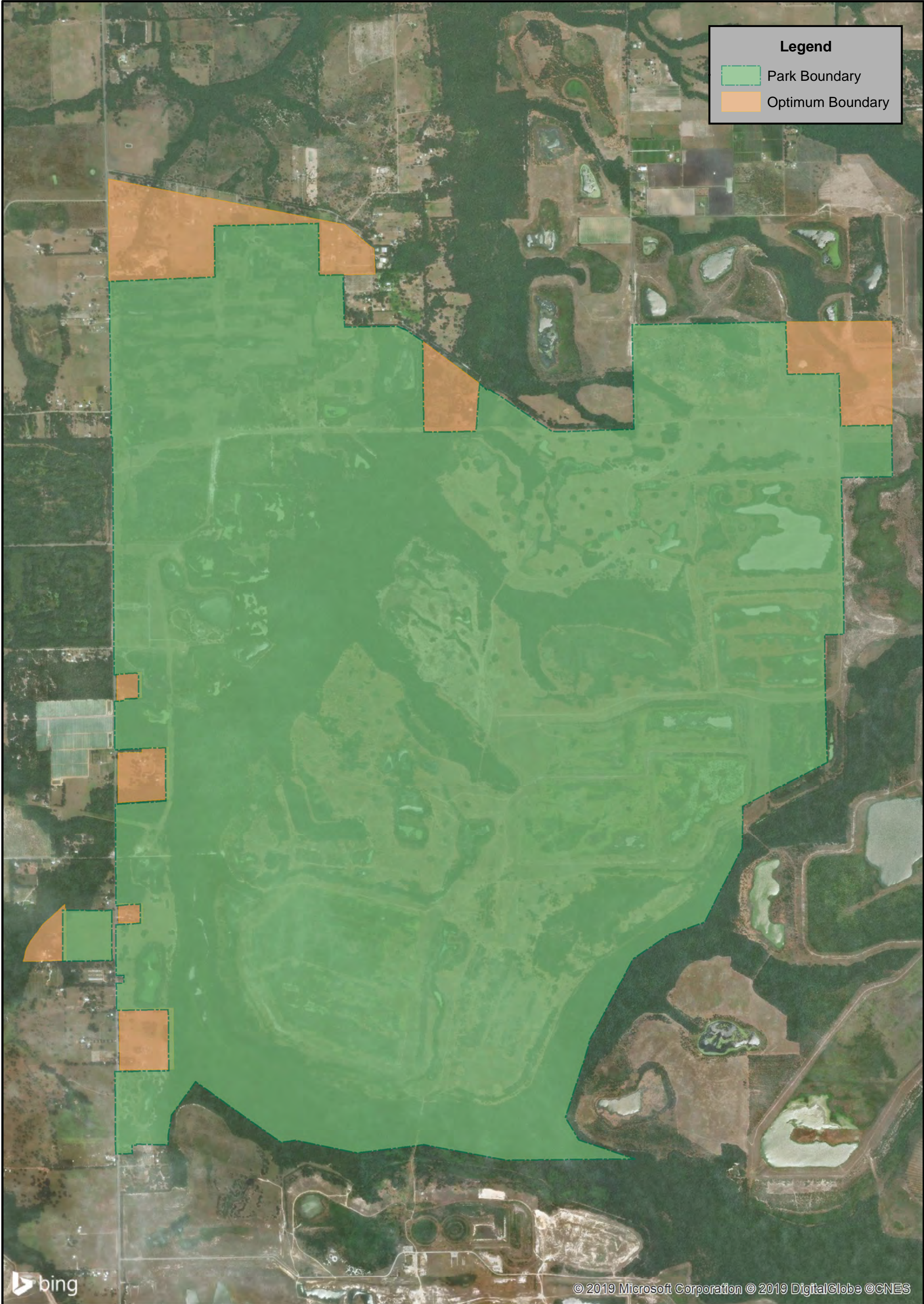
- Park road extensions
- Support road bridge

## **Optimum Boundary**

The optimum boundary map reflects lands considered desirable for direct management by the DRP as part of the state park. These parcels may include public or privately-owned land that would improve the continuity of existing parklands, provide the most efficient boundary configuration, improve access to the park, provide additional natural and cultural resource protection or allow for future expansion of recreational activities. Parklands that are potentially surplus to the management needs of DRP are also identified. As additional needs are identified through park use, development, and research, and as land use changes on adjacent property, modification of the park's optimum boundary may be necessary.

Identification of parcels on the optimum boundary map is intended solely for planning purposes. It is not to be used in connection with any regulatory purposes. Any party or governmental entity should not use a property's identification on the optimum boundary map to reduce or restrict the lawful rights of private landowners. Identification on the map does not empower or suggest that any government entity should impose additional or more restrictive environmental land use or zoning regulations. Identification should not be used as the basis for permit denial or the imposition of permit conditions.

The optimum boundary for Alafia River State Park includes approximately 450 acres in areas along the park's northern and western boundary. The acquisition of these properties would serve to better protect the Alafia River corridor and improve overall park operations and management. The acquisition would also provide a greenway connection to Hillsborough County conservation lands to the north (See Optimum Boundary Map).



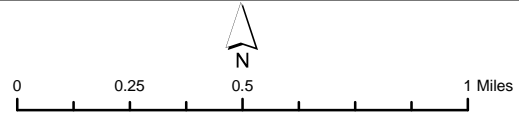
**Legend**

- Park Boundary
- Optimum Boundary

bing

© 2019 Microsoft Corporation © 2019 DigitalGlobe © CNES

ALAFIA RIVER STATE PARK



Florida Department of Environmental Protection  
Division of Recreation and Parks  
Date of aerial, 2016

OPTIMUM BOUNDARY MAP

