PUMPKIN HILL CREEK PRESERVE

STATE PARK

UNIT MANAGEMENT PLAN

APPROVED

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

JUNE 9, 2006

Department of
Environmental Protection

Jeb Bush
Governor

Marjorie Stoneman Douglas Building
3900 Commonwealth Boulevard, MS 140
Tallahassee, Florida 32399-3000

Colleen M. Castille
Secretary

September 13, 2006

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

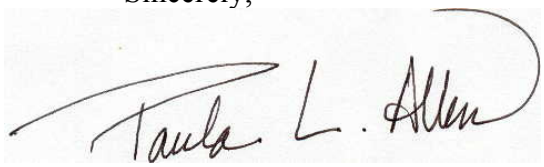
Re: Pumpkin Hill Creek Preserve State Park Lease #4074

Dear Ms. White:

On June 9, 2006, the Acquisition and Restoration Council recommended approval of the Pumpkin Hill Creek Preserve State Park management plan. Therefore, the Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, approved the management plan for the Pumpkin Hill Creek Preserve State Park. Pursuant to Sections 253.034 and 259.032, Florida Statutes, and Chapter 18-2, Florida Administrative Code this plan's ten-year update will be due on June 9, 2016.

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,



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

TABLE OF CONTENTS

RESOURCE MANAGEMENT COMPONENT

LAND USE COMPONENT

TABLE

LIST OF ADDENDA

MAPS

INTRODUCTION

Pumpkin Hill Creek Preserve State Park is located in Duval County. Access to the park is from Pumpkin Hill Road via Cedar Point Road (see Vicinity Map and Reference Map). The vicinity map also reflects significant land and water resources existing near the park.

In August of 1994, the State of Florida Board of Trustees of the Internal Improvement Trust Fund and the St. Johns River Water Management District jointly purchased the Pumpkin Hill Creek Preserve State Park. The property was originally acquired to be managed as a state buffer preserve with the Florida Department of Environmental Protection, Office of Coastal and Aquatic Managed Areas as the manager. In December of 2003, the preserve was transferred to the Division of Recreation and Parks to be managed as a state park.

At Pumpkin Hill Creek Preserve State Park, public outdoor recreation and conservation is the designated single use of the property. Currently, the park contains approximately 3,896 acres. There are no legislative or executive directives that constrain the use of this property.

PURPOSE AND SCOPE OF THE PLAN

This plan serves as the basic statement of policy and direction for the management of Pumpkin Hill Creek Preserve State Park as a unit of Florida's state park system. It identifies the objectives, criteria and standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the June 11, 1998 approved plan. All development and resource alteration encompassed in this plan is subject to the granting of appropriate permits; easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with the appropriate local, state or federal agencies. This plan is also intended to meet the requirements for beach and shore preservation, as defined in Chapter 161, Florida Statutes and Chapters 62B-33, 62B-36 and 62R-49, Florida Administrative Code.

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

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

In the development of this plan, the potential of the park to accommodate secondary management purposes (“multiple uses”) was analyzed. These secondary purposes were considered within the context of the Division’s statutory responsibilities and an analysis of the resource needs and values of the park. This analysis considered the park natural and cultural

Legend

- FDOT US Routes
- Interstates
- FDOT Local Roads
- FDOT State Routes
- Park Boundary

Public Lands

- Federal Managed Areas
- State Managed Areas
- Local Managed Areas
- Private Managed Areas
- Aquatic Preserves

Private Lands

- Developed
- Undeveloped

Sources: Florida Natural Areas Inventory, 2004
Florida Land Use, Cover and Forms Classification System, 2000

Fort Clinch State Park
Fort Clinch Aquatic Preserve
Fernandina Beach
Nassau River St. Johns River Marshes Aquatic Preserve
ATLANTIC OCEAN
Four Creeks State Forest
Timucuan Ecological And Historic Preserve
Big Talbot Island State Park
Little Talbot Island State Park
Nassau River St Johns River Marsh Aquatic Preserve
Fort George Island Cultural State Park
Huguenot Memorial Park
Kings Road Historical Preserve
Pumpkin Hill Creek Preserve State Park
Cary State Forest
Daiquiri
Jacksonville
Stone Mountain Industrial Park
Reddie Point Preserve
Fort Caroline National Memorial
Kathryn Abbey Hanna Park
Bulls Bay Preserve
Eggleston Hgts
Jacksonville Beach
Castaway Island Preserve
Beach and Peach Preserve
St Johns River
San Pablo Creek Conservation Easement
Ringhaver Park
Jacksonville Naval Air Station
9A Mitigation Parcels
Orange Park
Guana River Wildlife Management Area
Southeast Regional Park Phase II
Julington-Durbin Peninsula
Moccasin Slough
Duval County
St Johns County
Clay County
Guana Tolomato Matanzas National Estuarine Research Reserve

95 17 1 295 105 10 90

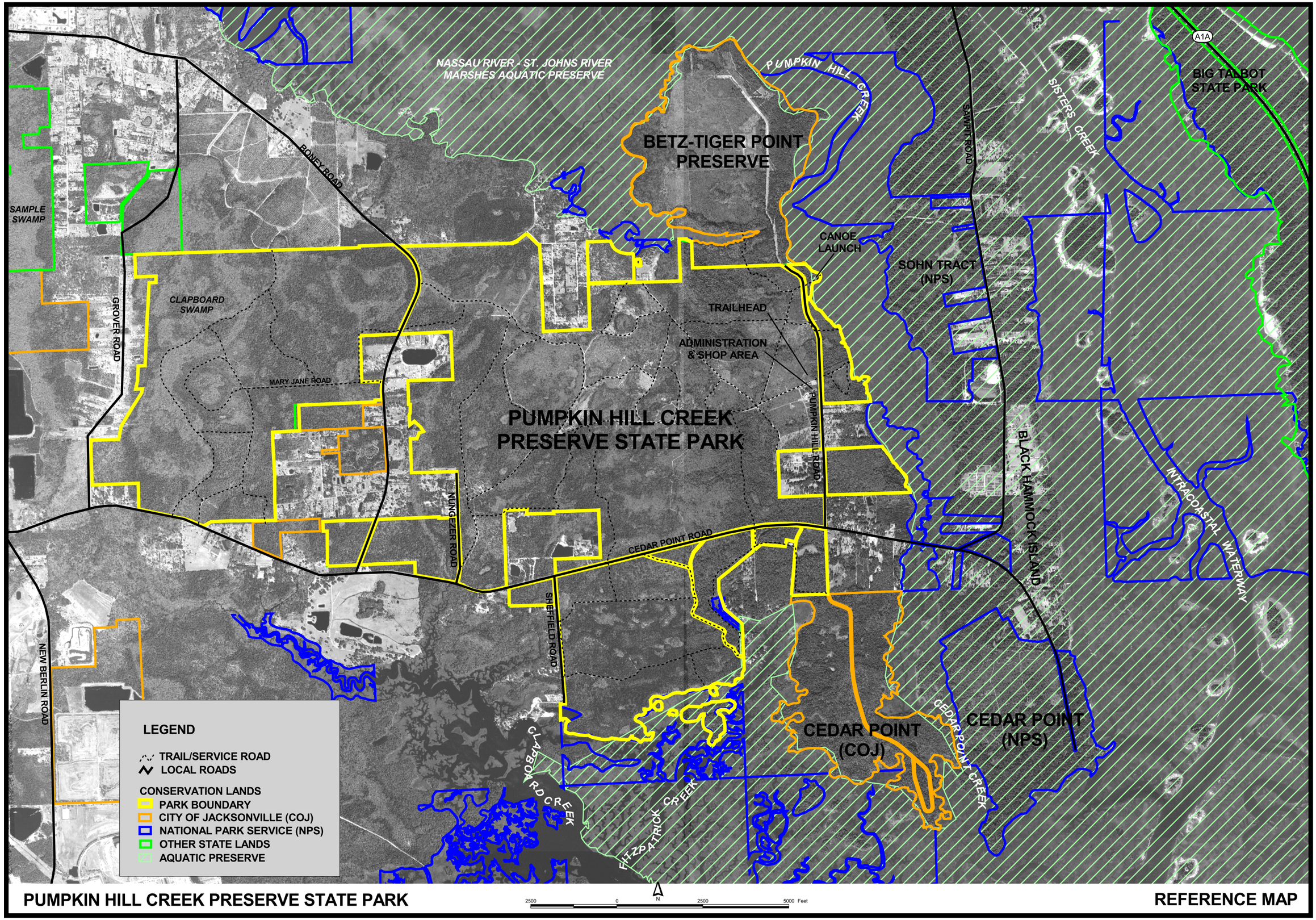
N

0 1.25 2.5 5 Miles

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

PUMPKIN HILL CREEK PRESERVE STATE PARK

VICINITY MAP



PUMPKIN HILL CREEK PRESERVE STATE PARK

REFERENCE MAP

resources, management needs, aesthetic values, visitation and visitor experiences. For this park, it was determined that timber management for the purposes of natural community restoration could be accommodated in a manner that would be compatible and not interfere with the primary purpose of resource-based outdoor recreation and conservation. This compatible secondary management purpose is addressed in the Resource Management Component of the plan. Uses such as water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park.

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 for the purposes of natural community restoration would be appropriate at this park as an additional source of revenue for land management since it is compatible with the park's primary purpose of resource-based outdoor recreation and conservation.

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

MANAGEMENT PROGRAM OVERVIEW

Management Authority and Responsibility

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

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

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

Many operating procedures are standard system wide and are set by policy. These procedures are outlined in the Division's Operation Manual (OM) that covers such areas as personnel management, uniforms and personal appearance, training, signs, communications, fiscal procedures, interpretation, concessions, camping regulations, resource management, law enforcement, protection, safety and maintenance.

In the management of Pumpkin Hill Creek Preserve State Park preservation and enhancement of natural conditions are all important. Resource considerations are given priority over user considerations and development is restricted to the minimum necessary for ensuring its protection and maintenance, limited access, user safety and convenience, and appropriate interpretation. Permitted uses are primarily of a passive nature, related to the aesthetic, educational and recreational enjoyment of the preserve, although other compatible uses are permitted in limited amounts. Program emphasis is placed on interpretation of the natural and cultural attributes of the preserve.

Park Goals and Objectives

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

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

Natural and Cultural Resources

1. Restore fire-adapted natural communities

- **A.** Expand the prescribed fire program in cooperation with SJRWMD land management staff. Place a high priority on burning fire-dependent natural communities regularly and on re-introducing fire to formerly fire-excluded areas.
- **B.** Determine the appropriate methodology and begin to remove hardwoods that have encroached on the flatwoods. Determine appropriate sites on which to harvest offsite slash pines and replant native longleaf pines and groundcover species in flatwoods and sandhill communities.
- **C.** Determine a sensitive and feasible methodology for removing the pines that have invaded the depression marshes, particularly where hooded pitcher plants occur.
- **D.** Continue to assess the need for additional firebreaks and for mechanical reduction of fuels. Refine resource management zone boundaries to allow for safe and effective prescribed burns, particularly in the urban interface areas. Seek funding for construction of boundary firelines as needed.

E. Continue to establish photopoints to monitor progress of the prescribed fire program and to determine if burn objectives are met.

F. Encourage university faculty and graduate students to conduct studies and monitoring that would provide pertinent information for natural community restoration.

2. Prioritize and coordinate hydrological data collection for waters within the park.

A. Assess the preserve's water resources and identify water bodies to be targeted for long-term monitoring.

B. Coordinate development of a long-term monitoring plan with the SJRWMD and the Aquatic Preserve.

C. Seek cooperative funding and services from other agencies.

D. Pursue designation of the waters of the preserve as Outstanding Florida Waters.

3. Identify and assess disruptions of natural hydrology in the park.

A. Abandon, or redesign and retrofit fill roads that impede overland sheetflow.

B. Repair deep fire plow lines adjacent to wetlands that may have altered natural wetland drainage.

C. Pursue mitigation or other funds to accomplish restoration projects.

D. Cap unused wells within the park.

4. Continue to monitor and control exotic species within the preserve.

A. Maintain feral hog trapping program. Determine if assistance from outside contractors is needed.

B. Coordinate with the SJRWMD Invasive Plant Program for removal of exotic plant species detected within the preserve.

5. Additional monitoring and survey work for native plant species are needed.

A. Contact the appropriate departments in various Florida Universities to communicate the need for an inventory of the park's non-vascular flora and for additional surveys of vascular flora.

B. Continue mapping the locations where listed plants species such as hooded pitcherplant (*Sarracenia minor*), rosebud orchid (*Pogonia divaricata*), and pond spice (*Litsea aestivalis*) occur, using GPS technology. Monitor the populations, as needed.

C. Increase survey efforts to locate additional populations of designated plant species within the preserve.

6. Additional monitoring and survey work for native animal species are needed.

A. Determine the means to accomplish a vertebrate inventory. Encourage local university staff to conduct surveys and research within the preserve.

B. Advise the staff of the Bureau of Entomology, Nematology and Plant Pathology of the Florida Department of Agriculture and Consumer Services (DACS) of the Division's desire to compile a list of macroinvertebrates for the park. Note that a collecting permit is required.

C. Increase survey efforts to locate additional populations of designated animal species within the preserve.

D. Continue monitoring of wood stork rookeries and bald eagle nests in the preserve.

7. Identify and protect cultural resources in the park.

A. Pursue funding for a phase I archaeological survey of the entire preserve and a phase II survey of selected areas within the preserve, particularly those areas that are known archaeological sites and experience high visitor use or are threatened for other reasons.

B. Repair and stabilize the looter pit on Du00095. Prioritize Du00095 for a full archaeological survey and documentation before the site is lost to erosion.

C. Regularly assess the condition of recorded and unrecorded cultural resources in the

preserve. Use photo points to monitor the status of sites.

D. Comply with Department of State, Division of Historical Resources policies when conducting ground-disturbing activities.

E. Patrol cultural sites to prevent vandalism and discourage the establishment of casual trails at the sites. Educate the public about the importance of preserving cultural sites, using interpretive signs that include warnings against collecting artifacts in either terrestrial or aquatic environments.

8. Establish and define park boundaries to improve resource protection and to avoid encroachment from neighbors.

A. Prioritize fencing needs along the preserve boundary. Coordinate fencing projects with the SJRWMD.

B. Continue to post and maintain boundary signs.

9. Protect adjacent natural areas through outright acquisition, close monitoring of proposed land use changes, and educational outreach to local residents.

A. To ensure the long-term survival of species within the preserve, aggressively pursue acquisition of additional natural areas within the preserve's optimum boundary before they are developed.

B. Contact local residents and instruct them about the importance of fire in preserving natural communities. Interpretation and education about prescribed fire will be vital to the continued use of fire as a management tool on state lands.

C. Continuously review comprehensive plan amendments and land development regulations that may govern proposed land use changes on properties adjacent to or in close proximity to the preserve. Monitor long-range transportation planning for projects that may affect the integrity of the preserve. Formally present to appropriate governing bodies all Division comments regarding proposed land use changes.

Recreational Goals

1. Continue to provide quality resource based outdoor recreational and interpretive programs and facilities at the state park.

A. Develop park-appropriate interpretive literature to enhance visitor experience.

B. Enhance equestrian user experience by adding watering stations and hitching posts along trails.

C. Provide static interpretive displays at various locations in the park to interpret cultural resources, natural systems, designated species and special features.

D. Schedule and conduct special interpretive programs, both within the park and off site, that meet state education curriculum standards and are consistent with the intent and mandate of the Americans with Disabilities Act.

E. Promote the use of the park, with its abundant historic, archaeological and natural resources, as an outdoor classroom and laboratory.

F. Use educational opportunities in the park as a means of fostering appreciation for the Mission of the Florida Park Service and of developing support for parks and other resources of regional and national significance.

2. Seek funding to expand recreational and interpretive opportunities through the improvement of programs and the development of new use areas and facilities, as outlined in this management plan.

A. Design facilities that allow appropriate management of visitor use in areas of the park where uncontrolled boundaries exist.

B. In partnership with the City of Jacksonville and National Park Service, develop a

shared-use trail that will cross boundaries between Cedar Point (NPS and COJ), Pumpkin Hill Creek Preserve State Park and Betz Tiger Point (COJ).

C. Redesign and enhance existing trail system including interpretive trails, which highlight the distinct cultural contexts and significant natural resources of the park.

D. Provide facilities that enhance public access to the waters of Pumpkin Hill Creek. Explore the feasibility of establishing a canoe/kayak trail in near shore waters of the park, in conjunction with NPS, DEP OGT and COJ. Continue to provide quality resource based outdoor recreational and interpretive programs and facilities at the state park.

Park Administration/Operations

1. Provide safe, appropriate, quality, outdoor recreational opportunities for park visitors.

A. Design park facilities and access points to appropriately manage, channel, and facilitate visitor use of park property

B. Pursue adequate operational funding to ensure that appropriate levels of corrective maintenance, visitor protection, resource management and visitor service are possible.

C. Pursue funding for upgrades to assure compliance with the Americans with Disabilities Act.

D. Conduct routine safety inspections of facilities and public areas and correct deficiencies as needed.

E. Conduct regular inspections of facilities for cleanliness and maintenance needs. Develop and implement a comprehensive routine maintenance plan for facilities that assures clean, comfortable accommodations, and reduces long-term facility maintenance costs.

F. Pursue funding for corrective maintenance projects of existing facilities.

G. Assure compliance with state and federal safety guidelines for: use and disposal of hazardous waste, blood-borne pathogens policy, hazardous communications plans, safety training and development of Park Protection Plans as required by the Division Operations Manual.

2. Develop and implement the Statement for Interpretation for interpretive activities at the parks.

A. Develop park's Statement for Interpretation and use it as a guide to design park programs.

B. Design school field trip programs, which meet Sunshine State Standards.

C. Provide static interpretive displays at various locations throughout the parks to interpret natural systems, designated species, environmental education themes, cultural resources and special features.

D. Adapt existing programs and provide special interpretive opportunities consistent with the intent and mandate of the Americans with Disabilities Act.

E. Train staff appropriately to assure their ability to provide frequent, impromptu interpretive experiences for visitors as opportunities present themselves.

F. Schedule and conduct special interpretive programs, both within the parks and off-site.

G. Provide interpretive literature.

3. Use the park's unique and intact natural communities as a natural classroom and laboratory for environmental education.

A. Build partnerships with regional educational institutions to develop natural resource educational and research opportunities at Pumpkin Hill Creek Preserve.

B. Utilize environmental education as a means to build appreciation for the Florida Park

Service Mission and develop support for the park and for regional natural resources.

4. Take advantage of the park's cultural, historical and archaeological resources as a classroom and laboratory for cultural history education.
   - **A.** Build partnerships with regional educational institutions to develop cultural resource educational and research opportunities at Pumpkin Hill Creek Preserve.
   - **B.** Utilize cultural history education as a means to build appreciation for the Florida Park Service Mission and to develop support for the park and for regional and national cultural history.

5. Promote Pumpkin Hill Creek Preserve as a destination for eco-tourism groups and tours.
   - **A.** Develop park facilities and programs so that they may be utilized in eco-tourism programming.
   - **B.** Design interpretive and educational programs to accommodate eco-tour groups.
   - **C.** Develop park facilities to provide access to recreational resources that would support eco-tour group interests.

6. Monitor activities outside the parks that may impact lands within the parks, and maintain public awareness of park resource management needs.
   - **A.** Monitor land use changes and permitting activities within the Pumpkin Hill Creek Preserve area. Develop a park greenline to identify areas of concern for the preserve.
   - **B.** Monitor aquatic resources and report unauthorized waste dumping and pollution to appropriate governmental agencies.
   - **C.** Maintain an active public relations program to increase public awareness of and support for the parks' resource management objectives.

Management Coordination

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

The St. Johns River Water Management District, which shares title to Pumpkin Hill Creek Preserve State Park with the Board of Trustees, participates in the management of the park and provides funding for management activities. The Department of Agriculture and Consumer Services, Division of Forestry (DOF), assists Division staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FFWCC), assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within park boundaries. In addition, the FFWCC aids the Division with wildlife management programs, including the development and management of Watchable Wildlife programs and Florida's Wildlife Legacy Initiative. The Department of State, Division of Historical Resources (DHR) assists staff to assure protection of archaeological and historical sites. The Department of Environmental Protection (DEP), Office of Coastal and Aquatic Managed Areas (CAMA) manage the adjacent Nassau River-St. Johns River Marshes Aquatic Preserve and staffs an office located at the preserve. The DEP, Bureau of Beaches and Wetland Resources aid staff in planning and construction activities seaward of the Coastal Construction Line and in the development of erosion control projects. Emphasis is placed on protection of existing resources as well as the promotion of compatible outdoor recreational uses.

The Talbot Islands State Parks (including Pumpkin Hill Creek Preserve State Park), the Timucuan National Ecological and Historic Preserve and the City of Jacksonville have parallel management concerns on their respective management areas in northern Jacksonville. Together

they manage an astonishing array of recreational, interpretive and educational resources. The three government agencies have executed a Memorandum of Agreement to reinforce and support mutual goals for natural and cultural resource management and the provision of public education and recreational enjoyment in this region of the state. This unique effort on the part of federal, state and local governments to link their land management responsibilities promises to provide broad and far-reaching benefits to the citizens of Florida and visitors to the Duval-Nassau County area. The following objectives are included in the Memorandum of Agreement:

1. **Promotion.** The parties have agreed that the area identified as the cooperative zone shall be named the Timucuan Trail State and National Parks. They also agreed to develop a marketing plan, which will maintain each agency's identity while promoting the combined properties to the public as one larger entity.
2. **Planning.** To the extent practicable, planning for the Timucuan Trail State and National Parks will be jointly produced and reviewed. Ongoing planning efforts will accommodate the participation of Division, COJ, and NPS, together. Existing plans will serve as current direction, pending their revision or replacement. The agencies shall cooperatively review non-Timucuan Trail State and National Parks plans that affect their interests.
3. **Coordination: Staff Liaison**. Division, COJ, and NPS shall each designate a staff liaison for purposes of discussing and resolving coordination matters. Agency heads or their designees will resolve substantive issues, including issues not resolved at the liaison level.
4. **Operating Procedures**. Division, COJ and NPS, to ensure accomplishments of the Timucuan Trail State and National Parks activities, may jointly develop operating procedures and standards.
5. **Resource Sharing**. To the extent practicable, Division, COJ, and NPS, mutually agree to commit staff, equipment and facilities assigned to the Timucuan Trail State and National Parks for the common protection of all resources contained within the Timucuan Trail State and National Parks, as well as for the appropriate enjoyment and appreciation of the same by the public.
6. **Management Approach**. Division, COJ and NPS shall explore cooperative operations and efficiencies to promote the effective implementation of Timucuan Trail State and National Parks management.
7. **Work Plan**. Division, COJ, and NPS will work cooperatively to prepare an annual work plan that identifies common projects. The work plan will contain specific goals, actions and target completion dates, to be incorporated into the goals and objectives of the responsible Division, COJ, and NPS managers.

National Park Service: Timucuan Ecological and Historic Preserve. The administrative boundary of the Timucuan Ecological and Historic Preserve includes Pumpkin Hill Creek Preserve State Park. The Timucuan Preserve was established by Public Law 100-249 on February 16, 1988. The preserve encompasses 46,000 acres in the valley between the lower St. Johns and Nassau Rivers, 75 percent of which are waterways and wetlands that form a complex salt marsh/estuarine ecosystem. The preserve also includes over 200 known prehistoric and historic archaeological sites. Approximately 30 percent of the land within the preserve boundaries is managed by the National Park Service.

The mission of the preserve is to protect and enhance the estuarine ecosystem, preserve the integrity of the historic and prehistoric sites, and provide public access to these resources. The Timucuan Preserve was designated a national preserve rather than a national park because it was

envisioned to be a place that could accommodate public and private uses not traditionally found in national parks.

The Timucuan Preserve and the Talbot Islands state parks have parallel management concerns, providing a valuable opportunity to reinforce and support mutual management goals to preserve natural and cultural resources while providing public education and recreational enjoyment. The Division of Recreation and Parks participated in the development of the Timucuan Preserve General Management Plan (March 1996), and coordinated the preparation of the state parks' unit management plans with Timucuan Preserve staff.

Timucuan Ecological and Historic Preserve Management Objectives. The following management goals of the Timucuan Preserve are related to the land and water areas managed by the Division of Recreation and Parks at and adjacent to Pumpkin Hill Creek Preserve State Park.

1. Natural Resources

- **A.** To achieve and maintain Florida Class II (edible shellfish) water quality standards within the preserve in order to promote biodiversity and to protect the salt marsh/estuarine system.
- **B.** To ensure that current and future uses of uplands within and adjacent to the preserve do not impair significant natural habitats, water quality, or a healthy salt marsh/estuarine system.
- **C.** To foster strenuously no net loss of wetlands in the preserve.
- **D.** To preserve the natural dynamics of the surface water and tidal hydrologic regimes that is critical to the biological systems of the preserve.

2. Recreation

- **A.** To manage, in cooperation with other agencies, boating, boating-related activities, fishing and hunting, allowing the public to experience the various water-based resources and values of the preserve in a manner that will not damage cultural resources nor impair the integrity of this relatively undeveloped and undisturbed salt marsh/estuarine system.

3. Interpretation

- **A.** To educate the general population and visitors about the following interpretive topics in order to instill appreciation and build support for the values of the preserve:
  - **1)** The impacts and relationships between human use and natural resources in the preserve.
  - **2)** The interaction of cultures within the region, especially Colonial French, Spanish, British, American, American Indian, and African, that have had a profound impact on American history.
  - **3)** The wetland and upland dynamics of a salt marsh/estuarine system.
  - **4)** The military and economic strategic importance of the lower St. Johns River.
  - **5)** The resources of the lower St. Johns River that provide and have provided basic subsistence to a variety of people.

4. Access

- **A.** To ensure the provision of land- and water-based accesses allowing visitors to have a visual and sensory understanding of the wetland ecology.

5. Vistas

- **A.** To protect the natural views within the preserve that is now unimpaired by permanent manmade elements in order to allow the public to experience the pristine, natural

character of these portions of the preserve.

B. To encourage enhancement or rehabilitation of predominantly natural vistas where manmade intrusions currently exist.

Public Participation

The Division provided an opportunity for public input by conducting public workshops and an advisory group meeting. An initial public workshop was held on February 24, 2005. The purpose of the meeting was to solicit comments from the public before the development of this management plan. A second public workshop was held on February 23, 2006**.** The purpose of this meeting was to present the draft management plan to the public. An Advisory Group meeting was held on February 24, 2006. The purpose of this meeting was to provide the Advisory Group members the opportunity to discuss this draft management plan.

