HOMOSASSA SPRINGS

WILDLIFE STATE PARK

UNIT MANAGEMENT PLAN

APPROVED

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

JUNE 3, 2005

Department of Environmental Protection

Jeb Bush
Governor

Marjory Stoneman Douglas Building
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Tallahassee, Florida 32399-3000
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Colleen Castille
Secretary

June 6, 2005

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

Re: Homosassa Springs Wildlife State Park Lease #3786

Dear Ms. White:

On June 3, 2005, the Acquisition and Restoration Council recommended approval of the Homosassa Springs Wildlife 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 Homosassa Springs Wildlife 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 3, 2015**.

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

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INTRODUCTION

Homosassa Springs Wildlife State Park is located in Citrus County (see Vicinity Map). Access to the park is from U.S. Highway 19/98. The vicinity map also reflects significant land and water resources existing near the park.

The Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (Trustees) acquired Homosassa Springs Wildlife State Park to manage the property in such a way as to protect and restore the natural and cultural values of the property and provide the greatest benefit to the citizens of the state (see Addendum 1). On December 30, 1988, the Trustees purchased from Citrus County the initial area of Homosassa Springs Wildlife State Park. The purchase was funded under the CARL program. Since this initial purchase, the Trustees have purchased several parcels under LATF and P2000/A and I programs and added them to Homosassa Springs Wildlife State Park. Homosassa Springs Wildlife State Park currently contains 196.76 acres.

Homosassa Springs Wildlife State Park is designated single-use to provide resource-based public outdoor recreation and other park related uses. There are no legislative or executive directives that constrain the use of this property.

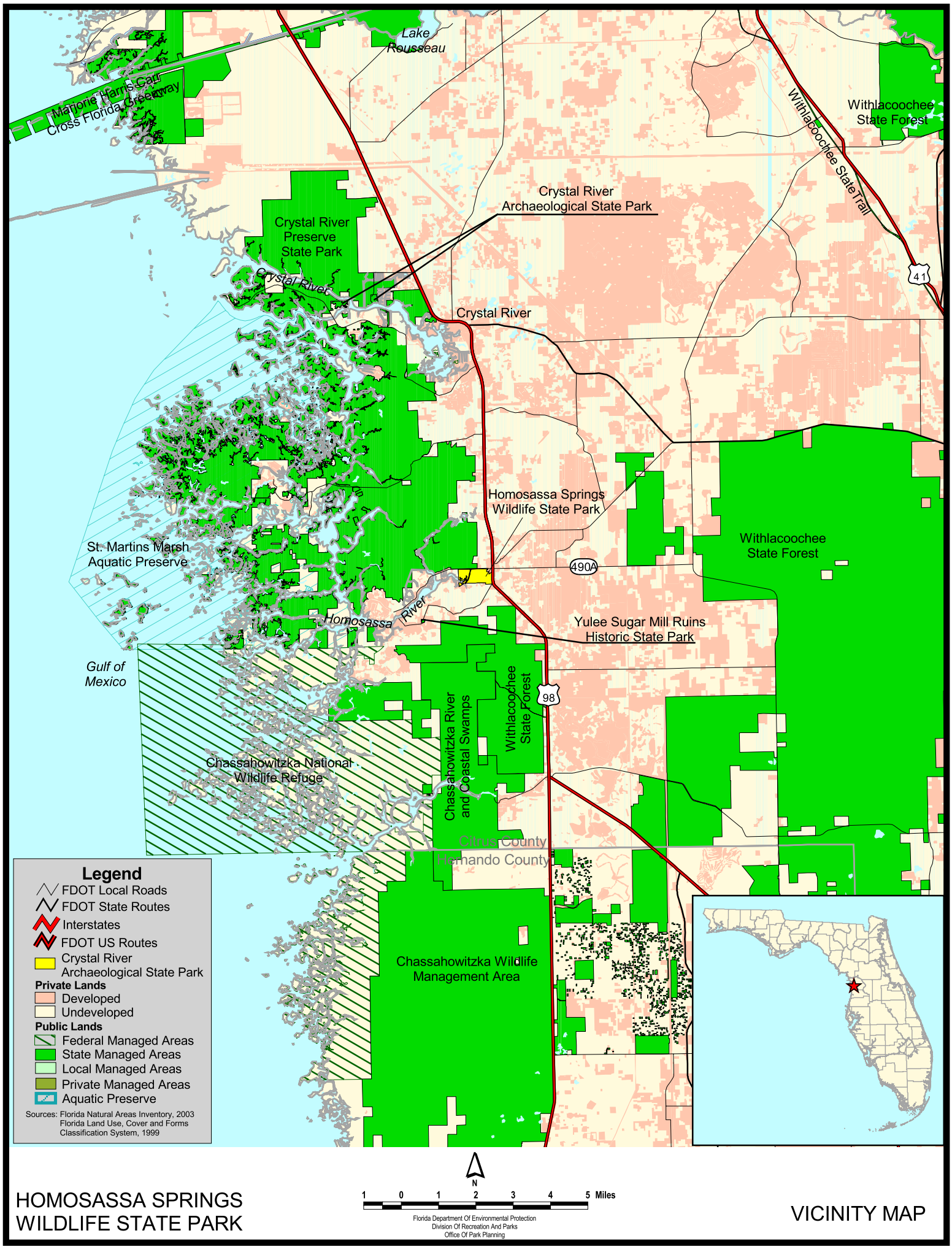
PURPOSE AND SCOPE OF THE PLAN

This plan serves as the basic statement of policy and direction for the management of Homosassa Springs Wildlife 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 October 21, 1999, approved plan. All development and resource alteration encompassed in this plan is subject to the granting of appropriate permits; easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with the appropriate local, state or federal agencies. This plan is also intended to meet the requirements for beach and shore preservation, as defined in Chapter 161, Florida Statutes and Chapters 62B-33, 62B-36 and 62R-49, Florida Administrative Code.

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

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

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



HOMOSASSA SPRINGS WILDLIFE STATE PARK

VICINITY MAP

park, it was determined that no secondary purposes could be accommodated in a manner that would not interfere with the primary purpose of resource-based outdoor recreation and conservation. Uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park and should be discouraged.

The potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the park. It was determined that multiple-use management activities would not be appropriate as a means of generating revenues for land management. Instead, techniques such as entrance fees, concessions and similar measures will be employed on a case-by-case basis as a means of supplementing park management funding.

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 affect public recreational uses.

Many operating procedures are standard system wide and are set by policy. These procedures are outlined in the Division’s Operations 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 Homosassa Springs Wildlife State Park, a balance is sought between the

goals of maintaining and enhancing natural conditions and providing various recreational opportunities. Natural resource management activities are aimed at management of natural systems. Development in the park is directed toward providing public access to and within the park, and to providing recreational facilities, in a reasonable balance, that are both convenient and safe. Program emphasis is on interpretation of the park's natural, aesthetic and educational attributes.

Park Goals and Objectives

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

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

Natural and Cultural Resources

1. Restore springs and waterways that contain accumulated sediments and continue to remove sources of sedimentation from areas around the springs and waterways.
   - **A.** Continue to seek funding and coordinate efforts to dredge sediments from the areas where wild manatees congregate downstream of the Long River Bridge and from the captive manatee area. Pursue funding to remove accumulated sediments from the Banana Spring area and from other locations within the Wildlife Walk area.
   - **B.** Continue efforts to convert the limerock trails to elevated boardwalks and to reduce the amount of organic material generated within the park.

2. Actively participate in efforts to improve and restore spring flows and water quality.
   - **A.** Educate park visitors and area citizens about the importance of water conservation, and the long-term preservation of spring flows.
   - **B.** Continue efforts to reduce nitrate-nitrogen sources within the park, and support regional efforts to minimize nitrate-nitrogen loading in groundwater and surface water systems.
   - **C.** Maintain working relationships with agencies responsible for collecting hydrologic data for the spring and river systems. Periodically compile available hydrologic data and disseminate to park staff and visitors.

3. Seek funds through the Florida Springs Initiative, or other sources, to identify and confirm potential hydraulic connections between the headsprings and offsite karst features.

4. Continue to remove limerock trails to restore natural drainage patterns, and determine whether removal of any spoil piles or abandoned roads is feasible.
   - **A.** Remove the remaining limerock trails, replacing them with elevated boardwalks for visitor access.
   - **B.** Investigate the feasibility of removing spoil piles and abandoned roads within the park that may negatively impact adjacent natural areas. Develop restoration plans for these

sites where appropriate.

C. Work with permitting agencies to develop and implement wetland mitigation projects in areas identified for restoration.

5. Continue to monitor water quality in the park. Continue efforts to reduce bacteria levels within park waters.

A. Continue to coordinate water quality monitoring within the park. Compile water quality data for the park and use the information to educate park staff, volunteers and visitors about water conservation and protection.

B. Maintain ongoing efforts to eliminate or reduce the introduction of plant and animal wastes to waters of the park.

6. Continue to work with agencies involved in the development of regional management plans for storm water treatment.

A. Continue to coordinate closely with the Southwest Florida Water Management District, Citrus County, Citrus County Mosquito Control District and the Department of Environmental Protection in developing and implementing a storm water plan that protects park resources and the Homosassa River.

7. Continue and improve the exotic plant control program at the park.

A. Increase monitoring efforts, particularly in the interface between developed areas and hydric hammock. Focus on the more invasive terrestrial exotic plants.

B. Develop a detailed exotic plant control plan. Map infestations of exotic plants and prioritize them for removal.

C. Improve control measures for exotic aquatic plants. Pursue funding to increase treatments of exotic plants within Pepper Creek.

8. Identify and protect populations of rare plants within the park.

9. Protect designated species and their habitats from disturbance.

A. Protect wild manatees from disturbance to the greatest extent possible, particularly during the winter months, through enforcement of manatee harassment regulations and effective interpretation. Continue to cooperate with the USFWS and the FFWCC in protecting manatees that congregate within and adjacent to the park.

B. Coordinate the posting of wildlife crossing signs on roads adjacent to the park to protect black bears that pass through the park. Request enforcement of existing speed limits on Halls River Road and Fishbowl Drive within the park. Continue to cooperate with the Chassahowitzka Interagency Black Bear Working Group, which includes other agencies that manage adjacent bear habitat and that conduct bear research in the region.

10. Continue to implement prescribed burning in fire-adapted communities within the park.

A. Pursue restoration of the mesic flatwoods, implementing burn plans prepared by District staff.

11. Manage historic structures in a manner that will maintain or improve their condition.

12. Regularly monitor archaeological sites and document their condition, and maintain them in a stable condition.

13. Manage collection objects according to current Division standards and procedures (Chapter 16, OPM.). Develop a Scope of Collections statement.

Recreational Goals

14. Continue to provide park visitors with quality, resource-based, outdoor recreational and interpretive programs and facilities.

A. Continue the development and implementation of an interpretive sign and exhibits program to improve accessibility.

B. Continue to improve current interpretive programs.

C. Produce a video program about the park and a video of the natural spring.

15. 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.** Continue to provide quality care, under highly professional standards, for captive and rehabilitated wildlife.
- **B.** Continue to pursue funding for, and plan and implement renovations of wildlife exhibits.

Park Administration/Operations

16. Provide visitors with a quality recreational experience through visitor service.

- **A.** Upgrade all public facilities to provide access for disabled visitors.
- **B.** Improve the transportation system to allow use in any weather, and provide full accessibility.
- **C.** Assure that appropriate training is provided to all staff in the areas of visitor service, park information and emergency procedures.
- **D.** Conduct regular safety inspections and correct deficiencies as needed to provide a safe environment for visitors and staff.
- **E.** Conduct regular inspections of the park to ensure that facilities and equipment are clean and well maintained.
- **F.** Continue to promote the park through special events and implementation of the park's marketing plan.
- **G.** Continue to refine and develop the volunteer program to achieve a more effective work force.
- **H.** Continue to refine and develop the administrative support program and concessions operations through training and the effective use of technology.

Management Coordination

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

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

Specific management coordination programs at Homosassa Springs Wildlife State Park include work with the U.S. Fish and Wildlife Service, the FFWC, the U.S. Department of Agriculture, the Save the Manatee Club and others regarding the management and care of captive manatees. Required permits for maintaining the animals on exhibit are acquired from the U.S. Department of Agriculture, the U.S. Fish and Wildlife Service and the FFWC, and staff of those agencies provides technical advice on the park's captive animal program. Park and District staff works with staff of the Southwest Florida Water Management District and the DEP Florida Springs Initiative regarding surface and groundwater quality and quantity issues. The Park staff is active

in the local community and work with local governments, chambers of commerce and tourism development councils and Visit Florida to coordinate the park's goals and visitor service programs with local planning and local and state promotional campaigns.

Public Participation

The Division provided an opportunity for public input by conducting a public workshop and an advisory group meeting. A public workshop was held on June 9, 2004, at 7:00 PM. The purpose of this meeting was to present this draft management plan to the public. An Advisory Group meeting was held on June 10, 2004, at 9:00 AM. The purpose of this meeting was to provide the Advisory Group members the opportunity to discuss this draft management plan.

Other Designations

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

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

RESOURCE MANAGEMENT COMPONENT

INTRODUCTION

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

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

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

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

RESOURCE DESCRIPTION AND ASSESSMENT

Natural Resources

Topography

Homosassa Springs Wildlife State Park is located in the physiographic province known as the Gulf Coastal Lowlands, which includes most of the broad coastal plain between the Brooksville Ridge and the Gulf of Mexico. The topography of the Gulf Coastal Lowlands is generally level, with occasional ancient dunes rising as high as 100 feet in elevation. Within these coastal lowlands are swamps and marine terraces of Pleistocene age (10,000 to 1.6 million years ago) that formed when sedimentary materials deposited and eroded as sea levels fluctuated. At elevations below 25 feet, as at Homosassa, the Pamlico Terrace occurs. Sands and clayey sands of variable thickness, underlain by Eocene and Oligocene limestone and dolomite, are characteristic of this marine terrace (Spencer 1984, Pilny et al. 1988).

Homosassa Springs is situated within a portion of the Gulf Coastal Lowlands further described as the Chassahowitzka Coastal Strip physiographic region. This is a low-lying coastal area of limestone rocklands characterized by a primary cover of hardwoods and swamps, with some flatwoods present as well (White 1970, Brooks 1982). Typical elevations in the region are 10 feet above sea level or less. An elevated escarpment east of and parallel to U.S. Highway 19, about three miles east of the park, is the western edge of the Brooksville Ridge, which surficially consists of ancient coastal ridge sands (Karst Environmental Services 1992).

Much of the park is situated below the five-foot contour; however, the eastern end of the park near U.S. Highway 19/98 ranges between five feet and ten feet above sea level. A few areas of fill and the dredge spoil along the banks of Pepper Creek reach approximately twelve feet in elevation. Prior to the dredging of this boat tour channel, much of the original hydric hammock through which Pepper Creek now passes was probably subject to seasonal inundation.

The major topographic feature of the park is the main spring basin, which is approximately 90 feet long by 50 feet wide, with steep sides and irregular depths reaching 35 feet below the surrounding land surface. Openings in the southwest side of the basin lead to a series of cavern rooms and solution features (Karst Environmental Services 1992). A detailed description of the topography of the main spring vent and aquatic cave system is in the Hydrology section of this plan.

Topographic alterations that occurred before the state acquired the park include the dredging of Pepper Creek, the creation of a fill road between Fishbowl Drive and U.S. Highway 19/98, and the deposition of fill in several developed areas.

Geology

Rock outcrops and rocks overlain by thin surface sediments are common in this region. These are ancient marine deposits associated with changes in sea levels that occurred over millennia. Listed from youngest to oldest, regional underlying deposits include the lower limestone of the Ocala Group, Avon Park Formation, Lake City Limestone, Oldsmar Formation and Cedar Keys Formation. Clays, mud and stone indicative of the Hawthorn Group are largely absent. Coastal and surface erosion, weathering and dissolution have worn these away, along with the Suwannee Limestone and upper layers of the Ocala Limestone (Karst Environmental Services 1992, Jones et al. 1997).

Within the park, limestone of the Ocala Group is at or near the land surface. Well completion reports from the region surrounding the park indicate that the intact portions of the Ocala limestone comprise the upper 36 to 125 feet of the underlying stratigraphy (Jones et al. 1997). Within the Homosassa Spring basin, the stratigraphic units of the Ocala Group and the Avon Park Formation are well defined. The divide between the two units in vicinity of the park was identified by Karst Environmental Services (1992) at 48 feet below mean sea level, indicating that the lower 50-55 foot portion of the Ocala limestone remains.

Below the Ocala Group lies the Avon Park Formation, also of Eocene age. This formation is composed primarily of limestone and dolomite. The limestone component is light to dark brown in color, contains many fossils and is variably porous. The dolomite component is gray to dark brown in color, fine to microcrystalline in texture, and may contain porous fossil molds, thin deposits of plant material, and peat fragments (Spencer 1984).

Below the Avon Park Formation lies the Lake City Limestone, also of Eocene age. In general, this formation consists of limestone and dolomite with some carbonaceous material. The limestone component is light brown to brown, easily fragmented, and contains many fossils. The dolomite component is brown, porous and crystalline in texture, and occurs in a wide range of distribution patterns—from small crystals in the limestone matrix, to pure deposits of dolomite. Gypsum may be present in fine, linear deposits within the dolomite (Chen 1965).

The deepest deposit of Eocene age is the Oldsmar Formation, which underlies the Lake City Limestone. This formation is composed of dolomite and limestone, with gypsum and anhydrite evaporites. The limestone component is typically light brown to white in color, porous and

containing many fossils. Beds of brown-colored, porous and variably textured dolomite occur within the limestone formation (Chen 1965).

The Cedar Keys Formation, of Paleocene age, is composed of dolomite with gypsum and anhydrite evaporites, and a small component of limestone. The dolomite is gray in color and variable in porosity and texture; it may or may not contain fossils. The Cedar Keys Formation is considered to form the base of the Floridan aquifer in this region of the state (Chen 1965, Fernald and Purdum 1998).

Geologic alterations in the park are limited to surficial limestone excavations in some areas, such as in the canal containing Pepper Creek. Other than dredging, no remarkable alterations of geologic formations have occurred.

Soils

Nine soil types occur within the park (Pilny et al. 1988). These soil types include better-drained sandy soils created by the filling of wetlands during earthmoving activities; relatively flat, poorly drained sands in the flatwoods; and very poorly drained, frequently flooded, mucky soils in areas of hydric hammock (see Soils Map). Addendum 3 contains detailed descriptions of these soils.

In general, the native soils at Homosassa Springs consist of a thin layer of organic material overlying limestone. Little or no horizon development is present. Trees are necessarily very shallow-rooted.

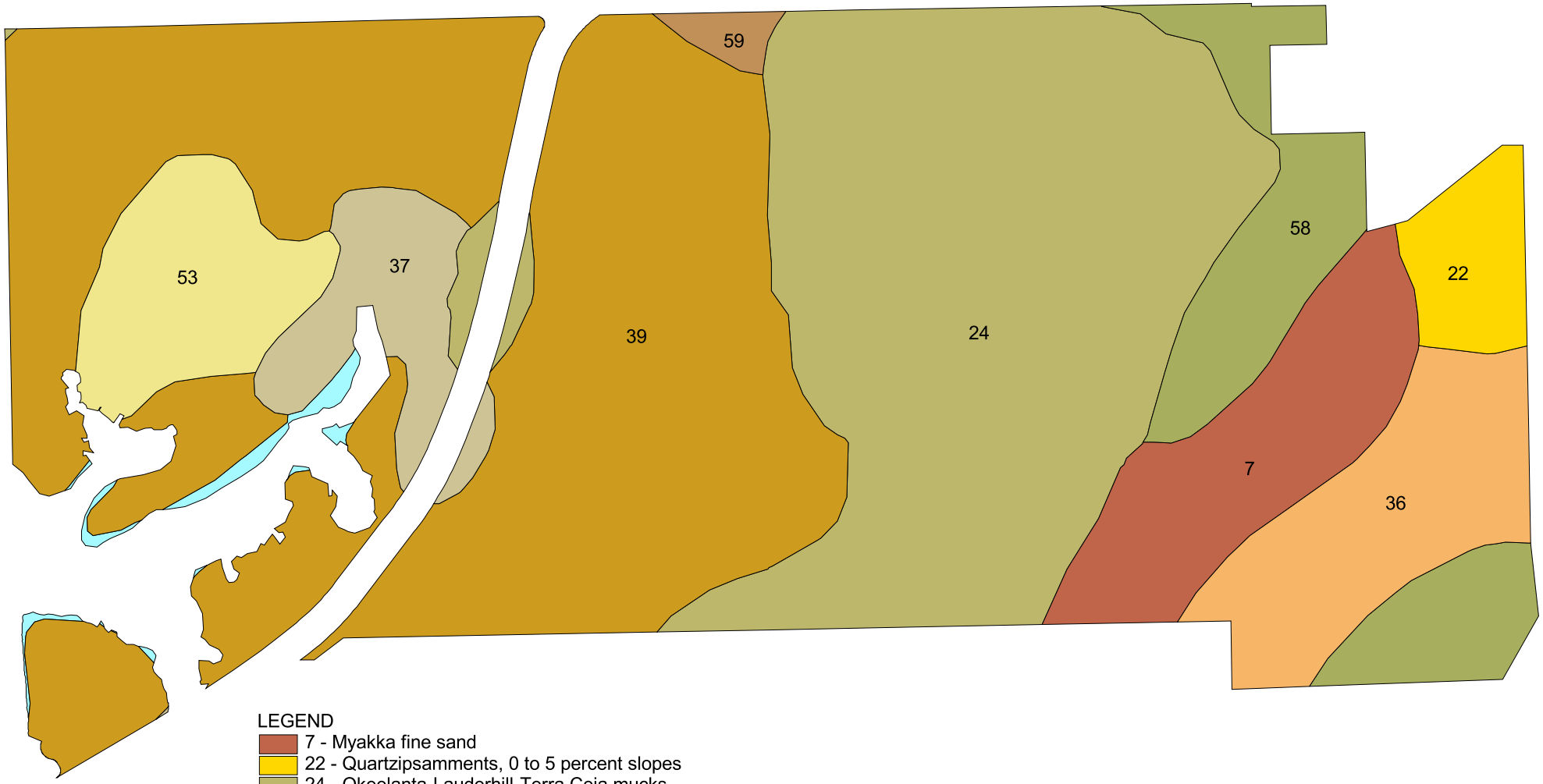
Alterations of natural topography and drainage patterns by roads, a canal and spoil banks have changed the soil characteristics in some local areas. Where spoil piles are located on wetland soil types, plant species typical of more upland environments predominate. This is attributable to the sunnier, better-drained microhabitat created by the spoil piles. In other areas, particularly those that historically were developed, off-site fill now caps the native soils. Most of these areas are located adjacent to U.S. Highway 19/98 or within the original attraction area. Erosion from the fill and from limestone walkways within the attraction causes impacts to the adjacent spring runs. Projects to remove the fill and the limestone walkways and replace them with elevated boardwalks are underway. The elevated boardwalks remove the foot traffic from the hydric hammock, and removal of the fill and limestone restores the natural drainage within the hydric hammock. Such management activities will follow generally accepted best management practices to minimize or prevent soil erosion and conserve soil and water resources on site.

Minerals

There are no known mineral reserves of commercial value within the park.

Hydrology

Park hydrologic features. The primary hydrologic features at Homosassa Springs Wildlife State Park are the main spring vents and additional smaller springs that constitute the primary headwaters of the Homosassa River. The multiple spring vents within the park are part of the Homosassa Springs Group, a series of springs occurring within an approximately four square mile area of the upper Homosassa River. Collectively, the Homosassa Springs Group discharges about 229 million gallons per day (mgd). The main spring vents located within the park discharge approximately 67 million gallons per day, based upon discharge measurements for the period of record (Champion et al. 2001). The cumulative volume of spring discharge from these springs affords Homosassa Springs first magnitude spring status, among the 32 other first-magnitude spring systems in the state of Florida (Rosenau et al. 1977, Scott et al. 2002).



LEGEND

- 7 - Myakka fine sand
- 22 - Quartzipsamments, 0 to 5 percent slopes
- 24 - Okeelanta-Lauderhill-Terra Ceia mucks
- 36 - EauGallie fine sand
- 37 - Matlacha, limestone substratum-Urban land complex
- 39 - Hallandale-Rock outcrop complex, rarely flooded
- 53 - Boca fine sand
- 58 - Myakka, limestone substratum-EauGallie, limestone substratum complex
- 59 - Boca fine sand, depressional
- Water

N

200 0 200 400 Feet

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

HOMOSASSA SPRINGES WILDLIFE STATE PARK

SOILS MAP

Other significant hydrologic features within the park include the uppermost reach of the Homosassa River; a channelized stream named Pepper Creek, which receives drainage from the town of Homosassa Springs; and an extensive area of hydric hammock that comprises the bulk of the park's acreage. The Homosassa River, which has been designated an Outstanding Florida Water, flows approximately seven miles from the park to the Gulf of Mexico. During hurricane storm surges, much of the park may flood; the saltwater inundation may be extensive enough that certain types of vegetation within the river floodplain are killed.

Spring hydrology. Karst Environmental Services (1992) conducted a detailed study of the hydrology of the main spring at Homosassa Springs in 1991, providing maps, water quality characteristics, sediment analyses, spring discharge and a detailed description of the basin, caverns and caves at Homosassa Spring.

The main springs of the Homosassa Springs complex emerge from a steep-sided rectangular basin that measures about 90 feet by 50 feet and has a maximum depth of about 35 feet. Overhanging ledges extend out along the west and southwest walls. The bottom of the basin is very uneven and irregular due to collapsed boulders that line the floor. The diver-accessible portion of the cave system extends to approximately 70 feet below sea level, although several narrow passages, which are inaccessible to divers, extend to greater depths (Karst Environmental Services 1992).

Besides the main spring, several other springs occur in the park. These include Blue Hole Spring, an unnamed spring in front of the pavilion along the southeast fork of the Homosassa River, Banana Spring, and several smaller springs in the area known as the Bird Park. Banana Spring and springs in the Bird Park merge to form an unnamed tributary to the Homosassa River northeast of the main boil. Additional springs within the park include a small spring beneath the boat dock at the visitor center on U.S. Highway 19/98 and several small, unnamed springs and solution basins typical of karst topography.

Blue Hole Spring, located in the western section of the park, discharges into the main spring run via a short run from its spring pool. This spring is 15 to 17 feet deep, with small vents along its western side. The offshore spring in the southeast fork of the Homosassa River, directly in front of the west pavilion, forms a vent at the bottom of a depression in the sand and gravel bottom sediments. This spring has a weak discharge and may stop flowing, or even reverse flow, under tidal influences or during drought.

Other named springs and surficial karst features occur on properties adjacent to the park. Hydraulic connections between these features and the main spring are suspected but have not been confirmed through scientific study.

The waters of the main spring emerge from several different vents within the basin and represent at least three sources of subterranean flow. Differentiation of these sources is based upon the levels of dissolved chlorides (salts) that they contain. The floor of the northern half of the basin contains several vents that discharge the freshest water, with chloride levels ranging between 324 and 590 milligrams per liter (mg/L). Beneath the ledges on the west and southwest sides of the basin are openings that lead into rooms and solution chambers where the largest individual vents occur. These vents discharge waters that have salinity levels of 1250 to 2000 mg/L. Numerous vents, with intermediate salinities in the range of 900 to 1400 mg/L, are located in the deeper, center area of the basin.

Discharge from the main spring appears to have decreased substantially since the 1970s. According to Rosenau et al. (1977), between 1931 and 1972, the average discharge was 68.4 mgd, with the lowest recorded output being 51.7 mgd. Researchers with Karst Environmental Services (1992) suggest that these earlier measurements may have been taken at a point further downstream, and perhaps included the flows of other springs in the park. They do not dispute the notion, however, that flow from the main spring has decreased. Currently, the United States Geological Survey (USGS) operates a water monitoring station that takes daily readings at the site. Flow data for Homosassa Springs may be accessed at the USGS website.

Coastal tides influence spring discharges on the Homosassa River. Discharges are greater at periods of low tide and decrease during high tides. At the main spring, the difference in discharge at high and low tide may be as great as 20 million gallons per day (mgd), with the average difference being 9.22 mgd.

Spring recharge. The recharge area for Homosassa Springs is not clearly distinguished from that of other coastal springs in the region (Jones et al. 1997). The Green Swamp Potentiometric High and the Brooksville High are the two principal sources of groundwater for the more than 40 springs located in the Gulf coastal area from Chassahowitzka to Crystal River. The Green Swamp Potentiometric High, situated in northern Polk, southern Sumter and eastern Pasco Counties, is the major water source for these springs; it has a groundwater elevation of more than 125 feet. The Brooksville High is closer, but has a groundwater elevation of only 83 feet. The potentiometric elevation at Homosassa Springs is only about 2 feet above mean sea level, so the direction of flow of groundwater is from the Green Swamp and Brooksville Potentiometric Highs northwesterly toward the park.

Local recharge also comes from the Brooksville Ridge, which lies due east of the park. Rainfall in this karstic upland area percolates quickly through 50 to 60 feet of sand, almost immediately reaching the upper Floridan aquifer because the confining layer is very thin or nonexistent. Fractures and karst solution features, which are abundant in this region, also allow rainfall to enter the aquifer rapidly. The absence of Suwannee Limestone and the Hawthorn Group means that the Floridan in this region is an unconfined or water table aquifer. Recharge along the Brooksville Ridge may be as much as 18 to 22 inches per year. Its contribution to the long-term perennial flow of Homosassa Springs is relatively minor, however, when compared to that of the Green Swamp and Brooksville Potentiometric Highs (Ryder 1985).

Water quality. Historically, the main springs at Homosassa have discharged water with nitrates at background levels of 0.05 mg/L (Rosenau et al. 1977). Within the past decade, however, nitrates in the main springs have risen to levels between 0.14 and 0.42 mg/L (Champion et al. 2001). Similar dramatic increases in nitrate levels have been observed in spring discharges in other parts of the state, particularly further north in the Suwannee River watershed. The South West Florida Water Management District currently measures nitrates, specific conductivity, salinity, dissolved oxygen and other water quality parameters on a quarterly basis at Homosassa Springs, and provides these data to the public annually.

A more critical water quality issue is the relatively high level of coliform and fecal coliform bacteria found in the Homosassa River downstream from the park, the origins of which some have attributed to the captive animals in the park. Efforts to reduce bacteria levels in waters at the park have included the following: removal of a petting zoo with 50-60 barnyard animals; removal of 35-40 geese, peacock, and ducks from the Bird Park; removal of all captive animals along Pepper Creek; implementation of a waste removal program within the wildlife park; and

connection of the park's wastewater discharge to the Citrus County wastewater treatment facility. Since incorporation of the park into the Florida Park Service in 1989, a priority of the Division has been to make continual progress in the reduction or elimination of animal waste contributions and in the improvement of water quality. The park has spent over 1.1 million dollars in these continuing efforts.

Erosion and sediment deposition from park facilities may also adversely affect water quality within the park and downstream. Once the state acquired the park in December 1988 and the Division received management authority, staff undertook measures to control erosion and minimize sediment deposition in park waters. In 1990, the park constructed sidewalks at the main spring and in the captive animal area to reduce erosion and runoff. Following this effort was the dredging in 1991 of eroded sediments from the main spring. In 1998, the park removed a 350-foot section of limerock trail and constructed a 300-foot elevated boardwalk in its place as part of an effort to restore wetlands and natural surface hydrology along the spring run. A similar restoration project within the Bird Park resulted in the removal of a 500-foot limerock trail and construction of a 600-foot elevated boardwalk. Removal of the remaining limerock fill trails, and their replacement with elevated boardwalks, continues in phases.

The use of Banana Spring and springs in the Bird Park area by park visitors, captive wildlife and free ranging wildlife has had a significant effect on the appearance of these springs and on their water quality. Over the past 35 years, these lesser drainage-ways were modified to create wildlife exhibits of captive waterfowl, otters, alligators, a crocodile and a hippopotamus. Pea gravel from the park's walkways, and organic material generated by plants and animals in the park, have deposited in the spring vents and in the waterways. Flow from these springs is difficult to detect.

Sediment accumulation has also been acute at the downstream side of the hippopotamus enclosure, largely due to activities of the hippo. The park has installed a new wastewater lift station to collect all land-deposited waste from the hippo. This decreases the amount of waste currently entering the water by 25-40%. The hippo has been living in this enclosure for over 35 years. He is currently 43 years old, and his life expectancy is about 50 to 55 years. When the hippo dies, the park will convert the enclosure to a native wildlife exhibit.

Pepper Creek, which originates east of the park in the town of Homosassa Springs, enters the eastern side of the park at the visitor center on U.S. Highway 19/98. This waterway is a large drainage ditch that carries runoff from downtown Homosassa Springs and U.S. Highway 19/98 through the park to the Homosassa River. Because much of the developed area around Homosassa Springs, including U.S. Highway 19/98, connects directly to this drainage system, hydrologists consider this ditch is to be a major point source of storm water pollution to the river. Base flow is less than five cubic feet per second (cfs), but Citrus County estimates that the volume of storm water runoff traveling through the ditch during large storm events is as much as 250 cfs (Citrus County 1989). A canal that runs beneath Halls River Road and joins Pepper Creek within the park may also supply substantial amounts of storm water. Within the park, there is a small spring beneath the boat dock at the visitor center on U.S. Highway 19/98 that contributes to the flow of Pepper Creek. There are also several small seeps and boils where Pepper Creek empties into the Homosassa River near the southwestern boundary of the park.

Pepper Creek serves not only as a drainage way for much of the Homosassa Springs area, but also as a water way to transport visitors from facilities on U.S. Highway 19/98 to the wildlife exhibits area of the park. Nearly 200,000 visitors use the tour boat annually. A weir system located in the park maintains sufficient depth for the boats to operate.

Dredge spoil piles line the Pepper Creek waterway, forming earthen berms that disrupt sheet flow in the adjacent hydric hammock. Plant species atypical of the hydric hammock exist on these elevated spoil piles.

Algae, and other nuisance or exotic aquatic plants, have proliferated within Pepper Creek and contribute to water quality problems. On a seasonal cycle, the aquatic plants bloom, die and decay, adding sediments to the waterway. Control of aquatic plants is a continual maintenance problem and operational expense.

Elsewhere in the park, nuisance aquatic plants are less of a problem. Saltwater from the storm surge associated with the "storm of the century" in March 1993 is credited with eliminating much of the hydrilla that had become established in the Homosassa River. A small amount of hydrilla remains around control structures located at some of the animal enclosures in the Bird Park.

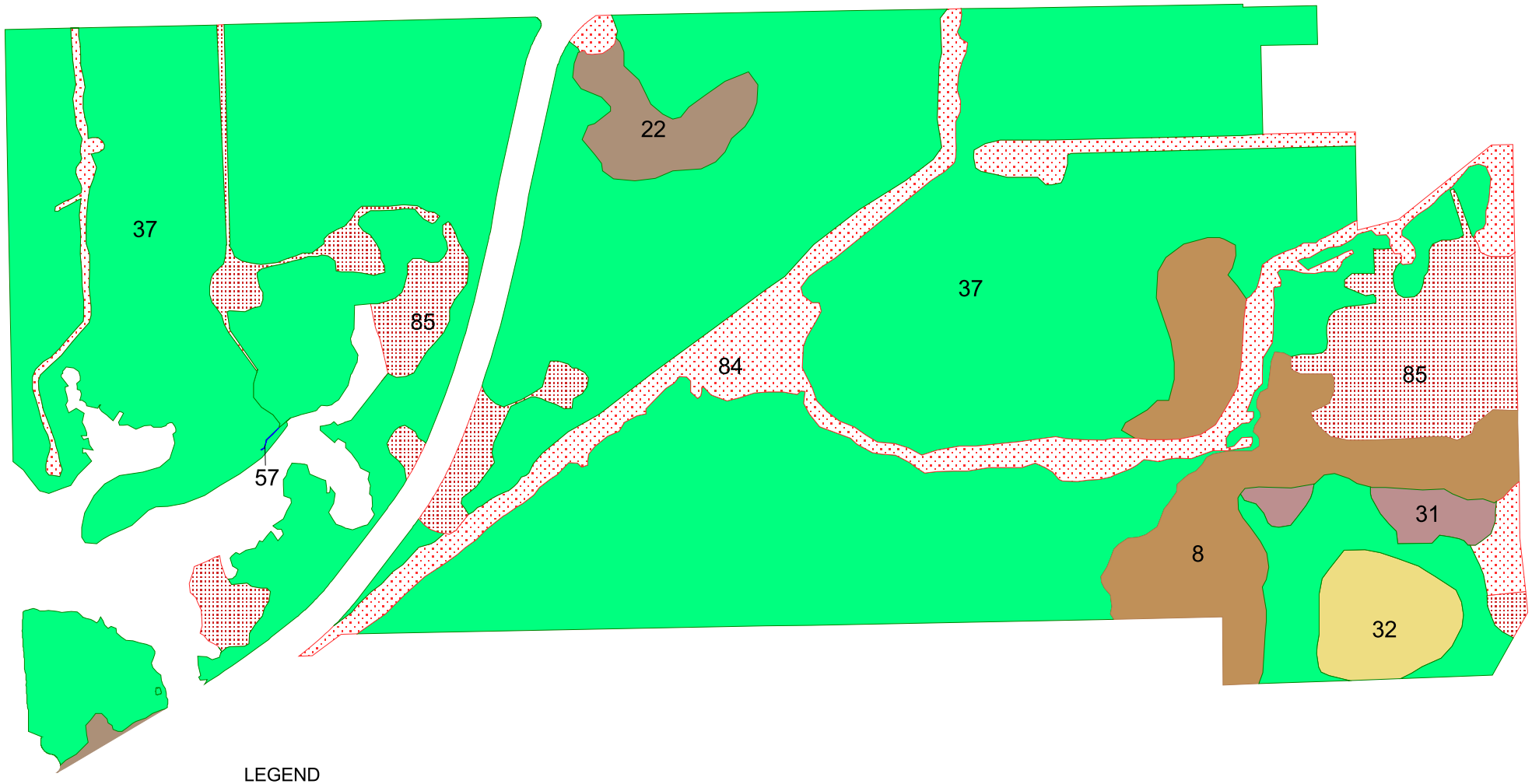
Wastewater generated within the park, once treated by a park-operated wastewater treatment plant, now discharges to the Citrus County wastewater treatment facility. The old treatment facility was dismantled and removed from the park, and the site will be used for overflow parking.

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 seven 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.