Other Designations

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

Surface waters within the preserve have not been designated as Outstanding Florida Waters, pursuant to Chapter 62-302 Florida Administrative Code. However, the surface waters in this preserve are Class III waters (Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife) as designated by DEP. Adjacent waters of Pumpkin Hill Creek are designated Class II (Shellfish Propagation or Harvesting). This park is adjacent to the Nassau River-St. Johns River Marshes Aquatic Preserve as designated under the Florida Aquatic Preserve Act of 1975 (section 258.35, Florida Statutes).

RESOURCE MANAGEMENT COMPONENT

INTRODUCTION

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

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

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

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

RESOURCE DESCRIPTION AND ASSESSMENT

Natural Resources

Topography

Pumpkin Hill Creek Preserve State Park is located on the western shore of Pumpkin Hill Creek and ranges from less than 10 feet above mean sea level to 30 feet above mean sea level. Topographic variation is primarily due to the depression marshes and basin swamps that are scattered throughout the flatwoods that is the primary natural community in the preserve. The highest area in the preserve is located near the western edge of the preserve.

The most apparent topographic disturbance in the preserve is Mary Jane Road, portions of which are a raised causeway that runs west from Boney Road through flatwoods and swamps. A blackwater stream near the eastern end of Mary Jane Road passes through a culvert under the causeway. Other drainages and wetlands may be partially impounded by the raised sections of the road, and sheetflow in the flatwoods is probably affected as well. Sections of other service roads in the preserve are also likely to intercept sheetflow in the flatwoods during storm events, and some sections of roads have been filled using local soil excavated from small roadside borrows prior to state ownership. More recently, inert gravel has been used to stabilize low water crossings where service roads pass through wet areas to avoid disruption of flow in these shallow

drainages. Other topographic disturbances include Cedar Point Road, a paved public roadway that passes through the southern part of the preserve, and fire plow lines from wildfire incidents in the past.

Geology

Pumpkin Hill Creek Preserve State Park in Duval County lies to the west of Big and Little Talbot Islands that lie at the southern end of the Sea Island Region of South Carolina and Georgia. Big Talbot, Little Talbot and Amelia Islands are classified as Sea Islands. Pumpkin Hill Creek Preserve State Park is separated from Big and Little Talbot by Pumpkin Hill Creek and Black Hammock Island. The St. Johns River is to the south of the preserve.

Duval County is divided into four physiographic regions (White, 1970). A physiographic region has similar geologic history, structure and climate. Pumpkin Hill Creek Preserve is located in the St. Marys Meander Plain physiographic region. It is believed that the large accumulation of river sediments from the north onto the St. Marys plain caused the St. Johns River to turn east toward the Atlantic Ocean.

For millions of years seawater covered Duval County and limestone was formed in the marine environment. Later, sediments from the Appalachian Mountains in the form of sand and clay were transported to northeast Florida and deposited over the limestone. During the Pleistocene (10,000-2,000,000 years before present), advances and retreats of continental glaciers elsewhere caused sea level fluctuations. For thousands of years the sea level in northeast Florida was either much lower or as much as two hundred feet higher than present day levels. Marine terraces formed during the Pleistocene compose much of present day Duval County's land surface. When sea levels dropped, the seafloor emerged as a terrace and the landward edge represented an abandoned shoreline. Subsequent terraces were formed in this fashion. The Pamlico and Silver Bluff Terraces form a low coastal plain about zero to 25 ft. above sea level in the area of Pumpkin Hill Creek Preserve.

Geologically Pumpkin Hill Creek Preserve is composed of Holocene and Pleistocene deposits of unconsolidated sand with some clay, shell and limestone that range from 10 ft. to 100 ft. thick. These overlay the Hawthorn Group which overlays the Ocala Limestone and Avon Park Formation. The Hawthorn Group, which contains a mix of sand, clay, phosphate and dolomite (limestone), may be as thick as 500 ft. in this area (Hoenstine 1984).

Soils

Fourteen different soils have been identified in Pumpkin Hill Creek Preserve (see Soils Map). Half of the soil types with in the preserve are Spodosols. Identified by a Spodic horizon, they encompass the majority of the area within the preserve and dominate the northern and almost the entire eastern portion of the preserve. A Spodic horizon is usually a subsurface, illuvial horizon that contains amorphous organic material and aluminum and possibly irons (Soil Survey Staff 2004). Spodosols are the most common soil order in Florida and are characteristic of flatwoods.

The soil orders, Entisols, Histosols, Inceptisols and Ultisols represent the remaining soil types. A complete listing and description can be found in Addendum 3. Management activities will follow generally accepted best management activities to prevent further soil erosion and conserve soil and water resources on the site.

LEGEND

- 14-Boulogne fine sand, 0 to 2 percent slopes
- 22-Evergreen-Westconnett complex, depressional, 0 to 5 percent slopes
- 24-Hurricane and Ridgewood soils, 0 to 5 percent slopes
- 32-Leon fine sand, 0 to 2 percent slopes
- 33-Leon fine sand, 0 to 2 percent slopes, very frequently flooded
- 35-Lynn Haven fine sand, 0 to 2 percent slopes
- 36-Mandarin fine sand, 0 to 2 percent slopes
- 46-Ortega fine sand, 0 to 5 percent slopes
- 49-Pamlico muck, depressional, 0 to 1 percent slopes
- 58-Pottsburg fine sand, high, 0 to 3 percent slopes
- 62-Rutlege mucky fine sand, 0 to 2 percent slopes, frequently flooded
- 66-Surrency loamy fine sand, depressional, 0 to 2 percent slopes
- 67-Surrency loamy fine sand, 0 to 2 percent slopes, frequently flooded
- 68-Tisonia mucky peat, 0 to 1 percent slopes, very frequently flooded
- Water

N

0 650 1,300 2,600 Feet

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

PUMKIN HILL CREEK PRESERVE STATE PARK

SOILS MAP

Minerals

There are no known deposits of minerals of commercial value within the preserve.

Hydrology

Pumpkin Hill Creek Preserve State Park is located within two major river basins—the Lower St. Johns River basin and the Nassau River basin. Most of the lands within the park drain to the Lower St. Johns River via Clapboard Creek. The remaining lands drain to the Nassau River via Pumpkin Hill Creek.

The lower St. Johns River basin extends from the confluence of the St. Johns and Ocklawaha rivers near Welaka, north to the mouth of the St. Johns River in Jacksonville. Clapboard Creek is a tributary to the lower St. Johns River, draining nearly 16 square miles of land surface composed primarily of forest, tidal creek and marsh, with increasing residential development. Most of the park lies within this sub-basin of the St. Johns River (Adamus *et al.* 1997).

The Nassau River basin drains approximately 430 square miles of land surface, and includes nearly 55 river miles and approximately 10 square miles of estuary, including the mouth of the Nassau River, Sisters Creek and the Fort George River. Pumpkin Hill Creek is a tributary to the Nassau River, draining approximately 13 square miles of predominately forest and wetlands. The northeastern portion of the park lies within this sub-basin of the Nassau River (Adamus *et al.* 1997).

Surface waters within the park include tidal creeks and marshes, blackwater streams, and freshwater marshes and swamps. The park is surrounded by the salt marshes and tidal creeks of the Nassau River-St. Johns River Marshes Aquatic Preserve. The largest freshwater system within the park is Clapboard Swamp, which drains south through Clapboard Creek to the St. Johns River. Surface waters within the preserve boundary are not classified as Outstanding Florida Waters (OFW), unlike most other waters managed by the Division of Recreation and Parks. However, waters within the Nassau River-St. Johns River Marshes Aquatic Preserve and the Timucuan Historic and Ecological Preserve are designated as OFWs under Chapter 62-302 Florida Administrative Code.

Sparse, if any, historical hydrologic data exist for surface waters within the park. Surface water quality data have been collected outside of, but in close proximity to, the park at established monitoring stations. One of these stations is located on Pumpkin Hill Creek, approximately 7500 feet downstream of the canoe launch. In addition, two monitoring stations are located on Clapboard Creek, approximately 2000 and 3500 feet downstream of the park boundary. Data collected periodically from the Pumpkin Hill Creek monitoring station from January 1999 through November 2002, and from the Clapboard Creek stations from January 1999 through November 2000, are compiled on Florida STORET.

It is assumed, given the modest level of urban development around the park, that water quality of streams flowing through the park has historically been good. Regional water quality data indicate that similar tributaries flowing through more urbanized areas in Duval County are declining in water quality (FDEP 2004). While no known point-source of pollution exist in or adjacent to the park, non-point sources of pollution, primarily residential septic systems, are abundant in developed areas surrounding the park. Development of private lands surrounding the park is

increasing rapidly, and this will likely result in increased nutrient and bacteria levels in surface and groundwater within the park.

Three groundwater aquifers are typically described for the region. The surficial, or unconfined, aquifer is nearest the surface and characterized by water-bearing sands and clays containing occasional shell or limestone beds. Underlying the undifferentiated sediments of the surficial aquifer is a secondary, artesian aquifer, composed of sandy, phosphatic limestone beds collectively referred to as the Hawthorn Group. This aquifer is an important source of fresh water to individual, low-volume wells in the region. Located beneath the Hawthorn Group, The Ocala Limestone and Avon Park Formation compose the limestone unit known as the Floridan aquifer, the primary source of fresh water to Duval County. Locally, the top of the Floridan aquifer lies 200 to 400 feet below sea level (McGrail *et al.* 1998).

Recharge to the surficial and intermediate aquifers occurs readily with local rainfall, however direct recharge to the Floridan aquifer does not occur within most of Duval County, including the region surrounding the park. Large groundwater withdrawals, to meet increasing population demands and extended drought in recent decades have caused a general decline in groundwater elevation within the Floridan aquifer in and around Jacksonville. Saltwater intrusion into the surficial and Floridan aquifers is common along the coast, and is exacerbated by any appreciable groundwater withdrawals (McGrail *et al.* 1998).

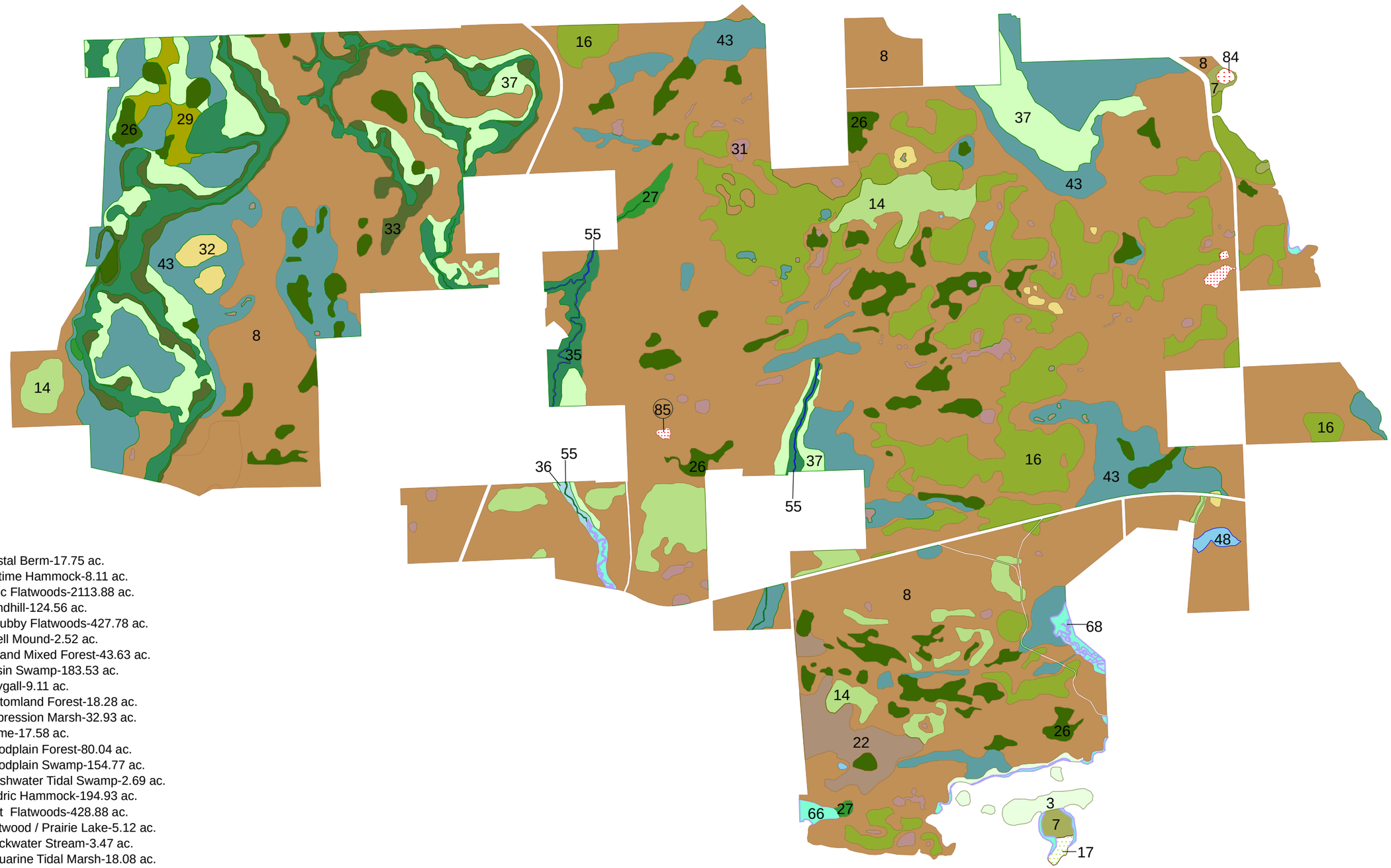
Until recently, groundwater monitoring near the park has been limited to a sparse number of wells. In 2003, three groundwater wells were installed in the park by the St. Johns River Water Management District, for regular monitoring of groundwater elevations and water quality within the three aquifers. Since March 2004, groundwater elevations are recorded daily, and water is sampled and analyzed quarterly for major ions (Larry Fayard, personal communication).

Natural Communities

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 which are similar with respect to these factors will tend to have natural communities with similar species compositions. Obvious differences in species composition can occur, despite similar physical conditions. In other instances, physical factors are substantially different, yet the species compositions are quite similar. For example, coastal strand and scrub--two communities with similar species compositions--generally have quite different climatic environments, and these necessitate different management programs.

The park contains 21 distinct natural communities (see Natural Communities Map**)** in addition to ruderal and developed areas. Park specific assessments of the existing natural communities are provided in the narrative below. A list of plants and animals occurring in the unit is contained in Addendum 4.

Coastal berm. Limited examples of the coastal berm community are found on the southern boundary of Pumpkin Hill Creek Preserve along Fitzpatrick Creek. Other examples of this community type may occur in other isolated areas along the ecotone between the uplands and the estuarine tidal marshes. Typically, these areas are formed by storm-driven debris that form ridges parallel to the shoreline.



LEGEND

- 3 - Coastal Berm-17.75 ac.
- 7 - Maritime Hammock-8.11 ac.
- 8 - Mesic Flatwoods-2113.88 ac.
- 14 - Sandhill-124.56 ac.
- 16 - Scrubby Flatwoods-427.78 ac.
- 17 - Shell Mound-2.52 ac.
- 22 - Upland Mixed Forest-43.63 ac.
- 26 - Basin Swamp-183.53 ac.
- 27 - Baygall-9.11 ac.
- 29 - Bottomland Forest-18.28 ac.
- 31 - Depression Marsh-32.93 ac.
- 32 - Dome-17.58 ac.
- 33 - Floodplain Forest-80.04 ac.
- 35 - Floodplain Swamp-154.77 ac.
- 36 - Freshwater Tidal Swamp-2.69 ac.
- 37 - Hydric Hammock-194.93 ac.
- 43 - Wet Flatwoods-428.88 ac.
- 48 - Flatwood / Prairie Lake-5.12 ac.
- 55 - Blackwater Stream-3.47 ac.
- 66 - Estuarine Tidal Marsh-18.08 ac.
- 68 - Estuarine Unconsolidated Substrate-2.78 ac.
- 84 - Ruderal-1.45 ac.
- 85 - Developed-3.68 ac.

N

0 650 1,300 2,600 Feet

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

PUMPKIN HILL CREEK PRESERVE STATE PARK

NATURAL COMMUNITIES MAP

Maritime hammock. Several examples of maritime hammock can be found along the eastern and southern edges of Pumpkin Hill Creek Preserve adjacent to estuarine tidal marshes. These well-developed hammocks are dominated by live oaks (*Quercus virginiana*) festooned with Spanish moss (*Tillandsia usneoides*) and resurrection fern (*Pleopeltis polypodioides*). Other canopy hardwoods include laurel oak (*Quercus hemispherica*) and southern magnolia (*Magnolia grandiflora*). The maritime hammocks are not as frequently found at Pumpkin Hill Creek in comparison with the island systems to the east. This is probably due to a more intense and frequent fire regime on the mainland compared to the barrier or sea islands. The northernmost example of maritime hammock has been heavily disturbed by previous land uses and the central portion is classified as ruderal. The remaining maritime hammocks are in relatively good condition.

Mesic flatwoods. The mesic flatwoods are the dominant natural community within Pumpkin Hill Creek Preserve State Park. The mesic flatwoods extend across the entire park, grading into scrubby flatwoods on more well drained rises, and into wet flatwoods on poorly drained soils and in low drainageways. The flatwoods are further broken up by scattered basin swamps, depression marshes and domes and are bisected by blackwater streams and associated floodplain areas.

Although the mesic flatwoods have been subjected to varying levels of timber harvest and fire suppression, nearly all of the mesic flatwoods retain a relatively high level of species diversity. Most are in at least good condition, some are in excellent condition. There is little evidence of intensive site preparation, even in the planted pine areas. In more fire suppressed areas, the understory is dominated by gallberry (*Ilex glabra*), saw palmetto (*Serenoa repens*), fetterbush (*Lyonia lucida*), and tarflower (*Befaria racemosa*). Herbaceous species such as wiregrass (*Aristida berychiana*) are more common in areas with a more recent history of fire. Fuel loading is very high in some areas that have not been recently burned.

Due to timber harvests that occurred prior to state ownership, some areas have a low density of adult pines and little pine reproduction. However, natural stands of uneven-aged longleaf pines (*Pinus palustris*) also occur on site, and it is presumed that longleaf pines were the dominant species in the mesic flatwoods at Pumpkin Hill Creek. However, both North Florida slash pines (*Pinus elliottii*) and pond pine (*Pinus serotina*) occur within the mesic flatwoods. Slash pines are a natural component of mesic flatwoods, and may occur in lower areas of the mesic flatwoods and even in wet flatwoods. Pond pines are more typical of wet flatwoods, but will move upslope into mesic flatwoods during periods of fire suppression or perhaps after natural longleaf stands are harvested. Although a few sand pines occur in one area of mesic flatwoods, it is likely that they were planted in that location. Several stands of planted slash pines occur on the park in the mesic flatwoods, but even these areas retain many of the native understory species. These areas will be managed to restore the natural species components by harvesting and replanting with longleaf pines.

Mesic flatwoods is a particularly flammable natural community. Lands now encompassed within Pumpkin Hill Creek Preserve State Park have a history of wildfires. Evidence of previous suppression activities, such as old fire plow lines, are scattered throughout the flatwoods. Restoration of a natural fire regime using prescribed fires will reduce the chance of wildfires occurring and will improve the current condition of the mesic flatwoods. The typical fire return interval for mesic flatwoods is 1 to 8 years (FNAI 1990). Park staff have been securing perimeter firebreaks and preparing interior fire lines to allow prescribed burns to be conducted more safely

and efficiently. Staff has also utilized mechanical preparation to reduce hazardous fuel levels in some flatwoods areas prior to prescribed burns.

Sandhill. Isolated ridges of sandhills on yellow sands are found in several areas of Pumpkin Hill Creek Preserve. These ridges are surrounded by mesic flatwoods and often grade into adjacent scrubby flatwoods. Turkey oaks (*Quercus laevis*) are common in the sandhills, but bluejack oak (*Quercus incana*) is also present. In some areas, wiregrass is sparse and ground lichens (*Cladonia* sp.) may be very common, perhaps due to a lack of frequent fires. Past timber harvests removed most of the longleaf pines from the sandhills, and regeneration is poor in many areas. Scrub oaks from the adjacent scrubby flatwoods have also moved into some areas of fire-suppressed sandhills. Most of the sandhills are in poor to fair condition. However, remnant groundcover species remain on site and little ground disturbance has occurred. Restoration of the sandhills will be straightforward and will consist of instituting a more natural fire regime along with planting of longleaf pines and selective removal of hardwoods. In most cases, a fire return interval of 2 to 5 years is recommended for sandhills (FNAI 1990).

Scrubby flatwoods. This community type is in relatively good condition. The scrubby flatwoods are dominated by the three typical scrub oaks: myrtle oak (*Quercus myrtifolia*), sand live oak (*Quercus geminata*), and Chapman's oak (*Quercus chapmanii*). Coastalplain staggerbush (*Lyonia fruticosa*) is also very common. Other common species include saw palmetto and hairy laurel (*Kalmia hirsuta*). Areas that were subjected to timber harvesting prior to state ownership or that were mowed more recently, are in better condition than those that have not been impacted by fire or mechanical disturbances. Harvested areas, however, are lacking the native longleaf pine overstory and will require extensive replanting. Although the overgrown areas remain in good condition, they have exceeded or are near the maximum fire return interval for scrubby flatwoods. Typically, scrubby flatwoods should burn every 8 to 25 years (FNAI 1990).

Shell mound. Limited areas of shell mound occur in Pumpkin Hill Creek Preserve. This community type is associated with shell middens that were deposited near human use areas and are usually found in association with tidal creeks or other water bodies.

Upland mixed forest. The upland mixed forest areas at Pumpkin Hill Creek Preserve are located on areas that have been disturbed in the past. The overstory consists of scattered mature live oaks, but the understory is dominated by young hardwoods, including laurel and water oaks (*Quercus nigra*).

Basin swamp. Pumpkin Hill Creek Preserve contains many basin swamps that occupy the lower elevations within the flatwoods communities. Most of these swamps are dominated by pond cypress (*Taxodium ascendens*) with smaller numbers of swamp tupelo (*Nyssa sylvatica* var. *biflora*) and red maple (*Acer rubrum*). Although cypress was undoubtedly logged from these swamps in the past and large cypress trees are rare, these basin swamps are in good to excellent condition and will gradually regain their former stature over time. Prescribed fires in the surrounding matrix flatwoods will be an important factor in maintaining the open ecotone between the basin swamps and the adjacent pinelands. This ecotone is an important habitat for hooded pitcher plants (*Sarracenia minor*), small butterworts (*Pinguicula pumila*), and sundews (*Drosera* spp.).

Although the species composition of domes and basin swamps are very similar, there are

physical differences in the size, shape and hydrology of these communities. Basin swamps tend to be larger and are often not circular in shape. Basin swamps often occur as chains of depressions along a shallow gradient. During high water events there is often water flowing between and though adjacent basin swamps, whereas domes tend to be more hydrologically isolated, smaller, and more circular in shape.

Both the basin swamp and dome communities serve as important bird rookery sites at Pumpkin Hill Creek Preserve. Protection of these sites during the nesting season is a priority.

Baygall. Two baygall communities have been mapped at Pumpkin Hill Creek Preserve, but it is likely that others occur within or adjacent to the wet and mesic flatwoods. Baygalls develop in seepage areas and are often located at the base of a sandy slope, and may grade into floodplain or other wetland communities. Baygall communities usually flourish in the absence of fire. Frequent or intense fires favor the development of a wet flatwoods community in areas that might otherwise develop as typical baygalls. Additional groundtruthing will be necessary to locate additional baygalls that may have developed in natural fire shadows.

Bottomland forest. Bottomland forest occurs in the Clapboard Swamp in the northwestern corner of the preserve. Most of the areas adjacent to the floodplain swamps and forests in this part of the preserve are mesic or wet flatwoods that are maintained by periodic fire. The bottomland forest lies in a natural fire shadow and is protected from fire by the adjacent floodplain and basin swamps. Bottomland forest lies upslope of the floodplain and is typically a relatively flat plateau that floods infrequently.

Depression marsh. Depression marshes are scattered throughout the flatwoods at Pumpkin Hill Creek Preserve. Usually dominated by herbaceous plant species, some of these marshes contained scattered hardwoods or small cypress trees. These species have likely invaded the marshes due to a lack of frequent fire. However, most of the depression marshes are in good to excellent condition and would benefit from increased prescribed fire. Hooded pitcher plants (*Sarracenia minor*) are often found on the fringes of depression marshes. It is likely that these marshes also serve as critical habitat for the various amphibian species that require ephemeral wetlands for breeding sites.

Dome. Several domes occur within Pumpkin Hill Creek Preserve. Although the distinction between a small basin swamp and a large dome is often difficult, the cypress swamps mapped as domes conform to the classic description of the dome natural community. These domes are nearly circular in shape with larger cypress trees closer to the center, and at least one has an open depression marsh in the center. The domes are in good to excellent condition.

Floodplain forest. The most extensive floodplain system is associated with Clapboard Swamp, west of Boney Road. In these floodplain areas, it is often difficult to distinguish floodplain swamp from floodplain forest, and floodplain forest from bottomland forest. Floodplain forest lies above floodplain swamp, but topographically below bottomland forest. Most of the floodplain forests are in relatively good condition, but were probably selectively logged in the past.

Floodplain swamp. The floodplain swamps at Pumpkin Hill Creek Preserve are found in association with drainages that channel water towards the estuary systems outside the preserve.

The headwaters of several tidal creeks pass through or originate within the preserve. Like the adjacent floodplain forests, the floodplain swamps are in good condition. Both the floodplain swamps and forests have a relatively diverse assemblage of plants. The floodplain swamps are dominated by gums and maples, including swamp tupelo, sweetgum (*Liquidambar styraciflua*) and red maple, along with some bald cypress (*Taxodium distichum*).

Freshwater tidal swamp. A limited area of freshwater tidal swamp occurs north of Cedar Point Road along Bogey Branch, a blackwater stream that drains the area around Boney Road. Aerial photos taken in 1943 show that the woody vegetation along Bogey Branch extended south of Cedar Point Road. Since that time, the estuarine tidal marsh vegetation has expanded upstream displacing the freshwater tidal swamp.

Hydric hammock. Several areas of hydric hammock occur in association with swamp and blackwater stream systems at Pumpkin Hill Creek Preserve. The hydric hammocks are dominated by live oaks and sabal palms (*Sabal palmetto*) and occur on higher areas adjacent to floodplain forests and swamps. Hydric hammocks flood infrequently and derive their hydrological inputs from upslope seepage and precipitation, with limited input from stream flooding. Bottomland forests, in contrast, receive most of their hydrological inputs from the flooding of blackwater streams (Vince et al, 1989).

Wet flatwoods. The wet flatwoods are restricted to the lower, less well-drained, elevations within the flatwoods. Typically, the wet flatwoods occur as a band around the cypress domes and basin swamps, as isolated depressions, and in low drainageways that lead towards floodplain areas and blackwater streams. The soils tend to be darker and richer in organics than the adjacent mesic flatwoods.