Mesic flatwoods. This community type occurs at higher elevations within the eastern portion of the park, north and south of Pepper Creek, and in the southeast corner of the park. Division biologists mapped and inspected much of this area during the course of a Resource Management Evaluation conducted in 1998 (Younker 1999). Mesic flatwoods extend south of the Visitor Center parking lot, lie adjacent to the assistant manager's residence and border the paved tram road for some distance. No fires, either natural or prescribed, are known to have occurred in this system in recent years; consequently, a considerable amount of fuel has accumulated in some areas. Both longleaf pine and slash pine are present. Saw palmetto and typical flatwoods shrubs dominate the understory. Herbaceous ground cover species are sparse, probably due to long-term fire exclusion. Prescribed burning should release many of the suppressed or dormant herbaceous species that remain on site. Off-site hardwoods such as laurel oak and water oak have invaded portions of the mesic flatwoods. Drainage ditches alter the natural hydrology of the flatwoods south of the Visitor Center, and the tram road fragments a small portion of the community. The current condition of the mesic flatwoods in the park is poor to fair.



LEGEND

- 8 - Mesic Flatwoods-15.71 ac.
- 22 - Upland Mixed Forest-3.38 ac.
- 31 - Depression Marsh-1.68 ac.
- 32 - Dome-3.52 ac.
- 37 - Hydric Hammock-146.40 ac.
- 57 - Spring-Run Stream-0.01 ac.
- 84- Ruderal-15.17 ac.
- 85 - Developed-13.90 ac.

N

200 0 200 400 Feet

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

HOMOSASSA SPRINGES WILDLIFE STATE PARK

NATURAL COMMUNITIES MAP

Upland mixed forest. Upland mixed forest occurs sparingly in the park on slightly higher elevations above the hydric hammock. Stands range in character from mature and relatively diverse to quite young with few species represented. Most of the upland mixed forest areas are small and occur scattered within and along the roadside edges of the hydric hammock. The Natural Communities Map depicts only the larger areas of upland mixed forest. Patches too small to differentiate readily are included within the hydric hammock designation. The current condition of the upland mixed forest is fair to good.

Depression marsh. Two areas classified as depression marsh occur in the southeast portion of the park. Both of these areas are overgrown with woody species because of past fire suppression, although herbaceous plants remain dominant. In addition, there is evidence of surface hydrologic alteration including scrapes, ditches and roads, both within and surrounding the depression marshes. Analysis of aerial photo images of the property indicates that the depression marshes may intermittently connect hydraulically with the dome swamp. The current condition of the depression marshes is poor.

Dome Swamp. A dome swamp is located in the southeast corner of the property. This dome is overgrown with hardwoods, although some young pond cypress trees are also present. Herbaceous vegetation dominates the area immediately surrounding the dome swamp. This emergent vegetation, and the several small spoil piles apparent in the wetland, indicates that scraping or rim ditching of the dome may have occurred in the past. The dome may connect hydraulically with the depression marsh areas immediately to the north, however surface alterations and past fire suppression obscure the physical appearance of the possible connection corridors. The current condition of the dome swamp is poor.

Hydric hammock. Hydric hammock is the dominant community type in the park and generally occurs below the five-foot elevation. This community usually inundates during extreme high water events such as storm surges associated with major storm systems. While selective cutting of southern red cedar occurred in this region during the early part of the 20th century, the hydric hammock within the park retains the structure and species composition typical of the area. The current condition of the hydric hammock is fair to good.

Several major hydrological disruptions within the hydric hammock occurred in the past. Two major roads and a large dredged canal transect the hydric hammock and undoubtedly affect drainage patterns and local water table levels. Other disturbances within the hydric hammock include the development of the Homosassa Springs attraction itself. In the management plan, the overall footprint of the numerous buildings and structures of the attraction is classified as developed. Numerous walkways and footpaths occur within the hydric hammock. Developers of the attraction used crushed and compacted limerock on most of these walkways to stabilize the organic soils of the hydric hammock. The park has recently removed many of the walkways, replacing them with elevated boardwalks to restore the natural sheet flow of the hydric hammock. Current plans include the replacement of nearly all the remaining limerock walkways with elevated boardwalks or concrete sidewalks. Other fill sites, including abandoned roads, also occur within the hydric hammock.

The spoil piles that remain from the dredging of Pepper Creek during the development of the attraction have impacted the hydric hammock adjacent to the creek. The park is considering removal of much of that spoil, but spoil removal may cause even greater environmental impact due to lack of easy access and to existing vegetation on the spoil piles. In some cases, spoil areas along the creek are included in the ruderal designation.

Spring-run stream. Homosassa Springs has two main spring-run drainages, the main boil described here and the watercourse that flows from Banana Spring described below in the Developed section. Numerous other smaller springs and seepages occur within the spring runs. The spring run associated with the main boil is relatively broad and shallow with large patches of bare sand. Near the western boundary of the park, the Long River Bridge spans the spring run. The bridge incorporates an underwater barrier to prevent the escape of captive manatees and to prevent physical contact between the captive manatees and wild manatees. This barrier prevents entry of wild manatees, large fish and other large animals into the captive manatee area. The number of manatees held within this area has varied since the park began serving as a rehabilitation center for manatees. Most of the aquatic vegetation normally found within a spring-run stream is absent at Homosassa due to the intensive foraging of the captive manatees. The main boil also houses the Fishbowl observatory, which is a floating, underwater observation chamber. Additional details concerning the spring-run streams are included in the Hydrology section above. The current condition of the spring-run streams is fair to good.

Aquatic cave (unmapped). Several aquatic caves are located underneath the main boil of Homosassa Spring. At the bottom of this depression, water flows from several vents and fissures, emerging from aquatic caves within Homosassa Spring. There are at least three sources of subterranean flow. Divers have explored two of the cave openings to a depth of 65 and 70 feet respectively. A study of the main spring and aquatic cave systems by Karst Environmental Services recorded two troglobitic species in the caves, an amphipod and an isopod. The Hydrology section above and the report issued by Karst Environmental Services (1992) contain additional descriptions of the aquatic caves. The aquatic caves are in good condition.

Ruderal. Several ruderal areas occur within the park. One area, located in the northeast portion of the park, was cleared and used as a spray field at one time. This practice has been discontinued and the area is now a possible site for wetland mitigation. In some portions of the park, disturbed areas resembling young upland mixed forest occur amidst the hydric hammock, possibly resulting from past filling of the wetlands. In other, more recently disturbed tracts, sweetgum and other pioneer species dominate.

Pepper Creek is classified as ruderal due to the large-scale dredging that occurred during development of the attraction. This watercourse, which originates in freshwater swamps east of the park, was probably at one time a blackwater stream, with at least some input from small springs along its path. The attraction artificially deepened the Pepper Creek channel in the 1960s to facilitate the passage of tour boats. The downstream portion of Pepper Creek follows what may have originally been a mosquito ditch or drainage ditch. The original ditch or canal continues to the northeast and passes under Halls River Road and out of the park. The upstream half of Pepper Creek within the park may follow what was once a natural drainage, but the past dredging operations have obscured the original nature of the stream. In places, spoil piles of limestone and soil border both Pepper Creek and the canal that passes under Halls River Road. Many of these piles are heavily vegetated. It is unlikely that the park will ever be able to reclaim the original aspect of Pepper Creek or of the other drainage ways in this area.

A weir that controls the water level of the Pepper Creek system is located near the park entrance on Fishbowl Drive a short distance downstream from the boat dock. Sediments are probably accumulating upstream of this structure and the park may need to address their disposition in the future. Untreated runoff from U.S. Highway 19/98 and from the town of Homosassa Springs likely lowers the water quality in Pepper Creek. The Hydrology section above contains additional details.

Developed. There are several developed areas in the park. Developed areas at the main entrance to the park on Fishbowl Drive include the snack bar and gift shop complex, the boat dock area, the museum building and its landscaped gardens, the animal cages and enclosures, the animal care and shop buildings, and the manager's residence area. A park residence is also located within the Parson's Property addition, near the western boundary of the park. Developed areas at the east end of the park adjacent to US Highway 19/98 include the main visitor center building, the boat dock and associated boat storage, the park warehouse and a park residence. The old wastewater treatment plant site and the former spray field are also included in the acreage classified as developed.

The spring-run system that originates at Banana Spring has been developed as a display area for crocodilians and other aquatic animals, including river otters and a hippopotamus. An unnamed tributary of this spring run, which receives input from several small springs, has been developed as a bird and mammal display area known as the Wildlife Walk. Water levels in this system are artificially maintained by a weir system located above the confluence of this spring run and the spring run from the main boil. Nutrient and fecal coliform levels are high in this watercourse due to the amount of food and animal wastes discharged into it. The park has recently succeeded in lowering levels of these pollutants by instituting some basic operational changes. The Hydrology section above contains additional details about this system.

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.

Although the park displays many designated species as captive animals, a significant number of free-ranging designated species also make use of the park. Several species of herons and egrets forage, roost, or even breed within the park. A wading bird rookery is located in the trees surrounding the alligator enclosure. The presence of alligators below the nests discourages the nocturnal feeding forays of wild raccoons and other nest predators.

Homosassa Springs is also a potentially critical area for the Florida black bear. Wildlife managers know that bears migrate through the park along a narrow corridor that connects extensive public lands to the north and south. The Crystal River State Buffer Preserve and St. Martins Marsh State Aquatic Preserve are located north of Homosassa, while the Withlacoochee State Forest (DOF), Chassahowitzka River and Coastal Swamps (SWFWMD), and Chassahowitzka National Wildlife Refuge (USFWS) lie to the south. Prospects for the long-term survival of the Chassahowitzka region's bear population would improve if the appropriate agencies secured a protected landscape connection between these properties and public lands in the Big Bend region to the north (Cox et al. 1994).

The Homosassa shrew (*Sorex longirostris eonis*), a subspecies of the southeastern shrew, was discovered in the area and described from 10 specimens in the 1950s (Davis 1957). Scientists originally thought this subspecies occurred only at Homosassa Springs. Based on morphological measurements of southeastern shrews from across the range of the entire species, however, Jones et al (1991) proposed that the range of the Homosassa shrew actually extended throughout peninsular Florida. It is likely, then, that the Homosassa shrew is not restricted to a single locality and is not distinct from the remainder of the southeastern shrew population within

peninsular Florida.

Perhaps the best-known designated species in the park is the West Indian manatee, which occurs both in captivity and in the wild. Wild manatees frequent the Homosassa River and are occasionally visible from the park. Large numbers of manatees may be observed in the river during winter months. Recent counts have documented more than 100 manatees frequenting the vicinity of the park. Both the Crystal River and the Homosassa River are important winter refuge for the northwest Florida manatee population. The captive herd of manatees at Homosassa Springs consists of long-term captives as well as younger animals born in captivity. In the past, the park has also temporarily housed manatees before their eventual release back into the wild. As of January 1999, the park housed nine captives; past numbers have ranged from six to twelve. All manatees in Florida, whether captive-born or wild-caught, are considered endangered and are held only under permit from the U.S. Fish and Wildlife Service.

In 1997, a papillomavirus was discovered in the captive manatee herd at Homosassa Springs. When active, the virus causes wart-like lesions on the skin of the infected animals. While not considered acutely lethal, the papillomavirus could have long-term debilitating effects. Although transmission of the papillomavirus is not completely understood, the park has taken measures to prevent direct physical contact between the captive and wild manatees. Barriers are located in the spring run to prevent direct and indirect contact between the captive herd and wild manatees in the spring run. In addition, the park cooperates with other entities, including the University of Florida, Harbor Branch Oceanographic Institute (HBOI), FFWCC and USFWS, in researching and monitoring the progression of the papillomavirus within the herd.

The park maintains a restricted area in the Homosassa River of approximately 2.7 acres to provide a sanctuary for wild manatees and other wildlife on a year-round basis. This area also serves as a buffer zone separating the passive recreation in the park from the more active recreation in the river. The restricted area has become an important resting and warm water refuge for the 100 or more manatees that use it during the winter months. Due to factors such as sediment displacement by captive manatees in the headspring, runoff from limerock trails, and alterations of smaller springs over the past 35 years, sediments have accumulated both inside and outside the restricted area. Water depth in this area varies from 0-5 feet, and when water levels are low, the area is too shallow for use by manatees. The Army Corps of Engineers has recently proposed to collaborate with the park on a project to restore natural depths in the spring run.

Most of the designated plant species within the park are listed as commercially exploited. These species tend to be restricted to the hydric hammock natural community or to ornamental plantings within developed areas. Informal surveys indicate that several designated terrestrial orchid species occur within the park (Paul Martin Brown, pers. comm.). A formal, multi-season survey is needed to identify the particular species, locations and numbers of these and other rare plant species that may occur within the park.

Special Natural Features

The most spectacular natural feature in the park is the main boil of Homosassa Spring, which forms the headwaters of the Homosassa River. The spring has attracted humans for thousands of years, and manatees for far longer. Although not as large as many of the other springs in Florida, Homosassa Spring is unique in the visitor experience and interpretation that it provides. At Homosassa Spring, it is actually possible to view the spring and its inhabitants from an underwater observatory that floats within the main boil of the spring. This underwater view of the spring and the resident manatees provides park visitors with an unparalleled experience. Interpretive signs explaining the geology, ecology, and natural history of the spring and its

wildlife provide visitors with an appreciation for all of the spring systems of Florida. The manatee programs conducted by park staff and a large volunteer corps provide critical public outreach and education to publicize the plight of the manatee in Florida.

Cultural Resources

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

The Florida Master Site File (FMSF) lists six sites within the unit. Of these sites, five are prehistoric and one is historic.

The historic site, Ci375, consists of the structural remains of the tourist attraction at Homosassa Springs. Documented accounts of visitation to the spring by persons of European descent date back to the 1880s. At that time, the spring was a stop along a rail line, Atlantic Coast Line 501, also known as the Mullet Train. Here tourists could enjoy the view of the spring and ship out commodities such as crabs, cedar wood and spring water. The train ran from Ocala to Homosassa carrying passengers, mail, express and cargo. A freight train, added later, carried to Homosassa ice, fish net twine, corks, leads, rope, lumber, wooden barrels and an array of items for the general store. The cargo leaving Homosassa consisted of barrels of fish, cedar, cedar slats and cypress logs. Apparently, the train track ran along the shoulder of what is now Fishbowl Drive.

The other sites listed in the site file are all prehistoric. One site, the Homosassa Spring Site (Ci208), is underwater. Artifacts recovered from this site represent a cross section of Florida's past, including prehistoric cultures such as the Paleo-Indian, Archaic and Woodland groups as well as historical periods. A midden site (Ci209) in the park is of the Weeden Island period of the Woodland group. The Parking Lot site (Ci414) is a prehistoric site discovered in the course of archaeological monitoring for a parking lot that was never constructed. This site comprises a lithic scatter of unidentified cultural affiliation that could possibly be associated with the midden and spring sites. The Shady Bank Site (Ci1046) was discovered and recorded during the process of archaeological monitoring for the removal of a limerock walkway and the subsequent building of a boardwalk for hydrologic restoration. It appears that the construction of the filled walkway, probably in the 1960s, previously disturbed this site. It is a deeply buried site where cultural materials exist within a thin lens (Ellis et al. 1998). The Manatus Site (Ci1077), the most recently recorded site at the park, is a disturbed lithic scatter site of unspecified prehistoric context.

The Homosassa Springs Site (Ci208) is in fair condition. During the process of dredging the spring vent in the past, artifact removal was common. Before the implementation of a park policy on artifact collection and an education program for staff and divers, artifacts were often removed from the site as they were found. The incidence of known artifact collection has been much lower since the start of this program. The Homosassa Springs Midden and the Parking Lot Site (Ci209, Ci414 respectively) are in good condition. The Shady Bank Site (Ci1046), because of disturbance from boardwalk and walkway construction, is in poor condition. During

boardwalk construction, however, professional archaeologists gathered information and salvaged much of the value of the site (Ellis et al. 1998).

The park has undergone several episodes of development. Several structures, including a bathhouse and water tower, were reportedly built in the 1920s. Neither of these structures is still standing; however, archaeological investigations could reveal evidence of their existence. The park has in its collection old photographs of a boathouse, the original bridge across the spring, and the first wooden Fish Bowl tower and platform that were all part of the attraction.

Further development of the park occurred in the 1940s. At least one structure from that era, the Museum Education Center, remains. Expansion and remodeling of the Museum Education Center has taken place over the years, so the present building represents an altered structure. Because of its location in the river floodplain, the museum is subject to inundation during extreme high water events. A building located adjacent to the park's west entrance is the second oldest of the structures in the park. It was the original construction office for Norris Development and was first located on U.S. Highway 19 before being moved to its current location.

In the early 1960s, the Norris Development Company purchased and expanded the park and marketed it as "Nature's Own Attraction." It appears that most of the structures currently located within the park date from this period. From 1978 to 1984, the park passed through several private ownerships. In late 1984, Citrus County purchased the site, and in January of 1989, the State of Florida assumed ownership of the property.

In 1985, while under county management, the park was the subject of an archaeological survey. However, as noted by the surveyor, efforts were focused on background research, and fieldwork was limited only to locations identified as potential archaeological sites. Furthermore, park areas east of Fishbowl Drive were considered to have low potential for archaeological sites, and other potentially important places were not surveyed because of time constraints (Deming 1985). Gary Ellis (personal communication) is of the opinion that other sites most certainly occur at Homosassa Springs Wildlife State Park, particularly along the spring shoreline and in locations underlying modern development.

Additional undocumented resources that may exist within the park include portions of the Cummer Lumber Company's rail line (Ellis et al. 1998). Pieces of narrow gauge rail have also been located within the park.

The park has in its possession a collection of objects. Many of these objects were recovered during the dredging of the main spring in 1992. Other objects in the collection were recovered as incidental finds in years past. The objects in this collection range from modern sunglasses to prehistoric projectile points. The condition of these objects is currently unknown. DHR personnel have evaluated most of these objects and have judged them to represent a cross section of Florida history, but no single object is of exceptional importance. The park also has a large collection of photographs, newspaper clippings, movies and videos that document the history of the Homosassa Springs Attraction. These items are variable in condition, ranging from good to poor. Another collection consists of natural history objects, including the remains of endangered species. The park uses these objects for display and interpretive purposes. The park also houses a Division collection of Florida Park Service memorabilia (uniforms, pins, patches and brochures) which is used for a Ranger Academy program.

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 analysis was not conducted for this park. The total acreage for the unit is below the 1,000-acre threshold established by Florida Statutes. Timber management will be reevaluated during the next revision of this management plan.

Additional Considerations

Management of Homosassa Springs Wildlife State Park differs in many ways from that of a typical state park. Homosassa contains a zoological park and well-developed visitor facilities, both located within sensitive natural communities that include a major spring, a spring-run stream and hydric hammock. Balancing the demands of a zoological park and tourist attraction with proper management of the natural resources is a complex and delicate task.

In the past, the zoological and tourist areas of the park caused unacceptable impacts to the natural resources of the park. After the state purchased the park, however, the Division of Recreation and Parks made much progress in improving the water quality and reducing the impacts of the facility on the local environment. Future management activities will continue to mitigate the effects of the development within the park.

Management Needs and Problems

1. Sediments have accumulated in springs and waterways in the park.
   - **A.** Sediments have accumulated in spring vents and waterways within the park. Contributing factors include the displacement of sediments by captive manatees in the headspring, runoff from limerock trails, decreased water flow and the construction of animal enclosures over the past 35 years.
   - **B.** Likewise, pea gravel eroded from public walkways and organic material generated by the captive animals has accumulated in the spring vents and in the waterways.

2. Spring flows and water quality are declining.
   - **A.** Average discharge from the headsprings has decreased since the 1970's.
   - **B.** Nitrate-nitrogen concentrations in the springs have increased significantly from background levels.
   - **C.** Hydrologic data for the springs and river are collected by several agencies at various intervals. Periodic compilation of available data is needed.

3. Potential hydraulic connections between the headsprings and offsite karst features remain unconfirmed.

4. Natural overland drainage patterns are altered by limerock trails, dredge spoil piles, fill areas and stabilized roads within the hydric hammock.

A. Although the park is actively removing the existing limerock trails and replacing them with elevated boardwalks, the project needs additional funding for completion.
B. The dredge spoil piles along Pepper Creek may also be affecting natural drainage patterns.
C. Several abandoned roads and fill areas exist within the park's hydric hammock community.

5. The use of springs by park visitors, captive wildlife and free ranging wildlife has had a significant effect on water quality.
A. Elevated fecal coliform levels occur in the Homosassa River downstream of the park and in samples of water taken within the park.

6. Untreated storm water enters Pepper Creek.
A. The developed areas around Homosassa Springs, including U.S. Highway 19/98, directly connect to the Pepper Creek drainage system, which is considered a major point source of storm water pollution to the river.
B. A canal that runs beneath Halls River Road and joins Pepper Creek within the park may also contribute substantial amounts of untreated storm water.

7. Exotic plants occur in the park.
A. Several species of ornamentals are gradually invading hydric hammock areas from adjacent developed areas.
B. Several EPPC-listed species occur at scattered locations within the park.
C. Exotic aquatic plants have proliferated within Pepper Creek, contributing to water quality problems. On a seasonal cycle, the plants bloom, die and decay, adding sediments to the waterway.

8. Rare plants may occur in the park, but documentation is inadequate. The park needs to identify rare plants, map locations and develop management measures.

9. Designated species within the park may be subject to human disturbance.
A. Boaters and swimmers may interfere with the natural behavior of wild manatees that congregate in the section of the Homosassa River adjacent to the park.
B. Vehicles on roads bordering the park are a threat to black bears that use the park as a movement corridor.

10. Long-term fire exclusion has caused a significant decline in quality of the mesic flatwoods within the park.
A. Mesic flatwoods within the park have not burned in many years. Shrubs and hardwoods now dominate the flatwoods, and many characteristic herbaceous species are apparently absent.

11. The historic structure associated with the former attraction (Museum Education Center) is in fair condition. This building has water damage resulting from flooding. Various remodeling efforts and additions in the past have modified the original building.

12. Archaeological sites in the park are in varying conditions, and are not routinely monitored.

13. The park has acquired a collection of objects but currently lacks a general collections statement.

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 springs and waterways that contain accumulated sediments and continue to remove

sources of sedimentation from areas around the springs and waterways.

A. Continue to seek funding and coordinate efforts to dredge sediments from the areas where wild manatees congregate downstream of the Long River Bridge and from the captive manatee area. Pursue funding to remove accumulated sediments from the Banana Spring area and from other locations within the Wildlife Walk area.

B. Continue efforts to convert the limerock trails to elevated boardwalks and to reduce the amount of organic material generated within the park.

2. Actively participate in efforts to improve and restore spring flows and water quality.

A. Educate park visitors and area citizens about the importance of water conservation, and the long-term preservation of spring flows.

B. Continue efforts to reduce nitrate-nitrogen sources within the park, and support regional efforts to minimize nitrate-nitrogen loading in groundwater and surfacewater systems.

C. Maintain working relationships with agencies responsible for collecting hydrologic data for the spring and river systems. Periodically compile available hydrologic data and disseminate to park staff and visitors.

3. Seek funds through the Florida Springs Initiative, or other sources, to identify and confirm potential hydraulic connections between the headsprings and offsite karst features.

4. Continue to remove limerock trails to restore natural drainage patterns, and determine whether removal of any spoil piles or abandoned roads is feasible.

A. Remove the remaining limerock trails, replacing them with elevated boardwalks for visitor access.

B. Investigate the feasibility of removing spoil piles and abandoned roads within the park that may negatively impact adjacent natural areas. Develop restoration plans for these sites where appropriate.

C. Work with permitting agencies to develop and implement wetland mitigation projects in areas identified for restoration.

5. Continue to monitor water quality in the park. Continue efforts to reduce bacteria levels within park waters.

A. Continue to coordinate water quality monitoring within the park. Compile water quality data for the park and use the information to educate park staff, volunteers and visitors about water conservation and protection.

B. Maintain ongoing efforts to eliminate or reduce the introduction of plant and animal wastes to waters of the park.

6. Continue to work with agencies involved in the development of regional management plans for storm water treatment.

A. Continue to coordinate closely with the Southwest Florida Water Management District, Citrus County, Citrus County Mosquito Control District and the Department of Environmental Protection in developing and implementing a storm water plan that protects park resources and the Homosassa River.

7. Continue and improve the exotic plant control program at the park.

A. Increase monitoring efforts, particularly in the interface between developed areas and hydric hammock. Focus on the more invasive terrestrial exotic plants.

B. Develop a detailed exotic plant control plan. Map infestations of exotic plants and prioritize them for removal.

C. Improve control measures for exotic aquatic plants. Pursue funding to increase treatments of exotic plants within Pepper Creek.

8. Identify and protect populations of rare plants within the park.

9. Protect designated species and their habitats from disturbance.

A. Protect wild manatees from disturbance to the greatest extent possible, particularly

during the winter months, through enforcement of manatee harassment regulations and effective interpretation. Continue to cooperate with the USFWS and the FFWCC in protecting manatees that congregate within and adjacent to the park.

B. Coordinate the posting of wildlife crossing signs on roads adjacent to the park to protect black bears that pass through the park. Request enforcement of existing speed limits on Halls River Road and Fishbowl Drive within the park. Continue to cooperate with the Chassahowitzka Interagency Black Bear Working Group, which includes other agencies that manage adjacent bear habitat and that conduct bear research in the region.

10. Continue to implement prescribed burning in fire-adapted communities within the park.

A. Pursue restoration of the mesic flatwoods, implementing burn plans prepared by District staff.

11. Manage historic structures in a manner that will maintain or improve their condition.

12. Regularly monitor archaeological sites and document their condition, and maintain them in a stable condition.

13. Manage collection objects according to current Division standards and procedures (Chapter 16, OM.). Develop a Scope of Collections statement.

Management Measures for Natural Resources

Hydrology

The hydrology of Homosassa Springs Wildlife State Park involves both surface and ground waters. The park is at an interface where deep groundwater becomes surface water that eventually mixes with a riverine system. Currently, there are regional concerns about groundwater quality and elevated nitrate levels. The continuation of systematic monitoring should enable the park to detect changes in water quality. It will remain the responsibility of regulatory authorities to enforce actual groundwater standards, however. Staff will continue to monitor land use changes outside the park and will provide comments to public officials if any threats to Homosassa Springs' groundwater resources become apparent.

Control of erosion should help protect surface water quality in the park. Management will comply with best management practices to maintain or improve the existing water quality on site and will take measures to prevent soil erosion or other impacts to water resources. Removal of evidence of past disturbances, particularly sediments in springs and waterways, should help to maintain high aesthetic values within the park, as well as provide improved habitat for captive and wild manatees. Stabilized foot trails in low-lying terrain may hinder natural sheet flow in some areas. Total removal of limerock and gravel trails and installation of elevated boardwalks should help solve such problems. The park and district staffs will determine if it is feasible to remove any spoil piles or abandoned roads that may influence local hydrology. Design modifications to certain structures should help control nutrient loading derived from captive wildlife pens. Staff will also assist other agencies in developing a regional storm water management plan.

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.

District 2 biologists have identified several areas of mesic flatwoods within the park that require prescribed burning. In addition, two areas of depression marsh and a dome swamp, all located within the southeast corner of the park, require reintroduction of fire after many years of apparent exclusion. The fire-dependent acreage within the park has not burned in many years, so the initial prescribed burns must emphasize fuel reduction. Adequate boundary firebreaks also must be in place before initiation of the prescribed burn program. New firebreaks are needed in some areas, particularly along park boundary lines. In an effort to reduce disturbance, the park will use soft lines and existing breaks where possible instead of creating new cleared or disked lines.

Cogon grass occurs along the shoulder of the tram road, which passes through the mesic flatwoods. Fire, a natural form of disturbance, would likely encourage the spread of this pest into the flatwoods. The park should treat this highly invasive exotic species with an appropriate herbicide at least once during the late growing season before burning the area. Complete eradication of the cogon grass would not be necessary before initiating burns.

Designated Species Protection

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

Staff will protect the wading bird rookeries within the park from undue disturbance. Unlike rookeries that develop in remote areas, most wading birds that nest in situations like Homosassa Springs tend to become habituated to humans and are remarkably tolerant of human presence. Unusual noises may disrupt rookeries, however, so staff should avoid the use of noisemakers or similar measures when attempting to deter black vultures from entering the park during the wading bird nesting season (see Problem Species below).

Homosassa Springs Wildlife State Park is a crucial link within a black bear movement corridor that parallels the Gulf Coast. Near the park, this corridor is called the Homosassa Wildlife Corridor. The hydric hammock within Homosassa Springs represents a bottleneck of forested land in an otherwise developed landscape. The corridor is bounded by Halls River and the Homosassa River to the west and Highway U.S. 19/98 and the town of Homosassa Springs to the east. Vehicles have struck bears within or adjacent to the park. Citrus County and Division officials should always consider the importance of this bear migration path when planning future land uses in the area. The posting of bear crossing signs and increasing the enforcement of speed limits on Halls River Road and Fishbowl Drive would substantially improve migrating bears' chances of survival. The park should cooperate with the Chassahowitzka Interagency Black Bear Working Group and with researchers currently working within the park under contract to the SWFWMD. The Division should also support land acquisition efforts by other agencies that would provide a perpetual connection between the park and public lands to the north and south.

Protection of the upland natural areas within the park, particularly the hydric hammock, should suffice to protect the local population of the Homosassa shrew. The secretive nature of this species makes population surveys difficult. Pitfall traps are perhaps the most effective means of censusing shrews, however they are inherently dangerous when used to trap shrews. The high metabolic rate and small body size of shrews may often cause them to die within pitfall traps, particularly if there is any accumulation of water within the trap due to rainfall or groundwater

seepage. Therefore, District 2 biologists recommend that no surveys be conducted for Homosassa shrews to avoid unnecessary impacts to the local population.

Perhaps the best-known designated species that occurs in captivity and in the wild at the park is the West Indian manatee. Homosassa Springs received its first permit as a manatee rehabilitation site in 1980. Management of the captive manatees is detailed in the Captive Manatee Management Plan for the park. Assistance with manatee care is provided by Dr. Mark Lowe (a local veterinarian), Sea World, the Florida Fish and Wildlife Conservation Commission Bureau of Protected Species Management (FFWCC), the Save the Manatee Club, and the U.S. Fish and Wildlife Service.

The master plan for the park, currently underway, includes plans for additional facilities to assist in the captive care of manatees. The Division is pursuing funds for the new manatee facilities from a number of sources. Construction was recently completed on an isolation pool that can be partially drained to allow better access to the manatees for routine examinations, medical treatments and potential transfers to other institutions. Although the captives at Homosassa Springs have reproduced in the past, the long-term prognosis for the successful release and survival of captive-born manatees in the wild is unknown. The USFWS currently prohibits the captive breeding of manatees in the United States. This ban serves in part to keep the captive population from outgrowing the facilities permitted to house manatees, and leaves spaces available for the temporary medical care and rehabilitation of wild manatees. Because of the ban, the captive herd at Homosassa Springs is designated a female herd. No adult males are permitted within the captive area.

The park also coordinates protection of wild manatees within the park with USFWS and FFWCC. Wild manatees often congregate in the Homosassa River and in the spring-run downstream of the captive manatee area. This warm water area is particularly important as a winter refuge for manatees. Unfortunately, these same areas are attractive to recreational boaters and swimmers resulting in a high potential for human and manatee conflicts. There is a designated no-entry zone within the lower portion of the Homosassa Spring run downstream of the barrier grate at the Long River Bridge. Boating and swimming are prohibited in this area to allow the wild manatees to avoid human contact. In addition, the USFWS and the FFWCC have established a seasonal manatee sanctuary in the Blue Waters area adjacent to the park, where human activity is restricted during winter months when manatees are congregating there. The park will continue to provide support to the USFWS and the FFWCC in the management of wild manatees that frequent areas adjacent to the park.

In 1997, a papillomavirus was discovered in the captive manatee herd at Homosassa Springs. The virus has infected at least five, if not all, of the captive manatees. While not an acutely lethal virus, the papillomavirus could have long-term debilitating effects. Presently, the captive manatees at Homosassa Springs are under a quarantine restriction. Introduction of new manatees is not allowed, nor is contact between the current herd and other manatees. Although mechanisms for transmitting the papillomavirus are not yet completely understood, the park has taken measures to prevent direct physical contact between the captive and wild manatees. To that end, the park reconstructed the barrier at the Long River Bridge, which spans the spring run, using a double grate that prevents physical contact between wild and captive manatees. A supplemental barrier that prevents food wastes from floating downstream was reinstalled on the Long River Bridge in March 1999 to reduce the risk of viral transmission to wild manatees. The park will continue to cooperate with other agencies, including the Manatee Recovery Team, in researching and monitoring the progression of the papillomavirus within the herd.

Future management measures for the captive manatee herd await the outcome of ongoing research on the papillomavirus and the recommendations of the other agencies involved. The current papillomavirus management plan includes removal of all infected manatees from the spring run, placement of three of these manatees in an isolation pool at the park, and placement of two of them at the Harbor Branch Laboratory for continued study and treatment. Manatees placed at Harbor Branch will return to the park, subject to the approval of the USFWS, when the papillomavirus issue is resolved.

There are relatively few records of designated plant species within the park. Recent informal surveys, however, indicate that several terrestrial orchid species occur there. A formal, multi-season survey is necessary to identify orchid and other rare plant species within the park, locate specific populations and estimate their extent. Protection of the hydric hammock from disturbance and prescribed burning of the mesic flatwoods should suffice to protect both the known and the yet undiscovered populations of designated species.

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.

Of the over 70 exotic plant species recorded at this park, at least 18 are on the Florida Exotic Pest Plant Council's 2003 List of Invasive Species. At this point, most species appear to be restricted to disturbed or developed sites. Skunk vine is established, however, in at least one part of the hydric hammock along Pepper Creek. Cogon grass appears to be the most widespread exotic species in the park, occurring on service roads, along paved road shoulders, and in other disturbed areas.

The park has a relatively large developed area with many ornamental plantings. Generally, exotic species are removed from parklands; however, in some cases that guideline is modified. Park staff should carefully review the exotic ornamental plantings within the park and replace all invasive exotic species, preferably with native alternatives. Non-invasive exotic ornamentals such as camellias and Asiatic azaleas do not necessarily have to be removed. At a minimum, staff should target for removal all exotics listed by the Exotic Pest Plant Council (EPPC), whether in ornamental plantings or not. While not listed by the EPPC, several other species that have shown a propensity to spread exist in ornamental plantings in the park. Among these plants are wax begonia, English ivy, border-grass and philodendron.

Exotic aquatic plant species, such as hydrilla, also warrant expedient treatment. The park will coordinate management of exotic aquatic plants with the DEP Bureau of Invasive Plant Management and the Crystal River and Homosassa River Aquatic Plant Management Working Group.

Regardless of whether an exotic plant is terrestrial or aquatic in habit, the need to initiate treatment promptly is underscored by the fact that some of the species do not yet form dense infestations in the park. Consequently, treatment and eventual eradication will be easier. District 2 and park staffs will develop a detailed plan for removal of exotic plants that will include precise locations of exotic infestations. Those species listed as EPPC Category I or II will receive the highest priority for treatment.

Herbicide treatment of cogon grass infestations should begin as soon as possible after discovery. Staff should use generally accepted methods as recommended by district staff. For other species, particularly in the developed areas, hand pulling or removal by other mechanical means using volunteers or staff, may be effective control measures. Staff should exercise extra caution when using herbicides in wetland areas, such as the hydric hammock, and must comply fully with herbicide labeling. Park-wide eradication of larger woody species or large infestations may require additional funding sources. The park and the district office will pursue funding for exotic plant removal through the Division budget process and through the Withlacoochee Region Invasive Plant Working Group.

There have been reports of feral hogs in the area; however, the recent resource evaluation in the park recorded no hog signs. Another destructive exotic vertebrate sometimes found in the park is the armadillo. The fire ant is the only exotic invertebrate of concern recorded in the park to date. Currently, no exotic species appears to pose a major problem.

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.

The unique status of Homosassa Springs Wildlife State Park as a zoological park has led to undesirable interactions with several native species. The park has a continuing problem with wild raccoons and bobcats entering the animal compounds and preying upon the captive animals. This problem is most severe in the Bird Park area where roosting captives, many of which are incapable of flight, fall easy prey to wild carnivores. An electric fence surrounding the compound acts as a partial deterrent; however, the park also maintains a live trapping program to capture problem animals within the compound. In the past, the park took measures to protect captive animals from black vultures that were congregating seasonally in the park in large numbers. The vultures competed with captive animals at mealtime, and actually pecked and fed upon the captive alligators. Working under a permit from the USDA, the park staff has successfully used noisemakers and small fireworks to discourage the black vultures from entering the area.

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.

1. Manage historic structures such that their condition is maintained or improved. Continue the schedule for maintenance of historic structures, including the schedule of vegetation maintenance around historic structures.
2. Pursue funding for repair and renovation of the museum building. Renovation plans should

include elevation of the building to prevent flooding and subsequent water damage. Renovation designs should accommodate the current use of the interior, while returning the exterior to its original design to the extent possible.

3. Monitor and maintain the condition of archaeological sites. Establish a formal routine to monitor archaeological sites, including a visual condition assessment of archaeological sites on a semiannual basis. Establish photo points and photograph cultural resources on a regular schedule. Improve long-term management of cultural resources by compiling a photographic record that will allow comparison of future conditions with previous ones.
4. Record additional cultural resources as they are encountered and identified. Until professionals conduct a comprehensive, scientifically informed cultural resources survey in the park, staff may contribute to good cultural resource management by recording their personal knowledge of previously unrecorded cultural resources.
5. Manage collection objects according to current Division of Recreation and Parks standards and procedures (Chapter 16, OPM.).
6. Formulate a Scope of Collections statement and a collections management plan.
7. Develop and implement a program to address the preservation and conservation of printed and film materials in the park files. This should include classification of documentary materials by condition and uniqueness, and development of a process to preserve documentary materials based upon their classifications. Provide training for staff and volunteers charged with implementing the program.
8. Inventory and catalog archaeological and historical artifacts in the park collection, and carry out plans for their deposition.
9. Inventory and catalog natural history artifacts.
10. Curate and maintain the inventory of the Florida Park Service memorabilia collection.

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.

The following research will improve the ability of the park to manage and interpret natural resources:

1. Research on manatee papillomavirus. The captive population of manatees at Homosassa Springs is known to be infected with a papillomavirus, and there is a critical need for research on the particular viral strain that affects manatees. Understanding the epidemiology of this virus is critical to containing the spread of this disease within the captive and possibly the wild population.
2. Research on black bear movements within the park and the regional landscape. The park should continue to assist other agencies with current black bear research in the region. Although the land area associated with the park is comparatively small, it serves as a crucial connector between other, larger areas within the home ranges of the local bear population.
3. Legitimate research projects on captive manatees. Depending on the type of research project, permits may be required not only from the Division, but also from the USFWS and the FFWCC. Review research project proposals on a case-by-case basis.
4. Identification of hydraulic connections between the head springs and offsite karst features.