These areas are characterized by an overstory of slash or pond pine, although longleaf may also be found some areas. The understory is very thick in most of the wet flatwoods at Pumpkin Hill Creek Preserve. Saw palmetto, fetterbush, loblolly bay (*Gordonia lasianthus*), and wax myrtle (*Myrica cerifera*) are common components. Past fire suppression has led to an overgrowth of vegetation in many of these areas. Typically, wet flatwoods have a fire return interval of about 3 to 10 years (FNAI 1990). Without periodic fires, the wet flatwoods can be invaded by hardwoods and may succeed toward a baygall community.

Like the mesic flatwoods, the wet flatwoods have been impacted by past fire suppression activities. Hydrological impacts from plow lines are more likely in the wet flatwoods due to the seasonally high water table. In general, the wet flatwoods are in good condition, but will require more frequent fires to improve their condition.

Flatwoods lake. Several flatwoods lakes occur within the preserve. Flatwoods lakes are very similar to depression marshes, and in fact may succeed towards depression marsh as they fill in with organics. In general, flatwoods lakes are deeper and have a larger open water zone than depression marshes, and are less likely to dry up on a regular basis, but they share many of the same species.

Blackwater stream. Blackwater streams drain most of the floodplain swamps in the preserve. Several are associated with the Clapboard Swamp system and ultimately drain towards St. Johns River. In general, the upper reaches of these streams are in good to excellent condition.

However, some have been disturbed through culverting, and channelization after they pass out of the preserve. The Bogey Creek system actually passes out of the preserve and re-enters the preserve twice.

Estuarine tidal marsh. Limited areas of estuarine tidal marsh lie within the boundaries of Pumpkin Hill Creek Preserve State Park. Most of the estuarine tidal marsh is within the Nassau River - St. Johns River Marshes Aquatic Preserve. High quality estuarine tidal marsh is associated with Fitzpatrick Creek, Clapboard Creek, and Pumpkin Hill Creek, as well as smaller unnamed tidal creeks.

Estuarine unconsolidated substrate. This natural community is also limited within the preserve since it is most often associated with tidal creeks within the estuarine tidal marsh. Estuarine unconsolidated substrates are characterized by a muddy or sandy bottom, but small areas of estuarine mollusk reef may occur within them.

Ruderal. Although several small areas within Pumpkin Hill Creek Preserve have been disturbed during timber operations prior to state ownership, none of these areas is considered unreasonably difficult to restore; therefore, they have not been classified as ruderal. The only area classified as ruderal is an area within a maritime hammock that was once an oyster processing site, and probably also served as a home site at one time. This area lies in the northeast corner of the preserve, and given the nature of the cultural history, there are no plans to restore the area to a maritime hammock.

Developed. Developed areas within the preserve include the office and shop complex on Pumpkin Hill Road that also includes a parking lot for visitor access to the preserve. A residence site and storage compound is located off Nungezer Road.

Designated Species

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

Six designated plant species are currently known from the preserve. It is likely that additional surveys will add to this list. One of the most apparent of these rare plants is the hooded pitcher plant that occurs in the wet and mesic flatwoods, often along the margin of depression marshes, domes or basin swamps. Maintenance of the natural hydrological and fire regimes in the flatwoods and wetland communities that dominate the preserve is critical to the preservation of ecotonal species like the hooded pitcher plant.

There are fifteen designated animal species listed for the preserve. Additional surveys are likely to expand this list. More cryptic species, such as some of the amphibians and reptiles, may be difficult to detect. Habitat occurs on site that could support species such as flatwoods salamander (*Ambystoma cingulatum*), gopher frog (*Rana capito*), southern hognose snake (*Heterodon simus*) and Florida pine snake (*Pituophis melanoleucus mugitus*). Of particular note are the two documented wood stork (*Mycteria americana*) rookeries within the preserve. Both are located

within cypress stands. The preserve also includes at least one active bald eagle (*Haliaeetus leucocephalus*) nest.

Special Natural Features

Perhaps the most striking natural feature of Pumpkin Hill Creek Preserve actually lies outside its boundary. The extensive tidal marshes associated with the Nassau River - St. Johns River Marshes Aquatic Preserve and the National Park Service's Timucuan Ecological and Historic Preserve provide a dramatic vista adjacent to the Pumpkin Hill Creek Preserve. These marshes provided much of the impetus for the purchase and protection of Pumpkin Hill Creek Preserve that acts as a filter and a buffer for the estuarine systems.

The uplands and freshwater wetlands of Pumpkin Hill Creek Preserve provide habitat for many wildlife species that also range into the surrounding estuarine systems. Many of the adjacent conservation areas lack significant natural upland acreage. Preserving the natural upland systems within Pumpkin Hill Creek Preserve will benefit many wildlife species that depend on a variety of habitats during their life cycle.

Cultural Resources

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

The Florida Master Site File (FMSF) lists five recorded archaeological sites within the unit. The preserve maintains a few collection objects (turpentine cup, scraper) related to the turpentine industry for interpretive purposes.

Du00079, Cedar Point Road, is a highly disturbed, multiple-component aboriginal site that has been briefly evaluated on at least four occasions. The site was likely disturbed by fire plow lines in 1998 and prior to that the site was heavily disturbed during road construction. A large oak is uprooted in the southeast corner. The extent of the site is unknown, and current information is insufficient to determine the site's potential for local or national designation of significance. The site's condition was evaluated as fair in 2005.

Du00095, Hog Plumb, is a multiple-component shell midden site that has been briefly evaluated, and determined to be potentially eligible for local designation as well as for the National Register. The site is located adjacent to a flowing stream, and is subject to damage from streambank erosion. Evidence at the site, and CARL survey documents (1996) indicate looting occurred there in the past. The current condition of the site is considered poor, based upon recent evaluation and observed effects of erosion**.**

Du11297, Abandoned Picnic, is a shell midden site of undetermined extent and insufficient information to determine local or national significance. The correct location of this site was recently re-evaluated during a resource management evaluation. The site is subject to erosion; however, it is more stable than Du00095. The site is considered to be in fair condition.

Du11304, Sandy Rise, is a terrestrial aboriginal site of unknown function, density and extent, and insufficient information to determine its eligibility for local or national designation. Recent evaluation of the site revealed some animal burrowing at the site, primarily by gopher tortoises; however, this does not seem to be adversely impacting the site. Overall, the site is stable and undisturbed, therefore it is considered to be in good condition.

Du17768, Pumpkin Canal and Landing, is a historical canal and landing area that extends onto park property from the adjacent tidal marsh. Originally delineated using aerial photography to locate the limits of the canal, additional inspection on site will be required to document the site. The full extent of the site is unknown, and current information is insufficient to determine the site's potential for local or national designation of significance.

In view of the abundant cultural sites recorded in the region, and because of its proximity to the tidal creeks and tributaries of the lower St. Johns River, Pumpkin Hill Creek Preserve State Park has the potential to contain many important historical and archaeological sites. Relatively little is known about the recorded cultural resources of the preserve however, and the preserve has not been the subject of a comprehensive cultural resources survey. At least four new sites are currently being evaluated and will be documented with the FMSF. Three are potential historical homesites, and the fourth consists of sub-surface oyster shell deposits.

Some of the preserve's interior roads are visible on the oldest available historic aerial photos of the region, and other evidence in the photos suggests the lands within the preserve were utilized for timber harvest long ago. There is also evidence of the turpentine industry. Fragments of turpentine pots and cat-faced trees have been found within the preserve. In addition, the site of an oyster processing plant may be of significance relating to historic activities in the region surrounding the preserve. A comprehensive cultural resources survey would undoubtedly reveal previously undiscovered cultural sites at Pumpkin Hill Creek Preserve State Park.

RESOURCE MANAGEMENT PROGRAM

Special Management Considerations

Timber Management Analysis

Chapters 253 and 259, Florida Statutes, require an assessment of the feasibility of managing timber in land management plans for parcels greater than 1,000 acres if the lead agency determines that timber management is not in conflict with the primary management objectives of the land. The feasibility of harvesting timber at this park during the period covered by this plan was considered in context of the Division's statutory responsibilities, and an analysis of the park's resource needs and values. The long-term management goal for forest communities in the state park system is to maintain or re-establish old-growth characteristics to the degree practicable, with the exception of early successional communities such as sand pine scrub and coastal strand.

A timber management assessment (see Addendum 6) was conducted for Pumpkin Hill Creek

Preserve State Park by Timothy Worley of the Florida Division of Forestry in September of 2002 when the preserve was under the management of the Office of Coastal and Aquatic Managed Areas. In general, emphasis will be placed on timber management for restoration of natural communities. In most cases, planted slash pines will be replaced with longleaf pines, and native groundcover protection and restoration will be important considerations when conducting timber management activities and other restoration measures.

Additional Considerations

The Division maintains management authority over a 400-foot zone from the edge of mean high water along the sovereign submerged lands passing through or alongside the parks. Where emergent wetland vegetation exists, the zone extends waterward 400 feet beyond the vegetation. Within this zone, the park staff will enforce Division regulations.

Management Needs and Problems

1. Fire-adapted natural communities require restoration.
- **A.** Fire-adapted natural communities have declined within the preserve due to lack of frequent enough burning.
- **B.** Offsite slash pines have been planted in some areas of the flatwoods, and in other areas, offsite hardwoods have invaded flatwoods and sandhill areas due to fire-exclusion.
- **C.** Some depression marshes have been encroached upon by pines that may be shading out hooded pitcher plants.
- **D.** The preserve needs additional firebreaks and a realignment of resource management zones in order to safely and efficiently conduct prescribed burns.
- **E.** Photopoints are needed to monitor the progress of the prescribed burn program and to determine if burn objectives are met.
- **F.** Research on natural community restoration should be encouraged in the preserve.

2. Few hydrological data exist for waters within the preserve.
- **A.** Flow and elevation data for water bodies within the preserve do not exist.
- **B.** Limited water quality data exist for Pumpkin Hill Creek and Clapboard Creek. These data were collected from stations outside the preserve.
- **C.** Cooperation and funding from other agencies are needed to monitor water quality and quantity in the preserve.
- **D.** Water bodies within the preserve are not designated as Outstanding Florida Waters, and lack the protections that designation provides.

3. Historic land management activities have created disruption to natural hydrology in several areas of the preserve.
- **A.** Fill roads through natural drains impede overland sheetflow.
- **B.** Deep fire plow lines adjacent to wetlands contribute to unnatural wetland drainage.
- **C.** Funding for restoration projects is needed.
- **D.** Unused and uncapped wells within the preserve could contaminate groundwater.

4. Exotic species occur within the preserve.
- **A.** Feral hogs damage natural areas within the preserve.
- **B.** Limited numbers of exotic plants occur within the preserve, but there is a high potential for future infestations.

5. Additional monitoring and survey work for native plant species are needed.
- **A.** The preserve lacks non-vascular plant survey data and has limited vascular plant survey data.

B. Some populations of designated plants have not been mapped adequately and require additional monitoring.
C. Additional survey work to locate other designated plant species is needed.

6. Additional monitoring and survey work for native animal species are needed.
A. Additional vertebrate species surveys are needed to improve the preserve's animal species list.
B. The preserve lacks an adequate macroinvertebrate species list.
C. Additional survey work to locate other designated animals species is needed.
D. Wood stork rookeries and bald eagle nests within the preserve require monitoring.

7. Cultural resources require clear identification and protection.
A. The lack of information about known and unknown cultural site locations may lead to inadvertent disturbance of the sites in the course of park operations.
B. Past looting activities, and ongoing natural erosion of Du00095 compromise the condition of the site which is listed as poor.
C. Regular assessment of the cultural resources in the preserve is needed to monitor their condition.
D. Ground disturbing activities have the potential to damage cultural sites.
E. Routine patrols and public education are needed to protect cultural sites.

8. Preserve boundaries require protection.
A. Some portions of the preserve remain unfenced.
B. Boundary signs need to be maintained along the preserve boundary.

9. Residential and commercial development near the preserve may negatively impact park resources.
A. Development adjacent to the preserve fragments upland habitat and reduces the available habitat adjacent to the preserve.
B. Nearby development inhibits the prescribed burn program by reducing the available options for conducting burns due to smoke management concerns.
C. Development within watersheds and particularly along creeks that enter the preserve will adversely impact water quality and natural hydrology.

Management Objectives

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

1. Restore fire-adapted natural communities.
A. Expand the prescribed fire program in cooperation with SJRWMD land management staff. Place a high priority on burning fire-dependent natural communities regularly and on re-introducing fire to formerly fire-excluded areas.
B. Determine the appropriate methodology and begin to remove hardwoods that have encroached on the flatwoods. Determine appropriate sites on which to harvest offsite slash pines and replant native longleaf pines and groundcover species in flatwoods and sandhill communities.
C. Determine a sensitive and feasible methodology for removing the pines that have invaded the depression marshes, particularly where hooded pitcher plants occur.

D. Continue to assess the need for additional firebreaks and for mechanical reduction of fuels. Refine resource management zone boundaries to allow for safe and effective prescribed burns, particularly in the urban interface areas. Seek funding for construction of boundary firelines as needed.

E. Continue to establish photopoints to monitor progress of the prescribed fire program and to determine if burn objectives are met.

F. Encourage university faculty and graduate students to conduct studies and monitoring that would provide pertinent information for natural community restoration.

2. Prioritize and coordinate hydrological data collection for waters within the park.

A. Assess the preserve's water resources and identify water bodies to be targeted for long-term monitoring.

B. Coordinate development of a long-term monitoring plan with the SJRWMD and the Aquatic Preserve.

C. Seek cooperative funding and services from other agencies.

D. Pursue designation of the waters of the preserve as Outstanding Florida Waters.

3. Identify and assess disruptions of natural hydrology in the park.

A. Abandon, or redesign and retrofit fill roads that impede overland sheetflow.

B. Repair deep fire plow lines adjacent to wetlands that may have altered natural wetland drainage.

C. Pursue mitigation or other funds to accomplish restoration projects.

D. Cap unused wells within the park.

4. Continue to monitor and control exotic species within the preserve.

A. Maintain feral hog trapping program. Determine if assistance from outside contractors is needed.

B. Coordinate with the SJRWMD Invasive Plant Program for removal of exotic plant species detected within the preserve.

5. Additional monitoring and survey work for native plant species are needed.

A. Contact the appropriate departments in various Florida Universities to communicate the need for an inventory of the park's non-vascular flora and for additional surveys of vascular flora.

B. Continue mapping the locations where listed plants species such as hooded pitcherplant (*Sarracenia minor*), rosebud orchid (*Pogonia divaricata*), and pond spice (*Litsea aestivalis*) occur, using GPS technology. Monitor the populations, as needed.

C. Increase survey efforts to locate additional populations of designated plant species within the preserve.

6. Additional monitoring and survey work for native animal species are needed.

A. Determine the means to accomplish a vertebrate inventory. Encourage local university staff to conduct surveys and research within the preserve.

B. Advise the staff of the Bureau of Entomology, Nematology and Plant Pathology of the Florida Department of Agriculture and Consumer Services (DACS) of Division's desire to compile a list of macroinvertebrates for the park. Note that a collecting permit is required.

C. Increase survey efforts to locate additional populations of designated animal species within the preserve.

D. Continue monitoring of wood stork rookeries and bald eagle nests in the preserve.

7. Identify and protect cultural resources in the park.

A. Pursue funding for a phase I archaeological survey of the entire preserve and a phase II survey of selected areas within the preserve, particularly those areas that are known

archaeological sites and experience high visitor use or are threatened for other reasons.

B. Repair and stabilize the looter pit on Du00095. Prioritize Du00095 for a full archaeological survey and documentation before the site is lost to erosion.

C. Regularly assess the condition of recorded and unrecorded cultural resources in the preserve. Use photo points to monitor the status of sites.

D. Comply with Department of State, Division of Historical Resources policies when conducting ground-disturbing activities.

E. Patrol cultural sites to prevent vandalism and discourage the establishment of casual trails at the sites. Educate the public about the importance of preserving cultural sites, using interpretive signs that include warnings against collecting artifacts in either terrestrial or aquatic environments.

8. Establish and define park boundaries to improve resource protection and to avoid encroachment from neighbors.

A. Prioritize fencing needs along the preserve boundary. Coordinate fencing projects with the SJRWMD.

B. Continue to post and maintain boundary signs.

9. Protect adjacent natural areas through outright acquisition, close monitoring of proposed land use changes, and educational outreach to local residents.

A. To ensure the long-term survival of species within the preserve, aggressively pursue acquisition of additional natural areas within the preserve's Optimum Boundary before they are developed.

B. Contact local residents and instruct them about the importance of fire in preserving natural communities. Interpretation and education about prescribed fire will be vital to the continued use of fire as a management tool on state lands.

C. Continuously review comprehensive plan amendments and land development regulations that may govern proposed land use changes on properties adjacent to or in close proximity to the preserve. Monitor long-range transportation planning for projects that may affect the integrity of the preserve. Formally present to appropriate governing bodies all Division comments regarding proposed land use changes.

Management Measures for Natural Resources

Hydrology

Virtually no historic hydrological data exist for groundwater or surfacewater systems within the preserve. A series of groundwater monitoring wells were recently installed in the preserve in cooperation with the St. Johns River Water Management District (SJRWMD). These wells provide daily groundwater elevation data and quarterly water quality data for the surficial, intermediate and Floridan aquifers. In addition, daily rainfall data are collected and compiled by preserve staff and reported to the SJRWMD.

Continuing development of surrounding private lands will likely result in changes in water quality and quantity in the park's aquatic systems. Equestrian, biking and hiking trails and other recreational development in the park also have the potential to impact surface waters. Periodic, long-term monitoring of hydrologic conditions—streamflow, surfacewater elevation, water quality and biology—in some of these systems will define current conditions, and helps identify changes over time. A park-wide assessment of water resources and identification of areas to be targeted for long-term monitoring will be prioritized. This may be accomplished in cooperation with the SJRWMD and the Aquatic Preserve. Designation of the surface waters within the

preserve as Outstanding Florida Waters would help protect the waters of the preserve from degradation due to activities that are subject to DEP permitting.

A final area of concern is the hydrologic disruption resulting from historic land management activities. Natural sheet flow and overland flow have been disrupted in several areas of the preserve by the construction of fill roads that have inadequate surface water conveyance structures. These roads will be identified and removed if obsolete, or they will be redesigned and retrofitted to restore a more natural conveyance of surface waters. Fire plow lines may also disrupt natural hydrology, and where these occur they will be documented and assessed for restoration.

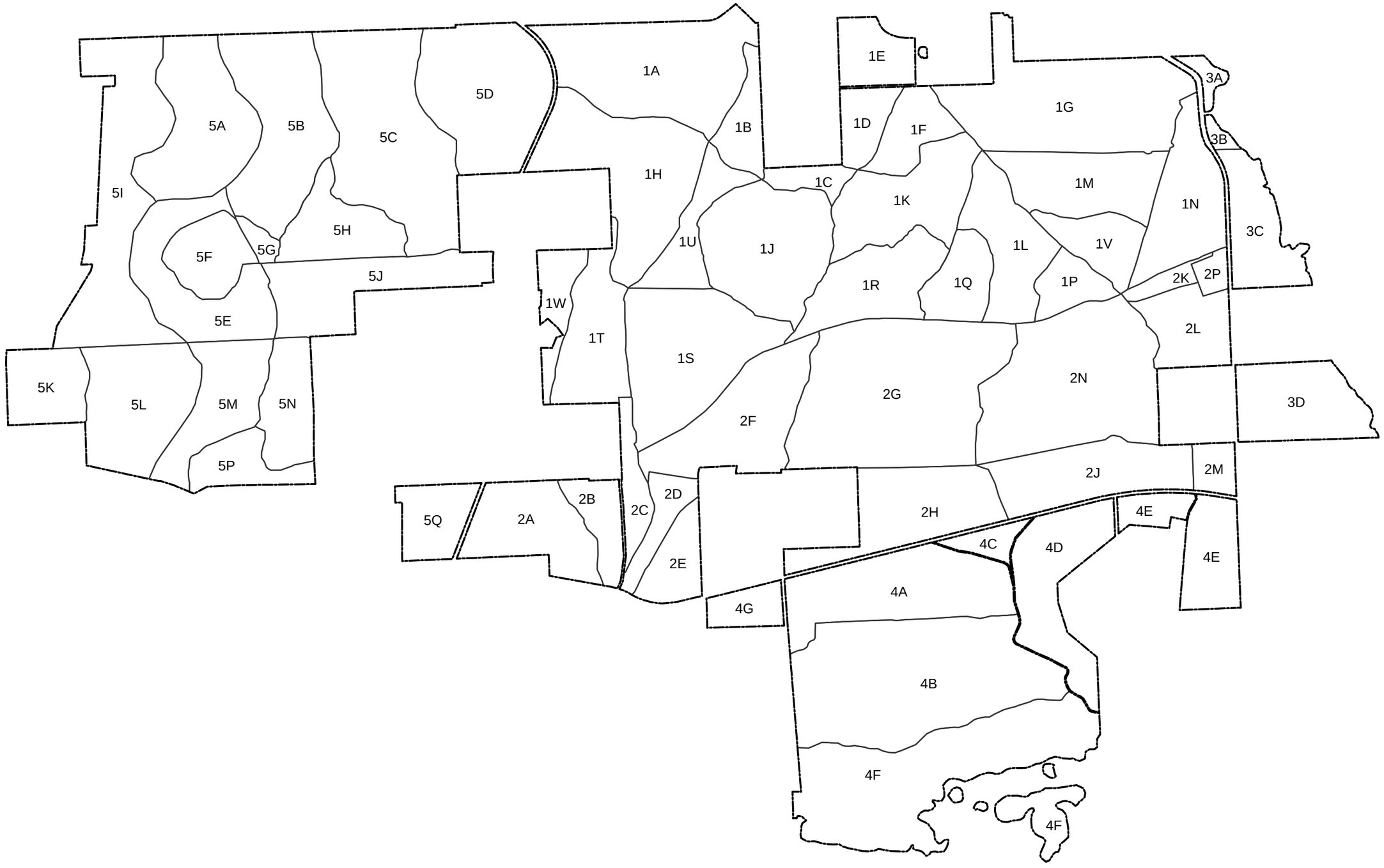
Prescribed Burning

The objectives of prescribed burning are to create those conditions that are most natural for a particular community, and to maintain ecological diversity within the unit's natural communities. To meet these objectives, the park is partitioned into burn zones, and burn prescriptions are implemented for each zone. The park burn plan is updated annually to meet current conditions. All prescribed burns are conducted with authorization from the Department of Agriculture and Consumer Services, Division of Forestry (DOF). Wildfire suppression activities will be coordinated between the Division and the DOF.

The Pumpkin Hill Creek Preserve State Park landscape is dominated by natural communities that require fire to maintain their ecological integrity. Prescribed fire is the most important resource management tool at Pumpkin Hill Creek Preserve. Application of safe and effective prescribed fires is complicated by the rapidly expanding development on the north side of the City of Jacksonville. The expanding wildland-urban interface at Pumpkin Hill Creek Preserve makes prescribed burning more difficult. Interstate 95/295 and the Jacksonville International Airport are both within 15 miles to the west of the preserve. Additional housing development and an elementary school are also planned to be built west of the preserve. The development of easterly sea breezes makes smoke management particularly difficult, and wind shifts can be caused by the daily convergence of sea and land breezes.

Volatile flatwoods fuels, and a network of wetlands that can limit all-weather access, further complicate the prescribed fire program. Heavy rains can make many firebreaks impassable in the wet flatwoods. Preserve staff have placed a high priority on the maintenance and expansion of the firebreaks within the preserve. Some perimeter firebreaks have already been widened and secured to enhance safety during prescribed burns and to help prevent the spread of wildfires into or out of the preserve. The construction of additional, extra-wide firebreaks in urban interface areas is planned for 2006. Resource management zones are being revised to make prescribed burns safer and more efficient (see Burn Zones Map).

Fire-adapted natural communities at Pumpkin Hill Creek Preserve include mesic, wet and scrubby flatwoods, sandhills and depression marshes. To a lesser degree cypress domes, basin swamps and wetland ecotones are also influenced by fire. Fire-return intervals listed by the Florida Natural Areas Inventory (FNAI 1990) for flatwoods are 1 to 8 years for mesic flatwoods, 8 to 25 years for scrubby flatwoods, 3 to 10 years for wet flatwoods. The scrubby flatwoods at Pumpkin Hill Creek Preserve are intermingled with mesic flatwoods and sandhill, and parts will likely burn more frequently along with the surrounding matrix. Some of the true pond pine dominated wet flatwoods may naturally have a longer fire-return interval than slash pine



PUMPKIN HILL CREEK
PRESERVE STATE PARK

BURN ZONE
MAP

dominated wet flatwoods (Hilsenbeck 2000). Typically, sandhills burn every 2 to 5 years. Fire return intervals for marsh systems are quite variable depending on water levels and the frequency of fire in surrounding communities. Natural fires in depression marshes often consumed accumulated peat deposits during drought periods. Such fires are difficult to mimic with prescribed fire due to smoke management concerns.

Prescribed burns at Pumpkin Hill Creek Preserve are planned and conducted in cooperation with the SJRWMD land management staff. Division staff is responsible for burn preparation work on site, and assists with burn planning. Prescribed burns are carried out using SJRWMD and Division staff and fire equipment. The preserve is a member of the Northeast Florida Prescribed Fire Working Group, and the Division has signed an MOU to facilitate cooperative burning efforts with other agency participants, including DOF. The Division has recently provided portable and mobile high band radios to all parks that conduct prescribed fires. These new radios will allow Division staff to communicate directly with Division of Forestry and SJRWMD staff during prescribed fires and on wildfire incidents.

Preserve staff will continue to coordinate and work with the local Division of Forestry staff regarding the development of a plan for addressing wildfire suppression within the park boundary. The wildfire suppression plan will include elements regarding rehabilitation of fire lines and any other related impacts. Preserve will work closely with Division of Forestry staff prior to wildfire incidents to ensure that Forestry staff is familiar with access points and service roads in the preserve.

Designated Species Protection

The welfare of designated species is an important concern of the Division. In many cases, these species will benefit most from proper management of their natural communities. At times, however, additional management measures are needed because of the poor condition of some communities, or because of unusual circumstances that aggravate the particular problems of a species. To avoid duplication of efforts and conserve staff resources, the Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species. Specifically, data collected by the FWC and USFWS as part of their ongoing research and monitoring programs will be reviewed periodically to inform management of decisions that may have an impact on designated species at the park.

Further plant and animal surveys will need to be conducted at Pumpkin Hill Creek Preserve to verify the presence of additional designated species. Mapping of designated species populations will continue in order to prevent inadvertent disturbances, and to monitor population trends. Some animal species, such as wood storks, will require protection from disturbances during the nesting season. The wood stork rookeries and bald eagle nests will be monitored to detect disturbances and verify nesting. Monitoring efforts for designated animal species will be coordinated with FWC whenever possible. Many of the plant species will only require the maintenance of the natural fire and hydrologic regimes.

Exotic Species Control

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

remove exotic species from native natural communities.

Pumpkin Hill Creek Preserve is fortunate to have few problematic exotic plant species. However, developed and urban areas that lie to the west of the preserve, particularly along the Interstate 95 corridor, have serious infestations of invasive exotic plants. Chinese tallow, is uncommon in the preserve, but is the dominant canopy tree in some woodlands west of the preserve. Staff will continue to keep a vigilant watch for infestations of Chinese tallow, especially since its seeds are often dispersed by birds. Other exotics species occur along roadsides and in disturbed areas. Preserve staff work with the SJRWMD Invasive Plant Program to control exotic species within the preserve.

A more serious problem at this time is the feral hogs that occur within the preserve. Staff is currently trapping and removing hogs. Consideration will be given to using outside contractors to control feral hogs if staff is not able to make sufficient progress. Other exotic animals such as greenhouse frogs (*Eleutherodactylus planirostris*) and armadillos (*Dasypus novemcinctus*) are more difficult to trap, but should be removed whenever possible.

Problem Species

Problem species are defined as native species whose habits create specific management problems or concerns. Occasionally, problem species are also a designated species, such as alligators. The Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species that are considered a threat or problem.At this time there are no species considered problem species within the preserve.

Management Measures for Cultural Resources

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

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

Four of the five recorded sites within the preserve appear stable, and given adequate protection, will remain so.

The Hog Plumb site, Du00095, is currently impacted and will continue to be threatened, by natural erosion from the adjacent tidal creek. Mechanical erosion control methods would draw unwanted attention to the site, and would likely be infeasible as well. It is recommended that the site be prioritized for a full archaeological survey and documentation before it is lost. In the meantime, the looter pit on this site should be filled in with clean sand or sand bags to prevent further erosion. Frequent monitoring of this site will be necessary to discourage looting and unauthorized access from the water. The erosion face of the midden should be checked on a regular basis, especially after heavy storms or high winds, for large concentrations of artifacts,

archaeological features or human remains eroding from the face. If any further incidents of looting occur, or if significant archaeological features are uncovered by erosion, preserve staff should notify the Bureau of Natural and Cultural Resources and Division of Historical Resources. If an incident of looting occurs, DEP Law Enforcement must also be notified.

The sparse number of recorded sites within the preserve, and the lack of information on the extent and significance of known sites is a management concern in the park. Inadvertent disturbance of previously undiscovered sites is probable if the locations and extent of sites remain unknown. When planning and implementing recreational activities, resource management, interpretation or protection, the need to preserve cultural resources, recorded and unrecorded, must be considered.

Preserve staff shall conduct annual inspections of each identified cultural resource within the park to monitor their condition and identify changes or activities that may cause adverse impacts. Files pertaining to recorded cultural resources shall be established and maintained at the park. Information pertaining to each resource such as photographs, yearly condition assessments and FMSF documents shall be contained in these files. Such files shall become a permanent resource management file and will not be scheduled for disposal.

A comprehensive phase I cultural resource survey of the entire preserve, and a phase II survey of portions of the preserve, will be sought. A phase I survey is a professionally planned survey that involves an extensive literature search and ground reconnaissance with limited shovel testing to determine general site locations. A phase II survey is a professionally planned survey to determine the extent of sites; it utilizes more intensive shovel testing. Management will encourage proposals for survey or other fieldwork from qualified archaeologists by referring the project to the State Archaeologist. If survey or other research is approved, management will cooperate with researchers. Managers must inform researchers that copies of reports and completed Florida Site File forms must be turned in to the park and district office. Any research activities pertaining to archaeological resources require permission of the State Archaeologist, and any activities conducted without a permit or that clearly go outside the scope of the permit are subject to citation and legal action.

Research Needs

Natural Resources

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

1. Additional surveys of plant and animal species within the preserve need to be conducted by staff or by outside researchers. Staff will encourage research within the preserve that would provide additional data on plant and animal occurrences, particularly for designated species.

Cultural Resources

1. The cultural site Du00095 requires full archaeological survey and documentation before it is lost to erosion.

2. A phase I archaeological survey is needed for the entire park and a phase II survey is needed in selected areas within the park, particularly those areas that are known archaeological sites and coincidentally experience high visitor use.

Resource Management Schedule

The priority schedule for conducting all management activities based on the purpose for which these lands were acquired, and to enhance the resource value, is contained in Addendum 7. Cost estimates for conducting priority management activities are based on the most cost effective methods and recommendations currently available.

Land Management Review

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

Pumpkin Hill Creek Preserve State Park (formerly known as the Pumpkin Hill Creek State Buffer Preserve) was subject to a land management review on April 17, 2002. The review team made the following determinations:

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

LAND USE COMPONENT

INTRODUCTION

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

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

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

EXTERNAL CONDITIONS

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

Pumpkin Hill Creek Preserve State Park lies within the state’s most populous incorporated area, the City of Jacksonville, in Duval County. The populations of Duval County and the adjacent Nassau County have grown 24 percent since 1990, and are projected to grow an additional 26 percent by 2020 (BEBR, University of Florida, 2004). The median age for Duval County is 34.6, which is significantly younger than the state average of 39.4 (BEBR, University of Florida, 2004). More than 1.1 million Floridians reside within 50 miles of the park, which includes the cities of Jacksonville, Fernandina Beach and St. Augustine (Census, 2000).

Pumpkin Hill Creek Preserve State Park was transferred to the Division of Recreation and Parks in December 2003 and visitation was not recorded in fiscal year 2003-2004. Currently, the preserve only contains an unimproved shoreline that is used by a few fishermen and canoe/kayak paddlers and a small trailhead popular with local equestrians. Visitation for fiscal year 2004-2005 was 966. Once use areas are developed, visitation is expected to increase significantly.

Existing Use of Adjacent Lands

The Timucuan Trail State and National Parks is a unique partnership between the City of

Jacksonville (COJ), the National Park Service (NPS) and the State of Florida. The group of parks includes some of the last unspoiled coastal wetlands on the Atlantic Coast and preserves the area's rich historic and prehistoric sites. Hiking, biking and kayak trails weave through the seamless system of parks, giving visitors a rare view of pristine marshland, coastal dunes and maritime hammocks. Specifically, Fort George Island Cultural State Park offers nature trails, an unimproved boat ramp, canoe/kayaking fishing, bicycling and a visitor center that serves as a gateway to the Timucuan Trail State and National Parks. Fort George Island is also home to the Kingsley Plantation, the oldest plantation house remaining in Florida, which is managed by NPS. Huguenot Memorial Park, administered by COJ, lies to the east of Fort George Island on an accreting landmass at the mouth of the St. Johns and Fort George Rivers, and is a popular beach park with camping. Little Talbot Island State Park provides beach recreation, camping, canoe/kayaking, fishing, hiking, bicycling, picnicking, and wildlife viewing. Big Talbot Island State Park contains a boat ramp, picnic area, nature trails and access to great fishing and paddling. Amelia Island State Park offers beach recreation, fishing, wildlife viewing and beachfront horseback riding. Fishing is particularly popular at George Crady Bridge Fishing Pier State Park, which spans the entire Nassau Sound. Across the St. Johns River is Fort Caroline National Memorial that was created by NPS to memorialize the sixteenth century French effort to establish a permanent colony in Florida. Other lands managed by the NPS include the Theodore Roosevelt Area providing opportunities for hiking, bicycling, picnicking and fishing; Cedar Point offering an unimproved boat ramp, fishing, hiking and birding; Thomas Creek battle site; and the Broward Islands. Adjacent to Pumpkin Hill Creek Preserve, the City of Jacksonville manages Betz-Tiger Point Preserve and Cedar Point. Also in close proximity, COJ manages Kathryn Abbey Hanna Park (beach recreation, camping, cabins, fishing, canoe/kayaking, picnicking), Sisters Creek Marina and Park, and Joe Carlucci Boat Ramp and Park.

Pumpkin Hill Creek Preserve State Park is the westernmost of the state parks in Duval and Nassau Counties. The preserve is surrounded by tidal creeks, conservation lands and rural residential neighborhoods. Pumpkin Hill Creek borders the preserve on the east while Fitzpatrick Creek and Clapboard Creek meander near the southern boundary of the preserve. The Nassau River-St. Johns River Marshes Aquatic Preserve includes the submerged lands surrounding the preserve and extends north to the Nassau River, south to the St. Johns River, and east to the Atlantic Ocean. The preserve also lies within the boundary of the Timucuan Ecological and Historic Preserve, 46,000 acres of undeveloped estuarine habitat administered by the NPS. Most of the land to the north, east, and south is currently zoned for "Agriculture" and "Conservation." In addition, there are two COJ properties (currently undeveloped) bordering the park that are zoned for "Recreation and Open Space", namely Betz-Tiger Point Preserve at the northeast corner of the preserve and Cedar Point at the southeast corner. Most of the lands to the west of the preserve as well as the private properties within the preserve area, especially along Boney Road, are zoned as "Rural Residential" and "Residential Low Density."

Planned Use of Adjacent Lands

The Future Land Use Map for the City of Jacksonville (2004) has identified the lands to the north, east, and south of the preserve as "Agriculture," "Conservation," and "Recreation and Open Space." Over 140,000 acres of marsh and uplands surrounding the preserve are in public ownership and managed for the purposes of conservation and recreation. These public lands serve to buffer the preserve from major impacts of future land use changes. Lands to the

west and the private parcels within the preserve area are designated as “Rural Residential.” However, many properties surrounding the preserve are currently being rezoned for residential and Planned Unit Development. New residential areas are expected to continue as Jacksonville sprawls to the north. Anticipated impacts include fragmentation of upland habitat, disruption of natural hydrology, decrease in water quality and quantity, management constraints with prescribed burning, increase in exotic plants, increase in traffic, noise and light pollution, and visual encroachments. The Florida Department of Transportation is currently considering road improvements along nearby Yellow Bluff Road and New Berlin Road.

The complex of state parks and other publicly owned and protected lands in the vicinity provide a unique variety of natural areas available for public enjoyment. Extensive beaches, coastal scrub, mixed pine and oak uplands, estuaries and salt marshes, outstanding boating and fishing waters, and prehistoric and historic features all lie within a few miles of Pumpkin Hill Creek Preserve State Park. The potential for this area to provide new recreational opportunities, nature and heritage based tourism and natural resource protection is exceptional. The proximity to urban Jacksonville and to the developing resort communities extending from Amelia Island north creates great potential for future increases in visitation to the state parks, the national preserve and the city parks.

Planning for the Timucuan Trail State and National Parks will be jointly produced and reviewed by staff of the Division, COJ and NPS. Resource management, recreational programs and park operations will be coordinated between the three agencies for greater operational efficiency and to provide a seamless recreational experience to visitors as they move across the invisible boundaries of agency responsibility. The Division, NPS and COJ staff will also work together to help the local planning and environmental protection agencies to identify and understand the potential impacts to the parks of new development and changing land uses beyond the parks' boundaries.

PROPERTY ANALYSIS

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

Recreation Resource Elements

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

Land Area

Pumpkin Hill Creek Preserve State Park is best described as pine flatwoods nestled within undisturbed tidal creeks. The park preserves nearly 4,000 acres of upland habitat bordering tidal marshlands along the St. Johns River, thus protecting one of the largest contiguous areas of coastal uplands remaining in Duval County. The preserve contains 21 distinct natural

communities including scrubby flatwoods, cypress dome, sandhills, maritime hammock, wet flatwoods and estuarine tidal marsh. Suitable recreation includes hiking and equestrian trails, picnicking, primitive camping, interpretation/education, shoreline fishing and access to the tidal creeks.

Water Area

Pumpkin Hill Creek Preserve State Park is surrounded by the salt marshes and tidal creeks of the Nassau River-St. Johns River Marshes Aquatic Preserve. Pumpkin Hill Creek serves as the eastern boundary of the park and flows north to the Nassau River while Fitzpatrick Creek and Clapboard Creek meet near the southernmost parcel of the park and flow south to the St. Johns River. These unspoiled marshes and creeks provide outstanding paddling opportunities. Whether fishing from the shore or a boat, these creeks have enormous potential for catching redfish, flounder and sea trout.

Shoreline

The majority of the shoreline is composed of wide marshes making recreational access to the tidal creeks difficult; however, there are three areas where uplands meet Pumpkin Hill Creek and access is available. Two of the areas have steep banks that are popular with fishermen while the third has a shell beach perfect for launching canoes and kayaks.

Natural Scenery

Views from the shoreline provide dramatic vistas of the undeveloped marshes and tidal creeks as well as their associated wildlife.

Significant Wildlife Habitat

The upland ecosystems are crucial in maintaining water quality and providing healthy habitat for plants, animals, as well as a refuge for birds. The abundant wildlife ranges from the protected gopher tortoise to the endangered wood stork.

Archaeological and Historical Features

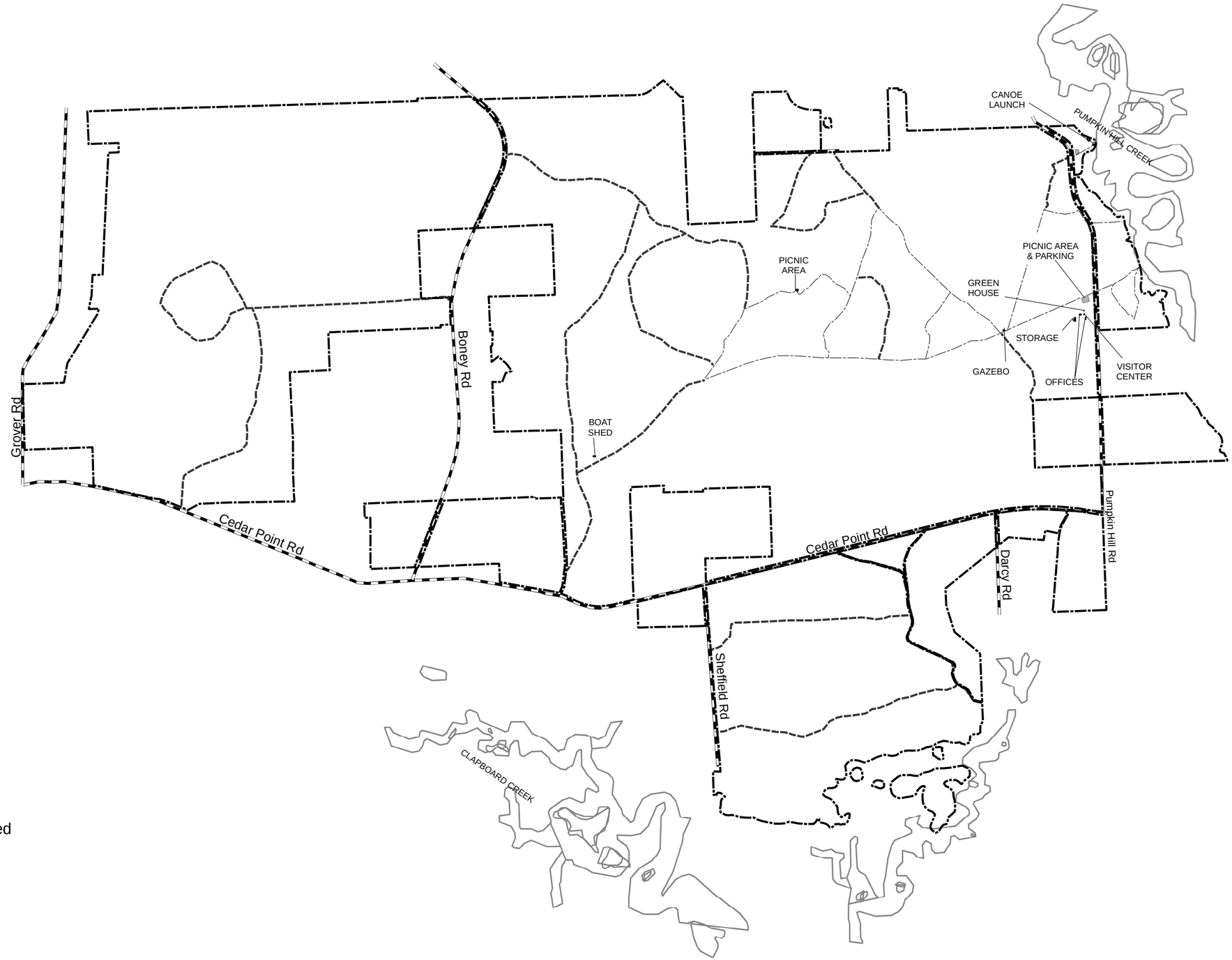
The Florida Master Site File lists five recorded archaeological sites within the preserve. The significance of these aboriginal sites has yet to be determined and the preserve has the potential to contain many important archaeological and historical sites. During the late 1800s and early 1900s, the primary activity at Pumpkin Hill Creek Preserve State Park was the turpentine industry. This area was later used for logging, so none of the cat-faced pines remains. In addition, an oyster plant once operated near the present-day canoe/kayak launching beach. The shells on this beach are probably related to this use.

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

The preserve property was used for turpentine and logging. In addition, an oyster processing plant was once located near the current canoe/kayak launch on Pumpkin Hill Creek.



LEGEND

- Park Boundary
- County Road
- Park Road Unpaved
- Hiking Trails
- Share-Use Trails
- Marine Structures
- Structures
- Parking Lots

N

0 750 1,500 3,000 Feet

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

PUMPKIN HILL CREEK PRESERVE STATE PARK

BASE MAP

Recreational Uses

Pumpkin Hill Creek Preserve State Park currently offers more than 10 miles of multi-use trails for equestrians, hikers, and off-road bicyclists, as well as shoreline access to Pumpkin Hill Creek for fishing and canoeing/kayaking.

Other Uses

The administration area also contains an office building used by the Office of Coastal and Aquatic Managed Areas (CAMA). From this office, CAMA staff manages both the Nassau River-St. Johns River Marshes and Fort Clinch State Park Aquatic Preserves. CAMA also constructed a boat storage shed and provided a drain field for a residence site off a service road accessed via Nungezer Road.

Protected Zones

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

At Pumpkin Hill Creek Preserve State Park, the sandhill, all wetland communities and all known cultural sites have been designated as protected zones as delineated on the Conceptual Land Use Plan.

Existing Facilities

Recreation facilities. There are five multi-use trails available to equestrians, hikers and off-road bicyclists that traverse more than ten miles of the preserve, all, accessible from the main parking area. There is also a short interpretive trail leading from the main parking lot to the small Visitor Center located in the administrative area, which displays several interpretive themes important to the natural and cultural history of the preserve. Water activities include fishing, and canoeing or kayaking on peaceful tidal creeks. The preserve offers a hand launch area for canoes or kayaks to access Pumpkin Hill Creek and the adjoining pristine tidal creeks.

Support facilities. The administration and shop area is located just south of the main parking lot. Facilities in this area include two office buildings, maintenance shop, a small visitor center, greenhouse and shed.

CONCEPTUAL LAND USE PLAN

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

BETZ-TIGER POINT PRESERVE (COJ)

PROPOSED FACILITIES:
- SHARED-USE TRAILS
- PICNIC AREAS
- CANOE/KAYAK LANDING
- POSSIBLE CANOE CAMPSITES

POTENTIAL TRAIL BRIDGE LOCATION

PROPOSED TRAIL CONNECTION TO BETZ-TIGER POINT PRESERVE

BONEY ROAD

SISTERS CREEK

PUMPKIN HILL CREEK

CANOE/KAYAK LAUNCH IMPROVEMENTS

SOHN TRACT (NPS)
- PROPOSED HIKING TRAIL WITH CONNECTION TO CEDAR POINT

GROUP CAMP

TRAILHEAD

TRAILHEAD

ADMINISTRATION & SHOP AREA

OBSERVATION/FISHING PLATFORM

PUMPKIN HILL ROAD

MAIN TRAILHEAD & PICNIC AREA

NUNEZER ROAD

TRAILHEAD

PROPOSED TRAIL CONNECTION TO CEDAR POINT

INTRACOASTAL WATERWAY

CEDAR POINT ROAD

EQUESTRIAN TRAILHEAD & CAMP

STARTER KIT & PARK INFORMATION KIOSK

CEDAR POINT (NPS)

PROPOSED FACILITIES:
- INFORMATION CENTER
- BOAT RAMP
- HIKING/BIKING TRAILS
- PICNICKING

CLAPBOARD CREEK

FITZPATRICK CREEK

CEDAR POINT CREEK

CEDAR POINT (COJ)

PROPOSED FACILITIES:
- HIKING/BIKING TRAILS
- BIRD OBSERVATION DECK

PROPOSED TRAIL BRIDGE ACROSS CEDAR POINT CREEK

LEGEND

- PROPOSED FACILITY
- PROPOSED ROAD
- TRAIL/SERVICE ROAD
- PROTECTED ZONE

CONSERVATION LANDS
- PARK BOUNDARY
- CITY OF JACKSONVILLE
- NATIONAL PARK SERVICE
- OTHER STATE LANDS

PUMPKIN HILL CREEK PRESERVE STATE PARK

2500 0 N 2500 5000 Feet

CONCEPTUAL LAND USE PLAN

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

Potential Uses and Proposed Facilities

The management focus at Pumpkin Hill Creek Preserve State Park is on preserving the upland ecosystems in order to maintain water quality and provide healthy habitat for native plants and animals. Recreational opportunities should be limited to passive uses and fully compatible active pursuits, such as hiking, horseback riding, picnicking, wildlife observation, birding, and interpretation/education as well as providing access to the tidal creeks for fishing and canoeing/kayaking. The current uses of the park are appropriate and should continue. In addition, the following facilities are recommended to develop the preserve for recreational use:

Recreation Facilities

Main Trailhead Area. The main access to the preserve's trails for hikers and bicyclists should be established off Nungezer Road, just north of Cedar Point Road. A paved road will meander through the flatwoods for approximately a half mile delivering visitors to a proposed trailhead area currently occupied by a boat storage shed and drain field. Recommended facilities include parking for 25 vehicles, two large and two medium-sized picnic shelters, a restroom, and an open-air interpretive pavilion. This area will need to be monitored to evaluate the proper road alignment and exact trailhead location. The Conceptual Land Use Plan currently shows the access road following an existing dirt service road. Strategic, future land acquisitions within the optimum boundary may provide alternatives to more effectively develop this recreational access point.

In addition, an orientation station is recommended at the corner of Cedar Point Road and Nungezer Road to provide information about all the conservation lands and recreational opportunities available in the vicinity. This area should also serve as a small trailhead until the main trailhead area is established.

Equestrian Trailhead and Camping Area. Currently, the trails north of Cedar Point Road are most popular with equestrian visitors. These trails traverse a variety of upland and wetland communities that provides for a scenic and, at times, challenging ride. In an effort to support this user group and provide separation from hikers and bicyclists, an equestrian trailhead and camping area is recommended on Cedar Point Road, west of Boney Road. Recommended facilities include a large picnic shelter, stabilized parking for 20 vehicles with horse trailers and

an equestrian camping area with 20 campsites including a fenced corral, and a bathhouse for the campers and trail users. The location identified is owned by COJ and is contiguous with the state park boundary. The Division will request title or a lease for this property from COJ to allow for the proposed development.

Additional Trailhead Areas. Three additional trailheads will also be provided within the preserve. These smaller trailheads will accommodate parking for 5-6 vehicles, include an interpretive kiosk and trail map. One will be located off Boney Road just north of a neighboring residential area. Another will be located on the south side of Cedar Point Road near the entrance to an adjacent cemetery. The third is already in existence and is located just north of the administration/shop area off Pumpkin Hill Road.

Trail Enhancements, Connections and Primitive Campsites. From the trailheads, visitors can access approximately 26 miles of service roads that will be enhanced and serve as the preserve's trail system. There are about 21 miles of service road north of Cedar Point Road that will be open to horses, hikers and bicyclists. Another 5 miles of trail will be provided south of Cedar Point Road that will connect to the Cedar Point properties managed by COJ and NPS. These trails will be available for hiking and bicycling. Interpretive signs will be placed at appropriate locations to inform visitors about the ecological role of wetland systems, the human impacts to hydrological regimes, restoration efforts, the rare natural communities, listed species, the role of prescribed burning, the threat of invasive exotic species and the cultural history of the area. Due to the flooding propensity of some of the preserve's natural communities, many of the trails will only receive seasonal use. Shallow water crossings may be provided in certain areas.

Providing a seamless system of trails that link conservation lands is an important component of the Memorandum of Agreement between the State, NPS and COJ. At Pumpkin Hill Creek Preserve State Park, trail connections are possible with Betz-Tiger Point Preserve (COJ) to the north and Cedar Point (NPS) via Cedar Point (COJ) to the south. Exact routes will be coordinated with the partnering agencies.

Along the system of trails, a series of 4 to 6 primitive campsites are recommended to support extended visits to the preserve. These campsites should provide stabilized tent sites and fire rings.

Group Camp. A group camp is recommended for an area of maritime hammock located along Pumpkin Hill Creek. This spot provides an attractive location for groups (up to 30 people) to stay overnight while having access to both the terrestrial trail system and tidal creeks. Recommended facilities include stabilized parking at Pumpkin Hill Road, a designated camping area, a picnic shelter, fire rings and a composting restroom. In an effort to maintain the natural viewshed, the proposed structures should not be visible from the marshes.

Canoe/Kayak Launch Area Improvements. The location of the existing canoe/kayak launch is the best site along Pumpkin Hill Creek for launching these small vessels. Currently, the only amenities here are the shell beach and a picnic table. It is recommended that this area be improved to support an anticipated increase in use as Betz-Tiger Point Park opens drawing more visitors to the area. Proposed improvements include a stabilized road with canoe/kayak drop-off lane, stabilized parking area for up to 20 vehicles, scattered picnic tables, interpretive kiosks and a composting restroom. A split rail fence will be installed as needed to control access to the

shoreline. To protect the viewshed, the proposed structures should not be visible from the marshes.

Observation/Fishing Platform. There are three areas along Pumpkin Hill Creek where park uplands meet the creek; the rest of the eastern boundary is met with wide marshes. The conceptual plan for this park includes enhancing two of these locations for a group camp and canoe/kayak launching area. Since these areas have traditionally been popular with local fishermen, it is recommended that the third location be improved for better shoreline fishing access. A small, t-shaped fishing platform is proposed for the spot where the existing nature trail meets Pumpkin Hill Creek. This platform will also serve as an observation point for those hiking along the trail. This platform should help protect the shoreline vegetation from becoming trampled by fishermen and curious hikers. Parking is already provided directly across Pumpkin Hill Road.