Understanding connections between offsite surface features and the springs will improve long-term protection of the springs.

Cultural Resources

The following research will improve the ability of the park to manage and interpret cultural resources:

1. History of the park. Use the collection of film and print materials to document the history of the park. This project would provide information useful for historic interpretation of the park.
2. Professional, comprehensive cultural resources survey of the unsurveyed portions of the park, at least to level I. A level I survey would include a literature survey and a walkover, with limited shovel testing. Ultimately, a professionally conducted survey will be essential to future expansion or confirmation of the base of knowledge of park cultural resources.

Resource Management Schedule

A priority schedule for conducting all management activities that is based on the purposes for which these lands were acquired, and to enhance the resource values, is contained in Addendum 6. Cost estimates for conducting priority management activities are based on the most cost effective methods and recommendations currently available (see Addendum 6).

Land Management Review

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

Homosassa Springs Wildlife State Park has not been the subject of a land management review.

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.

Homosassa Springs Wildlife State Park is located within Citrus County, about 75 miles north of Tampa in the central part of the state. The populations of Citrus and the adjacent Hernando have grown 28 percent since 1990, and are projected to grow an additional 19 percent by 2010 (BEBR, University of Florida, 2003). As of 2000, 14 percent of residents in these counties were in the 0-14 age group, 28 percent in the 15-44 age group, 27 percent in the 45-64 age group, and 31 percent were aged 65 and over, which reflects the state average for these groupings (BEBR, University of Florida, 2003). Nearly 120,000 people reside within 50 miles of the park, which includes the cities of Crystal River, Homosassa Springs, Homosassa, Dunnellon, Inverness, Inglis and Spring Hill (Census, 2000).

Homosassa Springs recorded 265,977 visitors in FY 2001-2002. This represents a net increase over the last five years. By Division estimates, these visitors contributed $9,195,528 in direct economic impact and the equivalent of 184 jobs to the local economy (Florida Department of Environmental Protection, 2002).

Existing Use of Adjacent Lands

Homosassa Springs State Wildlife Park is located within Citrus County, in of the town of Homosassa Springs and approximately 75 miles north of Tampa. Along the park’s southern boundary, the surrounding land-use is low density residential. U.S. Highway 19/98 and its associated commercial land-uses, run along the eastern edge of the park, while West Halls River

Road is the northern boundary of the park and wetlands bound the park on the west. Fishbowl Drive, a county maintained road, bisects the park. The road is heavily used, and causes noise problems in various parts of the park.

Numerous outdoor recreation opportunities are located near the park including camping, hiking, fishing, hunting, biking, environmental, and historic education. The following state lands are located within a short drive of Homosassa Springs Wildlife State Park: Yulee Sugar Mill Ruins Historic State Park, Fort Cooper State Park, Withlacoochee Trail State Park, Crystal River Archaeological State Park, Chassahowitzka Wildlife Management Area, Chinsegut Wildlife and Environmental Area, and Withlacoochee State Forest.

Planned Use of Adjacent Lands

Given the continued growth rate of this area of Florida, lands surrounding Homosassa Springs State Wildlife Park that are not within the river flood plain, and not included in future state or local government acquisitions, will likely be developed for residential and commercial uses. Although this area is slowly urbanizing, the land adjacent to the park will probably remain primarily wetlands and medium-density residential. The lands within and surrounding the park are primarily zoned as conservation lands although lands east of US Highway 19 are zoned medium- and high-density residential (Citrus County Comprehensive Plan, 2001). Some possible future impacts occurring along with the urbanization include declines in local surface water quantity and quality, increases in storm-water run-off, local traffic, point and non-point pollution sources within the park's watershed and continued residential development in the surrounding area.

PROPERTY ANALYSIS

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

Recreation Resource Elements

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

Land Area

Homosassa Springs State Wildlife Park contains natural landscapes within reach of nearly 200,000 Florida residents, and easily accessible to tourists traveling on U.S. Highway 19/98. The park’s general topography is relatively flat, and much of the park is situated below the five-foot contour. The upland natural communities of this park include mesic flatwoods and upland mixed forest. The wetland communities include hydric hammock, spring-run streams and aquatic caves.

The primary recreational resource of this park is the developed zoological park surrounding the headsprings. The unique status of Homosassa Springs State Wildlife Park as a zoological park has wide-ranging implications for the Division’s day-to-day operations, resource and visitor management activities. Since acquiring the park, the Division has continuously worked to improve the park’s facilities, alleviate public safety hazards, reduce environmental impacts and enhance aesthetic quality.

Water Area

The primary hydrologic features at Homosassa Springs State Wildlife Park are the springs that constitute the headwaters of the Homosassa River. The river itself flows approximately seven miles from the park to the Gulf of Mexico. The park contains approximately 0.5 miles of the river shoreline on the Homosassa River, and almost a mile of shoreline on Pepper Creek, the artificial channel on the river's upper reach, which is used by the park's boat tours to convey visitors from the Visitor Center to the West Entrance.

Homosassa Springs has two main spring-run drainages, the main boil and the watercourse that flows from Banana Spring. Numerous smaller springs and seepages occur within the spring-runs. Homosassa Spring is surrounded by a steep-sided rectangular basin. The spring houses the underwater observatory. The Banana Spring spring-run system was developed as a display area for crocodilians and other aquatic species including river otters and a hippopotamus. The Wildlife Walk, located on an unnamed tributary of this spring, has been developed as a display area for birds, birds of prey and small predators.

Shoreline

The park contains approximately 0.5 miles of the river shoreline on the Homosassa River, and almost a mile of shoreline on Pepper Creek.

Significant Wildlife Habitat

Although the park displays many designated species as captive animals, a significant number of free-ranging designated species also make use of the park. Several species of herons and egrets forage, roost, or even breed within the park. A wading bird rookery is located in the trees surrounding the alligator enclosure. Homosassa Springs is also a potentially critical area for the Florida black bear (see details in the Designated Species section). Perhaps the best-known designated species that occurs in the park is the West Indian manatee. While manatees occur both in captivity at the park and in the wild, wild manatees often frequent the Homosassa River and are occasionally visible from the park. Large numbers of manatees can be observed in the river during winter months.

Natural Features

The most significant natural feature in the park includes the main boil of the Homosassa Spring. This spring offers a unique opportunity for the visitor to experience it through the existence of an underwater viewing area, from a floating underwater observatory. The hydric hammock in the park is of regional importance since it is crucial link within a black bear corridor that parallels the Gulf Coast.

Archaeological and Historical Features

Six sites of pre-historic and historic importance are included in the Florida Master Site File for Homosassa Springs State Wildlife Park. Of the five prehistoric sites, one is underwater. Artifacts recovered from this site, the Homosassa Spring Site (Ci208), represent a cross section of Florida's past, including prehistoric cultures such as the Paleo-Indian, Archaic and Woodland groups as well as historical periods. A midden site (Ci209) in the park is of the Weeden Island period of the Woodland group. The Parking Lot site (Ci414) is a prehistoric site discovered in the course of archaeological monitoring for a parking lot that was never constructed. This site comprises a lithic scatter of unidentified cultural affiliation that could possibly be associated with the midden and spring sites. The Shady Bank Site (Ci1046) was discovered and recorded during the process of archaeological monitoring for the removal of a limerock walkway and the subsequent building of a boardwalk for hydrologic restoration. It appears that the construction of

the filled walkway, probably in the 1960s, previously disturbed this site. It is a deeply buried site where cultural materials exist within a thin lens (Ellis et al. 1998). The Manatus Site (Ci1077), the most recently recorded site at the park, is a disturbed lithic scatter site of unspecified prehistoric context. The historic site, Ci375, consists of the structural remains of the tourist attraction at Homosassa Springs.

Assessment of Use

All legal boundaries, 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 springs are a historic tourist attraction, and documented accounts of spring visitation date to the 1880s. At that time, the spring was a stop along the Mullet train, a rail line that probably ran along the shoulder of what is now Fishbowl Drive. Between 1920 and 1930, the tourist attraction was expanded and several structures, that are no longer standing, were reportedly built. A public swimming area was located near the current garden area of the park. In the 1940s, under private ownership, the attraction underwent further development. It was during this period that the first underwater observatory, an iron tank with small windows on each side, was constructed. At least one structure from that era, the Children's Education Center, remains, although it has been expanded over the years.

In the early 1960s, the Norris Development Company purchased the springs attraction and some land. The attraction was expanded during this period, and most of the structures currently located in the park date to that period. In 1964, the current floating underwater observatory (weighing 168 tons), the Fishbowl, was launched amid much fanfare (mainly about the banana greased steel skids used to lower it).

In 1980, Canadian Pacific Investments Ltd. bought the Homosassa Springs Attraction. It was sold to Taylor Simpson in 1982 and renamed Homosassa Springs Nature World. In late 1984, the site was purchased by Citrus County, and in December 1988 acquired by the State. This is the only park of its type to be operated by the Division.

Recreational Uses

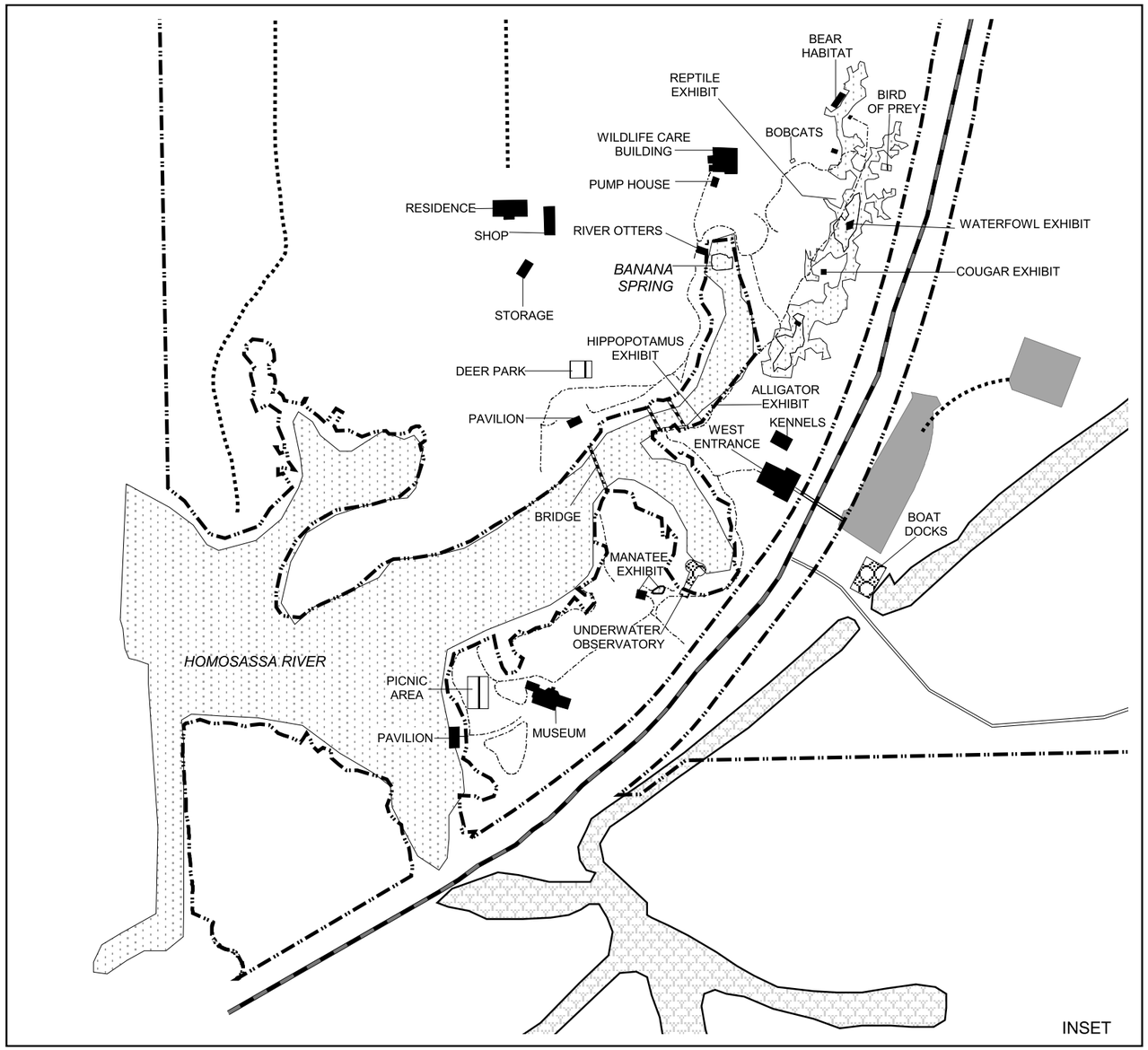
The current recreational uses at Homosassa Springs State Wildlife Park include interpretive boat tours, interpretive wildlife programs, wildlife exhibits and encounters, museum visitation, nature trails, and picnicking.

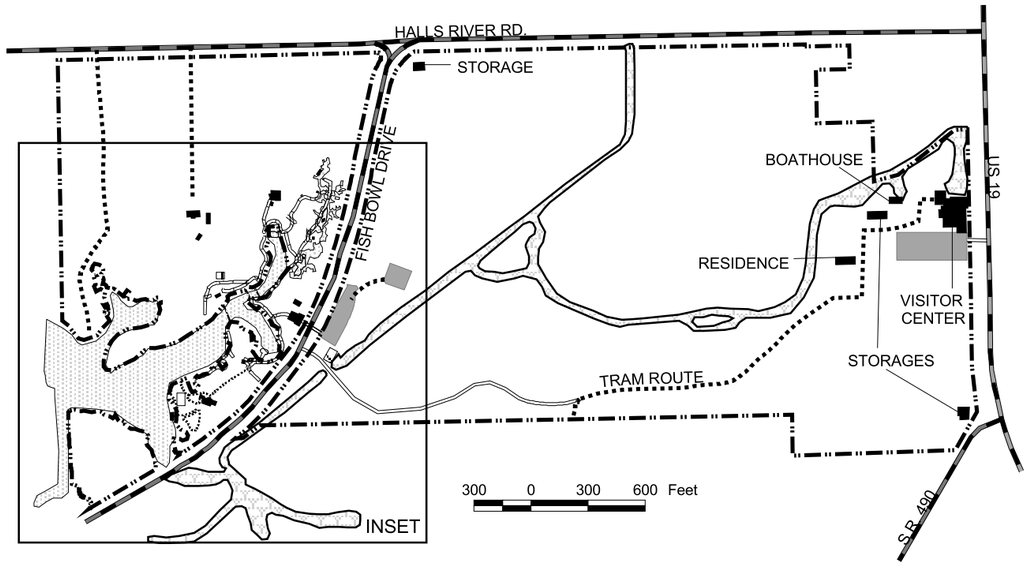
Other Uses

Fishbowl Drive, a county road, bisects the park. The road is heavily used, and causes noise problems in various parts of the park.

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.





LEGEND

- Park Boundary
- US Highway
- State Road
- County Road
- Park Road Paved
- Park Road Unpaved
- Walkways
- Structures
- Parking Lots
- Marine Structures
- Water Control Structures

N

200 0 200 400 Feet

HOMOSASSA SPRINGS WILDLIFE STATE PARK

BASE MAP

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

At Homosassa Springs Wildlife State Park, the hydric hammock community, spring run stream, aquatic cave and all other wetland communities have been designated as protected zones as delineated on the Conceptual Land Use Plan.

Existing Facilities

Four main public use areas make up the developed zones of Homosassa Springs State Wildlife Park. Due to the number of past ownership's and development phases of this park, the existing facilities are of various ages and conditions. Several of the park's structures are in need major renovations or replacement. The following is a list of facilities.

Recreation Facilities

Visitor Center
Interpretive exhibits
Boat dock
Restaurant
Pepper Creek Birding Trail (Tram Road)
Tour boats (4)

West Entrance
West entrance building

Wildlife Walk
Boardwalk (1,650 ft.)
Rain shelters (5)
Bear enclosure
Shorebird enclosure
Birds of Prey enclosures (3)
Fox enclosure
Small Birds of Prey enclosure
Bobcat enclosure
Cougar enclosure
Otter pool
Alligator lagoon
Hippopotamus exhibit
Deer exhibit
Wildlife Encounter pavilion
Reptile exhibit building
Restroom

Homosassa Spring
Underwater observatory
Bleachers

Garden of Springs
Children's Education Center
Garden Pavilion
Front Porch Stage
Picnic Area (no structures)
River Pavilion

Support Facilities

Visitor Center
Visitor Center (gift shop, administrative offices, boat dock)
Paved parking (200 vehicles)
Overflow parking (350 vehicles)
Residence
Warehouse
Tram station
Tram road
Dog kennels
Boathouse

West Entrance
Entrance building (gift shop, snack bar, restrooms)
Paved parking (60 vehicles)
Overflow parking (40 vehicles)
Dog kennels
Boathouse
Concession office
Tram station

Wildlife Walk
Wildlife care building
Wildlife care support enclosures (4)

Homosassa Spring
Manatee care building
Manatee handling pool

Children's Education Center
Restrooms

Shop
Residences (2)
Shop building

CONCEPTUAL LAND USE PLAN

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

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

Potential Uses and Proposed Facilities

This plan proposes the completion of the land-use plans approved in 1991 and 1999 and the renovation of facilities not addressed in those plans. Facilities and improvements to better support the environmental education and interpretive activities provided at the park are also recommended.

Recreation Facilities

Wildlife Exhibit renovations and improvements. To complete the Wildlife Walk and Wildlife Encounters areas the following facilities are needed: (1) renovation and additions to the manatee facilities, including a manatee care support building and an observation platform; (2) renovation of the otter, alligator and deer exhibits; (3) construction of a Manatee Interpretive Center and a spring run bridge to connect to existing boardwalk; and (4) some of the ecosystem restoration and wildlife habitat improvements that either were not addressed or completed over the course of the last five years. These improvements will include exhibit enhancement and replacement, removal of limerock trails, construction of elevated boardwalks, sediment removal, and wetland restoration and water quality improvements. All of these facilities will be made universally accessible, include additional educational and interpretive programs, and have improved service access. The proposed location of these facilities will be subject to further evaluation at the site design development phase, and some location changes may occur.

Narrow Gauge Replica Mullet Train. The wetland nature of the resource base at Homosassa Springs State Wildlife Park requires that a people-mover system be implemented. The park is unique with its Visitor Center located on U.S. Highway 19/98 and its West Entrance located on Fishbowl Drive, about one mile apart. The majority of parking is located at the Visitor Center and park staff is challenged to transport about 80 percent of the park visitors between the two areas. The park acquired new trams and trucks in 2001. While this equipment has improved the effectiveness of moving visitors, it lacks interpretation and a connection to the park's historical

LEGEND

PROPOSED FACILITIES

PARK BOUNDARY

PROTECTED ZONE

WEST HALLS RIVER RD (C.R. 490-A)

WILDLIFE EXHIBIT RENOVATIONS

CONVENIENCE STORE CONVERSION

VISITOR CENTER IMPROVEMENTS

PROPOSED PONTOON BOATS/ BOATHOUSE REPLACEMENT

MAINTENANCE AREA RENOVATIONS

FISHBOWL DRIVE

OLD ADMIN BUILDING CONVERSION

PROPOSED TRAM ROAD CONNECTOR

WEST ENTRANCE RENOVATIONS

OVERFLOW PARKING/ PICNIC SHELTER ADDITION

US HIGHWAY 19

CURRENT TRAM STATION/ PROPOSED MULLET TRAIN STATION

CURRENT TRAM ROUTE/PROPOSED MULLET TRAIN ROUTE

PROPOSED ENTRANCE RENOVATIONS

PROPOSED COMMERCIAL STORE REMOVAL

PROPOSED UNDERWATER OBSERVATORY REPLACEMENT

CHILDREN'S EDUCATION CENTER RENOVATION

SR 490

HOMOSASSA SPRINGS WILDLIFE STATE PARK

N

PREPARED BY: FL DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF RECREATIONA AND PARKS
OFFICE OF PARK PLANNING

CONCEPTUAL LAND USE PLAN

past. The previous land-use plan proposed a park operated train that would run along the existing service tram road and potentially expand into a currently undeveloped part of the park. The proposed system is a narrow gauge replica of the Mullet Train that historically ran through the park. The train would also serve as a back up for the aging boating transportation, and provide a more reliable, safe, efficient and ADA compliant alternative means of visitor transportation. Two terminus shelter/stations are proposed, one at the Visitor Center, and one at the west entrance.

Staff discussions about the people-mover system also included the potential for a loop route, since the current proposal is too short for interpretive activities. Therefore, this plan also proposes a study to examine the potential expansion of the people-mover system. This study will include additional resource inventories and design studies to integrate any proposed route with bridges and other measures in accordance with the hydrological restoration activities proposed previously in this plan. Although improvement of the method the park uses to move visitors, this project should not take priority over the wildlife exhibit renovations and other visitor service facilities and interpretive facility improvements outlined by this management plan.

Underwater Observatory replacement. The underwater observatory was built in 1962 and has been in continuous public use since then. This unique, custom-made floating facility provides a panoramic underwater view of the spring and its inhabitants. The floating structure is made of steel and concrete and is in need of replacement. The aging steel hull is rusting and showing its age. The windows, replaced in the early 1990s are scratched from daily cleaning and wear and tear and the observatory is not, nor can be practically converted for ADA access. The new observatory may be modeled after the current one made with modern materials and full ADA access.

Visitor Center improvements. The Visitor Center needs some improvements and new facilities. About 60 percent of the Visitor Center's roof needs replacing. This building is 22,000 square feet and the new roof should match the 40 percent roof that was replaced in 1996. A small picnic shelter should be located in the grass area to the south of the Visitor Center. The third floor of the Visitor Center was renovated by a concession contractor into a restaurant in 2001. It was operated as a restaurant from December 2001 until July 2003 when it closed. The use of this space may include re-establishing another contract to operate a restaurant or smaller food service operation, use the space for private event and meeting rentals, expanding the interpretive center or other uses that are compatible with the mission of the park.

Expansion of environmental education and interpretive opportunities. The historic Children's Education Center should be renovated and its interpretive programs and exhibits updated. The building was built in the mid-1940s and is in need of complete renovations including removal of the wood room addition, replacing the roof, interior walls and ceiling, elevating the entire structure above the flood level and adding new ADA access. The renovations will maintain the structure's historical exterior while modernizing the interior.

The addition of a new manatee interpretive center will enhance the manatee education programs. This new facility will be located adjacent to the manatee pools. The current bleachers, adjacent to the main Homosassa Spring, will be removed and this area will be used for passive viewing of the manatees and enjoyment of the spring.

Another facet of the expansion of the educational and interpretive opportunities provided by the park is the implementation of a resident scholar program. This scholar could be an intern or a visiting academic, interested in furthering the research and knowledge base about the park's

natural systems. The Division has received several requests for intensive study in this park and believes that it would be able to create a viable resident scholar program. The conversion of part of the old administrative office into a boarding and studying unit would create the facilities needed too implement this proposal.

Support Facilities

Pedestrian Circulation and West Entrance. Pedestrian circulation in and around the West Entrance building needs to be addressed by the Division and County Roads and Public Works Department. Improvements to the safe pedestrian crossing of Fishbowl Drive have been made by Citrus County. The addition of new audio enhanced crosswalk controls has improved visitor safety.

On the west side of Fishbowl Drive, design phase solutions should include re-design of the pedestrian circulation in and around the West Entrance building, internal re-organization of facilities, expansion of the gift shop and snack bar which may include a building addition, addition of outside deck for snack bar seating, ADA renovations to the restrooms, and expansion of the fee collection area.

West Entrance Parking Area improvements. Parking at the West Entrance is limited to 60 paved parking spaced and approximately 40 overflow spaces in a grass field. Both parking areas are heavily used and need improvement. The paved parking area is in need of resurfacing and re-striping to maximize space and improve parking for disabled visitors and tour busses. The overflow parking needs to be paved due to its heavy use. Expansion of these parking areas was explored in the late 1980s and it was determined that expansion was not practical due to impacts on the natural resources.

Wildlife Care Building replacement. The Wildlife Care Building is the focal point for all wildlife care activities; storage of perishable food products, walk-in freezer/refrigerator, commercial kitchen, medical treatment room, quarantine holding cages, office and restroom. The park's wildlife collection and wildlife care responsibilities have grown over the years and the building no longer meets those needs. The current structure was constructed in the early 1970s as a maintenance shop. It has been renovated in the early 1990s into its current use. The structure was not designed for its current function and is in need of replacement.

Redevelopment of U.S. Highway 19/98 Park Entrance. Due to the dangers inherent in a park entrance off a US highway and because of the addition of land at the park's southeast corner, it is recommended that the main park entrance be redeveloped. The Florida Department of Transportation (FDOT) is designing changes to U.S. Highway 19/98 that will impact the park. These changes include expanding U.S. Highway 19/98 to six lanes and adding grass medians and turn lanes. It is recommended that park staff consult with FDOT to explore viable options to improve access and safety. Options may include adding a new entrance and/or exit road to come off state highway 490 and through the new addition (see Conceptual Land Use Plan). If a new road is constructed, the existing commercial store on the corner of U.S. Highway 19/98 and State Road 490 will be removed.

Commercial Store at U.S. Highway 19/98/State Road 490. This commercial store was purchased as part of the parcel located on the park's southeast boundary. When purchased it had been unused for over twenty years and was not in a commercially usable condition. This building may be removed as part of the proposed new entrance/exit road. Since becoming State property, the park has been using the building for Friends of Homosassa Springs Wildlife Park yard sale and storage purposes. It is recommended that this use be continued until it is demolished for the

new entrance road. If the entrance road is not constructed then this building could be renovated for purposes that support the mission of the park.

Overflow Parking Lot addition. Parking is given the number of visitors the park attracts. Expansion of the parking facilities is needed at the Visitor Center. The large grass field adjacent to the Visitor Center's paved parking lot is available for limited use as an overflow parking area. Improvements such as stabilization or paving may be needed in this area if there is sustained vehicle use.

Tram Road alignment. A traffic conflict at the east end of the tram road exists. The road is shared between park tram vehicle traffic and traffic accessing the residence area. The addition of a new tram road connector will eliminate this conflict. The new tram road connector would be approximately 300 feet long and would be located on the north side of the Overflow Parking Lot Addition at the Visitor Center. This area is already cleared and will not affect the natural resources.

Maintenance Area improvements. An additional equipment storage building should be built at the shop area. Renovation of the warehouse, to expand shipping and receiving of resale operations, is also warranted.

Pontoon Boat and Boathouse replacement. The aging pontoon boats used for the boat tours are in need of replacement. The boathouse at the east end of the park also needs to be replaced. The current structure is in poor condition with rotten wood and rusted metal panels.

Convenience Store conversion. The old convenience store is currently being used for storage. It is recommended that this use be continued along with the possible renovation of the store to offices or other support function. There is potential for this site to act as a trailhead or recreational facility to rent bicycles to access other State lands to the north of the park.

Fencing. Fencing of the park boundary, especially where encroachments are starting is also proposed.

Facilities Development

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

Recreation Facilities

Wildlife Walk
Manatee observation platform
Manatee care support building
Otter, deer and alligator exhibit renovations
Manatee interpretive center
Spring run bridge
Wildlife habitat improvements
Interpretive exhibits upgrade

Homosassa Spring
Underwater observatory

Mullet Train
Train line (0.7-2.0 miles)
Train

Visitor Center
Building improvements
Small picnic shelter
Tram road realignment

Children's Education Center Renovation
Interpretive exhibit upgrades
Building renovations

Resident Scholar Program
Convert storage to offices/boarding area in old admin bldg

Support Facilities

Pedestrian Circulation and West Entrance
Redesign pedestrian circulation in and around West Entrance building
West Entrance building addition/improvements

Maintenance Area Improvements
Equipment storage building
Warehouse renovations

Wildlife Care
Wildlife Care building replacement

Park Entrance Redevelopment
New entrance road (1000 ft)
Overflow parking/activity area conversion

Pontoon Boat/Boathouse Replacement
Pontoon boats (2)
East boathouse replacement

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**
Wildlife Park	2,732	5,464			2,732	5,464
Visitor Centers	400	800			400	800
Picnicking	95	190			95	190
Nature Trails	5	10			5	10
TOTAL	**3,232**	**6,464**	**0**	**0**	**3,232**	**6,464**

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. Currently, no lands are identified for optimum boundary and no land is considered surplus to the needs of the park.

Addendum 1—Acquisition History

Purpose of Acquisition

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

Sequence of Acquisition

On December 30, 1988, the Trustees purchased from Citrus County Homosassa Springs Wildlife State Park. The purchase was funded under the CARL program. Since this initial purchase, the Trustees have purchased several parcels under LATF and P2000/A and I programs and added them to Homosassa Springs Wildlife State Park.

Lease Agreement

On August 11, 1989, the Trustees conveyed management authority of Homosassa Springs Wildlife State Park to the Division of Recreation and Parks (Division) under Lease No. 3786. The lease is for a period of fifty (50) years, which will expire on August 10, 2039.

In accordance with the Trustees lease, the Division manages Homosassa Springs Wildlife State Park only for the development, conservation and protection of natural and cultural resources of the property and to use the property for resource-based public outdoor recreation compatible with the conservation and protection of the resources.

Title Interest

The Trustees hold fee simple title to Homosassa Springs Wildlife State Park.

Special Conditions On Use

Homosassa Springs Wildlife 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, storm-water management projects, and linear facilities and sustainable agriculture and forestry, unless specifically stated otherwise in this unit management plan, are not consistent with the purposes for which the Division manages the park.

Outstanding Reservations

Following is a listing of outstanding rights, reservations, and encumbrances that apply to Homosassa Springs Wildlife State Park.

Instrument: .....Easement
Instrument Holder: .....Trustees
Beginning Date: .....May 21, 2001
Ending Date: .....No specific date is given
Outstanding Rights, Uses, Etc.: ..... The easement allows the Florida Power Corporation to construct, operate, and maintain overhead and underground electric facilities across a certain portion of the park.

Instrument: .....Warranty Deed
Instrument Holder: .....Fred Parsons and Mary Parsons
Beginning Date: .....December 27, 1994
Ending Date: .....Forever
Outstanding Rights, Uses, Etc.: ..... The deed is subject to a right-of-way easement to Florida Power Corporation.

Instrument: .....Easement
Instrument Holder: .....Trustees
Beginning Date: .....October 18, 1993
Ending Date: .....For a period coterminous with Lease No. 3786.
Outstanding Rights, Uses, Etc.: ..... The easement allows the Florida Power Corporation to construct, operate, and maintain an electrical utility easement over, under, and across a portion of the park.

Instrument: .....Warranty Deed
Instrument Holder: .....Louis Pappa's Homosassa Springs Restaurant, Inc.
Beginning Date: .....October 2, 1992
Ending Date: .....Forever
Outstanding Rights, Uses, Etc.: ..... The deed is subject to a certain right-of-way easement to Florida Power Corporation recorded in record book156, page 109, and a certain right-of-way deed in favor of the State of Florida recorded in deed book 69, page 525.

Homosassa Springs Wildlife State Park

List of Advisory Group Members

The Honorable Josh Wooten, Chair
Citrus County Board of County Commissioners
111 West Main Street, 3rd Floor
Inverness, Florida 34450

Mr. Bob Dampman, Acting Park Manager
Homosassa Springs State Wildlife Park
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Kr. Keith Laakkonen, Manger
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Mr. Ron Goodnow
American Pro Diving Center, Inc.
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Crystal River, Florida 34429

Leo Faneuf, President
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Homosassa, Florida 34446

Mr. Ronald Miller, President
Citrus County Audubon Society
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Ms. Judith Vallee, Executive Director
Save the Manatee Club
500 North Maitland Avenue
Maitland, Florida 32751

Mr. Paul Huffstutler
9570 West River Holly Place
Homosassa, Florida 34448

The Advisory Group appointed to review the proposed land management plan for Homosassa Springs State Wildlife Pak was held at the park on June 10, 2004. Appointed members Mr. Laakkonen (St. Martins Marsh Aquatic Preserve) and Mr. Huffstutler (adjacent landowner) attended. Mr. Wilbur Priest represented Ms. Albury (FL Division of Forestry), Mr. Mike Wichrowski represented Mr. Campbell (FL Fish and Wildlife Commission) and Mr. and Mrs. Swanson represented Mr. Faneuf (Friends of Homosassa Springs State Wildlife Park). Commissioner Wooten (Citrus County), Mr. Kraus (US Fish and Wildlife Service), Mr. Oliver (Nature Coast Soil and Water Conservation District), Mr. Goodnow (American Pro Diving Center, Inc.), Mr. Miller (Citrus County Audubon Society) and Ms. Vallee (Save the Manatee Club) did not attend the meeting. Division staff in attendance included Robert Dampman, Marla Ivory, Dan Pearson, Susie Hetrick and K.C. Bloom.

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

Summary Of Advisory Group Comments

Mr. Priest suggested that an optimum boundary map is needed. He questioned whether the species list is a list of probable species, or of species recorded on the site. Staff replied that DRP species lists are limited to plants and animals actually observed on the park. Mr. Priest suggested holding a "Bioblitz", an intensive one-day survey of the property by volunteer biology experts. Mr. Priest recognized that timber management alternatives are non-existent at this park, and the subject was addressed appropriately in the plan. He noted that prescribed fire management was also addressed well.

Mr. Dampman noted that the maintenance area improvements and warehouse improvements should be addressed separately in the conceptual land use plan. He stated that the proposed Mullet Trail replica will have to deal with the extreme limits on available space, and should be deferred or removed from the park plan until some future date. Mr. Dampman suggested a need for fencing between the park's tram road and an adjacent residential area. He also suggested discussion of the need for service access to support prescribed fire management in the area behind the hotel. **Ms. Ivory** suggested adding goals and objectives to the plan that address the need to establish hydrological connections between surface karst features with the springs, and recommended studies of stormwater impacts, sedimentation and an improved mapping effort for the springs and headwaters system.

Ms. Hetrick agreed on the hydrological connections and mapping suggestions. She noted that the goals and objectives for cultural resource management should be strengthened. She suggested less specificity regarding the park's captive manatee program to allow for multi-agency input in the future. She also noted the need to add language addressing mitigation projects in the park.

Mr. Wichrowski asked if historical aerial photography was used in developing the park's resource maps (affirmative), whether the park has a coyote problem and whether the park will actively manage black bears. Staff replied that coyotes have not been reported. They responded that the park's land area is too small to provide for a bear, but that the park will be managed to

support a corridor through which the animals can pass. In discussions regarding fencing in the park, Mr. Wichrowski recommended the use of barbed wire rather than hogwire fence to avoid blocking the movements of a variety of animals.

Mr. Huffstutler complemented staff of the completeness of the draft plan. He discussed native orchids that occur in the park. He supported the proposed Mullet Train. He provided clarification of the sequence of corporate and county ownerships of the property prior to its acquisition by the state.

Mr. Laakkonen also noted the need for an optimum boundary map. He suggested prioritizing the parcels proposed for acquisition. He agreed with Ms. Ivory's suggestion regarding hydrological connections and improved mapping of karst features. He recommended that DRP staff work to compile all existing water data. He questioned the scale of a planned dredging project and recommended that restoration planting would be included in that project, and asked for updates from the park as the project progresses. He suggested providing a timeline, species priority list and more detail for the park's exotic plant control program. Mr. Laakkonen urged staff to continue progress on the prescribed fire program in the park.

Staff Recommendation

A number of good suggestions for changes and clarifications of the draft management plan were received during the Advisory Group meeting. Resource management text will be added to the management plan pertaining to the need for collection of water quality and quantity data, investigation of stormwater and sedimentation impacts to the spring and spring run, restoration of hydrological connections disrupted by development, improved mapping and potential mitigation projects within the park. Although discussion of the Mullet Train should remain in the proposed development sections of the Land Use Component, text will be added noting that the project may be deferred until higher priority projects capital improvement projects, such as upgrading the animal exhibit areas, have been funded. With these changes, staff recommends approval of the proposed management plan for Homosassa Springs State Wildlife Park.

Addendum 2—References Cited

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Addendum 3—Soil Descriptions

7) Myakka fine sand - Myakka fine sand is nearly level and poorly drained. It is in broad, flatwoods areas and also occurs as a narrow band around some slightly depressional, poorly drained soils. The mapped areas are irregular in shape and range from 3 to about 100 acres. The slopes are smooth and less than 2 percent.

Typically, the surface layer is black fine sand 4 inches thick. The subsurface layer, to a depth of 27 inches, is dark gray and gray fine sand. The subsoil extends to a depth of 80 inches. It is black and dark reddish brown fine sand in the upper part and dark brown fine sand in the lower part.

The water table is at a depth of less than 10 inches for 1 month to 4 months. It gradually recedes to a depth of 40 inches or more. Internal drainage is slow. Permeability is moderate or moderately rapid in the subsoil and low or very low in the other layers. Reaction ranges from extremely acid to slightly acid. Natural fertility is low.

22) Quartzipsamments, 0 to 5 percent slopes - Quartzipsamments soil is nearly level to gently sloping. It has been reworked and shaped by earthmoving equipment. This map unit commonly is adjacent to urban lands but can occur throughout the county. Many areas of this soil were formerly sloughs, marshes, shallow ponds, or other areas of standing water. These areas have been filled with sandy soil material to the level of the surrounding landscape or higher. In a few areas, this soil originally was on the high ridges that were excavated to below natural ground level. Smoothing and shaping have made the soil better suited to use as sites for buildings, roads and streets, recreation areas, and other related uses.

The color and thickness of the various layers of this soil are variable. One of the more common profiles has a surface layer of mottled brownish yellow and pale brown fine sand 54 inches thick. The upper part of the underlying material, to a depth of 59 inches, is dark gray fine sand. The lower part to a depth of 80 inches is brownish yellow fine sand.

The depth to the water table is variable, but ranges from about 20 inches to more than 72 inches depending on the thickness of the fill material and drainage of the underlying soil. In most excavated areas, the water table is at a depth of more than 72 inches. Permeability is variable, but generally it is very rapid. The available water capacity is also variable, but generally it is very low. Natural fertility is very low.

24) Okeelanta-Lauderhill-Terra Ceia mucks - Okeelanta-Lauderhill-Terra Ceia mucks consist of nearly level, very poorly drained, well decomposed organic soils. These soils are in broad, freshwater swamps that parallel the coast. Most of the area is less than 5 feet above sea level, and limestone bedrock is frequently within 80 inches of the surface layer. Mineral soils on small, slightly elevated islands are adjacent to these organic soils. Poorly defined, small ponds and streams are common during dry periods. Water covers most of the area during wet periods. A few freshwater springs are present.