Possible Primitive Canoe/Kayak Campsites. In coordination with COJ and NPS, the Division will help locate areas along the tidal creeks suitable and appropriate for establishing primitive canoe/kayak campsites. Areas of potential include the Betz-Tiger Point Preserve (COJ) along Pumpkin Hill Creek, the southern tips of Cedar Point (NPS) and Cedar Point (COJ), and on two islands south of the main preserve property along Fitzpatrick Creek and Clapboard Creek. The archaeological significance of potential sites will be a determining factor when deciding where to establish the campsites. Recommended facilities include stabilized tent sites and fire rings.

Support Facilities

The shop and administration area are currently adequate and should remain. As existing use areas are improved and new use areas are developed, there will be a need to house park staff and volunteers on site. Ranger residences and volunteer campsites should be restricted to the shop area and near the proposed main trailhead area.

Facilities Development

Preliminary cost estimates for the following list of proposed facilities are provided in Addendum 7. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist the Division in budgeting future park improvements, and may be revised as more information is collected through the planning and design processes.

The protection of the water resources of the preserve, the protection of listed plant and animal habitat areas and the integration of new facilities with resource management activities, such as prescribed fire, will be priority considerations in the design and construction of the facilities proposed by this plan. These goals will be guiding principles in all site-specific analyses and site design activities for the development projects outlined here. Guidelines for sustainable design and construction will be applied to development projects, and careful construction planning and management will be applied to minimize impacts to the preserve's natural and cultural resources during the development process.

The proposed location for the new trailhead can become flooded and difficult to access during particularly wet years, as is true for most of the park property. Further site analysis and facility design is necessary to determine if the proposed trailhead location is a feasible option. It may be decided that the trailhead area will only be open seasonally, when the area is not inundated with

water. If this site proves to be too wet to serve as a viable trailhead, the existing trailhead off Pumpkin Hill Road will be improved and serve as the main trailhead for the park.

The development of the proposed use areas along Pumpkin Hill Creek will need to be coordinated with CAMA to minimize impacts to the aquatic resources.

Recreation Facilities

Main Trailhead and Picnic Area

Paved Road (0.5 miles)
Parking (25 vehicles)
Picnic Shelters (2 large and 2 medium)
Restroom
Open-Air Interpretive Pavilion
Park Information Kiosk

Trail System Improvements

Trail Enhancements (26 miles)
Equestrian Trailhead (20 vehicles)
Hiking/Biking Trailheads (2 - 6 cars ea.)
Interpretive Signs (15)

Equestrian Camping Area

20 Campsites
Corral
Tables and Grills
Water Source
Bathhouse

Group Camp

Tent Sites
Stabilized Parking
Picnic Shelter
Fire Rings
Composting Restroom

Primitive Campsites (6)

Stabilized tent sites
Fire Rings

Canoe/Kayak Launch Area Improvements

Stabilized Road and Parking (20 vehicles)
Picnic Tables
Split Rail Fence
Interpretive Kiosks (3)
Composting Restroom

Observation/Fishing Platform

Canoe/Kayak Campsites (as identified)

Support Facilities

Ranger Residences (2)
Volunteer Campsites (4)

Existing Use and Optimum Carrying Capacity

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

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

Table 1--Existing Use And Optimum Carrying Capacity

	Existing Capacity		Proposed Additional Capacity		Estimated Optimum Capacity	
Activity/Facility	**One Time**	**Daily**	**One Time**	**Daily**	**One Time**	**Daily**
Trails						
Equestrian	12	24	40	80	52	104
Hiking/Biking	18	36	111	222	129	258
Camping						
Equestrian			80	80	80	80
Group			30	30	30	30
Primitive			24	24	24	24
Canoe/Kayaking	60	120			60	120
Fishing	20	40			20	40
TOTAL	**110**	**220**	**285**	**436**	**395**	**656**

Note: No carrying capacity is determined for picnicing as these individuals are captured in the figures for trails, canoe/kayaking, and fishing.

Optimum Boundary

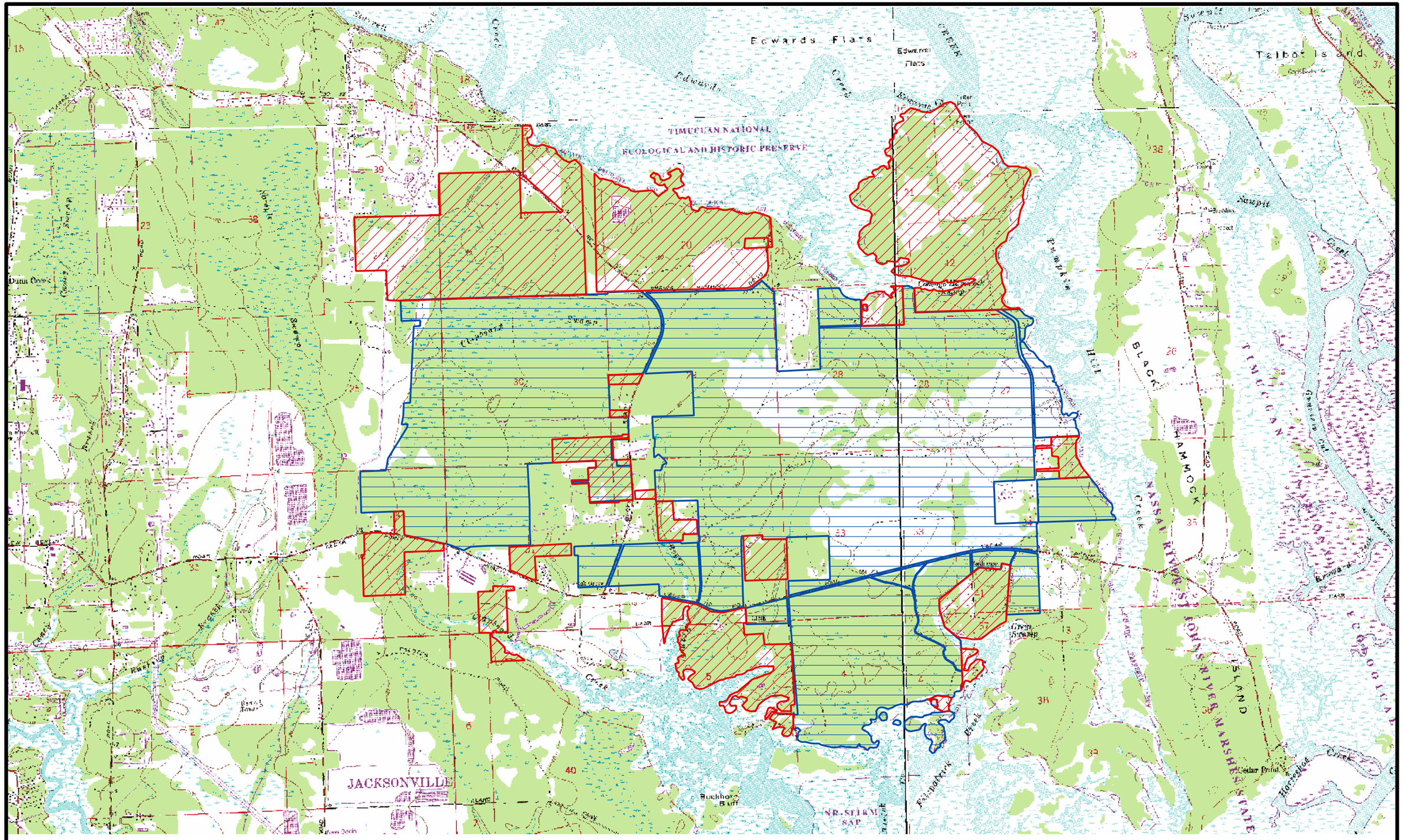
As additional needs are identified through park use, development, research, and as adjacent land uses change on private properties, modification of the unit's optimum boundary may occur for the enhancement of natural and cultural resources, recreational values and management efficiency. At this time, no lands are considered surplus to the needs of the park.

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

The optimum boundary map reflects lands identified for direct management by the Division as part of the park. These parcels may include public as well as privately owned lands that improve

the continuity of existing park lands, provide additional natural and cultural resource protection, and/or allow for future expansion of recreational activities.

Pumpkin Hill Creek Preserve State Park is a unique natural treasure located within the metropolitan City of Jacksonville. Due to an alarming growth in residential development, very



PUMPKIN HILL CREEK
PRESERVE STATE PARK

N

0 1,000 2,000 4,000 Feet

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

LEGEND

Optimum Boundary

Park Boundary

OPTIMUM BOUNDARY MAP

few undeveloped parcels remain adjacent to the park. The surrounding properties were rural residential but large suburban developments are swiftly moving in. Without quick action, these few remaining parcels will be divided and developed becoming unavailable for conservation acquisition.

Therefore, most of the undeveloped land surrounding the preserve is identified as optimum boundary. Acquisition of these areas would help protect one of the larger natural uplands left in the Duval County and maintain the water quality of the Nassau and St. Johns Rivers and their fringing marshes. These parcels would also allow an expansion of the recreational opportunities at the preserve.

The optimum boundary for Pumpkin Hill Creek Preserve State Park is designed to further objectives developed in this management plan. The main objectives of the recommended additions are: 1) preserve water quality and hydrological features and restore altered hydrology, 2) establish access points which facilitate public resource based recreational use, 3) facilitate the safe use of prescribed fire and wildfire safety, 4) connectivity to adjacent conservation land owners for wildlife corridors and development of a regional trail system, 5) protection of archaeological sites, 6) preserve and restore rare and threatened habitat types, and 7) acquire out-parcels to establish connectivity within the preserve boundaries.

Some parcels containing modest single-family houses are at locations where park staff residences are necessary for security. Mobile homes on parcels acquired would be of little value to management of the property. In most cases where agreeable, seller would be encouraged to retain
and remove these amenities. Where this is not agreeable, the property manager would scrap or remove these on a case-by-case basis.

Pumpkin Hill Creek Preserve State Park is surrounded by conservation lands including federally owned and managed Timucuan Ecological and Historic Preserve, City of Jacksonville Preservation Project, Nassau-St. Johns River Marshes Aquatic Preserve, The Nature Conservancy's Machaba Balu Preserve, and St. Johns River Water Management District conservation land. All parties are interested in additional acquisition of properties having a high risk of becoming developed. There is a strong likelihood for the availability of additional acquisition funding sources.

Addendum 1—Acquisition History and Advisory Group Documentation

Purpose of Acquisition

The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Trustees) acquired Pumpkin Hill Preserve State Park primarily to manage the property as a state buffer preserve.

Sequence of Acquisition

On August 31, 1994, the Trustees and the St. Johns River Water Management District (SJRWMD) purchased approximately 2,655.09-acre property, constituting the initial area of Pumpkin Hill Creek Preserve State Park. The Trustees and the SJRWMD, each having undivided fifty percent interest in the property, purchased the property using funds from the P2000/CARL program. Since this initial purchase, the Trustees and the SJRWMD have jointly acquired several parcels and added them to Pumpkin Hill Creek Preserve State Park.

Lease Agreements

Since Pumpkin Hill Creek Preserve State Park was initially purchased to be managed as a state buffer preserve, the Florida Department of Environmental Protection, Office of Coastal and Aquatic Managed Areas (CAMA) was the initial manager of the property. CAMA managed the Trustees interest under Lease Agreement No. 4074 and SJRWMD's interest under Intergovernmental Management Agreement until it transferred its leasehold and management interests to the Division of Recreation and Parks (Division) in December of 2003.

Lease No. 4074 is for a period of fifty (50) years commencing on June 29, 1995, and ending on June 28, 2045, unless sooner terminated pursuant to the provisions of the lease agreement. The initial term of the Intergovernmental Management Agreement was for a period of two (2) years, commencing on March 13, 1996, and ending on March 12, 1998. This agreement is automatically renewed, in twenty (20) year increments, unless terminated as otherwise set forth on each ending date.

The Division manages Pumpkin Hill Creek Preserve State Park to develop, conserve and protect the natural and cultural resources of the property and to use the property for resource-based public outdoor recreation that is compatible with the conservation and protection of the property.

Title Interest

The Trustees and SJRWMD hold fee simple title to Pumpkin Hill Creek Preserve State Park.

Special Conditions on Use

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

Outstanding Reservations

None

The Honorable John Peyton
Mayor, City of Jacksonville
4th Floor, City Hall at St. James
117 W. Duval Street
Jacksonville, Florida 32202
Represented by:
Kelley Boree, Administrator
Preservation Project Jacksonville
Office of the Mayor
851 North Market Street
Jacksonville, Florida 32202
And
Mike Middlebrook
1712 North 1st Street, #201
Jacksonville Beach, Florida 32250
(904) 509-6097
And
Mark Middlebrook
1200 River Place Boulevard, Suite 902
Jacksonville, Florida 32207

Bob Joseph, Park Manager
Talbot Islands GEOpark
12157 Heckscher Drive
Jacksonville, Florida 32226

Barbara Goodman, Superintendent
National Park Service
13165 Mt. Pleasant Road
Jacksonville, Florida 32225

Terry Doonan, Non-Game Biologist
Florida Fish and Wildlife Conservation Commission
North Central Region
3377 East US Highway 90

Nicole Robinson, Manager
Nassau River-St. Johns River Marshes Aquatic Preserve
13802 Pumpkin Hill Road
Jacksonville, Florida 32226

Bruce Hill, Manager
Florida Division of Forestry
Jacksonville District
7247 Big Oaks Road
Bryceville, Florida 32009

J.B. Miller, Senior Land Resource Planner
St. Johns River Water Management District
4049 Reid Street
Palatka, Florida 32177

Joe Forshee, Chair
Duval County Soil and Water Conservation District
11864 Duval Road
Jacksonville, Florida 32218
Represented by:
Doug Moore
12300 Holstein Drive
Jacksonville, Florida 32226
And
Clay Yarborough
12861 Meaghan Court
Jacksonville, Florida 32225

Paula Snellgrove, Chair
Florida Trail Association
North Florida Trailblazers Chapter
465 Lake Asbury Drive
Green Cove Springs, Florida 32043

Michael Saylor, Co-Owner
Little Creek Ranch
12581 Sawpit Road
Jacksonville, Florida 32226

Ray Hetchka
Kayak Amelia
13030 Heckscher Drive
Jacksonville, Florida 32226

Tom Larson, Chair
Northeast Florida Sierra Club
887 Marshside Court
Jacksonville Beach, Florida 32250
Represented by:
Dick Cardell
1528 Cornell Road
Jacksonville, Florida 32207

Lesley Royce, President
Duval Audubon Society
4520 Fulton Road
Jacksonville, Florida 32225

Neil Armingeon
St. Johns Riverkeeper
c/o Jacksonville University
2800 University Boulevard
Jacksonville, Florida 32211

Ada Pritchard, President
Pumpkin Hill Neighborhood Association
12638 Pumpkin Hill Road
Jacksonville, Florida 32226

Jody Hetchka, President
Friends of Talbot Islands State Parks
13030 Heckscher Drive
Jacksonville, Florida 32226

The Advisory Group meeting to review the proposed land management plan for Pumpkin Hill Creek Preserve State Park was held at the Ribault Club on Fort George Island on February 24, 2006 at 9am. Mayor John Peyton (City of Jacksonville) was represented by Mike Middlebrook and Mark Middlebrook. Joe Forshee (Duval County Soil and Water Conservation District) was represented by Doug Moore and Clay Yarborough. Tom Larson (Sierra Club) was represented by Dick Cardell. Jody Hetchka (Friends of Talbot Islands State Parks) was represented by Ray Hetchka. Barbara Goodman (National Park Service), Bruce Hill (Florida Division of Forestry), Paula Snellgrove (Florida Trail Association), Mike Saylor (equestrian representative), Neil Armingeon (St. Johns Riverkeeper), and Ada Pritchard (adjacent landowner) did not attend. All other appointed Advisory Group members were present. Attending staff were Bob Joseph, Daniel Pearson, Kristin Ebersol, Elizabeth Pavlinsky, Kathleen Kelso, Aaron Rodriguez, Tim Davis, Rick Argo, Nathan Rezeau, and Brian Burket.

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

Summary of Advisory Group Comments

J.B. Miller (St. Johns River Water Management District) recommended establishing water monitoring sites at the preserve due to the anticipated increase in equestrian use on the property. Bob Joseph commented that the real threat to water quality is from septic tanks in the area. Mr. Joseph suggested that the management plan address monitoring of water quality as the area around the preserve is developed. Mr. Miller requested that the term "SJRWMD Exotic Team" in the management plan be replaced with "SJRWMD Invasive Plant Program." He recommended two additional fire breaks for the preserve. He requested that the location of the cultural sites be removed from the Reference Map. He recommended that the Florida Park Service accept management of Sample Swamp. Bob Joseph replied that the City of Jacksonville would be a more appropriate manager since they already manage property adjacent to this swamp. Mike Middlebrook stated he would discuss this issue with Kelley Boree, Administrator of the Preservation Project Jacksonville. Mr. Miller suggested that the road to the proposed trailhead avoid the sandhill community. Dan Pearson replied that the initial development plans call for a small trailhead off Cedar Point Road which will buy time to monitor the area to evaluate the proper road alignment and trailhead location.

Doug Moore (Duval County Soil and Water Conservation District) stated he doesn't believe that the presence of horses on the preserve would significantly impact the water quality. He expressed support for the removal of hogs. He commented that the creeks surrounding the preserve are great for fishing and stated that the preserve serves as a protective buffer for the aquatic resources.

Ray Hetchka (Kayak Amelia and Friends of Talbot Islands State Parks) voiced support for enhancing the canoe and kayak launch area. He requested that roads and parking areas not be paved unless absolutely necessary. He stated the need for more staffing. He commented that fishermen want pre-dawn access to the shoreline. Bob Joseph responded that the improved canoe and kayak launch area will probably not be gated; however, the site will

be monitored for unacceptable impacts. Mr. Hetchka then asked about the neighbors' response to prescribed burning at the preserve. Kristin Ebersol replied that the neighbors are aware of the burning program and are educated about its importance. Ms. Ebersol then recommended that Duval County require future PUD's to mention the burn program at the preserve.

Lesley Royce (Duval Audubon Society) expressed support for the conceptual plan of providing access with minimal development. She does not recommend paving roads or parking areas in the preserve. She commented that the anticipated development of the surrounding area over the next 10 years will bring management issues and illegal uses and; therefore, she recommends more staffing.

Dick Cardell (Northeast Florida Sierra Club) appreciated the plan's discussion of the anticipated impacts as the surrounding areas become developed and he voiced support for further acquisition efforts. As a long-time resident of the area, Mr. Cardell expressed his gratitude for establishing the preserve. He then asked if user fees would be implemented. Bob Joseph said that some fees were likely.

Terry Doonan (Florida Fish and Wildlife Conservation Commission) made a few species list suggestions. Dan Pearson agreed to include a statement in the plan about the influence of the preserve on species occurring on adjacent conservation lands. Mr. Doonan asked how the management of wood stork rookeries fit into the plan. Kristin Ebersol discussed the ongoing monitoring of the wood storks. J.B. Miller suggested that page 31 include a statement specific to wood stork management. Mr. Doonan then asked why shorebirds were not included on the species list. Mr. Pearson explained that the shorebird habitat is located within the adjacent aquatic preserve and not within the boundary of the state park. Mr. Doonan suggested adding The Nature Conservancy into the state's partnership with NPS and the City of Jacksonville. He requested that the plan incorporate information identified in Florida's Wildlife Legacy Initiative. He asked why Betz-Tiger Point was identified on the Optimum Boundary Map but not Cedar Point. Brian Burket explained that the map only reflects what the Division would like to manage.

Mark Middlebrook (City of Jacksonville) noticed that the Vicinity Map, Reference Map, and Conceptual Land Use Plan did not show all of the properties owned by the City of Jacksonville or TNC within the area. He agreed to send an updated shapefile of these conservation lands. J.B. Miller suggested sending the plan to TNC for review. Mr. Middlebrook commented that Duval County will be built-out by 2020; therefore, an aggressive acquisition program is necessary to protect conservation lands. He stated that plans are being developed for a south route from Nassau to Duval County just west of Pumpkin Hill Creek Preserve to Yellow Bluff Road. He suggested that the Timucuan Trail partnership agreement be added as an appendix to the plan. He commented that the staffing problems might be solved with help from the partners. And, he suggested that the anticipated development of the surrounding area can also be viewed in positive terms, such as a source of volunteers and support for the preserve.

Mike Middlebrook (City of Jacksonville) supported the comment regarding the treatment of the cultural resources in a landscape context. He also favored leaving the park roads and parking areas unpaved, where possible.

Nicole Robinson (CAMA, Nassau River-St. Johns River Marshes Aquatic Preseve)

requested that the plan provide additional discussion about the presence and role of CAMA staff at the preserve. She pointed out that the boat shed is still being used. She also requested that the Division coordinate with CAMA before developing the proposed use areas along Pumpkin Hill Creek.

Summary of Phoned/Written Comments

Tom Larson (Northeast Florida Sierra Club) stated that he feels the vision outlined in the plan is appropriate for the preserve. He encouraged the state to closely monitor and comment on future development proposals in the vicinity of the preserve. In response to concerns over the potential impact of equestrian use on water quality, he recommended surface water monitoring as well as providing waste collection facilities in the equestrian use area.

Staff Recommendations

The staff recommends approval of the proposed management plan for Pumpkin Hill Creek Preserve State Park as presented with the following changes:

Water Quality Monitoring. The management plan will address the monitoring of water quality over time to determine the impacts of the surrounding development areas as well as equestrian use.

Species Management. The plan will include a statement about the influence of the preserve on species occurring on adjacent conservation lands. A statement specific to wood stork management will be added. And, reference to Florida's Wildlife Legacy Initiative will be inserted.

CAMA Involvement. Additional information regarding the presence and role of CAMA staff at the preserve will be included. And, a statement will be added identifying the need to coordinate with CAMA about developing the proposed use areas along Pumpkin Hill Creek.

Main Trailhead Area. Language will be added discussing the need to monitor and evaluate the proper road alignment and trailhead location.

Addendum 2—References Cited

Adamus, C., D. Clapp, and S. Brown. 1997. Surface Water Drainage Basin Boundaries, St. Johns River Water Management District: A Reference Guide. Technical Publication SJ97-1. St. Johns River Water Management District, Palatka, Florida.

Bureau of Economic and Business Research (BEBR), University of Florida. 2004. Florida Statistical Abstract 2004. Gainesville, Florida.

City of Jacksonville. 2004. City of Jacksonville 2010 Comprehensive Plan, Future Land Use Element. Jacksonville, Florida.

Florida Department of Environmental Protection (FDEP). 2004. Integrated Water Quality Assessment for Florida: 2004 305(b) Report and 303(d) List Update. FEDP Division of Water Resource Management, Bureau of Watershed Management, Tallahassee, Florida.

Florida Natural Areas Inventory and the Florida Department of Natural Resources, 1990. Guide to the natural communities of Florida. Tallahassee, FL. 111 pp.

Hilsenbeck, R. A. 2000. Brief Ecological Description of Lands within the Proposed Pumpkin Hill Creek CARL/SOR Project Boundary Amendment (Duval County, Florida). Florida Chapter of The Nature Conservancy. 8pp.

Hoenstine, R. W. 1984. Biostratigraphy of selected cores of the Hawthorn Formation in northeast and east-central Florida. Report of investigation no. 93. Bureau of Geology, Division of Resource Management, Florida Department of Natural Resources. 68p.

McGrail, L., K. Berk, D. Brandes, D. Munch, C. Neubauer, W. Osburn, D. Rao, J. Thomson, and D. Toth. 1998. St. Johns River Water Management District, *In:* Water Resources Atlas of Florida, E. Fernald and E. Purdum, eds. Florida State University Institute of Science and Public Affairs, Tallahassee, Florida.

Phelps, G.G. 1994. Water Resources of Duval County, Florida. U.S. Geological Survey. Water-Resources Investigations Report 93-4130.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions [Online WWW]. Available URL: "http://soils.usda.gov/technical/classification/osd/index.html" [Accessed 23 August 2005].

Soil Survey of City of Jacksonville, Duval County, Florida. 1998. Natural Resources Conservation Service, United States Department of Agriculture.

U. S. Department of Commerce, Bureau of the Census. 2000. U. S. Census 2000.

Vince, S. W., Humphrey, S. R., and Simons, R. W. 1989. The ecology of hydric hammocks: a community profile. U.S. Fish and Wildlife Service. Biological Report 85(7.26). 81 pp.

White, William A., 1970. The Geomorphology of the Florida peninsula: Florida Geologic Survey Bulletin no. 52, 164 p., 4pls.

Addendum 3—Soil Descriptions

(14) Boulogne fine sand, 0 to 2 percent slopes – This map unit consists of poorly drained soils located on flatwoods in the Lower Coastal Plain. It is derived from sandy marine sediments that formed linear shapes ranging from 3 to 50 acres in size. Boulogne fine sand and similar components make up 95 to 100 percent, and contrasting components make up 0 to 5 percent of the map unit.

Typically, the surface layer of the Boulogne fine sand is gray fine sand about 6 inches thick. The upper 10 inches of the subsoil is weakly developed, dark organic stained, brown fine sand that is coated with organic matter. The next 15 inches is very pale brown fine sand. The lower part of the subsoil, to a depth of 80 inches, is dark organic stained fine sand that is coated with organic matter. This part is dark reddish brown to a depth of 39 inches and black below this depth.

Boulogne soils are slowly permeable. Generally, the high water table is at a depth of 6 to 8 inches.

(22) Evergreen-Wesconnett complex, depressional, 0 to 2 percent slopes – This map unit consists of very poorly drained soils located in depressions of the Lower Coastal Plain. It is derived from decomposed organic materials underlain by thick sandy marine sediments that formed concave slopes ranging from 3 to 125 acres in size. Evergreen soils and similar components make up 63 to 65 percent, Wesconnett soil and similar components make up 33 to 35 percent, and contrasting components make up 0 to 4 percent of the map unit.

Typically, the surface layer of the Evergreen soil is black muck in the upper part, black loamy fine sand in the next part, and very dark gray fine sand in the lower part. The subsurface layer extends to a depth of about 26 inches. It is light brownish gray fine sand. The subsoil extends to a depth of about 80 inches. It is dark organic stained. It is dark reddish brown loamy fine sand in the upper part and dark reddish brown fine sand in the lower part.

Typically, the surface layer of the Wesconnett soil is black fine sand about 2 inches thick. The upper part of the subsoil, between depth of 2 and 32 inches, is fine sand. This part is black in the upper 8 inches, dark reddish brown in the lower 6 inches. Below this is a layer of pale brown fine sand about 12 inches thick. The lower part of the subsoil, between depths of 44 to 80 inches, is fine sand. The sand grains are well coated with organic matter. This part is reddish black in the upper 28 inches and very dusky red in the lower 8 inches.