The soils in this complex are ponded for 6 to 12 months. The water recedes to a depth of less than 10 inches during extended periods of drought. Internal drainage is slow. Surface outlets are limited. Permeability is rapid in the organic layers and is very rapidly permeable in pedons that have sandy mineral layers. The available water capacity is very high in the organic layers and is

low in the mineral layers. Natural fertility is high.

36) EauGallie fine sand - EauGallie fine sand is nearly level and poorly drained. It is on the flatwoods. The slopes are gradual and less than 2 percent.

Typically, the surface layer is very dark and dark gray fine sand 10 inches thick. The subsurface layer, to a depth of 22 inches, is light brownish gray fine sand. The subsoil extends to a depth of 80 inches. The upper part is dark brown fine sand. The middle part is dark reddish brown fine sand. The lower part is pale olive and light gray fine sandy loam.

The water table is within 10 inches of the surface for 1 month to 4 months. It recedes during dry periods but is generally within 40 inches of the surface layer for 6 months. Runoff is slow. The available water capacity is low to very low in the surface and subsurface layers and is moderate to high in the subsoil. Reaction is very strongly acid to medium acid in the surface layer. It is extremely acid to slightly acid in the upper part of the subsoil and very strongly acid to mildly alkaline in the lower part. Natural fertility is very low.

37) Matlacha, limestone substratum-Urban land complex - Matlacha, limestone substratum-Urban land complex consists of nearly level, somewhat poorly drained Matlacha soil and areas of Urban land. Matlacha soil was formed by fill material from earth-moving operations. Typically, Matlacha soil has a surface layer that is very dark grayish brown gravely fine sand about 6 inches thick. The lower part, to a depth of about 23 inches, is mottled white, brown, and yellow fine sand mixed with 25 percent limestone fragments and scattered pockets of fine-textured clay material. Below the layers of fill material is the original buried soil. The upper part of the buried soil, to a depth of about 44 inches, is a very dark grayish brown and light gray fine sand. The next layer, to a depth of 48 inches, is light brownish gray fine sandy loam. Below the fine sandy loam is a thin layer of soft limestone bedrock underlain by hard, white, fractured limestone bedrock.

Matlacha soil has a water table between depths of 2 and 3 feet for 1 month to 3 months annually. In many areas, the high water table and depth to bedrock are moderate to severe limitations to the use of these soils for most sanitary facilities and for building site development.

39) Hallandale-Rock outcrop complex, rarely flooded - Hallandale-Rock outcrop complex consist of nearly level, poorly drained, mineral soil and rock outcrop. Hallandale soil is along the coast adjacent to freshwater and saltwater marshes and also on some offshore islands. This soil is underlain by bedrock at a depth of 20 inches or less.

Typically, Hallandale soil has a surface layer that is black fine sand about 2 inches thick. The subsurface layer, to a depth of 6 inches, is grayish brown fine sand. The subsoil, to a depth of 10 inches, is yellowish brown fine sand. Below the subsoil is hard limestone bedrock.

In most years, the soils in this map unit have a high water table within 10 inches of the surface for up to 6 months. In some areas, the surface may be covered by shallow water for up to a month after very heavy rains. In drained areas, the water level in the drainage ditches and solution holes in the limestone bedrock fluctuates. These soils are rarely flooded by severe

coastal storms. Local flood-hazard studies can be consulted to determine the extent of flooding. Permeability is moderate to moderately slow. Runoff is slow. Natural fertility is low, and response to applied fertilizers is moderate. Soil reaction ranges from strongly acid to slightly acid in the surface layer and from medium acid to moderately alkaline in the lower layers.

53) Boca fine sand - Boca fine sand is nearly level and poorly drained. It is on low, broad flats and in poorly defined drainageways on the flatwoods. The slopes are less than 2 percent.

Typically, the surface layer is dark grayish brown fine sand 5 inches thick. The subsurface layer, to a depth of 19 inches, is light gray fine sand. The next layer, to a depth of 21 inches, is yellow fine sand. The next layer, to a depth of 38 inches is grayish brown sandy clay loam underlain by limestone bedrock.

The water table is within 10 inches of the surface for 2 to 4 months in most years. It recedes into the limestone during dry periods. Permeability is rapid in the sandy layers and moderate in the finer textured layers. The available water capacity is low to very low in the surface and subsurface layers. It is moderate in the subsoil. Reaction ranges from strongly acid to moderately alkaline. Natural fertility is low.

58) Myakka, limestone substratum-EauGallie, limestone substratum complex - This complex consists of nearly level, poorly drained Myakka and EauGallie soils. These soils are on the coastal flatwoods and are also on some islands adjacent to saltwater marshes in the northern part of Citrus county. Depth to the limestone bedrock commonly is 50 to 80 inches but averages about 60 inches. The mapped areas range from broad to narrow and are somewhat elongated. These areas range from 4 to 100 acres. The slopes are less than 2 percent.

Myakka soil makes up about 40 percent of the map unit. EauGallie soil makes up about 25 percent. The included soils make up about 35 percent.

Typically, Myakka soil has a surface layer that is dark gray fine sand about 5 inches thick. The subsurface layer, to a depth of 23 inches, is light brownish gray fine sand. The upper part of the subsoil, to a depth of 34 inches, is very dark gray fine sand. The lower part, to a depth of about 62 inches, is brown and light brownish gray fine sand. Below the subsoil is hard limestone bedrock.

Typically, EauGallie soil has a surface layer that is black fine sand about 4 inches thick. The subsurface layer, to a depth of 25 inches, is light brownish gray fine sand. The upper part of the subsoil, to a depth of 39 inches, is black fine sand. The middle part, to a depth of 59 inches, is grayish brown fine sand. The lower part, to a depth of 63 inches, is light olive gray sandy clay loam. Below the subsoil is hard limestone bedrock.

The soils in this complex have a high water table at a depth of less than 10 inches for 1 month to 4 months in most years. It gradually recedes to a depth of 40 inches or more during drier periods. Internal drainage is moderately slow. The available water capacity is medium in the subsoil and low to very low in the surface and subsurface layers. The reaction of Myakka soil ranges from strongly acid to mildly alkaline. The reaction of EauGallie soil ranges from very strongly acid to

medium acid in the surface and subsurface layers and from very strongly acid to slightly acid in the subsoil. Natural fertility of Myakka and EauGallie soils is low, and plant response to applied fertilizer is moderate.

59) Boca fine sand, depressional - Boca fine sand is nearly level and poorly drained. It is in depressions and other poorly defined drainageways along the coast. This soil is underlain by limestone bedrock at a depth of 24 to 40 inches; however, solution pits extending to a depth of 60 inches or more are common.

Typically, the surface layer is black fine sand 8 inches thick. The subsurface layer, to a depth of 21 inches, is light gray fine sand. The subsoil, to a depth of 25 inches, is grayish brown sandy clay loam. The next layer to a depth of 27 inches is a mixture of white limestone fragments, marl, and yellowish brown sandy clay loam underlain by limestone bedrock.

This soil is ponded for periods of 2 to 6 months in most years. The water table recedes below the surface during dry years. It is generally within 10 inches of the surface. In very dry periods, the water table recedes into the limestone. Permeability is rapid in the sandy layers and is moderate in the finer textured layers. The available water capacity is low to moderate. Reaction ranges from strongly acid to mildly alkaline in the surface layer and is moderately alkaline in the other layers. The content of organic matter and natural fertility are low.

Addendum 4—Plant And Animal List

Homosassa Springs Wildlife State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
	PTERIDOPHYTES	
Giant leather fern	*Acrostichum danaeifolium*	
Saw fern	*Blechnum serrulatum*	
Scouring rush	*Equisetum hyemale*	
Boston fern *	*Nephrolepis cordifolia*	
Cinnamon fern	*Osmunda cinnamomea*	35
Royal fern	*Osmunda regalis*	
Resurrection fern	*Polypodium polypodioides*	
Bracken fern	*Pteridium aquilinum*	
Water spangles	*Salvinia minima*	
Hairy maiden fern	*Thelypteris hispidula*	
Wood fern	*Thelypteris kunthii*	
Virginia chain fern	*Woodwardia virginica*	
	GYMNOSPERMS	
Sago palm *	*Cycas revoluta*	
Southern red cedar	*Juniperus silicicola*	
Juniper *	*Juniperus* sp.	
Slash pine	*Pinus elliottii*	
Longleaf pine	*Pinus palustris*	
Pond cypress	*Taxodium ascendens*	
Florida coontie	*Zamia pumila*	82
	ANGIOSPERMS	
Monocots		
Indian ginger *	*Alpina calcarata*	
Shell ginger *	*Alpina zerumbet*	
Bushy bluestem	*Andropogon glomeratus*	
Jack-in-the-pulpit	*Arisaema triphyllum*	
Wire grass	*Aristida beyrichiana*	
Arrow bamboo *	*Arundinaria japonica*	
Sprenger's asparagus-fern *	*Asparagus densiflorus*	
Cast iron plant *	*Aspidistra elatior*	
Common carpet grass	*Axonopus affinis*	
Big carpet grass	*Axonopus furcatus*	
Hedge bamboo *	*Bambusa multiplex*	
Rescue grass	*Bromus unioloides*	
Canna-lily *	*Canna* sp.	
White-yellow sedge	*Carex albolutescens*	
Longleaf spike grass	*Chasmanthium sessiliflorum*	
Wild taro *	*Colocasia esculenta*	
Spreading day-flower	*Commelina diffusa*	

* Non-native Species

Homosassa Springs Wildlife State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
String-lily	*Crinum americanum*	
Saw-grass	*Cladium jamaicense*	
Bermuda grass *	*Cynodon dactylon*	
Umbrella sedge *	*Cyperus alternifolius*	
Globe sedge	*Cyperus globulosus*	
Texas sedge	*Cyperus polystachyos*	
Variable panicum	*Dicathelium commutatum*	
Open-flower panicum	*Dicathelium laxiflorum*	
Southern crab grass	*Digitaria ciliaris*	
Air potato *	*Dioscorea bulbifera*	
Wild yam	*Dioscorea floridana*	
Brazilian elodea *	*Egeria densa*	
Water-hyacinth *	*Eichhornia crassipes*	
Sprouting spikerush	*Eleocharis vivipara*	
Greenfly orchid	*Epidendrum conopseum*	35
Bigtop love grass	*Eragrostis hirsuta*	
Centipede grass *	*Eremochloa ophiuroides*	
Rock finger grass	*Eustachys petrea*	
False Reinorchid	*Habenaria* sp.	
Daylily *	*Hemerocallis fulva*	
Hydrilla *	*Hydrilla verticillata*	
Cogon grass *	*Imperata cylindrica*	
Two-parted rush	*Juncus dichotomus*	
Perennial kyllinga	*Kyllinga brevifolius*	
Bloodroot	*Lachnanthes caroliniana*	
Rye grass *	*Lolium perenne*	
Banana *	*Musa x paradisiaca*	
Heavenly-bamboo *	*Nandina domestica*	
Woods grass	*Oplismenus setarius*	
Egyptian paspalum	*Paspalidium geminatum*	
Knot-grass	*Paspalum disctichum*	
Thin paspalum	*Paspalum setaceum*	
Green arum	*Peltandra virginica*	
Common reed	*Phragmites australis*	
Water-lettuce *	*Pistia stratiotes*	
Southern tubercled orchid	*Platanthera flava*	
Annual blue grass *	*Poa annua*	
Pickerelweed	*Pontederia cordata*	
Shadow-witch	*Ponthieva racemosa*	
Needle palm	*Rhapidophyllum hystrix*	35
White-top	*Rhynchospora colorata*	
Clustered beakrush	*Rhynchospora fascicularis*	
	Rhynchospora mixta	

* Non-native Species

Homosassa Springs Wildlife State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Cabbage palm	*Sabal palmetto*	
Lanceleaf arrowhead	*Sagittaria lancifolia*	
Saw palmetto	*Serenoa repens*	
Narrow-winged blue-eyed grass	*Sisyrinchium atlanticum*	
Annual blue-eyed grass	*Sisyrinchium rosulatum*	
Catbrier	*Smilax bona-nox*	
Prairie wedgescale grass	*Sphenopholis obtusata*	
Ladies'-tresses	*Spiranthes* sp.	
Smut grass *	*Sporobolus indicus*	
St. Augustine grass	*Stenotaphrum secundatum*	
Ball moss	*Tillandsia recurvata*	
Wild pine	*Tillandsia setacea*	
Spanish moss	*Tillandsia usneoides*	
Common spiderwort	*Tradescantia ohiensis*	
Purple queen *	*Tradescantia pallida*	
Spanish bayonet *	*Yucca aloifolia*	
Tape-grass	*Vallisneria americana*	
Elephant-ear *	*Xanthosoma sagittifolium*	
Dicots		
Three-sided mercury	*Acalypha gracilens*	
Box-elder	*Acer negundo*	
Red maple	*Acer rubrum*	
Aechmea *	*Aechmea* sp.	
Ajuga *	*Ajuga reptans*	
Mimosa *	*Albizia julibrissin*	
Alligator-weed *	*Alternanthera philoxeroides*	
Ragweed	*Ambrosia artemisiifolia*	
Pepper vine	*Ampelopsis arborea*	
Snapdragon *	*Antirrhinum majus*	
Groundnut	*Apios americana*	
Peanut *	*Arachis hypogaea*	
Devil's-walkingstick	*Aralia spinosa*	
Variable-leaved indian plantain	*Arnoglossum diversifolium*	35
Scarlet milkweed	*Asclepias curassavica*	
Climbing aster	*Aster carolinianus*	
Bushy aster	*Aster dumosus*	
Groundsel bush	*Baccharis halimifolia*	
Smooth water-hyssop	*Bacopa monnieri*	
Wax begonia *	*Begonia* x hybrid	
Rattan vine	*Berchemia scandens*	
Common beggar-tick	*Bidens alba*	
Cross vine	*Bignonia capreolata*	
Bog-hemp	*Boehmeria cylindrica*	
Boxwood *	*Buxus microphylla*	

* Non-native Species

Homosassa Springs Wildlife State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
American beautyberry	*Callicarpa americana*	
Trumpet creeper	*Campsis radicans*	
Hairy bitter-cress *	*Cardamine hirsuta*	
Blue-beech	*Carpinus caroliniana*	
Water hickory	*Carya aquatica*	
Pignut hickory	*Carya glabra*	
Beefwood *	*Casuarina cunninghamiana*	
Madagascar periwinkle *	*Catharanthus roseus*	
Cockscomb *	*Celosia cristata*	
Hackberry	*Celtis laevigata*	
Coinwort	*Centella asiatica*	
Button bush	*Cephalanthus occidentalis*	
Spotted spurge	*Chamaesyce maculata*	
Water hemlock	*Cicuta mexicana*	
Nuttall's thistle	*Cirsium nuttalli*	
Sour orange *	*Citrus aurantium*	
Croton *	*Codiaeum variegatum*	
Garden coleus *	*Coleus* x *hybridus*	
Horseweed	*Conyza canadensis*	
Dogwood	*Cornus florida*	
Swamp dogwood	*Cornus foemina*	
Marsh parsley *	*Cyclospermum leptophyllum*	
Climbing hydrangea	*Decumaria barbara*	
Creeping beggarweed	*Desmodium incanum*	
Lance-leaved beggarweed	*Desmodium paniculatum*	
Pony-foot	*Dichondra caroliniensis*	
Persimmon	*Diospyros virginiana*	
Golden-dewdrop	*Duranta repens*	
Fireweed	*Erechtites hieracifolia*	
Southern fleabane	*Erigeron quercifolius*	
Marsh fleabane	*Erigeron vernus*	
Loquat *	*Eriobotrya japonica*	
Matted button snakeroot	*Eryngium baldwinii*	
Coralbean	*Erythrina herbacea*	
Dog fennel	*Eupatorium capillifolium*	
Strawberry bush	*Euonymus americanus*	
White ash	*Fraxinus americana*	
Pop ash	*Fraxinus caroliniana*	
Green ash	*Fraxinus pennsylvanica*	
Bedstraw	*Galium tinctorium*	
Gardenia *	*Gardenia jasminoides*	
Yellow jessamine	*Gelsemium sempervirens*	
Cranesbill geranium	*Geranium carolinianum*	
Loblolly bay	*Gordonia lasianthus*	
Wandering cudweed	*Gnaphalium pensylvanicum*	

* Non-native Species

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Purple cudweed	*Gnaphalium purpureum*	
English ivy *	*Hedera helix*	
Carolina rock-rose	*Helianthemum carolinianum*	
Scarlet hibiscus	*Hibiscus coccineus*	
Hawkweed	*Hieracium gronovii*	
Large-head hawkweed	*Hieracium megacephalon*	
Water pennywort	*Hydrocotyle umbellata*	
Dwarf St. John's-wort	*Hypericum mutilum*	
East Palatka holly	*Ilex attenuata* (*I. opaca* x *cassine*)	
Dahoon holly	*Ilex cassine*	
Chinese holly *	*Ilex cornuta*	
Gallberry	*Ilex glabra*	
American holly	*Ilex opaca*	
Yaupon holly	*Ilex vomitoria*	
Impatiens *	*Impatiens wallerana*	
Virginia willow	*Itea virginica*	
Common wild-lettuce	*Lactuca graminifolia*	
Crape-myrtle *	*Lagerstroemia indica*	
Lantana *	*Lantana camara*	
Japanese privet *	*Ligustrum japonicum*	
Hedge privet *	*Ligustrum sinense*	
Border-grass *	*Liriope* sp.	
Sweet gum	*Liquidambar styraciflua*	
Oldfield toadflax	*Linaria canadensis*	
Fogfruit	*Phyla nodiflora?*	
Sweet alyssum *	*Lobularia maritima*	
Japanese honeysuckle *	*Lonicera japonica*	
Floating water-primrose	*Ludwigia repens*	
Southern magnolia	*Magnolia grandiflora*	
Sweet bay	*Magnolia virginiana*	
Angle-pod	*Matelea gonocarpos*	*gg*
Black medic *	*Medicago lupulina*	
Climbing hempweed	*Mikania scandens*	
Bristly mallow	*Modiola caroliniana*	
Red mulberry	*Morus rubra*	
Wax myrtle	*Myrica cerifera*	
Oleander *	*Nerium oleander*	
Black gum	*Nyssa sylvatica biflora*	
Cut-leaf evening primrose	*Oenothera laciniata*	
Mondo-grass *	*Ophiopogon japonicus*	
Eastern hophornbeam	*Ostrya virginiana*	
Pink wood sorrel	*Oxalis corymbosa*	
Florida yellow wood sorrel	*Oxalis floridana*	
Florida pellitory	*Parietaria floridana*	
Virginia creeper	*Parthenocissus quinquefolia*	