Evergreen and Wesconnett soils are moderately slowly permeable to rapidly permeable. Generally, their high water tables are at or above the surface for very long periods.

(24) Hurricane and Ridgewood soils, 0 to 5 percent slopes – This map unit consists of somewhat poorly drained soils located on rises and knolls. It is derived from sandy marine sediments that formed convex slopes ranging from 3 to 150 acres in size. Hurricane soil and similar components make up 53 to 60 percent, Ridgewood soil and similar components make up 33 to 40 percent, and contrasting components make up 0 to 14 percent of the map unit.

Typically, the surface layer of the Hurricane soil is grayish brown fine sand about 5 inches thick. The subsurface layer is fine sand. It extends to a depth of about 68 inches. It is yellowish brown in the upper part, light yellowish brown in the next part, and light gray in the lower part. The subsoil extends to a depth of 80 inches or more. It is dark organic stained fine sand. It is dark

brown in the upper part and dark reddish brown in the lower part.

Typically, the surface layer of the Ridgewood soil is gray fine sand about 7 inches thick. The substratum extends to a depth of 80 inches or more. It is fine sand that is light yellowish brown in the upper part and pale brown and light gray in the lower part.

Hurricane soils are moderately rapidly permeable and rapidly permeable. Generally the high water table is at a depth of 24 to 42 inches. Ridgewood soils are rapidly permeable. Generally, the high water table is at a depth of 18 to 42 inches.

(32) Leon fine sand, 0 to 2 percent slopes – This map unit is poorly drained and occurs in nearly level flatwoods. It is derived from sandy marine sediments that have linear shape ranging from 3 to 75 acres in size. Leon soil and similar components make up 89 to 98 percent of the map unit.

Typically, the surface layer is fine sand about 8 inches thick. In the upper 5 inches it is very dark gray, and in the lower 3 inches it is dark gray. The subsurface layer is gray fine sand about 10 inches thick. The subsoil is fine sand that extends to a depth of more than 80 inches. It is dark organic stained fine sand that is coated with organic matter. It is black between the depths of 18 and 26 inches, very dark gray between depths of 26 and 37 inches, dark brown between depths of 37 and 45 inches, and dark reddish brown between depths of 45 and 80 inches.

The soils are slowly permeable to moderately rapidly permeable. In areas in flatwoods, the high water table generally is at a depth of 6 to 18 inches.

(33) Leon fine sand, 0 to 2 percent slopes, very frequently flooded – This map unit consists of very poorly drained soils located in tidal marshes of the Lower Coastal Plain. It is derived from sandy marine sediments that formed linear shapes ranging from 3 to 50 acres in size. Leon fine sand and similar components make up 88 to 100 percent, and contrasting components make up 0 to 12 percent of the map unit.

Typically, the surface layer is fine sand about 8 inches thick. In the upper 5 inches it is very dark gray, and in the lower 3 inches it is dark gray. The subsurface layer is gray fine sand about 10 inches thick. The subsoil is fine sand that extends to a depth of more than 80 inches. It is dark organic stained fine sand that is coated with organic matter. It is black between the depths of 18 and 26 inches, very dark gray between depths of 26 and 37 inches, dark brown between depths of 37 and 45 inches, and dark reddish brown between depths of 45 and 80 inches.

Leon fine sands are slowly permeable to moderately rapidly permeable. In areas in flatwoods, the high water table generally is at a depth of 6 to 18 inches. In tidal areas, the high water table generally is at or near the surface and the areas are flooded twice daily by fluctuating tides for very brief periods. .

(35) Lynn Haven fine sand, 0 to 2 percent slopes – This map unit is very poorly drained and is located on the flats and in seep areas on side slopes. It is derived from sandy marine sediments that have concave slopes ranging from 3 to 75 acres in size. Lynn Haven soil and similar components make up 85 to 100 percent of the map unit.

Typically, the surface layer is fine sand about 13 inches thick. In the upper 7 inches it is black, and in the lower 6 inches it is very dark gray. The subsurface layer is mixed light gray and gray fine sand about 8 inches thick. The subsoil is fine sand that extends to a depth of more than 80 inches and is coated with organic matter. It is black between the depths of 21 and 35 inches, dark reddish brown between depths of 35 and 62inches, and dark brown between depths of 62 and 80 inches.

The soils are moderately permeable and moderately rapidly permeable. Generally, the high water table is at or near the surface.

(36) Mandarin fine sand, 0 to2 percent slopes – This map unit is somewhat poorly drained and occurs in the slightly elevated, nearly level flatwoods of the Lower Coastal Plain. It is derived from sandy marine sediments which form a convex shape ranging from 3 to 100 acres in size. Mandarin soil and similar components make up 85 to 93 percent of the map unit.

Typically, the surface layer is dark gray fine sand about 4 inches thick. The subsurface layer is fine sand about 22 inches thick. The upper 4 inches is light brownish gray, and the lower 18 inches is light gray. The subsoil is dark organic stained fine sand that extends to a depth of 46 inches. The sand grains are coated with organic matter. The subsoil is very dark grayish brown between depths of 26 and 30 inches, very dark brown between depths of 30 and 35 inches, black between depths of 35 to 40 inches, and brown between depths of 40 to 46 inches. Below this, to a depth of 56 inches, is light gray fine sand. The next 6 inches is white fine sand, and the next 11 inches is grayish brown fine sand. Between the depth of 73 and 80 inches are weakly cemented, black fine sand, and the sand grains are coated with organic matter.

The soils are moderately permeable. Generally, the high water table is at a depth of 18 to 42 inches.

(46) Ortega fine sand, 0 to 5 percent slopes - The Ortega soils are moderately well drained and occur on nearly level and gently sloping rises and knolls. Individual areas arise from sandy marine sediments which are convex in shape and range from 3 to 85 acres in size. Ortega soil and similar components consist of 88 to 98 percent of the map unit.

Typically, the surface layer is grayish brown fine sand about 5 inches thick. Below this to a depth of 48 inches is very pale brown fine sand. The next layer is white fine sand to a depth of 63 inches and very pale brown sand between depths of 63 and 80 inches or more.

The soils are rapidly permeable. Generally, the high water table is at a depth of 42 to 72 inches.

(49) Pamlico muck, depressional, 0 to 1 percent slopes - This map unit consists of very poorly drained soils located in depressions of the Lower Coastal Plain. It is derived from decomposed organic materials that formed concave slopes ranging from 3 to 100 acres in size. Leon fine sand and similar components make up 85 to 97 percent, and contrasting components make up 3 to 15 percent of the map unit.

Typically, the surface layer is black, well decomposed muck about 6 inches thick. It overlies 24 inches of very dusky red muck. Below this is a layer of dark brown muck that extends to a depth of 35 inches. The next layer is very dark grayish brown fine sand about 25 inches thick. Below

this, to a depth of 80 inches or more, is a layer of dark brown fine sand.

Pamlico muck soils are moderately rapidly permeable. In areas of the floodplain, the high water table generally is at or near the surface and the areas is frequently flooded for brief periods. In areas of depressions, the high water table is generally at or above the surface for very long periods.

(58) Pottsburg fine sand, high, 0 to 3 percent slopes – This map unit is nearly level, somewhat poorly drained soil on the flatwoods at slightly higher elevations than the surrounding soils. Individual areas arise from sandy marine sediments which are convex in shape and range from 3 to 150 acres in size. Pottsburg soil and similar components consist of 88 to 93 percent of the map unit.

Typically, the surface layer is gray fine sand about 3 inches thick. The subsurface layer extends to a depth of 57 inches. It is brown fine sand 7 inches thick, grayish brown fine sand 24 inches thick, and light gray fine sand 23 inches thick. The subsoil, between depths of 57 and 80 inches, is dark reddish brown fine sand that is weakly cemented and well-coated with organic matter.

These soils are moderately permeable generally the high water table is at a depth of 6 to 24 inches.

(62) Rutlege mucky fine sand, 0 to 2 percent slopes, frequently flooded – This map unit consists of very poorly drained soils located on flood plains of the Lower Coastal Plain. It is derived from sandy marine sediments that formed concave slopes ranging from 3 to 100 acres in size. Leon fine sand and similar components make up 85 to 100 percent, and contrasting components make up 0 to 15 percent of the map unit.

Typically, the surface layer is black mucky fine sand in the upper 10 inches and dark gray fine sand in the lower 4 inches. The subsurface layer is very dark gray fine sand about 4 inches thick. The subsoil extends to a depth of 80 inches. It is dark gray fine sand in the upper park, gray fine sand in the middle part, and light gray in the lower part.

Rutlege mucky fine sands are rapidly permeable. Generally, the high water table is at or above the surface, and areas are subject to frequent flooding for brief periods.

(66) Surrency loamy fine sand, depressional, 0 to 2 percent slopes – This map unit consists of very poorly drained soils located on depressions of the Lower Coastal Plain. It is derived from sandy and loamy sediments that formed concave slopes ranging from 3 to 80 acres in size. Leon fine sand and similar components make up 85 to 100 percent, and contrasting components make up 0 to 15 percent of the map unit.

Typically, the surface layer is about 18 inches thick. It is loamy fine sand in the upper 14 inches and dark brown fine sand in the lower 4 inches. The subsurface layer is light brownish gray fine sand about 8 inches thick. The subsoil occurs between depths of 26 and 70 inches. It is fine sandy loam. It is dark grayish brown in the upper 12 inches, dark gray in the next 11 inches, and greenish gray in the lower 21 inches. Below this, to a depth of 80 inches or more, is greenish gray sandy clay loam.

Surrency loamy fine sands are moderately permeable and moderately slowly permeable. In areas on floodplains, the high water table generally is at or near the surface and the areas are subject o frequent flooding for brief periods. In areas in depressions, the high water table generally is at or above the soil surface for very long periods.

(67) Surrency loamy fine sand, 0 to 2 percent slopes, frequently flooded - This map unit consists of very poorly drained soils located in flood plains of the Lower Coastal Plain. It is derived from sandy and loamy sediments that formed concave slopes ranging from 3 to 100 acres in size. Leon fine sand and similar components make up 86 to 97 percent and contrasting components make up 3 to 14 percent of the map unit.

Typically, the surface layer is about 18 inches thick. It is loamy fine sand in the upper 14 inches and dark brown fine sand in the lower 4 inches. The subsurface layer is light brownish gray fine sand about 8 inches thick. The subsoil occurs between depths of 26 and 70 inches. It is fine sandy loam. It is dark grayish brown in the upper 12 inches, dark gray in the next 11 inches, and greenish gray in the lower 21 inches. Below this, to a depth of 80 inches or more, is greenish gray sandy clay loam.

Surrency loamy fine sands are moderately permeable and moderately slowly permeable. In areas on floodplains, the high water table generally is at or near the surface and the areas are subject o frequent flooding for brief periods. In areas in depressions, the high water table generally is at or above the soil surface for very long periods.

(68) Tisonia mucky peat, 0 to 1 percent slopes, very frequently flooded - This map unit consists of level to nearly level, very poorly drained soil on tidal marshes. Individual areas arise from partly decomposed organic materials that are linear in shape and range from 10 to 1,000 acres or more in size. Tisonia soil and similar components comprise 95 to 100 percent of the map unit.

Typically, the surface layer is dark grayish brown mucky peat about 18 inches thick. It is underlain by dark olive gray clay that extends to a depth of 65 inches or more.

These soils are very slowly permeable. The high water table generally is at or near the surface, and areas are flooded twice daily by fluctuating tides for very brief periods.

Addendum 4—Plant And Animal List

Pumpkin Hill Creek Preserve State Park Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
	BRYOPHYTES	
	Sphagnum sp.	
	PTERIDOPHYTES	
Cinnamon fern	*Osmunda cinnamomea*	41,25
Resurrection fern	*Pleopeltis polypodioides*	
Bracken	*Pteridium aquilinum*	
Virginia chain fern	*Woodwardia virginica*	
	GYMNOSPERMS	
Red cedar	*Juniperus virginiana*	
Slash pine	*Pinus elliottii*	
Longleaf pine	*Pinus palustris*	
Pond pine	*Pinus serotina*	
Loblolly pine	*Pinus taeda*	
Pond-cypress	*Taxodium ascendens*	
Bald-cypress	*Taxodium distichum*	
	ANGIOSPERMS	
Monocots		
Meadow garlic	*Allium canadense*	
Broomsedge bluestem	*Andropogon virginicus*	
Bottlebrush threeawn	*Aristida spiciformis*	
Wiregrass	*Aristida stricta* var. *beyrichiana*	
Whitemouth dayflower	*Commelina erecta*	
Dayflower	*Commelina* sp.	
Fragrant flatsedge	*Cyperus odoratus*	
Common water-hyacinth *	*Eichhornia crassipes*	
Centipedegrass *	*Eremochloa ophiuroides*	
Tenangle pipewort	*Eriocaulon decangulare*	
Fringed yellow stargrass	*Hypoxis juncea*	
Virginia iris	*Iris virginica*	
Carolina redroot	*Lachnanthes caroliana*	
Whitehead bogbutton	*Lachnocaulon anceps*	
Common duckweed	*Lemna minor*	
Duckweed	*Lemna* sp.	
Beaked panicum	*Panicum anceps*	
Maidencane	*Panicum hemitomon*	
Warty panicgrass	*Panicum verrucosum*	
Vaseygrass	*Paspalum urvillei*	
Florida needlegrass	*Piptochaetium avenacioides*	

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Rosebud orchid	*Pogonia divaricata*	8
Narrowfruit horned beaksedge	*Rhynchospora inundata*	
Cabbage palm	*Sabal palmetto*	
Saw palmetto	*Serenoa repens*	
Annual blueeyed grass *	*Sisyrinchium rosulatum*	
Earleaf greenbrier	*Smilax auriculata*	
Saw greenbrier	*Smilax bona-nox*	
Wild sarsaparilla	*Smilax glauca*	
Laurel greenbrier	*Smilax laurifolia*	
Lopsided Indiangrass	*Sorghastrum secundum*	
Saltmeadow cordgrass	*Spartina patens*	
Cordgrass	*Spartina* sp.	
Greenvein ladiestresses	*Spiranthes praecox*	
Ladiestresses	*Spiranthes* spp.	
Spring ladiestresses	*Spiranthes vernalis*	
Crowpoison	*Stenanthium densum*	
Yellow hatpins	*Syngonanthus flavidulus*	
Spanish moss	*Tillandsia usneoides*	
Ohio spiderwort	*Tradescantia ohiensis*	
Carolina yelloweyed grass	*Xyris caroliniana*	
Yelloweyed grass	*Xyris* sp.	
Adam's needle	*Yucca filamentosa*	
Dicots		
Velvetleaf *	*Abutilon theophrasti*	
Red maple	*Acer rubrum*	
Purple false foxglove	*Agalinis purpurea*	
False foxglove	*Agalinis* sp.	
Mimosa *	*Albizia julibrissin*	
False indigobush	*Amorpha fruticosa*	
Devil's walkingstick	*Aralia spinosa*	
Butterflyweed	*Asclepias tuberosa*	
Savannah milkweed	*Asclepias pedicellata*	
Whorled milkweed	*Asclepias verticillata*	
Smallflower pawpaw	*Asimina parviflora*	
Dwarf pawpaw	*Asimina pygmea*	
Netted pawpaw	*Asimina reticulata*	
Sea myrtle	*Baccharis halimifolia*	
Gopherweed	*Baptisia lanceolata*	
White screwstem	*Bartonia verna*	
Saltwort	*Batis maritima*	
Tarflower	*Bejaria racemosa*	
Greeneyes	*Berlandiera* sp.	
Florida greeneyes	*Berlandiera subacaulis*	
Beggarticks	*Bidens alba* var. *radiata*	

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Smallfruit beggarticks	*Bidens mitis*	
Pineland rayless goldenrod	*Bigelowia nudata*	
Crossvine	*Bignonia capreolata*	
Bushy seaside oxeye	*Borrichia frutescens*	
Paper mulberry *	*Broussonetia papyrifera*	
American bluehearts	*Buchnera americana*	
American beautyberry	*Callicarpa americana*	
Trumpet creeper	*Campsis radicans*	
Coastalplain chaffhead	*Carphephorus corymbosus*	
Vanillaleaf	*Carphephorus odoratissimus*	
Hairy chaffhead	*Carphephorus paniculatus*	
Pignut hickory	*Carya glabra*	
Chinquapin	*Castanea pumila*	
Sugarberry	*Celtis laevigata*	
Spurred butterfly pea	*Centrosema virginianum*	
Common buttonbush	*Cephalanthus occidentalis*	
Sensitive pea	*Chamaecrista nictitans*	
Spotted sandmat	*Chamaesyce maculata*	
Maryland goldenstar	*Chrysopsis mariana*	
Spotted water hemlock	*Cicuta maculata*	
Swamp leather-flower	*Clematis crispa*	
Atlantic pigeonwings	*Clitoria mariana*	
Tread-softly	*Cnidoscolus stimulosus*	
Blue mistflower	*Conoclinium coelestinum*	
Coastalplain tickseed	*Coreopsis gladiata*	
Flowering dogwood	*Cornus florida*	
Lanceleaf rattlebox	*Crotalaria lanceolata*	
Jimsonweed	*Datura stramonium*	
Ticktrefoil	*Desmodium* sp.	
Witchgrass	*Dichanthelium* sp.	
Poor joe	*Diodia teres*	
Virginia buttonweed	*Diodia virginiana*	
Common persimmon	*Diospyros virginiana*	
Dwarf sundew	*Drosera brevifolia*	
Pink sundew	*Drosera capillaris*	
Tall elephantsfoot	*Elephantopus elatus*	
American burnweed	*Erechtites hieraciifolius*	
Oakleaf fleabane	*Erigeron quercifolius*	
Prairie fleabane	*Erigeron strigosus*	
Fragrant eryngo	*Eryngium aromaticum*	
Eryngo	*Eryngium* sp.	
Coralbean	*Erythrina herbacea*	
Dogfennel	*Eupatorium capillifolium*	
Roundleaf thoroughwort	*Eupatorium rotundifolium*	
Lateflowering thoroughwort	*Eupatorium serotinum*	

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Eupatorium	*Eupatorium* sp.	
Slender flattop goldenrod	*Euthamia caroliniana*	
Firewheel	*Gaillardia pulchella*	
Elliott's milkpea	*Galactia elliottii*	
Stiff marsh bedstraw	*Galium tinctorium*	
Goosegrass	*Galium aparine*	
Southern beeblossom	*Gaura angustifolia*	
Huckleberry	*Gaylussacia* sp.	
Yellow jessamine	*Gelsemium sempervirens*	
Carolina cranesbill	*Geranium carolinianum*	
Loblolly bay	*Gordonia lasianthus*	
Rough hedgehyssop	*Gratiola hispida*	
Two-wing silverbell	*Halesia diptera*	
Spanish daisy	*Helenium amarum*	
Florida sunflower	*Helianthus floridanus*	
Stiff sunflower	*Helianthus radula*	
Innocence	*Houstonia procumbens*	
Manyflower marshpennywort	*Hydrocotyle umbellata*	
Marshpennywort	*Hydroctyle* sp.	
St. Peter's-wort	*Hypericum crux-andreae*	
St. Andrew's-cross	*Hypericum hypericoides*	
Myrtleleaf St.John's-wort	*Hypericum myrtifolium*	
Atlantic St.Johns-Wort	*Hypericum reductum*	
Sandweed	*Hypericum fasciculatum*	
Fourpetal St.John's-wort	*Hypericum tetrapetalum*	
Dahoon	*Ilex cassine*	
Myrtle dahoon	*Ilex cassine* var. *myrtifolia*	
Gallberry	*Ilex glabra*	
American holly	*Ilex opaca*	
Holly	*Ilex* sp.	
Yaupon	*Ilex vomitoria*	
Scarletcreeper	*Ipomoea hederifolia*	
Oceanblue morning-glory	*Ipomoea indica* var. *acuminata*	
Cypressvine *	*Ipomoea quamoclit*	
Virginia willow	*Itea virginica*	
Wicky	*Kalmia hirsuta*	
Virginia dwarfdandelion	*Krigia virginica*	
Canada lettuce	*Lactuca canadensis*	
Grassleaf lettuce	*Lactuca graminifolia*	
Lantana *	*Lantana camara*	
Virginia pepperweed	*Lepidium virginicum*	
Swamp doghobble	*Leucothoe racemosa*	
Slender gayfeather	*Liatris gracilis*	
Gayfeather	*Liatris* sp.	
Gopher apple	*Licania michauxii*	

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Japanese privet *	*Ligustrum japonicum*	
Carolina sealavender	*Limonium carolinianum*	
Canadian toadflax	*Linaria canadensis*	
Sweetgum	*Liquidambar styraciflua*	
Pondspice	*Litsea aestivalis*	29
Japanese honeysuckle *	*Lonicera japonica*	
Coral honeysuckle	*Lonicera sempervirens*	
Seedbox	*Ludwigia alternifolia*	
Wingleaf primrosewillow	*Ludwigia decurrens*	
Seaside primrosewillow	*Ludwigia maritima*	
Mexican primrosewillow	*Ludwigia octovalvis*	
Primrosewillow	*Ludwigia* sp.	
Savannah primrosewillow	*Ludwigia virgata*	
Skyblue lupine	*Lupinus diffusus*	
Christmasberry	*Lycium carolinianum*	
Rose-rush	*Lygodesmia aphylla*	
Rusty staggerbush	*Lyonia ferruginea*	
Coastalplain staggerbush	*Lyonia fruiticosa*	
Fetterbush	*Lyonia lucida*	
Piedmont staggerbush	*Lyonia mariana*	
Southern magnolia	*Magnolia grandiflora*	
Black medick *	*Medicago lupulina*	
Chinaberrytree *	*Melia azedarach*	
Noyau vine *	*Merremia dissecta*	
Climbing hempvine	*Mikania scandens*	
Sensitive brier	*Mimosa quadrivalvis*	
Wax myrtle	*Myrica cerifera*	
American white waterlily	*Nymphaea odorata*	
Tupelo	*Nyssa sp.*	
Swamp tupelo	*Nyssa sylvatica*	
Cutleaf eveningprimrose	*Oenothera laciniata*	
Pricklypear	*Opuntia humifusa*	
Wild olive	*Osmanthus americanus*	
Common yellow woodsorrel	*Oxalis corniculata*	
Woodsorrel	*Oxalis* sp.	
Coastalplain palafox	*Palafoxia integrifolia*	
Swamp bay	*Persea palustris*	
Red chokeberry	*Photinia pyrifolia*	
Blueflower butterwort	*Pinguicula caerulea*	8,41
Small butterwort	*Pinguicula pumila*	
Narrowleaf silkgrass	*Pityopsis graminifolia*	
Sweetscent	*Pluchea odorata*	
Orange milkwort	*Polygala lutea*	
Candyroot	*Polygala nana*	
Coastalplain milkwort	*Polygala setacea*	

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Showy milkwort	*Polygala violacea*	
Tall jointweed	*Polygonella gracilis*	
Swamp smartweed	*Polygonum hydropiperoides*	
Knotweed	*Polygonum* sp.	
Carolina laurelcherry	*Prunus caroliniana*	
Black cherry	*Prunus serotina*	
Blackroot	*Pterocaulon pycnostachyum*	
Mock Bishopsweed	*Ptilimnium capillaceum*	
Carolina desertchicory	*Pyrrhopappus carolinianus*	
Chapman's oak	*Quercus chapmanii*	
Sand live oak	*Quercus geminata*	
Bluejack oak	*Quercus incana*	
Turkey oak	*Quercus laevis*	
Laurel oak	*Quercus laurifolia*	
Myrtle oak	*Quercus myrtifolia*	
Water oak	*Quercus nigra*	
Savannah meadowbeauty	*Rhexia alifanus*	
Pale meadowbeauty	*Rhexia mariana*	
Handsome Harry	*Rhexia virginica*	
Meadowbeauty	*Rhexia sp.*	
Sweet pinxter azalea	*Rhododendron canescens*	8,31
Starrush whitetop	*Rhynchospora colorata*	
Tropical Mexican clover *	*Richardia brasiliensis*	
Sawtooth blackberry	*Rubus argutus*	
Shortleaf rosegentian	*Sabatia brevifolia*	
Rosegentian	*Sabatia* sp.	
Rose-of-Plymouth	*Sabatia stellaris*	
Annual glasswort	*Salicornia bigelovii*	
Lyreleaf sage	*Salvia lyrata*	
Elderberry	*Sambucus nigra* subsp. *canadensis*	
Chinese tallowtree *	*Sapium sebiferum*	
Perennial glasswort	*Sarcocornia perennis*	
Hooded pitcherplant	*Sarracenia minor*	8
Sassafras	*Sassafras albidum*	
Lizard's tail	*Saururus cernuus*	
Helmet skullcap	*Scutellaria integrifolia*	
Coffeeweed *	*Senna obtusifolia*	
Danglepod	*Sesbania herbacea*	
Rattlebox *	*Sesbania punicea*	
Bladderpod	*Sesbania vesicaria*	
Yaupon blacksenna	*Seymeria cassioides*	
Indian hemp	*Sida rhombifolia*	
American black nightshade	*Solanum americanum*	
Chapman's goldenrod	*Solidago odora* var. *chapmanii*	
Goldenrod	*Solidago* sp.	

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Betony	*Stachys* sp.	
Florida Betony	*Stachys floridana*	
Queensdelight	*Stillingia sylvatica*	
Trailing fuzzybean	*Strophostyles helvola*	
Perennial saltmarsh aster	*Symphyotrichum tenuifolium*	
Walter's aster	*Symphyotrichum walteri*	
Common dandelion	*Taraxacum officinale*	
Florida hoarypea	*Tephrosia florida*	
Field pennycress *	*Thlaspi arvense*	
Torrenia *	*Torrenia sp.*	
Eastern poison ivy	*Toxicodendron radicans*	
Virginia marsh St. John's-wort	*Triadenum virginicum*	
White clover *	*Trifolium repens*	
Clasping Venus's lookingglass	*Triodanis perfoliata*	
American elm	*Ulmus americana*	
Little floating bladderwort	*Utricularia radiata*	
Bladderwort	*Utricularia* sp.	
Floating bladderwort	*Utricularia inflata*	
Zigzag bladderwort	*Utricularia subulata*	
Sparkleberry	*Vaccinium arboreum*	
Highbush blueberry	*Vaccinium corymbosum*	
Shiny blueberry	*Vaccinium myrsinites*	
Mullein	*Verbascum* sp.	
White crownbeard	*Verbesina virginica*	
Tall ironweed	*Vernonia angustifolia*	
Hairypod cowpea	*Vigna luteola*	
Bog white violet	*Viola lanceolata*	
Violet	*Viola* sp.	
Muscadine	*Vitis rotundifolia*	
Chinese wisteria *	*Wisteria sinensis*	

*** Non-native Species**

Pumpkin Hill Creek Preserve State Park Plants

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

* Non-native Species

Pumpkin Hill Creek Preserve State Park Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
	AMPHIBIANS	
Salamanders		
Dwarf salamander +	*Eurycea quadridigitata*	8,41,31,33,35
Central newt +	*Notophthalmus viridescens louisianensis*	25,31,35
Striped newt	*Notophthalmus perstriatus*	29,25
Frogs and Toads		
Florida cricket frog +	*Acris gryllus dorsalis*	8,31,41,29
Southern toad +	*Bufo terrestris*	8,35,31
Greenhouse frog * +	*Eleutherodactylus planirostris*	8,35,41
Eastern narrow-mouthed toad +	*Gastrophryne carolinensis*	29,8,41
Green treefrog +	*Hyla cinerea*	25,35,31,29
Pine woods treefrog	*Hyla femoralis*	8,41,29
Squirrel treefrog +	*Hyla squirella*	8,41,25,29
Little grass frog +	*Pseudacris ocularis*	8,41,29
Bullfrog +	*Rana catesbeiana*	33,35,46
Bronze frog +	*Rana clamitans clamitans*	25,33,46
Pig frog +	*Rana grylio*	29,25,46
Southern leopard frog	*Rana sphenocephala*	25,29,46
Eastern spadefoot toad	*Scaphiopus holbrookii holbrookii*	8,13
	REPTILES	
Crocodilians		
American alligator	*Alligator mississippiensis*	29,46
Turtles		
Florida softshell turtle +	*Trionyx ferox*	29,46
Snapping turtle +	*Chelydra serpentina*	25,46
Chicken turtle	*Deirochelys recticularia*	29,46,8
Gopher tortoise	*Gopherus polyphemus*	8,13,15
Cooter +	*Pseudemys floridana*	29,46,53
Florida red-bellied turtle +	*Pseudemys nelsoni*	46,53
Common musk turtle +	*Sternotherus odoratus*	29,25,46,53
Florida box turtle +	*Terrapene carolina bauri*	8,41,35,31
Red-eared slider *	*Trachemys scripta elegans*	29,25,46,53
Lizards		
Green anole +	*Anolis carolinensis*	8,41
Brown anole * +	*Anolis sagrei*	82
Six-lined racerunner +	*Cnemidophorus sexlineatus sexlineatus*	13,15
Southeastern five-lined skink +	*Eumeces inexpectatus*	8,21
Broad-headed skink +	*Eumeces laticeps*	35,31,21
Eastern glass lizard +	*Ophisaurus ventralis*	8,41

*** Non-native Species**

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Southern fence lizard +	*Sceloporus undulatus undulatus*	13,15
Ground skink	*Scincella lateralis*	8,35,31
Snakes		
Florida cottonmouth	*Agkistrodon piscivorous conanti*	25,34,33
Scarlet snake +	*Cemophora coccinea*	8,13,15
Southern black racer	*Coluber constrictor priapus*	8,13
Eastern diamondback rattlesnake	*Crotalus adamanteus*	8,41,13
Southern ringneck snake +	*Diadophis punctatus punctatus*	8,35
Eastern indigo snake	*Drymarchon corias couperi*	8,13,15,35
Corn snake +	*Elaphe guttata guttata*	8,41,13
Yellow rat snake +	*Elaphe obsoleta quadrivittata*	8,35,31
Banded water snake +	*Nerodia fasciata fasciata*	29,33,25,46
Rough green snake +	*Opheodrys aestivus aestivus*	31,35
Pine woods snake +	*Rhadinaea flavilata*	8,41,13
North Florida swamp snake +	*Seminatrix pygaea pygaea*	31,33,29,41
Florida red belly snake +	*Storeria occipitomaculata obscura*	35,21
Eastern garter snake	*Thamnophis sirtalis sirtalis*	8,41,31
Dusky pygmy rattlesnake	*Sistrurus miliarus barbouri*	8,41,13

+ Species documented within Timucuan Ecological and Historic Preserve,but not yet recorded within Pumpkin Hill Creek Preserve State Park.

BIRDS

Ducks and Geese		
Canada Goose	*Branta canadensis*	OF
Turkey and Quail		
Northern Bobwhite	*Colinus virginianus*	13,81
Herons and Bitterns		
Great Egret	*Ardea alba*	29,63
Great Blue Heron	*Ardea herodias*	29,63
Little Blue Heron	*Egretta caerulea*	29,63
Snowy Egret	*Egretta thula*	63
Tricolored Heron	*Egretta tricolor*	63
Ibises and Spoonbills		
White Ibis	*Eudocimus albus*	29,63
Roseate Spoonbill	*Platalea ajaja*	63
Storks		
Wood Stork	*Mycteria americana*	25,29,30

*** Non-native Species**

Pumpkin Hill Creek Preserve State Park Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Vultures		
Turkey Vulture	*Cathartes aura*	8,15,OF
Black Vulture	*Coragyps atratus*	8,15,OF
Hawks,Eagles,Falcons and Kites		
Sharp-shinned Hawk	*Accipiter striatus*	MTC,OF
Red-tailed Hawk	*Buteo jamaicensis*	13,22,OF
Red-shouldered Hawk	*Buteo lineatus*	25,28,33,OF
Peregrine Falcon	*Falco peregrinus*	OF
Bald Eagle	*Haliaeetus leucocephalus*	25,OF
Osprey	*Pandion haliaetus*	46,OF
Rails		
Clapper Rail	*Rallus longirostris*	63
Shorebirds		
American Oystercatcher	*Haematopus palliatus*	63
Black-bellied Plover	*Pluvialis squatarola*	63
Greater Yellowlegs	*Tringa melanoleuca*	63
Doves		
Common Ground-Dove	*Columbina passerina*	8,13
Mourning Dove	*Zenaida macroura*	MTC
Owls		
Barred Owl	*Strix varia*	25,30,33
Goatsuckers and Swifts		
Chimney Swift	*Chaetura pelagica*	OF
Kingfishers		
Belted Kingfisher	*Ceryle alcyon*	46,53,63
Woodpeckers		
Pileated Woodpecker	*Dryocopus pileatus*	MTC
Red-bellied Woodpecker	*Melanerpes carolinus*	MTC
Downy Woodpecker	*Picoides pubescens*	MTC
Yellow-bellied Sapsucker	*Sphyrapicus varius*	7,21,28
Flycatchers		
Eastern Wood-Pewee	*Contopus virens*	13
Great Crested Flycatcher	*Myiarchus crinitus*	13,21,25
Eastern Phoebe	*Sayornis phoebe*	MTC

*** Non-native Species**

Pumpkin Hill Creek Preserve State Park Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Shrikes		
Loggerhead Shrike	*Lanius ludovicianus*	13
Vireos		
White-eyed Vireo	*Vireo griseus*	8,15
Jays and Crows		
American Crow	*Corvus brachyrhynchos*	MTC
Blue Jay	*Cyanocitta cristata*	MTC
Martins and Swallows		
Tree Swallow	*Tachycineta bicolor*	OF
Titmice		
Tufted Titmouse	*Baeolophus bicolor*	MTC
Carolina Chickadee	*Poecile carolinensis*	13,21
Nuthatches		
Brown-headed Nuthatch	*Sitta pusilla*	8
Wrens		
Carolina Wren	*Thryothorus ludovicianus*	MTC
House Wren	*Troglodytes aedon*	8,81
Marsh Wren	*Cistothorus palustris*	8,13
Gnatcatchers and Kinglets		
Ruby-crowned Kinglet	*Regulus calendula*	MTC
Thrushes		
Hermit Thrush	*Catharus guttatus*	21,28
Eastern Bluebird	*Sialia sialis*	8,13
Mimids		
Gray Catbird	*Dumetella carolinensis*	8,15,81
Northern Mockingbird	*Mimus polyglottos*	13,81,82
Brown Thrasher	*Toxostoma rufum*	8,81
Warblers		
Yellow-rumped Warbler	*Dendroica coronata*	MTC
Palm Warbler	*Dendroica palmarum*	8,13
Pine Warbler	*Dendroica pinus*	8,13
Common Yellowthroat	*Geothlypis trichas*	8,29,30,63
Northern Parula	*Parula americana*	MTC
Black-and-white Warbler	*Mniotilta varia*	21,28,35
American Redstart	*Setophaga ruticilla*	21,28,35

*** Non-native Species**

Pumpkin Hill Creek Preserve State Park Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Orange-crowned Warbler	*Vermivora celata*	13,21,28
Sparrows,Towhees and Juncos		
Seaside Sparrow	*Ammodramus maritimus*	63
Eastern Towhee	*Pipilo erythrophthalmus*	8,13,15
Chipping Sparrow	*Spizella passerina*	13,81
Cardinals,Grosbeaks,and Buntings		
Northern Cardinal	*Cardinalis cardinalis*	MTC
Indigo Bunting	*Passerina cyanea*	13
Painted Bunting	*Passerina ciris*	7
Meadowlarks,Blackbirds and Orioles		
Red-winged Blackbird	*Agelaius phoeniceus*	25,29,30,33
Common Grackle	*Quiscalus quiscula*	13,81,82
Finches and Old World Sparrow		
American Goldfinch	*Carduelis tristis*	MTC
MAMMALS		
Didelphids		
Opossum	*Didelphis virginiana*	MTC
Edentates		
Nine-banded armadillo *	*Dasypus novemcinctus*	MTC
Rodents		
Gray squirrel	*Sciurus carolinensis*	MTC
Sherman's fox squirrel	*Sciurus niger shermani*	13,8
Carnivores		
Bobcat	*Felis rufus*	MTC
River otter	*Lutra canadensis*	50,51,53
Raccoon	*Procyon lotor*	MTC
Grey fox	*Urocyon cinereoargenteus*	8,21,22
Artiodactyls		
White-tailed deer	*Odocoileus virginianus*	MTC
Wild pig *	*Sus scrofa*	MTC

*** Non-native Species**

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

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

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

Lacustrine—Continued
47. Marsh Lake
48. River Floodplain Lake
49. Sandhill Upland Lake
50. Sinkhole Lake
51. Swamp Lake

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

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

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

Subterranean
79. Aquatic Cave
80. Terrestral Cave

Miscellaneous
81. Ruderal
82. Developed

MTC Many Types Of Communities
OF Overflying

Addendum 5—Designated Species List

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

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

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

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

FNAI GLOBAL RANK DEFINITIONS

G1	=	Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
G2	=	Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3	=	Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
G4	=	apparently secure globally (may be rare in parts of range)
G5	=	demonstrably secure globally
GH	=	of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
GX	=	believed to be extinct throughout range
GXC	=	extirpated from the wild but still known from captivity or cultivation
G#?	=	tentative rank (e.g.,G2?)
G#G#	=	range of rank; insufficient data to assign specific global rank (e.g., G2G3)
G#T#	=	rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1)
G#Q	=	rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q)
G#T#Q	=	same as above, but validity as subspecies or variety is questioned.
GU	=	due to lack of information, no rank or range can be assigned (e.g., GUT2).
G?	=	not yet ranked (temporary)
S1	=	Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
S2	=	Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3	=	Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
S4	=	apparently secure in Florida (may be rare in parts of range)
S5	=	demonstrably secure in Florida
SH	=	of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
SX	=	believed to be extinct throughout range
SA	=	accidental in Florida, i.e., not part of the established biota
SE	=	an exotic species established in Florida may be native elsewhere in North America
SN	=	regularly occurring, but widely and unreliably distributed; sites for conservation hard to determine
SU	=	due to lack of information, no rank or range can be assigned (e.g., SUT2).
S?	=	not yet ranked (temporary)
N	=	Not currently listed, nor currently being considered for listing,by state or federal agencies.

LEGAL STATUS

FEDERAL **(Listed by the U. S. Fish and Wildlife Service - USFWS)**

LE	=	Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species that is in danger of extinction throughout all or a significant portion of its range.
PE	=	Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.
LT	=	Listed as Threatened Species. Defined as any species that is likely to become an endangered species within the near future throughout all or a significant portion of its range.
PT	=	Proposed for listing as Threatened Species.
C	=	Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants. Defined as those species for which the USFWS currently has on file sufficient information on biological vulnerability and threats to support proposing to list the species as endangered or threatened.
E(S/A)	=	Endangered due to similarity of appearance.
T(S/A)	=	Threatened due to similarity of appearance.

STATE

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

LE	=	Listed as Endangered Species by the FFWCC. Defined as a species, subspecies, or isolated population which is so rare or depleted in number or so restricted in range of habitat due to any man-made or natural factors that it is in immediate danger of extinction or extirpation from the state, or which may attain such a status within the immediate future.
LT	=	Listed as Threatened Species by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.
LS	=	Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species.

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

LE	=	Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all species determined to be endangered or threatened pursuant to the Federal Endangered Species Act of 1973,as amended.
LT	=	Listed as Threatened Plants in the Preservation of Native Flora of Florida Act. Defined as species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in such number as to cause them to be endangered.

Pumpkin Hill Creek Preserve State Park Designated Species—Plants

Common Name/ ***Scientific Name***	**Designated Species Status** **FDACS**	**USFWS**	**FNAI**
Pond spice			
Litsea aestivalis	E		G3, S2
Cinnamon fern			
Osmunda cinnamona	CE		
Blue butterwort			
Pinguicula caerulea	T		
Rosebud orchid			
Pogonia divaricata	T		G4, S1
Hooded pitcherplant			
Sarracenia minor	T		
Sweet pinxter azalea			
Rhododendron canescens	CE		

Pumpkin Hill Creek Preserve State Park Designated Species—Animals

Common Name/ *Scientific Name*	Designated Species Status FFWCC	USFWS	FNAI
AMPHIBIANS			
Striped newt *Notophthalmus perstriatus*			G2G3, S2S3
REPTILES			
American alligator *Alligator mississippiensis*	LS	T(S/A)	G5, S4
Eastern diamondback rattlesnake *Crotalus adamanteus*			G4, S3
Eastern indigo snake *Drymarchon corias couperi*	T	T	G3, S3
Gopher tortoise *Gopherus polyphemus*	SSC		G3, S3
BIRDS			
Worthington's marsh wren *Cistothorus palustris griseus*	SSC		G5T3, S2
Little Blue Heron *Egretta caerulea*	SSC		G5, S4
Snowy Egret *Egretta thula*	SSC		G5, S3
Tricolored Heron *Egretta tricolor*	SSC		G5, S4
White Ibis *Eudocimus albus*	SSC		G5, S4
Peregrine Falcon *Falco peregrinus*	E		G4, S2
American Oystercatcher *Haematopus palliatus*	SSC		G5, S2
Bald Eagle *Haliaeetus leucocephalus*	T		G4, S3
Wood Stork *Mycteria americana*	E	E	G4, S2
Roseate Spoonbill *Platalea ajaja*	SSC		G5, S2
Least Tern *Sterna antillarum*	T		G4, S3
MAMMALS			
Sherman's fox squirrel *Sciurus niger shermani*	SSC		G5T3, S3

Addendum 6—Timber Management Analysis

I. Purpose

This document is intended to fulfill the timber assessment requirement for the Pumpkin Hill Creek State Buffer Preserve (PHCSBP) as required by Section 253.036, Florida Statutes. The goal of this Timber Assessment is to evaluate the potential and feasibility of utilizing silvicultural techniques to assist managers in achieving objectives at the PHCSBP.

II. General Information

The PHCSBP is managed by the Florida Department of Environmental Protection (DEP), Division of Marine Resources. The property consists of approximately 3,810 acres in northeast Duval County. This property was purchased for the objectives outlined in Section I, page 3, in the current 1998 management plan.

Prior to ownership by the State, the area was owned by Verdie Forest, Inc. and was managed for multiple uses including timber management, private game management, and commercial shrimping and fishing (Pumpkin Hill Creek State Buffer Preserve Management Plan, 1998). No virgin stands of timber exist today, however, one area of Clapboard Swamp does exhibit old growth slash and loblolly pine. Portions of the flatwoods have regenerated slash pine naturally, while the existing pine plantations appear to require some silviculture treatments to maintain forest health.

PHCSBP has several distinct vegetative community types. These types include Pine Flatwoods, Maritime Hammock, Dome Swamp, Tidal Marsh, and Sandhill. The pine flatwoods on PHCSBP encompass the largest percentage of the entire tract at 71%. Contained within the flatwoods are four slash pine plantations containing approximately 435 acres. One plantation is 25 years old, one is 10 years old, and the remaining two plantations are about eight years old. The remainder of this community appears mostly as pockets of forested areas that have been cut using a modified seed tree harvest. This harvesting technique encourages natural regeneration of the pine forest. There is evidence of successful natural regeneration in a few areas, whereas other areas exhibit a complete failure in regeneration.

The sandhill community has great potential for restoration. Mature longleaf pines have produced many small seedlings that are presently in the grass stage of development. Natural regeneration of this species is not difficult, however it is time consuming and not uniform across the entire stand.

This Forest Resource Assessment will discuss only the flatwoods and sandhill components, as these are the only areas where silvicultural treatments may be feasible.

III. Flatwoods

Forest Resources

PHCSBP has approximately 2,702 total acres of flatwoods. This community type has seen past disturbance by the establishment of pine plantations on 435 acres leaving 1,767 acres that have been thinned and 500 acres show no stocking. The naming conventions used to denote specific areas within this community include North Shore, Wallace Tract,

Clapboard Swamp, Penland, and Verdie. These areas are characterized by a north Florida slash pine overstory with light to heavy palmetto, gallberry, and wax myrtle understory. Due to the variability of stocking levels and age classes this assessment will address each named area and management option.

North Shore Tract (250 Acres)

This is a slash pine plantation that was mechanically established in1992. Currently, this fully stocked stand is comprised of approximately 271 trees per acre, or 90 square feet of basal area (BA), and contains a volume of approximately 10 cords of pulpwood per acre. Native shade intolerant ground cover species will continue to decrease and be replaced by more shade tolerant species such as palmetto, gallberry and wax myrtle as the plantation matures.

1) Timber Management Emphasis – Managing this area strictly for timber production is certainly an option, however, considering the fact that this tract was purchased as a preserve, this option is probably undesirable. This option is included only to explore the various alternatives available for managing the area. It is not recommended that this area be managed in this manner, unless on a very small scale.

Pine plantations should be thinned when live crowns in the majority of the dominant and co-dominant trees have been reduced to approximately 1/3 of their total height. This will help ensure a healthy stand of trees. These stands should be thinned to 60 – 80 sq. ft. BA per acre each time they reach 100 sq. ft. BA per acre or more. An added benefit of opening up the canopy is that more sunlight will reach the forest floor increasing forage production for wildlife. Once the stand has reached maturity, it may be harvested, then planted or naturally regenerated. If prescribed fire is used prior to any thinning, it is recommended a winter burn be used to condition the stand and lower the chance of high mortality.

2) Ecosystem Management (Restoration) Emphasis – This option is similar to the Timber Management Emphasis above, however, this strategy gradually thins the stand even further to 40-60 sq. ft. BA per acre. This will allow even more sunlight to reach the forest floor, increasing the amount and variety of native ground cover.

A variety of thinning methods can be utilized. Thinning options to consider are: normal thinning with relatively even spacing, group selection, group seed tree, or a combination of all three. Once the plantation becomes mature enough to produce seed, natural regeneration should become established without much difficulty if the ground becomes sufficiently scarified.

One advantage of thinning is that the understory vegetation will be knocked down enough to allow managers to reintroduce prescribed fire more safely. However, immediately after any kind of ground disturbance the area may be susceptible to invasion by exotic/invasive plant species. This is something to be especially concerned with in this part of Florida, and it is recommended that a plan be in place to address this potential problem prior to any harvest activities.

Wallace Tract (40 Acres)

This is a twenty-two year old slash pine plantation which was third row thinned approximately two years ago. On average, there are seventy-two trees per acre, or 20-50 sq. ft. of basal area per acre. The average volume is 12.8 cords of chip-n-saw per acre and 1.1 cords of pulpwood per acre.

1) Timber Management Emphasis - Fire could be re-introduced into this area on a four year cycle. Once this stand grows to 90 sq. ft. of basal area, then it could be thinned back to 60-70 sq. ft. of basal area. This option would create a stand of very large diameter trees.

2) Ecosystem Management (Restoration) Emphasis – It is possible to artificially re-establish longleaf pines into this stand by hand planting tubelings within the rows where the trees have been removed. Once the seedlings are of sufficient size, complete slash pine overstory removal could be implemented. During the first year of establishment, managers should consider herbaceous weed control in order to eliminate plant competition which is critical for longleaf establishment and growth.

Verdie Forest Tract (146 Acres)

This is a pre-merchantable slash pine plantation that is about eight years old. With about 1,800 stems per acre, the stand exhibits good growth. Typically, with a plantation this young, there is a tremendous amount of understory vegetation, most of which is herbaceous and is competing for light and nutrients. Managers should consider mowing or chopping every third or fifth row. This will set back plant succession and provide forage for wildlife.

Penland I Tract (195 Acres)

This tract was previously harvested using a modified seed tree cut in order to regenerate the site. The slash pine parent trees and overstory are exhibiting good form and distribution. Regeneration is excellent with sampling indicating about 1,800 seedlings per acre. Understory plants include wax myrtle, palmetto and green briar. Recommendations for this site are limited. Managers could utilize a cool winter burn to remove plant competition and lower the risk for wildfire. Since sufficient regeneration is evident, parent tree or overstory removal could be performed.

Penland II Tract (82 Acres)

This tract was harvested identically to the Penland I tract. The major difference is there is very poor regeneration. Understory plants are similar to the Penland I tract which include gallberry, wax myrtle and palmetto.

Option 1:

Monitor seed trees for cone and seed production. Once it has been determined that enough cones are present, prepare a seed bed by mechanical means through the use of a roller chopper or conduct a prescribed fire to expose mineral soil. Seedlings should appear the following spring.

Option 2:

Remove the overstory parent trees followed by roller chopping, burning or herbiciding to reduce plant competition. Replant longleaf at an approximate density of 500 trees per acre during the winter months to capture rainfall.

Clapboard Swamp (174 Acres)

This area is characterized by an overstory of cypress, tupelo, red maple, slash and bay. Within this area are pockets of old growth slash and loblolly pine. There are no management recommendations at this time.

IV. Sandhill

At approximately 5,500 stems per acre, portions of this 183 acre stand have good longleaf pine regeneration, most of which are in the grass stage of development. There is however, a large amount turkey oak and sand live oak development. This can pose a minor problem due to the negative impact of shade on seedling development. It is important to note that these seedlings represent a new longleaf pine forest in the early stages of development and care should be of primary concern. Listed below are two management options for this stand.

Option 1:

With an appropriate herbicide, for example Velpar L, portions of the stand could be treated using a spot gun. Pick those areas where oak encroachment is the heaviest. Once oak mortality has stopped, managers could conduct a light prescribed fire to encourage height growth of the seedlings and wire grass.

Option 2:

Using fire as the only silviculture tool it is possible to reduce the amount of oak encroachment, but there are risks associated with higher seedling mortality. To control hardwoods, fire should be applied at a higher intensity, and when hardwoods are actively growing. To keep seedling mortality to a minimum, managers should consider the use of night burning and firing techniques such as strip head fires and spot firing.

V. Access

Most of the interior roads on PHCSBP are capable of light truck usage. These roads are not designed to accommodate heavy truck traffic for long periods of time, and particularly not in wet weather.

VI. Prescribed Fire

Prescribed fire is an important tool for ecosystem management in Florida. Before European settlement, natural fires occurred at regular intervals on an average of two to five years. These fires reduced the fuel load, produced a seedbed for pine regeneration and released nutrients back into the soil. Prescribed fire, coupled with a well-planned timber harvest, is often the most economical and responsible method for conducting ecosystem management, and restoring areas back to natural conditions.

Much of the flatwoods on PHCSBP exhibit heavy fuel buildups due to the lack of fire. Currently, fuels are such that it would be risky, but not impossible, to attempt burning without first implementing some kind of mechanical treatment. One option would be to first thin the area and then conduct a series of cool backing fires at frequent intervals (every 1-2 years) until it becomes safe to conduct more aggressive growing season burns. Again, a series of cool backing fires should be implemented until eventually the fuel loads become more manageable.

The major objective when prescribed burning in timber should be minimal mortality of the trees. Historic natural fires caused very little tree mortality except in small seedlings because they burnt mostly on the finer fuels of wiregrass and pine straw. South Florida slash pine is more intolerant to fire than longleaf pine, especially during the seedling stage when longleaf pine is in the grass stage. Both species are susceptible to fire caused mortality for several years after initiation of height growth. Therefore, burning intervals should be adjusted until the majority of the trees grow out of the susceptible stage. One study suggests that once slash pine seedlings surpass 1.5 inches diameter 6 inches above the ground, most will survive, providing the fire is cool. (Johansen, R.W. and Wade, D.D. 1987). When burning, even in mature timber, it must be kept in mind that not all fire is good. A hot fire may not initially kill trees, but will stress them enough to dramatically increase their susceptibility to insect and disease attack. This is especially true when combined with other stresses, such as drought or flood.

VII. Economics

It is difficult to predict what future timber markets will be, and therefore difficult to predict with any certainty the amount of revenue that can be derived through timber harvests on PHCSBP. Market conditions, harvest prescriptions, product mix, logging conditions and distance to manufacturing facilities all play a factor in stumpage prices.

PHCSBP is located in Duval County, which is approximately two hours from major wood processing facilities in Palatka, Fernandina, and Whitehouse, Florida. This makes it easier to sell timber in this part of Florida, especially considering current market conditions.

Although timber sales occurring on PHCSBP cannot be expected to generate a great amount of revenue, they can be expected to sell. This is advantageous if habitat restoration and fire hazard reduction are goals. A well-planned timber harvest can greatly reduce the costs of these activities as well as reduce the risk of wildfire.

VIII. Summary

The Pumpkin Hill Creek State Buffer Preserve has significant acreage of pine plantation within the flatwoods in which silvicultural treatments may prove beneficial. It is possible to manage this area in such a manner as to retain their natural appearance, meet objectives stated in the Conceptual Management Plan, such as habitat restoration, and produce revenue through timber harvests. The revenue producing potential of the area is average. The most practical application of silviculuture on this property is as a tool in achieving restoration objectives and for reducing wildfire hazards.

Literature Cited

Johansen, R.W. and Wade, D.D. 1987. An insight into thinning young slash pine stands with fire, pp 103-106. In: Douglas R. Phillips (comp.) Proceedings of the Fourth Biennial Southern Silvicultural Research Conference; 1986 November 4-6; Atlanta, GA. USDA Forest Service Southeastern Forest Experiment Station General Technical

Report, SE-42.

Pumpkin Hill Creek State Buffer Preserve Management Plan. Florida Department of Environmental Protection and St. Johns River Water Management District, June 1998.