* Non-native Species

Homosassa Springs Wildlife State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Swamp bay	*Persea palustris*	
Philodendron *	*Philodendron selloum*	
Common philodendron *	*Philodendron scandens*	
Pokeweed	*Phytolacca americana*	
Silk-grass	*Pityopsis graminifolia*	
Southern plantain	*Plantago virginica*	
Japanese yew *	*Podocarpus macrophyllus*	
Black cherry	*Prunus serotina*	
Wild-coffee	*Psychotria nervosa*	
Firethorn *	*Pyracantha coccinea*	
False dandelion	*Pyrrhopappus carolinianus*	
Laurel oak	*Quercus laurifolia*	
Overcup oak	*Quercus lyrata*	
Swamp chestnut oak	*Quercus michauxii*	
Water oak	*Quercus nigra*	
Shumard oak	*Quercus shumardii*	
Live oak	*Quercus virginiana*	
Azalea *	*Rhododendron* x southern hybrid	
Swamp honeysuckle	*Rhododendron viscosum*	
Winged sumac	*Rhus copallina*	
Rose *	*Rosa* sp.	
Highbush blackberry	*Rubus argutus*	
Sand blackberry	*Rubus cuneifolius*	
Wild-petunia	*Ruellia caroliniensis*	
Sour dock	*Rumex hastatulus*	
White sabatia	*Sabatia brevifolia*	
Climbing buckthorn	*Sageretia minutiflora*	
Coastal plain willow	*Salix caroliniana*	
Lyre-leaved sage	*Salvia lyrata*	
Elderberry	*Sambucus canadensis*	
Pineland pimpernel	*Samolus valerandi parviflorus*	
Snakeroot	*Sanicula canadensis*	
Lizard's tail	*Saururus cernuus*	
Dusty miller *	*Senecio cineraria*	
Box-thorn *	*Severinia buxifolia*	
Fragrant goldenrod	*Solidago odora*	
Seaside goldenrod	*Solidago sempervirens*	
Spiny-leaved sow thistle	*Sonchus asper*	
Hedge nettle	*Stachys floridana*	
African marigold *	*Tagetes erecta*	
Rice paper plant *	*Tetrapanax papifera*	
Poison Ivy	*Toxicodendron radicans*	
Carolina basswood	*Tilia caroliniana*	
Society garlic *	*Tulbaghia violacea*	
Winged elm	*Ulmus alata*	

* Non-native Species

Homosassa Springs Wildlife State Park

Plants

Common Name	*Scientific Name*	Primary Habitat Codes (for designated species)
Florida elm	*Ulmus americana*	
Shiny blueberry	*Vaccinium myrsinites*	
Frostweed	*Verbesina virginica*	
Small viburnum	*Viburnum obovatum*	
Sweet viburnum *	*Viburnum odoratissimum*	
Sand vetch	*Vicia acutifolia*	
Florida vetch	*Vicia floridana*	
Garden pansy *	*Viola x wittrockiana*	
Muscadine grape	*Vitus rotundifolia*	
Frost grape	*Vitis vulpina*	
Creeping oxeye *	*Wedelia trilobata*	
Chinese wisteria *	*Wisteria sinensis*	
Asiatic hawksbeard *	*Youngia japonica*	

* Non-native Species

Homosassa Springs Wildlife State Park

Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
	INVERTEBRATE	
Crayfish	*Procambarus paeninsulanus*	
Shrimp	*Palaemonetes* sp.	
	Gammarus sp.	
Blue crab	*Callinectes sapidus*	
	FISH	
Yellow bullhead	*Ameirus natalis*	55
American eel	*Anguilla rostrata*	55
Sheepshead	*Archosargus probatocephalus*	55
Hardhead catfish	*Arius felis*	55
Gafftopsail catfish	*Bagre marinus*	55
Crevalle jack	*Caranx hippos*	55
Snook	*Centropomus undecimalis*	55
Goby	*Ctenogobius* sp	55
Grass carp *	*Ctenopharynogodon idella*	55
Spotted sea trout	*Cynoscion nebulosus*	55
Sheepshead minnow	*Cyprinodon variegatus*	55
Stingray	*Dasyatis sabina*	55
Sharksucker	*Echeneis naucrates*	55
Okefenokee pygmy sunfish	*Elassoma okefenokee*	55
Ladyfish	*Elops saurus*	55
Lake chubsucker	*Erimyzon sucetta*	55
Spotfin mojarra	*Eucinostomus argenteus floridanus*	55
Tidewater mojarra	*Eucinostamus harengulus*	55
Marsh killifish	*Fundulus confulentus*	55
Seminole killifish	*Fundulus seminolis*	55
Eastern mosquitofish	*Gambusia holbrooki*	55
Least killifish	*Heterandria formosa*	55
Pinfish	*Lagodon rhomboides*	55
Spotted gar	*Lepisosteus oculatus*	55
Longnose gar	*Lepisosteus osseus*	55
Florida gar	*Lepisosteus platyrhincus*	55
Warmouth	*Lepomis gulosus*	55
Bluegill	*Lepomis macrochirus*	55
Redear sunfish	*Lepomis microlophus*	55
Spotted sunfish	*Lepomis punctatus*	55
Pinfish	*Logodon rhomboides*	55
Bluefin killifish	*Lucania goodei*	55
Rainwater killifish	*Lucania parva*	55
Schoolmaster	*Lutjanus apodus*	55

* Non-native Species

Homosassa Springs Wildlife State Park

Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Gray snapper	*Lutjanus griseus*	55
Tarpon	*Megalops atlanticus*	55
Inland silverside	*Menida beryllina*	55
Clown goby	*Microgobius gulosus*	55
Florida largemouth bass	*Micropterus salmoides*	55
Striped mullet	*Mugil cephalus*	55
White mullet	*Mugil curema*	55
Golden shiner	*Notemigonus crysoleucas*	55
Redeye chub	*Notropis harperi*	55
Coastal shiner	*Notropis pertersoni*	55
Tadpole madtom	*Noturus gyrinus*	55
Sailfin molly	*Poecilia latipinna*	55
Black drum	*Pogonias chromis*	55
Red drum	*Sciaenops ocellatus*	55
Atlantic needlefish	*Strongylura marina*	55
Hogchoker	*Trinectes maculatus*	55
	AMPHIBIANS	
Frogs		
Florida cricket frog	*Acris gryllus dorsalis*	35
Greenhouse frog *	*Eleutherodactylus p. planirostris*	35
Green treefrog	*Hyla cinerea*	35
Pig frog	*Rana grylio*	55
Bull frog	*Rana catesbeiana*	55
Southern leopard frog	*Rana utricularia*	55
Salamanders		
Two-toed amphiuma	*Amphiuma means*	55
	REPTILES	
Crocodilians		
American alligator	*Alligator mississippiensis*	55
Turtles		
Florida softshell turtle	*Apolone ferox*	55
Common snapping turtle	*Chelydra serpentina*	55
Florida chicken turtle	*Deirochelys reticularia chrysea*	55
Gopher tortoise	*Gopherus polyphemus*	
Suwanee cooter	*Pseudomys concinna suwanniensis*	55
Florida cooter	*Pseudemys floridana floridana*	55
Peninsula cooter	*Pseudemys floridana peninsularis*	55
Florida redbelly turtle	*Pseudemys nelsoni*	55
Suwannee cooter	*Pseudomys concinna suwanniensi*	55
Florida mud turtle	*Kinosternon subrubrum steindachneri*	55
Stinkpot	*Sternotherus odoratus*	55

* Non-native Species

Homosassa Springs Wildlife State Park

Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Box turtle	*Terrapene carolina*	35
Lizards		
Green anole	*Anolis carolinensis*	35
Brown anole *	*Anolis sagrei*	82
Six-lined racerunner	*Cnemidophorus s. sexlineatus*	8
Southeastern five-lined skink	*Eumeces inexpectatus*	8
Broadhead skink	*Eumeces laticeps*	35
Eastern glass lizard	*Ophisaurus ventralis*	35
Ground skink	*Scincella lateralis*	35
Snakes		
Florida cottonmouth	*Agkistrodon piscivorus conanti*	35
Southern black racer	*Coluber constrictor priapus*	8
Eastern diamondback rattlesnake	*Crotalus adamanteus*	8
Southern ringneck snake	*Diadophis p. punctatus*	35
Eastern indigo snake	*Drymarchon corais couperi*	35
Red rat snake	*Elaphe g. guttata*	8
Yellow rat snake	*Elaphe obsoleta quadrivittata*	35
Mud snake	*Farancia abacura*	55
Eastern hognose snake	*Heterodon platyrhinos*	8
Scarlet kingsnake	*Lampropeltis triangulum elapsoides*	8
Eastern coachwhip snake	*Masticophis f. flagellum*	8
Eastern coral snake	*Micrurus f. fulvius*	35
Florida water snake	*Nerodia fasciata pictiventris*	55
Ribbon snake	*Thamnophis sauritus*	35
Garter snake	*Thamnophis sirtalis*	35
	BIRDS	
Grebe		
Pied-billed Grebe	*Podilymbus podiceps*	55
Pelicans		
Brown Pelican	*Pelecanus occidentalis*	55
Cormorants		
Double-crested Cormorant	*Phalacrocorax auritus*	55
Anhingas		
Anhinga	*Anhinga anhinga*	55
Bitterns & Herons		
Great Blue Heron	*Ardea herodias*	55
Green-backed Heron	*Butorides striatus*	55
Little Blue Heron	*Egretta caerulea*	55
Snowy Egret	*Egretta thula*	55
Tricolored Heron	*Egretta tricolor*	55
Yellow-crowned Night-Heron	*Nyctanassa violacea*	55
Black-crowned Night-Heron	*Nycticorax nycticorax*	55

* Non-native Species

Homosassa Springs Wildlife State Park

Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Ibises & Spoonbills		
White Ibis	*Eudocimus albus*	35
Roseate Spoonbill	*Ajaia ajaja*	55
Storks		
Wood Stork	*Mycteria americana*	55
Ducks, Geese & Swans		
Wood Duck	*Aix sponsa*	55
Mallard	*Anas platyrhynchos*	55
Blue-winged Teal	*Anas discors*	55
Green-winged Teal	*Anas crecca*	55
Lesser Scaup	*Aythya affinis*	55
Red-breasted Merganser	*Mergus serrator*	55
Vultures		
Black Vulture	*Coragyps atratus*	35
Turkey Bulture	*Cathartes aura*	35
Hawks, Eagles & Kites		
Short-tailed Hawk	*Buteo brachyurus*	35
Red-shouldered Hawk	*Buteo lineatus*	35
Red-tailed Hawk	*Buteo jamaicensis*	35
Swallow-tailed Kite	*Elanoides forficatus*	35
Bald Eagle	*Haliaetus leucocephalus*	35
Osprey		
Osprey	*Pandion haliaetus*	35
Pheasants, Turkey & Quail		
Northern Bobwhite	*Colinus virginianus*	8
Cranes		
Sandhill Crane	*Grus canadensis*	35
Rails, Gallinules & Coots		
Common Moorhen	*Gallinula chloropus*	55
Purple Gallinule	*Porphyrula martinica*	55
Limpkins		
Limpkin	*Aramus guarauna*	55
Plovers & Lapwings		
Killdeer	*Charadrius vociferus*	82
Gulls, Terns & Skimmers		
Laughing Gull	*Larus atricilla*	35
Ring-billed Gull	*Larus delawarensis*	35
Herring Gull	*Larus argentatus*	35
Owls		
Eastern Screech Owl	*Otus asio*	35
Great Horned Owl	*Bubo virginianus*	35
Barred Owl	*Strix varia*	35
Parrots		
Quaker Parrot *	*Myiopsitta monachus*	35

* Non-native Species

Homosassa Springs Wildlife State Park

Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Hummingbirds		
Ruby-throated Hummingbird	*Archilochus colubris*	35
Woodpeckers		
Pileated Woodpecker	*Dryocopus pileatus*	35
Red-bellied Woodpecker	*Melanerpes carolinus*	35
Downy Wodpecker	*Picoides pubescens*	8
Yellow-bellied Sapsucker	*Sphyrapicus varius*	35
Swallows		
Purple Martin	*Progne subis*	MTC
Jays, Crows & Magpies		
Fish Crow	*Corvus ossifragus*	35
Titmice		
Tufted Titmouse	*Baeolophus bicolor*	35
Carolina Chickadee	*Poecile carolinensis*	35
Wrens		
Carolina Wren	*Thryothorus ludovicianus*	35
Thrushes, Kinglets & Veery		
Ruby-crowned Kinglet	*Regulus calendula*	*35*
American robin	*Turdus migratorius*	MTC
Warblers, Blackbirds, Etc.		
Red-winged Blackbird	*Agelaius phoeniceus*	35
Black-throated Blue Warbler	*Dendroica caerulescens*	35
Yellow-rumped Warbler	*Dendroica coronata*	35
Pine Warbler	*Dendroica pinus*	8
Black-and-white Warbler	*Mniotilta varia*	35
Northern Parula	*Parula americana*	35
Ovenbird	*Seiurus aurocapillus*	35
Boat-tailed Grackle	*Quiscalus major*	35
Mockingbirds & Thrashers		
Northern Mockingbird	*Mimus polyglottos*	82
Brown Thrasher	*Toxostoma rufum*	35
Kinglets & Gnatcatchers		
Blue-gray Gnatcatcher	*Polioptila caerulea*	35
Starlings		
European Starling *	*Sturnus vulgaris*	82
Vireos		
White-eyed Vireo	*Vireo griseus*	35
Solitary Vireo	*Vireo solitarius*	35
Finches, Sparrows & Buntings		
Northern Cardinal	*Cardinalis cardinalis*	35
Pine Siskin	*Carduelis pinus*	35
	MAMMALS	
Marsupials		
Virginia opossum	*Didelphis virginiana*	35

* Non-native Species

Homosassa Springs Wildlife State Park

Animals

Common Name	*Scientific Name*	Primary Habitat Codes (for all species)
Bats		
Eastern pipistrelle	*Pipistrellus subflavus*	35
Edentates		
Nine-banded armadillo*	*Dasypus novemcinctus*	35
Lagomorphs		
Eastern cottontail	*Sylvilagus floridanus*	8
Marsh rabbit	*Sylvilagus palustris*	35
Rodents		
Southern flying squirrel	*Glaucomys volans*	35
Golden mouse	*Ochrotomys nuttalli*	35
Cotton mouse	*Peromyscus gossypinus*	8
Black rat *	*Rattus rattus*	35
Gray squirrel	*Sciurus carolinensis*	MTC
Cotton rat	*Sigmodon hispidus*	35
Insectivores		
Short-tailed shrew	*Blarina carolinensis*	35
Eastern mole	*Scalopus aquaticus*	8
Homosassa shrew	*Sorex longirostris eionis*	35
Carnivores		
Bobcat	*Felis rufus*	35
River otter	*Lutra canadensis*	55
Raccoon	*Procyon lotor*	MTC
Gray fox	*Urocyon cinereoargenteus*	8
Florida black bear	*Ursus americanus floridanus*	35
Artiodactyls		
White-tailed deer	*Odocoileus virginianus*	35
Feral hog *	*Sus scrofa*	35
Manatees		
Manatee	*Trichechus manatus*	55

* 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

Lacustrine

46. Flatwood/Prairie Lake
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

Homosassa Springs Wildlife State Park

Designated Species

Plants

Common Name/ *Scientific Name*	**Designated Species Status** FDA	USFWS	FNAI
Variable-leaved Indian-plantain *Arnoglossum diversifolium*	LT		G2, S2
Greenfly orchid *Epidendrum canopseum*	CE		
Cinnamon fern *Osmunda cinnamomea*	CE		
Coontie *Zamia pumila*	CE		
Needle palm *Rhaphidiphyllum hystrix*	CE		

Homosassa Springs Wildlife State Park

Designated Species

Animals

Common Name/ *Scientific Name*	Designated Species Status FFWCC	USFWS	FNAI
REPTILES			
American alligator *Alligator mississippiensis*	LS	T(S/A)	G5, S4
Eastern indigo snake *Drymarchon corais cooperi*	LT	LT	G4T3, S3
Gopher tortoise *Gopherus polyphemus*	LS		G3, S3
Suwannee cooter *Pseudemys concinna suwanniensis*	LS		G5T3, S3
Eastern diamondback rattlesnake *Crotalus adamanteus*			G5, S3
BIRDS			
Roseate Spoonbill *Ajaia ajaja*	LS		G5, S2
Little blue heron *Egretta caerulea*	LS		G5, S4
Snowy egret *Egretta thula*	LS		G5, S4
Tricolored heron *Egretta tricolor*	LS		G5, S4
Swallow-tailed kite *Elanoides forficatus*			G4, S2S3
White ibis *Eudocimus albus*	LS		G5, S4
Southern bald eagle *Haliaeetus leucocephalus*	LT	LT	G4, S3
Wood stork *Mycteria americana*	LE	LE	G4, S2
Black-crowned Night-heron *Nycticorax nycticorax*			G5, S3
Yellow-crowned Night-heron *Nyctanassa violacea*			G5, S3
Osprey *Pandion haliaetus*			G5, S3S4
Brown Pelican *Pelecanus occidentalis*	LS		G4, S3
MAMMALS			
Manatee *Trichechus manatus*	LE	LE	G2, S2
Homosassa shrew *Sorex longirostris eionis*	LS		G5T3, S3
Florida black bear *Ursus americanus floridanus*	LT		G5T2, S2

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

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

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

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

FNAI GLOBAL RANK DEFINITIONS

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

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

LEGAL STATUS

N = Not currently listed, nor currently being considered for listing,by state or federal agencies.

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

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

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

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

PT = Proposed for listing as Threatened Species.

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

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

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

STATE

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

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

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

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

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

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

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

Addendum 6—Priority Schedule and Cost Estimates

Homosassa Springs Wildlife State Park

Priority Schedule And Cost Estimates

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

Natural Resources

1. Restore manatee habitat within captive area and downstream of Long River Bridge by removing accumulated sediments and restoring native vegetation. 0-5 years. **Estimated Cost: $1,000,000; Division 35 Percent Match: $350,000.**
2. Continue wetlands restoration by removal of limerock trails to restore natural drainage patterns and replacement with elevated boardwalks. 0-5 years. **Estimated Cost: $250,000.**
3. Restore Bird Park springs and waterways containing accumulated sediments, remove sources of sedimentation and improve water quality. 0-5 years. **Estimated Cost: $100,000.**
4. Restore Banana spring-run, alligator, otter and hippo areas containing accumulated sediments, remove sources of sedimentation and improve water quality. 0-5 years. **Estimated Cost: $100,000.**
5. Construct captive manatee observation platform to improve ability to observe captives to aid research, improve husbandry, and improve on-site interpretation for visitors. 0-5 years. **Estimated Cost: $40,000.**
6. Locate exotic plant infestations, develop exotic plant removal plan, pursue funding for removal and implement plan. 0-5 years. **Estimated Cost: $50,000.**
7. Implement prescribed burn program utilizing District resources. 0-5 years. **Estimated Cost: $5,000.**

Cultural Resources

1. Pursue funding for a Level 1 survey of cultural resources. Develop and implement programs to document and stabilize historic and archaeological sites. Provide protective measures for cultural resources. 0-5 years. **Estimated Cost: $25,000.**
2. Manage collection objects according to current Division of Recreation and Parks standards and procedures. 0-5 years. **Estimated Cost: $5,000.**

TOTAL ESTIMATED COST: $925,000.

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

Capital Improvements

Development Area or Facility

Maintenance Area Improvements	$130,000.00
Mullet Train Development	$945,000.00
Park Entrance Redevelopment	$72,500.00
Pedestrian Circulation Improvements	$150,000.00
Boat and Boathouse Replacement	$418,000.00
Resident Scholar Facility Improvements	$100,000.00
Visitor Center	$96,000.00
Wildlife Walk Improvements	$1,370,000.00
Total w/contingency	**$3,878,800.00**

NOTE: These preliminary cost estimates, based on Divisions standards, do not include costs for site-specific elements not evident at the conceptual level of planning. Additional costs should be investigated before finalizing budget estimates. All items fall in the new facility construction category © of the uniform cost accounting system required by ch. 259.037 F.S.

Additional Information

FNAI Descriptions

DHR Cultural Management Statement

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]).

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

D. MANAGEMENT IMPLEMENTATION

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

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

A. Historic Sites

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

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