Prepared by:
Timothy S. Worley
Senior Forester
Florida Division of Forestry
September 25, 2002

Addendum 7—Priority Schedule And Cost Estimates

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

RESOURCE MANAGEMENT

Natural Resources

1. Increase prescribed burning program to 10-12 burns (600-1000 acres) per year. 0-10 years. Average of $16,125/year for personnel and $10,000/year for equipment. **Estimated Cost: $261,250.**
2. Target flatwood and sandhill areas for restoration. Increase girdling and chemical treatment of offsite hardwoods in fire-suppressed areas. Determine sites for harvesting of offsite slash pines. 0-10 years. **Estimated Cost: $20,000.**
3. Initiate large-scale replanting of appropriate pine species, especially longleaf pine, in flatwoods and sandhills harvested prior to state ownership. 0-10 years. **Estimated Cost: $20,000.**
4. Maintain and create firebreaks, mechanically reduce fuels, and realign resource management zone boundaries as necessary to conduct safe and effective prescribed burns. 0-10 years. **Estimated Cost: $40,000.**
5. Establish and maintain photopoints to monitor progress of the prescribed fire program. 0-10 years. **Estimated Cost: $ 3000.**
6. Prioritize and coordinate hydrological data collection for waters within the park. Develop long-term monitoring plan. 0-10 years. **Estimated Cost: $15,000.**
7. Identify and assess disruptions of natural hydrology in the park. Correct hydrological disruptions and restore natural hydrology including removal or retrofitting of existing roads and causeways that disrupt natural sheet flow. 0-10 years. **Estimated Cost: $25,000.**
8. Continue the exotic plant control program within the preserve in cooperation the SJRWMD. Continue to monitor the preserve for new infestations of exotic plants. Map and treat infestations as needed. 0-10 years. Includes equipment, herbicide and staff. **Estimated Cost: $10,000.**
9. Pursue additional surveys for plant and animal species in the preserve. 0-10 years. **Estimated Cost: $10,000.**
10. Continue to monitor designated species within the park. Includes continued mapping and monitoring of rare plant and animal species. Implement protective measures as needed. 0-10 years. **Estimated Cost: $15,000.**

Cultural Resources

11. Pursue funding for a phase I archaeological survey of the entire preserve and for a phase II survey of selected areas within the preserve. 0-10 years. **Estimated Cost: $50,000.**
12. Repair and stabilize the looter pit on Du00095. 0-5 years. **Estimated Cost: $2000.**
13. Regularly assess the condition of recorded and unrecorded cultural resources in the preserve. Use photo points to periodically monitor the status of sites judged to be in poor condition. 0-

10 years. **Estimated Cost: $4000.**

14. Patrol cultural sites to prevent vandalism. Educate the public about the importance of preserving cultural sites. 0-10 years. **Estimated Cost: $5000.**
15. Enhance resource protection by securing boundaries of the parks, including fencing and posting of boundary signs. 0-5 years. **Estimated Cost: $30,000.**
16. Monitor proposed land use changes and transportation planning to protect the preserve from outside impacts. Continue educational outreach to local residents. 0-10 years. **Estimated Cost: $10,000.**

TOTAL ESTIMATED COST: $520,250

CAPITAL IMPROVEMENTS

Development Area or Facilities	Cost
Canoe/Kayak Launch Area Improvements	$80,000.00
Equestrian Camping Area	$400,000.00
Group Camp	$150,000.00
Main Trailhead and Picnic Area	$626,000.00
Observation/Fishing Platform	$50,000.00
Primitive Campsites	$6,000.00
Trail System Improvements	$213,960.00
Support Facilities	$400,000.00
Total w/contingency	**$2,311,152.00**

Additional Information

FNAI Descriptions

DHR Cultural Management Statement

2002 Land Management Review Report

Descriptions Of Natural Communities Developed By FNAI

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

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

The levels of the hierarchy are:

Natural Community Category - defined by hydrology and vegetation.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Mesic Flatwoods - flatland with sand substrate; mesic; subtropical or temperate; frequent fire; slash pine and/or longleaf pine with saw palmetto, gallberry and/or wiregrass or cutthroat grass understory.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Flatwoods/Prairie Lake - generally shallow basin in flatlands with high water table; frequently with a broad littoral zone; still water or flow-through; sand or peat substrate; variable water chemistry, but characteristically colored to clear, acidic to slightly alkaline, soft to moderately hard water with moderate

mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

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

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

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

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

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

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

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

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

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

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

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

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

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

MARINE/ESTUARINE (The distinction between the Marine and Estuarine Natural Communities is often subtle, and the natural communities types found under these two community categories have the same

descriptions. For these reasons they have been grouped together.) - Subtidal, intertidal and supratidal zones of the sea, landward to the point at which seawater becomes significantly diluted with freshwater inflow from the land.

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

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

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

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

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

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

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

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

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

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

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

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

DEFINITIONS OF TERMS Terrestrial and Palustrine Natural Communities

Physiography

Upland - high area in region with significant topographic relief; generally undulating
Lowland - low area in region with or without significant topographic relief; generally flat to gently sloping
Flatland - generally level area in region without significant topographic relief; flat to gently sloping
Basin - large, relatively level lowland with slopes confined to the perimeter or isolated interior locations
Depression - small depression with sloping sides, deepest in center and progressively shallower towards the perimeter
Floodplain - lowland adjacent to a stream; topography influenced by recent fluvial processes
Bottomland - lowland not on active floodplain; sand/clay/organic substrate

Hydrology

occasionally inundated - surface water present only after heavy rains and/or during flood stages
seasonally inundated - surface water present during wet season and flood periods
usually inundated - surface water present except during droughts

Climatic Affinity of the Flora

tropical - community generally occurs in practically frost-free areas
subtropical - community generally occurs in areas that experience occasional frost, but where freezing temperatures are not frequent enough to cause true winter dormancy
temperate - community generally occurs in areas that freeze often enough that vegetation goes into winter dormancy

Fire

annual fire - burns about every 1-2 years
frequent fire - burns about every 3-7 years
occasional fire - burns about every 8-25 years
rare fire - burns about every 26-100 years
no fire - community develops only when site goes more than 100 years without burning

LATIN NAMES OF PLANTS MENTIONED IN NATURAL COMMUNITY DESCRIPTIONS

anise - *Illicium floridanum*
bays:
- swamp bay -*Persea palustris*
- gordonia -*Gordonia lasianthus*
- sweetbay -*Magnolia virgiana*

beakrush - *Rhynchospora* spp.
beech - *Fagus grandifolia*
blackgum - *Nyssa biflora*
blue palmetto - *Sabal minor*
bluestem - *Andropogon* spp.
buttonbush - *Cephalanthus occidentalis*
cabbage palm - *Sabal palmetto*
cacti - *Opuntia* and *Harrisia* spp., predominantly *stricta* and *pentagonus*
cane - *Arundinaria gigantea* or *A. tecta*
cattail - *Typha* spp.
cedars:
- red cedar - *Juniperus silicicola*
- white cedar - *Chamaecyparis thyoides* or *C. henryi*

cladonia - *Cladonia* spp.
cypress - *Taxodium distichum*
dahoon holly - *Ilex cassine*
diamondleaf oak - *Quercus laurifolia*
fire flag - *Thalia geniculata*
Florida maple - *Acer barbatum*
gallberry - *Ilex glabra*
gums:
- tupelo - *Nyssa aquatica*
- blackgum - *Nyssa biflora*
- Ogeechee gum - *Nyssa ogeche*

hackberry - *Celtis laevigata*
hornbeam - *Carpinus caroliniana*
laurel oak - *Quercus hemisphaerica*
live oak - *Quercus virginiana*
loblolly pine - *Pinus taeda*
longleaf pine - *Pinus palustris*
magnolia - *Magnolia grandiflora*
maidencane - *Panicum hemitomon*
needle palm - *Rhapidophyllum hystrix*
overcup oak - *Quercus lyrata*
pickerel weed - *Pontederia cordata* or *P. lanceolata*
pignut hickory - *Carya glabra*
pop ash - *Fraxinus caroliniana*
pond apple - *Annona glabra*
pond pine - *Pinus serotina*
pyramid magnolia - *Magnolia pyramidata*
railroad vine - *Ipomoea pes-caprae*
red cedar - *Juniperus silicicola*
red maple - *Acer rubrum*
red oak - *Quercus falcata*
rosemary - *Ceratiola ericoides*
sagittaria - *Sagittaria lancifolia*
sand pine - *Pinus clausa*
saw palmetto - *Serenoa repens*
sawgrass - *Cladium jamaicensis*
scrub oaks - *Quercus geminata, Q. chapmanii, Q. myrtifolia,Q. inopina*
sea oats - *Uniola paniculata*
seagrape - *Coccoloba uvifera*
shortleaf pine - *Pinus echinata*
Shumard oak - *Quercus shumardii*
slash pine - *Pinus elliottii*
sphagnum moss - *Sphagnum* spp.
spikerush - *Eleocharis* spp.
spruce pine - *Pinus glabra*
St. John's wort - *Hypericum* spp.
swamp chestnut oak - *Quercus prinus*
sweetgum - *Liquidambar styraciflua*
titi - *Cyrilla racemiflora*, and *Cliftonia monophylla*
tuliptree - *Liriodendron tulipfera*
tupelo - *Nyssa aquatica*
turkey oak - *Quercus laevis*
water oak - *Quercus nigra*
waterlily - *Nymphaea odorata*
white cedar - *Chamaecyparis thyoides*
white oak - *Quercus alba*
willow - *Salix caroliniana*
yucca - *Yucca aloifolia*

A. GENERAL DISCUSSION

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

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

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

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

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

B. STATUTORY AUTHORITY

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

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

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

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

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

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

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

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

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

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

C. MANAGEMENT POLICY

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

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

It should be noted that while many archaeological and historical sites are already recorded within state--owned or controlled--lands, the majority of the uplands areas and nearly all of the inundated areas have

not been surveyed to locate and assess the significance of such resources. The known sites are, thus, only an incomplete sample of the actual resources - i.e., the number, density, distribution, age, character and condition of archaeological and historic sites - on these tracts. Unfortunately, the lack of specific knowledge of the actual resources prevents formulation of any sort of detailed management or use plan involving decisions about the relative historic value of individual sites. For this reason, a generalized policy of conservation is recommended until the resources have been better addressed.

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

1. State land managers shall coordinate all planned activities involving known archaeological or historic sites or potential site areas closely with the Division of Historical Resources in order to prevent any kind of disturbance to significant archaeological or historic sites that may exist on the tract. Under 267.061(1)(b), F.S., the Division of Historical Resources is vested with title to archaeological and historic resources abandoned on state lands and is responsible for administration and protection of such resources. The Division will cooperate with the land manager in the management of these resources. Furthermore, provisions of 267.061(2) and 267.13, F.S., combined with those in 267.061(3) and 253.034(4), F.S., require that other managing (or permitting) agencies coordinate their plans with the Division of Historical Resources at a sufficiently early stage to preclude inadvertent damage or destruction to known or potentially occurring, presently unknown archaeological and historic sites. The provisions pertaining to human burial sites must also be followed by state land managers when such remains are known or suspected to be present (see 872.02 and 872.05, F.S., and 1A-44, F.A.C.)

2. Since the actual resources are so poorly known, the potential impact of the managing agency's activities on historic archaeological sites may not be immediately apparent. Special field survey for such sites may be required to identify the potential endangerment as a result of particular management or permitting activities. The Division may perform surveys, as its resources permit, to aid the planning of other state agencies in their management activities, but outside archaeological consultants may have to be retained by the managing agency. This would be especially necessary in the cases of activities contemplating ground disturbance over large areas and unexpected occurrences. It should be noted, however, that in most instances Division staff's knowledge of known and expected site distribution is such that actual field surveys may not be necessary, and the project may be reviewed by submitting a project location map (preferably a 7.5 minute U.S.G.S. Quadrangle map or portion thereof) and project descriptive data, including detailed construction plans. To avoid delays, Division staff should be contacted to discuss specific project documentation review needs.

3. In the case of known significant sites, which may be affected by proposed project activities, the managing agency will generally be expected to alter proposed management or development plans, as necessary, or else make special provisions to minimize or mitigate damage to such sites.

4. If in the course of management activities, or as a result of development or the permitting of dredge activities (see 403.918(2)(6)a, F.S.), it is determined that valuable historic or archaeological sites will be damaged or destroyed, the Division reserves the right, pursuant to 267.061(1)(b), F.S., to require salvage measures to mitigate the destructive impact of such activities to such sites. Such salvage measures would be accomplished before the Division would grant permission for destruction of the affected site areas. The funding needed to implement salvage measures would be the responsibility of the managing agency planning the site destructive activity. Mitigation of historic structures at a minimum involves the preparation of measured drawings and documentary photographs. Mitigation of archaeological resources involves the excavation, analysis and reporting of the project findings and must be planned to occur sufficiently in advance to avoid project construction delays. If these services are to be contracted by the state agency, the selected consultant will need to obtain an Archaeological Research Permit from the Division of Historical Resources, Bureau of Archaeological Research (see 267.12, F.S. and Rules 1A-32 and 1A-46 F.A.C.).

5. For the near future, excavation of non-endangered (i.e., sites not being lost to erosion or development) archaeological site is discouraged. There are many endangered sites in Florida (on

both private and public lands) in need of excavation because of the threat of development or other factors. Those within state-owned or controlled lands should be left undisturbed for the present - with particular attention devoted to preventing site looting by "treasure hunters". On the other hand, the archaeological and historic survey of these tracts is encouraged in order to build an inventory of the resources present, and to assess their scientific research potential and historic or architectural significance.

6. The cooperation of land managers in reporting sites to the Division that their field personnel may discover is encouraged. The Division will help inform field personnel from other resource managing agencies about the characteristics and appearance of sites. The Division has initiated a cultural resource management training program to help accomplish this. Upon request the Division will also provide to other agencies archaeological and historical summaries of the known and potentially occurring resources so that information may be incorporated into management plans and public awareness programs (See Management Implementation).

7. Any discovery of instances of looting or unauthorized destruction of sites must be reported to the agent for the Board of Trustees of the Internal Improvement Trust Fund and the Division so that appropriate action may be initiated. When human burial sites are involved, the provisions of 872.02 and 872.05, F. S. and Rule 1A-44, F.A.C., as applicable, must also be followed. Any state agent with law enforcement authority observing individuals or groups clearly and incontrovertibly vandalizing, looting or destroying archaeological or historic sites within state-owned or controlled lands without demonstrable permission from the Division will make arrests and detain those individuals or groups under the provisions of 267.13, 901.15, and 901.21, F.S., and related statutory authority pertaining to such illegal activities on state-owned or controlled lands. County Sheriffs' officers are urged to assist in efforts to stop and/or prevent site looting and destruction.

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

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

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

2. The historic character of a property shall be retained and preserved. The removal of historic materials or alterations of features and spaces that characterize a property shall be avoided.

3. Each property shall be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.

4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.

5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.

6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.

7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

9. New additions, exterior alterations, or related new construction shall not destroy materials that characterize the property. The new work shall be differentiated from the old and shall be

compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.

10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired. (see Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings [Revised 1990]).

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

D. MANAGEMENT IMPLEMENTATION

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

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

A. Historic Sites

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

B. Archaeological Sites

(1) Site location (written narrative and mapped location).
(2) Cultural affiliation and period.
(3) Site type (midden, burial mound, artifact scatter, building rubble, etc.).

(4) Threats to site (deterioration, vandalism, etc.).
(5) Site size (acreage, square meters, etc.).
(6) Artifacts observed on ground surface (pottery, bone, glass, etc.).
(7) Description of surrounding environment.

7. No land disturbing activities should be undertaken in areas of known archaeological or historic sites or areas of high site probability without prior review by the Division early in the project planning.

8. Ground disturbing activities may proceed elsewhere but land managers should stop disturbance in the immediate vicinity of artifact finds and notifies the Division if previously unknown archaeological or historic remains are uncovered. The provisions of Chapter 872, F.S., must be followed when human remains are encountered.

9. Excavation and collection of archaeological and historic sites on state lands without a permit from the Division are a violation of state law and shall be reported to a law enforcement officer. The use of metal detectors to search for historic artifacts shall be prohibited on state lands except when authorized in a 1A-32, F.A.C., research permit from the Division.

10. Interpretation and visitation which will increase public understanding and enjoyment of archaeological and historic sites without site destruction or vandalism is strongly encouraged.

11. Development of interpretive programs including trails, signage, kiosks, and exhibits is encouraged and should be coordinated with the Division.

12. Artifacts found or collected on state lands are by law the property of the Division. Land managers shall contact the Division whenever such material is found so that arrangements may be made for recording and conservation. This material, if taken to Tallahassee, can be returned for public display on a long term loan.

E. ADMINISTERING AGENCY

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

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

Contact Person

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

Land Management Review of Pumpkin Hill Creek State Buffer Preserve

Nassau County (Lease No. 4074): April 17, 2002

Prepared by Division of State Lands Staff

William Howell, OMC Manager
Ginny Morris, Administrative Assistant

For
The Pumpkin Hill Creek State Buffer Preserve Team

Final July 19, 2002

Land Manager:	CAMA
Area:	4,460 acres
County:	Nassau
Mngt. Plan Revised:	06/111/98
Mngt. Plan Update Due:	06/11/03

Management Review Team Members

Agency Represented	Team member Appointed	Team member In attendance
DEP/DRP	Craig Parenteau	Craig Parenteau
DEP Northeast Florida District	Erin Gawera	Danielle Harvey
DACS/DOF	Bill Korn	Bill Korn
FWCC	Dan Miller	Dan Miller
Soil and Water Conservation	Phil Caldwell	
County Commission	Nick Deonas	
Conservation Organization	Barbara Blonder	Barbara Blonder
Private Land Manager	Pat foster -Turley	Pat Foster-Turley

Process for Implementing Regional Management Review Teams

Legislative Intent and Guidance:

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

Review Site

The management review of Pumpkin Hill Creek State Buffer Preserve considered approximately 4,460 acres in Nassau County that are managed by the Division of Coastal and Aquatic Managed Areas (CAMA). The team evaluated the extent to which current management actions are sufficient, whether the land is being managed for the purpose for which it was acquired, and whether actual management practices, including public access, are in compliance with the management plan. CAMA revised the management plan on June 11 1998, and the management plan update is due on June 11, 2003.

Review Team Determination

1. **Is the land being managed for the purpose for which it was acquired? All team members found that Pumpkin Hill SBA is being managed for the purpose for which it was acquired.**

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

Exceptional management actions

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

1. The Team commends the manager and staff for their good start on burning. However, increased burning emphasis is necessary to reduce vegetation/fuel loads in most natural communities. Smaller burn units and mechanical treatments should be considered to assist in these efforts.
2. The team commends the manager and staff for their prompt, diligent and effective efforts to deal with invasive exotic plants that could have become a significant problem.

Exceptional Management Actions

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

- Protection and restoration of xeric hammock, maritime hammock, shell mound, bottomland forest, dome swamp, tidal marsh, and baygall communities.
- Protection and preservation of listed animals and cultural resources.
- Restoration of the dumpsite back to scrubby flatwoods
- Control of invasive plants
- Boundary survey
- Law enforcement presence
- Acquisition of inholdings and additions
- Roads
- Recreational opportunities
- Environmental education and outreach

Recommendations and Checklist Findings

The management plan must include responses to the recommendations and checklist items that are identified below.

1. The Team recommends that CAMA explore more opportunities for non-vehicular access to different parts of the site, where appropriate.

Manager's Response: PHCSBP is managed under the low intensity, single use concept for the purpose of conservation of natural and cultural resources. The buffer preserve has been established for the conservation and restoration of environmentally sensitive ecosystems. Access to

the natural and cultural resources for public recreation, education, and research are limited to activities that are compatible with the intended purpose of the buffer preserve. Designated access points have been established, and a network of trails based on existing roads has been developed, including an informational kiosk with maps, and trail signage appropriately marked. Access to more isolated areas of the preserve is planned as need arises. Passive recreational uses to date include horseback riding and hiking. The expected highest use is anticipated to be in the educational area, and access points for that are planned and will be addressed in the revised management plan.

Checklist findings

The following items received low scores on the review team checklist (see Attachment 1), which indicates that management actions, in the field, were insufficient (f) or that the issue was not sufficiently addressed in the management plan (p). These items need to be addressed in the management plan update.

1. Scrubby flatwoods (**p**), wet flatwoods (**p**), sandhill (f), scrub (**p**), mesic flatwoods (**p**), baygall (**p**)

Manager's Response: The current Plan was based on an initial field survey by an FNAI ecologist, existing FNAI data, proposal application information and aerial photos. Since that time staff have initiated and nearly completed mapping and ground truthing an inventory of habitats. The revised plan, due next year, will reflect that newly acquired information. The revised plan will also include identification of habitats listed by highest acreage to lowest, in order to avoid confusion encountered as to preponderance of certain actually limited habitats. Each of these communities - scrubby flatwoods (p), wet flatwoods (p), sandhill (p), scrub (p), mesic flatwoods (p), and baygall (p) will be discussed in the revised plan to better reflect information acquired during mapping/ground truthing in the past two years. In addition, the sandhill description (f) will reflect updated information on fuel reduction plans.

2. Discussion of listed animals (**p**) and plants (**p**)

Manager's Response: The current Plan was an initial overview of expected listed species. There had been one initial visit by an FNAI botanist. The revised and updated Plan will include more specific information that has been acquired regarding listed species, both plant and animal. Several species not included in the initial list of expected species have been identified in the past three years. The entire section is being rewritten.

3. Area (**p**,f), frequency (**p**,f) and quality (**p**) of prescribed burning

Manager's Response: At the time of the writing of the current plan, the Buffer had been very recently acquired. An initial discussion of a generalized fuel-reduction based plan was included. Work efforts have been directed at establishing firebreaks, division of areas into manageable fire units, and identification of habitats to aid in planning for ecological burning. The revised plan will include a more extensive fire plan than the current plan, reflecting the experience and information gained in the past five years. In addition, as of the writing of this response, the East Coast CAMA office has acquired an Environmental Administrator with an extensive fire background who will assist PHCSBP in developing and implementing the fire plan.

4. Discussion of the dumpsite. (**p**)

Manager's Response: The current Plan includes a brief description of scrubby flatwoods on page 18, but no discussion of dump sites. The team has addressed under Plan review Scrubby Flatwoods/Dumpsite. At the time of the writing of the current plan, there had been a tentative agreement that WMD was arranging for completion of cleanup of dumpsites prior to turning it over to DEP for management. That did not happen.
The field review did include a discussion of our successful efforts to have numerous dumpsites cleaned up in an in-kind trade arranged with the Northeast DEP District; in which approximately $35 K in fines to a local construction company was transferred to $35 K worth of debris hauled away, including appliances, cars and car parts, construction materials, tires, and miscellaneous smaller items.

5. Restoration of pine plantations (p)

Manager's Response: At the time of the original plan writing, neither of the areas which have planted pine (Wallace tract=40 acres, Northshore= 200 acres) were under management. However, as they are now under active management, it was decided that the team would look and then recommend actions on these areas. The current Plan includes a very brief discussion of some options which were to be considered regarding timber. In the past five years, management activities regarding timber have included a post-wildfire salvage operation, marking and thinning of the 40-acre Wallace/Penland tract coordinated with the SJRWMD, and a request for a timber assessment to be done this year by DOF. The new plan will include a description of the present activities, including fuel reduction to date, and timber sales to date. It will also include detailed five, ten and twenty year tentative plans for management and restoration of these tracts.

6. Surface water quality and quantity (**p**)

Manager's Response: Surface water quality and quantity staff of DEP Northeast District have been contacted to implement studies specifically providing information on the preserve, while data already collected by other agencies in the near vicinity has been requested. Additional partnering with the Water Management District regarding hydrologic maps will be requested. Staffing and funding are the limiting factors. Volunteer and intern support work in these areas will be pursued and described in the updated version of the management plan.

7. Restoration of ditches (**p**,f)

Manager's Response: The land area of the preserve has historically been disturbed by a policy fire of suppression, resulting in a myriad off plow lines which may affect the hydrologic flow across the watershed. Studies have been initiated in partnership with hydrologists from the St. Johns River Water Management District to ascertain to what extent, if any, rehabilitation of old plow scars should be pursued. Additionally, as development increases in the local area, more neighboring landowners are directing water flow off of access roads through ditching. A survey was provided through the WMD Survey and Mapping to initiate determination as to what extent some areas have been encroached on. These increasing issues of encroachment will be addressed in the revised plan.

8. Impacts from industrial development (p)

Manager's Response: There is no discussion of this in the current Plan. There has been some industrial development near the preserve, and that will probably be addressed in the updated plan. It hasn't been a critical issue to date, but a plan for dealing with any related problems directly affecting the preserve due to increased industrial development will be explored and included in the revised plan. More directly impacting the preserve are the ramifications of residential housing

developments adjacent to the preserve, exponentially increasing the problems of encroachment, septic issues, trespass and increased vandalism. This will be addressed in the revised plan.

9. Discussion of roads, parking and water access (**p**)

Manager's Response: Access points located on roads and parking areas will be clearly marked on maps which will be included in the revised plan and duplicated for public use in the visitors' kiosks. Water access has been briefly described in the initial plan, but a more descriptive section on specifics about launching and other topics of visitor concern will be included in the revised plan.

10. Discussion of interpretive facilities (**p**) and signs (**p**,f)

Manager's Response: New signs directing visitors to the preserve have been purchased and will be strategically placed on roadways. A new kiosk has already been received and placed at the main entrance to the preserve since the time of this review team visit. The new plan will include a detailed description of the plans for visitor education and interpretive facilities and programs. Any active partnership has been developed with the National Park Service Timucuan Preserve and discussion of those cooperative plans will be included in the new revised version of the plan.

11. Discussion of environmental education and outreach (**p**)

Manager's Response: Environmental education and outreach programs were only briefly outlined in the initial management plan. It was expected that the first several years' work efforts would be primarily in basic resource management issues, dump site cleanup, fencing, etc. and that subsequent years would see the development of these types of programs. The current manager has an extensive background in environmental education, and the updated version will include detailed discussion for the development of environmental programs through a variety of partnerships and schools. A student intern program has already been developed, and a volunteer program, though small, continues to grow.

12. Inadequate Staff (f) and funding (f)

Manager's Response: Equipment, staff and funding are generally limited and determined by CAMA based on legislatively approved funding. Staff submits identified needs to CAMA in preparation of each year's Legislative Budget Request. This site partners frequently with the St. Johns River Water Management District in many and management areas, including prescribed fire, with a sharing of staff and resources. Additionally, WMD initiated a timber sale which resulted in an in-kind trade for infrastructure needs administered through WMD, surveying, and law enforcement patrol. Grants have been pursued to supplement resource management, specifically exotics control through DEP Bureau of Invasive Plant Management. Grants such as this will continue to be aggressively pursued. Other efforts to supplement staffing and funds include the start of a student intern and volunteer program last year. These successes and plans for additional alternative funding methods will be addressed in the updated management plan.